

A Falcon Heavy rocket is shown launching at night, with a large plume of fire and smoke at its base. The rocket is positioned on the right side of the frame. In the background, the launch complex is visible with various structures and lights. A large blue banner with white text is overlaid on the center of the image, and a red-bordered white box with red text is in the top left.

**NASA LIVE**

**NASA'S SPACEX  
CREW-2 LAUNCH**

**#LAUNCHAMERICA**

1  
00:00:03,750 --> 00:00:08,549

[Music]

2  
00:00:08,559 --> 00:00:13,430

between countries

3  
00:00:13,440 --> 00:00:17,029

[Music]

4  
00:00:35,760 --> 00:00:19,990

discovery clears the tower

5  
00:00:35,770 --> 00:00:45,990

[Music]

6  
00:00:50,709 --> 00:00:48,150  
you're looking live at the crew dragon

7  
00:00:52,549 --> 00:00:50,719  
spacecraft and falcon 9 rocket set to

8  
00:00:54,950 --> 00:00:52,559  
launch four astronauts to the

9  
00:00:58,470 --> 00:00:54,960  
international space station in just a

10  
00:01:01,189 --> 00:00:58,480  
few hours today a crew of two americans

11  
00:01:03,510 --> 00:01:01,199  
one european and one japanese astronaut

12  
00:01:05,590 --> 00:01:03,520  
will set off on a six-month science

13  
00:01:07,429 --> 00:01:05,600

mission to the world's only orbiting

14

00:01:09,350 --> 00:01:07,439

laboratory

15

00:01:11,670 --> 00:01:09,360

welcome to nasa's kennedy space center

16

00:01:14,390 --> 00:01:11,680

in florida i'm marie lewis with nasa

17

00:01:17,109 --> 00:01:14,400

communications and i'm kate tyce senior

18

00:01:19,270 --> 00:01:17,119

certification engineer at spacex joining

19

00:01:21,670 --> 00:01:19,280

us today is nasa astronaut tracy

20

00:01:23,670 --> 00:01:21,680

caldwell dyson welcome tracy thank you

21

00:01:25,429 --> 00:01:23,680

kate thank you marie it's a sure

22

00:01:26,789 --> 00:01:25,439

pleasure to be here you know it's a busy

23

00:01:28,310 --> 00:01:26,799

month for human space flight with

24

00:01:30,469 --> 00:01:28,320

traffic to and from the international

25

00:01:33,109 --> 00:01:30,479

space station and today's launch of crew

26

00:01:34,710 --> 00:01:33,119

2 is a very exciting part of that and

27

00:01:36,710 --> 00:01:34,720

i'm just so pumped that i get to be

28

00:01:38,950 --> 00:01:36,720

right here and tracy we were talking

29

00:01:41,270 --> 00:01:38,960

earlier about when the last time was you

30

00:01:44,710 --> 00:01:41,280

were in florida for a launch that was in

31

00:01:47,190 --> 00:01:44,720

2011 for sts-135 i had just returned

32

00:01:49,749 --> 00:01:47,200

from my space station mission and they

33

00:01:51,749 --> 00:01:49,759

needed some help in the c-squared group

34

00:01:54,550 --> 00:01:51,759

the cape crusader and so i came here to

35

00:01:56,469 --> 00:01:54,560

support well we are so happy to have you

36

00:01:58,789 --> 00:01:56,479

back for this new era of human space

37

00:02:01,990 --> 00:01:58,799

flight a quick note for you all we have

38

00:02:03,590 --> 00:02:02,000

each been vaccinated against covet 19

39

00:02:05,749 --> 00:02:03,600

and so that's why you see us sitting

40

00:02:08,550 --> 00:02:05,759

here together without masks on we want

41

00:02:11,670 --> 00:02:08,560

to keep everyone safe and healthy

42

00:02:13,750 --> 00:02:11,680

at 5 49 this morning eastern time nasa

43

00:02:16,390 --> 00:02:13,760

astronauts shane kimbrough megan

44

00:02:18,790 --> 00:02:16,400

macarthur european space agency

45

00:02:21,190 --> 00:02:18,800

astronaut thomas pesquet and japan

46

00:02:22,470 --> 00:02:21,200

aerospace exploration agency astronaut

47

00:02:25,110 --> 00:02:22,480

aki hoshide

48

00:02:27,110 --> 00:02:25,120

will lift off from launch complex 39a

49

00:02:28,949 --> 00:02:27,120

which you see right there at nasa's

50

00:02:31,670 --> 00:02:28,959

kennedy space center as part of the

51  
00:02:33,910 --> 00:02:31,680  
agency's commercial crew program this

52  
00:02:35,430 --> 00:02:33,920  
crew will relieve the four crew one

53  
00:02:38,150 --> 00:02:35,440  
astronauts who have been living and

54  
00:02:40,070 --> 00:02:38,160  
working on station since november this

55  
00:02:43,110 --> 00:02:40,080  
will be the first time that spacex

56  
00:02:45,589 --> 00:02:43,120  
reuses both a first stage and a crew

57  
00:02:47,910 --> 00:02:45,599  
dragon capsule this booster supported

58  
00:02:50,470 --> 00:02:47,920  
the crew 1 mission and the capsule

59  
00:02:52,470 --> 00:02:50,480  
dragon endeavor flew astronauts bob

60  
00:02:54,630 --> 00:02:52,480  
benkin and doug hurley to the space

61  
00:02:56,630 --> 00:02:54,640  
station and last year's history making

62  
00:02:58,790 --> 00:02:56,640  
demo 2 test flight

63  
00:03:00,710 --> 00:02:58,800

and we have teams all around the country

64

00:03:03,350 --> 00:03:00,720

covering the action from spacex

65

00:03:06,070 --> 00:03:03,360

headquarters in hawthorne california

66

00:03:08,149 --> 00:03:06,080

nasa's mission control center in houston

67

00:03:09,830 --> 00:03:08,159

and of course right here in florida

68

00:03:11,670 --> 00:03:09,840

we'll also be answering your questions

69

00:03:14,070 --> 00:03:11,680

throughout the countdown so you can send

70

00:03:16,869 --> 00:03:14,080

us yours by using the hashtag launch

71

00:03:19,350 --> 00:03:16,879

america on social media

72

00:03:21,190 --> 00:03:19,360

at t minus four hours and five minutes

73

00:03:23,589 --> 00:03:21,200

nasa will turn the crew over to the

74

00:03:25,750 --> 00:03:23,599

spacex team and once that happens there

75

00:03:28,789 --> 00:03:25,760

are a series of key milestones to be

76

00:03:31,509 --> 00:03:28,799

checked off as we count down to t0

77

00:03:34,070 --> 00:03:31,519

the first one is suit up the suit-up

78

00:03:36,470 --> 00:03:34,080

room is located in nasa's neil armstrong

79

00:03:37,670 --> 00:03:36,480

operations and checkout building or the

80

00:03:39,430 --> 00:03:37,680

onc

81

00:03:41,110 --> 00:03:39,440

here the spacex team will help the

82

00:03:43,190 --> 00:03:41,120

astronauts put on their suits and

83

00:03:45,430 --> 00:03:43,200

perform some key suit checkouts to

84

00:03:47,509 --> 00:03:45,440

ensure suit integrity

85

00:03:49,830 --> 00:03:47,519

after suit up we'll see the crew walk

86

00:03:51,670 --> 00:03:49,840

out the astronauts will leave the onc

87

00:03:53,910 --> 00:03:51,680

building for final goodbyes with

88

00:03:55,670 --> 00:03:53,920

co-workers friends and family gathered

89

00:03:56,470 --> 00:03:55,680

outside before they head to the launch

90

00:03:58,390 --> 00:03:56,480

pad

91

00:04:00,229 --> 00:03:58,400

following goodbyes the crew will get in

92

00:04:03,670 --> 00:04:00,239

their teslas and begin the roughly

93

00:04:06,350 --> 00:04:03,680

15-minute drive to pad 39a once there

94

00:04:09,350 --> 00:04:06,360

the four astronauts will ascend to the

95

00:04:10,309 --> 00:04:09,360

255 foot level of the fixed service

96

00:04:13,589 --> 00:04:10,319

structure

97

00:04:15,910 --> 00:04:13,599

right of the rocket then they take the

98

00:04:18,150 --> 00:04:15,920

last 10 feet to the crew access arm and

99

00:04:20,789 --> 00:04:18,160

white room the white room is their last

100

00:04:23,590 --> 00:04:20,799

stop before aborting their spacecraft a

101  
00:04:25,510 --> 00:04:23,600  
process known as crew ingress during

102  
00:04:27,749 --> 00:04:25,520  
ingress the spacex team will run a

103  
00:04:30,230 --> 00:04:27,759  
series of checks to ensure the suits

104  
00:04:32,230 --> 00:04:30,240  
seats and vehicle interfaces are all

105  
00:04:34,550 --> 00:04:32,240  
functioning properly

106  
00:04:37,110 --> 00:04:34,560  
after all the vehicle and crew checkouts

107  
00:04:39,270 --> 00:04:37,120  
are complete the spacex closeout team

108  
00:04:41,749 --> 00:04:39,280  
will close the crew dragon's side hatch

109  
00:04:44,070 --> 00:04:41,759  
with the crew safely inside at t minus

110  
00:04:45,590 --> 00:04:44,080  
40 minutes the crew access arm which is

111  
00:04:47,909 --> 00:04:45,600  
the long suspended walkway the

112  
00:04:49,990 --> 00:04:47,919  
astronauts use to board dragon will

113  
00:04:52,629 --> 00:04:50,000

retract followed by the arming of the

114

00:04:54,950 --> 00:04:52,639

launch escape system and once the arm is

115

00:04:57,030 --> 00:04:54,960

retracted and the escape system armed

116

00:04:57,909 --> 00:04:57,040

propellant loading on falcon 9 will

117

00:05:00,390 --> 00:04:57,919

begin

118

00:05:02,550 --> 00:05:00,400

at t minus five minutes dragon will be

119

00:05:04,790 --> 00:05:02,560

configured for what is called terminal

120

00:05:07,590 --> 00:05:04,800

count this is when dragon's onboard

121

00:05:09,510 --> 00:05:07,600

computers take control of the spacecraft

122

00:05:11,909 --> 00:05:09,520

and finally at t

123

00:05:14,950 --> 00:05:11,919

crew dragon and falcon 9 will lift off

124

00:05:17,029 --> 00:05:14,960

from pad 39a roughly 12 minutes after

125

00:05:19,270 --> 00:05:17,039

liftoff crew dragon will separate from

126

00:05:21,830 --> 00:05:19,280

falcon 9's second stage enter its

127

00:05:23,510 --> 00:05:21,840

preliminary orbit and activation phase

128

00:05:25,749 --> 00:05:23,520

and begin using its own onboard

129

00:05:28,150 --> 00:05:25,759

propulsion system to carry the crew to

130

00:05:29,590 --> 00:05:28,160

their destination the international sp

131

00:05:32,070 --> 00:05:29,600

with space station

132

00:05:34,150 --> 00:05:32,080

so with crew suit up in about seven

133

00:05:36,550 --> 00:05:34,160

minutes let's introduce our team at

134

00:05:38,710 --> 00:05:36,560

spacex headquarters in california to

135

00:05:42,629 --> 00:05:38,720

show us what's happening there what's up

136

00:05:46,550 --> 00:05:44,469

hello from spacex headquarters in

137

00:05:48,150 --> 00:05:46,560

hawthorne california i'm nasa's gary

138

00:05:50,150 --> 00:05:48,160

jordan and thank you for joining us live

139

00:05:52,150 --> 00:05:50,160

for the second flight of the crew dragon

140

00:05:54,390 --> 00:05:52,160

endeavor on a falcon 9 rocket to the

141

00:05:56,390 --> 00:05:54,400

international space station i'm jesse

142

00:05:59,110 --> 00:05:56,400

anderson a lead manufacturing engineer

143

00:06:00,629 --> 00:05:59,120

here at spacex and right next to us is

144

00:06:02,230 --> 00:06:00,639

mission control hawthorne where our

145

00:06:04,629 --> 00:06:02,240

teams are monitoring the vehicle

146

00:06:06,790 --> 00:06:04,639

checking in on all of its systems and

147

00:06:08,230 --> 00:06:06,800

the capsule is go for launch

148

00:06:10,070 --> 00:06:08,240

once the crew lifts off it will take

149

00:06:11,830 --> 00:06:10,080

them a little more than 23 hours to

150

00:06:13,830 --> 00:06:11,840

reach their destination the space

151  
00:06:15,670 --> 00:06:13,840  
station with dragon flying autonomously

152  
00:06:17,510 --> 00:06:15,680  
the entire way but the crew will have

153  
00:06:20,390 --> 00:06:17,520  
the ability to take manual control of

154  
00:06:22,390 --> 00:06:20,400  
endeavour at any time if necessary

155  
00:06:24,150 --> 00:06:22,400  
to help make sure the crew has a safe

156  
00:06:26,390 --> 00:06:24,160  
journey our team in mission control will

157  
00:06:28,790 --> 00:06:26,400  
be monitoring the progress along the way

158  
00:06:30,309 --> 00:06:28,800  
on console or headset are six key

159  
00:06:32,469 --> 00:06:30,319  
positions who are monitoring the health

160  
00:06:34,629 --> 00:06:32,479  
of the vehicle and crew the mission

161  
00:06:36,550 --> 00:06:34,639  
director responsible for mission success

162  
00:06:38,469 --> 00:06:36,560  
is in charge in the room the person that

163  
00:06:40,550 --> 00:06:38,479

you'll hear talking to the astronauts is

164

00:06:43,430 --> 00:06:40,560

the crew operations and resources

165

00:06:45,110 --> 00:06:43,440

engineer or what we refer to as the core

166

00:06:46,790 --> 00:06:45,120

the other positions are focused on the

167

00:06:49,830 --> 00:06:46,800

vehicle systems like navigation and

168

00:06:51,430 --> 00:06:49,840

control avionics software propulsion

169

00:06:53,270 --> 00:06:51,440

life support and communications with

170

00:06:55,110 --> 00:06:53,280

ground segments nasa has its own team

171

00:06:56,710 --> 00:06:55,120

members in mission control houston where

172

00:06:58,629 --> 00:06:56,720

they've been preparing the space station

173

00:07:00,469 --> 00:06:58,639

for crew dragon's arrival we'll meet

174

00:07:02,390 --> 00:07:00,479

several of the key players later when we

175

00:07:04,070 --> 00:07:02,400

check in with houston for now though

176

00:07:05,670 --> 00:07:04,080

let's go to john insprucker for an

177

00:07:07,430 --> 00:07:05,680

operational update on the launch

178

00:07:09,110 --> 00:07:07,440

countdown john

179

00:07:11,430 --> 00:07:09,120

hello from spacex headquarters in

180

00:07:13,670 --> 00:07:11,440

hawthorne california i'm john inspector

181

00:07:16,150 --> 00:07:13,680

falcon principal integration engineer

182

00:07:18,629 --> 00:07:16,160

here at spacex we're just over four

183

00:07:20,710 --> 00:07:18,639

hours 11 minutes to launch we're coming

184

00:07:22,790 --> 00:07:20,720

up at t minus four hours with the launch

185

00:07:25,430 --> 00:07:22,800

director's countdown briefing

186

00:07:27,189 --> 00:07:25,440

but right now we're looking at whether

187

00:07:28,870 --> 00:07:27,199

everything's looking good

188

00:07:30,870 --> 00:07:28,880

now the major event getting to this

189

00:07:33,110 --> 00:07:30,880

point was static fire of the falcon 9

190

00:07:34,710 --> 00:07:33,120

that was performed six days ago

191

00:07:36,950 --> 00:07:34,720

the team went through all the steps of a

192

00:07:38,790 --> 00:07:36,960

regular countdown and at t zero we

193

00:07:40,950 --> 00:07:38,800

ignited the nine merlin engines on the

194

00:07:42,950 --> 00:07:40,960

first stage and let them run for seven

195

00:07:45,350 --> 00:07:42,960

seconds before shutting down

196

00:07:47,990 --> 00:07:45,360

this gave us a final integrated checkout

197

00:07:50,390 --> 00:07:48,000

of the rocket and ground systems

198

00:07:51,830 --> 00:07:50,400

once static fire was complete we drained

199

00:07:53,510 --> 00:07:51,840

the propellants from the rocket and we

200

00:07:55,670 --> 00:07:53,520

reopened the pad

201  
00:07:57,589 --> 00:07:55,680  
since then the falcon 9 with the dragon

202  
00:07:58,790 --> 00:07:57,599  
capsule on top as you can see here in

203  
00:08:00,469 --> 00:07:58,800  
the picture

204  
00:08:01,510 --> 00:08:00,479  
they've remained vertical on the launch

205  
00:08:03,749 --> 00:08:01,520  
pad

206  
00:08:05,909 --> 00:08:03,759  
now the day after the static fire we

207  
00:08:07,909 --> 00:08:05,919  
performed a final dress rehearsal with

208  
00:08:09,589 --> 00:08:07,919  
the crew they're putting on their suits

209  
00:08:11,350 --> 00:08:09,599  
they got into the capsule they practice

210  
00:08:13,110 --> 00:08:11,360  
their countdown steps with the

211  
00:08:15,110 --> 00:08:13,120  
dragonflight team

212  
00:08:17,430 --> 00:08:15,120  
a launch readiness review was held early

213  
00:08:19,749 --> 00:08:17,440

on tuesday the 20th and we got approval

214

00:08:21,670 --> 00:08:19,759

to move into tonight's countdown

215

00:08:23,670 --> 00:08:21,680

at the same time we were also stowing

216

00:08:25,909 --> 00:08:23,680

the final cargo into lockers on the

217

00:08:28,070 --> 00:08:25,919

dragon spacecraft that finished up

218

00:08:30,790 --> 00:08:28,080

wednesday morning

219

00:08:33,190 --> 00:08:30,800

right now at pad 39a the falcon 9 and

220

00:08:34,949 --> 00:08:33,200

dragon are both powered on the falcon

221

00:08:37,430 --> 00:08:34,959

launch team will perform their final

222

00:08:39,589 --> 00:08:37,440

check starting at t minus two hours

223

00:08:42,070 --> 00:08:39,599

the dragon team is waiting for arrival

224

00:08:44,470 --> 00:08:42,080

of the crew in about 90 to 100 minutes

225

00:08:45,590 --> 00:08:44,480

uh happens around t minus two hours 35

226

00:08:47,350 --> 00:08:45,600

minutes

227

00:08:49,110 --> 00:08:47,360

we just heard a weather brief to the

228

00:08:50,870 --> 00:08:49,120

astronauts that came at t minus four

229

00:08:52,790 --> 00:08:50,880

hours 20 minutes

230

00:08:55,190 --> 00:08:52,800

uh as a reminder we had to pass up a

231

00:08:57,110 --> 00:08:55,200

launch opportunity 24 hours ago due to

232

00:08:59,269 --> 00:08:57,120

unfavorable weather in the contingency

233

00:09:00,870 --> 00:08:59,279

landing areas areas where dragon might

234

00:09:02,310 --> 00:09:00,880

have to splice down in case they had to

235

00:09:04,070 --> 00:09:02,320

return early

236

00:09:05,750 --> 00:09:04,080

the good news is the weather forecast

237

00:09:07,829 --> 00:09:05,760

both at the launch site and around the

238

00:09:10,070 --> 00:09:07,839

world looks good for launch early this

239

00:09:14,470 --> 00:09:10,080

morning from the kennedy space center

240

00:09:16,310 --> 00:09:14,480

conditions continue to be go at pad 39a

241

00:09:19,030 --> 00:09:16,320

on the event things don't go as planned

242

00:09:21,430 --> 00:09:19,040

such as an abort spacex and nasa are

243

00:09:24,150 --> 00:09:21,440

coordinating with the u.s coast guard to

244

00:09:26,949 --> 00:09:24,160

ensure crew safety upon splashdown this

245

00:09:29,190 --> 00:09:26,959

will include extra ships and air assets

246

00:09:31,509 --> 00:09:29,200

to patrol the 10 nautical mile keep out

247

00:09:33,910 --> 00:09:31,519

zone this is to help mitigate safety

248

00:09:35,670 --> 00:09:33,920

concerns for any boaters approaching the

249

00:09:37,829 --> 00:09:35,680

landing area

250

00:09:40,310 --> 00:09:37,839

and as usual for dragon flights we have

251  
00:09:41,829 --> 00:09:40,320  
an instantaneous launch window that

252  
00:09:43,350 --> 00:09:41,839  
means we can't move the launch time

253  
00:09:45,509 --> 00:09:43,360  
we'll have to go right on the planned

254  
00:09:48,070 --> 00:09:45,519  
minute and second now if we need to

255  
00:09:49,030 --> 00:09:48,080  
delay we will have to switch to a backup

256  
00:09:51,110 --> 00:09:49,040  
lock

257  
00:09:51,990 --> 00:09:51,120  
up launch opportunity three days from

258  
00:09:56,630 --> 00:09:52,000  
now

259  
00:09:59,350 --> 00:09:56,640  
pad let's head over to houston where

260  
00:10:03,430 --> 00:09:59,360  
nasa's courtney beasley is standing by

261  
00:10:07,269 --> 00:10:05,190  
thanks john and welcome to mission

262  
00:10:08,790 --> 00:10:07,279  
control houston you're inside the

263  
00:10:11,509 --> 00:10:08,800

international space station flight

264

00:10:13,990 --> 00:10:11,519

control room in houston texas at nasa's

265

00:10:15,509 --> 00:10:14,000

johnson space center mission control

266

00:10:16,949 --> 00:10:15,519

houston is the nerve center for

267

00:10:18,870 --> 00:10:16,959

operating the international space

268

00:10:20,870 --> 00:10:18,880

station working in tandem with our

269

00:10:22,790 --> 00:10:20,880

partner agencies and providers around

270

00:10:25,269 --> 00:10:22,800

the globe together we've ensured the

271

00:10:27,190 --> 00:10:25,279

station is ready to welcome crew 2 as

272

00:10:29,910 --> 00:10:27,200

the four astronauts arrive and join the

273

00:10:31,590 --> 00:10:29,920

current expedition 65 crew

274

00:10:34,150 --> 00:10:31,600

leading the team inside the room right

275

00:10:35,990 --> 00:10:34,160

now is flight director paul conia as the

276

00:10:37,590 --> 00:10:36,000

crew on board the station is just about

277

00:10:39,430 --> 00:10:37,600

20 minutes away from waking up and

278

00:10:41,430 --> 00:10:39,440

preparing for their work day

279

00:10:43,190 --> 00:10:41,440

a few hours before dragon arrives at the

280

00:10:44,949 --> 00:10:43,200

station nasa flight director scott

281

00:10:46,389 --> 00:10:44,959

stover will take over for dragon's

282

00:10:48,470 --> 00:10:46,399

approach and docking

283

00:10:50,470 --> 00:10:48,480

he'll lead the joint nasa spacex go

284

00:10:52,550 --> 00:10:50,480

no-go's once we're in joint operations

285

00:10:55,190 --> 00:10:52,560

with mission controllers here in houston

286

00:10:57,030 --> 00:10:55,200

and in spacex in hawthorne working in

287

00:10:59,430 --> 00:10:57,040

sync to bring crew dragon to its new

288

00:11:00,949 --> 00:10:59,440

home in space a little bit later i'll go

289

00:11:03,030 --> 00:11:00,959

through all the work we've been doing in

290

00:11:05,829 --> 00:11:03,040

space and on the ground to prepare the

291

00:11:07,430 --> 00:11:05,839

station for crew 2's arrival until then

292

00:11:09,350 --> 00:11:07,440

we'll keep an eye on today's countdown

293

00:11:11,430 --> 00:11:09,360

and we'll check back in with you soon

294

00:11:13,110 --> 00:11:11,440

for now let's head back to tracy in

295

00:11:15,750 --> 00:11:13,120

florida at the kennedy space center for

296

00:11:17,509 --> 00:11:15,760

the latest launch preparations tracy

297

00:11:19,750 --> 00:11:17,519

thanks courtney the astronauts will

298

00:11:21,750 --> 00:11:19,760

begin suiting up in a minute or so they

299

00:11:23,590 --> 00:11:21,760

designed the logo for the mission the

300

00:11:25,269 --> 00:11:23,600

determined expression of the dragon

301

00:11:27,670 --> 00:11:25,279

reflects the strength of the team and

302

00:11:29,990 --> 00:11:27,680

their contribution to space exploration

303

00:11:31,990 --> 00:11:30,000

the five large stars represent the five

304

00:11:34,389 --> 00:11:32,000

partner space agencies cooperating in

305

00:11:36,310 --> 00:11:34,399

the international space station program

306

00:11:38,389 --> 00:11:36,320

we're proud to have representation from

307

00:11:41,430 --> 00:11:38,399

three of those partner agencies on this

308

00:11:43,430 --> 00:11:41,440

mission with a jaxa and an esa astronaut

309

00:11:45,509 --> 00:11:43,440

flying on crew 2.

310

00:11:47,990 --> 00:11:45,519

and we had planned to launch on earth

311

00:11:50,389 --> 00:11:48,000

day yesterday but of course the teams

312

00:11:51,829 --> 00:11:50,399

made a decision to wave off due to rough

313

00:11:53,910 --> 00:11:51,839

weather conditions in the ascent

314

00:11:55,910 --> 00:11:53,920

corridor which would have made things

315

00:11:58,389 --> 00:11:55,920

just too dangerous in the event of an

316

00:12:00,629 --> 00:11:58,399

abort for both the astronauts and the

317

00:12:02,949 --> 00:12:00,639

rescue team in that scenario

318

00:12:05,430 --> 00:12:02,959

but weather looking much much better

319

00:12:07,910 --> 00:12:05,440

today and at nasa you know we tend to

320

00:12:10,389 --> 00:12:07,920

think of every day as earth day because

321

00:12:11,750 --> 00:12:10,399

of the work we do on and off the planet

322

00:12:14,150 --> 00:12:11,760

we call home

323

00:12:16,550 --> 00:12:14,160

we've all seen this iconic earthrise

324

00:12:18,710 --> 00:12:16,560

image taken by apollo 8 astronaut bill

325

00:12:20,949 --> 00:12:18,720

anders as he circled the moon all the

326

00:12:23,269 --> 00:12:20,959

way back in 1968.

327

00:12:27,110 --> 00:12:23,279

here's how the apollo 8 crew remembers

328

00:12:30,790 --> 00:12:28,790

i think it was bill too who said look we

329

00:12:35,190 --> 00:12:30,800

went all the way the moon to discover

330

00:12:40,470 --> 00:12:38,470

first time that we had gone so far and

331

00:12:44,710 --> 00:12:40,480

the first time that we saw

332

00:12:47,110 --> 00:12:44,720

the earth from 240 000 miles away

333

00:12:48,790 --> 00:12:47,120

i think it gave us a sense of uh we

334

00:12:52,230 --> 00:12:48,800

better do our best to take care of the

335

00:12:59,670 --> 00:12:52,240

this little blue marble that we have

336

00:12:59,680 --> 00:13:03,590

it makes you realize

337

00:13:03,600 --> 00:13:09,829

the earth from here is

338

00:13:13,910 --> 00:13:11,269

i think earth fries will go down in

339

00:13:16,230 --> 00:13:13,920

history is an iconic first

340

00:13:22,150 --> 00:13:16,240

real view of our home planet which is

341

00:13:27,750 --> 00:13:25,910

1970 and this year's earth day theme is

342

00:13:30,230 --> 00:13:27,760

connected by earth

343

00:13:33,190 --> 00:13:30,240

we have a little guest with us you may

344

00:13:36,310 --> 00:13:33,200

remember uh this is little earth

345

00:13:39,030 --> 00:13:36,320

famously known for uh his trip on the

346

00:13:41,430 --> 00:13:39,040

demo one test flight back in i think it

347

00:13:44,069 --> 00:13:41,440

was 2019 now it seems like it was

348

00:13:46,870 --> 00:13:44,079

forever ago he cut a ride with ripley

349

00:13:49,430 --> 00:13:46,880

yes yes so he was the gravity indicator

350

00:13:51,829 --> 00:13:49,440

on the demo one uh uncrewed test flight

351  
00:13:53,509 --> 00:13:51,839  
and and mclean and the other crew aboard

352  
00:13:56,150 --> 00:13:53,519  
the space station took great care of him

353  
00:13:58,629 --> 00:13:56,160  
while he was flying in orbit uh for that

354  
00:14:01,430 --> 00:13:58,639  
mission so we're excited to have him as

355  
00:14:02,389 --> 00:14:01,440  
a special guest today as a nod to earth

356  
00:14:06,870 --> 00:14:02,399  
day

357  
00:14:10,150 --> 00:14:06,880  
and we also have a view of the actual

358  
00:14:13,030 --> 00:14:10,160  
spacesuits worn by nasa astronauts bob

359  
00:14:15,430 --> 00:14:13,040  
benkin and doug hurley during the demo 2

360  
00:14:17,670 --> 00:14:15,440  
test flight last year that's a view from

361  
00:14:19,590 --> 00:14:17,680  
the pre-launch news conference

362  
00:14:21,189 --> 00:14:19,600  
tuesday morning you can see the briefers

363  
00:14:23,670 --> 00:14:21,199

and on either side of them in the

364

00:14:25,590 --> 00:14:23,680

background that is bob bankins space

365

00:14:27,990 --> 00:14:25,600

suit on the left and doug hurley's on

366

00:14:31,430 --> 00:14:28,000

the right and so they are here in

367

00:14:33,990 --> 00:14:31,440

florida especially for this mission to

368

00:14:36,629 --> 00:14:34,000

pay homage to all of the accomplishments

369

00:14:38,629 --> 00:14:36,639

that the nasa and spacex teams

370

00:14:40,949 --> 00:14:38,639

have have done together in the last 10

371

00:14:43,509 --> 00:14:40,959

years of the commercial crew program and

372

00:14:45,829 --> 00:14:43,519

so we are super excited to see the next

373

00:14:49,189 --> 00:14:45,839

crew of four uh suit up in their own

374

00:14:50,790 --> 00:14:49,199

custom made suits momentarily

375

00:14:53,670 --> 00:14:50,800

yeah we're looking forward to getting

376

00:14:56,310 --> 00:14:53,680

live views inside the onc suit up room

377

00:14:58,710 --> 00:14:56,320

momentarily but while we have a great

378

00:15:00,069 --> 00:14:58,720

shot of the rocket out at pad 39a

379

00:15:01,829 --> 00:15:00,079

something i want to point out as i

380

00:15:04,310 --> 00:15:01,839

mentioned earlier this is the first time

381

00:15:06,389 --> 00:15:04,320

that we are reusing a booster for a

382

00:15:07,910 --> 00:15:06,399

crude flight and it's also the first

383

00:15:09,990 --> 00:15:07,920

time that we are reusing a dragon

384

00:15:12,230 --> 00:15:10,000

capsule but you can actually see the

385

00:15:14,230 --> 00:15:12,240

soot from the previous mission which was

386

00:15:15,590 --> 00:15:14,240

the crew 1 mission that this booster was

387

00:15:17,430 --> 00:15:15,600

utilized for

388

00:15:19,990 --> 00:15:17,440

so if you're wondering why this

389

00:15:21,829 --> 00:15:20,000

particular rocket is not quite as white

390

00:15:23,670 --> 00:15:21,839

and shiny as other ones you may have

391

00:15:25,590 --> 00:15:23,680

seen that's because this one is flight

392

00:15:26,389 --> 00:15:25,600

proven it's already been to space and

393

00:15:29,269 --> 00:15:26,399

back

394

00:15:31,829 --> 00:15:29,279

and you can't probably see it from this

395

00:15:34,150 --> 00:15:31,839

view but the crew for this mission

396

00:15:36,550 --> 00:15:34,160

actually signed their initials in the

397

00:15:39,269 --> 00:15:36,560

soot of that first stage booster

398

00:15:41,110 --> 00:15:39,279

they had a chance to do that

399

00:15:43,990 --> 00:15:41,120

after they arrived here at kennedy last

400

00:15:46,389 --> 00:15:44,000

friday so that was pretty cool uh

401  
00:15:48,389 --> 00:15:46,399  
to see and tomah was saying that they

402  
00:15:53,990 --> 00:15:48,399  
think they started a new tradition for

403  
00:15:59,269 --> 00:15:56,470  
that is an up-close look at the crew

404  
00:16:00,949 --> 00:15:59,279  
dragon capsule and the crew access arm

405  
00:16:02,710 --> 00:16:00,959  
extended out to the right that is the

406  
00:16:05,110 --> 00:16:02,720  
hallway that the astronauts will walk

407  
00:16:07,189 --> 00:16:05,120  
down once they make their way to the pad

408  
00:16:09,590 --> 00:16:07,199  
a little bit later this morning again we

409  
00:16:12,790 --> 00:16:09,600  
are just standing by to get our first

410  
00:16:14,710 --> 00:16:12,800  
live look inside the suit up room inside

411  
00:16:16,629 --> 00:16:14,720  
the neil armstrong operations and

412  
00:16:19,829 --> 00:16:16,639  
checkout building here at nasa's kennedy

413  
00:16:22,310 --> 00:16:19,839

space center at t minus four hours two

414

00:16:27,189 --> 00:16:22,320

minutes 20 seconds and counting until

415

00:16:32,790 --> 00:16:29,509

and a note about the weather it is a

416

00:16:35,189 --> 00:16:32,800

really calm peaceful quiet morning

417

00:16:37,749 --> 00:16:35,199

here on florida space coast yesterday

418

00:16:39,189 --> 00:16:37,759

morning was much the same way for us uh

419

00:16:41,189 --> 00:16:39,199

here on the ground and a lot of people

420

00:16:43,269 --> 00:16:41,199

were wondering why did they wave off the

421

00:16:45,590 --> 00:16:43,279

launch on such a beautiful florida

422

00:16:47,509 --> 00:16:45,600

morning and it wasn't the conditions at

423

00:16:49,990 --> 00:16:47,519

the launch site it was the conditions

424

00:16:52,310 --> 00:16:50,000

along the ascent corridor because if the

425

00:16:53,829 --> 00:16:52,320

crew has to abort at any point along

426

00:16:56,389 --> 00:16:53,839

that flight path

427

00:16:58,949 --> 00:16:56,399

the conditions have to be safe or low

428

00:17:00,870 --> 00:16:58,959

risk enough for a rescue operation to

429

00:17:02,629 --> 00:17:00,880

take place in the atlantic and so

430

00:17:05,110 --> 00:17:02,639

conditions in the atlantic

431

00:17:07,590 --> 00:17:05,120

were just too risky so the teams made

432

00:17:09,829 --> 00:17:07,600

the right call if they had attempted

433

00:17:11,590 --> 00:17:09,839

yesterday everyone agreed that they

434

00:17:13,270 --> 00:17:11,600

would have had to scrub

435

00:17:14,789 --> 00:17:13,280

and the conditions look much better

436

00:17:17,990 --> 00:17:14,799

today the last i heard that there was

437

00:17:20,710 --> 00:17:18,000

only a five percent uh probability of

438

00:17:23,270 --> 00:17:20,720

violation which means we're 95 go for

439

00:17:25,350 --> 00:17:23,280

launch today so we're very excited about

440

00:17:27,510 --> 00:17:25,360

that weather news that's pretty good for

441

00:17:29,669 --> 00:17:27,520

florida standards 95

442

00:17:32,230 --> 00:17:29,679

favorability that's pretty great yeah

443

00:17:35,270 --> 00:17:32,240

and it's much better odds than the first

444

00:17:39,029 --> 00:17:35,280

time endeavor liftoff in may of last

445

00:17:40,870 --> 00:17:39,039

year with bob benkin and doug hurley

446

00:17:42,789 --> 00:17:40,880

i believe for crew one we were about 80

447

00:17:45,110 --> 00:17:42,799

percent favorable for that launch as

448

00:17:46,870 --> 00:17:45,120

well but yeah you're absolutely right we

449

00:17:48,789 --> 00:17:46,880

we did had to scrub didn't have to scrub

450

00:17:49,909 --> 00:17:48,799

for that um basically the downstream

451  
00:17:52,310 --> 00:17:49,919  
weather but

452  
00:17:54,390 --> 00:17:52,320  
unfortunately that's you know while the

453  
00:17:56,630 --> 00:17:54,400  
oh and there we have our first look

454  
00:17:58,870 --> 00:17:56,640  
inside the suit up room at the neil

455  
00:18:01,750 --> 00:17:58,880  
armstrong onc building

456  
00:18:03,830 --> 00:18:01,760  
we can see the astronauts have gotten

457  
00:18:05,830 --> 00:18:03,840  
into their suits and are now working

458  
00:18:08,630 --> 00:18:05,840  
with spacex suit technicians and the

459  
00:18:11,909 --> 00:18:08,640  
closeout team basically spacex uh suit

460  
00:18:13,669 --> 00:18:11,919  
closeouts for uh doing checks on the

461  
00:18:15,830 --> 00:18:13,679  
umbilicals for

462  
00:18:18,070 --> 00:18:15,840  
looks like they're getting ready to get

463  
00:18:20,230 --> 00:18:18,080

into their chairs

464

00:18:21,430 --> 00:18:20,240

tracy looking at this room i'm sure it

465

00:18:22,710 --> 00:18:21,440

brings back

466

00:18:24,710 --> 00:18:22,720

memories

467

00:18:26,310 --> 00:18:24,720

it does it brings back too many i don't

468

00:18:29,190 --> 00:18:26,320

have enough time to talk about it all

469

00:18:31,110 --> 00:18:29,200

but yeah this is such a historic room

470

00:18:32,870 --> 00:18:31,120

that anyone who walks in it whether

471

00:18:35,830 --> 00:18:32,880

you're an astronaut or not you just feel

472

00:18:38,950 --> 00:18:35,840

like you're catapulted in time to a

473

00:18:40,710 --> 00:18:38,960

period where this all began

474

00:18:42,870 --> 00:18:40,720

and there's a view of

475

00:18:44,230 --> 00:18:42,880

megan macarthur being helped by the suit

476  
00:18:46,710 --> 00:18:44,240  
technicians

477  
00:18:48,549 --> 00:18:46,720  
she happens to be the wife of bob benkin

478  
00:18:49,590 --> 00:18:48,559  
and she's going to be flying in the

479  
00:18:54,150 --> 00:18:49,600  
space

480  
00:18:55,029 --> 00:18:54,160  
not the same suit excuse me the same

481  
00:18:59,110 --> 00:18:55,039  
seat

482  
00:19:01,029 --> 00:18:59,120  
course she's got her own custom-made

483  
00:19:03,750 --> 00:19:01,039  
suit on yep all of these suits were

484  
00:19:06,950 --> 00:19:03,760  
designed in-house at spacex we took

485  
00:19:08,230 --> 00:19:06,960  
safety comfort and style all into

486  
00:19:10,310 --> 00:19:08,240  
account

487  
00:19:13,590 --> 00:19:10,320  
i absolutely love the way that these

488  
00:19:15,590 --> 00:19:13,600

turned out and um we have heard from

489

00:19:17,750 --> 00:19:15,600

crew members that they are really

490

00:19:19,750 --> 00:19:17,760

comfortable so what we see going on here

491

00:19:20,870 --> 00:19:19,760

um with earlier megan they were

492

00:19:22,070 --> 00:19:20,880

basically just making sure that

493

00:19:25,190 --> 00:19:22,080

everything was comfortable and

494

00:19:28,950 --> 00:19:26,710

i can't quite tell who's in that chair

495

00:19:32,390 --> 00:19:28,960

there but they're basically sitting in a

496

00:19:34,070 --> 00:19:32,400

mock-up of the crew dragon capsule

497

00:19:36,230 --> 00:19:34,080

and that looks yeah that's our commander

498

00:19:39,430 --> 00:19:36,240

shane kimbrough um and he's basically

499

00:19:41,270 --> 00:19:39,440

sitting in a mock-up of the

500

00:19:43,350 --> 00:19:41,280

of the chair that he will be seated in

501  
00:19:45,029 --> 00:19:43,360  
inside crew dragon so while they're

502  
00:19:47,830 --> 00:19:45,039  
seated inside crew dragon they actually

503  
00:19:50,950 --> 00:19:47,840  
have an umbilical plugged into their

504  
00:19:52,549 --> 00:19:50,960  
suit that flows cool air through that

505  
00:19:55,590 --> 00:19:52,559  
through the suit to keep them cool and

506  
00:19:58,070 --> 00:19:55,600  
comfy as well as communications uh

507  
00:19:59,909 --> 00:19:58,080  
umbilicals and and power so it's really

508  
00:20:02,230 --> 00:19:59,919  
important to make sure that we do these

509  
00:20:04,149 --> 00:20:02,240  
fit ups here so that there really aren't

510  
00:20:06,390 --> 00:20:04,159  
any surprises once we get into dragon

511  
00:20:08,950 --> 00:20:06,400  
capsule out on the pad

512  
00:20:11,750 --> 00:20:08,960  
and the helmets that they're wearing are

513  
00:20:13,110 --> 00:20:11,760

also custom printed using 3d printing

514

00:20:14,470 --> 00:20:13,120

technology

515

00:20:16,390 --> 00:20:14,480

so that's a really exciting

516

00:20:18,070 --> 00:20:16,400

technological advancement since the

517

00:20:20,390 --> 00:20:18,080

shuttle days

518

00:20:21,990 --> 00:20:20,400

in the the room shot we saw just a

519

00:20:24,470 --> 00:20:22,000

minute ago and there's uh megan

520

00:20:27,510 --> 00:20:24,480

macarthur getting helped into her uh

521

00:20:29,909 --> 00:20:27,520

gloves in her spacesuit uh but we saw if

522

00:20:33,110 --> 00:20:29,919

we could take the wide shot of that room

523

00:20:35,270 --> 00:20:33,120

we saw um another astronaut

524

00:20:37,990 --> 00:20:35,280

there it was uh in the foreground number

525

00:20:40,789 --> 00:20:38,000

38 that's jessica meer uh she is a

526

00:20:42,549 --> 00:20:40,799

member of the pad closeout team so

527

00:20:43,430 --> 00:20:42,559

you'll we'll see her here in the suit-up

528

00:20:45,029 --> 00:20:43,440

room

529

00:20:46,710 --> 00:20:45,039

and she'll also be headed to the white

530

00:20:48,630 --> 00:20:46,720

room a little later to provide crew

531

00:20:51,350 --> 00:20:48,640

support

532

00:20:53,270 --> 00:20:51,360

now that role for the astronaut is also

533

00:20:54,950 --> 00:20:53,280

pretty historic we've had a group of

534

00:20:56,149 --> 00:20:54,960

astronauts in the shuttle days come down

535

00:20:57,990 --> 00:20:56,159

and

536

00:21:00,549 --> 00:20:58,000

support shuttle crews

537

00:21:02,789 --> 00:21:00,559

basically pre-flight the orbiter and get

538

00:21:04,470 --> 00:21:02,799

it ready to go before that in the apollo

539

00:21:05,430 --> 00:21:04,480

days that's where it all started with

540

00:21:07,350 --> 00:21:05,440

our

541

00:21:09,270 --> 00:21:07,360

astronaut support personnel and it's

542

00:21:11,830 --> 00:21:09,280

nice to see that tradition continue

543

00:21:13,190 --> 00:21:11,840

having an astronaut there to to help

544

00:21:16,870 --> 00:21:13,200

support

545

00:21:19,750 --> 00:21:16,880

we can also see the red uh recliners

546

00:21:21,909 --> 00:21:19,760

from the shuttle days kind of in the uh

547

00:21:23,830 --> 00:21:21,919

top right corner off in the background

548

00:21:26,310 --> 00:21:23,840

so they they did keep those chairs

549

00:21:28,230 --> 00:21:26,320

around but um it's really nice for the

550

00:21:30,070 --> 00:21:28,240

crew to have actual mock-ups of the

551  
00:21:31,830 --> 00:21:30,080  
seats that they're gonna be inside the

552  
00:21:33,590 --> 00:21:31,840  
spacecraft so they can do all that kind

553  
00:21:35,510 --> 00:21:33,600  
of fine-tuning in the room before they

554  
00:21:37,430 --> 00:21:35,520  
go get into the actual seats inside the

555  
00:21:39,640 --> 00:21:37,440  
spacecraft yeah i always like to say we

556  
00:21:41,270 --> 00:21:39,650  
kept the history we just relocated it

557  
00:21:42,950 --> 00:21:41,280  
[Laughter]

558  
00:21:45,430 --> 00:21:42,960  
like i said yeah we this isn't this is

559  
00:21:48,390 --> 00:21:45,440  
an integral part of launch day is is

560  
00:21:51,029 --> 00:21:48,400  
doing these initial suit checkouts um in

561  
00:21:52,310 --> 00:21:51,039  
in the mock-up dragon seats and but yeah

562  
00:21:54,149 --> 00:21:52,320  
you can even see the corner of one of

563  
00:21:55,510 --> 00:21:54,159

those maroon chairs in the in the upper

564

00:21:56,789 --> 00:21:55,520

yeah in the upper right hand corner

565

00:21:58,549 --> 00:21:56,799

there so yeah those are the same

566

00:22:00,549 --> 00:21:58,559

recliners that the astronauts use during

567

00:22:02,310 --> 00:22:00,559

the shuttle days to do

568

00:22:03,750 --> 00:22:02,320

basically the the same process that's

569

00:22:05,909 --> 00:22:03,760

going on now

570

00:22:09,110 --> 00:22:05,919

and there's a close-up uh we just lost

571

00:22:11,750 --> 00:22:09,120

view of him but that's aki hoshide uh

572

00:22:14,310 --> 00:22:11,760

having a laugh with some of the uh suit

573

00:22:16,549 --> 00:22:14,320

technicians uh this is the ld on

574

00:22:18,870 --> 00:22:16,559

countdown one with the t minus four hour

575

00:22:21,390 --> 00:22:18,880

situational awareness briefing we are

576  
00:22:25,669 --> 00:22:21,400  
currently counting down to a t zero of

577  
00:22:27,669 --> 00:22:25,679  
949.02 utc 549.02 local with an

578  
00:22:29,190 --> 00:22:27,679  
instantaneous window the crew have

579  
00:22:31,590 --> 00:22:29,200  
started suit dawning and leak checks in

580  
00:22:32,870 --> 00:22:31,600  
preparation to begin ingress activities

581  
00:22:34,390 --> 00:22:32,880  
the advanced team is currently on the

582  
00:22:35,990 --> 00:22:34,400  
way the pad to open the side hatch and

583  
00:22:38,149 --> 00:22:36,000  
prepare for crew arrival

584  
00:22:40,149 --> 00:22:38,159  
vehicle gases are at me up fts checkouts

585  
00:22:41,190 --> 00:22:40,159  
are complete and dragon prop tanks are

586  
00:22:42,789 --> 00:22:41,200  
pressed

587  
00:22:43,909 --> 00:22:42,799  
f9 is not working any issues at this

588  
00:22:45,510 --> 00:22:43,919

time

589

00:22:47,510 --> 00:22:45,520

team is tracking ascent winds and pad

590

00:22:49,510 --> 00:22:47,520

winds for this morning's launch but are

591

00:22:51,430 --> 00:22:49,520

currently go for those conditions

592

00:22:53,430 --> 00:22:51,440

expecting a final update on ascent winds

593

00:22:57,029 --> 00:22:53,440

at approximately t minus three hours and

594

00:22:58,710 --> 00:22:57,039

pad escape wins at t minus 1 hour

595

00:23:00,070 --> 00:22:58,720

falcon 9 launch and recovery weather is

596

00:23:01,110 --> 00:23:00,080

not tracking any constraints at this

597

00:23:02,390 --> 00:23:01,120

time

598

00:23:03,990 --> 00:23:02,400

in the event of a scrub the next

599

00:23:05,590 --> 00:23:04,000

available launch attempt will be monday

600

00:23:07,830 --> 00:23:05,600

april 26th

601  
00:23:09,029 --> 00:23:07,840  
procedure

602  
00:23:11,029 --> 00:23:09,039  
open in the event of any crew

603  
00:23:12,149 --> 00:23:11,039  
contingency from crew ingress through

604  
00:23:15,270 --> 00:23:12,159  
launch

605  
00:23:16,390 --> 00:23:15,280  
will be armed prior to propellant load

606  
00:23:18,070 --> 00:23:16,400  
today

607  
00:23:19,990 --> 00:23:18,080  
firearm 4 will go into lockdown at t

608  
00:23:22,070 --> 00:23:20,000  
minus 45 minutes and last until after

609  
00:23:24,630 --> 00:23:22,080  
spacecraft separation or the launch

610  
00:23:26,149 --> 00:23:24,640  
escape system is disarmed all personnel

611  
00:23:28,070 --> 00:23:26,159  
are requested to stay in their locations

612  
00:23:32,149 --> 00:23:28,080  
until lockdown is complete

613  
00:23:37,350 --> 00:23:34,390

f9 is healthy and we are not tracking

614

00:23:39,190 --> 00:23:37,360

any vehicle issues at this time copvs

615

00:23:42,870 --> 00:23:39,200

are at full pressure

616

00:23:47,909 --> 00:23:46,230

copy all md report on dragon health

617

00:23:49,669 --> 00:23:47,919

good evening ld i can report the same

618

00:23:52,149 --> 00:23:49,679

dragon as healthy and

619

00:23:54,149 --> 00:23:52,159

looking forward to proceeding with count

620

00:23:55,990 --> 00:23:54,159

alright great news this will conclude

621

00:24:01,350 --> 00:23:56,000

the t-minus four hour situational brief

622

00:24:05,909 --> 00:24:03,269

all right all good news there from

623

00:24:08,070 --> 00:24:05,919

spacex launch director frank messina and

624

00:24:10,549 --> 00:24:08,080

spacex chief engineer emma france

625

00:24:12,310 --> 00:24:10,559

everything sounds like we are on track

626  
00:24:14,390 --> 00:24:12,320  
and looking uh

627  
00:24:15,590 --> 00:24:14,400  
really good for our on-time liftoff

628  
00:24:18,630 --> 00:24:15,600  
today

629  
00:24:21,269 --> 00:24:18,640  
for this crew 2 mission and just a quick

630  
00:24:23,430 --> 00:24:21,279  
note about those call outs um sometimes

631  
00:24:25,750 --> 00:24:23,440  
they may happen a little bit ahead of

632  
00:24:27,909 --> 00:24:25,760  
schedule from what we have on paper and

633  
00:24:29,669 --> 00:24:27,919  
so we might be in mid-sentence and we'll

634  
00:24:32,630 --> 00:24:29,679  
do our best to just stop talking so that

635  
00:24:33,750 --> 00:24:32,640  
you don't miss uh that traffic on the

636  
00:24:35,830 --> 00:24:33,760  
nets

637  
00:24:37,990 --> 00:24:35,840  
but moving right along this is the

638  
00:24:40,310 --> 00:24:38,000

second rotational crew to fly on a

639

00:24:42,870 --> 00:24:40,320

commercial spacecraft and they bring a

640

00:24:43,909 --> 00:24:42,880

diverse set of experiences to today's

641

00:24:45,590 --> 00:24:43,919

flight

642

00:24:47,830 --> 00:24:45,600

crew dragon commander shane kimbrough

643

00:24:50,470 --> 00:24:47,840

sitting there will be making his third

644

00:24:52,950 --> 00:24:50,480

trip to space he was born in colleen

645

00:24:55,750 --> 00:24:52,960

texas and raised in atlanta he was

646

00:24:58,230 --> 00:24:55,760

selected as an astronaut in 2004.

647

00:25:00,070 --> 00:24:58,240

kimbrough is a retired u.s army colonel

648

00:25:02,950 --> 00:25:00,080

and holds degrees in aerospace

649

00:25:04,630 --> 00:25:02,960

engineering and operations research he

650

00:25:06,190 --> 00:25:04,640

first launched aboard the space shuttle

651  
00:25:09,350 --> 00:25:06,200  
endeavour on

652  
00:25:12,310 --> 00:25:09,360  
sts-126 then aboard a russian soyuz

653  
00:25:15,190 --> 00:25:12,320  
spacecraft for expeditions 49 50.

654  
00:25:19,510 --> 00:25:15,200  
kimbrough has spent a total of 189 days

655  
00:25:21,909 --> 00:25:19,520  
in space and performed six space walks

656  
00:25:24,230 --> 00:25:21,919  
pilot megan macarthur will be making her

657  
00:25:25,830 --> 00:25:24,240  
second trip to space but her first one

658  
00:25:27,909 --> 00:25:25,840  
to the space station

659  
00:25:30,710 --> 00:25:27,919  
she was born in honolulu but considers

660  
00:25:33,669 --> 00:25:30,720  
california her home state nasa selected

661  
00:25:35,750 --> 00:25:33,679  
macarthur as an astronaut in 2000. she

662  
00:25:38,549 --> 00:25:35,760  
holds degrees in aerospace engineering

663  
00:25:40,390 --> 00:25:38,559

and oceanography macarthur served as

664

00:25:42,950 --> 00:25:40,400

mission specialist aboard space shuttle

665

00:25:44,549 --> 00:25:42,960

atlantis on sts-125

666

00:25:47,350 --> 00:25:44,559

the final servicing mission of the

667

00:25:49,190 --> 00:25:47,360

hubble space telescope in 2009.

668

00:25:52,070 --> 00:25:49,200

she operated the shuttle's robotic arm

669

00:25:54,310 --> 00:25:52,080

over the course of 12 days and 21 hours

670

00:25:56,470 --> 00:25:54,320

capturing the telescope and maneuvering

671

00:25:58,710 --> 00:25:56,480

the maneuvering crew members throughout

672

00:26:00,950 --> 00:25:58,720

the five spacewalks to upgrade hubble's

673

00:26:03,029 --> 00:26:00,960

science instruments along with removal

674

00:26:05,029 --> 00:26:03,039

and replacement of other components to

675

00:26:07,430 --> 00:26:05,039

lengthen the telescope's life

676

00:26:09,269 --> 00:26:07,440

hubble continues to operate to this day

677

00:26:10,950 --> 00:26:09,279

providing scientists the opportunity to

678

00:26:13,909 --> 00:26:10,960

make more and more deep space

679

00:26:17,909 --> 00:26:16,070

mission specialist aki hoshide is

680

00:26:20,870 --> 00:26:17,919

suiting up for his third space flight

681

00:26:23,669 --> 00:26:20,880

today born in tokyo hoshide was selected

682

00:26:26,310 --> 00:26:23,679

as an astronaut in 1999 by the national

683

00:26:29,430 --> 00:26:26,320

space development agency of japan known

684

00:26:31,750 --> 00:26:29,440

today as jaxa hoshide earned degrees in

685

00:26:35,110 --> 00:26:31,760

aerospace engineering and mechanical

686

00:26:37,350 --> 00:26:35,120

engineering he flew on sts-124 aboard

687

00:26:39,750 --> 00:26:37,360

the space shuttle discovery to deliver

688

00:26:42,390 --> 00:26:39,760

and install japan's science laboratory

689

00:26:47,430 --> 00:26:42,400

kibo he also flew aboard the russian

690

00:26:49,590 --> 00:26:47,440

soyuz on expedition 32 and 33 for a 124

691

00:26:52,149 --> 00:26:49,600

day visit to the space station

692

00:26:54,470 --> 00:26:52,159

in 2014 he also served as commander of

693

00:26:56,549 --> 00:26:54,480

the 18th nasa extreme environment

694

00:26:58,710 --> 00:26:56,559

mission operation an underwater

695

00:27:00,870 --> 00:26:58,720

expedition at the national national

696

00:27:04,149 --> 00:27:00,880

oceanic and atmospheric administration's

697

00:27:05,430 --> 00:27:04,159

aquarius habitat off florida keys largo

698

00:27:07,990 --> 00:27:05,440

coast

699

00:27:10,710 --> 00:27:08,000

and mission specialist thomas

700

00:27:13,590 --> 00:27:10,720

will be making his second trip to space

701  
00:27:17,190 --> 00:27:13,600  
born in ruan france pesquet was selected

702  
00:27:19,750 --> 00:27:17,200  
by issa as an astronaut in 2009 he has a

703  
00:27:22,950 --> 00:27:19,760  
degree in spacecraft design and control

704  
00:27:25,669 --> 00:27:22,960  
and more than 2300 hours as a commercial

705  
00:27:28,149 --> 00:27:25,679  
airline pilot pesquet first flew to

706  
00:27:31,269 --> 00:27:28,159  
space on the russian soyuz as a flight

707  
00:27:33,350 --> 00:27:31,279  
engineer for expeditions 50 and 51. in

708  
00:27:35,909 --> 00:27:33,360  
that time he worked on more than 50

709  
00:27:38,230 --> 00:27:35,919  
different experiments and performed two

710  
00:27:41,909 --> 00:27:38,240  
spacewalks to maintain the space station

711  
00:27:44,870 --> 00:27:41,919  
with kimbrough he has logged 197 days in

712  
00:27:47,430 --> 00:27:44,880  
space pesquet will be the first european

713  
00:27:49,669 --> 00:27:47,440

astronaut to fly in crew dragon and it

714

00:27:52,230 --> 00:27:49,679

will be the first time a european has

715

00:27:53,510 --> 00:27:52,240

launched from american soil in more than

716

00:27:55,190 --> 00:27:53,520

a decade

717

00:27:57,990 --> 00:27:55,200

each of these four crew members will

718

00:28:00,389 --> 00:27:58,000

join expedition 65 once they arrive at

719

00:28:02,789 --> 00:28:00,399

the international space station with aki

720

00:28:05,669 --> 00:28:02,799

hoshide taking over as commander of the

721

00:28:08,070 --> 00:28:05,679

station right before crew one departs

722

00:28:10,149 --> 00:28:08,080

and of course we'll we'll we'll we will

723

00:28:12,389 --> 00:28:10,159

be sure to give you a closer look at

724

00:28:13,909 --> 00:28:12,399

each of these astronauts as we approach

725

00:28:16,070 --> 00:28:13,919

launch time

726

00:28:18,310 --> 00:28:16,080

so we can see right now pilot megan

727

00:28:21,269 --> 00:28:18,320

macarthur is now going through the leak

728

00:28:22,549 --> 00:28:21,279

check portion of uh suit up aki looks

729

00:28:25,750 --> 00:28:22,559

very comfortable

730

00:28:27,350 --> 00:28:25,760

is in the white room on schedule

731

00:28:29,029 --> 00:28:27,360

all right the call that we heard there

732

00:28:31,110 --> 00:28:29,039

uh indicates the advanced team which is

733

00:28:33,430 --> 00:28:31,120

basically the spacex team that just

734

00:28:35,669 --> 00:28:33,440

arrived out at pad 39a to start

735

00:28:37,350 --> 00:28:35,679

preparing dragon capsule for the arrival

736

00:28:40,149 --> 00:28:37,360

of the crew and the remainder of the

737

00:28:41,990 --> 00:28:40,159

closeout team once again aki having some

738

00:28:46,230 --> 00:28:42,000

more laughs with our suit technicians

739

00:28:50,070 --> 00:28:47,830

you know the suit up room is kind of

740

00:28:52,710 --> 00:28:50,080

where the on happens you know for the

741

00:28:54,470 --> 00:28:52,720

crew uh this is this is it there's no

742

00:28:57,430 --> 00:28:54,480

going back to your room to get something

743

00:28:59,029 --> 00:28:57,440

there's no uh break from this point it's

744

00:29:01,669 --> 00:28:59,039

it's at the moment that you're on so

745

00:29:04,230 --> 00:29:01,679

it's kind of nice to see a little levity

746

00:29:05,830 --> 00:29:04,240

break out and put everybody at ease that

747

00:29:07,430 --> 00:29:05,840

they're still um

748

00:29:09,190 --> 00:29:07,440

they're still uh with everybody in the

749

00:29:11,430 --> 00:29:09,200

room

750

00:29:13,830 --> 00:29:11,440

and these four will have about a four

751  
00:29:15,990 --> 00:29:13,840  
day handover period with the astronauts

752  
00:29:17,830 --> 00:29:16,000  
from crew one who of course have been

753  
00:29:19,990 --> 00:29:17,840  
living and working on the space station

754  
00:29:22,630 --> 00:29:20,000  
since their launch from here in florida

755  
00:29:25,110 --> 00:29:22,640  
this past november nasa astronauts mike

756  
00:29:27,909 --> 00:29:25,120  
hopkins victor glover shannon walker and

757  
00:29:30,470 --> 00:29:27,919  
jaxa astronaut sowichi naguchi were the

758  
00:29:32,789 --> 00:29:30,480  
last astronauts to sit in this room and

759  
00:29:35,909 --> 00:29:32,799  
suit up and they are set to return home

760  
00:29:38,070 --> 00:29:35,919  
to earth on april 28th after the longest

761  
00:29:40,310 --> 00:29:38,080  
human spaceflight ever launched from the

762  
00:29:42,549 --> 00:29:40,320  
united states we'll dive a little deeper

763  
00:29:44,630 --> 00:29:42,559

into the work they've been doing later

764

00:29:46,950 --> 00:29:44,640

on before launch but right now they are

765

00:29:47,990 --> 00:29:46,960

preparing to welcome this crew aboard

766

00:29:50,149 --> 00:29:48,000

station

767

00:29:52,070 --> 00:29:50,159

the crew 2 astronauts will also be

768

00:29:54,710 --> 00:29:52,080

arriving at the space station in the

769

00:29:57,269 --> 00:29:54,720

exact same capsule that first flew nasa

770

00:29:59,430 --> 00:29:57,279

astronauts bob benkin and doug hurley

771

00:30:01,110 --> 00:29:59,440

back in may of 2020.

772

00:30:03,110 --> 00:30:01,120

after that mission splashed down last

773

00:30:05,430 --> 00:30:03,120

summer spacex refurbished the crew

774

00:30:07,990 --> 00:30:05,440

dragon endeavor specifically for today's

775

00:30:10,070 --> 00:30:08,000

flight the falcon 9 launching today is

776

00:30:12,310 --> 00:30:10,080

also using a

777

00:30:15,510 --> 00:30:12,320

flight proven hardware it is the same

778

00:30:17,750 --> 00:30:15,520

booster flown on crew one so this crew

779

00:30:20,470 --> 00:30:17,760

is about to fly on both a flight proven

780

00:30:23,029 --> 00:30:20,480

spacecraft and rocket which i personally

781

00:30:25,269 --> 00:30:23,039

think is pretty cool that is really cool

782

00:30:28,230 --> 00:30:25,279

you know reuse not only drives down the

783

00:30:30,549 --> 00:30:28,240

cost of uh space exploration but um

784

00:30:32,630 --> 00:30:30,559

yesterday colonel bob cabana made a

785

00:30:35,190 --> 00:30:32,640

great uh point i thought and that was

786

00:30:36,470 --> 00:30:35,200

that when we refurbished these vehicles

787

00:30:38,470 --> 00:30:36,480

we

788

00:30:40,149 --> 00:30:38,480

are able to inspect them and notice if

789

00:30:41,430 --> 00:30:40,159

there's any issues with them that we can

790

00:30:44,549 --> 00:30:41,440

then later

791

00:30:47,190 --> 00:30:44,559

fix or um or design differently

792

00:30:49,350 --> 00:30:47,200

that we would otherwise not know if

793

00:30:50,710 --> 00:30:49,360

we disposed of it on the way home so i

794

00:30:53,669 --> 00:30:50,720

think it's great

795

00:30:56,549 --> 00:30:53,679

always more to learn with space flight

796

00:30:58,389 --> 00:30:56,559

this crew has been training together uh

797

00:31:01,110 --> 00:30:58,399

since their assignment for this mission

798

00:31:03,430 --> 00:31:01,120

was announced this past july and each

799

00:31:05,590 --> 00:31:03,440

has their own unique connection to the

800

00:31:07,430 --> 00:31:05,600

mission kimbrough had already been

801  
00:31:10,070 --> 00:31:07,440  
familiar with crew dragon and how the

802  
00:31:12,149 --> 00:31:10,080  
astronauts interact with the spacecraft

803  
00:31:14,070 --> 00:31:12,159  
before this assignment he was chief of

804  
00:31:16,389 --> 00:31:14,080  
nasa's vehicle integration and test

805  
00:31:19,269 --> 00:31:16,399  
office and in that role he spent a great

806  
00:31:21,509 --> 00:31:19,279  
deal of time helping doug hurley and bob

807  
00:31:23,029 --> 00:31:21,519  
bankin prepare for the demo 2 test

808  
00:31:25,430 --> 00:31:23,039  
flight last year

809  
00:31:27,750 --> 00:31:25,440  
as we mentioned kimbrough flew on the

810  
00:31:29,909 --> 00:31:27,760  
space shuttle endeavour there he is a

811  
00:31:32,630 --> 00:31:29,919  
photo from him on board the space

812  
00:31:34,470 --> 00:31:32,640  
shuttle endeavor during sts-126 that was

813  
00:31:36,149 --> 00:31:34,480

back in 2008

814

00:31:37,269 --> 00:31:36,159

so this mission has a special meaning

815

00:31:39,029 --> 00:31:37,279

for him

816

00:31:41,669 --> 00:31:39,039

because of his connection to just the

817

00:31:44,549 --> 00:31:41,679

endeavor name he's thrilled about flying

818

00:31:46,789 --> 00:31:44,559

on the crew dragon endeavor this time

819

00:31:48,630 --> 00:31:46,799

and macarthur also came into her role

820

00:31:50,870 --> 00:31:48,640

with a unique perspective as we

821

00:31:53,029 --> 00:31:50,880

mentioned earlier bob benkin is her

822

00:31:55,830 --> 00:31:53,039

husband so she's getting ready to make

823

00:31:58,870 --> 00:31:55,840

the same journey he did nearly one year

824

00:32:01,350 --> 00:31:58,880

ago in the same seat and roll of pilot

825

00:32:03,590 --> 00:32:01,360

aboard crew dragon endeavour and of

826  
00:32:05,590 --> 00:32:03,600  
course he will be the one seeing her off

827  
00:32:07,909 --> 00:32:05,600  
today

828  
00:32:09,509 --> 00:32:07,919  
as for pesquet and hoshide during their

829  
00:32:12,149 --> 00:32:09,519  
previous trips to the international

830  
00:32:14,149 --> 00:32:12,159  
space station they both saw cargo dragon

831  
00:32:15,990 --> 00:32:14,159  
up close and personal they had the

832  
00:32:18,149 --> 00:32:16,000  
opportunity to capture the vehicle with

833  
00:32:20,870 --> 00:32:18,159  
the station's robotic canada arm during

834  
00:32:22,789 --> 00:32:20,880  
the dragon's berthing process

835  
00:32:24,549 --> 00:32:22,799  
as a point of distinction crew dragon

836  
00:32:26,230 --> 00:32:24,559  
will dock autonomously with the space

837  
00:32:28,310 --> 00:32:26,240  
station and will not need the help of

838  
00:32:30,549 --> 00:32:28,320

the arm

839

00:32:32,630 --> 00:32:30,559

during that experience pesquet was truly

840

00:32:35,190 --> 00:32:32,640

amazed by the spacecraft's guidance and

841

00:32:36,710 --> 00:32:35,200

navigation and how precise it was while

842

00:32:38,630 --> 00:32:36,720

traveling at more than seventeen

843

00:32:39,909 --> 00:32:38,640

thousand five hundred miles per hour

844

00:32:42,549 --> 00:32:39,919

above the earth

845

00:32:44,470 --> 00:32:42,559

now he will ride aboard crew dragon and

846

00:32:47,190 --> 00:32:44,480

is looking forward to experiencing that

847

00:32:50,230 --> 00:32:47,200

same sort of performance first hand

848

00:32:52,710 --> 00:32:50,240

and for hoshide he was astonished by the

849

00:32:54,549 --> 00:32:52,720

gorgeous design of the dragon spacecraft

850

00:32:57,350 --> 00:32:54,559

and he had a lot of fun transferring

851  
00:32:59,029 --> 00:32:57,360  
cargo in and out of the vehicle at the

852  
00:33:01,509 --> 00:32:59,039  
time he never thought he'd have the

853  
00:33:03,350 --> 00:33:01,519  
opportunity to ride on dragon and so

854  
00:33:05,350 --> 00:33:03,360  
he's looking forward to it being a

855  
00:33:07,909 --> 00:33:05,360  
fascinating ride and there he is giving

856  
00:33:09,909 --> 00:33:07,919  
a wave inside the suit-up room

857  
00:33:12,310 --> 00:33:09,919  
during one of their many trips to train

858  
00:33:14,149 --> 00:33:12,320  
at spacex facilities in hawthorne our

859  
00:33:15,110 --> 00:33:14,159  
team had the opportunity to chat with

860  
00:33:16,950 --> 00:33:15,120  
the crew

861  
00:33:19,029 --> 00:33:16,960  
one thing that's for certain about these

862  
00:33:20,870 --> 00:33:19,039  
four astronauts they all really enjoy

863  
00:33:28,389 --> 00:33:20,880

each other's company and always have a

864

00:33:31,509 --> 00:33:30,310

my fellow astronauts on this crew are

865

00:33:33,190 --> 00:33:31,519

incredible

866

00:33:35,029 --> 00:33:33,200

and all three of these folks are

867

00:33:37,590 --> 00:33:35,039

incredibly brilliant incredibly

868

00:33:40,470 --> 00:33:37,600

competent so it really makes it easy for

869

00:33:42,070 --> 00:33:40,480

me being the commander of the dragon

870

00:33:43,750 --> 00:33:42,080

to have these folks on board and for us

871

00:33:46,710 --> 00:33:43,760

to be successful

872

00:33:48,310 --> 00:33:46,720

aki's very resourceful always in a good

873

00:33:50,710 --> 00:33:48,320

mood which is hugely important for a

874

00:33:53,830 --> 00:33:50,720

long term mission megan she's super

875

00:33:55,509 --> 00:33:53,840

smart she knows nasa inside out

876

00:33:57,430 --> 00:33:55,519

and for shane i think what i appreciate

877

00:33:59,430 --> 00:33:57,440

the most is his leadership it's just

878

00:34:00,870 --> 00:33:59,440

he's got a great leadership that the man

879

00:34:03,110 --> 00:34:00,880

makes you

880

00:34:05,110 --> 00:34:03,120

want to follow him into battle just by

881

00:34:06,470 --> 00:34:05,120

setting a great example so i'm looking

882

00:34:08,389 --> 00:34:06,480

forward to spending time with those

883

00:34:09,589 --> 00:34:08,399

three on the space station

884

00:34:11,750 --> 00:34:09,599

thomas

885

00:34:14,389 --> 00:34:11,760

who i'm flying together with this time

886

00:34:17,430 --> 00:34:14,399

he's very talented he's a good guy

887

00:34:19,030 --> 00:34:17,440

but most of all i love his dancing

888

00:34:20,869 --> 00:34:19,040

he's a great dancer

889

00:34:24,470 --> 00:34:20,879

you can ask him hey aki said you're a

890

00:34:28,710 --> 00:34:26,470

so my crewmates are so much fun the

891

00:34:30,310 --> 00:34:28,720

sense of humor that we all share you

892

00:34:32,389 --> 00:34:30,320

know the banter that goes around the

893

00:34:33,829 --> 00:34:32,399

group is really really fun and you might

894

00:34:35,750 --> 00:34:33,839

think you know interacting with some of

895

00:34:38,069 --> 00:34:35,760

them individually that they're kind of

896

00:34:40,149 --> 00:34:38,079

quiet but they're all individually very

897

00:34:42,069 --> 00:34:40,159

funny and very fun to be around it's

898

00:34:43,270 --> 00:34:42,079

like a family now you know we joke

899

00:34:45,909 --> 00:34:43,280

around a lot

900

00:34:48,869 --> 00:34:45,919

we have fun together and when we need to

901  
00:34:49,990 --> 00:34:48,879  
be serious we do get serious i like this

902  
00:34:51,909 --> 00:34:50,000  
teamwork

903  
00:34:53,510 --> 00:34:51,919  
but most of all i like the

904  
00:34:55,030 --> 00:34:53,520  
relationship

905  
00:34:57,030 --> 00:34:55,040  
with each other

906  
00:34:58,870 --> 00:34:57,040  
to be able to laugh about things and

907  
00:35:00,710 --> 00:34:58,880  
your mistakes and your you know the

908  
00:35:02,870 --> 00:35:00,720  
things that you do well and just enjoy

909  
00:35:05,270 --> 00:35:02,880  
each other so we have a very compatible

910  
00:35:14,470 --> 00:35:05,280  
crew very blessed to be on a crew like

911  
00:35:19,030 --> 00:35:16,630  
and we're looking at the crew again live

912  
00:35:22,470 --> 00:35:19,040  
uh in the suit up room they had a little

913  
00:35:24,550 --> 00:35:22,480

bit of uh downtime yesterday uh with the

914

00:35:27,270 --> 00:35:24,560

the wave off because of the weather i

915

00:35:28,950 --> 00:35:27,280

think we have a photo that tomah posted

916

00:35:31,109 --> 00:35:28,960

recently there they are

917

00:35:33,270 --> 00:35:31,119

sitting on the beach oh what a what a

918

00:35:35,670 --> 00:35:33,280

fantastic moment of levity for those

919

00:35:37,750 --> 00:35:35,680

guys um you know i've said it before

920

00:35:40,230 --> 00:35:37,760

these are some of the best personalities

921

00:35:41,750 --> 00:35:40,240

in our core today and it's fun to watch

922

00:35:43,510 --> 00:35:41,760

them launch it's also fun to watch them

923

00:35:46,550 --> 00:35:43,520

relax just before their their big

924

00:35:48,950 --> 00:35:46,560

mission yes and now it's all business

925

00:35:50,390 --> 00:35:48,960

and checkouts complete on schedule

926  
00:35:52,310 --> 00:35:50,400  
so we just heard the call that suit

927  
00:35:54,470 --> 00:35:52,320  
donning and checkouts are complete at t

928  
00:35:56,470 --> 00:35:54,480  
minus three hours and 42 minutes let's

929  
00:36:01,750 --> 00:35:56,480  
go over to john inspucker and hawthorne

930  
00:36:06,230 --> 00:36:03,829  
thanks marie we're just inside as she

931  
00:36:08,230 --> 00:36:06,240  
said three months three hours 43 minutes

932  
00:36:09,510 --> 00:36:08,240  
all continues to go well for this

933  
00:36:13,670 --> 00:36:09,520  
morning's launch

934  
00:36:15,670 --> 00:36:13,680  
as we watch suit up finishing

935  
00:36:16,470 --> 00:36:15,680  
we just heard the call out side hatch is

936  
00:36:18,470 --> 00:36:16,480  
open

937  
00:36:21,990 --> 00:36:18,480  
the advanced team is waiting for the

938  
00:36:23,510 --> 00:36:22,000

astronauts up in pad 39a

939

00:36:25,510 --> 00:36:23,520

now to get to this point we began

940

00:36:26,630 --> 00:36:25,520

clearing the launch pad of people minus

941

00:36:28,550 --> 00:36:26,640

a dollars

942

00:36:31,750 --> 00:36:28,560

the team began clearing the hazard area

943

00:36:33,349 --> 00:36:31,760

around pad 39a at t-minus five hours the

944

00:36:34,710 --> 00:36:33,359

only folks remaining on the pad right

945

00:36:36,470 --> 00:36:34,720

now are the ones who are needed for

946

00:36:38,310 --> 00:36:36,480

ingress of the astronauts

947

00:36:40,150 --> 00:36:38,320

as i mentioned they have entered the pad

948

00:36:41,990 --> 00:36:40,160

and they are waiting for the crew and

949

00:36:44,390 --> 00:36:42,000

we'll be covering crew arrival at the

950

00:36:46,710 --> 00:36:44,400

pad and entry into the spacecraft

951  
00:36:48,150 --> 00:36:46,720  
at the launch pad falcon 9 is powered on

952  
00:36:50,150 --> 00:36:48,160  
engine and stage checkouts were

953  
00:36:51,990 --> 00:36:50,160  
performed several hours ago we're

954  
00:36:53,829 --> 00:36:52,000  
currently monitoring telemetry where

955  
00:36:56,069 --> 00:36:53,839  
pressurizing gas storage vessels on the

956  
00:36:57,910 --> 00:36:56,079  
first and second stages a little while

957  
00:37:00,710 --> 00:36:57,920  
ago we heard the t-minus four hour

958  
00:37:02,069 --> 00:37:00,720  
briefing by the spacex launch director

959  
00:37:04,470 --> 00:37:02,079  
the good news is there's nothing

960  
00:37:06,710 --> 00:37:04,480  
significant to report on the rocket

961  
00:37:08,710 --> 00:37:06,720  
on top of the falcon 9 dragon spacecraft

962  
00:37:10,630 --> 00:37:08,720  
is ready for the crew functional

963  
00:37:12,790 --> 00:37:10,640

checkouts were performed in preparation

964

00:37:14,950 --> 00:37:12,800

for the crew's upcoming arrival

965

00:37:16,390 --> 00:37:14,960

most recently a little under an hour ago

966

00:37:18,790 --> 00:37:16,400

the dragon propellant system was

967

00:37:21,750 --> 00:37:18,800

pressurized to final flight pressure and

968

00:37:23,349 --> 00:37:21,760

currently all spacecraft systems are go

969

00:37:25,510 --> 00:37:23,359

the launch range is ready to support

970

00:37:27,270 --> 00:37:25,520

they're working no issues at this time

971

00:37:28,790 --> 00:37:27,280

the weather continues to be go for

972

00:37:31,670 --> 00:37:28,800

launch and as we heard in the countdown

973

00:37:33,750 --> 00:37:31,680

brief we'll be listening for pad winds

974

00:37:35,430 --> 00:37:33,760

at the t minus three hour t minus one

975

00:37:37,270 --> 00:37:35,440

hour marks but right now we're

976

00:37:39,270 --> 00:37:37,280

anticipating acceptable weather for

977

00:37:40,870 --> 00:37:39,280

launch but things are looking good with

978

00:37:43,190 --> 00:37:40,880

both falcon and dragon the weather's

979

00:37:45,430 --> 00:37:43,200

cooperating as we count down to liftoff

980

00:37:47,270 --> 00:37:45,440

as we get ready for the crew to walk out

981

00:37:49,270 --> 00:37:47,280

let's go back to our team at kennedy

982

00:37:51,670 --> 00:37:49,280

space center

983

00:37:53,910 --> 00:37:51,680

all right thanks john it's now t-minus

984

00:37:56,310 --> 00:37:53,920

three hours 40 minutes here at kennedy

985

00:37:59,589 --> 00:37:56,320

space center in florida uh the crew woke

986

00:38:01,910 --> 00:37:59,599

up right after uh about 1105 uh i guess

987

00:38:03,829 --> 00:38:01,920

it was last night now because it's now

988

00:38:05,589 --> 00:38:03,839

friday morning and they listened to a

989

00:38:07,430 --> 00:38:05,599

weather brief which we've heard the

990

00:38:09,430 --> 00:38:07,440

weather is looking great they had

991

00:38:11,910 --> 00:38:09,440

breakfast and we have been watching the

992

00:38:13,670 --> 00:38:11,920

suit techs from spacex fit each crew

993

00:38:15,589 --> 00:38:13,680

member into their own custom-made

994

00:38:18,710 --> 00:38:15,599

spacesuit inside the astronaut crew

995

00:38:21,270 --> 00:38:18,720

quarters and in a few minutes at t minus

996

00:38:23,670 --> 00:38:21,280

3 hours and 25 minutes the crew will be

997

00:38:26,069 --> 00:38:23,680

making their way out of this famed

998

00:38:28,069 --> 00:38:26,079

suit-up room down the hall into an

999

00:38:29,910 --> 00:38:28,079

elevator down to the first floor and

1000

00:38:31,670 --> 00:38:29,920

then finally outside to be greeted by

1001

00:38:33,430 --> 00:38:31,680

their families and a small group of

1002

00:38:34,310 --> 00:38:33,440

well-wishers before they head out to the

1003

00:38:36,230 --> 00:38:34,320

pad

1004

00:38:39,349 --> 00:38:36,240

there are three teslas waiting to drive

1005

00:38:41,510 --> 00:38:39,359

the crew out to launch complex 39a

1006

00:38:43,750 --> 00:38:41,520

riding in the first car

1007

00:38:45,990 --> 00:38:43,760

we'll have

1008

00:38:47,829 --> 00:38:46,000

the spacecraft closeout lead and a

1009

00:38:50,310 --> 00:38:47,839

couple of suit techs

1010

00:38:52,390 --> 00:38:50,320

in the second tesla we will have shane

1011

00:38:54,390 --> 00:38:52,400

and megan and they'll be sharing a ride

1012

00:38:57,109 --> 00:38:54,400

with our flight surgeon and then the

1013

00:38:59,190 --> 00:38:57,119

third vehicle will be aki and toma and

1014

00:39:00,630 --> 00:38:59,200

another closeout lead

1015

00:39:03,190 --> 00:39:00,640

of course we're going to try and follow

1016

00:39:06,150 --> 00:39:03,200

the convoy live every step of the way it

1017

00:39:07,349 --> 00:39:06,160

is the middle of the night morning so

1018

00:39:09,990 --> 00:39:07,359

though there we could see the the

1019

00:39:12,069 --> 00:39:10,000

tesla's awaiting the crew uh to take

1020

00:39:14,310 --> 00:39:12,079

them to the pad but we will try to bring

1021

00:39:16,150 --> 00:39:14,320

you as close as possible to the crew

1022

00:39:21,270 --> 00:39:16,160

without actually being inside the car

1023

00:39:26,630 --> 00:39:24,470

tracy what's it like for you seeing uh

1024

00:39:28,950 --> 00:39:26,640

the crew here in these moments before

1025

00:39:30,870 --> 00:39:28,960

they walk out and remembering what your

1026

00:39:32,550 --> 00:39:30,880

experience was like

1027

00:39:34,790 --> 00:39:32,560

like i said this is this is the moment

1028

00:39:37,270 --> 00:39:34,800

where the on gets turned on and you're

1029

00:39:38,390 --> 00:39:37,280

um you know you're you're looking at

1030

00:39:39,910 --> 00:39:38,400

your crewmates and you know you're going

1031

00:39:41,990 --> 00:39:39,920

to be doing something pretty exciting

1032

00:39:43,750 --> 00:39:42,000

here but there's a long it seems like a

1033

00:39:45,430 --> 00:39:43,760

long way to go before

1034

00:39:47,430 --> 00:39:45,440

liftoff because there's a lot of

1035

00:39:49,670 --> 00:39:47,440

milestones to to meet

1036

00:39:51,589 --> 00:39:49,680

and a lot of coordination that has to

1037

00:39:54,150 --> 00:39:51,599

happen so you're kind of in this meta

1038

00:39:56,069 --> 00:39:54,160

state of excitement and focus

1039

00:39:57,750 --> 00:39:56,079

we have another guest close by for

1040

00:40:00,069 --> 00:39:57,760

launch today who looks forward to the

1041

00:40:02,390 --> 00:40:00,079

day when she may be also suiting up in

1042

00:40:04,230 --> 00:40:02,400

this room let's go to nasa's jasmine

1043

00:40:07,990 --> 00:40:04,240

hopkins at the operations support

1044

00:40:10,150 --> 00:40:08,000

building 2 to meet this guest jasmine

1045

00:40:12,550 --> 00:40:10,160

thanks marie we've seen astronauts suit

1046

00:40:14,390 --> 00:40:12,560

up at the onc since the apollo days but

1047

00:40:16,550 --> 00:40:14,400

we don't often see is the hard work that

1048

00:40:18,230 --> 00:40:16,560

it took to get there i'm jasmine hopkins

1049

00:40:19,510 --> 00:40:18,240

with nasa communications and joining me

1050

00:40:21,349 --> 00:40:19,520

now to talk about the journey to

1051  
00:40:23,030 --> 00:40:21,359  
becoming an astronaut is jasmine

1052  
00:40:25,589 --> 00:40:23,040  
mugbelli thanks so much for being here

1053  
00:40:27,349 --> 00:40:25,599  
today absolutely thank you jasmine

1054  
00:40:28,790 --> 00:40:27,359  
absolutely we are so glad to have you

1055  
00:40:31,750 --> 00:40:28,800  
here so you were selected to be an

1056  
00:40:34,069 --> 00:40:31,760  
astronaut in 2017. can you tell us how

1057  
00:40:36,870 --> 00:40:34,079  
competitive is that process

1058  
00:40:39,510 --> 00:40:36,880  
yes so it was very competitive um the

1059  
00:40:40,790 --> 00:40:39,520  
year i applied there were over 18 000

1060  
00:40:42,950 --> 00:40:40,800  
applicants

1061  
00:40:44,870 --> 00:40:42,960  
and i remember going through the

1062  
00:40:47,750 --> 00:40:44,880  
selection process and meeting some of

1063  
00:40:49,430 --> 00:40:47,760

the other candidates who had applied and

1064

00:40:51,349 --> 00:40:49,440

it was then that i was sure i wouldn't

1065

00:40:54,309 --> 00:40:51,359

be selected because they were

1066

00:40:57,030 --> 00:40:54,319

all so incredible and so uh you know i

1067

00:40:58,230 --> 00:40:57,040

feel incredibly lucky to be here right

1068

00:41:00,230 --> 00:40:58,240

i'm sure there was something that made

1069

00:41:01,589 --> 00:41:00,240

you stand out against the crowd we know

1070

00:41:03,109 --> 00:41:01,599

there's a lot that goes into being an

1071

00:41:04,870 --> 00:41:03,119

astronaut so can you tell us any of

1072

00:41:06,630 --> 00:41:04,880

those specific requirements that got you

1073

00:41:08,630 --> 00:41:06,640

where you are

1074

00:41:11,270 --> 00:41:08,640

yeah so we do generally look for people

1075

00:41:12,710 --> 00:41:11,280

with stem backgrounds but what i like to

1076  
00:41:15,510 --> 00:41:12,720  
tell people is

1077  
00:41:16,470 --> 00:41:15,520  
it doesn't matter so much what you do as

1078  
00:41:19,670 --> 00:41:16,480  
to

1079  
00:41:21,910 --> 00:41:19,680  
do it

1080  
00:41:23,589 --> 00:41:21,920  
i think it's really important

1081  
00:41:25,030 --> 00:41:23,599  
for people to do

1082  
00:41:28,150 --> 00:41:25,040  
something that they feel passionate

1083  
00:41:29,990 --> 00:41:28,160  
about and that they love and

1084  
00:41:31,990 --> 00:41:30,000  
you know as for the how

1085  
00:41:33,750 --> 00:41:32,000  
you should try to excel and you should

1086  
00:41:35,910 --> 00:41:33,760  
do your best at it and that that doesn't

1087  
00:41:37,190 --> 00:41:35,920  
mean you won't fail along the way you

1088  
00:41:39,109 --> 00:41:37,200

probably should fail that means you're

1089

00:41:41,270 --> 00:41:39,119

pushing yourself

1090

00:41:43,349 --> 00:41:41,280

but if you look at our astronaut office

1091

00:41:44,950 --> 00:41:43,359

we have many different backgrounds you

1092

00:41:47,510 --> 00:41:44,960

have chemists you have

1093

00:41:49,030 --> 00:41:47,520

pilots you have submariners teachers

1094

00:41:51,109 --> 00:41:49,040

doctors so

1095

00:41:52,550 --> 00:41:51,119

all sorts of backgrounds right right now

1096

00:41:53,990 --> 00:41:52,560

it definitely takes a lot to make up

1097

00:41:56,230 --> 00:41:54,000

that team

1098

00:41:57,349 --> 00:41:56,240

and you now have two years of astronaut

1099

00:41:59,109 --> 00:41:57,359

training under your belt and your

1100

00:42:01,109 --> 00:41:59,119

awaiting assignment to your first flight

1101  
00:42:03,030 --> 00:42:01,119  
so can you tell us what that process is

1102  
00:42:05,349 --> 00:42:03,040  
like um

1103  
00:42:06,710 --> 00:42:05,359  
for the training uh no how do you know

1104  
00:42:09,109 --> 00:42:06,720  
when you get assigned to your first

1105  
00:42:10,790 --> 00:42:09,119  
flight sure absolutely so um you know

1106  
00:42:13,030 --> 00:42:10,800  
i've never been behind the scenes for

1107  
00:42:15,829 --> 00:42:13,040  
the actual uh selections for assignments

1108  
00:42:17,109 --> 00:42:15,839  
but i know a lot goes into it in one of

1109  
00:42:18,710 --> 00:42:17,119  
course

1110  
00:42:21,109 --> 00:42:18,720  
who fits the requirements for this

1111  
00:42:23,030 --> 00:42:21,119  
mission um putting together not just a

1112  
00:42:24,950 --> 00:42:23,040  
it's not just a single person but a

1113  
00:42:27,270 --> 00:42:24,960

whole crew that works together and has

1114

00:42:29,270 --> 00:42:27,280

all the things they need to accomplish

1115

00:42:31,589 --> 00:42:29,280

that mission you know if you're talking

1116

00:42:33,990 --> 00:42:31,599

about we need to do spacewalks to

1117

00:42:35,910 --> 00:42:34,000

maintain the space station um who do

1118

00:42:37,910 --> 00:42:35,920

what teams do we have to do that if

1119

00:42:39,589 --> 00:42:37,920

we're talking about going to the moon

1120

00:42:42,069 --> 00:42:39,599

maybe you want a geologist on that

1121

00:42:44,870 --> 00:42:42,079

flight someone who can land the land the

1122

00:42:46,630 --> 00:42:44,880

vehicle so it definitely plays into

1123

00:42:48,470 --> 00:42:46,640

how the whole crew works together and

1124

00:42:50,309 --> 00:42:48,480

meets the requirements for that mission

1125

00:42:51,910 --> 00:42:50,319

right right well we are definitely

1126  
00:42:53,750 --> 00:42:51,920  
looking forward to when you get assigned

1127  
00:42:55,670 --> 00:42:53,760  
to that first flight i know today is a

1128  
00:42:58,710 --> 00:42:55,680  
big day for all of us but how eager are

1129  
00:43:01,030 --> 00:42:58,720  
you to see yourself in that suit-up room

1130  
00:43:02,390 --> 00:43:01,040  
yeah just you know watching this today

1131  
00:43:03,430 --> 00:43:02,400  
um

1132  
00:43:05,030 --> 00:43:03,440  
this

1133  
00:43:07,670 --> 00:43:05,040  
uh becoming an astronaut has been a

1134  
00:43:09,910 --> 00:43:07,680  
lifelong dream for me so

1135  
00:43:12,470 --> 00:43:09,920  
thinking about me actually being on one

1136  
00:43:14,630 --> 00:43:12,480  
of these spacecraft uh and launching

1137  
00:43:16,390 --> 00:43:14,640  
into space it's uh

1138  
00:43:18,309 --> 00:43:16,400

it's still something that blows my mind

1139

00:43:20,230 --> 00:43:18,319

that that's even possible right now

1140

00:43:22,309 --> 00:43:20,240

right right now absolutely jasmine

1141

00:43:24,630 --> 00:43:22,319

mcbelly thank you so much for joining us

1142

00:43:26,550 --> 00:43:24,640

here today thanks absolutely now let's

1143

00:43:28,950 --> 00:43:26,560

take it back to the ksc host desk with

1144

00:43:32,950 --> 00:43:31,750

thanks jasmine as you can see we here in

1145

00:43:34,390 --> 00:43:32,960

our

1146

00:43:36,069 --> 00:43:34,400

in the suit up room at the neil

1147

00:43:40,309 --> 00:43:36,079

armstrong onc building we have a couple

1148

00:43:41,750 --> 00:43:40,319

of vip visitors uh greeting the crew as

1149

00:43:43,430 --> 00:43:41,760

they are awaiting and now they're

1150

00:43:46,470 --> 00:43:43,440

departing

1151

00:43:48,870 --> 00:43:46,480

and it looks like we have

1152

00:43:51,270 --> 00:43:48,880

a couple last uh probably photo

1153

00:43:52,630 --> 00:43:51,280

opportunities uh prior to the the crew

1154

00:43:54,150 --> 00:43:52,640

walks out now one thing i do want to

1155

00:43:56,470 --> 00:43:54,160

point out

1156

00:43:59,670 --> 00:43:56,480

specifically for the folks wearing these

1157

00:44:00,790 --> 00:43:59,680

black flight suits this is the suit up

1158

00:44:02,550 --> 00:44:00,800

team

1159

00:44:03,829 --> 00:44:02,560

and partially the um will be the

1160

00:44:07,030 --> 00:44:03,839

closeout team

1161

00:44:08,950 --> 00:44:07,040

for the astronauts this crew is excuse

1162

00:44:10,790 --> 00:44:08,960

me these these suit technicians are

1163

00:44:12,230 --> 00:44:10,800

responsible for assisting the crew not

1164

00:44:14,550 --> 00:44:12,240

only in getting in their spacesuits but

1165

00:44:17,030 --> 00:44:14,560

making sure that things like unapproved

1166

00:44:18,870 --> 00:44:17,040

jewelry or

1167

00:44:20,309 --> 00:44:18,880

is is not still being worn when the

1168

00:44:21,910 --> 00:44:20,319

suits are put on making sure that any

1169

00:44:24,630 --> 00:44:21,920

personal items like glasses or

1170

00:44:25,990 --> 00:44:24,640

medication are tucked in the pockets of

1171

00:44:27,349 --> 00:44:26,000

the spacesuits

1172

00:44:29,109 --> 00:44:27,359

basically just making sure that those

1173

00:44:30,390 --> 00:44:29,119

personal items are in the appropriate

1174

00:44:32,069 --> 00:44:30,400

places

1175

00:44:33,910 --> 00:44:32,079

also making sure that the ear pieces

1176

00:44:35,030 --> 00:44:33,920

that the crew astronauts are wearing in

1177

00:44:36,230 --> 00:44:35,040

each ear

1178

00:44:37,910 --> 00:44:36,240

making sure that those are seated

1179

00:44:39,430 --> 00:44:37,920

properly that making sure that everybody

1180

00:44:40,950 --> 00:44:39,440

can hear

1181

00:44:43,750 --> 00:44:40,960

there's there's there's a lot that these

1182

00:44:45,910 --> 00:44:43,760

folks do it's all in the procedures

1183

00:44:47,589 --> 00:44:45,920

which are followed along it with on the

1184

00:44:48,790 --> 00:44:47,599

tablets that you see some folks carrying

1185

00:44:50,870 --> 00:44:48,800

around

1186

00:44:53,750 --> 00:44:50,880

and yeah so while it might seem a little

1187

00:44:55,589 --> 00:44:53,760

chaotic at times um whenever during the

1188

00:44:57,190 --> 00:44:55,599

suit-up process with lots of people

1189

00:44:59,910 --> 00:44:57,200

milling about there's there's actually a

1190

00:45:02,390 --> 00:44:59,920

very specific process uh each astronaut

1191

00:45:04,069 --> 00:45:02,400

has a specific suit technician assigned

1192

00:45:05,829 --> 00:45:04,079

to them and that suit technician is

1193

00:45:07,349 --> 00:45:05,839

responsible for communicating and

1194

00:45:09,910 --> 00:45:07,359

relaying

1195

00:45:11,750 --> 00:45:09,920

basically status to the to that person's

1196

00:45:13,990 --> 00:45:11,760

assigned crew member

1197

00:45:16,069 --> 00:45:14,000

and i do want to mention uh the visitors

1198

00:45:18,630 --> 00:45:16,079

that we saw a few minutes ago and they

1199

00:45:20,069 --> 00:45:18,640

were just departing after the interview

1200

00:45:22,790 --> 00:45:20,079

with jasmine

1201  
00:45:25,270 --> 00:45:22,800  
but that was elon musk of spacex in the

1202  
00:45:26,710 --> 00:45:25,280  
room and also nasa acting administrator

1203  
00:45:29,349 --> 00:45:26,720  
steve jerzik

1204  
00:45:31,910 --> 00:45:29,359  
in the room to have some private words

1205  
00:45:34,150 --> 00:45:31,920  
with the crew you may also have noticed

1206  
00:45:36,950 --> 00:45:34,160  
um that we don't hear ambient sound we

1207  
00:45:40,230 --> 00:45:36,960  
don't have audio from inside this room

1208  
00:45:43,510 --> 00:45:40,240  
and that is by design to give um the the

1209  
00:45:46,309 --> 00:45:43,520  
crew uh the the suit technicians and the

1210  
00:45:51,030 --> 00:45:46,319  
visitors in there uh some privacy before

1211  
00:46:01,589 --> 00:45:55,910  
we

1212  
00:46:03,109 --> 00:46:01,599  
think it's number 28 on the far left if

1213  
00:46:06,230 --> 00:46:03,119

that's a two i can't quite tell under

1214

00:46:08,790 --> 00:46:06,240

her hair but doma um giving her an

1215

00:46:10,470 --> 00:46:08,800

embrace just a minute ago and i imagine

1216

00:46:12,150 --> 00:46:10,480

that you get pretty close to this team

1217

00:46:14,950 --> 00:46:12,160

because you spend a lot of time together

1218

00:46:17,270 --> 00:46:14,960

right tracy exactly and just like kate

1219

00:46:19,670 --> 00:46:17,280

was saying you these uh suteks get you

1220

00:46:22,309 --> 00:46:19,680

get assigned to a specific suetec you

1221

00:46:24,069 --> 00:46:22,319

work with them outside of of this launch

1222

00:46:26,150 --> 00:46:24,079

countdown and the dress rehearsal

1223

00:46:28,550 --> 00:46:26,160

anytime you're in that suit

1224

00:46:31,349 --> 00:46:28,560

then that person is there to help you

1225

00:46:32,950 --> 00:46:31,359

learn about the suit and um and fix any

1226

00:46:35,349 --> 00:46:32,960

problems you have and i have fond

1227

00:46:37,349 --> 00:46:35,359

memories of my suit tech back when i was

1228

00:46:39,750 --> 00:46:37,359

uh suiting up for the shuttle her name

1229

00:46:41,030 --> 00:46:39,760

was tony and i still remember her today

1230

00:46:46,630 --> 00:46:41,040

and

1231

00:46:49,109 --> 00:46:46,640

role that they have in helping you with

1232

00:46:52,630 --> 00:46:49,119

your life preserving suit absolutely and

1233

00:46:53,510 --> 00:46:52,640

this crew trains uh quite often um not

1234

00:46:56,069 --> 00:46:53,520

only

1235

00:46:57,829 --> 00:46:56,079

here at kennedy but also at spacex

1236

00:47:00,150 --> 00:46:57,839

headquarters in hawthorne

1237

00:47:01,589 --> 00:47:00,160

we have dragon capsule simulators not

1238

00:47:03,670 --> 00:47:01,599

only for the displays but also

1239

00:47:05,670 --> 00:47:03,680

physically getting in and out

1240

00:47:06,950 --> 00:47:05,680

getting buckled into your seat all that

1241

00:47:10,630 --> 00:47:06,960

all of that

1242

00:47:13,750 --> 00:47:10,640

the crew rehearses tens of times with

1243

00:47:16,390 --> 00:47:13,760

the spacex team and the nasa team

1244

00:47:17,589 --> 00:47:16,400

so what we're seeing here really is just

1245

00:47:20,950 --> 00:47:17,599

another

1246

00:47:22,470 --> 00:47:20,960

in their sleep at this point

1247

00:47:25,190 --> 00:47:22,480

one thing real quick i want to point out

1248

00:47:27,270 --> 00:47:25,200

before we lose this shot um the tiny or

1249

00:47:30,230 --> 00:47:27,280

not tiny the small blue boxes there that

1250

00:47:31,829 --> 00:47:30,240

you see behind the crew members that has

1251

00:47:33,750 --> 00:47:31,839

uh kind of like an elephant's trunk an

1252

00:47:35,990 --> 00:47:33,760

umbilical that's plugging into the leg

1253

00:47:38,309 --> 00:47:36,000

of each crew member gosh i love the

1254

00:47:40,390 --> 00:47:38,319

frivolity that we see here it's it's so

1255

00:47:41,750 --> 00:47:40,400

it's so wonderful

1256

00:47:43,270 --> 00:47:41,760

yeah so i wanted to mention it because i

1257

00:47:46,790 --> 00:47:43,280

figured we'd lose the shot those blue

1258

00:47:49,510 --> 00:47:46,800

boxes are basically flowing cool nitrox

1259

00:47:50,870 --> 00:47:49,520

or nitrogen oxygen mixture air which is

1260

00:47:53,030 --> 00:47:50,880

basically the stuff that you have in a

1261

00:47:54,870 --> 00:47:53,040

scuba tank um

1262

00:47:56,549 --> 00:47:54,880

we're trying to keep the astronauts cool

1263

00:47:57,589 --> 00:47:56,559

while they're in their suits

1264

00:47:59,030 --> 00:47:57,599

you know

1265

00:48:00,470 --> 00:47:59,040

while they're moving around it can get a

1266

00:48:01,589 --> 00:48:00,480

little warm and we want to keep them

1267

00:48:03,349 --> 00:48:01,599

comfortable

1268

00:48:05,589 --> 00:48:03,359

until they are

1269

00:48:06,950 --> 00:48:05,599

seated in their seat inside crew dragon

1270

00:48:09,430 --> 00:48:06,960

so that's what those what those small

1271

00:48:10,390 --> 00:48:09,440

boxes are and they will have those along

1272

00:48:13,270 --> 00:48:10,400

with them

1273

00:48:14,309 --> 00:48:13,280

um inside the teslas during the ride out

1274

00:48:16,309 --> 00:48:14,319

as well

1275

00:48:19,030 --> 00:48:16,319

i think we'll have time for a couple of

1276  
00:48:20,790 --> 00:48:19,040  
social media questions but another note

1277  
00:48:23,430 --> 00:48:20,800  
just about the timeline

1278  
00:48:26,870 --> 00:48:23,440  
if you've been following along with all

1279  
00:48:28,230 --> 00:48:26,880  
of our anticipated times the crew

1280  
00:48:29,990 --> 00:48:28,240  
right now we've seen is ahead of

1281  
00:48:31,430 --> 00:48:30,000  
schedule in terms of completing their

1282  
00:48:32,790 --> 00:48:31,440  
suit up process

1283  
00:48:35,030 --> 00:48:32,800  
this is a very

1284  
00:48:37,190 --> 00:48:35,040  
limber quick crew

1285  
00:48:39,109 --> 00:48:37,200  
we we observed this during the dry dress

1286  
00:48:40,470 --> 00:48:39,119  
rehearsal over the weekend

1287  
00:48:43,510 --> 00:48:40,480  
they were ahead of schedule getting

1288  
00:48:44,309 --> 00:48:43,520

suited up we do still expect them

1289

00:48:47,190 --> 00:48:44,319

to

1290

00:48:49,030 --> 00:48:47,200

walk out at the anticipated time we

1291

00:48:50,950 --> 00:48:49,040

expect that will happen at t minus three

1292

00:48:52,470 --> 00:48:50,960

hours and 20 minutes so about nine

1293

00:48:54,150 --> 00:48:52,480

minutes from now

1294

00:48:55,030 --> 00:48:54,160

is roughly when they should walk out of

1295

00:48:57,430 --> 00:48:55,040

the

1296

00:48:58,950 --> 00:48:57,440

operations and checkout building but up

1297

00:49:01,270 --> 00:48:58,960

to this point they've been a little bit

1298

00:49:03,670 --> 00:49:01,280

ahead of schedule let's take a couple of

1299

00:49:05,589 --> 00:49:03,680

social media questions um while we're

1300

00:49:08,230 --> 00:49:05,599

waiting for that to happen

1301

00:49:11,109 --> 00:49:08,240

okay this one um this is a good one for

1302

00:49:13,670 --> 00:49:11,119

tracy why are very specific times chosen

1303

00:49:16,230 --> 00:49:13,680

for launches a lot of it has to do with

1304

00:49:19,510 --> 00:49:16,240

uh orbital mechanics and where the space

1305

00:49:22,390 --> 00:49:19,520

station is uh um over kennedy space

1306

00:49:24,950 --> 00:49:22,400

center at the time and so um

1307

00:49:27,109 --> 00:49:24,960

we are basically launching a vehicle to

1308

00:49:28,470 --> 00:49:27,119

chase the space station and it has much

1309

00:49:31,910 --> 00:49:28,480

to do with that

1310

00:49:36,790 --> 00:49:34,309

how long does it take to refurbish a

1311

00:49:39,190 --> 00:49:36,800

crude dragon and how many times can

1312

00:49:41,030 --> 00:49:39,200

dragon uh be reused as we're looking

1313

00:49:43,430 --> 00:49:41,040

outside the o and c kate this is a good

1314

00:49:46,069 --> 00:49:43,440

one for you yeah that's a great question

1315

00:49:47,589 --> 00:49:46,079

uh in terms of how long it's hard to say

1316

00:49:49,910 --> 00:49:47,599

right now because this is the first time

1317

00:49:51,190 --> 00:49:49,920

that we did it and the first time that

1318

00:49:53,190 --> 00:49:51,200

you refurbished something or really the

1319

00:49:54,630 --> 00:49:53,200

first time you do anything is generally

1320

00:49:55,750 --> 00:49:54,640

the longest it will take you to do

1321

00:49:57,430 --> 00:49:55,760

something

1322

00:50:00,309 --> 00:49:57,440

we have been working on the

1323

00:50:02,710 --> 00:50:00,319

refurbishment uh of this crew dragon

1324

00:50:04,549 --> 00:50:02,720

capsule since it splashed down in august

1325

00:50:07,190 --> 00:50:04,559

of last year so

1326

00:50:08,390 --> 00:50:07,200

just under a year uh basically to to get

1327

00:50:12,230 --> 00:50:08,400

it in

1328

00:50:14,390 --> 00:50:12,240

a in a state and launch ready we can see

1329

00:50:16,870 --> 00:50:14,400

some well-wishers here gathering outside

1330

00:50:19,270 --> 00:50:16,880

the teslas as uh they're awaiting the

1331

00:50:21,589 --> 00:50:19,280

crew to come and do the walk out and

1332

00:50:23,109 --> 00:50:21,599

final goodbyes uh but getting back to

1333

00:50:24,870 --> 00:50:23,119

the question i the second part of the

1334

00:50:28,230 --> 00:50:24,880

question was how many times can a crew

1335

00:50:30,630 --> 00:50:28,240

dragon capsule be reused uh we are

1336

00:50:32,069 --> 00:50:30,640

certified for five uh but i you know

1337

00:50:34,309 --> 00:50:32,079

there might be plans in the future to

1338

00:50:36,069 --> 00:50:34,319

try and increase that um that's

1339

00:50:37,990 --> 00:50:36,079

obviously discussion that that happens

1340

00:50:39,750 --> 00:50:38,000

but down the road but at this point in

1341

00:50:41,270 --> 00:50:39,760

time we're we're shooting for five

1342

00:50:43,109 --> 00:50:41,280

reuses

1343

00:50:45,829 --> 00:50:43,119

all right uh we have time for another

1344

00:50:48,230 --> 00:50:45,839

question from social media

1345

00:50:50,150 --> 00:50:48,240

and this one when will the astronauts on

1346

00:50:52,630 --> 00:50:50,160

the international space station return

1347

00:50:55,190 --> 00:50:52,640

to earth uh great question so the crew

1348

00:50:57,270 --> 00:50:55,200

won astronauts of course that launched

1349

00:50:59,750 --> 00:50:57,280

from here in florida this past november

1350

00:51:02,870 --> 00:50:59,760

they are scheduled to return

1351  
00:51:06,309 --> 00:51:02,880  
on april 28th and they will be splashing

1352  
00:51:08,309 --> 00:51:06,319  
down off the florida coast spacex hasn't

1353  
00:51:09,990 --> 00:51:08,319  
narrowed down a specific location just

1354  
00:51:12,150 --> 00:51:10,000  
yet but they will be splashing down

1355  
00:51:14,950 --> 00:51:12,160  
somewhere either in the gulf of mexico

1356  
00:51:19,829 --> 00:51:14,960  
or along the eastern coast of florida

1357  
00:51:22,230 --> 00:51:19,839  
about 12 30 eastern time on april 28th

1358  
00:51:25,670 --> 00:51:22,240  
and we see a few more folks coming

1359  
00:51:28,549 --> 00:51:25,680  
outside in anticipation of the crew walk

1360  
00:51:31,030 --> 00:51:28,559  
out it looks like uh elon musk and steve

1361  
00:51:33,190 --> 00:51:31,040  
jertz nasa administrator

1362  
00:51:36,549 --> 00:51:33,200  
taking their spots to the right of your

1363  
00:51:37,589 --> 00:51:36,559

screen we also can see um astronaut

1364

00:51:39,270 --> 00:51:37,599

support

1365

00:51:41,910 --> 00:51:39,280

crew members and

1366

00:51:43,510 --> 00:51:41,920

some suit technicians gathered outside

1367

00:51:45,510 --> 00:51:43,520

there

1368

00:51:47,430 --> 00:51:45,520

we can also see some of the crew members

1369

00:51:48,950 --> 00:51:47,440

families i recognize

1370

00:51:50,230 --> 00:51:48,960

some of them there

1371

00:51:52,790 --> 00:51:50,240

in the uh

1372

00:51:54,230 --> 00:51:52,800

in the background um those blue studers

1373

00:51:56,790 --> 00:51:54,240

those astronauts that are there are the

1374

00:51:59,030 --> 00:51:56,800

unsung heroes they are there as family

1375

00:52:00,870 --> 00:51:59,040

escorts personally selected by the crew

1376

00:52:03,349 --> 00:52:00,880

members to care for their family both

1377

00:52:05,990 --> 00:52:03,359

immediate and the extended family and

1378

00:52:07,589 --> 00:52:06,000

friends that are here so uh hats off to

1379

00:52:08,630 --> 00:52:07,599

those guys because uh

1380

00:52:11,589 --> 00:52:08,640

they uh

1381

00:52:14,710 --> 00:52:11,599

um are there to care for the families

1382

00:52:17,109 --> 00:52:14,720

and tracy how how meaningful is it for

1383

00:52:19,030 --> 00:52:17,119

the families to have this opportunity to

1384

00:52:20,950 --> 00:52:19,040

see the crew walk out you know i'm glad

1385

00:52:24,069 --> 00:52:20,960

you asked that because this is uh the

1386

00:52:25,589 --> 00:52:24,079

first time that we allow family to be at

1387

00:52:27,510 --> 00:52:25,599

this point so the crew members get to

1388

00:52:29,829 --> 00:52:27,520

see the family during shuttle uh that

1389

00:52:33,030 --> 00:52:29,839

was mainly employees and our families

1390

00:52:36,230 --> 00:52:33,040

were elsewhere either on the roof of lcc

1391

00:52:37,829 --> 00:52:36,240

or at banana creek and so i it is so

1392

00:52:39,750 --> 00:52:37,839

important and

1393

00:52:41,349 --> 00:52:39,760

it will be

1394

00:52:43,109 --> 00:52:41,359

vital for the crew to see their families

1395

00:52:45,030 --> 00:52:43,119

and their families to see them just

1396

00:52:47,510 --> 00:52:45,040

before they head out to the pad like we

1397

00:52:50,230 --> 00:52:47,520

mentioned earlier pilot megan macarthur

1398

00:52:53,349 --> 00:52:50,240

is married to nasa astronaut bob benkin

1399

00:52:55,670 --> 00:52:53,359

who flew on the demo 2 mission last year

1400

00:52:57,430 --> 00:52:55,680

and so we expect to see bob i can't

1401

00:52:59,190 --> 00:52:57,440

quite tell which one he is

1402

00:53:01,349 --> 00:52:59,200

from this angle but well i'm sure we'll

1403

00:53:04,710 --> 00:53:01,359

see cena up close later and it's just i

1404

00:53:07,670 --> 00:53:04,720

think it is so awesome that you know

1405

00:53:10,069 --> 00:53:07,680

megan was seeing him off a year ago and

1406

00:53:12,309 --> 00:53:10,079

now he's seeing her off to

1407

00:53:14,549 --> 00:53:12,319

you know do the same position and i just

1408

00:53:16,390 --> 00:53:14,559

think that's that's really cool they

1409

00:53:18,710 --> 00:53:16,400

they're they are a power couple and i

1410

00:53:21,990 --> 00:53:18,720

love it yeah i'm the ultimate power

1411

00:53:26,950 --> 00:53:24,230

and tracy i remember you saying you know

1412

00:53:29,910 --> 00:53:26,960

we were talking about this earlier and

1413

00:53:30,790 --> 00:53:29,920

that it's the harder job of the family

1414

00:53:33,030 --> 00:53:30,800

member

1415

00:53:35,510 --> 00:53:33,040

to say goodbye to their astronaut when

1416

00:53:37,750 --> 00:53:35,520

it's their day to fly oh yeah

1417

00:53:40,230 --> 00:53:37,760

i'm sure bob is keeping it together on

1418

00:53:41,990 --> 00:53:40,240

the outside but inside he's way more

1419

00:53:44,150 --> 00:53:42,000

nervous i bet today than he was on the

1420

00:53:45,800 --> 00:53:44,160

day he was sitting on that seat on the

1421

00:53:49,190 --> 00:53:45,810

launch pad just a guess

1422

00:53:52,630 --> 00:53:49,200

[Laughter]

1423

00:53:55,430 --> 00:53:52,640

and so uh it is t-minus three hours 24

1424

00:53:58,710 --> 00:53:55,440

minutes and counting and any moment now

1425

00:54:01,670 --> 00:53:58,720

we expect to see the crew uh leave the

1426  
00:54:04,150 --> 00:54:01,680  
room and start walking down the hallway

1427  
00:54:07,349 --> 00:54:04,160  
uh we'll see them get into an elevator

1428  
00:54:10,069 --> 00:54:07,359  
and here is a shot of the elevator so

1429  
00:54:12,870 --> 00:54:10,079  
excuse me the hallway

1430  
00:54:13,990 --> 00:54:12,880  
and so where those that is joe acaba to

1431  
00:54:16,069 --> 00:54:14,000  
the left

1432  
00:54:17,589 --> 00:54:16,079  
and jessica watkins one of our newer

1433  
00:54:19,829 --> 00:54:17,599  
astronauts there they both are part of

1434  
00:54:21,670 --> 00:54:19,839  
the um the vet team the

1435  
00:54:22,950 --> 00:54:21,680  
vehicle integration and test

1436  
00:54:24,870 --> 00:54:22,960  
team office

1437  
00:54:27,270 --> 00:54:24,880  
and we'll see the crew

1438  
00:54:30,150 --> 00:54:27,280

walk out there's a doorway uh to the

1439

00:54:32,230 --> 00:54:30,160

left of your screen uh where joe and

1440

00:54:33,030 --> 00:54:32,240

jessica are facing and we'll see the

1441

00:54:36,150 --> 00:54:33,040

crew

1442

00:54:38,069 --> 00:54:36,160

walk out of that doorway and come

1443

00:54:44,390 --> 00:54:38,079

straight down towards where the camera

1444

00:54:44,400 --> 00:54:48,309

and here they come they are

1445

00:54:52,630 --> 00:54:50,390

commander shane kimbrough pilot megan

1446

00:54:55,510 --> 00:54:52,640

macarthur in the front megan blowing

1447

00:54:55,520 --> 00:54:59,430

toma and aki

1448

00:55:03,910 --> 00:55:01,109

ready for their ride to the space

1449

00:55:08,630 --> 00:55:06,470

and inside the elevator there there is a

1450

00:55:10,870 --> 00:55:08,640

poster you can see in the background it

1451  
00:55:15,030 --> 00:55:10,880  
has the signatures of folks who have

1452  
00:55:19,109 --> 00:55:17,109  
so this is the first of two elevator

1453  
00:55:21,510 --> 00:55:19,119  
rides that these guys will be partaking

1454  
00:55:23,670 --> 00:55:21,520  
in today the second of course being the

1455  
00:55:26,390 --> 00:55:23,680  
elevator ride to um

1456  
00:55:29,109 --> 00:55:26,400  
the almost the top of the

1457  
00:55:31,750 --> 00:55:29,119  
um the the structure next to the launch

1458  
00:55:33,430 --> 00:55:31,760  
pad and we will see the crew walk out in

1459  
00:55:35,510 --> 00:55:33,440  
just a moment but first we want to hear

1460  
00:55:37,430 --> 00:55:35,520  
a performance of america the beautiful

1461  
00:55:39,910 --> 00:55:37,440  
by preeminent jazz and classical

1462  
00:55:42,309 --> 00:55:39,920  
saxophonist composer band leader and

1463  
00:55:47,660 --> 00:55:42,319

three-time grammy winner branford martin

1464

00:56:03,920 --> 00:56:00,829

[Music]

1465

00:56:16,630 --> 00:56:03,930

foreign oh

1466

00:56:19,050 --> 00:56:16,640

[Music]

1467

00:56:31,270 --> 00:56:19,060

uh

1468

00:56:54,950 --> 00:56:33,760

oh

1469

00:56:59,829 --> 00:56:57,510

so that was a beautiful performance we

1470

00:57:01,910 --> 00:56:59,839

just heard from three-time grammy winner

1471

00:57:03,109 --> 00:57:01,920

branford marsalis of america the

1472

00:57:05,670 --> 00:57:03,119

beautiful

1473

00:57:07,910 --> 00:57:05,680

and we can see some members of uh the

1474

00:57:10,150 --> 00:57:07,920

closeout team heading out of the

1475

00:57:13,030 --> 00:57:10,160

operations and checkout building we

1476

00:57:15,589 --> 00:57:13,040

expect the crew to walk out at t-minus

1477

00:57:18,069 --> 00:57:15,599

three hours and 20 minutes so about a

1478

00:57:21,030 --> 00:57:18,079

minute from now we will see the crew

1479

00:57:23,270 --> 00:57:21,040

walk out those famed doors and you can

1480

00:57:25,910 --> 00:57:23,280

see above them they're teeny tiny from

1481

00:57:28,069 --> 00:57:25,920

where we're looking but uh stickers from

1482

00:57:31,030 --> 00:57:28,079

past mission patches and tracy i'm sure

1483

00:57:34,390 --> 00:57:31,040

you have a sticker up there yes yes from

1484

00:57:36,309 --> 00:57:34,400

sts 118 one of my crewmates uh made sure

1485

00:57:37,910 --> 00:57:36,319

that we were well represented

1486

00:57:40,549 --> 00:57:37,920

they're on the traditions that we have

1487

00:57:42,069 --> 00:57:40,559

in space flight and

1488

00:57:43,910 --> 00:57:42,079

and i love that

1489

00:57:45,990 --> 00:57:43,920

we are getting to continue that

1490

00:57:48,230 --> 00:57:46,000

tradition with stickers

1491

00:57:49,589 --> 00:57:48,240

for these nasa spacex missions you can

1492

00:57:51,829 --> 00:57:49,599

actually see

1493

00:57:54,390 --> 00:57:51,839

i believe it's on the right hand side of

1494

00:57:56,870 --> 00:57:54,400

the meatball located above the doors i

1495

00:57:59,030 --> 00:57:56,880

believe that's where um the crews for

1496

00:58:01,670 --> 00:57:59,040

demo two and crew one placed their

1497

00:58:05,270 --> 00:58:03,190

we're gonna have to widen the walkway

1498

00:58:10,309 --> 00:58:05,280

here

1499

00:58:11,750 --> 00:58:10,319

stickers and these stickers denote the

1500

00:58:13,190 --> 00:58:11,760

missions in which the teslas were

1501  
00:58:14,950 --> 00:58:13,200  
utilized for

1502  
00:58:17,270 --> 00:58:14,960  
so here counting backwards from the

1503  
00:58:19,670 --> 00:58:17,280  
right the red one is obviously the crew

1504  
00:58:22,470 --> 00:58:19,680  
2 mission patch the blue dragon to the

1505  
00:58:25,190 --> 00:58:22,480  
left of that being crew one the white

1506  
00:58:28,470 --> 00:58:25,200  
helmet from demo two and then the

1507  
00:58:30,710 --> 00:58:28,480  
triangular patch from demo one so

1508  
00:58:32,710 --> 00:58:30,720  
even though we didn't have any real

1509  
00:58:33,829 --> 00:58:32,720  
astronauts we had ripley our our test

1510  
00:58:39,109 --> 00:58:33,839  
subject

1511  
00:58:44,950 --> 00:58:42,150  
and here they come the crew 2 astronauts

1512  
00:58:48,030 --> 00:58:44,960  
taking their first steps outside before

1513  
00:59:01,510 --> 00:58:48,040

their journey to space

1514

00:59:05,750 --> 00:59:03,190

i love this moment they're now going to

1515

00:59:07,670 --> 00:59:05,760

have the opportunity to wave goodbye

1516

00:59:10,309 --> 00:59:07,680

from a safe distance

1517

00:59:12,549 --> 00:59:10,319

the distance is normal protocol of

1518

00:59:15,349 --> 00:59:12,559

course for space flight

1519

00:59:17,910 --> 00:59:15,359

this is not a result of the covet 19

1520

00:59:19,750 --> 00:59:17,920

pandemic this would be in place even if

1521

00:59:22,309 --> 00:59:19,760

if that even if we didn't have that

1522

00:59:25,190 --> 00:59:22,319

situation going on um but i love this

1523

00:59:27,670 --> 00:59:25,200

moment it's it's a wonderful opportunity

1524

00:59:30,069 --> 00:59:27,680

to see the astronauts

1525

00:59:40,230 --> 00:59:30,079

get some final farewells from their

1526  
00:59:43,510 --> 00:59:42,309  
we've got shane and megan to the right

1527  
01:00:10,150 --> 00:59:43,520  
of your screen

1528  
01:00:15,349 --> 01:00:11,990  
shane and his wife posing for a socially

1529  
01:00:17,750 --> 01:00:15,359  
distanced photo yes

1530  
01:00:19,829 --> 01:00:17,760  
and it looks like bob benkin is there in

1531  
01:00:33,349 --> 01:00:19,839  
a blue polo with

1532  
01:00:39,190 --> 01:00:35,589  
yeah there's a better shot of bob megan

1533  
01:00:45,030 --> 01:00:42,390  
what an experience as their son to yeah

1534  
01:00:46,309 --> 01:00:45,040  
do this twice get to see dad and mom go

1535  
01:00:49,990 --> 01:00:46,319  
to space he's going to think this is

1536  
01:00:55,030 --> 01:00:52,150  
experience and you can see on the

1537  
01:00:56,789 --> 01:00:55,040  
license plate of that tesla recycle

1538  
01:00:59,349 --> 01:00:56,799

you can't see it from this shot but the

1539

01:01:02,630 --> 01:00:59,359

other two teslas in this convoy have

1540

01:01:05,030 --> 01:01:02,640

reduce and reuse oh wow so first one is

1541

01:01:10,150 --> 01:01:05,040

reduce the second one is reuse and this

1542

01:01:46,309 --> 01:01:13,190

a nod there again to earth day

1543

01:01:50,829 --> 01:01:48,710

and we see those tesla doors uh starting

1544

01:01:53,990 --> 01:01:50,839

to close

1545

01:01:56,870 --> 01:01:54,000

now like i mentioned before the

1546

01:01:59,910 --> 01:01:56,880

equipment is already in the tesla the

1547

01:02:01,910 --> 01:01:59,920

astronauts are plugged into that small

1548

01:02:03,349 --> 01:02:01,920

blue box and they're getting that cool

1549

01:02:04,470 --> 01:02:03,359

air flowing through their suits once

1550

01:02:07,029 --> 01:02:04,480

again

1551

01:02:09,589 --> 01:02:07,039

and the ac is turned up on high in those

1552

01:02:11,829 --> 01:02:09,599

teslas to make sure everybody's comfy

1553

01:02:14,150 --> 01:02:11,839

now you've seen some people go around to

1554

01:02:16,789 --> 01:02:14,160

the back side of the cars as

1555

01:02:19,109 --> 01:02:16,799

this is another opportunity for family

1556

01:02:21,670 --> 01:02:19,119

members to approach and have a little

1557

01:02:23,990 --> 01:02:21,680

bit more private moment with their crew

1558

01:02:28,230 --> 01:02:24,000

member before they leave

1559

01:02:32,309 --> 01:02:30,069

i can't tell you how meaningful this is

1560

01:02:33,829 --> 01:02:32,319

for crew to have this opportunity to see

1561

01:02:35,990 --> 01:02:33,839

their loved one

1562

01:02:38,309 --> 01:02:36,000

this close to heading out to the pad

1563

01:02:48,630 --> 01:02:38,319

this is this is a nice change that we've

1564

01:02:52,630 --> 01:02:50,870

and this is the car carrying shane

1565

01:02:55,349 --> 01:02:52,640

kimbrough on the right

1566

01:02:57,349 --> 01:02:55,359

uh rear passenger side and megan

1567

01:02:59,910 --> 01:02:57,359

macarthur is on the left ear passenger

1568

01:03:01,430 --> 01:02:59,920

side and then this uh back the third

1569

01:03:03,270 --> 01:03:01,440

tesla in the convoy here with the

1570

01:03:05,750 --> 01:03:03,280

recycle license plate

1571

01:03:21,430 --> 01:03:05,760

has tomas sitting on the back rear side

1572

01:03:25,270 --> 01:03:23,109

and as soon as the families come back

1573

01:03:30,630 --> 01:03:25,280

around we should see the convoy begin to

1574

01:03:30,640 --> 01:03:37,029

right on schedule

1575

01:03:37,039 --> 01:04:10,470

i love you brother

1576

01:04:14,870 --> 01:04:13,510

onc departure on schedule

1577

01:04:17,349 --> 01:04:14,880

all right so we just heard that

1578

01:04:19,990 --> 01:04:17,359

announcement that the crew has departed

1579

01:04:22,789 --> 01:04:20,000

the operations and checkout building on

1580

01:04:25,990 --> 01:04:22,799

schedule they are now on their way to

1581

01:04:31,109 --> 01:04:26,000

launch complex 39a scheduled to lift off

1582

01:04:33,670 --> 01:04:31,119

at 5 49 a.m eastern time this morning

1583

01:04:35,910 --> 01:04:33,680

it will be about a 15-minute drive with

1584

01:04:38,069 --> 01:04:35,920

a full security escort across nasa's

1585

01:04:40,870 --> 01:04:38,079

kennedy space center and out to the

1586

01:04:42,789 --> 01:04:40,880

launch pad and as we follow the convoy

1587

01:04:45,990 --> 01:04:42,799

we'd like to share some words from the

1588

01:04:48,309 --> 01:04:46,000

teams working so hard day and night to

1589

01:04:52,870 --> 01:04:48,319

get this crew to the international space

1590

01:04:59,190 --> 01:04:54,549

wishing crew two good luck and a safe

1591

01:05:05,870 --> 01:05:03,190

good luck shane megan aki and thomas

1592

01:05:08,540 --> 01:05:05,880

go crew too

1593

01:05:13,109 --> 01:05:08,550

[Music]

1594

01:05:18,300 --> 01:05:15,750

you guys are inspiration to all of us

1595

01:05:18,450 --> 01:05:18,310

let's go too

1596

01:05:20,549 --> 01:05:18,460

[Music]

1597

01:05:22,069 --> 01:05:20,559

[Applause]

1598

01:05:25,440 --> 01:05:22,079

we want to wish you a safe and

1599

01:05:25,520 --> 01:05:25,450

successful mission go crew 2.

1600

01:05:28,230 --> 01:05:25,530

[Music]

1601

01:05:30,390 --> 01:05:28,240

[Applause]

1602

01:05:32,470 --> 01:05:30,400

as a female aerospace engineer in

1603

01:05:34,309 --> 01:05:32,480

progress i just wanted to say i'm beyond

1604

01:05:36,309 --> 01:05:34,319

inspired by you and your family's

1605

01:05:38,069 --> 01:05:36,319

endeavors and we want to wish the crew

1606

01:05:45,350 --> 01:05:38,079

to astronaut a safe trip to the

1607

01:05:45,360 --> 01:05:49,990

[Music]

1608

01:05:54,390 --> 01:05:52,150

hey crew 2 uh looking forward to

1609

01:05:55,750 --> 01:05:54,400

watching you guys watch today the

1610

01:05:56,950 --> 01:05:55,760

screens behind me should look familiar

1611

01:06:00,230 --> 01:05:56,960

i'm looking forward to getting to see

1612

01:06:04,710 --> 01:06:02,069

so proud you'll be representing all

1613

01:06:08,069 --> 01:06:04,720

yellow jackets on the nasa spacex crew

1614

01:06:09,829 --> 01:06:08,079

dragon to the iss good luck on behalf of

1615

01:06:11,420 --> 01:06:09,839

the hunch program clear creek high

1616

01:06:14,069 --> 01:06:11,430

school has a message for you

1617

01:06:15,829 --> 01:06:14,079

[Music]

1618

01:06:23,150 --> 01:06:15,839

have a safe and successful mission to

1619

01:06:26,950 --> 01:06:25,020

[Music]

1620

01:06:29,829 --> 01:06:26,960

[Applause]

1621

01:06:34,160 --> 01:06:29,839

macarthur and all of crew 2 ucla is

1622

01:06:34,170 --> 01:06:44,150

[Music]

1623

01:06:44,160 --> 01:06:48,069

have an amazing and safe flight

1624

01:06:58,029 --> 01:06:50,390

good luck crew 2 on your mission to help

1625

01:07:02,069 --> 01:07:00,710

space crew 2 good luck on their journey

1626  
01:07:03,349 --> 01:07:02,079  
to the international space station i

1627  
01:07:05,670 --> 01:07:03,359  
can't wait to support you guys when you

1628  
01:07:08,630 --> 01:07:05,680  
get there uh enjoy space enjoy your

1629  
01:07:10,549 --> 01:07:08,640  
mission go issa go it says go mission

1630  
01:07:12,630 --> 01:07:10,559  
alpha we're going to be there with you

1631  
01:07:14,150 --> 01:07:12,640  
as you're going through space and we're

1632  
01:07:16,549 --> 01:07:14,160  
going to be there with you as you're on

1633  
01:07:18,150 --> 01:07:16,559  
the cool on iss

1634  
01:07:22,920 --> 01:07:18,160  
and we're going to be there with you

1635  
01:07:26,320 --> 01:07:25,970  
[Music]

1636  
01:07:27,140 --> 01:07:26,330  
[Applause]

1637  
01:07:31,990 --> 01:07:27,150  
[Music]

1638  
01:07:36,870 --> 01:07:34,150

so the convoy will be making their way

1639

01:07:39,349 --> 01:07:36,880

just behind us here at the press site

1640

01:07:41,750 --> 01:07:39,359

but for right now a closer look at the

1641

01:07:43,029 --> 01:07:41,760

crew 2 spacecraft commander riding in

1642

01:07:45,349 --> 01:07:43,039

this convoy

1643

01:07:53,670 --> 01:07:45,359

here is two-time space flight veteran

1644

01:07:56,710 --> 01:07:55,029

i love it it doesn't matter what i'm

1645

01:08:00,390 --> 01:07:56,720

flying a helicopter an airplane it's

1646

01:08:03,750 --> 01:08:01,670

the views we get are great the

1647

01:08:05,510 --> 01:08:03,760

sensations you have helicopter flying to

1648

01:08:07,109 --> 01:08:05,520

me is is really a lot of fun because

1649

01:08:09,510 --> 01:08:07,119

generally we're down in the trees it's

1650

01:08:11,589 --> 01:08:09,520

very challenging and now learning to fly

1651

01:08:13,109 --> 01:08:11,599

jets around here and nasa's been pretty

1652

01:08:15,029 --> 01:08:13,119

incredible too had to hang out the

1653

01:08:16,470 --> 01:08:15,039

helicopter keys but pulled out some jet

1654

01:08:17,749 --> 01:08:16,480

keys and it's pretty nice

1655

01:08:19,749 --> 01:08:17,759

i'd always want to be an astronaut ever

1656

01:08:21,430 --> 01:08:19,759

since i was a little kid my grandparents

1657

01:08:22,950 --> 01:08:21,440

lived in titusville right across from

1658

01:08:24,229 --> 01:08:22,960

the kennedy space center in florida so i

1659

01:08:26,390 --> 01:08:24,239

spent a lot of time down there as a

1660

01:08:27,910 --> 01:08:26,400

small child and i think my

1661

01:08:29,349 --> 01:08:27,920

grandfather was really the inspiration

1662

01:08:31,269 --> 01:08:29,359

behind all this because he would drag me

1663

01:08:42,789 --> 01:08:31,279

out to see anything launching launch

1664

01:08:46,309 --> 01:08:44,309

for whatever reason it kind of stuck in

1665

01:08:47,990 --> 01:08:46,319

my blood the ironic thing is when i

1666

01:08:49,430 --> 01:08:48,000

decided to go to west point i figured

1667

01:08:51,510 --> 01:08:49,440

that my dream of being astronaut was

1668

01:08:52,789 --> 01:08:51,520

gone so i kind of gave up on it because

1669

01:08:54,709 --> 01:08:52,799

i didn't realize you could be in the

1670

01:08:56,709 --> 01:08:54,719

army and be an astronaut but turns out

1671

01:09:00,229 --> 01:08:56,719

you can so

1672

01:09:02,390 --> 01:09:00,239

back in 2008 i flew on sts-126 we were

1673

01:09:03,910 --> 01:09:02,400

kind of a resupply mission so they

1674

01:09:05,349 --> 01:09:03,920

called our mission actually the extreme

1675

01:09:07,189 --> 01:09:05,359

home makeover mission for the space

1676

01:09:09,269 --> 01:09:07,199

station we got a chance to bring up new

1677

01:09:10,309 --> 01:09:09,279

bedrooms a new bathroom a new kitchen a

1678

01:09:12,390 --> 01:09:10,319

new gym

1679

01:09:14,309 --> 01:09:12,400

really outfit the station to be able to

1680

01:09:16,149 --> 01:09:14,319

support more than three crew members so

1681

01:09:18,149 --> 01:09:16,159

that was pretty cool to be part of that

1682

01:09:21,749 --> 01:09:18,159

and then to go back a few years later in

1683

01:09:23,349 --> 01:09:21,759

2016 and 2017 when i flew on the soyuz

1684

01:09:25,189 --> 01:09:23,359

that was an incredible time up there the

1685

01:09:26,870 --> 01:09:25,199

long duration piece is obviously a lot

1686

01:09:28,390 --> 01:09:26,880

different than the shuttle couple week

1687

01:09:30,390 --> 01:09:28,400

mission there's a different cadence a

1688

01:09:32,470 --> 01:09:30,400

different rhythm you have to get into

1689

01:09:35,349 --> 01:09:32,480

more of a marathon pace versus a sprint

1690

01:09:38,709 --> 01:09:35,359

pace

1691

01:09:40,229 --> 01:09:38,719

rocking and rolling for the first couple

1692

01:09:41,110 --> 01:09:40,239

minutes while the solid rocket boosters

1693

01:09:42,870 --> 01:09:41,120

are on

1694

01:09:45,269 --> 01:09:42,880

and then it smooths out and it's pure

1695

01:09:46,709 --> 01:09:45,279

acceleration the landing coming back in

1696

01:09:49,189 --> 01:09:46,719

is super smooth because you're landing

1697

01:09:51,030 --> 01:09:49,199

on a runway and soyuz to me was kind of

1698

01:09:52,709 --> 01:09:51,040

the opposite it was a really smooth ride

1699

01:09:55,430 --> 01:09:52,719

uphill but coming back was really

1700

01:09:56,709 --> 01:09:55,440

violent and uh pretty incredible that we

1701

01:09:58,470 --> 01:09:56,719

made it through that but they've been

1702

01:10:03,270 --> 01:09:58,480

doing it for many many years

1703

01:10:06,229 --> 01:10:04,870

we do things differently done in florida

1704

01:10:08,229 --> 01:10:06,239

now than we did for shuttle so it was

1705

01:10:10,550 --> 01:10:08,239

just a whole different world we kind of

1706

01:10:12,550 --> 01:10:10,560

blended i would say the best things from

1707

01:10:14,310 --> 01:10:12,560

shuttle during quarantine and launch day

1708

01:10:16,149 --> 01:10:14,320

operations and the best things from

1709

01:10:17,669 --> 01:10:16,159

soyuz that we've learned over the years

1710

01:10:19,669 --> 01:10:17,679

and kind of now we have a hybrid of

1711

01:10:20,790 --> 01:10:19,679

those really good things on launch day

1712

01:10:23,110 --> 01:10:20,800

especially

1713

01:10:25,110 --> 01:10:23,120

i'm really excited about it i love the

1714

01:10:26,550 --> 01:10:25,120

kennedy space center and all the teams

1715

01:10:28,390 --> 01:10:26,560

down there that i've gotten to work with

1716

01:10:29,990 --> 01:10:28,400

i love it for our country our nation

1717

01:10:31,830 --> 01:10:30,000

that we're launching out of the us again

1718

01:10:33,350 --> 01:10:31,840

it's a great capability that we have and

1719

01:10:34,470 --> 01:10:33,360

just happy to be doing it again out of

1720

01:10:36,470 --> 01:10:34,480

florida

1721

01:10:39,110 --> 01:10:36,480

my name is shane kimbrough i'm the

1722

01:10:40,630 --> 01:10:39,120

commander of nasa's spacex crew 2

1723

01:10:47,030 --> 01:10:40,640

mission to the international space

1724

01:10:51,350 --> 01:10:49,030

riding in the same car as kimbrough is

1725

01:10:53,990 --> 01:10:51,360

crew dragon pilot and nasa astronaut

1726

01:10:56,149 --> 01:10:54,000

megan mcarthur she's about to embark on

1727

01:10:58,070 --> 01:10:56,159

her second space flight and this will be

1728

01:11:01,510 --> 01:10:58,080

her first trip to the international

1729

01:11:06,390 --> 01:11:03,830

my name is megan macarthur i'm the pilot

1730

01:11:10,149 --> 01:11:06,400

for nasa's spacex crew 2 mission to the

1731

01:11:13,750 --> 01:11:12,229

i first thought of becoming an astronaut

1732

01:11:15,750 --> 01:11:13,760

when i was in high school so my dad was

1733

01:11:17,750 --> 01:11:15,760

a navy pilot and so i first thought well

1734

01:11:19,350 --> 01:11:17,760

i'd love to be a pilot we lived at

1735

01:11:20,950 --> 01:11:19,360

moffett field naval air station which

1736

01:11:22,470 --> 01:11:20,960

was connected with ames research center

1737

01:11:24,070 --> 01:11:22,480

where we'd hear the the wind tunnels

1738

01:11:26,149 --> 01:11:24,080

going you know at all hours of the day

1739

01:11:28,070 --> 01:11:26,159

and night and um also it's where shuttle

1740

01:11:30,550 --> 01:11:28,080

astronauts would come to do their

1741

01:11:31,990 --> 01:11:30,560

landing and roll out training and so i i

1742

01:11:34,070 --> 01:11:32,000

would see them you know come in their

1743

01:11:36,149 --> 01:11:34,080

t-38 jets and and get out in their

1744

01:11:37,590 --> 01:11:36,159

spiffy blues flight suits and and walk

1745

01:11:39,110 --> 01:11:37,600

in to do their training and i thought

1746

01:11:41,669 --> 01:11:39,120

well that looks like fun how do i get

1747

01:11:43,590 --> 01:11:41,679

that job um and i and i knew that it was

1748

01:11:45,030 --> 01:11:43,600

a long shot right but i but i also knew

1749

01:11:46,550 --> 01:11:45,040

that i wanted to be a part of something

1750

01:11:48,480 --> 01:11:46,560

like that right a part of this bigger

1751

01:11:50,470 --> 01:11:48,490

thing of exploration

1752

01:11:52,390 --> 01:11:50,480

[Music]

1753

01:11:54,310 --> 01:11:52,400

and then i kind of took this left turn

1754

01:11:56,070 --> 01:11:54,320

into oceanography but really it's all

1755

01:11:58,070 --> 01:11:56,080

about exploration we're not better

1756

01:11:59,350 --> 01:11:58,080

equipped to survive underwater you know

1757

01:12:00,950 --> 01:11:59,360

any better than we are in outer space

1758

01:12:02,630 --> 01:12:00,960

and so we need technology to help us

1759

01:12:04,470 --> 01:12:02,640

explore those areas so how do we do

1760

01:12:06,149 --> 01:12:04,480

those things you know we can send rovers

1761

01:12:07,350 --> 01:12:06,159

we can send people you know we have to

1762

01:12:08,709 --> 01:12:07,360

build the right kind of machines to

1763

01:12:10,390 --> 01:12:08,719

support that and so there's a lot of

1764

01:12:12,149 --> 01:12:10,400

parallels from graduate school in

1765

01:12:14,470 --> 01:12:12,159

oceanography i kind of just i always had

1766

01:12:16,149 --> 01:12:14,480

this idea in the back of my mind and i

1767

01:12:18,310 --> 01:12:16,159

went ahead and applied and i got really

1768

01:12:20,950 --> 01:12:18,320

lucky

1769

01:12:22,630 --> 01:12:20,960

every launch experience is very unique

1770

01:12:24,310 --> 01:12:22,640

to the individual you know we climbed a

1771

01:12:25,110 --> 01:12:24,320

board and there's that period of waiting

1772

01:12:26,070 --> 01:12:25,120

and

1773

01:12:27,750 --> 01:12:26,080

you actually get a little bit

1774

01:12:29,430 --> 01:12:27,760

uncomfortable you know your body starts

1775

01:12:34,790 --> 01:12:29,440

to cramp up and you're ready to you're

1776

01:12:38,950 --> 01:12:36,470

and then when the actual launch goes

1777

01:12:41,910 --> 01:12:38,960

it's indescribable it's so much energy

1778

01:12:44,149 --> 01:12:41,920

you are moving so fast

1779

01:12:45,669 --> 01:12:44,159

one of my main focuses was capturing

1780

01:12:47,750 --> 01:12:45,679

this free-flying vehicle the hubble

1781

01:12:49,590 --> 01:12:47,760

space telescope the really complicated

1782

01:12:51,430 --> 01:12:49,600

spacewalks that were planned out five

1783

01:12:53,110 --> 01:12:51,440

spacewalks back to back to back so it

1784

01:12:54,709 --> 01:12:53,120

was just this tremendous

1785

01:12:56,790 --> 01:12:54,719

rush of activity

1786

01:12:59,189 --> 01:12:56,800

for really 11 days until we were ready

1787

01:13:06,550 --> 01:12:59,199

to let the telescope go three

1788

01:13:11,270 --> 01:13:08,950

we dream these amazing dreams we have

1789

01:13:15,350 --> 01:13:11,280

these huge goals and we're going to be

1790

01:13:17,030 --> 01:13:15,360

successful when we work on them together

1791

01:13:19,669 --> 01:13:17,040

when you think about the international

1792

01:13:22,070 --> 01:13:19,679

space station and the size of that

1793

01:13:24,070 --> 01:13:22,080

vehicle and the breadth of science that

1794

01:13:25,189 --> 01:13:24,080

gets accomplished on that vehicle with

1795

01:13:27,910 --> 01:13:25,199

all of the different countries that are

1796

01:13:30,149 --> 01:13:27,920

participating and then now we've added

1797

01:13:32,390 --> 01:13:30,159

commercial partners where they have a

1798

01:13:34,030 --> 01:13:32,400

vehicle that we are using to get us to

1799

01:13:37,030 --> 01:13:34,040

our space laboratory

1800

01:13:39,430 --> 01:13:37,040

[Music]

1801  
01:13:41,990 --> 01:13:39,440  
we have these big dreams where we look

1802  
01:13:44,149 --> 01:13:42,000  
out to the horizon and this desire to

1803  
01:13:46,550 --> 01:13:44,159  
explore the universe around us and we're

1804  
01:13:48,630 --> 01:13:46,560  
always going to be more successful when

1805  
01:13:50,090 --> 01:13:48,640  
we work together to achieve these

1806  
01:13:57,940 --> 01:13:50,100  
incredible dreams

1807  
01:14:00,950 --> 01:13:59,430  
[Music]

1808  
01:14:03,270 --> 01:14:00,960  
so there's the convoy there on your

1809  
01:14:04,550 --> 01:14:03,280  
screen they just passed behind us just

1810  
01:14:07,910 --> 01:14:04,560  
moments ago

1811  
01:14:11,270 --> 01:14:07,920  
on their way to pad 39a now if you're

1812  
01:14:12,790 --> 01:14:11,280  
wondering what the crew is listening to

1813  
01:14:15,350 --> 01:14:12,800

oh first let's let's look at this

1814

01:14:17,910 --> 01:14:15,360

twitter comment it's so cool seeing bob

1815

01:14:20,470 --> 01:14:17,920

it's so cool seeing bob see his wife off

1816

01:14:23,669 --> 01:14:20,480

for the mis this mission crew 2 almost a

1817

01:14:24,870 --> 01:14:23,679

year after she did the same for him for

1818

01:14:26,709 --> 01:14:24,880

demo 2.

1819

01:14:29,110 --> 01:14:26,719

i just love that like i said before they

1820

01:14:29,650 --> 01:14:29,120

are a power couple and i can't get

1821

01:14:31,110 --> 01:14:29,660

enough of it

1822

01:14:33,669 --> 01:14:31,120

[Laughter]

1823

01:14:36,229 --> 01:14:33,679

absolutely and um they've got a really

1824

01:14:37,510 --> 01:14:36,239

cool playlist uh that we had a preview

1825

01:14:40,070 --> 01:14:37,520

of but you were starting to talk about

1826  
01:14:42,550 --> 01:14:40,080  
that kate yeah so um the astronauts of

1827  
01:14:44,470 --> 01:14:42,560  
course get to pick their playlist uh in

1828  
01:14:45,830 --> 01:14:44,480  
their tesla so

1829  
01:14:48,870 --> 01:14:45,840  
in the first car

1830  
01:14:50,229 --> 01:14:48,880  
with shane and megan um i'm not sure

1831  
01:14:52,790 --> 01:14:50,239  
which one they're listening to this

1832  
01:14:54,870 --> 01:14:52,800  
instant but they had selections like

1833  
01:14:56,390 --> 01:14:54,880  
learn to fly by the foo fighters a

1834  
01:14:59,590 --> 01:14:56,400  
personal favorite of mine

1835  
01:15:01,430 --> 01:14:59,600  
uh crazy train ozzy osbourne uh enter

1836  
01:15:03,910 --> 01:15:01,440  
sandman metallica i was listening to

1837  
01:15:06,870 --> 01:15:03,920  
that one on my way in today

1838  
01:15:09,990 --> 01:15:06,880

city of blinding lights you too uh and

1839

01:15:13,910 --> 01:15:10,000

in aki and tomas car carr

1840

01:15:17,189 --> 01:15:13,920

drops of jupiter that is uh a a classic

1841

01:15:20,630 --> 01:15:17,199

uh paradise city by guns n roses and of

1842

01:15:22,830 --> 01:15:20,640

course danger zone by kenny logan yeah a

1843

01:15:23,830 --> 01:15:22,840

little top gun action i love

1844

01:15:25,990 --> 01:15:23,840

it um

1845

01:15:28,229 --> 01:15:26,000

the nasa and spacex team inside the

1846

01:15:30,550 --> 01:15:28,239

launch control center uh here at kennedy

1847

01:15:32,709 --> 01:15:30,560

space center just watched this uh this

1848

01:15:35,430 --> 01:15:32,719

convoy passed by from their windows at

1849

01:15:37,830 --> 01:15:35,440

the lcc and we caught up with the nasa

1850

01:15:40,870 --> 01:15:37,840

commercial crew program manager about

1851

01:15:42,870 --> 01:15:40,880

what that moment is like

1852

01:15:45,110 --> 01:15:42,880

as their drive down that road down to

1853

01:15:46,950 --> 01:15:45,120

launch pad 39a and you can you can see

1854

01:15:49,189 --> 01:15:46,960

the the crew and then to me that's when

1855

01:15:51,030 --> 01:15:49,199

it really becomes real

1856

01:15:52,229 --> 01:15:51,040

not that it's not real

1857

01:15:53,910 --> 01:15:52,239

every step of the way during

1858

01:15:55,350 --> 01:15:53,920

preparations but

1859

01:15:57,910 --> 01:15:55,360

everybody in the firing room will stand

1860

01:15:59,270 --> 01:15:57,920

up and it gets really quiet

1861

01:16:00,950 --> 01:15:59,280

and i think that's when everybody

1862

01:16:03,510 --> 01:16:00,960

realizes hey we're about to go do this

1863

01:16:06,390 --> 01:16:03,520

for real and you can just feel

1864

01:16:08,390 --> 01:16:06,400

the passion and the intensity

1865

01:16:10,790 --> 01:16:08,400

everybody in that room and everybody in

1866

01:16:12,310 --> 01:16:10,800

houston and hawthorne

1867

01:16:13,910 --> 01:16:12,320

you know i think they're standing up to

1868

01:16:16,070 --> 01:16:13,920

watching because they know

1869

01:16:17,270 --> 01:16:16,080

hey this is uh this is going to be a

1870

01:16:22,550 --> 01:16:17,280

great mission

1871

01:16:28,470 --> 01:16:25,750

and now the crew is approaching pad 39a

1872

01:16:31,189 --> 01:16:28,480

and entering what is known as the blast

1873

01:16:32,229 --> 01:16:31,199

danger area or bda

1874

01:16:35,030 --> 01:16:32,239

and now

1875

01:16:37,270 --> 01:16:35,040

approaching the base of the pad but uh

1876

01:16:39,750 --> 01:16:37,280

the teams have conducted internal go

1877

01:16:42,310 --> 01:16:39,760

no-go poles to make sure that this area

1878

01:16:44,149 --> 01:16:42,320

was safe before they entered

1879

01:16:46,950 --> 01:16:44,159

and as they are approaching the base of

1880

01:16:48,390 --> 01:16:46,960

the pad we have some more uh messages

1881

01:16:57,669 --> 01:16:48,400

from those with some personal

1882

01:17:01,070 --> 01:16:59,830

godspeed and we'll see you when you come

1883

01:17:03,830 --> 01:17:01,080

home

1884

01:17:05,750 --> 01:17:03,840

[Applause]

1885

01:17:07,560 --> 01:17:05,760

godspeed and have a great trip to the

1886

01:17:14,640 --> 01:17:07,570

iss

1887

01:17:18,520 --> 01:17:14,650

[Music]

1888

01:17:23,910 --> 01:17:18,530

[Applause]

1889

01:17:25,830 --> 01:17:23,920

[Music]

1890

01:17:29,680 --> 01:17:25,840

good luck from the bakery and simcoe

1891

01:17:36,240 --> 01:17:29,690

logistics team gone crew dragons

1892

01:17:38,950 --> 01:17:37,830

[Music]

1893

01:17:42,830 --> 01:17:38,960

go

1894

01:17:46,950 --> 01:17:45,270

spacex launching there's ten seconds for

1895

01:17:50,310 --> 01:17:46,960

this cheers so good luck to the

1896

01:17:53,590 --> 01:17:50,320

astronauts and dragon engineers

1897

01:17:56,950 --> 01:17:53,600

go megan go thomas go hockey go falcon

1898

01:18:00,630 --> 01:17:58,709

we are wishing endeavor guys a safe

1899

01:18:04,149 --> 01:18:00,640

mission to the iss

1900

01:18:05,910 --> 01:18:04,159

good luck and godspeed megan shane

1901

01:18:08,310 --> 01:18:05,920

thomas

1902

01:18:17,750 --> 01:18:08,320

well here to wish crew to a successful

1903

01:18:22,070 --> 01:18:19,430

on behalf of the dragon engines and

1904

01:18:23,669 --> 01:18:22,080

tanks engineering team have a safe play

1905

01:18:25,750 --> 01:18:23,679

wishing shane meghan tomorrow and

1906

01:18:28,229 --> 01:18:25,760

nakahito a safe flight and a productive

1907

01:18:29,480 --> 01:18:28,239

stay at the iss go falcon go dragon and

1908

01:18:32,390 --> 01:18:29,490

go crew 2.

1909

01:18:34,390 --> 01:18:32,400

[Applause]

1910

01:18:36,790 --> 01:18:34,400

and thank you for flying space eyes have

1911

01:18:38,790 --> 01:18:36,800

a safe flight

1912

01:18:40,470 --> 01:18:38,800

and it is an honor and a privilege to be

1913

01:18:41,510 --> 01:18:40,480

a part of this and contribute in some

1914

01:18:43,830 --> 01:18:41,520

way

1915

01:18:46,700 --> 01:18:43,840

and i couldn't be more excited to see

1916

01:18:50,790 --> 01:18:46,710

you on this mission

1917

01:18:55,830 --> 01:18:50,800

[Applause]

1918

01:19:00,950 --> 01:18:58,390

all right uh that was some some messages

1919

01:19:02,630 --> 01:19:00,960

from the spacex team and others uh that

1920

01:19:03,830 --> 01:19:02,640

have been working so hard to get this

1921

01:19:06,390 --> 01:19:03,840

crew to

1922

01:19:09,830 --> 01:19:06,400

this day uh we are looking at the base

1923

01:19:12,229 --> 01:19:09,840

of launch complex 39a and we can see

1924

01:19:13,430 --> 01:19:12,239

the falcon 9 first stage booster on the

1925

01:19:16,149 --> 01:19:13,440

pad

1926

01:19:18,550 --> 01:19:16,159

kate i know spacex has done some

1927

01:19:20,630 --> 01:19:18,560

extensive upgrades since he began

1928

01:19:23,189 --> 01:19:20,640

leasing this and we can't see the crew

1929

01:19:24,709 --> 01:19:23,199

on screen here they they take a bio

1930

01:19:26,229 --> 01:19:24,719

break once they get to the pad so it'll

1931

01:19:28,950 --> 01:19:26,239

be a couple of minutes before they

1932

01:19:30,550 --> 01:19:28,960

ascend the fixed service structure uh to

1933

01:19:32,149 --> 01:19:30,560

the right of your screen that's that big

1934

01:19:33,750 --> 01:19:32,159

black tower

1935

01:19:35,990 --> 01:19:33,760

and we also should be hearing an

1936

01:19:37,270 --> 01:19:36,000

announcement from the core specifically

1937

01:19:39,350 --> 01:19:37,280

chad healy

1938

01:19:41,750 --> 01:19:39,360

that the crew has arrived at the pad so

1939

01:19:44,149 --> 01:19:41,760

that could be coming any minute yeah

1940

01:19:46,229 --> 01:19:44,159

like you said um we have made a number

1941

01:19:48,229 --> 01:19:46,239

of upgrades in case if you aren't

1942

01:19:50,950 --> 01:19:48,239

familiar with the history of this launch

1943

01:19:53,110 --> 01:19:50,960

pad it was originally built in the 1960s

1944

01:19:55,590 --> 01:19:53,120

to support the saturn v rocket for the

1945

01:19:57,270 --> 01:19:55,600

apollo program and of course

1946

01:19:59,990 --> 01:19:57,280

this is where we went to the moon from

1947

01:20:01,350 --> 01:20:00,000

this is the launch pad where apollo 11

1948

01:20:04,470 --> 01:20:01,360

took off from

1949

01:20:07,110 --> 01:20:04,480

after that program it was upgraded to

1950

01:20:09,110 --> 01:20:07,120

support shuttle and then after that

1951

01:20:11,669 --> 01:20:09,120

spacex took over the lease for it in

1952

01:20:14,310 --> 01:20:11,679

2014 and we actually had our first

1953

01:20:16,629 --> 01:20:14,320

flight from here in february of 2017

1954

01:20:18,390 --> 01:20:16,639

which was a cargo resupply mission to

1955

01:20:21,350 --> 01:20:18,400

the international space station

1956

01:20:23,510 --> 01:20:21,360

so we've been busy um it looks a little

1957

01:20:25,750 --> 01:20:23,520

different we did make some upgrades uh

1958

01:20:28,470 --> 01:20:25,760

to aesthetics but a lot of it was safety

1959

01:20:29,669 --> 01:20:28,480

driven uh i believe you know the the

1960

01:20:33,110 --> 01:20:29,679

shuttle

1961

01:20:35,189 --> 01:20:33,120

structures were iconic it was of course

1962

01:20:36,950 --> 01:20:35,199

heartbreaking for everyone to see the

1963

01:20:39,030 --> 01:20:36,960

rotating service structure come down but

1964

01:20:40,950 --> 01:20:39,040

we did have to remove it for for safety

1965

01:20:42,790 --> 01:20:40,960

purposes but also it was just

1966

01:20:44,550 --> 01:20:42,800

unnecessary for for what we would be

1967

01:20:46,070 --> 01:20:44,560

doing to advance

1968

01:20:48,870 --> 01:20:46,080

the next generation of human space

1969

01:20:51,110 --> 01:20:48,880

flight so i will say that the uh the

1970

01:20:54,310 --> 01:20:51,120

tower there does have the bones of that

1971

01:20:56,550 --> 01:20:54,320

original um fixed service structure and

1972

01:20:58,950 --> 01:20:56,560

so there there are many things that are

1973

01:21:01,750 --> 01:20:58,960

still original in there like a the

1974

01:21:03,510 --> 01:21:01,760

telephone which we will see later on uh

1975

01:21:06,149 --> 01:21:03,520

i think we'll we'll save that uh for

1976

01:21:08,550 --> 01:21:06,159

later but also it's the same elevator

1977

01:21:10,090 --> 01:21:08,560

that the shuttle astronauts uh rode up

1978

01:21:12,870 --> 01:21:10,100

in as well yeah so

1979

01:21:14,790 --> 01:21:12,880

[Laughter]

1980

01:21:17,189 --> 01:21:14,800

it looks different but there we have a

1981

01:21:19,110 --> 01:21:17,199

shot of those elevators there um yeah

1982

01:21:21,430 --> 01:21:19,120

elevators that don't have floor numbers

1983

01:21:23,270 --> 01:21:21,440

but rather foot numbers on them yeah the

1984

01:21:25,590 --> 01:21:23,280

the crew astronauts will be hitting the

1985

01:21:27,990 --> 01:21:25,600

button for the 255

1986

01:21:30,229 --> 01:21:28,000

foot level of of this structure but yeah

1987

01:21:32,310 --> 01:21:30,239

these are these are the original

1988

01:21:34,310 --> 01:21:32,320

elevators obviously maintained for

1989

01:21:36,629 --> 01:21:34,320

safety and but they're yes so while it

1990

01:21:38,709 --> 01:21:36,639

may look different a lot of that history

1991

01:21:40,709 --> 01:21:38,719

uh is still is still there

1992

01:21:42,550 --> 01:21:40,719

and tracy this is the same pad of course

1993

01:21:45,590 --> 01:21:42,560

that you launched from

1994

01:21:48,070 --> 01:21:45,600

years ago yes uh very fond memories of

1995

01:21:50,790 --> 01:21:48,080

it um on my flight as we got out of the

1996

01:21:52,950 --> 01:21:50,800

astro van the pilot on our flight on

1997

01:21:54,310 --> 01:21:52,960

sts-118 charlie hobaugh who we called

1998

01:21:56,629 --> 01:21:54,320

scorch

1999

01:21:59,590 --> 01:21:56,639

paused and looked up at the

2000

01:22:02,550 --> 01:21:59,600

uh stack and he stopped my crewmate

2001  
01:22:05,430 --> 01:22:02,560  
fellow rookie uh barbara morgan and i to

2002  
01:22:07,350 --> 01:22:05,440  
pause and take a look at this mammoth

2003  
01:22:08,629 --> 01:22:07,360  
spacecraft we're about to fly on because

2004  
01:22:11,350 --> 01:22:08,639  
he said this is going to be the last

2005  
01:22:12,390 --> 01:22:11,360  
time you see this view and

2006  
01:22:14,709 --> 01:22:12,400  
we uh

2007  
01:22:17,350 --> 01:22:14,719  
i'll never forget that moment it was

2008  
01:22:18,709 --> 01:22:17,360  
very meaningful to me i cherish it but

2009  
01:22:20,310 --> 01:22:18,719  
barbara and i realized we we got to

2010  
01:22:22,709 --> 01:22:20,320  
hurry up we don't want to miss our first

2011  
01:22:25,270 --> 01:22:22,719  
launch and so we we scooted on and he

2012  
01:22:27,270 --> 01:22:25,280  
stayed there um pausing to to look at it

2013  
01:22:29,430 --> 01:22:27,280

and i'll always remember that

2014

01:22:31,350 --> 01:22:29,440

hopefully we'll we'll see these i mean

2015

01:22:33,189 --> 01:22:31,360

if if dry dress rehearsal was any

2016

01:22:35,189 --> 01:22:33,199

indication we'll have we'll be able to

2017

01:22:37,590 --> 01:22:35,199

see the these astronauts have a similar

2018

01:22:39,110 --> 01:22:37,600

moment to what is one of my favorite

2019

01:22:42,070 --> 01:22:39,120

moments in the whole launch countdown

2020

01:22:44,550 --> 01:22:42,080

the astronaut lean back

2021

01:22:46,950 --> 01:22:44,560

just try to take in uh like you said

2022

01:22:49,110 --> 01:22:46,960

this ginormous uh vehicle that they're

2023

01:22:50,790 --> 01:22:49,120

about to ride in yeah and we should see

2024

01:22:52,629 --> 01:22:50,800

that uh happen

2025

01:22:54,390 --> 01:22:52,639

in just a few minutes but uh in the

2026

01:22:56,229 --> 01:22:54,400

meantime we learned a little bit more

2027

01:22:58,310 --> 01:22:56,239

about shane and megan as they rode out

2028

01:23:01,510 --> 01:22:58,320

to the pad now let's take a closer look

2029

01:23:03,430 --> 01:23:01,520

at mission specialist tom pesco

2030

01:23:05,590 --> 01:23:03,440

we've received our final weather brief

2031

01:23:08,149 --> 01:23:05,600

for the dragon ascent corridor weather

2032

01:23:09,910 --> 01:23:08,159

ascent weather is go for launch

2033

01:23:12,229 --> 01:23:09,920

the final weather brief for pad escape

2034

01:23:14,709 --> 01:23:12,239

winds will be at t minus one hour

2035

01:23:16,629 --> 01:23:14,719

okay so we heard ascent weather looking

2036

01:23:19,590 --> 01:23:16,639

good we'll hear another weather brief at

2037

01:23:21,910 --> 01:23:19,600

t minus one hour uh but again toma

2038

01:23:24,629 --> 01:23:21,920

pesque of isa will be the first european

2039

01:23:27,189 --> 01:23:24,639

to fly aboard crew dragon and the first

2040

01:23:29,750 --> 01:23:27,199

european to launch from u.s soil in more

2041

01:23:32,310 --> 01:23:29,760

than a decade

2042

01:23:35,030 --> 01:23:32,320

okay are you ready yes i'm ready i tend

2043

01:23:36,629 --> 01:23:35,040

to work a lot even outside of work you

2044

01:23:38,310 --> 01:23:36,639

know going to new places meeting new

2045

01:23:41,830 --> 01:23:38,320

people i like new experiences i like to

2046

01:23:46,470 --> 01:23:43,750

my name is thomas k and i'm a mission

2047

01:23:47,910 --> 01:23:46,480

specialist for nasa's spacex crew 2

2048

01:23:52,470 --> 01:23:47,920

mission to the international space

2049

01:23:56,149 --> 01:23:54,070

on both the crew dragons as a mission

2050

01:23:57,590 --> 01:23:56,159

specialist everything that's manual is

2051

01:23:59,350 --> 01:23:57,600

in our ballpark if we have to open a

2052

01:24:01,430 --> 01:23:59,360

hatch if we have to use the emergency

2053

01:24:03,030 --> 01:24:01,440

equipment if we have to open or close

2054

01:24:04,950 --> 01:24:03,040

valves if we have to manage their cargo

2055

01:24:08,229 --> 01:24:04,960

and the stowage all this is going to be

2056

01:24:11,669 --> 01:24:09,830

i remember as a kid

2057

01:24:13,590 --> 01:24:11,679

everybody's an interest but mine was

2058

01:24:15,990 --> 01:24:13,600

space shuttles and planes and i had the

2059

01:24:18,070 --> 01:24:16,000

posters in my room and the complete kit

2060

01:24:19,750 --> 01:24:18,080

and so i went into math and physics and

2061

01:24:21,669 --> 01:24:19,760

then i became an engineer i went into

2062

01:24:23,350 --> 01:24:21,679

aerospace that seemed natural at the

2063

01:24:25,270 --> 01:24:23,360

time and then i got a chance to become a

2064

01:24:27,669 --> 01:24:25,280

pilot which was kind of another piece we

2065

01:24:29,350 --> 01:24:27,679

have a national selection every 10 to 15

2066

01:24:31,270 --> 01:24:29,360

years in europe and i don't think it was

2067

01:24:33,430 --> 01:24:31,280

going to happen but i i passed all the

2068

01:24:35,110 --> 01:24:33,440

all those selections and i made it so

2069

01:24:37,430 --> 01:24:35,120

really it's been it's been a dream i've

2070

01:24:39,270 --> 01:24:37,440

been so lucky if i would have pictured

2071

01:24:40,950 --> 01:24:39,280

it when i was a kid i couldn't have

2072

01:24:44,229 --> 01:24:40,960

pictured it any better than what really

2073

01:24:48,229 --> 01:24:46,229

it's a space station to me it's a step

2074

01:24:49,910 --> 01:24:48,239

for exploration so we're preparing the

2075

01:24:51,830 --> 01:24:49,920

the next steps are going to take us you

2076

01:24:53,030 --> 01:24:51,840

know to the moon and to mars and then at

2077

01:24:54,950 --> 01:24:53,040

the same time we're using the space

2078

01:24:57,430 --> 01:24:54,960

station as a as an orbiting laboratory

2079

01:25:00,629 --> 01:24:57,440

so every day you do research that you

2080

01:25:02,550 --> 01:25:00,639

couldn't be doing on the ground

2081

01:25:04,470 --> 01:25:02,560

you have to prepare for the space walks

2082

01:25:06,310 --> 01:25:04,480

you always prepare it very meticulously

2083

01:25:08,390 --> 01:25:06,320

very thoroughly and then once you go out

2084

01:25:09,990 --> 01:25:08,400

and adjust your adrenaline is very high

2085

01:25:11,430 --> 01:25:10,000

and it's also physically challenging

2086

01:25:13,590 --> 01:25:11,440

because you got to be for six seven

2087

01:25:15,510 --> 01:25:13,600

hours fighting against that space suit

2088

01:25:16,950 --> 01:25:15,520

because that space is inflated with air

2089

01:25:18,550 --> 01:25:16,960

for you to be able to breathe which

2090

01:25:21,189 --> 01:25:18,560

means it's gonna resist your your

2091

01:25:22,870 --> 01:25:21,199

movements so those are huge big memories

2092

01:25:24,870 --> 01:25:22,880

that you have but but really also

2093

01:25:26,950 --> 01:25:24,880

sometimes the small things that the the

2094

01:25:29,270 --> 01:25:26,960

fun that you could have

2095

01:25:31,110 --> 01:25:29,280

it's one of the big achievements of the

2096

01:25:33,110 --> 01:25:31,120

space program is to is to bring people

2097

01:25:34,629 --> 01:25:33,120

together that's what makes us go you

2098

01:25:36,070 --> 01:25:34,639

know in the future i think our programs

2099

01:25:37,590 --> 01:25:36,080

are going to be more and more ambitious

2100

01:25:39,110 --> 01:25:37,600

so we're going to need more than just

2101

01:25:40,790 --> 01:25:39,120

one country no single country in the

2102

01:25:42,950 --> 01:25:40,800

world can do it on its own so i think

2103

01:25:45,350 --> 01:25:42,960

it's the partnership that takes us

2104

01:25:46,870 --> 01:25:45,360

forward and it makes you better it makes

2105

01:25:48,709 --> 01:25:46,880

you achieve more and i think that's the

2106

01:25:51,590 --> 01:25:48,719

path we're in the space station has

2107

01:25:53,110 --> 01:25:51,600

paved the way and every future big space

2108

01:26:00,950 --> 01:25:53,120

program is going to have to follow the

2109

01:26:04,870 --> 01:26:03,030

so there we can see shane and megan have

2110

01:26:07,750 --> 01:26:04,880

made their way up the tower they're now

2111

01:26:10,950 --> 01:26:07,760

they're now climbing the stairs to the

2112

01:26:13,430 --> 01:26:10,960

level where the crew arm is located

2113

01:26:15,590 --> 01:26:13,440

before aki and tomah make their way to

2114

01:26:18,070 --> 01:26:15,600

the elevator at the ground level of pad

2115

01:26:20,390 --> 01:26:18,080

39a let's get a look at mission

2116

01:26:23,189 --> 01:26:20,400

specialist and jaxa astronaut aki

2117

01:26:25,350 --> 01:26:23,199

hoshide once at the space station he

2118

01:26:27,590 --> 01:26:25,360

will be part of the first ever direct

2119

01:26:34,470 --> 01:26:27,600

handover from one japanese astronaut to

2120

01:26:38,709 --> 01:26:36,149

i meant to check this but do you

2121

01:26:40,229 --> 01:26:38,719

remember do you know when i was selected

2122

01:26:42,870 --> 01:26:40,239

as an astronaut

2123

01:26:44,550 --> 01:26:42,880

1999 thank you i always get mixed up

2124

01:26:47,430 --> 01:26:44,560

there

2125

01:26:48,709 --> 01:26:47,440

so i was born in tokyo japan and then

2126  
01:26:51,270 --> 01:26:48,719  
from age

2127  
01:26:54,070 --> 01:26:51,280  
three to seven i actually lived in new

2128  
01:26:57,750 --> 01:26:54,080  
jersey because of my dad's job in high

2129  
01:27:02,229 --> 01:26:57,760  
school i went to singapore for two years

2130  
01:27:05,270 --> 01:27:02,239  
went to ko university in japan

2131  
01:27:07,510 --> 01:27:05,280  
got my degree in mechanical engineering

2132  
01:27:11,110 --> 01:27:07,520  
and then right after college i joined

2133  
01:27:13,510 --> 01:27:11,120  
the japanese space agency i have dreamt

2134  
01:27:15,110 --> 01:27:13,520  
of becoming an astronaut since my

2135  
01:27:17,510 --> 01:27:15,120  
childhood and

2136  
01:27:18,390 --> 01:27:17,520  
tried couple times in astronaut

2137  
01:27:21,590 --> 01:27:18,400  
selection

2138  
01:27:27,669 --> 01:27:21,600

and on my third try i got selected as an

2139

01:27:33,430 --> 01:27:31,430

saw my first mission on sds-124 on the

2140

01:27:35,270 --> 01:27:33,440

space shuttle discovery that was my

2141

01:27:37,990 --> 01:27:35,280

first flight so i thought i would be

2142

01:27:40,149 --> 01:27:38,000

nervous but my crewmates were already

2143

01:27:46,790 --> 01:27:40,159

like my family so we were just

2144

01:27:49,270 --> 01:27:47,830

two

2145

01:27:51,350 --> 01:27:49,280

one

2146

01:27:52,380 --> 01:27:51,360

booster ignition and liftoff of shuttle

2147

01:28:05,910 --> 01:27:52,390

discovery

2148

01:28:07,189 --> 01:28:05,920

[Music]

2149

01:28:11,030 --> 01:28:07,199

heading for a half year on the

2150

01:28:16,310 --> 01:28:13,110

my second flight was a long duration

2151  
01:28:18,310 --> 01:28:16,320  
flight we launched on a soyuz capsule

2152  
01:28:24,709 --> 01:28:18,320  
docked to the space station and did a

2153  
01:28:28,470 --> 01:28:26,470  
flying out of three different vehicles

2154  
01:28:31,189 --> 01:28:28,480  
that's that's going to be amazing

2155  
01:28:33,910 --> 01:28:31,199  
the new spacecraft crew dragon it's a

2156  
01:28:37,110 --> 01:28:33,920  
it's a new technology a new layout new

2157  
01:28:40,629 --> 01:28:37,120  
operation and i can't wait to actually

2158  
01:28:44,550 --> 01:28:42,870  
so i guess the difference would be

2159  
01:28:47,270 --> 01:28:44,560  
it's a brand new vehicle

2160  
01:28:50,149 --> 01:28:47,280  
a lot less switches

2161  
01:28:53,669 --> 01:28:50,159  
it's like a smartphone i would say which

2162  
01:28:55,110 --> 01:28:53,679  
felt uncomfortable initially because as

2163  
01:28:56,870 --> 01:28:55,120

an astronaut you're like

2164

01:28:59,590 --> 01:28:56,880

where are the switches which button do i

2165

01:29:02,470 --> 01:28:59,600

have to push so initially i felt a

2166

01:29:04,470 --> 01:29:02,480

little i would say a little awkward

2167

01:29:07,350 --> 01:29:04,480

then after training

2168

01:29:09,669 --> 01:29:07,360

you get adjusted and you understand hey

2169

01:29:12,310 --> 01:29:09,679

this is how the system works and

2170

01:29:13,490 --> 01:29:12,320

how can i as a crew member help out the

2171

01:29:14,790 --> 01:29:13,500

mission

2172

01:29:16,950 --> 01:29:14,800

[Music]

2173

01:29:19,350 --> 01:29:16,960

it's a privilege actually to work

2174

01:29:20,790 --> 01:29:19,360

together with these people and

2175

01:29:22,870 --> 01:29:20,800

look forward to

2176

01:29:27,510 --> 01:29:22,880

actually doing the mission

2177

01:29:29,990 --> 01:29:27,520

and spending more time working together

2178

01:29:32,550 --> 01:29:30,000

i'm aki hoshide jax astronaut and

2179

01:29:35,910 --> 01:29:32,560

mission specialist for nasa spacex crew

2180

01:29:41,430 --> 01:29:38,390

all right that was a look at uh aki

2181

01:29:45,110 --> 01:29:41,440

hoshide and we can see the astronauts

2182

01:29:47,830 --> 01:29:45,120

inside the crew access arm that walkway

2183

01:29:50,070 --> 01:29:47,840

here are commander shane kimbrough and

2184

01:29:52,790 --> 01:29:50,080

pilot megan macarthur

2185

01:29:56,149 --> 01:29:52,800

making their way up behind them our issa

2186

01:29:57,990 --> 01:29:56,159

astronaut toma pesque and jaxa astronaut

2187

01:30:00,950 --> 01:29:58,000

aki hoshide

2188

01:30:04,310 --> 01:30:00,960

and we'll be seeing them make their way

2189

01:30:06,629 --> 01:30:04,320

up there they are coming up the steps

2190

01:30:09,030 --> 01:30:06,639

and they'll be stopping to use the phone

2191

01:30:11,830 --> 01:30:09,040

shane and megan uh already had the

2192

01:30:13,189 --> 01:30:11,840

opportunity to do that

2193

01:30:15,350 --> 01:30:13,199

that phone is

2194

01:30:17,350 --> 01:30:15,360

uh up where you see uh the person in the

2195

01:30:19,750 --> 01:30:17,360

black suit that looks like jessica mear

2196

01:30:22,390 --> 01:30:19,760

number 38 part of the

2197

01:30:24,790 --> 01:30:22,400

closeout team at the pad

2198

01:30:26,629 --> 01:30:24,800

and this is a shot inside the white room

2199

01:30:28,629 --> 01:30:26,639

astronaut shane kimbrough to the left of

2200

01:30:30,550 --> 01:30:28,639

your screen and to the right you can see

2201

01:30:32,550 --> 01:30:30,560

the side hatch of the crew dragon

2202

01:30:34,790 --> 01:30:32,560

endeavor is open

2203

01:30:37,350 --> 01:30:34,800

in preparation for the next milestone

2204

01:30:40,550 --> 01:30:37,360

which will be uh crew ingress in just a

2205

01:30:44,229 --> 01:30:41,830

if you're just joining us you're

2206

01:30:47,270 --> 01:30:44,239

watching live coverage of nasa's spacex

2207

01:30:48,950 --> 01:30:47,280

mission known as crew 2 good morning and

2208

01:30:51,030 --> 01:30:48,960

welcome to kennedy space center in

2209

01:30:52,390 --> 01:30:51,040

florida i'm marie lewis with nasa

2210

01:30:54,709 --> 01:30:52,400

communications

2211

01:30:57,590 --> 01:30:54,719

and i'm kate tys senior certification

2212

01:31:00,070 --> 01:30:57,600

engineer at spacex joining us today is

2213

01:31:01,669 --> 01:31:00,080

nasa astronaut tracy caldwell dyson

2214

01:31:03,350 --> 01:31:01,679

welcome tracy we're so happy that you're

2215

01:31:04,870 --> 01:31:03,360

able to join us this morning thank you

2216

01:31:05,750 --> 01:31:04,880

kate thank you marie it's great to be

2217

01:31:07,910 --> 01:31:05,760

here

2218

01:31:10,629 --> 01:31:07,920

so as you can see the crew has already

2219

01:31:15,189 --> 01:31:10,639

arrived at pad 39a where falcon 9 will

2220

01:31:18,390 --> 01:31:15,199

lift off at 5 49 a.m eastern time

2221

01:31:21,270 --> 01:31:18,400

we can see that megan and shane are in

2222

01:31:24,229 --> 01:31:21,280

the white room here undergoing final

2223

01:31:27,430 --> 01:31:24,239

checkouts and uh just comfort checks

2224

01:31:29,750 --> 01:31:27,440

with the suit and closeout team uh one

2225

01:31:32,070 --> 01:31:29,760

thing that we'll see them do momentarily

2226

01:31:34,149 --> 01:31:32,080

is the closeout lead there on the right

2227

01:31:36,470 --> 01:31:34,159

hand side with the tablet will provide

2228

01:31:38,550 --> 01:31:36,480

them with a black sharpie and they're

2229

01:31:41,430 --> 01:31:38,560

going to actually

2230

01:31:44,149 --> 01:31:41,440

add their signature to the wall to their

2231

01:31:45,750 --> 01:31:44,159

right of this white room uh we named it

2232

01:31:49,110 --> 01:31:45,760

the white room to

2233

01:31:50,870 --> 01:31:49,120

keep again in space tradition um

2234

01:31:52,550 --> 01:31:50,880

from you know previous human space

2235

01:31:54,470 --> 01:31:52,560

flight programs but uh something

2236

01:31:56,149 --> 01:31:54,480

different this time where we're actually

2237

01:31:58,470 --> 01:31:56,159

having all the astronauts that fly on

2238

01:32:00,229 --> 01:31:58,480

crew dragons signed their names and

2239

01:32:02,870 --> 01:32:00,239

there's a shot um

2240

01:32:05,350 --> 01:32:02,880

inside the crew tower it looks like

2241

01:32:07,830 --> 01:32:05,360

where aki and tomah are now using the

2242

01:32:08,950 --> 01:32:07,840

telephone to for a final goodbye now

2243

01:32:10,149 --> 01:32:08,960

tracy do you want to talk a little bit

2244

01:32:12,390 --> 01:32:10,159

about the significance of that

2245

01:32:15,430 --> 01:32:12,400

particular telephone

2246

01:32:17,030 --> 01:32:15,440

uh well i i think um it's a great way to

2247

01:32:18,709 --> 01:32:17,040

surprise your family and friends on

2248

01:32:21,270 --> 01:32:18,719

launch day

2249

01:32:23,750 --> 01:32:21,280

i know that my uh my parents were not

2250

01:32:25,510 --> 01:32:23,760

expecting it and um and it was probably

2251  
01:32:32,709 --> 01:32:25,520  
one of one of the more emotional moments

2252  
01:32:35,990 --> 01:32:34,790  
and in a moment uh

2253  
01:32:38,149 --> 01:32:36,000  
we will see

2254  
01:32:41,030 --> 01:32:38,159  
commander shane kimbrough

2255  
01:32:43,270 --> 01:32:41,040  
here he is climbing inside

2256  
01:32:49,830 --> 01:32:43,280  
crew dragon endeavor we call this

2257  
01:32:49,840 --> 01:32:56,470  
and pilot megan macarthur following

2258  
01:32:59,750 --> 01:32:57,990  
so we can see the closeout team

2259  
01:33:02,629 --> 01:32:59,760  
assisting the crew crew address has

2260  
01:33:03,910 --> 01:33:02,639  
started on schedule

2261  
01:33:06,070 --> 01:33:03,920  
announcement there that we are on

2262  
01:33:07,350 --> 01:33:06,080  
schedule with our activity here of crew

2263  
01:33:09,110 --> 01:33:07,360

ingress

2264

01:33:11,750 --> 01:33:09,120

like i was saying the you can see the

2265

01:33:14,870 --> 01:33:11,760

closeout team assisting the crew as they

2266

01:33:17,270 --> 01:33:14,880

enter the capsule to assure that they

2267

01:33:18,550 --> 01:33:17,280

don't ding their helmet or any part of

2268

01:33:20,149 --> 01:33:18,560

their suit

2269

01:33:22,709 --> 01:33:20,159

on the hatch as they're entering there's

2270

01:33:24,470 --> 01:33:22,719

also some protective coverings around

2271

01:33:25,750 --> 01:33:24,480

the hatch itself but just to make sure

2272

01:33:28,149 --> 01:33:25,760

that there's

2273

01:33:31,189 --> 01:33:28,159

a clear at path to entry

2274

01:33:33,750 --> 01:33:31,199

we see we now see suit technicians um

2275

01:33:35,750 --> 01:33:33,760

assisting the crew getting settled and

2276

01:33:36,870 --> 01:33:35,760

uh will help the crew members get

2277

01:33:37,670 --> 01:33:36,880

buckled in

2278

01:33:39,189 --> 01:33:37,680

uh the

2279

01:33:41,270 --> 01:33:39,199

[Music]

2280

01:33:43,750 --> 01:33:41,280

the the harness that we see coming into

2281

01:33:46,070 --> 01:33:43,760

the picture here is uh not just your

2282

01:33:48,310 --> 01:33:46,080

normal seat belts although it does

2283

01:33:52,070 --> 01:33:48,320

function in that purpose it's a it's a

2284

01:33:54,870 --> 01:33:52,080

five port a five point harness and uh

2285

01:33:56,149 --> 01:33:54,880

the crew will start to buckle themselves

2286

01:33:58,229 --> 01:33:56,159

and kind of like when you get on a

2287

01:34:00,950 --> 01:33:58,239

roller coaster like you you get your

2288

01:34:02,310 --> 01:34:00,960

initial fit up and then your safety team

2289

01:34:06,310 --> 01:34:02,320

member comes over and make sure that

2290

01:34:10,070 --> 01:34:07,910

this is a great shot because we can

2291

01:34:13,510 --> 01:34:10,080

actually see the the touch screen the

2292

01:34:15,030 --> 01:34:13,520

lcd display screens above the crew it

2293

01:34:16,550 --> 01:34:15,040

they might look in an awkward position

2294

01:34:17,910 --> 01:34:16,560

right now that's just because the seats

2295

01:34:20,950 --> 01:34:17,920

are actually in a

2296

01:34:23,110 --> 01:34:20,960

rotated downward for crew ingress

2297

01:34:25,590 --> 01:34:23,120

after everyone is in bu is all buckled

2298

01:34:27,110 --> 01:34:25,600

in and the communications and leak

2299

01:34:29,270 --> 01:34:27,120

checks have been performed the seats

2300

01:34:32,149 --> 01:34:29,280

will rotate back so that the crew has

2301  
01:34:34,470 --> 01:34:32,159  
easier access to those display screens

2302  
01:34:37,350 --> 01:34:34,480  
but in addition to those display screens

2303  
01:34:39,430 --> 01:34:37,360  
they also have a tablet uh either on

2304  
01:34:41,350 --> 01:34:39,440  
their side you might see some of the

2305  
01:34:44,310 --> 01:34:41,360  
crew members have it velcroed on their

2306  
01:34:46,390 --> 01:34:44,320  
on one of their legs and they're also

2307  
01:34:49,750 --> 01:34:46,400  
able to follow along with what's going

2308  
01:34:51,990 --> 01:34:49,760  
on in the action using those tablets

2309  
01:34:53,669 --> 01:34:52,000  
and again we see uh commander shane

2310  
01:34:56,229 --> 01:34:53,679  
kimbrough in the foreground of your

2311  
01:34:58,229 --> 01:34:56,239  
screen this is a shot uh from inside the

2312  
01:35:00,470 --> 01:34:58,239  
crew dragon endeavor pilot megan

2313  
01:35:03,109 --> 01:35:00,480

macarthur sitting to his right and

2314

01:35:05,270 --> 01:35:03,119

momentarily we will see isa astronaut

2315

01:35:08,629 --> 01:35:05,280

tomah pesquet who's on the phone right

2316

01:35:11,510 --> 01:35:08,639

now and jaxa astronaut aki hoshide in

2317

01:35:13,270 --> 01:35:11,520

the background ingressing dragon and so

2318

01:35:15,350 --> 01:35:13,280

we're going to go over to hawthorne

2319

01:35:17,270 --> 01:35:15,360

california for our nasa and spacex

2320

01:35:23,669 --> 01:35:17,280

friends there to take us through the

2321

01:35:27,669 --> 01:35:26,149

hey marie great to be with you here from

2322

01:35:30,070 --> 01:35:27,679

spacex headquarters in hawthorne

2323

01:35:31,590 --> 01:35:30,080

california we're following along on all

2324

01:35:33,910 --> 01:35:31,600

the action going on over at the cape

2325

01:35:35,910 --> 01:35:33,920

from here in california the spacex

2326

01:35:38,149 --> 01:35:35,920

flight control team monitoring uh the

2327

01:35:39,510 --> 01:35:38,159

progress as the crew is ingress again

2328

01:35:41,990 --> 01:35:39,520

we're right now we're watching crew

2329

01:35:43,669 --> 01:35:42,000

ingressing the jab the dragon capsule

2330

01:35:45,510 --> 01:35:43,679

which is just a space flight term for

2331

01:35:47,109 --> 01:35:45,520

climbing aboard you'll hear a lot of

2332

01:35:49,270 --> 01:35:47,119

these space terms in the coming hours

2333

01:35:51,270 --> 01:35:49,280

and days ingress is just what we use

2334

01:35:53,430 --> 01:35:51,280

when crew members are getting into a

2335

01:35:55,270 --> 01:35:53,440

spacecraft or an airlock while egress

2336

01:35:56,950 --> 01:35:55,280

means the opposite they're exiting

2337

01:35:58,709 --> 01:35:56,960

before climbing into the capsule today

2338

01:36:00,790 --> 01:35:58,719

the crew completed a foreign object

2339

01:36:02,709 --> 01:36:00,800

debris check or fod check that means

2340

01:36:04,310 --> 01:36:02,719

they themselves have to be inspected for

2341

01:36:06,390 --> 01:36:04,320

any substance or debris that isn't

2342

01:36:07,990 --> 01:36:06,400

supposed to be on them or their suits

2343

01:36:10,470 --> 01:36:08,000

which could potentially cause damage to

2344

01:36:12,470 --> 01:36:10,480

dragon in fact we also heard an informal

2345

01:36:13,910 --> 01:36:12,480

comm check we heard the voices of shane

2346

01:36:16,149 --> 01:36:13,920

kimbrough and megan macarthur in the

2347

01:36:18,390 --> 01:36:16,159

seats right now they'll do a more formal

2348

01:36:19,990 --> 01:36:18,400

poll as we get later into the ingress

2349

01:36:22,629 --> 01:36:20,000

procedures

2350

01:36:23,510 --> 01:36:22,639

and we got some really cool views of

2351  
01:36:25,830 --> 01:36:23,520  
these

2352  
01:36:28,709 --> 01:36:25,840  
second two astronauts walking through

2353  
01:36:31,030 --> 01:36:28,719  
the crew arm making their way to the

2354  
01:36:33,350 --> 01:36:31,040  
dragon capsule

2355  
01:36:35,350 --> 01:36:33,360  
and to protect to help protect against

2356  
01:36:37,590 --> 01:36:35,360  
debris the crew has covers on their

2357  
01:36:39,750 --> 01:36:37,600  
boots as well as on their umbilical port

2358  
01:36:41,910 --> 01:36:39,760  
on their suits that need to be removed

2359  
01:36:44,310 --> 01:36:41,920  
before they can ingress once the fod

2360  
01:36:45,990 --> 01:36:44,320  
check was complete for the first two

2361  
01:36:48,149 --> 01:36:46,000  
astronauts

2362  
01:36:50,470 --> 01:36:48,159  
commander shane kimbrough ingressed

2363  
01:36:53,590 --> 01:36:50,480

first followed by megan and then next up

2364

01:36:55,350 --> 01:36:53,600

we will have aki and tomah who just made

2365

01:36:58,790 --> 01:36:55,360

it to the white room that you can see on

2366

01:37:03,270 --> 01:37:01,430

and megan and

2367

01:37:05,830 --> 01:37:03,280

commander shane

2368

01:37:08,149 --> 01:37:05,840

kimbrough are now strapped in they're

2369

01:37:10,310 --> 01:37:08,159

getting uh all

2370

01:37:12,229 --> 01:37:10,320

hooked up to their umbilicals and the

2371

01:37:14,310 --> 01:37:12,239

umbilicals allow the crew to have their

2372

01:37:16,390 --> 01:37:14,320

comms through their suit air to help

2373

01:37:18,709 --> 01:37:16,400

keep them cool as well as delivers

2374

01:37:20,229 --> 01:37:18,719

nitrox for suit pressurization as we

2375

01:37:22,390 --> 01:37:20,239

mentioned earlier in the broadcast the

2376

01:37:23,990 --> 01:37:22,400

soup's primary function is to protect

2377

01:37:26,149 --> 01:37:24,000

the crew in the event of a cabin

2378

01:37:27,750 --> 01:37:26,159

depressurization

2379

01:37:29,430 --> 01:37:27,760

now there are four seats configured

2380

01:37:31,189 --> 01:37:29,440

right now inside dragon they're numbered

2381

01:37:33,350 --> 01:37:31,199

one to four from right to left when

2382

01:37:35,510 --> 01:37:33,360

you're looking at the seats you can see

2383

01:37:37,910 --> 01:37:35,520

shane kimbrough now positioned in seat

2384

01:37:40,390 --> 01:37:37,920

two or the commander seat megan mcarthur

2385

01:37:42,870 --> 01:37:40,400

uh beside him now in seat three which

2386

01:37:45,510 --> 01:37:42,880

for crew dragon is the pilot seat aki

2387

01:37:47,669 --> 01:37:45,520

hoshide will take the seat number one

2388

01:37:50,149 --> 01:37:47,679

which is on the far right of your screen

2389

01:37:52,070 --> 01:37:50,159

and it's the left seat tomato will be in

2390

01:37:53,910 --> 01:37:52,080

seat four the left of your screen that's

2391

01:37:55,990 --> 01:37:53,920

called the right seat now it's worth

2392

01:37:57,590 --> 01:37:56,000

noting that megan is sitting in the same

2393

01:37:59,189 --> 01:37:57,600

seat in the same capsule that her

2394

01:38:00,629 --> 01:37:59,199

husband bob banking sat in during the

2395

01:38:03,350 --> 01:38:00,639

demo two test flight to the space

2396

01:38:05,109 --> 01:38:03,360

station last year

2397

01:38:06,950 --> 01:38:05,119

directly in front of the crew members

2398

01:38:08,550 --> 01:38:06,960

you can see sort of to the top of the

2399

01:38:09,990 --> 01:38:08,560

panel that's on the right there there

2400

01:38:11,510 --> 01:38:10,000

are three displays that they'll use

2401

01:38:13,830 --> 01:38:11,520

throughout the flight getting insight

2402

01:38:15,990 --> 01:38:13,840

into dragon systems seeing any alerts or

2403

01:38:17,590 --> 01:38:16,000

issues with the vehicle and if required

2404

01:38:19,830 --> 01:38:17,600

taking control and manually flying

2405

01:38:22,390 --> 01:38:19,840

dragon

2406

01:38:23,189 --> 01:38:22,400

coming up the crew we'll do a calm check

2407

01:38:29,109 --> 01:38:23,199

and

2408

01:38:31,990 --> 01:38:29,119

an unofficial um or informal comm check

2409

01:38:34,310 --> 01:38:32,000

but there will be a formal com check

2410

01:38:36,070 --> 01:38:34,320

once all four astronauts are in their

2411

01:38:37,830 --> 01:38:36,080

seats

2412

01:38:39,990 --> 01:38:37,840

that is to make sure that they can hear

2413

01:38:44,470 --> 01:38:40,000

mission control

2414

01:38:46,310 --> 01:38:44,480

then their seats will be rotated into

2415

01:38:49,109 --> 01:38:46,320

position for launch once those comm

2416

01:38:51,750 --> 01:38:49,119

checks are complete

2417

01:38:52,870 --> 01:38:51,760

so what you're seeing right now

2418

01:39:00,470 --> 01:38:52,880

is

2419

01:39:05,030 --> 01:39:01,990

on the far end it looks to be tomah

2420

01:39:07,270 --> 01:39:05,040

tomas the right seat the left uh from if

2421

01:39:10,470 --> 01:39:07,280

you're looking directly through the side

2422

01:39:12,310 --> 01:39:10,480

hatch uh but it is it is the right seat

2423

01:39:13,830 --> 01:39:12,320

he and aki both have the same role as

2424

01:39:15,270 --> 01:39:13,840

mission specialists

2425

01:39:16,870 --> 01:39:15,280

they're just far enough away where they

2426

01:39:19,270 --> 01:39:16,880

don't necessarily have access to that

2427

01:39:21,030 --> 01:39:19,280

display panel uh that kimbrough and

2428

01:39:23,270 --> 01:39:21,040

macarthur will use as soon as the scenes

2429

01:39:28,709 --> 01:39:23,280

rotate motion species too from the

2430

01:39:32,790 --> 01:39:30,390

got you loud and clear

2431

01:39:35,109 --> 01:39:32,800

help me

2432

01:39:39,669 --> 01:39:35,119

i got you loud and clear chad thanks a

2433

01:39:43,030 --> 01:39:41,590

i here how fast that happens jesse as

2434

01:39:44,629 --> 01:39:43,040

soon as they get into the seat they do

2435

01:39:46,709 --> 01:39:44,639

have those biblical umbilicals that they

2436

01:39:48,629 --> 01:39:46,719

were carrying that was providing air uh

2437

01:39:51,669 --> 01:39:48,639

some condition there uh to to their

2438

01:39:53,510 --> 01:39:51,679

suits uh and as uh was able to uh

2439

01:39:56,470 --> 01:39:53,520

pressurize it while when they were in

2440

01:39:58,870 --> 01:39:56,480

the onc building uh those suits will

2441

01:40:00,390 --> 01:39:58,880

provide pressure to um to the suits when

2442

01:40:02,149 --> 01:40:00,400

uh when that comes

2443

01:40:04,390 --> 01:40:02,159

uh later in the countdown first is the

2444

01:40:06,550 --> 01:40:04,400

comm check so yeah tomorrow plug that in

2445

01:40:08,390 --> 01:40:06,560

and that's that informal comm check

2446

01:40:09,189 --> 01:40:08,400

they're gonna do a formal poll with all

2447

01:40:13,109 --> 01:40:09,199

the

2448

01:40:15,430 --> 01:40:13,119

mission control teams here in hawthorne

2449

01:40:20,390 --> 01:40:15,440

california aki hoshide entering through

2450

01:40:24,709 --> 01:40:22,790

yeah definitely very exciting gary this

2451  
01:40:27,109 --> 01:40:24,719  
is one of my favorite parts is watching

2452  
01:40:28,470 --> 01:40:27,119  
them ingress onto the vehicle

2453  
01:40:29,910 --> 01:40:28,480  
it's really getting real you know we

2454  
01:40:32,709 --> 01:40:29,920  
have been watching them since the suit

2455  
01:40:35,350 --> 01:40:32,719  
up room but now they are officially on

2456  
01:40:36,790 --> 01:40:35,360  
the vehicle getting strapped in getting

2457  
01:40:43,189 --> 01:40:36,800  
ready for this

2458  
01:40:43,199 --> 01:40:47,189  
welcome to dragon

2459  
01:40:52,790 --> 01:40:50,310  
good to be here

2460  
01:40:54,950 --> 01:40:52,800  
very cool we just heard aki's

2461  
01:40:57,030 --> 01:40:54,960  
informal comm check

2462  
01:41:00,229 --> 01:40:57,040  
again once they are all strapped in all

2463  
01:41:02,310 --> 01:41:00,239

their umbilicals are hooked up uh their

2464

01:41:04,709 --> 01:41:02,320

harnesses on then they will do an

2465

01:41:07,830 --> 01:41:04,719

official comm check

2466

01:41:10,229 --> 01:41:07,840

will

2467

01:41:12,310 --> 01:41:10,239

be the seat rotation and you can kind of

2468

01:41:13,910 --> 01:41:12,320

see on your right hand screen the seats

2469

01:41:16,550 --> 01:41:13,920

are

2470

01:41:18,629 --> 01:41:16,560

rotated upright right now

2471

01:41:20,790 --> 01:41:18,639

but when uh they're getting ready for

2472

01:41:23,109 --> 01:41:20,800

launch they will rotate

2473

01:41:24,709 --> 01:41:23,119

upwards uh looking at your screen so

2474

01:41:29,350 --> 01:41:24,719

that they can access those display

2475

01:41:32,709 --> 01:41:30,950

that's right accessing those display

2476

01:41:35,030 --> 01:41:32,719

panels would be key in fact some of the

2477

01:41:37,510 --> 01:41:35,040

previous missions that we've watched uh

2478

01:41:40,149 --> 01:41:37,520

demo two as well as crew one

2479

01:41:41,750 --> 01:41:40,159

it was seconds before i think the suit

2480

01:41:43,510 --> 01:41:41,760

the seat rotation was still actually

2481

01:41:44,709 --> 01:41:43,520

rotating and the commander and pilot

2482

01:41:46,390 --> 01:41:44,719

pulled up their fingers and started

2483

01:41:47,669 --> 01:41:46,400

pressing they have a lot of procedures

2484

01:41:50,390 --> 01:41:47,679

that they got to get through make sure

2485

01:41:52,470 --> 01:41:50,400

that they're yes you can see already

2486

01:41:54,709 --> 01:41:52,480

already already accessing the panel

2487

01:41:56,070 --> 01:41:54,719

um yeah those checklists are some of the

2488

01:41:57,750 --> 01:41:56,080

things from the crew side that they'll

2489

01:41:59,430 --> 01:41:57,760

have to do again some of those key

2490

01:42:01,350 --> 01:41:59,440

visual milestones well first of the

2491

01:42:02,950 --> 01:42:01,360

audio milestones we'll do the formal

2492

01:42:04,550 --> 01:42:02,960

communications check with all the ground

2493

01:42:06,229 --> 01:42:04,560

teams making sure everyone can check in

2494

01:42:08,790 --> 01:42:06,239

through the various communication

2495

01:42:09,669 --> 01:42:08,800

pathways that we have on dragon there's

2496

01:42:11,350 --> 01:42:09,679

uh

2497

01:42:13,189 --> 01:42:11,360

some communication lines through the

2498

01:42:15,669 --> 01:42:13,199

ground we also have communication

2499

01:42:17,189 --> 01:42:15,679

through ground stations as well as tdrs

2500

01:42:19,030 --> 01:42:17,199

geosynchronous satellites so they'll

2501

01:42:21,109 --> 01:42:19,040

test all of these different pathways

2502

01:42:23,270 --> 01:42:21,119

making sure that the crew can hear and

2503

01:42:24,790 --> 01:42:23,280

all systems are go before they begin

2504

01:42:26,229 --> 01:42:24,800

those next couple of milestones jesse

2505

01:42:28,470 --> 01:42:26,239

you mentioned the seat rotation that's a

2506

01:42:31,350 --> 01:42:28,480

very visual milestone as well as the

2507

01:42:32,470 --> 01:42:31,360

leak checks we saw that again in the onc

2508

01:42:34,070 --> 01:42:32,480

building

2509

01:42:37,750 --> 01:42:34,080

uh not too long ago but they'll do

2510

01:42:39,590 --> 01:42:37,760

another one here before they uh the

2511

01:42:40,470 --> 01:42:39,600

advanced teams that are there now that

2512

01:42:42,790 --> 01:42:40,480

are

2513

01:42:44,629 --> 01:42:42,800

currently preparing the crew in their

2514

01:42:46,390 --> 01:42:44,639

seats before they go ahead and depart

2515

01:42:50,310 --> 01:42:46,400

the access arm and leave the blast

2516

01:42:55,109 --> 01:42:52,390

and as you mentioned uh they did perform

2517

01:42:57,189 --> 01:42:55,119

those those suit leak checks uh while in

2518

01:42:59,270 --> 01:42:57,199

the suit up room at the onc building but

2519

01:43:00,950 --> 01:42:59,280

they'll do that again right before

2520

01:43:02,709 --> 01:43:00,960

liftoff and that's because you know

2521

01:43:04,629 --> 01:43:02,719

they're strapped into a whole new system

2522

01:43:07,109 --> 01:43:04,639

now they're strapped into

2523

01:43:09,270 --> 01:43:07,119

the dragon system officially

2524

01:43:15,510 --> 01:43:09,280

so we want to make sure that their

2525

01:43:19,189 --> 01:43:17,910

again we have all four astronauts on

2526  
01:43:21,669 --> 01:43:19,199  
crew 2

2527  
01:43:23,270 --> 01:43:21,679  
sitting in each of their seats these are

2528  
01:43:25,910 --> 01:43:23,280  
custom seats

2529  
01:43:27,910 --> 01:43:25,920  
with their custom suits for each uh

2530  
01:43:29,990 --> 01:43:27,920  
astronaut

2531  
01:43:32,310 --> 01:43:30,000  
and it's almost like its own entire

2532  
01:43:33,510 --> 01:43:32,320  
system it's almost like they are inside

2533  
01:43:34,950 --> 01:43:33,520  
of a

2534  
01:43:37,510 --> 01:43:34,960  
uh

2535  
01:43:38,470 --> 01:43:37,520  
a vehicle inside of a vehicle a

2536  
01:43:40,229 --> 01:43:38,480  
within the spacecraft

2537  
01:43:41,350 --> 01:43:40,239  
that's exactly right that suit will hold

2538  
01:43:43,750 --> 01:43:41,360

pressure

2539

01:43:45,830 --> 01:43:43,760

just in case there is any breach and

2540

01:43:47,910 --> 01:43:45,840

that causes atmospheric pressure to

2541

01:43:49,750 --> 01:43:47,920

decrease they do have that redundancy

2542

01:43:51,350 --> 01:43:49,760

with the suit itself providing pressure

2543

01:43:53,430 --> 01:43:51,360

and holding throughout some of the more

2544

01:43:55,750 --> 01:43:53,440

dynamic phases of flight that includes

2545

01:43:57,990 --> 01:43:55,760

ascent this is very important until they

2546

01:44:00,229 --> 01:43:58,000

reach an orbital insertion it's not too

2547

01:44:03,189 --> 01:44:00,239

long after they get into a healthy orbit

2548

01:44:05,189 --> 01:44:03,199

you got checkouts of the draco

2549

01:44:06,629 --> 01:44:05,199

engines that will provide the navigation

2550

01:44:08,070 --> 01:44:06,639

and some of the thrust needed to make

2551  
01:44:10,070 --> 01:44:08,080  
its way to the international space

2552  
01:44:12,229 --> 01:44:10,080  
station but it's really not too long

2553  
01:44:13,350 --> 01:44:12,239  
until they start doffing or taking off

2554  
01:44:15,270 --> 01:44:13,360  
their suits

2555  
01:44:16,870 --> 01:44:15,280  
and getting into a position to get some

2556  
01:44:18,390 --> 01:44:16,880  
shut eye actually they get a long flight

2557  
01:44:20,790 --> 01:44:18,400  
ahead of them

2558  
01:44:21,830 --> 01:44:20,800  
yeah it's about a 23 and a half hour

2559  
01:44:27,669 --> 01:44:21,840  
flight

2560  
01:44:31,270 --> 01:44:29,750  
you can see the suit techs are there

2561  
01:44:32,950 --> 01:44:31,280  
helping

2562  
01:44:35,430 --> 01:44:32,960  
all four astronauts

2563  
01:44:37,189 --> 01:44:35,440

get strapped in preparing them for these

2564

01:44:39,910 --> 01:44:37,199

suit week checks and comm checks coming

2565

01:44:41,270 --> 01:44:39,920

up here shortly

2566

01:44:43,669 --> 01:44:41,280

and

2567

01:44:45,109 --> 01:44:43,679

you may have seen uh some of them

2568

01:44:46,790 --> 01:44:45,119

holding a tablet

2569

01:44:48,550 --> 01:44:46,800

that is so that they have access to

2570

01:44:49,990 --> 01:44:48,560

those procedures

2571

01:44:52,629 --> 01:44:50,000

each procedure

2572

01:44:55,350 --> 01:44:52,639

has very specific and intentional

2573

01:44:57,669 --> 01:44:55,360

steps that they need to follow

2574

01:44:59,750 --> 01:44:57,679

and the astronauts also have a tablet

2575

01:45:03,590 --> 01:44:59,760

themselves that they can follow along

2576

01:45:08,470 --> 01:45:06,229

all right two hours uh inside two hours

2577

01:45:09,750 --> 01:45:08,480

and 34 minutes from launch we're going

2578

01:45:11,990 --> 01:45:09,760

to stand by and wait for those

2579

01:45:13,910 --> 01:45:12,000

communication checks meanwhile let's

2580

01:45:16,149 --> 01:45:13,920

check in for an operational update with

2581

01:45:18,390 --> 01:45:16,159

john inspector for the latest health on

2582

01:45:20,390 --> 01:45:18,400

both vehicles john

2583

01:45:22,310 --> 01:45:20,400

as gary said just over two and a half

2584

01:45:24,149 --> 01:45:22,320

hours remaining in the countdown for the

2585

01:45:26,470 --> 01:45:24,159

launch of falcon 9 with dragon on the

2586

01:45:28,629 --> 01:45:26,480

crew 2 mission to the space station

2587

01:45:30,470 --> 01:45:28,639

the dragon launch ops team has completed

2588

01:45:32,629 --> 01:45:30,480

their major activities to prepare the

2589

01:45:34,149 --> 01:45:32,639

spacecraft for the astronauts

2590

01:45:36,550 --> 01:45:34,159

checkouts are complete of the major

2591

01:45:38,470 --> 01:45:36,560

systems including the escape system and

2592

01:45:40,390 --> 01:45:38,480

as you can see on your screens ingress

2593

01:45:42,229 --> 01:45:40,400

of the astronauts is well underway all

2594

01:45:45,350 --> 01:45:42,239

four crew members inside the dragon

2595

01:45:47,270 --> 01:45:45,360

capsule and there are no issues in work

2596

01:45:49,270 --> 01:45:47,280

we're also listening right now for the

2597

01:45:52,149 --> 01:45:49,280

dragon team comp checks with the crew

2598

01:45:54,229 --> 01:45:52,159

that'll be coming up momentarily

2599

01:45:56,149 --> 01:45:54,239

now the falcon 9 team is located in

2600

01:45:58,390 --> 01:45:56,159

firing room 4 in the launch control

2601  
01:46:00,629 --> 01:45:58,400  
center at kennedy space center they're

2602  
01:46:02,790 --> 01:46:00,639  
settling in for final checkouts and then

2603  
01:46:04,310 --> 01:46:02,800  
propellant loading and launch we've been

2604  
01:46:05,990 --> 01:46:04,320  
hearing some of the comp checks as the

2605  
01:46:08,550 --> 01:46:06,000  
engineers get on station here in the

2606  
01:46:10,709 --> 01:46:08,560  
last 15 20 minutes

2607  
01:46:12,470 --> 01:46:10,719  
now the falcon 9 team will also do com

2608  
01:46:14,629 --> 01:46:12,480  
checks with the crew that'll happen at

2609  
01:46:16,070 --> 01:46:14,639  
about t minus two hours or about 30

2610  
01:46:18,070 --> 01:46:16,080  
minutes from now

2611  
01:46:19,910 --> 01:46:18,080  
currently all systems are go on the

2612  
01:46:21,669 --> 01:46:19,920  
launch vehicle

2613  
01:46:23,830 --> 01:46:21,679

the range continues to report no

2614

01:46:25,910 --> 01:46:23,840

problems the weather forecast continues

2615

01:46:27,830 --> 01:46:25,920

to be acceptable we're looking at

2616

01:46:29,270 --> 01:46:27,840

weather not only at the launch site but

2617

01:46:30,790 --> 01:46:29,280

around the world

2618

01:46:32,870 --> 01:46:30,800

we need to make sure conditions are

2619

01:46:35,270 --> 01:46:32,880

acceptable if dragon has to splash down

2620

01:46:36,950 --> 01:46:35,280

in the atlantic in case of an escape

2621

01:46:38,950 --> 01:46:36,960

we're also monitoring contingency

2622

01:46:41,430 --> 01:46:38,960

splashdown locations if the crew had to

2623

01:46:43,030 --> 01:46:41,440

come back to earth before docking with

2624

01:46:44,950 --> 01:46:43,040

the space station

2625

01:46:46,950 --> 01:46:44,960

now if this were to happen spacex and

2626

01:46:49,270 --> 01:46:46,960

nasa are coordinating with the us coast

2627

01:46:52,149 --> 01:46:49,280

guard to ensure crew safety upon

2628

01:46:54,709 --> 01:46:52,159

splashdown that includes extra ships and

2629

01:46:56,950 --> 01:46:54,719

air assets to patrol the 10 nautical

2630

01:46:59,510 --> 01:46:56,960

mile keep out zone this will help

2631

01:47:01,750 --> 01:46:59,520

mitigate safety concerns for any boaters

2632

01:47:03,830 --> 01:47:01,760

who may approach the landing area

2633

01:47:07,109 --> 01:47:03,840

but right now as the clock continues to

2634

01:47:10,629 --> 01:47:07,119

count down all systems are go at t minus

2635

01:47:12,709 --> 01:47:10,639

2 hours 31 minutes and 32 seconds let's

2636

01:47:16,629 --> 01:47:12,719

head back over to jesse and gary who are

2637

01:47:20,310 --> 01:47:17,990

thanks john

2638

01:47:23,270 --> 01:47:20,320

in order to get to where we are today

2639

01:47:25,510 --> 01:47:23,280

our third human space flight it took

2640

01:47:27,590 --> 01:47:25,520

years of hard work the development of

2641

01:47:29,590 --> 01:47:27,600

crew dragon really started with cargo

2642

01:47:31,830 --> 01:47:29,600

dragon because dragon was designed from

2643

01:47:33,990 --> 01:47:31,840

the beginning for flying humans to space

2644

01:47:36,790 --> 01:47:34,000

so much so that even the first cargo

2645

01:47:38,470 --> 01:47:36,800

dragon had a window our teams

2646

01:47:40,149 --> 01:47:38,480

implemented a number of design upgrades

2647

01:47:41,910 --> 01:47:40,159

to make sure both dragon and falcon 9

2648

01:47:44,229 --> 01:47:41,920

are suitable for flying people and then

2649

01:47:46,149 --> 01:47:44,239

put both vehicles through thousands of

2650

01:47:48,070 --> 01:47:46,159

tests to prove their safety

2651  
01:47:50,070 --> 01:47:48,080  
at spacex we believe in a process of

2652  
01:47:51,910 --> 01:47:50,080  
continued iteration that allows us to

2653  
01:47:53,189 --> 01:47:51,920  
continuously improve the designs of all

2654  
01:47:55,510 --> 01:47:53,199  
of our hardware

2655  
01:47:57,430 --> 01:47:55,520  
now with that said dragon underwent a

2656  
01:47:58,310 --> 01:47:57,440  
few improvements since it last blew

2657  
01:48:00,310 --> 01:47:58,320  
people

2658  
01:48:02,070 --> 01:48:00,320  
that's right components have been added

2659  
01:48:04,470 --> 01:48:02,080  
to the dragon propulsion system that

2660  
01:48:06,629 --> 01:48:04,480  
increases pad abort performance by over

2661  
01:48:08,709 --> 01:48:06,639  
10 percent which increases launch

2662  
01:48:10,709 --> 01:48:08,719  
availability by more than doubling the

2663  
01:48:12,790 --> 01:48:10,719

onshore wind limits

2664

01:48:14,070 --> 01:48:12,800

a fly-around capability was also added

2665

01:48:15,990 --> 01:48:14,080

which will allow dragon to

2666

01:48:18,390 --> 01:48:16,000

circumnavigate around the international

2667

01:48:20,390 --> 01:48:18,400

space station post undocking in order to

2668

01:48:21,669 --> 01:48:20,400

take pictures and document the condition

2669

01:48:23,350 --> 01:48:21,679

of the station

2670

01:48:25,270 --> 01:48:23,360

as you might recall this was a maneuver

2671

01:48:26,629 --> 01:48:25,280

the shuttle used to perform but since

2672

01:48:28,310 --> 01:48:26,639

its retirement there hasn't been any

2673

01:48:30,149 --> 01:48:28,320

spacecraft that has been able to provide

2674

01:48:32,149 --> 01:48:30,159

detailed imagery around the space

2675

01:48:33,990 --> 01:48:32,159

station you could equate this to being

2676

01:48:35,430 --> 01:48:34,000

able to walk around your house and check

2677

01:48:37,030 --> 01:48:35,440

on it to make sure nothing is in need of

2678

01:48:38,950 --> 01:48:37,040

repair

2679

01:48:41,189 --> 01:48:38,960

we've also added and improved some

2680

01:48:43,189 --> 01:48:41,199

interior cargo stowage locations to make

2681

01:48:45,270 --> 01:48:43,199

it easier for the crew to access items

2682

01:48:47,910 --> 01:48:45,280

that they will need during free flight

2683

01:48:49,990 --> 01:48:47,920

and lastly the paint on the mud flaps

2684

01:48:52,390 --> 01:48:50,000

and super draco cartridges were changed

2685

01:48:54,070 --> 01:48:52,400

from silver to white while this may seem

2686

01:48:55,830 --> 01:48:54,080

like an aesthetic change it actually

2687

01:48:57,990 --> 01:48:55,840

results in a lower equilibrium

2688

01:48:59,750 --> 01:48:58,000

temperature on orbit for a given solar

2689

01:49:01,350 --> 01:48:59,760

input this has the advantage of

2690

01:49:03,270 --> 01:49:01,360

increasing return availability by

2691

01:49:05,669 --> 01:49:03,280

improving structural margins during

2692

01:49:07,430 --> 01:49:05,679

splashdown so a lot of preparation has

2693

01:49:08,870 --> 01:49:07,440

come into ensuring the safety of these

2694

01:49:11,030 --> 01:49:08,880

missions and we're really excited to see

2695

01:49:13,990 --> 01:49:11,040

crew 2 liftoff from the kennedy space

2696

01:49:16,310 --> 01:49:14,000

center later today still standing by for

2697

01:49:17,910 --> 01:49:16,320

those communication checks you can see

2698

01:49:26,149 --> 01:49:17,920

some of the suit technicians getting

2699

01:49:29,669 --> 01:49:27,990

they become quite pros at this jesse

2700

01:49:31,510 --> 01:49:29,679

just uh as soon as they got into the

2701  
01:49:33,510 --> 01:49:31,520  
seats you saw some of their gloves were

2702  
01:49:35,109 --> 01:49:33,520  
off those gloves specially designed and

2703  
01:49:37,350 --> 01:49:35,119  
form-fitted to each of the astronauts

2704  
01:49:38,709 --> 01:49:37,360  
the gloves are now in place

2705  
01:49:40,870 --> 01:49:38,719  
uh very shortly we'll be hearing the

2706  
01:49:42,390 --> 01:49:40,880  
communications checks uh some of the

2707  
01:49:44,629 --> 01:49:42,400  
other milestones that'll happen very

2708  
01:49:46,550 --> 01:49:44,639  
quickly uh as well will be the seat

2709  
01:49:47,990 --> 01:49:46,560  
rotation it'll be from this position

2710  
01:49:49,750 --> 01:49:48,000  
that allows the suit technicians to

2711  
01:49:51,990 --> 01:49:49,760  
access each of the astronauts and help

2712  
01:49:53,990 --> 01:49:52,000  
them get buckled strapped in uh and the

2713  
01:49:58,390 --> 01:49:54,000

umbilicals checked out uh and then of

2714

01:50:03,270 --> 01:50:00,790

and we've got a cool view looking from

2715

01:50:05,430 --> 01:50:03,280

outside of the dragon capsule in through

2716

01:50:07,420 --> 01:50:05,440

the hatchway

2717

01:50:08,470 --> 01:50:07,430

and some fist bumps there

2718

01:50:15,589 --> 01:50:08,480

[Laughter]

2719

01:50:19,350 --> 01:50:17,669

it's an exciting day for for everyone

2720

01:50:22,629 --> 01:50:19,360

really the anticipation i can't even

2721

01:50:25,189 --> 01:50:22,639

imagine you just you wanna i i just uh

2722

01:50:26,870 --> 01:50:25,199

just knowing seeing the pilots and the

2723

01:50:28,310 --> 01:50:26,880

commanders from previous missions

2724

01:50:29,750 --> 01:50:28,320

accessing the panel wanting to get

2725

01:50:31,270 --> 01:50:29,760

through their checklists

2726

01:50:33,030 --> 01:50:31,280

you know they're really soaking in this

2727

01:50:34,790 --> 01:50:33,040

moment but at the same time they are

2728

01:50:36,709 --> 01:50:34,800

thinking about those next steps what do

2729

01:50:38,790 --> 01:50:36,719

i have to do to prepare to make sure

2730

01:50:41,589 --> 01:50:38,800

we're ready to launch on time today

2731

01:50:44,229 --> 01:50:41,599

exactly they must be so excited but this

2732

01:50:45,350 --> 01:50:44,239

is their job at the moment right they're

2733

01:50:47,350 --> 01:50:45,360

actually

2734

01:50:51,589 --> 01:50:47,360

endeavor we're in section one decimal

2735

01:51:06,470 --> 01:50:53,510

spacex copies stand by for umbilical

2736

01:51:06,480 --> 01:51:12,229

cdr plt ms1 ms2 com check

2737

01:51:17,189 --> 01:51:14,870

cdr loud and clear

2738

01:51:22,950 --> 01:51:17,199

plc loud and clear

2739

01:51:26,629 --> 01:51:25,030

and core loud and clear umbilical comp

2740

01:52:15,270 --> 01:51:26,639

checks complete stand by for ground

2741

01:52:19,669 --> 01:52:16,950

if you're just now joining us they are

2742

01:52:22,310 --> 01:52:19,679

performing comm checks right now so that

2743

01:52:25,830 --> 01:52:22,320

is what we are waiting

2744

01:52:27,430 --> 01:52:25,840

for they've done a couple so far

2745

01:52:36,149 --> 01:52:27,440

there will be a few more call outs here

2746

01:52:36,159 --> 01:52:41,109

dragon spacex com check

2747

01:52:45,910 --> 01:52:44,149

endeavor has you loud and clear

2748

01:52:48,070 --> 01:52:45,920

and core loud and clear ground station

2749

01:53:25,109 --> 01:52:48,080

com check complete standby for tdrs com

2750

01:53:28,629 --> 01:53:26,550

an incredible view from one of the

2751  
01:53:30,629 --> 01:53:28,639  
handheld cameras of the suit technician

2752  
01:53:33,030 --> 01:53:30,639  
peering in through the side hatch the

2753  
01:53:34,470 --> 01:53:33,040  
side hatch will is open now and will

2754  
01:53:36,709 --> 01:53:34,480  
remain closed throughout the duration of

2755  
01:53:37,830 --> 01:53:36,719  
the mission until dragon splashes down

2756  
01:53:43,669 --> 01:53:37,840  
we're standing by for some of the

2757  
01:53:43,679 --> 01:53:47,270  
endeavor has you loud and clear

2758  
01:53:51,030 --> 01:53:49,109  
core loud and clear tutorscom check

2759  
01:53:58,870 --> 01:53:51,040  
complete standby for calm checks with md

2760  
01:53:58,880 --> 01:54:04,950  
dragon md on countdown 1 com check

2761  
01:54:10,310 --> 01:54:07,030  
amd have you loud and clear on countdown

2762  
01:54:17,350 --> 01:54:11,910  
md loud and clear standby for come check

2763  
01:54:17,360 --> 01:54:23,510

dragon md on dragon to ground come check

2764

01:54:27,109 --> 01:54:25,270

md loud loud and clear dragging the

2765

01:54:29,270 --> 01:54:27,119

ground

2766

01:54:31,430 --> 01:54:29,280

md loud and clear stand by for contracts

2767

01:54:36,709 --> 01:54:31,440

with ld

2768

01:54:39,589 --> 01:54:38,310

that would be loud and clear countdown

2769

01:54:41,510 --> 01:54:39,599

one

2770

01:54:44,709 --> 01:54:41,520

ld loud and clear stand by for a com

2771

01:54:50,229 --> 01:54:46,709

dragon ld on dragon the ground comp

2772

01:55:03,030 --> 01:54:53,430

lb loud and clear dragging the ground

2773

01:55:06,709 --> 01:55:04,950

and dragon spacex launch configuration

2774

01:55:08,870 --> 01:55:06,719

com checks complete report when ready

2775

01:55:17,690 --> 01:55:08,880

for seat rotation for section two of

2776

01:55:17,700 --> 01:55:23,350

[Music]

2777

01:55:27,030 --> 01:55:24,950

all right and you heard that call the

2778

01:55:29,270 --> 01:55:27,040

communications checks are complete from

2779

01:55:32,629 --> 01:55:29,280

all the various endeavors

2780

01:55:32,639 --> 01:55:36,950

copy will report when initiating

2781

01:55:40,950 --> 01:55:39,510

excellent the communications checks are

2782

01:55:42,629 --> 01:55:40,960

complete

2783

01:55:45,350 --> 01:55:42,639

the next step will be the visual

2784

01:55:46,790 --> 01:55:45,360

milestone of uh seat rotation so again

2785

01:55:48,629 --> 01:55:46,800

those communication checks were summoned

2786

01:55:51,589 --> 01:55:48,639

through some of the various paths of

2787

01:55:53,430 --> 01:55:51,599

communication to dragon including uh

2788

01:55:59,990 --> 01:55:53,440

through some of the ground lines as well

2789

01:56:00,000 --> 01:56:05,430

dragon spacex initiating seat rotation

2790

01:56:05,440 --> 01:56:13,270

copy

2791

01:56:18,310 --> 01:56:15,189

and you can see on your screen that seat

2792

01:56:20,550 --> 01:56:18,320

rotation has now begun

2793

01:56:23,589 --> 01:56:20,560

they are rotating from upright to the

2794

01:56:25,990 --> 01:56:23,599

recline launch position

2795

01:56:28,470 --> 01:56:26,000

and this will give shane kimbrough and

2796

01:56:32,790 --> 01:56:28,480

megan macarthur access to those display

2797

01:56:36,709 --> 01:56:35,030

it's very slow and steady but

2798

01:56:41,030 --> 01:56:36,719

this is a pretty cool view that we have

2799

01:56:44,870 --> 01:56:42,470

you can see how much

2800

01:56:50,870 --> 01:56:44,880

cargo space we have under those seats as

2801  
01:56:56,149 --> 01:56:52,629  
dragon spacex seats are in the launch

2802  
01:56:56,159 --> 01:57:03,030  
copy great news

2803  
01:57:03,040 --> 01:57:09,350  
and that seat rotation is now complete

2804  
01:57:13,990 --> 01:57:11,669  
you can already see them uh getting

2805  
01:57:16,629 --> 01:57:14,000  
their hands on that touch screen dragon

2806  
01:57:20,950 --> 01:57:16,639  
spacex you are go for section three suit

2807  
01:57:20,960 --> 01:57:29,109  
copy go for section three

2808  
01:57:32,709 --> 01:57:30,950  
these milestones really happening in

2809  
01:57:34,229 --> 01:57:32,719  
rapid succession

2810  
01:57:35,589 --> 01:57:34,239  
as you mentioned jesse it wasn't really

2811  
01:57:36,790 --> 01:57:35,599  
too long until they reached up and

2812  
01:57:38,629 --> 01:57:36,800  
started touching through some of those

2813  
01:57:40,390 --> 01:57:38,639

procedures that first one of course is

2814

01:57:41,990 --> 01:57:40,400

the suit leak checks

2815

01:57:43,510 --> 01:57:42,000

communications checks complete from all

2816

01:57:46,310 --> 01:57:43,520

the various communication paths and

2817

01:57:48,709 --> 01:57:46,320

seats are rotated into the position for

2818

01:57:51,030 --> 01:57:48,719

launch those seats specially designed

2819

01:57:52,790 --> 01:57:51,040

for each astronaut

2820

01:57:54,950 --> 01:57:52,800

not only it allows them to access that

2821

01:57:59,270 --> 01:57:54,960

display cover complete ready for loop

2822

01:58:06,310 --> 01:58:01,669

copy endeavor we see the same your go

2823

01:58:06,320 --> 01:58:17,350

section foreign work

2824

01:58:20,550 --> 01:58:19,189

and they've now begun those suit leak

2825

01:58:23,430 --> 01:58:20,560

checks

2826

01:58:25,270 --> 01:58:23,440

so to catch up on the station side let's

2827

01:58:32,149 --> 01:58:25,280

check in with courtney at johnson space

2828

01:58:36,070 --> 01:58:34,310

thanks jesse as we said earlier the team

2829

01:58:38,149 --> 01:58:36,080

here in mission control houston is

2830

01:58:40,470 --> 01:58:38,159

actively controlling and monitoring the

2831

01:58:43,270 --> 01:58:40,480

space station as they await dragon's

2832

01:58:45,270 --> 01:58:43,280

arrival the expedition 65 crew is in the

2833

01:58:47,669 --> 01:58:45,280

early part of their day after waking up

2834

01:58:49,669 --> 01:58:47,679

at 1 am central time the crew on board

2835

01:58:52,709 --> 01:58:49,679

have completed a number of tasks to

2836

01:58:54,550 --> 01:58:52,719

prepare the station for crew 2's arrival

2837

01:58:56,149 --> 01:58:54,560

nasa's victor glover received some

2838

01:58:57,990 --> 01:58:56,159

additional onboard training for

2839

01:58:59,510 --> 01:58:58,000

monitoring dragon during its final

2840

01:59:01,510 --> 01:58:59,520

approach which he'll do from the

2841

01:59:03,830 --> 01:59:01,520

station's cupola in addition he will set

2842

01:59:05,910 --> 01:59:03,840

up computers and control panels needed

2843

01:59:08,390 --> 01:59:05,920

for approach monitoring and hatch

2844

01:59:10,629 --> 01:59:08,400

operations and pre-position emergency

2845

01:59:13,109 --> 01:59:10,639

equipment he will also work with suichi

2846

01:59:14,870 --> 01:59:13,119

naguchi to get the extra station crew

2847

01:59:17,270 --> 01:59:14,880

quarters ready for the new residence

2848

01:59:19,350 --> 01:59:17,280

back here in houston our rotating flight

2849

01:59:21,350 --> 01:59:19,360

directors and their teams will be in

2850

01:59:23,350 --> 01:59:21,360

constant communication with the spacex

2851  
01:59:25,750 --> 01:59:23,360  
mission director for the duration of the

2852  
01:59:27,830 --> 01:59:25,760  
flight uphill once we get integrated

2853  
01:59:30,870 --> 01:59:27,840  
operations the nasa flight director will

2854  
01:59:32,550 --> 01:59:30,880  
be conducting a series of go no-go polls

2855  
01:59:34,790 --> 01:59:32,560  
at the predetermined checkpoints for

2856  
01:59:36,470 --> 01:59:34,800  
dragon's approach for now we'll continue

2857  
01:59:38,149 --> 01:59:36,480  
to follow along from here in mission

2858  
01:59:40,629 --> 01:59:38,159  
control houston so i'll send it back to

2859  
01:59:42,310 --> 01:59:40,639  
the team at kennedy over to you marie

2860  
01:59:44,950 --> 01:59:42,320  
all right thank you courtney if you're

2861  
01:59:47,510 --> 01:59:44,960  
just joining us it is t minus two hours

2862  
01:59:49,910 --> 01:59:47,520  
18 minutes and counting until the first

2863  
01:59:52,310 --> 01:59:49,920

astronaut launch of the year from u.s

2864

01:59:55,430 --> 01:59:52,320

soil and the third crew launch for

2865

01:59:57,750 --> 01:59:55,440

spacex in nasa's commercial crew program

2866

02:00:00,149 --> 01:59:57,760

commander shane kimbrough pilot megan

2867

02:00:03,109 --> 02:00:00,159

macarthur and mission specialists thomas

2868

02:00:06,390 --> 02:00:03,119

pesquet and aki hoshide are strapped

2869

02:00:09,189 --> 02:00:06,400

into their seats rotated back and safely

2870

02:00:11,350 --> 02:00:09,199

inside crew dragon endeavor the next

2871

02:00:13,669 --> 02:00:11,360

milestones coming up are actually we

2872

02:00:15,910 --> 02:00:13,679

just completed seat rotation and uh

2873

02:00:17,350 --> 02:00:15,920

we're gonna have hatch closing coming up

2874

02:00:19,510 --> 02:00:17,360

shortly

2875

02:00:21,589 --> 02:00:19,520

this will be the first reuse of crew

2876

02:00:23,510 --> 02:00:21,599

dragon this is the same capsule that

2877

02:00:25,669 --> 02:00:23,520

flew bob banken and doug hurley in

2878

02:00:28,310 --> 02:00:25,679

spacex test flight to the space station

2879

02:00:30,470 --> 02:00:28,320

last year the crew today is also flying

2880

02:00:32,310 --> 02:00:30,480

on the same falcon 9 rocket booster that

2881

02:00:34,229 --> 02:00:32,320

lifted the crew one astronauts into

2882

02:00:36,709 --> 02:00:34,239

orbit last fall

2883

02:00:39,669 --> 02:00:36,719

and we are also ready to see the first

2884

02:00:42,229 --> 02:00:39,679

european astronaut fly in crew dragon of

2885

02:00:44,550 --> 02:00:42,239

course that's tomas pesquet and nasa's

2886

02:00:46,709 --> 02:00:44,560

jasmine hopkins is at a nearby viewing

2887

02:00:49,430 --> 02:00:46,719

location uh with a special guest from

2888

02:00:51,350 --> 02:00:49,440

the european space agency jasmine thanks

2889

02:00:53,270 --> 02:00:51,360

marie cruz will be the first commercial

2890

02:00:55,830 --> 02:00:53,280

crew mission to include two astronauts

2891

02:00:57,589 --> 02:00:55,840

from our international partners

2892

02:00:59,750 --> 02:00:57,599

more about it

2893

02:01:01,270 --> 02:00:59,760

is frank de vena esa's manager for the

2894

02:01:03,750 --> 02:01:01,280

international space station

2895

02:01:05,510 --> 02:01:03,760

we see the same good league checks close

2896

02:01:07,430 --> 02:01:05,520

our team will perform good morning good

2897

02:01:08,870 --> 02:01:07,440

afternoon in europe thank you so much

2898

02:01:10,629 --> 02:01:08,880

for being here today with us frank we

2899

02:01:12,310 --> 02:01:10,639

got some call-ups happening over the

2900

02:01:14,550 --> 02:01:12,320

waves right now we're going to continue

2901  
02:01:16,629 --> 02:01:14,560  
with your interview uh so you understand

2902  
02:01:19,189 --> 02:01:16,639  
the space station as both an astronaut

2903  
02:01:20,790 --> 02:01:19,199  
and as a manager you flew there twice

2904  
02:01:22,709 --> 02:01:20,800  
can you tell us what today's mission

2905  
02:01:24,470 --> 02:01:22,719  
means to esa

2906  
02:01:26,070 --> 02:01:24,480  
well today is a very important mission

2907  
02:01:28,390 --> 02:01:26,080  
of course for isa it's the first time

2908  
02:01:30,870 --> 02:01:28,400  
that we fly an isa astronaut

2909  
02:01:33,030 --> 02:01:30,880  
in the u.s commercial crew vehicle the

2910  
02:01:35,589 --> 02:01:33,040  
dragon the crew 2

2911  
02:01:37,350 --> 02:01:35,599  
and it's also the start because we fly

2912  
02:01:38,229 --> 02:01:37,360  
to mape square today on the alpha

2913  
02:01:40,870 --> 02:01:38,239

mission

2914

02:01:43,189 --> 02:01:40,880

but in fall we will fly matthias more

2915

02:01:45,030 --> 02:01:43,199

and next year you will be back here to

2916

02:01:48,790 --> 02:01:45,040

fly samantha cristoforetti so it's

2917

02:01:51,270 --> 02:01:48,800

really a great time for eza to be on

2918

02:01:53,189 --> 02:01:51,280

this missions we have four usos crew

2919

02:01:55,109 --> 02:01:53,199

members now permanently on the

2920

02:01:57,669 --> 02:01:55,119

international space station which means

2921

02:02:00,070 --> 02:01:57,679

that we have a big increase in the

2922

02:02:02,070 --> 02:02:00,080

number of hours of crew time utilization

2923

02:02:05,589 --> 02:02:02,080

that we can do so we have a whole

2924

02:02:08,709 --> 02:02:05,599

science uh package uh from isa but also

2925

02:02:10,870 --> 02:02:08,719

from our partner agency kness that will

2926  
02:02:12,790 --> 02:02:10,880  
be executed during this alpha mission on

2927  
02:02:14,870 --> 02:02:12,800  
board so it's a great time to be here

2928  
02:02:16,629 --> 02:02:14,880  
and we're very excited right that is

2929  
02:02:18,229 --> 02:02:16,639  
fantastic and we are very excited it's

2930  
02:02:19,589 --> 02:02:18,239  
also an exciting time for isa because

2931  
02:02:21,510 --> 02:02:19,599  
you are going through astronaut

2932  
02:02:24,149 --> 02:02:21,520  
selections as well can you talk to us

2933  
02:02:25,669 --> 02:02:24,159  
about how issa is planning to expand the

2934  
02:02:27,589 --> 02:02:25,679  
number of european astronauts on the

2935  
02:02:29,669 --> 02:02:27,599  
space station

2936  
02:02:31,990 --> 02:02:29,679  
yes we are indeed starting a new

2937  
02:02:34,629 --> 02:02:32,000  
astronaut selection this year the

2938  
02:02:37,030 --> 02:02:34,639

campaign is running we are asking uh all

2939

02:02:39,270 --> 02:02:37,040

people from around europe to uh

2940

02:02:41,910 --> 02:02:39,280

participate and to put in their uh

2941

02:02:43,510 --> 02:02:41,920

candidacy uh till the end of may and

2942

02:02:46,149 --> 02:02:43,520

then the selection process will take

2943

02:02:48,870 --> 02:02:46,159

about a year and then by the end of uh

2944

02:02:51,430 --> 02:02:48,880

next year we hope to select a new class

2945

02:02:54,070 --> 02:02:51,440

of astronauts that then will fly towards

2946

02:02:57,189 --> 02:02:54,080

the international space station uh as of

2947

02:02:58,870 --> 02:02:57,199

25 26 something like that and so we are

2948

02:03:02,149 --> 02:02:58,880

also working with our international

2949

02:03:04,629 --> 02:03:02,159

partners of course like nasa to extend

2950

02:03:06,390 --> 02:03:04,639

the space station until 2030 because

2951  
02:03:08,709 --> 02:03:06,400  
from an isa point of view it's very

2952  
02:03:10,310 --> 02:03:08,719  
important that we continue the research

2953  
02:03:12,550 --> 02:03:10,320  
and the technology development that we

2954  
02:03:14,950 --> 02:03:12,560  
can do on the space station of course

2955  
02:03:17,669 --> 02:03:14,960  
science for the benefit of humankind

2956  
02:03:20,149 --> 02:03:17,679  
here on earth but also to prepare for

2957  
02:03:23,350 --> 02:03:20,159  
the future of exploration as you know

2958  
02:03:24,950 --> 02:03:23,360  
isa is also a participant in the gateway

2959  
02:03:27,669 --> 02:03:24,960  
some of the astronauts will fly to the

2960  
02:03:30,390 --> 02:03:27,679  
gateway as well so we we need to expand

2961  
02:03:32,070 --> 02:03:30,400  
uh our reach of uh humankind in the in

2962  
02:03:33,830 --> 02:03:32,080  
the rest of the universe right that's

2963  
02:03:35,109 --> 02:03:33,840

fantastic you know there's a lot of

2964

02:03:37,030 --> 02:03:35,119

great science that's going to be going

2965

02:03:39,030 --> 02:03:37,040

on on board the space station especially

2966

02:03:41,270 --> 02:03:39,040

from tomokosuke you've spoken about the

2967

02:03:42,709 --> 02:03:41,280

uh european robotic arm previously can

2968

02:03:44,629 --> 02:03:42,719

you tell us more about that and how he's

2969

02:03:47,510 --> 02:03:44,639

going to be involved

2970

02:03:50,470 --> 02:03:47,520

yes also the 15th of july we will see

2971

02:03:53,430 --> 02:03:50,480

the launch of the mlm from baikonur from

2972

02:03:56,470 --> 02:03:53,440

our russian colleagues roscosmos and on

2973

02:03:59,189 --> 02:03:56,480

this multi-lab purpose module there will

2974

02:04:00,790 --> 02:03:59,199

be the european robotic arm a robotic

2975

02:04:02,709 --> 02:04:00,800

arm that has been

2976

02:04:04,470 --> 02:04:02,719

prepared long time ago has been long

2977

02:04:06,870 --> 02:04:04,480

time in storage

2978

02:04:08,709 --> 02:04:06,880

waiting for its launch and now finally

2979

02:04:11,270 --> 02:04:08,719

we will be able to commission the

2980

02:04:13,510 --> 02:04:11,280

european robotic arm

2981

02:04:15,030 --> 02:04:13,520

during the flight of tomapesque the

2982

02:04:16,950 --> 02:04:15,040

first part of the commissioning the

2983

02:04:19,109 --> 02:04:16,960

second part will happen during the

2984

02:04:21,750 --> 02:04:19,119

flight of matthias more and then

2985

02:04:24,629 --> 02:04:21,760

hopefully we can start using this arm

2986

02:04:26,870 --> 02:04:24,639

also to enhance the capabilities of the

2987

02:04:29,189 --> 02:04:26,880

space station on the russian segment to

2988

02:04:31,270 --> 02:04:29,199

place for example uh experiments on the

2989

02:04:33,750 --> 02:04:31,280

outside of the russian segment or to

2990

02:04:36,390 --> 02:04:33,760

relocate some modules so we are very

2991

02:04:37,990 --> 02:04:36,400

excited as well to also work with our

2992

02:04:40,709 --> 02:04:38,000

russian colleagues of roscosmos and

2993

02:04:42,470 --> 02:04:40,719

inerga to get finally this european

2994

02:04:44,550 --> 02:04:42,480

robotic arm launched to the space

2995

02:04:45,990 --> 02:04:44,560

station right right now that's very

2996

02:04:47,669 --> 02:04:46,000

exciting we're glad to see uh some of

2997

02:04:50,229 --> 02:04:47,679

the specifics of what he's going to be

2998

02:04:51,910 --> 02:04:50,239

working on on board uh can you tell us

2999

02:04:54,709 --> 02:04:51,920

about the importance of our commercial

3000

02:04:56,709 --> 02:04:54,719

and international partnerships with esa

3001

02:04:59,189 --> 02:04:56,719

well it's very important that we have

3002

02:05:01,910 --> 02:04:59,199

this partnership uh going of course uh

3003

02:05:03,030 --> 02:05:01,920

in the international space station uh at

3004

02:05:05,750 --> 02:05:03,040

one day

3005

02:05:07,669 --> 02:05:05,760

the iss will come to an end

3006

02:05:10,229 --> 02:05:07,679

but for sure the partnership will

3007

02:05:12,149 --> 02:05:10,239

continue and that is already clear in

3008

02:05:14,310 --> 02:05:12,159

the gateway program now and we hope to

3009

02:05:16,470 --> 02:05:14,320

extend that further to the lunar surface

3010

02:05:18,629 --> 02:05:16,480

with the astronaut with the artemis

3011

02:05:20,470 --> 02:05:18,639

program and and also have european

3012

02:05:22,550 --> 02:05:20,480

astronauts one day walking on the

3013

02:05:24,950 --> 02:05:22,560

surface of the moon so the partnership

3014

02:05:27,830 --> 02:05:24,960

for us is extremely important to be able

3015

02:05:29,750 --> 02:05:27,840

to execute our exploration program

3016

02:05:31,350 --> 02:05:29,760

but also the commercial partnership is

3017

02:05:34,310 --> 02:05:31,360

very important because

3018

02:05:37,589 --> 02:05:34,320

isa wants to continue to fly astronauts

3019

02:05:40,149 --> 02:05:37,599

to low-earth orbit even after the iss

3020

02:05:42,470 --> 02:05:40,159

we want to be able to do research

3021

02:05:44,149 --> 02:05:42,480

in low-earth orbit after the iss do

3022

02:05:47,669 --> 02:05:44,159

technology development that we will need

3023

02:05:49,350 --> 02:05:47,679

for further exploration after the iss

3024

02:05:51,189 --> 02:05:49,360

but most probably it will not be the

3025

02:05:53,589 --> 02:05:51,199

same configuration anymore as we have

3026

02:05:55,350 --> 02:05:53,599

today it will be in a partnership with

3027

02:05:57,910 --> 02:05:55,360

the commercial sector

3028

02:06:00,069 --> 02:05:57,920

it's what we call the leo economy and so

3029

02:06:03,109 --> 02:06:00,079

one of the tasks that we have as well at

3030

02:06:05,510 --> 02:06:03,119

esa is to help build this leo economy so

3031

02:06:08,470 --> 02:06:05,520

that we can also have a good and

3032

02:06:10,709 --> 02:06:08,480

thriving future of astronautics flying

3033

02:06:13,350 --> 02:06:10,719

astronauts research and science in

3034

02:06:15,109 --> 02:06:13,360

low-earth orbit after the iss

3035

02:06:17,109 --> 02:06:15,119

we have a lot to look forward to then

3036

02:06:18,629 --> 02:06:17,119

from issa frank devena thank you so much

3037

02:06:20,390 --> 02:06:18,639

for being here with us today now we're

3038

02:06:21,990 --> 02:06:20,400

going to take it back to the ksc host

3039

02:06:23,910 --> 02:06:22,000

desk

3040

02:06:25,830 --> 02:06:23,920

all right thanks jasmine uh teams are

3041

02:06:27,589 --> 02:06:25,840

running about 16 minutes ahead of

3042

02:06:29,589 --> 02:06:27,599

schedule and hatch close will be

3043

02:06:31,910 --> 02:06:29,599

happening momentarily so we're going to

3044

02:06:36,229 --> 02:06:31,920

go over to john inspucker and hawthorne

3045

02:06:41,030 --> 02:06:38,069

thanks marie

3046

02:06:42,709 --> 02:06:41,040

we are coming up on t minus 2 hours 12

3047

02:06:44,550 --> 02:06:42,719

minutes and counting

3048

02:06:46,790 --> 02:06:44,560

right now the falcon 9 team is on

3049

02:06:48,629 --> 02:06:46,800

console and firing room 4 they are

3050

02:06:50,709 --> 02:06:48,639

preparing for their communication checks

3051  
02:06:53,350 --> 02:06:50,719  
with the crew that's due at about t

3052  
02:06:55,430 --> 02:06:53,360  
minus 1 hour 55 minutes

3053  
02:06:57,109 --> 02:06:55,440  
of spacex engineers right now they're

3054  
02:06:59,510 --> 02:06:57,119  
continuing to pressurize the launch

3055  
02:07:02,069 --> 02:06:59,520  
vehicle gas storage bottles these are

3056  
02:07:04,069 --> 02:07:02,079  
composite over wrapped pressure vessels

3057  
02:07:06,470 --> 02:07:04,079  
they contain gases used to fill the

3058  
02:07:08,069 --> 02:07:06,480  
tanks with hot helium as the propellant

3059  
02:07:09,430 --> 02:07:08,079  
is drained out of the first and second

3060  
02:07:11,430 --> 02:07:09,440  
stages

3061  
02:07:13,750 --> 02:07:11,440  
we're also storing helium and nitrogen

3062  
02:07:16,149 --> 02:07:13,760  
gases on the vehicle we use those to

3063  
02:07:18,470 --> 02:07:16,159

spin the merlin engine turbo pumps when

3064

02:07:20,390 --> 02:07:18,480

we start an engine in space for example

3065

02:07:22,950 --> 02:07:20,400

when we light the second stage engine

3066

02:07:24,709 --> 02:07:22,960

after it separates from the first stage

3067

02:07:26,550 --> 02:07:24,719

we're also using gas for attitude

3068

02:07:28,709 --> 02:07:26,560

control systems both the first and

3069

02:07:30,310 --> 02:07:28,719

second stages of the falcon 9 have an

3070

02:07:32,310 --> 02:07:30,320

acs system

3071

02:07:34,550 --> 02:07:32,320

and finally the landing systems use the

3072

02:07:36,069 --> 02:07:34,560

gas to help with the grid fins and then

3073

02:07:38,229 --> 02:07:36,079

deploying the legs right before

3074

02:07:40,229 --> 02:07:38,239

touchdown on the drone ship

3075

02:07:43,350 --> 02:07:40,239

now currently for falcon 9 the countdown

3076  
02:07:45,589 --> 02:07:43,360  
is proceeding nominally at this point

3077  
02:07:47,109 --> 02:07:45,599  
on board the dragon spacecraft endeavor

3078  
02:07:49,910 --> 02:07:47,119  
we heard the comp checks just a little

3079  
02:07:51,830 --> 02:07:49,920  
while ago between dragon team and crew

3080  
02:07:53,510 --> 02:07:51,840  
we've seen the astronauts rotate their

3081  
02:07:55,270 --> 02:07:53,520  
seats to the flight position we've

3082  
02:07:57,510 --> 02:07:55,280  
successfully completed the suit leak

3083  
02:07:59,189 --> 02:07:57,520  
checks and we're watching right now as

3084  
02:08:01,030 --> 02:07:59,199  
the hatch is coming down as part of the

3085  
02:08:02,550 --> 02:08:01,040  
closure

3086  
02:08:04,629 --> 02:08:02,560  
sequence of events

3087  
02:08:06,870 --> 02:08:04,639  
and then once we get the hatch closed

3088  
02:08:09,109 --> 02:08:06,880

the spacex support team will perform a

3089

02:08:11,350 --> 02:08:09,119

final leak check of that hatch

3090

02:08:13,669 --> 02:08:11,360

now once that leak check is finished and

3091

02:08:15,990 --> 02:08:13,679

it passes the team will then begin the

3092

02:08:18,149 --> 02:08:16,000

steps to ready the access arm for

3093

02:08:20,149 --> 02:08:18,159

retraction once they've got everything

3094

02:08:23,750 --> 02:08:20,159

configured the team will leave the pad

3095

02:08:26,310 --> 02:08:23,760

by t minus one hour at the latest

3096

02:08:28,550 --> 02:08:26,320

now t minus two hours coming up here

3097

02:08:30,870 --> 02:08:28,560

very shortly kennedy space center

3098

02:08:33,270 --> 02:08:30,880

personnel will begin final sweeps of the

3099

02:08:34,709 --> 02:08:33,280

flight caution and hazard areas

3100

02:08:36,629 --> 02:08:34,719

right now the only people that are

3101

02:08:39,430 --> 02:08:36,639

inside the road blocks in a perimeter

3102

02:08:41,430 --> 02:08:39,440

around pad 39a are the crew and the

3103

02:08:51,270 --> 02:08:41,440

spacex support team that you see on your

3104

02:08:54,629 --> 02:08:53,030

and right now as we get ready to bring

3105

02:08:58,470 --> 02:08:54,639

the hatch down we're going to go back to

3106

02:09:03,510 --> 02:09:00,709

thanks for that update john as you can

3107

02:09:06,069 --> 02:09:03,520

see we are preparing for the closure of

3108

02:09:08,229 --> 02:09:06,079

the side hatch the closeout team there

3109

02:09:11,270 --> 02:09:08,239

in the black spacex flight suits that

3110

02:09:12,950 --> 02:09:11,280

you see have performed a final fog check

3111

02:09:15,910 --> 02:09:12,960

and they've gotten the final okay from

3112

02:09:17,669 --> 02:09:15,920

the crew inside the capsule to confirm

3113

02:09:18,870 --> 02:09:17,679

that they are indeed ready to go to

3114

02:09:20,790 --> 02:09:18,880

space today

3115

02:09:23,270 --> 02:09:20,800

as you can see the side hatch has just

3116

02:09:25,350 --> 02:09:23,280

been closed this is a little bit more

3117

02:09:27,189 --> 02:09:25,360

complicated than it may seem so it's

3118

02:09:29,830 --> 02:09:27,199

this initial closure

3119

02:09:32,069 --> 02:09:29,840

and then there will be a actual

3120

02:09:33,830 --> 02:09:32,079

mechanical closure using a torque wrench

3121

02:09:35,589 --> 02:09:33,840

which we should see here momentarily

3122

02:09:36,709 --> 02:09:35,599

might be yeah we can see that happening

3123

02:09:39,589 --> 02:09:36,719

now

3124

02:09:42,149 --> 02:09:39,599

and then afterward we will inflate the

3125

02:09:43,830 --> 02:09:42,159

seal that's around the side hatch in

3126

02:09:45,510 --> 02:09:43,840

order to do that leak check we'll

3127

02:09:47,669 --> 02:09:45,520

inflate the seal apply a pressure

3128

02:09:50,390 --> 02:09:47,679

basically and make sure that the hatch

3129

02:09:52,709 --> 02:09:50,400

is able to hold that designated pressure

3130

02:09:55,430 --> 02:09:52,719

for a couple of minutes and once that's

3131

02:09:57,589 --> 02:09:55,440

done we'll put the side closure there on

3132

02:10:00,390 --> 02:09:57,599

the open part of the hatch that still

3133

02:10:03,270 --> 02:10:00,400

remains and like john said at that point

3134

02:10:06,870 --> 02:10:03,280

the crew will then begin to prepare the

3135

02:10:09,430 --> 02:10:06,880

crew access arm for retraction

3136

02:10:11,750 --> 02:10:09,440

and i can't emphasize this enough we've

3137

02:10:15,109 --> 02:10:11,760

we've seen this time and time again with

3138

02:10:17,189 --> 02:10:15,119

spacex the written timeline

3139

02:10:19,189 --> 02:10:17,199

you know has very specific times laid

3140

02:10:21,189 --> 02:10:19,199

out but often times

3141

02:10:23,589 --> 02:10:21,199

we we see that they're ahead of schedule

3142

02:10:25,510 --> 02:10:23,599

and that's certainly the case here

3143

02:10:26,790 --> 02:10:25,520

is closed and starting leak checks on

3144

02:10:28,550 --> 02:10:26,800

schedule

3145

02:10:29,910 --> 02:10:28,560

okay so we heard uh the announcement

3146

02:10:31,990 --> 02:10:29,920

that the side hatched copy thanks for

3147

02:10:34,470 --> 02:10:32,000

the words chad

3148

02:10:36,950 --> 02:10:34,480

and leak checks are uh beginning

3149

02:10:38,709 --> 02:10:36,960

momentarily on the side hatch um now

3150

02:10:40,709 --> 02:10:38,719

when i say that they're ahead of

3151  
02:10:42,709 --> 02:10:40,719  
schedule that does not mean the launch

3152  
02:10:44,790 --> 02:10:42,719  
time is changing launch

3153  
02:10:48,069 --> 02:10:44,800  
is instantaneous that cannot change

3154  
02:10:50,950 --> 02:10:48,079  
that's holding for 5 49 and 2 seconds

3155  
02:10:53,350 --> 02:10:50,960  
this morning eastern daylight time

3156  
02:10:55,270 --> 02:10:53,360  
but when the teams work ahead

3157  
02:10:57,350 --> 02:10:55,280  
as they are in this case if everything

3158  
02:10:59,830 --> 02:10:57,360  
goes well with the side hatch

3159  
02:11:02,470 --> 02:10:59,840  
leak checks all that does is give them

3160  
02:11:05,430 --> 02:11:02,480  
more time more margin to troubleshoot if

3161  
02:11:08,310 --> 02:11:05,440  
an issue does pop up after this point

3162  
02:11:10,870 --> 02:11:08,320  
so they may be running ahead of the

3163  
02:11:12,790 --> 02:11:10,880

timeline but regardless we're still

3164

02:11:16,310 --> 02:11:12,800

going to see launch if everything goes

3165

02:11:18,310 --> 02:11:16,320

well at 5 49 at two seconds this morning

3166

02:11:20,790 --> 02:11:18,320

and what we're seeing now is the

3167

02:11:23,430 --> 02:11:20,800

closeout team basically installing the

3168

02:11:25,510 --> 02:11:23,440

fixture that will allow us to begin to

3169

02:11:26,709 --> 02:11:25,520

inflate that seal that is around the

3170

02:11:30,470 --> 02:11:26,719

side hatch

3171

02:11:32,229 --> 02:11:30,480

which like i said pressurizing and then

3172

02:11:34,310 --> 02:11:32,239

for a couple of minutes to ensure that

3173

02:11:39,350 --> 02:11:34,320

the side hatch is able to maintain that

3174

02:11:43,109 --> 02:11:40,709

as you can see everyone's following

3175

02:11:45,030 --> 02:11:43,119

along with procedures on their tablets

3176  
02:11:47,669 --> 02:11:45,040  
everyone has a specific job that's what

3177  
02:11:49,350 --> 02:11:47,679  
the numbers are for located on the back

3178  
02:11:50,950 --> 02:11:49,360  
of the space suit excuse me of the

3179  
02:11:54,229 --> 02:11:50,960  
flight suits

3180  
02:11:56,229 --> 02:11:54,239  
everyone has a specific role and all of

3181  
02:11:57,589 --> 02:11:56,239  
this has been practiced multiple times

3182  
02:12:02,310 --> 02:11:57,599  
which is why it looks like the

3183  
02:12:06,390 --> 02:12:04,470  
stacy at this point in time the door is

3184  
02:12:08,229 --> 02:12:06,400  
closed you know stuff is happening on

3185  
02:12:10,149 --> 02:12:08,239  
the outside

3186  
02:12:11,510 --> 02:12:10,159  
where is your heart where is your head

3187  
02:12:13,030 --> 02:12:11,520  
at this point in the launch countdown

3188  
02:12:14,629 --> 02:12:13,040

because you're you're not quite there

3189

02:12:16,870 --> 02:12:14,639

yet but like you said earlier your

3190

02:12:18,470 --> 02:12:16,880

suit's on so like the on button has been

3191

02:12:20,390 --> 02:12:18,480

pushed exactly

3192

02:12:22,390 --> 02:12:20,400

exactly and and right now i imagine um

3193

02:12:24,470 --> 02:12:22,400

i've not been in the the dragon capsule

3194

02:12:26,550 --> 02:12:24,480

but i'm pretty sure the crew can hear

3195

02:12:29,109 --> 02:12:26,560

what the close-up crew is doing right

3196

02:12:31,830 --> 02:12:29,119

now so um they uh they're probably

3197

02:12:34,470 --> 02:12:31,840

listening to uh the mechanisms and uh

3198

02:12:36,229 --> 02:12:34,480

their spacecraft breathing

3199

02:12:39,030 --> 02:12:36,239

but at this point now that the hatch is

3200

02:12:41,030 --> 02:12:39,040

closed they it's like a new phase it's

3201

02:12:43,350 --> 02:12:41,040

it's just the four of you and you know

3202

02:12:45,189 --> 02:12:43,360

from this point forward um that it's

3203

02:12:47,350 --> 02:12:45,199

just the four of you so your focus kind

3204

02:12:49,510 --> 02:12:47,360

of comes in a little bit

3205

02:12:51,430 --> 02:12:49,520

before you're you're coordinating with

3206

02:12:53,510 --> 02:12:51,440

uh with the second team but now it's

3207

02:12:55,350 --> 02:12:53,520

just the four of you um and then the

3208

02:12:58,629 --> 02:12:55,360

voices that you hear so it's it's kind

3209

02:13:03,750 --> 02:13:01,350

we got word that uh the crew aboard the

3210

02:13:06,069 --> 02:13:03,760

international space station is also

3211

02:13:08,069 --> 02:13:06,079

watching all of this unfold live of

3212

02:13:09,910 --> 02:13:08,079

course they were sitting in uh these

3213

02:13:12,470 --> 02:13:09,920

seats at the pad in their crew dragon

3214

02:13:14,629 --> 02:13:12,480

resilience that's currently docked uh to

3215

02:13:17,109 --> 02:13:14,639

the international space station so that

3216

02:13:19,430 --> 02:13:17,119

crew is watching the crew on the pad

3217

02:13:21,830 --> 02:13:19,440

today and getting ready to welcome them

3218

02:13:28,470 --> 02:13:21,840

aboard if all goes as planned early

3219

02:13:32,470 --> 02:13:30,390

and again if you're just joining us uh

3220

02:13:35,270 --> 02:13:32,480

the side hatch of the crew dragon

3221

02:13:37,910 --> 02:13:35,280

endeavor on the launch pad uh has just

3222

02:13:39,990 --> 02:13:37,920

closed and leak checks of that side

3223

02:13:42,470 --> 02:13:40,000

hatch are in progress

3224

02:13:45,189 --> 02:13:42,480

this is a view of the white room with

3225

02:13:47,430 --> 02:13:45,199

members of the spacex pad closeout team

3226

02:13:49,350 --> 02:13:47,440

you see in the black flight suits and

3227

02:13:51,510 --> 02:13:49,360

the shot we saw just before this was

3228

02:13:54,229 --> 02:13:51,520

from inside the crew dragon endeavor

3229

02:13:58,629 --> 02:13:56,390

like i mentioned earlier it's not as

3230

02:14:01,270 --> 02:13:58,639

simple as just closing the door on your

3231

02:14:05,109 --> 02:14:01,280

car or to your house we do inflate the

3232

02:14:09,189 --> 02:14:07,430

rock paper scissors double-fisted rock

3233

02:14:13,280 --> 02:14:09,199

paper scissors

3234

02:14:16,470 --> 02:14:15,430

[Laughter]

3235

02:14:18,629 --> 02:14:16,480

so

3236

02:14:20,149 --> 02:14:18,639

like i said this is this process takes a

3237

02:14:22,550 --> 02:14:20,159

couple of minutes we inflate the seal

3238

02:14:24,310 --> 02:14:22,560

around the side hatch and make sure that

3239

02:14:27,669 --> 02:14:24,320

it's able to maintain that pressure for

3240

02:14:29,189 --> 02:14:27,679

a couple of minutes prior to actually

3241

02:14:33,350 --> 02:14:29,199

performing the rest of the physical

3242

02:14:37,350 --> 02:14:35,510

which at that point after the successful

3243

02:14:39,510 --> 02:14:37,360

leak check will mostly just involve

3244

02:14:41,109 --> 02:14:39,520

removing the remaining ground support

3245

02:14:43,990 --> 02:14:41,119

equipment away from the area and

3246

02:14:47,109 --> 02:14:44,000

installing the the tiny hatch on the

3247

02:14:51,990 --> 02:14:48,870

the rock paper scissors shoot with the

3248

02:14:53,430 --> 02:14:52,000

crew 2 crew continues on

3249

02:14:55,750 --> 02:14:53,440

let's get back to the technical part of

3250

02:14:57,589 --> 02:14:55,760

the rock paper scissors they did this

3251  
02:14:59,750 --> 02:14:57,599  
during dry dress and we wondered what

3252  
02:15:01,669 --> 02:14:59,760  
what was going on and it may be that

3253  
02:15:03,189 --> 02:15:01,679  
they're just making up for lost time i

3254  
02:15:05,189 --> 02:15:03,199  
don't remember seeing them do this

3255  
02:15:06,550 --> 02:15:05,199  
during uh the suit up and so they're

3256  
02:15:07,990 --> 02:15:06,560  
they're getting in their rock paper

3257  
02:15:09,990 --> 02:15:08,000  
scissors those are now it's critical

3258  
02:15:12,709 --> 02:15:10,000  
it's totally critical

3259  
02:15:14,870 --> 02:15:12,719  
but in all seriousness i i think that

3260  
02:15:16,629 --> 02:15:14,880  
you know when we see the joke that we

3261  
02:15:18,950 --> 02:15:16,639  
see the crew kind of joke around and

3262  
02:15:20,870 --> 02:15:18,960  
have those moments of levity they can do

3263  
02:15:22,870 --> 02:15:20,880

that because they

3264

02:15:24,470 --> 02:15:22,880

they know these procedures like the back

3265

02:15:26,069 --> 02:15:24,480

of their hands it's all like muscle

3266

02:15:28,550 --> 02:15:26,079

memory at this point because they've

3267

02:15:31,910 --> 02:15:28,560

rehearsed it so many times yeah this is

3268

02:15:40,950 --> 02:15:31,920

definitely a good sign they uh

3269

02:15:46,629 --> 02:15:43,750

so it's t minus two hours two minutes

3270

02:15:48,709 --> 02:15:46,639

and counting uh the hatch close

3271

02:15:50,550 --> 02:15:48,719

the catch close has been completed a

3272

02:15:52,870 --> 02:15:50,560

little bit ahead of schedule and we're

3273

02:15:53,990 --> 02:15:52,880

awaiting the results of a side hatch

3274

02:16:01,830 --> 02:15:54,000

leak check

3275

02:16:07,030 --> 02:16:04,790

i'd love to know what the winner gets in

3276

02:16:11,750 --> 02:16:07,040

this rock paper scissors game that we

3277

02:16:14,550 --> 02:16:13,669

this will be probably a question the

3278

02:16:16,470 --> 02:16:14,560

first

3279

02:16:20,870 --> 02:16:16,480

opportunity they have to answer

3280

02:16:24,870 --> 02:16:22,550

i just happen to be looking at the uh

3281

02:16:28,069 --> 02:16:24,880

the crew's schedule on board right now

3282

02:16:29,910 --> 02:16:28,079

um and my memory of of those days being

3283

02:16:32,709 --> 02:16:29,920

on board waiting for a crew to come up

3284

02:16:34,629 --> 02:16:32,719

to see you it's um it's it's

3285

02:16:36,629 --> 02:16:34,639

it's a lot of anticipation um because

3286

02:16:38,790 --> 02:16:36,639

you're gonna they're coming to see you

3287

02:16:41,509 --> 02:16:38,800

and so i'm just thinking about um

3288

02:16:44,469 --> 02:16:41,519

uh mike and shannon and

3289

02:16:47,110 --> 02:16:44,479

victor and suici uh mark on board at

3290

02:16:48,709 --> 02:16:47,120

least in the u.s segment to um to be

3291

02:16:50,150 --> 02:16:48,719

anticipating this and they just got

3292

02:16:52,389 --> 02:16:50,160

their day started and i see a lot of

3293

02:16:53,669 --> 02:16:52,399

flexible activities and so

3294

02:16:55,190 --> 02:16:53,679

they're probably

3295

02:16:56,309 --> 02:16:55,200

getting updates from mission control

3296

02:16:57,990 --> 02:16:56,319

right now

3297

02:17:00,309 --> 02:16:58,000

we have time to take a couple of

3298

02:17:02,230 --> 02:17:00,319

questions for social media while this

3299

02:17:06,230 --> 02:17:02,240

hatch leak check is in progress if we

3300

02:17:10,950 --> 02:17:08,870

does food taste the same in space tracy

3301  
02:17:13,750 --> 02:17:10,960  
you're the only one here that can answer

3302  
02:17:15,830 --> 02:17:13,760  
that i think that one's for me

3303  
02:17:17,589 --> 02:17:15,840  
i would say that food probably tastes

3304  
02:17:18,790 --> 02:17:17,599  
the same it's your taste buds detecting

3305  
02:17:21,110 --> 02:17:18,800  
it that

3306  
02:17:21,990 --> 02:17:21,120  
go through a little alteration

3307  
02:17:24,150 --> 02:17:22,000  
for me

3308  
02:17:26,150 --> 02:17:24,160  
spicy foods took on a different flavor

3309  
02:17:27,750 --> 02:17:26,160  
every astronaut is different so

3310  
02:17:29,990 --> 02:17:27,760  
you'll get a different answer depending

3311  
02:17:32,230 --> 02:17:30,000  
on who you ask but the shrimp cocktail

3312  
02:17:34,549 --> 02:17:32,240  
loved it on the ground could not

3313  
02:17:35,669 --> 02:17:34,559

tolerate it in orbit but it's very

3314

02:17:37,349 --> 02:17:35,679

interesting yeah it was it was

3315

02:17:39,509 --> 02:17:37,359

disappointing too because i really liked

3316

02:17:45,110 --> 02:17:39,519

it and i packed a lot

3317

02:17:49,110 --> 02:17:47,270

are the big touch screens uh that the

3318

02:17:51,110 --> 02:17:49,120

astronauts are looking at just for

3319

02:17:53,669 --> 02:17:51,120

looking up data and docking on the

3320

02:17:55,349 --> 02:17:53,679

international space station or can could

3321

02:17:58,150 --> 02:17:55,359

the astronauts do something different

3322

02:18:00,709 --> 02:17:58,160

with them like open the side hatch or

3323

02:18:03,509 --> 02:18:00,719

separate the trunk or fire the draco

3324

02:18:05,589 --> 02:18:03,519

thrusters manually kate yeah that's a

3325

02:18:06,629 --> 02:18:05,599

great question um

3326

02:18:14,150 --> 02:18:06,639

i

3327

02:18:15,589 --> 02:18:14,160

approach to

3328

02:18:16,309 --> 02:18:15,599

the station

3329

02:18:18,230 --> 02:18:16,319

the

3330

02:18:20,629 --> 02:18:18,240

everyone can actually see which

3331

02:18:21,589 --> 02:18:20,639

thrusters are thrusting when as dragon

3332

02:18:24,469 --> 02:18:21,599

is

3333

02:18:26,389 --> 02:18:24,479

slowing itself down and steering and

3334

02:18:28,549 --> 02:18:26,399

basically positioning itself to dock

3335

02:18:31,190 --> 02:18:28,559

with the international space station um

3336

02:18:32,389 --> 02:18:31,200

but for the actions that are like like

3337

02:18:34,950 --> 02:18:32,399

that were mentioned in the question

3338

02:18:38,469 --> 02:18:34,960

there are actually a number of

3339

02:18:40,549 --> 02:18:38,479

hard-wired buttons located below the the

3340

02:18:42,790 --> 02:18:40,559

screens there they're a little difficult

3341

02:18:45,509 --> 02:18:42,800

to see um so there are there are some

3342

02:18:48,549 --> 02:18:45,519

commanding uh buttons that are located

3343

02:18:50,950 --> 02:18:48,559

there uh that would be used in in in the

3344

02:18:53,190 --> 02:18:50,960

event of an emergency i'm not quite sure

3345

02:18:55,270 --> 02:18:53,200

what each and every button is but there

3346

02:18:57,669 --> 02:18:55,280

are also actually a couple of buttons

3347

02:18:59,270 --> 02:18:57,679

located on the left armrest you might be

3348

02:19:01,190 --> 02:18:59,280

able to see it there

3349

02:19:02,469 --> 02:19:01,200

just under commander shane kimbrough's

3350

02:19:05,349 --> 02:19:02,479

left arm

3351

02:19:06,870 --> 02:19:05,359

there there's actually a a small

3352

02:19:09,110 --> 02:19:06,880

control panel

3353

02:19:11,030 --> 02:19:09,120

that allows them to basically turn their

3354

02:19:12,469 --> 02:19:11,040

volume up and down turns on their task

3355

02:19:14,389 --> 02:19:12,479

light which is a little personal light

3356

02:19:15,669 --> 02:19:14,399

there inside the cabin

3357

02:19:18,309 --> 02:19:15,679

and of course transmit their

3358

02:19:20,469 --> 02:19:18,319

communication so there are a couple of

3359

02:19:22,549 --> 02:19:20,479

different buttons located around

3360

02:19:26,230 --> 02:19:22,559

the ones used most often are certainly

3361

02:19:26,240 --> 02:19:30,150

next question from social media

3362

02:19:35,030 --> 02:19:32,709

why did the other crew dragon capsule

3363

02:19:37,349 --> 02:19:35,040

have to undock and re-dock on a

3364

02:19:40,549 --> 02:19:37,359

different space station port what

3365

02:19:42,870 --> 02:19:40,559

prevents crew 2 simply from docking at

3366

02:19:44,150 --> 02:19:42,880

that other port to avoid all the

3367

02:19:46,309 --> 02:19:44,160

repositioning

3368

02:19:49,670 --> 02:19:46,319

so that's a great question and i'm going

3369

02:19:51,830 --> 02:19:49,680

to try to explain it in a simple way so

3370

02:19:54,150 --> 02:19:51,840

um the shorter answer is the crew dragon

3371

02:19:56,469 --> 02:19:54,160

resilience could dock to either the

3372

02:19:58,550 --> 02:19:56,479

forward port or the zenith port they're

3373

02:19:59,750 --> 02:19:58,560

going to be docking to the forward port

3374

02:20:03,349 --> 02:19:59,760

that is where

3375

02:20:05,030 --> 02:20:03,359

um the crew dragon resilience um excuse

3376  
02:20:06,630 --> 02:20:05,040  
me i misspoke the crew dragon endeavor

3377  
02:20:08,550 --> 02:20:06,640  
is what's on the pad and they can dock

3378  
02:20:10,710 --> 02:20:08,560  
to either uh the forward port or the

3379  
02:20:14,150 --> 02:20:10,720  
zenith port the crew dragon resilience

3380  
02:20:17,510 --> 02:20:14,160  
which is already on station uh relocated

3381  
02:20:19,590 --> 02:20:17,520  
from the forward port to the zenith port

3382  
02:20:21,990 --> 02:20:19,600  
earlier this month and that actually had

3383  
02:20:23,910 --> 02:20:22,000  
more to do with the cargo dragon flight

3384  
02:20:26,469 --> 02:20:23,920  
that's coming up this summer

3385  
02:20:28,070 --> 02:20:26,479  
the preferred port for cargo dragon is

3386  
02:20:33,670 --> 02:20:28,080  
the zenith port

3387  
02:20:36,469 --> 02:20:33,680  
for the cargo dragon when resilience uh

3388  
02:20:38,070 --> 02:20:36,479

departs to come home in just a few days

3389

02:20:40,070 --> 02:20:38,080

uh so it's a little bit of musical

3390

02:20:42,230 --> 02:20:40,080

chairs a little bit of just rearranging

3391

02:20:44,230 --> 02:20:42,240

parking spots on the international space

3392

02:20:46,469 --> 02:20:44,240

station because it's a it's pretty

3393

02:20:48,309 --> 02:20:46,479

happening up there what a great problem

3394

02:20:50,469 --> 02:20:48,319

to have though too many dragons we got

3395

02:20:53,110 --> 02:20:50,479

to move things around

3396

02:20:54,870 --> 02:20:53,120

one thing that we did learn that came

3397

02:20:58,630 --> 02:20:54,880

out of that activity so in order to

3398

02:21:00,710 --> 02:20:58,640

perform that um that port relocation

3399

02:21:03,030 --> 02:21:00,720

hatch leak check complete and access

3400

02:21:05,190 --> 02:21:03,040

panel install has started

3401  
02:21:08,469 --> 02:21:05,200  
okay great information there sounds like

3402  
02:21:12,630 --> 02:21:10,790  
that leak check was successful and now

3403  
02:21:14,469 --> 02:21:12,640  
they're going to install the final plate

3404  
02:21:16,150 --> 02:21:14,479  
there on the side hatch

3405  
02:21:17,990 --> 02:21:16,160  
so this is essentially the last

3406  
02:21:19,270 --> 02:21:18,000  
buttoning the last dragon spacex we're a

3407  
02:21:21,190 --> 02:21:19,280  
convincing help check for the launch

3408  
02:21:23,030 --> 02:21:21,200  
escape system expect a momentary flight

3409  
02:21:27,429 --> 02:21:23,040  
computer change followed by transition

3410  
02:21:27,439 --> 02:21:39,190  
captioning not

3411  
02:21:43,590 --> 02:21:41,190  
bit of available the eyes and her

3412  
02:21:45,750 --> 02:21:43,600  
dotting the eyes and crossing the t's

3413  
02:21:50,710 --> 02:21:45,760

um that the vehicle itself will undergo

3414

02:21:52,469 --> 02:21:50,720

prior to uh liftoff um and we can see

3415

02:21:53,750 --> 02:21:52,479

the team working to

3416

02:21:56,230 --> 02:21:53,760

finish uh

3417

02:21:59,429 --> 02:21:56,240

or uninstalling the hardware there that

3418

02:22:02,150 --> 02:21:59,439

was utilized for that leak check

3419

02:22:04,389 --> 02:22:02,160

and so we've got a little over an hour

3420

02:22:07,270 --> 02:22:04,399

now until the pad team wraps up its

3421

02:22:08,870 --> 02:22:07,280

final checks and clears the white room

3422

02:22:10,950 --> 02:22:08,880

that's when the action will really pick

3423

02:22:13,270 --> 02:22:10,960

up with the retraction of the crew

3424

02:22:15,830 --> 02:22:13,280

access arm the arming of the launch

3425

02:22:18,389 --> 02:22:15,840

escape system and propellant loading on

3426

02:22:20,389 --> 02:22:18,399

the falcon 9 rocket so we'll keep a live

3427

02:22:22,870 --> 02:22:20,399

view of the crew here as they're sitting

3428

02:22:24,710 --> 02:22:22,880

tight for the next hour or so and

3429

02:22:27,030 --> 02:22:24,720

provide you with some more context about

3430

02:22:29,270 --> 02:22:27,040

this mission now let's head over to

3431

02:22:31,270 --> 02:22:29,280

houston for a closer look at what the

3432

02:22:35,270 --> 02:22:31,280

crew will be doing once they reach their

3433

02:22:39,270 --> 02:22:37,830

thanks marie once crew dragon arrives at

3434

02:22:41,670 --> 02:22:39,280

the international space station they'll

3435

02:22:43,510 --> 02:22:41,680

be welcomed by their expedition 65

3436

02:22:45,910 --> 02:22:43,520

crewmates we're doing something called a

3437

02:22:47,429 --> 02:22:45,920

direct handover which just means a new

3438

02:22:50,070 --> 02:22:47,439

crew of astronauts arrives at the

3439

02:22:52,070 --> 02:22:50,080

station before another crew departs it

3440

02:22:54,150 --> 02:22:52,080

will only last a few days but we'll have

3441

02:22:55,830 --> 02:22:54,160

11 people on board the station the

3442

02:22:57,590 --> 02:22:55,840

record for the most astronauts aboard

3443

02:22:59,670 --> 02:22:57,600

the station was set several times during

3444

02:23:02,550 --> 02:22:59,680

the space shuttle program when we had as

3445

02:23:04,309 --> 02:23:02,560

many as 13 for short periods of time

3446

02:23:05,990 --> 02:23:04,319

one question we've heard a lot is where

3447

02:23:07,990 --> 02:23:06,000

are all of these astronauts going to

3448

02:23:09,910 --> 02:23:08,000

sleep the space station has seven

3449

02:23:12,230 --> 02:23:09,920

permanent spots for astronauts to sleep

3450

02:23:13,750 --> 02:23:12,240

known as crew quarters when we have more

3451

02:23:15,349 --> 02:23:13,760

people sleeping

3452

02:23:17,349 --> 02:23:15,359

on the station than locations for a

3453

02:23:19,190 --> 02:23:17,359

short period of time works with flight

3454

02:23:21,190 --> 02:23:19,200

controllers on the ground to stake out

3455

02:23:22,710 --> 02:23:21,200

temporary campout locations in different

3456

02:23:24,389 --> 02:23:22,720

modules

3457

02:23:26,389 --> 02:23:24,399

we can also have a crew member sleep

3458

02:23:28,309 --> 02:23:26,399

inside each dragon capsule as crew one

3459

02:23:29,429 --> 02:23:28,319

commander mike hopkins did for his stay

3460

02:23:31,110 --> 02:23:29,439

on the station

3461

02:23:33,750 --> 02:23:31,120

this mission will also continue keeping

3462

02:23:36,870 --> 02:23:33,760

the long duration crew size on station

3463

02:23:36,880 --> 02:23:43,070

we'll have five astronauts to conduct

3464

02:23:43,080 --> 02:23:48,070

research work a week on station

3465

02:23:52,950 --> 02:23:50,630

effectively doubling our amount of time

3466

02:23:55,270 --> 02:23:52,960

dedicated

3467

02:24:02,389 --> 02:23:55,280

during crew 2's mission that number will

3468

02:24:02,399 --> 02:24:07,670

falcon 9 operators

3469

02:24:07,680 --> 02:24:15,670

ready for contrast

3470

02:24:18,870 --> 02:24:17,190

and with new research still to be

3471

02:24:20,309 --> 02:24:18,880

delivered on upcoming cargo flights

3472

02:24:22,070 --> 02:24:20,319

including another spacex dragon

3473

02:24:23,830 --> 02:24:22,080

scheduled right now in june that's the

3474

02:24:25,349 --> 02:24:23,840

latest from here in mission control i'll

3475

02:24:26,790 --> 02:24:25,359

toss it over to jasmine now where we

3476

02:24:28,710 --> 02:24:26,800

will learn more about some of the

3477

02:24:37,510 --> 02:24:28,720

exciting science on the horizon for crew

3478

02:24:41,429 --> 02:24:38,870

all right we are

3479

02:24:43,910 --> 02:24:41,439

actually at the kennedy host desk at the

3480

02:24:46,070 --> 02:24:43,920

kennedy press site we are currently at t

3481

02:24:46,870 --> 02:24:46,080

minus one hour and fifty trillion

3482

02:24:52,070 --> 02:24:46,880

minutes

3483

02:24:58,070 --> 02:24:55,750

tnt loud and clear countdown one

3484

02:25:02,550 --> 02:24:58,080

gnc loud and clear stand by for comm

3485

02:25:02,560 --> 02:25:08,309

dragon prop on countdown one calm check

3486

02:25:08,319 --> 02:25:13,429

stop loud and clear countdown one

3487

02:25:20,309 --> 02:25:15,429

rob loud and clear stand by for com

3488

02:25:26,230 --> 02:25:22,309

dragon avionics on countdown one comm

3489

02:25:31,590 --> 02:25:29,830

avionics loud and clear countdown one

3490

02:25:35,510 --> 02:25:31,600

avionics loud and clear stand by for

3491

02:25:37,349 --> 02:25:35,520

comm check by ground segment engineer

3492

02:25:40,950 --> 02:25:37,359

driving ground segment on countdown one

3493

02:25:45,270 --> 02:25:42,710

ground segment loud and clear countdown

3494

02:25:50,870 --> 02:25:47,429

car segment please stand by for contract

3495

02:25:57,590 --> 02:25:53,190

dragon launch control on countdown one

3496

02:26:01,910 --> 02:25:59,590

launch control loud and clear countdown

3497

02:26:07,429 --> 02:26:03,750

launch control loud and clear stand by

3498

02:26:13,270 --> 02:26:07,439

for comm check by the chief engineer

3499

02:26:19,190 --> 02:26:17,030

ce loud and clear count down one

3500

02:26:27,030 --> 02:26:19,200

see loud and clear this completes the f9

3501

02:26:32,230 --> 02:26:29,030

all right so we just heard uh comm

3502

02:26:35,349 --> 02:26:32,240

checks from the falcon 9 team and the

3503

02:26:37,670 --> 02:26:35,359

crew dragon endeavor crew sitting inside

3504

02:26:40,469 --> 02:26:37,680

the capsule that was the voice of chief

3505

02:26:43,030 --> 02:26:40,479

engineer emma france that we last heard

3506

02:26:45,750 --> 02:26:43,040

and uh everything sounded great we are

3507

02:26:48,389 --> 02:26:45,760

going to go over now to jasmine at the

3508

02:26:51,270 --> 02:26:48,399

osb 2 viewing location with another

3509

02:26:53,110 --> 02:26:51,280

special guest jasmine

3510

02:26:54,950 --> 02:26:53,120

thanks marie one of the ongoing

3511

02:26:57,349 --> 02:26:54,960

experiments on the space station is

3512

02:26:59,510 --> 02:26:57,359

growing plants in space here to talk to

3513

02:27:01,190 --> 02:26:59,520

us more about it is joya masa project

3514

02:27:02,870 --> 02:27:01,200

scientist from right here at kennedy

3515

02:27:05,270 --> 02:27:02,880

space center thanks so much for being

3516

02:27:07,670 --> 02:27:05,280

here joya oh my pleasure jasmine thank

3517

02:27:10,230 --> 02:27:07,680

you absolutely so let's get right into

3518

02:27:12,070 --> 02:27:10,240

it why are we growing plants in space

3519

02:27:14,710 --> 02:27:12,080

well we're growing plants in space for a

3520

02:27:17,190 --> 02:27:14,720

number of reasons uh primarily for the

3521

02:27:19,830 --> 02:27:17,200

food to help supplement the packaged

3522

02:27:21,830 --> 02:27:19,840

diet the package diet is great but if

3523

02:27:23,750 --> 02:27:21,840

it's stored for a long duration like it

3524

02:27:24,870 --> 02:27:23,760

will have to be when we send astronauts

3525

02:27:27,110 --> 02:27:24,880

to mars

3526

02:27:29,110 --> 02:27:27,120

the the nutrition and the quality can

3527

02:27:31,590 --> 02:27:29,120

break down so we're looking at adding

3528

02:27:33,910 --> 02:27:31,600

plants to provide all of the vitamins

3529

02:27:34,870 --> 02:27:33,920

and variety for the crew

3530

02:27:36,870 --> 02:27:34,880

at the same time they're going to

3531

02:27:38,790 --> 02:27:36,880

provide psychological benefit and that

3532

02:27:40,309 --> 02:27:38,800

reminder of earth

3533

02:27:42,630 --> 02:27:40,319

right right now that's that's really

3534

02:27:44,870 --> 02:27:42,640

important to think about um so

3535

02:27:46,550 --> 02:27:44,880

growing plants can be difficult as it is

3536

02:27:47,990 --> 02:27:46,560

on earth not everybody has a green thumb

3537

02:27:49,750 --> 02:27:48,000

so what are some of the specific

3538

02:27:51,750 --> 02:27:49,760

challenges that astronauts are facing

3539

02:27:53,670 --> 02:27:51,760

growing plants on the space station

3540

02:27:56,309 --> 02:27:53,680

well you know we have a number of

3541

02:27:58,550 --> 02:27:56,319

challenges i mean one to think of is is

3542

02:28:01,190 --> 02:27:58,560

seeds you know i've got some seeds here

3543

02:28:03,590 --> 02:28:01,200

to show they're really small

3544

02:28:05,510 --> 02:28:03,600

so handling seeds planting seeds is a

3545

02:28:07,270 --> 02:28:05,520

real challenge so one of the things

3546

02:28:09,990 --> 02:28:07,280

we've recently tested in the space

3547

02:28:11,110 --> 02:28:10,000

station was having the astronauts put

3548

02:28:13,670 --> 02:28:11,120

seeds

3549

02:28:15,990 --> 02:28:13,680

that are planted in a film and to plant

3550

02:28:18,550 --> 02:28:16,000

the plants directly with that so it's a

3551  
02:28:20,870 --> 02:28:18,560  
way to handle the seeds easily in

3552  
02:28:22,469 --> 02:28:20,880  
microgravity without them floating away

3553  
02:28:25,110 --> 02:28:22,479  
and they plant them in plant pillows

3554  
02:28:27,670 --> 02:28:25,120  
such as this that we use in our veggie

3555  
02:28:30,230 --> 02:28:27,680  
chamber another challenge is watering

3556  
02:28:32,309 --> 02:28:30,240  
the plants and right now the astronauts

3557  
02:28:34,389 --> 02:28:32,319  
have to water the pillow in veggie

3558  
02:28:36,230 --> 02:28:34,399  
through this quick disconnect

3559  
02:28:38,309 --> 02:28:36,240  
you know it's a fair amount of labor and

3560  
02:28:40,070 --> 02:28:38,319  
it's not as sustainable as we need to be

3561  
02:28:42,550 --> 02:28:40,080  
in the future so we're looking at

3562  
02:28:44,870 --> 02:28:42,560  
methods like like this porous ceramic

3563  
02:28:47,349 --> 02:28:44,880

tube where plants could be grown

3564

02:28:50,950 --> 02:28:47,359

multiple times harvested the tubes could

3565

02:28:52,150 --> 02:28:50,960

be cleaned off and then replanted

3566

02:28:53,750 --> 02:28:52,160

so we're

3567

02:28:55,030 --> 02:28:53,760

we're looking at a lot of these

3568

02:28:56,710 --> 02:28:55,040

challenges to try to figure out

3569

02:28:57,990 --> 02:28:56,720

solutions for the future right right

3570

02:29:00,550 --> 02:28:58,000

it's good to see those creative

3571

02:29:03,270 --> 02:29:00,560

solutions that we have going on there so

3572

02:29:04,870 --> 02:29:03,280

this is a very uh timely uh scientific

3573

02:29:06,150 --> 02:29:04,880

um experiment going on on the space

3574

02:29:08,389 --> 02:29:06,160

station because just yesterday we

3575

02:29:09,990 --> 02:29:08,399

celebrated earth day can you talk to us

3576  
02:29:11,990 --> 02:29:10,000  
about how some of the science that we're

3577  
02:29:13,990 --> 02:29:12,000  
doing on the space station is helping us

3578  
02:29:15,990 --> 02:29:14,000  
here on our home planet of earth

3579  
02:29:17,830 --> 02:29:16,000  
certainly you know there's a lot of

3580  
02:29:19,670 --> 02:29:17,840  
parallels between the agriculture that

3581  
02:29:22,150 --> 02:29:19,680  
we do on earth and the agriculture that

3582  
02:29:25,030 --> 02:29:22,160  
we need to do in space and we're

3583  
02:29:27,110 --> 02:29:25,040  
learning a lot that may apply to growing

3584  
02:29:30,469 --> 02:29:27,120  
plants on earth especially in controlled

3585  
02:29:32,710 --> 02:29:30,479  
environments how to grow plants indoors

3586  
02:29:34,950 --> 02:29:32,720  
so there's a lot of work on vertical

3587  
02:29:37,190 --> 02:29:34,960  
farming in cities

3588  
02:29:39,190 --> 02:29:37,200

to grow fresh produce a lot of the

3589

02:29:41,830 --> 02:29:39,200

lessons that we're learning for how to

3590

02:29:43,990 --> 02:29:41,840

care for the plants translate directly

3591

02:29:46,070 --> 02:29:44,000

to that environment and we also learn a

3592

02:29:48,550 --> 02:29:46,080

lot from the research community on earth

3593

02:29:51,030 --> 02:29:48,560

working in that area and even other

3594

02:29:53,830 --> 02:29:51,040

aspects such as choosing the right

3595

02:29:56,469 --> 02:29:53,840

plants to grow in these environments

3596

02:29:59,030 --> 02:29:56,479

we do work on that here to identify good

3597

02:30:01,590 --> 02:29:59,040

candidates that have the vitamins that

3598

02:30:02,710 --> 02:30:01,600

people need that have very good food

3599

02:30:04,950 --> 02:30:02,720

safety

3600

02:30:05,750 --> 02:30:04,960

and those would also translate well to

3601

02:30:08,790 --> 02:30:05,760

earth

3602

02:30:11,190 --> 02:30:08,800

also the work on led lighting for crops

3603

02:30:13,990 --> 02:30:11,200

that was something that nasa started

3604

02:30:16,070 --> 02:30:14,000

originally and now it's being done all

3605

02:30:18,230 --> 02:30:16,080

over the planet right right and i'm glad

3606

02:30:20,230 --> 02:30:18,240

that you you mentioned choosing the

3607

02:30:22,550 --> 02:30:20,240

right plant i know that part of your

3608

02:30:24,230 --> 02:30:22,560

scientific research is also education

3609

02:30:26,389 --> 02:30:24,240

based with something called growing

3610

02:30:28,150 --> 02:30:26,399

beyond earth you worked with students in

3611

02:30:29,990 --> 02:30:28,160

hundreds of classrooms you know across

3612

02:30:31,830 --> 02:30:30,000

the country to help choose a crop that

3613

02:30:33,670 --> 02:30:31,840

mike hopkins grew on the space station

3614

02:30:34,870 --> 02:30:33,680

and is there anything that you want to

3615

02:30:37,830 --> 02:30:34,880

tell to those students you know about

3616

02:30:40,309 --> 02:30:37,840

the future of plant science well that

3617

02:30:41,830 --> 02:30:40,319

citizen science education program that

3618

02:30:43,910 --> 02:30:41,840

we run

3619

02:30:46,070 --> 02:30:43,920

is is well it's run by fairchild

3620

02:30:48,230 --> 02:30:46,080

tropical botanic garden in miami and we

3621

02:30:50,469 --> 02:30:48,240

collaborate with them on this it's been

3622

02:30:51,910 --> 02:30:50,479

wonderful because we have over 250

3623

02:30:53,590 --> 02:30:51,920

middle schools and high schools around

3624

02:30:55,270 --> 02:30:53,600

the country helping us to do the

3625

02:30:57,590 --> 02:30:55,280

research that we need we have a pretty

3626  
02:31:00,070 --> 02:30:57,600  
small group here at kennedy space center

3627  
02:31:02,550 --> 02:31:00,080  
and so we need this this army of young

3628  
02:31:05,590 --> 02:31:02,560  
researchers helping us to decide which

3629  
02:31:07,429 --> 02:31:05,600  
plants to to grow in the future so i

3630  
02:31:09,670 --> 02:31:07,439  
just really want to thank those students

3631  
02:31:11,750 --> 02:31:09,680  
for all their hard work on this

3632  
02:31:13,110 --> 02:31:11,760  
encourage others who are interested in

3633  
02:31:14,870 --> 02:31:13,120  
in potentially

3634  
02:31:18,230 --> 02:31:14,880  
getting involved in this program to look

3635  
02:31:20,550 --> 02:31:18,240  
at citizen science on [science.nasa.gov](http://science.nasa.gov)

3636  
02:31:22,630 --> 02:31:20,560  
to learn more about the program and to

3637  
02:31:24,469 --> 02:31:22,640  
encourage people to grow plants at home

3638  
02:31:26,550 --> 02:31:24,479

just because you learn so much when

3639

02:31:28,309 --> 02:31:26,560

you're doing this type of research right

3640

02:31:30,550 --> 02:31:28,319

right absolutely there's a lot that our

3641

02:31:32,469 --> 02:31:30,560

future space gardeners have to look

3642

02:31:33,830 --> 02:31:32,479

forward to enjoy a massive project

3643

02:31:35,750 --> 02:31:33,840

scientist thank you so much for being

3644

02:31:37,429 --> 02:31:35,760

here with us today our astronauts are

3645

02:31:38,870 --> 02:31:37,439

doing a lot more than gardening on the

3646

02:31:40,710 --> 02:31:38,880

space station so we're going to take a

3647

02:31:42,389 --> 02:31:40,720

closer look at this life-changing

3648

02:31:44,550 --> 02:31:42,399

science and get a message from the last

3649

02:31:47,590 --> 02:31:44,560

person to command a crew dragon into

3650

02:31:51,830 --> 02:31:49,510

the international space station is a

3651  
02:31:53,670 --> 02:31:51,840  
state-of-the-art microgravity laboratory

3652  
02:31:55,910 --> 02:31:53,680  
that is unlocking discoveries not

3653  
02:31:58,070 --> 02:31:55,920  
possible on earth and helping us push

3654  
02:32:00,309 --> 02:31:58,080  
farther into deep space

3655  
02:32:02,710 --> 02:32:00,319  
every single day we are answering big

3656  
02:32:04,309 --> 02:32:02,720  
questions about earth and about space

3657  
02:32:05,990 --> 02:32:04,319  
about where we came from and about where

3658  
02:32:07,429 --> 02:32:06,000  
we're going but the other thing that

3659  
02:32:12,630 --> 02:32:07,439  
we're doing is we're learning more

3660  
02:32:16,870 --> 02:32:14,790  
microgravity turns almost everything we

3661  
02:32:19,590 --> 02:32:16,880  
know upside down

3662  
02:32:22,389 --> 02:32:19,600  
liquids behave completely differently

3663  
02:32:25,270 --> 02:32:22,399

fire burns in new ways

3664

02:32:26,870 --> 02:32:25,280

biological systems reveal surprises

3665

02:32:28,950 --> 02:32:26,880

there's a few things that have made me

3666

02:32:30,790 --> 02:32:28,960

gasp out loud up on board space station

3667

02:32:32,790 --> 02:32:30,800

watching heart cells actually beat has

3668

02:32:34,710 --> 02:32:32,800

been a pretty big one

3669

02:32:36,230 --> 02:32:34,720

we're studying ways to grow food in

3670

02:32:39,190 --> 02:32:36,240

microgravity

3671

02:32:41,349 --> 02:32:39,200

i gotta tell you these uh

3672

02:32:44,550 --> 02:32:41,359

these are pretty amazing we're learning

3673

02:32:46,309 --> 02:32:44,560

how human bodies react to life in space

3674

02:32:48,550 --> 02:32:46,319

and how to keep crew members safe and

3675

02:32:49,670 --> 02:32:48,560

strong on long duration exploration

3676

02:32:51,510 --> 02:32:49,680

missions

3677

02:32:54,469 --> 02:32:51,520

deadlifts are awesome on earth they're

3678

02:32:56,389 --> 02:32:54,479

also awesome in zero gravity

3679

02:32:58,389 --> 02:32:56,399

we're testing technologies that will be

3680

02:33:01,590 --> 02:32:58,399

critical to our return to the moon and

3681

02:33:06,230 --> 02:33:03,830

our research has contributed to medical

3682

02:33:08,389 --> 02:33:06,240

and social benefits on our home planet

3683

02:33:10,710 --> 02:33:08,399

allowing us to find new ways to combat

3684

02:33:12,870 --> 02:33:10,720

disease back on earth and develop

3685

02:33:16,950 --> 02:33:12,880

technologies to deliver clean water to

3686

02:33:21,670 --> 02:33:18,950

the spectacular vantage point of more

3687

02:33:23,750 --> 02:33:21,680

than 200 miles above our planet supports

3688

02:33:26,630 --> 02:33:23,760

our monitoring of earth's climate

3689

02:33:28,389 --> 02:33:26,640

natural disasters and plant life i can't

3690

02:33:30,389 --> 02:33:28,399

begin to describe some of the sites that

3691

02:33:31,750 --> 02:33:30,399

you get to see it's just an incredible

3692

02:33:33,750 --> 02:33:31,760

view of our planet that we have from

3693

02:33:36,469 --> 02:33:33,760

here

3694

02:33:38,630 --> 02:33:36,479

growing new space economy so vital to

3695

02:33:42,469 --> 02:33:38,640

our continued progress in space is

3696

02:33:47,270 --> 02:33:45,190

we're inspiring future generations from

3697

02:33:51,349 --> 02:33:47,280

a platform that is one of the largest

3698

02:33:53,830 --> 02:33:51,359

international collaborations of our time

3699

02:33:55,990 --> 02:33:53,840

we're doing science at 17

3700

02:34:00,670 --> 02:33:56,000

500 miles per hour

3701

02:34:00,680 --> 02:34:06,469

[Music]

3702

02:34:10,150 --> 02:34:08,550

hi i'm nasa astronaut mike hopkins

3703

02:34:12,550 --> 02:34:10,160

aboard the international space station

3704

02:34:13,670 --> 02:34:12,560

and a member of expedition 64.

3705

02:34:15,429 --> 02:34:13,680

additionally i have the honor of

3706

02:34:17,190 --> 02:34:15,439

commanding crew dragon resilience which

3707

02:34:18,870 --> 02:34:17,200

brought us here last fall

3708

02:34:20,790 --> 02:34:18,880

since that time my crewmates and i have

3709

02:34:22,710 --> 02:34:20,800

been busy working on experiments and

3710

02:34:25,190 --> 02:34:22,720

performing space walks to maintain this

3711

02:34:26,870 --> 02:34:25,200

spectacular orbiting laboratory

3712

02:34:28,790 --> 02:34:26,880

it has been a privilege of a lifetime

3713

02:34:30,710 --> 02:34:28,800

for the past six months as we continue

3714

02:34:32,469 --> 02:34:30,720

to pave the way for exciting new

3715

02:34:34,309 --> 02:34:32,479

exploration that will lead to american

3716

02:34:35,990 --> 02:34:34,319

footprints on the moon once again in the

3717

02:34:38,070 --> 02:34:36,000

near future

3718

02:34:40,389 --> 02:34:38,080

victor shannon suici and i are getting

3719

02:34:42,070 --> 02:34:40,399

ready to come home soon but first we're

3720

02:34:47,110 --> 02:34:42,080

looking forward to welcoming the next

3721

02:34:48,630 --> 02:34:47,120

spacex dragon crew shane megan toma aki

3722

02:34:50,790 --> 02:34:48,640

you are about to experience one of the

3723

02:34:52,790 --> 02:34:50,800

most exciting rides of your lives and a

3724

02:34:53,830 --> 02:34:52,800

very memorable 24 hours to docking with

3725

02:34:55,349 --> 02:34:53,840

iss

3726

02:34:56,870 --> 02:34:55,359

we've loved our time here but we're

3727

02:34:58,790 --> 02:34:56,880

ready to pass the baton to you for the

3728

02:35:03,429 --> 02:34:58,800

next commercial crew mission on dragon

3729

02:35:07,190 --> 02:35:05,429

all right that was colonel mike hopkins

3730

02:35:08,630 --> 02:35:07,200

commander of crew dragon resilience he's

3731

02:35:11,030 --> 02:35:08,640

been up on the international space

3732

02:35:12,630 --> 02:35:11,040

station since november of last year he's

3733

02:35:14,550 --> 02:35:12,640

had a chance to look down at the earth

3734

02:35:16,230 --> 02:35:14,560

and watch it breathe now what does that

3735

02:35:17,830 --> 02:35:16,240

mean well luckily we have a climate

3736

02:35:19,270 --> 02:35:17,840

scientist here from nasa's jet

3737

02:35:20,870 --> 02:35:19,280

propulsion laboratory to tell us

3738

02:35:22,150 --> 02:35:20,880

everything about it dr anne marine

3739

02:35:24,550 --> 02:35:22,160

eldering thank you so much for joining

3740

02:35:26,230 --> 02:35:24,560

us hey thanks for having me here so yeah

3741

02:35:28,790 --> 02:35:26,240

what do we mean by watching the earth

3742

02:35:30,469 --> 02:35:28,800

breathe so carbon dioxide in our earth

3743

02:35:32,230 --> 02:35:30,479

atmosphere you probably know it's going

3744

02:35:35,030 --> 02:35:32,240

up as we burn

3745

02:35:37,830 --> 02:35:35,040

coal oil gas but it has this big

3746

02:35:40,870 --> 02:35:37,840

seasonal cycle so plants are really

3747

02:35:42,389 --> 02:35:40,880

important for carbon dioxide when they

3748

02:35:44,790 --> 02:35:42,399

spring they take it out of the

3749

02:35:46,309 --> 02:35:44,800

atmosphere and there's so many plants in

3750

02:35:48,309 --> 02:35:46,319

the land of the northern hemisphere

3751

02:35:50,230 --> 02:35:48,319

northern spring reduces the carbon

3752

02:35:51,910 --> 02:35:50,240

dioxide in the atmosphere

3753

02:35:55,910 --> 02:35:51,920

in the fall and the winter those leaves

3754

02:35:58,389 --> 02:35:55,920

are falling off decomposing it goes back

3755

02:36:00,230 --> 02:35:58,399

in and out of carbon dioxide from plant

3756

02:36:01,990 --> 02:36:00,240

activity every year

3757

02:36:04,469 --> 02:36:02,000

all right so why is the international

3758

02:36:06,309 --> 02:36:04,479

space station a good place to monitor

3759

02:36:07,750 --> 02:36:06,319

all of that the international space

3760

02:36:11,270 --> 02:36:07,760

station was actually really well

3761

02:36:13,910 --> 02:36:11,280

designed for us to do science on it and

3762

02:36:16,469 --> 02:36:13,920

two features we love one is it the way

3763

02:36:19,190 --> 02:36:16,479

it orbits around the earth it passes

3764

02:36:21,590 --> 02:36:19,200

overhead at different times of day

3765

02:36:22,870 --> 02:36:21,600

for like la you'll see it change during

3766

02:36:24,230 --> 02:36:22,880

the week

3767

02:36:25,590 --> 02:36:24,240

and that's really interesting with

3768

02:36:27,910 --> 02:36:25,600

plants and these other things that

3769

02:36:29,270 --> 02:36:27,920

respond to sunlight you want to see them

3770

02:36:32,070 --> 02:36:29,280

at different times of day you can sort

3771

02:36:34,950 --> 02:36:32,080

of learn about that part of the change

3772

02:36:36,710 --> 02:36:34,960

so the uh oco-3 orbiting carbon

3773

02:36:38,790 --> 02:36:36,720

observatory three has been up on the

3774

02:36:41,429 --> 02:36:38,800

international space station since 2019

3775

02:36:43,110 --> 02:36:41,439

it launched on a spacex dragon what have

3776

02:36:45,030 --> 02:36:43,120

you seen so far what sorts of data have

3777

02:36:46,469 --> 02:36:45,040

you seen coming in we've we've been

3778

02:36:48,230 --> 02:36:46,479

really having a great time making

3779

02:36:50,950 --> 02:36:48,240

measurements i brought my little plastic

3780

02:36:52,550 --> 02:36:50,960

model of what we have loaded up there

3781

02:36:54,790 --> 02:36:52,560

and one of the things on the bottom it

3782

02:36:57,270 --> 02:36:54,800

has this pointing system and we can look

3783

02:36:59,349 --> 02:36:57,280

everywhere very quickly so i brought a

3784

02:37:01,990 --> 02:36:59,359

graphic along that's a measurement over

3785

02:37:04,469 --> 02:37:02,000

los angeles we looked at carbon dioxide

3786

02:37:06,550 --> 02:37:04,479

in just two minutes we map the city

3787

02:37:09,270 --> 02:37:06,560

and you can see how there's extra carbon

3788

02:37:11,349 --> 02:37:09,280

dioxide over the heart of la as compared

3789

02:37:12,150 --> 02:37:11,359

to the outer reaches so we can start to

3790

02:37:14,710 --> 02:37:12,160

see

3791

02:37:16,950 --> 02:37:14,720

city scale variation in carbon dioxide

3792

02:37:18,790 --> 02:37:16,960

and learn more about our own human

3793

02:37:20,389 --> 02:37:18,800

emissions than we've ever seen before

3794

02:37:22,070 --> 02:37:20,399

now that's some great data right but

3795

02:37:23,349 --> 02:37:22,080

this is not the only remote sensing tool

3796

02:37:25,349 --> 02:37:23,359

that's on the international space

3797

02:37:27,510 --> 02:37:25,359

station what else is up there it's it's

3798

02:37:28,950 --> 02:37:27,520

like a party up there we've got

3799

02:37:31,349 --> 02:37:28,960

especially when you're thinking about

3800

02:37:33,270 --> 02:37:31,359

plants we have a neighbor called jedi

3801

02:37:35,590 --> 02:37:33,280

it's looking at how much plant material

3802

02:37:37,830 --> 02:37:35,600

is there there's another neighbor called

3803

02:37:39,990 --> 02:37:37,840

ecostress it says what happens to plants

3804

02:37:42,150 --> 02:37:40,000

when they're hot and dried out and then

3805

02:37:44,870 --> 02:37:42,160

this other instrument from the german

3806

02:37:46,550 --> 02:37:44,880

space agency diesis that's figuring out

3807

02:37:48,150 --> 02:37:46,560

what types of plants are in different

3808

02:37:50,950 --> 02:37:48,160

places so when you get all those

3809

02:37:51,990 --> 02:37:50,960

measurements from the iss same time same

3810

02:37:54,230 --> 02:37:52,000

place

3811

02:37:56,070 --> 02:37:54,240

really powerful for science all right

3812

02:37:58,469 --> 02:37:56,080

anne marie eldering thank you so much

3813

02:38:01,429 --> 02:37:58,479

for joining us uh project scientist for

3814

02:38:04,150 --> 02:38:01,439

orbiting carbon observatory 3. we have a

3815

02:38:05,590 --> 02:38:04,160

lot more of climate science information

3816

02:38:06,950 --> 02:38:05,600

that you can find on our website that's

3817

02:38:08,469 --> 02:38:06,960

nasa.gov

3818

02:38:10,710 --> 02:38:08,479

earth day now let's get back to the

3819

02:38:12,389 --> 02:38:10,720

action with crew 2 with john innsbrucker

3820

02:38:15,670 --> 02:38:12,399

here at spacex headquarters in

3821

02:38:17,429 --> 02:38:15,680

washington in hawthorne california john

3822

02:38:19,510 --> 02:38:17,439

that's right gary just upstairs from

3823

02:38:21,670 --> 02:38:19,520

where you are down on the floor we're

3824

02:38:24,230 --> 02:38:21,680

coming up on just over 100 minutes

3825

02:38:26,630 --> 02:38:24,240

before launch the falcon 9 launch team

3826

02:38:29,110 --> 02:38:26,640

began their final activities at t minus

3827

02:38:31,750 --> 02:38:29,120

two hours now the launch engineers are

3828

02:38:34,150 --> 02:38:31,760

located in firing room four in the nasal

3829

02:38:36,150 --> 02:38:34,160

launch control center on kennedy space

3830

02:38:39,270 --> 02:38:36,160

center they've got a view through their

3831

02:38:40,950 --> 02:38:39,280

large windows of pad 39a located just

3832

02:38:43,750 --> 02:38:40,960

five kilometers east of where they're

3833

02:38:45,590 --> 02:38:43,760

sitting the falcon 9 team is loading

3834

02:38:47,830 --> 02:38:45,600

helium and nitrogen gas into storage

3835

02:38:49,830 --> 02:38:47,840

bottles on the launch vehicle

3836

02:38:52,389 --> 02:38:49,840

radio frequency checkouts have also been

3837

02:38:54,550 --> 02:38:52,399

completed and a final review of launch

3838

02:38:57,190 --> 02:38:54,560

vehicle testing performed earlier today

3839

02:38:58,870 --> 02:38:57,200

is underway now the spacex chief

3840

02:39:01,349 --> 02:38:58,880

engineer will check with the team at t

3841

02:39:03,429 --> 02:39:01,359

minus 80 minutes to verify we are good

3842

02:39:05,510 --> 02:39:03,439

to continue the countdown

3843

02:39:08,070 --> 02:39:05,520

now the next major activity is going to

3844

02:39:10,550 --> 02:39:08,080

be flowing a small amount of fuel onto

3845

02:39:12,389 --> 02:39:10,560

the first stage to prime the merlin 1d

3846

02:39:14,309 --> 02:39:12,399

engines for ignition

3847

02:39:16,870 --> 02:39:14,319

the team is also monitoring fuel and

3848

02:39:18,469 --> 02:39:16,880

liquid oxygen loading preparations we're

3849

02:39:21,190 --> 02:39:18,479

ensuring that the propellants in the

3850

02:39:23,910 --> 02:39:21,200

ground tanks are correctly chilled prior

3851  
02:39:25,510 --> 02:39:23,920  
to loading onto the falcon at t minus 35

3852  
02:39:27,429 --> 02:39:25,520  
minutes

3853  
02:39:29,190 --> 02:39:27,439  
now the view you've got here the dragon

3854  
02:39:31,830 --> 02:39:29,200  
capsule at the end of the crew access

3855  
02:39:33,270 --> 02:39:31,840  
arm well the crew has been busy uh this

3856  
02:39:35,670 --> 02:39:33,280  
early morning

3857  
02:39:38,550 --> 02:39:35,680  
we've got all four of the astronauts are

3858  
02:39:40,389 --> 02:39:38,560  
in the capsule the hatch is closed

3859  
02:39:42,630 --> 02:39:40,399  
the comp checks with the spacex launch

3860  
02:39:44,950 --> 02:39:42,640  
team are complete both with the dragon

3861  
02:39:46,309 --> 02:39:44,960  
flight crew as well as the falcon 9

3862  
02:39:48,150 --> 02:39:46,319  
launch crew

3863  
02:39:49,590 --> 02:39:48,160

we've also done a leak check and that

3864

02:39:52,790 --> 02:39:49,600

confirmed the hatch is correctly

3865

02:39:54,870 --> 02:39:52,800

installed it was completed with no leaks

3866

02:39:57,590 --> 02:39:54,880

now in about t minus one hour the

3867

02:40:00,070 --> 02:39:57,600

support team will be clear of the crew

3868

02:40:01,670 --> 02:40:00,080

access arm and the pad and actually

3869

02:40:03,750 --> 02:40:01,680

right now we're running well ahead of

3870

02:40:05,590 --> 02:40:03,760

schedule so they're beginning to button

3871

02:40:09,750 --> 02:40:05,600

things up and so they may actually leave

3872

02:40:11,830 --> 02:40:09,760

the launch pad area a little bit early

3873

02:40:13,990 --> 02:40:11,840

now the range will begin their final

3874

02:40:15,030 --> 02:40:14,000

sweeps of the flight hazard and caution

3875

02:40:17,269 --> 02:40:15,040

areas

3876  
02:40:19,349 --> 02:40:17,279  
and for the weather the good news right

3877  
02:40:20,389 --> 02:40:19,359  
now is that everything continues to look

3878  
02:40:21,590 --> 02:40:20,399  
good

3879  
02:40:24,550 --> 02:40:21,600  
the weather

3880  
02:40:26,550 --> 02:40:24,560  
possibility of bad weather is only five

3881  
02:40:28,469 --> 02:40:26,560  
percent right now what we're mostly

3882  
02:40:31,670 --> 02:40:28,479  
looking at is in case uh

3883  
02:40:33,910 --> 02:40:31,680  
a cloud with some rain in it pops up

3884  
02:40:36,469 --> 02:40:33,920  
along the flight trajectory but that

3885  
02:40:38,950 --> 02:40:36,479  
doesn't look to be a big issue right now

3886  
02:40:41,990 --> 02:40:38,960  
we are waiting at t minus one hour for

3887  
02:40:43,910 --> 02:40:42,000  
some last weather data that will tell us

3888  
02:40:45,990 --> 02:40:43,920

the dragon weather conditions if they

3889

02:40:47,990 --> 02:40:46,000

are go for launch in the case of an

3890

02:40:50,070 --> 02:40:48,000

abort we need to make sure that it's not

3891

02:40:52,389 --> 02:40:50,080

too windy if dragon had to do an escape

3892

02:40:54,309 --> 02:40:52,399

maneuver from the falcon 9 we don't want

3893

02:40:55,990 --> 02:40:54,319

the winds to be too high as they come

3894

02:40:58,630 --> 02:40:56,000

down into the ocean

3895

02:41:00,870 --> 02:40:58,640

but right now everything looks good both

3896

02:41:04,870 --> 02:41:00,880

at the launch pad as well as the

3897

02:41:07,030 --> 02:41:04,880

downrange and uh contingency weather uh

3898

02:41:08,469 --> 02:41:07,040

contingency landing locations looking

3899

02:41:10,309 --> 02:41:08,479

good weather-wise

3900

02:41:13,590 --> 02:41:10,319

so right now everything's looking go at

3901  
02:41:16,950 --> 02:41:13,600  
t-minus one hour 37 minutes 28 seconds

3902  
02:41:18,150 --> 02:41:16,960  
and jasmine back to you in florida

3903  
02:41:19,750 --> 02:41:18,160  
thanks john

3904  
02:41:21,590 --> 02:41:19,760  
this mission is demonstrating our

3905  
02:41:23,910 --> 02:41:21,600  
partnerships across the country and

3906  
02:41:26,550 --> 02:41:23,920  
around the globe joining me now is

3907  
02:41:28,309 --> 02:41:26,560  
hiroshi sasaki vice president of jaxa

3908  
02:41:30,469 --> 02:41:28,319  
and director general of the human space

3909  
02:41:32,150 --> 02:41:30,479  
flight technology directorate thank you

3910  
02:41:33,990 --> 02:41:32,160  
so much for joining us today welcome

3911  
02:41:36,309 --> 02:41:34,000  
thank you very much of course of course

3912  
02:41:38,870 --> 02:41:36,319  
so crew 2 will be the second commercial

3913  
02:41:40,469 --> 02:41:38,880

crew mission to include a jaxa astronaut

3914

02:41:42,309 --> 02:41:40,479

can you tell us what the commercial crew

3915

02:41:43,830 --> 02:41:42,319

program means to jaxa

3916

02:41:47,269 --> 02:41:43,840

yeah

3917

02:41:48,070 --> 02:41:47,279

program is very uh important for also us

3918

02:41:51,110 --> 02:41:48,080

that

3919

02:41:52,630 --> 02:41:51,120

our japanese astronauts on board

3920

02:41:54,790 --> 02:41:52,640

and aki

3921

02:41:57,190 --> 02:41:54,800

as well as the japanese folks are so

3922

02:42:00,630 --> 02:41:57,200

excited that uh

3923

02:42:02,309 --> 02:42:00,640

japanese notes soichi and aki

3924

02:42:04,150 --> 02:42:02,319

will meet

3925

02:42:05,830 --> 02:42:04,160

each other in a

3926

02:42:07,429 --> 02:42:05,840

space station

3927

02:42:10,309 --> 02:42:07,439

and there is a symbol

3928

02:42:14,550 --> 02:42:10,319

of the japanese accent notes are active

3929

02:42:17,269 --> 02:42:14,560

in space and it inspires and give hopes

3930

02:42:19,830 --> 02:42:17,279

to the japanese young people

3931

02:42:22,309 --> 02:42:19,840

right right absolutely so i'm glad that

3932

02:42:24,230 --> 02:42:22,319

you mentioned that that aki hika hoshide

3933

02:42:26,070 --> 02:42:24,240

will be joining suici naguchi on board

3934

02:42:28,710 --> 02:42:26,080

and this will be the first time that

3935

02:42:30,870 --> 02:42:28,720

there is a direct crew handover with two

3936

02:42:33,190 --> 02:42:30,880

jaxa astronauts can you tell us how

3937

02:42:37,670 --> 02:42:33,200

that's inspiring the next uh generation

3938

02:42:40,950 --> 02:42:37,680

of jaxa astronauts yeah uh now we are uh

3939

02:42:43,030 --> 02:42:40,960

selecting the new astronaut

3940

02:42:45,429 --> 02:42:43,040

not only the iss but all the

3941

02:42:46,950 --> 02:42:45,439

moon uh missions

3942

02:42:50,469 --> 02:42:46,960

and uh it

3943

02:42:52,150 --> 02:42:50,479

this activity is a very inspires uh

3944

02:42:54,950 --> 02:42:52,160

peoples to

3945

02:42:57,429 --> 02:42:54,960

want to go to the space and

3946

02:42:58,870 --> 02:42:57,439

even the moon i think

3947

02:43:01,110 --> 02:42:58,880

absolutely there's a lot of inspiration

3948

02:43:03,830 --> 02:43:01,120

of course coming from the two of them

3949

02:43:06,790 --> 02:43:03,840

and like suici aki has had a lot of

3950

02:43:09,910 --> 02:43:06,800

experience he's flown on shuttle soyuz

3951  
02:43:12,389 --> 02:43:09,920  
and soon a crew dragon which is very

3952  
02:43:14,630 --> 02:43:12,399  
exciting can you tell us um what unique

3953  
02:43:18,469 --> 02:43:14,640  
skills he is bringing to crew 2

3954  
02:43:20,710 --> 02:43:18,479  
yeah he has a lot of experience and

3955  
02:43:23,590 --> 02:43:20,720  
i think that he's very

3956  
02:43:24,950 --> 02:43:23,600  
relaxed to the lunch so

3957  
02:43:26,950 --> 02:43:24,960  
maybe he

3958  
02:43:27,990 --> 02:43:26,960  
will lead the

3959  
02:43:31,190 --> 02:43:28,000  
other

3960  
02:43:34,830 --> 02:43:31,200  
astronauts to them

3961  
02:43:39,110 --> 02:43:37,670  
mind i think so yeah

3962  
02:43:40,870 --> 02:43:39,120  
we're glad that he's relaxed today but

3963  
02:43:42,790 --> 02:43:40,880

he's ready to go we're all ready to

3964

02:43:44,870 --> 02:43:42,800

watch him and cheer him on so can you

3965

02:43:47,269 --> 02:43:44,880

tell us what is next for jaxa and the

3966

02:43:48,389 --> 02:43:47,279

commercial crew program yeah uh the next

3967

02:43:53,910 --> 02:43:48,399

uh

3968

02:43:57,670 --> 02:43:53,920

wakata a very famous astronaut

3969

02:43:59,030 --> 02:43:57,680

and also look at his second flight

3970

02:44:01,110 --> 02:43:59,040

and uh

3971

02:44:04,710 --> 02:44:01,120

we want to

3972

02:44:06,469 --> 02:44:04,720

send a japanese note every year

3973

02:44:08,230 --> 02:44:06,479

that's that's fantastic we're looking

3974

02:44:10,790 --> 02:44:08,240

forward to that cadence of jaxa

3975

02:44:12,870 --> 02:44:10,800

astronauts going to the space station

3976

02:44:14,710 --> 02:44:12,880

and you also mentioned the moon you know

3977

02:44:17,349 --> 02:44:14,720

inspiring people to to go back to the

3978

02:44:19,190 --> 02:44:17,359

moon so last year jax assigned the

3979

02:44:21,349 --> 02:44:19,200

artemis accords which is

3980

02:44:23,510 --> 02:44:21,359

speaking to our continued partnership in

3981

02:44:23,980 --> 02:44:23,520

space can you tell us more about that

3982

02:44:25,429 --> 02:44:23,990

yeah

3983

02:44:27,190 --> 02:44:25,439

[Music]

3984

02:44:29,190 --> 02:44:27,200

japan is

3985

02:44:30,830 --> 02:44:29,200

signed not only the artist program but

3986

02:44:35,910 --> 02:44:30,840

also the gateway

3987

02:44:38,309 --> 02:44:35,920

mou and uh we want to uh contribute the

3988

02:44:40,070 --> 02:44:38,319

using our

3989

02:44:43,990 --> 02:44:40,080

expertise

3990

02:44:46,469 --> 02:44:44,000

such as uh ecosystem or transportations

3991

02:44:48,469 --> 02:44:46,479

and even astronauts right

3992

02:44:51,190 --> 02:44:48,479

and uh we want to

3993

02:44:53,349 --> 02:44:51,200

uh go together to the moon

3994

02:44:55,429 --> 02:44:53,359

with the international partners

3995

02:44:57,190 --> 02:44:55,439

exactly no you know it's all about

3996

02:44:59,190 --> 02:44:57,200

partnership it's all about going

3997

02:45:01,190 --> 02:44:59,200

together uh is there anything that you

3998

02:45:02,950 --> 02:45:01,200

can tell us that uh aki will be working

3999

02:45:06,309 --> 02:45:02,960

on on station any specific science that

4000

02:45:08,230 --> 02:45:06,319

he'll be doing yeah he will uh

4001

02:45:10,630 --> 02:45:08,240

conduct a lot of

4002

02:45:12,830 --> 02:45:10,640

science research and technology

4003

02:45:16,150 --> 02:45:12,840

demonstrate such

4004

02:45:17,429 --> 02:45:16,160

as protein crystal growth for the

4005

02:45:18,630 --> 02:45:17,439

medicine

4006

02:45:20,790 --> 02:45:18,640

design

4007

02:45:22,790 --> 02:45:20,800

contributing the

4008

02:45:25,269 --> 02:45:22,800

people on the ground

4009

02:45:26,469 --> 02:45:25,279

and demonstration was a

4010

02:45:28,550 --> 02:45:26,479

enhanced

4011

02:45:31,349 --> 02:45:28,560

water recovery system

4012

02:45:33,190 --> 02:45:31,359

for the huge explorations

4013

02:45:34,469 --> 02:45:33,200

right right that is that's fantastic we

4014

02:45:36,309 --> 02:45:34,479

know that he's going to be doing great

4015

02:45:37,830 --> 02:45:36,319

work and i'm sure that you are excited

4016

02:45:39,190 --> 02:45:37,840

to see today's launch can you tell us

4017

02:45:42,309 --> 02:45:39,200

where you'll be watching from later on

4018

02:45:44,710 --> 02:45:42,319

today yeah i want to i'm i'm looking for

4019

02:45:47,429 --> 02:45:44,720

the i think it's a beautiful launch

4020

02:45:49,269 --> 02:45:47,439

fantastic wonderful hiroshi sasaki thank

4021

02:45:50,950 --> 02:45:49,279

you so much for joining us today we are

4022

02:45:52,309 --> 02:45:50,960

honored to have you here and now we're

4023

02:45:55,429 --> 02:45:52,319

going to take it back to marie at the

4024

02:45:57,590 --> 02:45:55,439

ksc host desk

4025

02:46:00,469 --> 02:45:57,600

all right thank you jasmine we are uh

4026  
02:46:03,349 --> 02:46:00,479  
currently at t minus one hour 32 minutes

4027  
02:46:05,190 --> 02:46:03,359  
and counting until crew dragon flies its

4028  
02:46:07,269 --> 02:46:05,200  
next four-person crew to the

4029  
02:46:09,429 --> 02:46:07,279  
international space station with the

4030  
02:46:11,910 --> 02:46:09,439  
astronauts you see live inside the crew

4031  
02:46:14,309 --> 02:46:11,920  
dragon endeavor spacecraft commander

4032  
02:46:16,630 --> 02:46:14,319  
shane kimbrough pilot megan macarthur

4033  
02:46:19,590 --> 02:46:16,640  
and mission specialists tomah pesquet

4034  
02:46:21,349 --> 02:46:19,600  
and aki hoshide

4035  
02:46:24,469 --> 02:46:21,359  
at this point in time

4036  
02:46:27,670 --> 02:46:24,479  
we expect the closeout team to be given

4037  
02:46:28,630 --> 02:46:27,680  
the go to leave the bda the blast danger

4038  
02:46:30,070 --> 02:46:28,640

area

4039

02:46:32,630 --> 02:46:30,080

we're waiting to hear that call out

4040

02:46:35,510 --> 02:46:32,640

they're just doing final inspections

4041

02:46:39,990 --> 02:46:35,520

so all good news uh proceeding to an

4042

02:46:41,830 --> 02:46:40,000

on-time liftoff this afternoon the

4043

02:46:44,230 --> 02:46:41,840

the milestone that will be coming up

4044

02:46:46,550 --> 02:46:44,240

after that will be the

4045

02:46:47,990 --> 02:46:46,560

launch escape system checks or les

4046

02:46:50,950 --> 02:46:48,000

checks

4047

02:46:53,190 --> 02:46:50,960

that will happen around t minus 1 hour

4048

02:46:54,309 --> 02:46:53,200

and 30 minutes

4049

02:46:57,030 --> 02:46:54,319

and those will be conducted by the

4050

02:46:59,030 --> 02:46:57,040

falcon launch team those checkouts are a

4051  
02:47:00,230 --> 02:46:59,040  
standard part of the launch countdown

4052  
02:47:02,230 --> 02:47:00,240  
and critical to make sure that

4053  
02:47:04,790 --> 02:47:02,240  
everything is in working order before

4054  
02:47:06,870 --> 02:47:04,800  
arming the launch escape system and

4055  
02:47:08,469 --> 02:47:06,880  
which of course and there we see the

4056  
02:47:11,030 --> 02:47:08,479  
closeout team

4057  
02:47:17,510 --> 02:47:11,040  
leaving the dragon capsule walking down

4058  
02:47:26,550 --> 02:47:20,389  
so the closeout team has begun

4059  
02:47:26,560 --> 02:47:33,349  
kathy thanks

4060  
02:47:37,429 --> 02:47:35,269  
we just heard confirmation that the pat

4061  
02:47:42,950 --> 02:47:37,439  
closeout team has departed the crew

4062  
02:47:46,790 --> 02:47:44,389  
as i was saying the milestone that will

4063  
02:47:49,510 --> 02:47:46,800

be coming up next is a commencement of

4064

02:47:52,230 --> 02:47:49,520

the launch escape system checks

4065

02:47:53,910 --> 02:47:52,240

and we're expecting that to begin any

4066

02:47:55,590 --> 02:47:53,920

moment now

4067

02:47:57,670 --> 02:47:55,600

as i was saying this these are standard

4068

02:47:59,510 --> 02:47:57,680

part of the launch countdown critical to

4069

02:48:02,230 --> 02:47:59,520

make sure that everything is in working

4070

02:48:03,990 --> 02:48:02,240

order before we arm the launch escape

4071

02:48:05,750 --> 02:48:04,000

system which of course comes right

4072

02:48:09,510 --> 02:48:05,760

before we

4073

02:48:13,269 --> 02:48:12,150

and that launch escape system is what

4074

02:48:16,230 --> 02:48:13,279

uh

4075

02:48:17,349 --> 02:48:16,240

basically arms the crew dragon capsule

4076

02:48:18,790 --> 02:48:17,359

to be

4077

02:48:21,590 --> 02:48:18,800

able to

4078

02:48:23,990 --> 02:48:21,600

uh propel itself off of the falcon 9

4079

02:48:26,790 --> 02:48:24,000

rocket in the event of an emergency and

4080

02:48:28,830 --> 02:48:26,800

so that is a critical uh step that has

4081

02:48:31,830 --> 02:48:28,840

to be taken before the arming of that

4082

02:48:34,870 --> 02:48:31,840

system that happens just before

4083

02:48:40,790 --> 02:48:34,880

fueling on the rocket begins at t minus

4084

02:48:45,670 --> 02:48:43,429

once again seated in the seat that is

4085

02:48:48,710 --> 02:48:45,680

closest to what we can actually see on

4086

02:48:51,990 --> 02:48:48,720

the camera is commander shane kimbrough

4087

02:48:55,590 --> 02:48:52,000

to his right is pilot megan macarthur

4088

02:48:57,750 --> 02:48:55,600

uh to her right is tomah pesquet and

4089

02:48:59,990 --> 02:48:57,760

then seated underneath the camera so

4090

02:49:05,030 --> 02:49:00,000

unfortunately we can't see him

4091

02:49:08,870 --> 02:49:07,190

this crew has certainly been having a

4092

02:49:11,110 --> 02:49:08,880

good time while they're sitting in their

4093

02:49:13,190 --> 02:49:11,120

seats there's not a whole lot for them

4094

02:49:15,910 --> 02:49:13,200

to do at this particular time we see

4095

02:49:18,469 --> 02:49:15,920

some smiles there on our commander so it

4096

02:49:20,630 --> 02:49:18,479

sounds like everything is is uh

4097

02:49:23,830 --> 02:49:20,640

fun inside the capsule tracy you

4098

02:49:27,750 --> 02:49:23,840

mentioned earlier that this crew is

4099

02:49:29,030 --> 02:49:27,760

just at you know the the epitome of

4100

02:49:30,710 --> 02:49:29,040

um

4101  
02:49:33,910 --> 02:49:30,720  
of working together and just having

4102  
02:49:35,750 --> 02:49:33,920  
these amazing personalities and um i can

4103  
02:49:38,790 --> 02:49:35,760  
only imagine what it would might be like

4104  
02:49:40,550 --> 02:49:38,800  
to be of course no flies in

4105  
02:49:43,190 --> 02:49:40,560  
crew dragon that's that's foreign object

4106  
02:49:45,830 --> 02:49:43,200  
debris that's fun but to to be a fly on

4107  
02:49:47,269 --> 02:49:45,840  
the wall and and kind of peek in on

4108  
02:49:49,510 --> 02:49:47,279  
these interactions it must be so

4109  
02:49:51,429 --> 02:49:49,520  
fascinating yeah if i had to guess even

4110  
02:49:52,870 --> 02:49:51,439  
though we can't see aki uh we know he's

4111  
02:49:54,469 --> 02:49:52,880  
smiling right

4112  
02:49:55,990 --> 02:49:54,479  
he's the one probably making them all

4113  
02:49:57,590 --> 02:49:56,000

laugh yeah

4114

02:49:59,590 --> 02:49:57,600

yeah these guys have worked together

4115

02:50:01,510 --> 02:49:59,600

we've all worked together well before um

4116

02:50:03,590 --> 02:50:01,520

being assigned to crew together and

4117

02:50:05,990 --> 02:50:03,600

these four have intertwined in a number

4118

02:50:07,830 --> 02:50:06,000

of ways uh as you know shane and

4119

02:50:09,990 --> 02:50:07,840

tomaflew in space together on their

4120

02:50:11,110 --> 02:50:10,000

expedition

4121

02:50:13,110 --> 02:50:11,120

aki

4122

02:50:14,890 --> 02:50:13,120

credits megan with teaching him how to

4123

02:50:17,349 --> 02:50:14,900

capcom and um

4124

02:50:20,070 --> 02:50:17,359

[Laughter]

4125

02:50:21,910 --> 02:50:20,080

this is how you capcom aki and he told

4126  
02:50:24,950 --> 02:50:21,920  
me that he gave me credit for giving him

4127  
02:50:27,269 --> 02:50:24,960  
the opportunity to first make a quindar

4128  
02:50:28,630 --> 02:50:27,279  
which is the ping that you hear

4129  
02:50:30,710 --> 02:50:28,640  
when you have

4130  
02:50:32,469 --> 02:50:30,720  
keyed the mic in mission control to

4131  
02:50:35,030 --> 02:50:32,479  
space to ground or air to ground or in

4132  
02:50:36,309 --> 02:50:35,040  
this case uh dragon to ground and i'll

4133  
02:50:38,309 --> 02:50:36,319  
take it you know whatever um

4134  
02:50:41,910 --> 02:50:38,319  
contribution i made to his fabulous

4135  
02:50:45,110 --> 02:50:41,920  
career i'm i'm very honored uh but um

4136  
02:50:48,230 --> 02:50:45,120  
yeah this this crew is uh um top-notch

4137  
02:50:51,429 --> 02:50:48,240  
um people um at heart as well as

4138  
02:50:54,070 --> 02:50:51,439

technically sound and brilliant and all

4139

02:50:56,150 --> 02:50:54,080

that they've done so i can only imagine

4140

02:50:57,269 --> 02:50:56,160

them being concentrated together in a

4141

02:50:58,790 --> 02:50:57,279

capsule

4142

02:51:00,469 --> 02:50:58,800

there's just too much goodness the rest

4143

02:51:02,830 --> 02:51:00,479

of us probably just wouldn't be able to

4144

02:51:05,750 --> 02:51:02,840

fit in there so it's

4145

02:51:07,590 --> 02:51:05,760

great and there's a look outside at the

4146

02:51:10,070 --> 02:51:07,600

launch pad uh

4147

02:51:12,469 --> 02:51:10,080

looking at the crew access arm extended

4148

02:51:15,429 --> 02:51:12,479

out still connected at this point to the

4149

02:51:17,269 --> 02:51:15,439

crew dragon endeavor that will retract

4150

02:51:21,349 --> 02:51:17,279

from the capsule as we get closer to

4151  
02:51:23,429 --> 02:51:21,359  
launch around the t minus 42 minute mark

4152  
02:51:25,590 --> 02:51:23,439  
so again we've we've just been standing

4153  
02:51:28,710 --> 02:51:25,600  
by to listen to

4154  
02:51:31,190 --> 02:51:28,720  
the launch escape system health checks

4155  
02:51:32,389 --> 02:51:31,200  
we expected that to hear that about t

4156  
02:51:34,309 --> 02:51:32,399  
minus

4157  
02:51:39,269 --> 02:51:34,319  
1 hour and 30 minutes but we haven't

4158  
02:51:46,550 --> 02:51:40,950  
let's take a social question while we're

4159  
02:51:50,550 --> 02:51:48,630  
all right how come some launches take

4160  
02:51:51,990 --> 02:51:50,560  
longer to get to the space station than

4161  
02:51:54,230 --> 02:51:52,000  
others tracy do you want to take that

4162  
02:51:56,469 --> 02:51:54,240  
one sure um

4163  
02:51:58,790 --> 02:51:56,479

i it mainly again has to do with our

4164

02:52:00,550 --> 02:51:58,800

orbital mechanics and um

4165

02:52:01,750 --> 02:52:00,560

you know the station uh

4166

02:52:03,429 --> 02:52:01,760

the the

4167

02:52:05,590 --> 02:52:03,439

capsule one that launches is uh

4168

02:52:08,389 --> 02:52:05,600

constantly chasing the space station um

4169

02:52:09,990 --> 02:52:08,399

but it it has a lot to do with um

4170

02:52:11,750 --> 02:52:10,000

phasing we call it but that's really

4171

02:52:14,150 --> 02:52:11,760

just the the distance you are to the

4172

02:52:15,990 --> 02:52:14,160

space space station and and how far

4173

02:52:17,670 --> 02:52:16,000

below it you are and you're catching up

4174

02:52:19,590 --> 02:52:17,680

to it and it and

4175

02:52:21,830 --> 02:52:19,600

we call it a profile but it's basically

4176  
02:52:25,190 --> 02:52:21,840  
the path that the capsule takes to get

4177  
02:52:28,150 --> 02:52:25,200  
to this station and um each milestone of

4178  
02:52:30,469 --> 02:52:28,160  
that is a is a engine firing that that

4179  
02:52:33,349 --> 02:52:30,479  
takes it closer to the station either in

4180  
02:52:34,630 --> 02:52:33,359  
altitude or in proximity and how that's

4181  
02:52:36,550 --> 02:52:34,640  
designed

4182  
02:52:39,269 --> 02:52:36,560  
plays a big role in how long it takes to

4183  
02:52:41,670 --> 02:52:39,279  
get there plus engines uh performance

4184  
02:52:43,590 --> 02:52:41,680  
and and propellant and a number of

4185  
02:52:46,469 --> 02:52:43,600  
factors can go into that

4186  
02:52:49,750 --> 02:52:46,479  
that make it anywhere from two days uh

4187  
02:52:52,710 --> 02:52:49,760  
to two hours and so it's quite a um

4188  
02:52:55,030 --> 02:52:52,720

a range of uh of time to get there

4189

02:52:58,309 --> 02:52:55,040

and it just so happens that uh this

4190

02:53:00,469 --> 02:52:58,319

flight after it lifts off at 5 49 in two

4191

02:53:02,309 --> 02:53:00,479

seconds this morning we expect they will

4192

02:53:05,030 --> 02:53:02,319

be docking to the international space

4193

02:53:07,910 --> 02:53:05,040

station in less than 24 hours a little

4194

02:53:09,510 --> 02:53:07,920

after 5 a.m eastern time

4195

02:53:11,110 --> 02:53:09,520

saturday morning

4196

02:53:13,990 --> 02:53:11,120

i think we have time for another social

4197

02:53:18,950 --> 02:53:17,110

what improvement over crew one does this

4198

02:53:22,230 --> 02:53:18,960

mission have in terms of crew dragon

4199

02:53:25,190 --> 02:53:22,240

itself also will rendezvous with iss be

4200

02:53:27,349 --> 02:53:25,200

quicker this time or take the 27 hours

4201

02:53:29,110 --> 02:53:27,359

like previous missions i think we just

4202

02:53:30,309 --> 02:53:29,120

answered the last part of that question

4203

02:53:32,790 --> 02:53:30,319

but kate do you want to take the first

4204

02:53:35,190 --> 02:53:32,800

part for sure um yeah we've definitely

4205

02:53:37,429 --> 02:53:35,200

made a number of upgrades to crew dragon

4206

02:53:39,510 --> 02:53:37,439

like i said before this is a refurbished

4207

02:53:42,309 --> 02:53:39,520

dragon this is the first time that we

4208

02:53:44,230 --> 02:53:42,319

are utilizing a a flight proven dragon

4209

02:53:46,150 --> 02:53:44,240

on a crew mission

4210

02:53:47,830 --> 02:53:46,160

we installed some components on the

4211

02:53:50,550 --> 02:53:47,840

super draco system

4212

02:53:53,269 --> 02:53:50,560

which is actually if needed which of

4213

02:53:55,510 --> 02:53:53,279

course never something we expect to use

4214

02:53:57,030 --> 02:53:55,520

but the launch escape system as we

4215

02:54:00,070 --> 02:53:57,040

mentioned before

4216

02:54:01,910 --> 02:54:00,080

is an important safety feature and the

4217

02:54:03,590 --> 02:54:01,920

components that we added to that

4218

02:54:06,070 --> 02:54:03,600

propulsion system

4219

02:54:08,950 --> 02:54:06,080

it gives us over a 10 percent

4220

02:54:10,790 --> 02:54:08,960

improvement on on performance uh for a

4221

02:54:11,670 --> 02:54:10,800

pad abort scenario

4222

02:54:13,750 --> 02:54:11,680

which

4223

02:54:15,510 --> 02:54:13,760

in that case doubles and in this

4224

02:54:17,670 --> 02:54:15,520

situation doubling is a good thing it

4225

02:54:20,469 --> 02:54:17,680

actually doubles our

4226

02:54:22,630 --> 02:54:20,479

our envelope for the the wind limits at

4227

02:54:24,469 --> 02:54:22,640

launch time so when there are so many

4228

02:54:27,030 --> 02:54:24,479

things going into consideration for a

4229

02:54:29,670 --> 02:54:27,040

launch like downrange weather which is

4230

02:54:31,830 --> 02:54:29,680

why we waived off from yesterday um to

4231

02:54:34,790 --> 02:54:31,840

launch weather uh here specifically at

4232

02:54:36,950 --> 02:54:34,800

the site it's it's a great improvement

4233

02:54:38,870 --> 02:54:36,960

to be able to have

4234

02:54:41,670 --> 02:54:38,880

twice as much capability there in that

4235

02:54:43,269 --> 02:54:41,680

range we've also improved some inside

4236

02:54:45,590 --> 02:54:43,279

things we've taken of course feedback

4237

02:54:48,309 --> 02:54:45,600

from the our astronauts that have have

4238

02:54:50,309 --> 02:54:48,319

flown on board already and have taken

4239

02:54:51,750 --> 02:54:50,319

their feedback and made some

4240

02:54:54,469 --> 02:54:51,760

more efficiency or operational

4241

02:54:56,309 --> 02:54:54,479

improvements to things even as simple as

4242

02:54:58,710 --> 02:54:56,319

where certain personal items need to be

4243

02:55:01,429 --> 02:54:58,720

packed inside crew dragon for retrieval

4244

02:55:03,590 --> 02:55:01,439

while while on orbit

4245

02:55:06,950 --> 02:55:03,600

and i think we have time for uh one more

4246

02:55:11,110 --> 02:55:08,950

are the crew 2 astronauts going to do

4247

02:55:13,510 --> 02:55:11,120

any experiments that are related to

4248

02:55:14,870 --> 02:55:13,520

artemis missions yes

4249

02:55:16,710 --> 02:55:14,880

absolutely

4250

02:55:17,990 --> 02:55:16,720

in fact many of the experiments on

4251  
02:55:19,990 --> 02:55:18,000  
station are

4252  
02:55:21,990 --> 02:55:20,000  
directly related to artemis there's a

4253  
02:55:24,550 --> 02:55:22,000  
live shot of the moon that we're looking

4254  
02:55:25,990 --> 02:55:24,560  
at by the way um and

4255  
02:55:28,870 --> 02:55:26,000  
that is where we're going with the

4256  
02:55:30,870 --> 02:55:28,880  
artemis mission uh to put we are set on

4257  
02:55:32,790 --> 02:55:30,880  
putting the first woman and the first

4258  
02:55:34,710 --> 02:55:32,800  
person of color on the moon as part of

4259  
02:55:37,269 --> 02:55:34,720  
the artemis mission and the the

4260  
02:55:39,670 --> 02:55:37,279  
experiments that the astronauts do on

4261  
02:55:41,830 --> 02:55:39,680  
the space station help us learn about

4262  
02:55:44,309 --> 02:55:41,840  
how life in microgravity affects the

4263  
02:55:45,190 --> 02:55:44,319

human body and of course that helps us

4264

02:55:47,110 --> 02:55:45,200

develop

4265

02:55:49,429 --> 02:55:47,120

the technologies that we need to keep

4266

02:55:50,389 --> 02:55:49,439

astronauts healthy for those longer deep

4267

02:55:52,389 --> 02:55:50,399

space

4268

02:55:55,190 --> 02:55:52,399

missions that are required to go to the

4269

02:55:57,910 --> 02:55:55,200

moon and eventually on to mars and uh

4270

02:56:00,710 --> 02:55:57,920

one in particular that aki has mentioned

4271

02:56:04,389 --> 02:56:00,720

is uh working on recycling water in

4272

02:56:06,870 --> 02:56:04,399

space um and and also ways to counteract

4273

02:56:08,950 --> 02:56:06,880

bone and muscle loss from extended time

4274

02:56:11,510 --> 02:56:08,960

and space and those are just a couple of

4275

02:56:12,469 --> 02:56:11,520

examples but there are so uh so many

4276  
02:56:14,870 --> 02:56:12,479  
more

4277  
02:56:16,389 --> 02:56:14,880  
i'm also wanted to let folks know that

4278  
02:56:18,790 --> 02:56:16,399  
we actually

4279  
02:56:21,910 --> 02:56:18,800  
we have completed the launch escape

4280  
02:56:23,110 --> 02:56:21,920  
system health checks um we

4281  
02:56:25,110 --> 02:56:23,120  
we didn't acknowledge them because they

4282  
02:56:27,110 --> 02:56:25,120  
happened so far ahead of schedule we

4283  
02:56:29,830 --> 02:56:27,120  
were expecting them at t minus one hour

4284  
02:56:32,070 --> 02:56:29,840  
and 30 minutes they in fact happened uh

4285  
02:56:34,790 --> 02:56:32,080  
more than 30 minutes ago so just want to

4286  
02:56:36,389 --> 02:56:34,800  
let folks know that we did

4287  
02:56:38,790 --> 02:56:36,399  
have those already happen and they were

4288  
02:56:40,950 --> 02:56:38,800

successful this is of course the third

4289

02:56:43,030 --> 02:56:40,960

crew to fly to orbit in a commercial

4290

02:56:46,150 --> 02:56:43,040

spacecraft of course the first were

4291

02:56:48,550 --> 02:56:46,160

astronauts doug hurley and bob benkin

4292

02:56:50,790 --> 02:56:48,560

nearly a year ago and the last

4293

02:56:52,870 --> 02:56:50,800

crew that launched in november is still

4294

02:56:55,750 --> 02:56:52,880

in orbit right now they are getting

4295

02:56:57,349 --> 02:56:55,760

ready to return to earth on april 28th

4296

02:56:59,269 --> 02:56:57,359

after they welcome the crew to

4297

02:57:00,550 --> 02:56:59,279

astronauts aboard the space station

4298

02:57:02,309 --> 02:57:00,560

here's a look at some of the

4299

02:57:04,790 --> 02:57:02,319

extraordinary and record-setting

4300

02:57:08,970 --> 02:57:04,800

accomplishments of the crew one team to

4301

02:57:08,980 --> 02:57:13,830

[Music]

4302

02:57:19,110 --> 02:57:15,670

you know it feels great to be a part of

4303

02:57:21,910 --> 02:57:19,120

this transition this transition from

4304

02:57:25,110 --> 02:57:21,920

a test program a demonstration program

4305

02:57:27,190 --> 02:57:25,120

to an operational program

4306

02:57:30,150 --> 02:57:27,200

[Music]

4307

02:57:32,469 --> 02:57:30,160

after nasa certified crew dragon kuran

4308

02:57:34,230 --> 02:57:32,479

is the first mission to the

4309

02:57:36,790 --> 02:57:34,240

international space station

4310

02:57:40,469 --> 02:57:36,800

i feel very honored to be a part of this

4311

02:57:45,269 --> 02:57:43,349

dragon spacex go for launch

4312

02:57:46,550 --> 02:57:45,279

when we're sitting on the launch pad i

4313

02:57:48,230 --> 02:57:46,560

think what's going to be going through

4314

02:57:50,710 --> 02:57:48,240

my mind is

4315

02:57:55,110 --> 02:57:50,720

i want to be in the moment

4316

02:58:00,150 --> 02:57:57,830

there is just an electricity in the air

4317

02:58:02,870 --> 02:58:00,160

as that countdown is happening

4318

02:58:04,710 --> 02:58:02,880

the engine is light and liftoff occurs

4319

02:58:05,660 --> 02:58:04,720

three two

4320

02:58:11,990 --> 02:58:05,670

one

4321

02:58:12,000 --> 02:58:24,930

vehicles pitching down range

4322

02:58:39,030 --> 02:58:30,150

[Music]

4323

02:58:44,230 --> 02:58:41,190

it's really hard to explain living and

4324

02:58:46,710 --> 02:58:44,240

working in zero g

4325

02:58:48,950 --> 02:58:46,720

it's fascinating how normal it becomes

4326

02:58:50,150 --> 02:58:48,960

so quickly it just

4327

02:58:57,440 --> 02:58:50,160

feels like you've done it your whole

4328

02:58:57,450 --> 02:59:02,790

[Music]

4329

02:59:06,630 --> 02:59:04,790

we are on the cusp of the third crude

4330

02:59:08,870 --> 02:59:06,640

launch for the commercial crew program

4331

02:59:10,630 --> 02:59:08,880

signifying a regular cadence of human

4332

02:59:12,870 --> 02:59:10,640

space flight launches from right here at

4333

02:59:14,710 --> 02:59:12,880

kennedy space center joining me now is

4334

02:59:16,230 --> 02:59:14,720

center director bob cabana thank you so

4335

02:59:18,150 --> 02:59:16,240

much for being here today with us

4336

02:59:20,389 --> 02:59:18,160

absolutely my pleasure jasmine this what

4337

02:59:21,670 --> 02:59:20,399

an awesome morning right right we're up

4338

02:59:23,830 --> 02:59:21,680

before the sun

4339

02:59:26,070 --> 02:59:23,840

yeah yeah we are so glad to have you

4340

02:59:28,230 --> 02:59:26,080

here what's your reaction to this return

4341

02:59:30,469 --> 02:59:28,240

to regular human space flight launches

4342

02:59:33,269 --> 02:59:30,479

all i can say is it's about time it was

4343

02:59:34,790 --> 02:59:33,279

so great last may when bob and doug

4344

02:59:37,190 --> 02:59:34,800

launched for the first time in nine

4345

02:59:39,030 --> 02:59:37,200

years humans to space on a u.s rocket

4346

02:59:40,870 --> 02:59:39,040

from u.s soil here at the kennedy space

4347

02:59:42,790 --> 02:59:40,880

center then to get crew one up there

4348

02:59:44,550 --> 02:59:42,800

last november and now this is really

4349

02:59:46,469 --> 02:59:44,560

cool because megan's flying in the same

4350

02:59:49,030 --> 02:59:46,479

capsule that bob her husband went to

4351

02:59:50,389 --> 02:59:49,040

space in last may i mean this is it's

4352

02:59:52,309 --> 02:59:50,399

it's awesome to have this regular

4353

02:59:53,990 --> 02:59:52,319

cadence again yeah yeah absolutely we

4354

02:59:55,910 --> 02:59:54,000

are just we're thrilled to be here we're

4355

02:59:57,830 --> 02:59:55,920

thrilled to see you know history being

4356

02:59:59,590 --> 02:59:57,840

made and in addition to the excitement

4357

03:00:01,830 --> 02:59:59,600

from today's launch we are also coming

4358

03:00:04,150 --> 03:00:01,840

off our celebration of earth day can you

4359

03:00:06,150 --> 03:00:04,160

talk to us about how we launch from

4360

03:00:07,830 --> 03:00:06,160

earth for earth what is kennedy space

4361

03:00:10,230 --> 03:00:07,840

center doing to to benefit our home

4362

03:00:11,910 --> 03:00:10,240

planet kennedy space center has an

4363

03:00:14,070 --> 03:00:11,920

absolutely excellent environmental

4364

03:00:17,269 --> 03:00:14,080

program you know first off

4365

03:00:19,030 --> 03:00:17,279

our 144 000 acres here it's the uh it's

4366

03:00:20,950 --> 03:00:19,040

a national wildlife refuge managed

4367

03:00:22,710 --> 03:00:20,960

forest by the fish and wildlife service

4368

03:00:25,590 --> 03:00:22,720

i've been out and seen the sea turtles

4369

03:00:27,830 --> 03:00:25,600

i've helped count eggs look at eggs see

4370

03:00:29,590 --> 03:00:27,840

the nests it's it's awesome it is so

4371

03:00:32,309 --> 03:00:29,600

cool you know we just signed an

4372

03:00:36,550 --> 03:00:32,319

agreement with florida power and light

4373

03:00:38,790 --> 03:00:36,560

they have put in a 491 acre solar farm

4374

03:00:41,110 --> 03:00:38,800

it can it takes care of like fifteen

4375

03:00:43,429 --> 03:00:41,120

thousand homes the electricity that this

4376  
03:00:46,070 --> 03:00:43,439  
solar farm generates you know we wanna

4377  
03:00:47,429 --> 03:00:46,080  
be very uh ecologically friendly you

4378  
03:00:49,190 --> 03:00:47,439  
know one of the neat things that we're

4379  
03:00:51,990 --> 03:00:49,200  
doing here at kennedy space center we're

4380  
03:00:53,510 --> 03:00:52,000  
responsible for uh plants growing plants

4381  
03:00:55,429 --> 03:00:53,520  
in space growing plants when we go to

4382  
03:00:57,429 --> 03:00:55,439  
the moon going to mars

4383  
03:00:59,830 --> 03:00:57,439  
food for the astronauts

4384  
03:01:02,230 --> 03:00:59,840  
real processed food loses nutrition over

4385  
03:01:05,030 --> 03:01:02,240  
time and there's a psychological benefit

4386  
03:01:06,870 --> 03:01:05,040  
to having plants in space too so i think

4387  
03:01:09,429 --> 03:01:06,880  
it's kind of cool to be able to take you

4388  
03:01:12,230 --> 03:01:09,439

know part of planet earth with us into

4389

03:01:13,510 --> 03:01:12,240

space as we move on but no i i just i'm

4390

03:01:15,830 --> 03:01:13,520

really proud of our environmental

4391

03:01:17,349 --> 03:01:15,840

program here at ksc right absolutely you

4392

03:01:19,510 --> 03:01:17,359

really understand the importance of

4393

03:01:22,230 --> 03:01:19,520

taking pieces of home up to the space

4394

03:01:23,670 --> 03:01:22,240

station um you have flown four times on

4395

03:01:25,269 --> 03:01:23,680

shuttle you understand probably more

4396

03:01:27,030 --> 03:01:25,279

than most of us how our astronauts are

4397

03:01:29,190 --> 03:01:27,040

feeling today so have you spoken to them

4398

03:01:30,790 --> 03:01:29,200

recently how are they doing uh the crew

4399

03:01:33,269 --> 03:01:30,800

is doing outstanding i talked to them

4400

03:01:35,110 --> 03:01:33,279

the other night they are ready to go uh

4401  
03:01:37,590 --> 03:01:35,120  
everything's tracking well on the launch

4402  
03:01:38,870 --> 03:01:37,600  
i can't wait to see those guys blast off

4403  
03:01:40,950 --> 03:01:38,880  
i got to see them come out of crew

4404  
03:01:43,349 --> 03:01:40,960  
quarters and get in their

4405  
03:01:44,710 --> 03:01:43,359  
teslas and drive out to the pad they're

4406  
03:01:46,710 --> 03:01:44,720  
all looking great their families are

4407  
03:01:48,950 --> 03:01:46,720  
great but you know i know they're really

4408  
03:01:51,110 --> 03:01:48,960  
focused right now this is uh when you

4409  
03:01:52,309 --> 03:01:51,120  
once you strap into that spaceship

4410  
03:01:54,070 --> 03:01:52,319  
you're just thinking about doing

4411  
03:01:56,550 --> 03:01:54,080  
everything right making sure that you do

4412  
03:01:58,550 --> 03:01:56,560  
your job to get safely to space right

4413  
03:02:00,790 --> 03:01:58,560

right now and you have seen you know how

4414

03:02:02,230 --> 03:02:00,800

this uh spaceport has changed over time

4415

03:02:03,670 --> 03:02:02,240

you were recently recognized as the

4416

03:02:05,750 --> 03:02:03,680

longest serving center director so

4417

03:02:07,590 --> 03:02:05,760

congratulations on that can you talk to

4418

03:02:09,830 --> 03:02:07,600

us about how it's evolved over time

4419

03:02:11,269 --> 03:02:09,840

absolutely you know uh

4420

03:02:13,269 --> 03:02:11,279

the shuttle paid for everything at the

4421

03:02:16,070 --> 03:02:13,279

kennedy space center and of course that

4422

03:02:18,469 --> 03:02:16,080

program came to an end in july of 2011.

4423

03:02:20,070 --> 03:02:18,479

uh we had about 15 000 contractors and

4424

03:02:22,070 --> 03:02:20,080

civil servants working here at the end

4425

03:02:24,309 --> 03:02:22,080

of the shuttle program when atlantis

4426

03:02:26,230 --> 03:02:24,319

landed on a thursday in july on friday 2

4427

03:02:27,510 --> 03:02:26,240

000 contractors got pink slips and

4428

03:02:31,030 --> 03:02:27,520

walked out the door we went from a

4429

03:02:32,469 --> 03:02:31,040

workforce of 15 000 down to 7 500

4430

03:02:34,950 --> 03:02:32,479

then we took a look at hey what do we

4431

03:02:37,750 --> 03:02:34,960

need to support the future you know and

4432

03:02:40,550 --> 03:02:37,760

the future was sls and orion but it was

4433

03:02:42,710 --> 03:02:40,560

also enabling commercial operations and

4434

03:02:44,630 --> 03:02:42,720

we got a lot of stuff off our books that

4435

03:02:47,990 --> 03:02:44,640

we had no need for that didn't support

4436

03:02:50,309 --> 03:02:48,000

commercial operations or the sls orion

4437

03:02:52,230 --> 03:02:50,319

artemis program and then what was left

4438

03:02:53,910 --> 03:02:52,240

we said hey how can we enable commercial

4439

03:02:56,710 --> 03:02:53,920

operations with this we went out for

4440

03:02:59,110 --> 03:02:56,720

notices of availability on this

4441

03:03:01,510 --> 03:02:59,120

extra facilities that we had and look at

4442

03:03:04,309 --> 03:03:01,520

us today we've got boeing and spacex

4443

03:03:06,150 --> 03:03:04,319

boeing's building the csd 100 starliner

4444

03:03:08,309 --> 03:03:06,160

and officially right over here the air

4445

03:03:09,990 --> 03:03:08,319

force x-37 orbital test vehicles

4446

03:03:11,750 --> 03:03:10,000

operating out of these former shuttle

4447

03:03:14,550 --> 03:03:11,760

facilities over here

4448

03:03:16,389 --> 03:03:14,560

we got spacex out on pad 39a where we

4449

03:03:18,630 --> 03:03:16,399

went to the moon and launched shuttles a

4450

03:03:21,030 --> 03:03:18,640

20-year use agreement to utilize that

4451  
03:03:22,630 --> 03:03:21,040  
pad launching cargo and cruise to the

4452  
03:03:24,870 --> 03:03:22,640  
international space station as well as

4453  
03:03:27,110 --> 03:03:24,880  
our commercial missions

4454  
03:03:29,110 --> 03:03:27,120  
space florida is operating the what used

4455  
03:03:31,269 --> 03:03:29,120  
to be the shuttle landing facility now

4456  
03:03:33,590 --> 03:03:31,279  
and commercializing it

4457  
03:03:35,590 --> 03:03:33,600  
uh we've got exploration park a research

4458  
03:03:37,110 --> 03:03:35,600  
and development park on nasa property

4459  
03:03:39,349 --> 03:03:37,120  
outside the secure perimeter space

4460  
03:03:41,510 --> 03:03:39,359  
florida operates that we got blue origin

4461  
03:03:43,429 --> 03:03:41,520  
out there we got more companies coming

4462  
03:03:45,510 --> 03:03:43,439  
in i mean it's just this is an exciting

4463  
03:03:47,110 --> 03:03:45,520

time for america's space program

4464

03:03:48,790 --> 03:03:47,120

right right now absolutely you know

4465

03:03:51,190 --> 03:03:48,800

there's a bright future right here at

4466

03:03:52,389 --> 03:03:51,200

kennedy space center director bob cabana

4467

03:03:53,830 --> 03:03:52,399

thank you so much for being here with us

4468

03:03:58,469 --> 03:03:53,840

today now we're going to take it back to

4469

03:03:58,479 --> 03:04:04,710

i have it in my script if that helps

4470

03:04:10,710 --> 03:04:08,230

thanks jasmine we're just t minus 1 hour

4471

03:04:13,349 --> 03:04:10,720

and 14 minutes from launch and we're

4472

03:04:15,190 --> 03:04:13,359

getting pretty excited over here since

4473

03:04:17,190 --> 03:04:15,200

arriving at the spacecraft the crew were

4474

03:04:19,269 --> 03:04:17,200

helped by our closeout engineers to get

4475

03:04:20,790 --> 03:04:19,279

into their seats attach their suits to

4476

03:04:22,710 --> 03:04:20,800

special umbilicals that provide

4477

03:04:24,309 --> 03:04:22,720

breathing air and a communication link

4478

03:04:25,990 --> 03:04:24,319

to dragon systems

4479

03:04:28,070 --> 03:04:26,000

they conducted suit leak checks which

4480

03:04:29,910 --> 03:04:28,080

were successful and communications

4481

03:04:31,190 --> 03:04:29,920

checks with the core here in hawthorne

4482

03:04:32,950 --> 03:04:31,200

which is the person who will speak to

4483

03:04:35,110 --> 03:04:32,960

them directly throughout the mission as

4484

03:04:36,150 --> 03:04:35,120

well as the launch director in florida

4485

03:04:38,790 --> 03:04:36,160

this is where they're checking their

4486

03:04:41,190 --> 03:04:38,800

compass through both ground stations and

4487

03:04:43,110 --> 03:04:41,200

data tracking and data relay satellites

4488

03:04:45,269 --> 03:04:43,120

that will use to talk to the crew the

4489

03:04:46,790 --> 03:04:45,279

entire way to the station

4490

03:04:48,550 --> 03:04:46,800

and after those suit leak checks the

4491

03:04:51,110 --> 03:04:48,560

closeout team was able to seal the hatch

4492

03:04:52,870 --> 03:04:51,120

which also gets its own leak check the

4493

03:04:54,550 --> 03:04:52,880

closeout team has departed the pad and

4494

03:04:56,790 --> 03:04:54,560

weather operators will kick off their

4495

03:04:58,630 --> 03:04:56,800

final check on wind speeds at the pad

4496

03:05:00,790 --> 03:04:58,640

which will be used during the final go

4497

03:05:02,870 --> 03:05:00,800

no go for launch now before we get to

4498

03:05:05,269 --> 03:05:02,880

that final go no go the various teams at

4499

03:05:07,590 --> 03:05:05,279

both nasa and spacex will do an internal

4500

03:05:09,990 --> 03:05:07,600

go pole making sure conditions are right

4501  
03:05:11,990 --> 03:05:10,000  
with the falcon 9 the dragon the crew

4502  
03:05:14,469 --> 03:05:12,000  
the range and the space station before

4503  
03:05:16,550 --> 03:05:14,479  
that final go is given let's check back

4504  
03:05:18,389 --> 03:05:16,560  
in on houston for status on the team

4505  
03:05:22,230 --> 03:05:18,399  
supporting the space station on their

4506  
03:05:26,550 --> 03:05:24,150  
thanks gary the team here in mission

4507  
03:05:28,230 --> 03:05:26,560  
control houston remains go for launch

4508  
03:05:29,910 --> 03:05:28,240  
all systems onboard the station that are

4509  
03:05:32,070 --> 03:05:29,920  
required to be healthy for this mission

4510  
03:05:33,990 --> 03:05:32,080  
are continuing to look good before the

4511  
03:05:35,830 --> 03:05:34,000  
station team is go for launch they must

4512  
03:05:38,389 --> 03:05:35,840  
verify that key systems onboard the

4513  
03:05:40,150 --> 03:05:38,399

station are functioning as expected this

4514

03:05:43,030 --> 03:05:40,160

includes life support systems like

4515

03:05:44,790 --> 03:05:43,040

oxygen generation carbon dioxide removal

4516

03:05:47,030 --> 03:05:44,800

and the water recycling system that

4517

03:05:49,429 --> 03:05:47,040

allows us to reuse about 90 percent of

4518

03:05:51,110 --> 03:05:49,439

the water we send to station we're also

4519

03:05:52,870 --> 03:05:51,120

ensuring that the computers that allow

4520

03:05:55,030 --> 03:05:52,880

us to command the station's major

4521

03:05:57,590 --> 03:05:55,040

subsystems essentially the station's

4522

03:05:59,190 --> 03:05:57,600

nervous system are functioning normally

4523

03:06:01,750 --> 03:05:59,200

we also work with our russian

4524

03:06:03,670 --> 03:06:01,760

counterparts to ensure that both methods

4525

03:06:05,910 --> 03:06:03,680

of controlling the station's attitude

4526  
03:06:08,870 --> 03:06:05,920  
are fully functional this includes the

4527  
03:06:11,030 --> 03:06:08,880  
large u.s gyroscopes and the thrusters

4528  
03:06:12,790 --> 03:06:11,040  
found on the russian segment both

4529  
03:06:15,030 --> 03:06:12,800  
systems play a critical role during

4530  
03:06:16,630 --> 03:06:15,040  
dragon's docking mission control houston

4531  
03:06:18,630 --> 03:06:16,640  
will be closely monitoring the crew's

4532  
03:06:20,389 --> 03:06:18,640  
flight and checking off milestones for

4533  
03:06:23,590 --> 03:06:20,399  
most of the journey again flight

4534  
03:06:24,950 --> 03:06:23,600  
director paul kanye is now on console

4535  
03:06:26,630 --> 03:06:24,960  
leading flight controllers here in

4536  
03:06:28,870 --> 03:06:26,640  
houston for launch and flight director

4537  
03:06:31,269 --> 03:06:28,880  
scott stover will lead teams for docking

4538  
03:06:33,670 --> 03:06:31,279

tomorrow expected to take place at 4 10

4539

03:06:35,750 --> 03:06:33,680

a.m central time the international space

4540

03:06:40,309 --> 03:06:35,760

station team is ready for launch so i'll

4541

03:06:43,510 --> 03:06:41,670

all right thank you courtney as we

4542

03:06:45,030 --> 03:06:43,520

mentioned the crew two astronauts will

4543

03:06:47,110 --> 03:06:45,040

spend about six months on the

4544

03:06:49,349 --> 03:06:47,120

international space station during this

4545

03:06:51,590 --> 03:06:49,359

time the crew one astronauts will depart

4546

03:06:53,590 --> 03:06:51,600

station and return to earth they're set

4547

03:06:55,429 --> 03:06:53,600

to undock from the station in the crew

4548

03:06:57,590 --> 03:06:55,439

dragon resilience on april 28th and

4549

03:06:59,190 --> 03:06:57,600

splash down off the coast of florida

4550

03:07:02,230 --> 03:06:59,200

where they'll be picked up at sea by one

4551  
03:07:04,309 --> 03:07:02,240  
of spacex's recovery vessels next spacex

4552  
03:07:07,349 --> 03:07:04,319  
will launch commercial resupply mission

4553  
03:07:09,750 --> 03:07:07,359  
22 or crs-22 to the space station to

4554  
03:07:11,990 --> 03:07:09,760  
deliver cargo and supplies to crew 2 and

4555  
03:07:14,710 --> 03:07:12,000  
the astronauts and cosmonauts aboard

4556  
03:07:17,750 --> 03:07:14,720  
it will automatically dock to ida 3 at

4557  
03:07:20,150 --> 03:07:17,760  
the zenith port of the harmony module

4558  
03:07:21,830 --> 03:07:20,160  
before crew 2 returns home they will

4559  
03:07:23,670 --> 03:07:21,840  
hand the baton to the next crew to

4560  
03:07:26,550 --> 03:07:23,680  
arrive at the orbiting lab on crew

4561  
03:07:29,030 --> 03:07:26,560  
dragon the crew 3 crew that mission is

4562  
03:07:31,349 --> 03:07:29,040  
targeted to launch this fall it will

4563  
03:07:33,269 --> 03:07:31,359

carry crew dragon commander raja chari

4564

03:07:35,990 --> 03:07:33,279

pilot tom marshburn whom are both of

4565

03:07:38,150 --> 03:07:36,000

nasa mission specialist matthias marrer

4566

03:07:40,230 --> 03:07:38,160

of the european space agency as well as

4567

03:07:42,790 --> 03:07:40,240

a fourth crew member who will be added

4568

03:07:44,550 --> 03:07:42,800

soon the crew three astronauts will also

4569

03:07:46,550 --> 03:07:44,560

complete a six-month mission as

4570

03:07:48,710 --> 03:07:46,560

expedition crew members aboard the space

4571

03:07:50,389 --> 03:07:48,720

station they will be joined there by

4572

03:07:52,630 --> 03:07:50,399

three additional crewmates who will

4573

03:07:54,630 --> 03:07:52,640

launch on a russian soyuz spacecraft

4574

03:07:56,389 --> 03:07:54,640

this will mean that seven people will be

4575

03:07:58,630 --> 03:07:56,399

on the space station at one time

4576  
03:07:59,910 --> 03:07:58,640  
allowing nasa to effectively double the

4577  
03:08:02,710 --> 03:07:59,920  
amount of space

4578  
03:08:04,870 --> 03:08:02,720  
the amount of science conducted in space

4579  
03:08:07,030 --> 03:08:04,880  
this will be chari's first trip to space

4580  
03:08:09,269 --> 03:08:07,040  
but he has more than 2500 hours of

4581  
03:08:11,349 --> 03:08:09,279  
flight time as a test pilot the u.s air

4582  
03:08:13,110 --> 03:08:11,359  
force colonel is also a member of nasa's

4583  
03:08:14,950 --> 03:08:13,120  
artemis team and is eligible for

4584  
03:08:15,990 --> 03:08:14,960  
assignment to a future mission to the

4585  
03:08:18,230 --> 03:08:16,000  
moon

4586  
03:08:19,910 --> 03:08:18,240  
crew 3 will be marshburn's third visit

4587  
03:08:23,190 --> 03:08:19,920  
to the space station and his second

4588  
03:08:26,389 --> 03:08:23,200

long-duration mission he flew on sts-127

4589

03:08:28,630 --> 03:08:26,399

and expeditions 34 and 35. marshburn is

4590

03:08:30,630 --> 03:08:28,640

also a medical doctor who once served as

4591

03:08:32,790 --> 03:08:30,640

a flight surgeon and medical operations

4592

03:08:34,710 --> 03:08:32,800

lead for the space station

4593

03:08:36,710 --> 03:08:34,720

like chari maurer will be making his

4594

03:08:39,030 --> 03:08:36,720

first trip to space with the crew 3

4595

03:08:41,510 --> 03:08:39,040

mission he has extensive experience in

4596

03:08:43,269 --> 03:08:41,520

engineering and research and he spent 16

4597

03:08:45,429 --> 03:08:43,279

consecutive days in an underwater

4598

03:08:47,590 --> 03:08:45,439

laboratory as part of nasa's extreme

4599

03:08:49,429 --> 03:08:47,600

environment mission operations now let's

4600

03:08:52,630 --> 03:08:49,439

head back over to marie at kennedy space

4601  
03:08:54,630 --> 03:08:52,640  
center how's it going over there marie

4602  
03:08:57,030 --> 03:08:54,640  
thanks gary things looking good here in

4603  
03:08:58,870 --> 03:08:57,040  
florida if you are just now joining us

4604  
03:09:02,150 --> 03:08:58,880  
welcome to coverage for the mission

4605  
03:09:03,910 --> 03:09:02,160  
known as crew 2. nasa and spacex's third

4606  
03:09:06,950 --> 03:09:03,920  
flight with crew to the international

4607  
03:09:09,510 --> 03:09:06,960  
space station we are at t-minus one hour

4608  
03:09:11,990 --> 03:09:09,520  
nine minutes and counting until liftoff

4609  
03:09:13,670 --> 03:09:12,000  
uh myself and kate tyse and tracy

4610  
03:09:16,150 --> 03:09:13,680  
caldwell-dyson here have all been

4611  
03:09:18,150 --> 03:09:16,160  
vaccinated against covet 19 and that's

4612  
03:09:20,070 --> 03:09:18,160  
why you see us here sitting together

4613  
03:09:23,429 --> 03:09:20,080

without masks on

4614

03:09:26,150 --> 03:09:23,439

liftoff is still holding for 5 49 and 2

4615

03:09:28,309 --> 03:09:26,160

seconds eastern time and we're tracking

4616

03:09:31,190 --> 03:09:28,319

no issues at the moment with falcon 9 or

4617

03:09:33,670 --> 03:09:31,200

dragon the range is green and weather is

4618

03:09:35,510 --> 03:09:33,680

looking good over the last three hours

4619

03:09:38,870 --> 03:09:35,520

our crew of shane kimbrough megan

4620

03:09:40,630 --> 03:09:38,880

macarthur thomas pesquet and aki hoshide

4621

03:09:43,349 --> 03:09:40,640

donned their spacex suits in the

4622

03:09:45,190 --> 03:09:43,359

historic crew quarter suit up room

4623

03:09:47,590 --> 03:09:45,200

they walked out of the crew quarters

4624

03:09:49,349 --> 03:09:47,600

building just as every astronaut to fly

4625

03:09:52,469 --> 03:09:49,359

from this spaceport has done since

4626  
03:09:54,389 --> 03:09:52,479  
apollo 7. and then they were transported

4627  
03:09:57,030 --> 03:09:54,399  
to the pad where they climbed inside the

4628  
03:09:58,870 --> 03:09:57,040  
spacex crew dragon endeavor

4629  
03:10:00,630 --> 03:09:58,880  
which we are watching live on your

4630  
03:10:03,110 --> 03:10:00,640  
screen

4631  
03:10:05,429 --> 03:10:03,120  
while this is spacex's third time flying

4632  
03:10:07,670 --> 03:10:05,439  
astronauts and crew dragon it will be

4633  
03:10:10,309 --> 03:10:07,680  
the first time a european astronaut will

4634  
03:10:12,790 --> 03:10:10,319  
fly aboard dragon if you remember back

4635  
03:10:15,030 --> 03:10:12,800  
in november we launched nasa astronauts

4636  
03:10:19,030 --> 03:10:15,040  
mike hopkins victor glover shannon

4637  
03:10:20,790 --> 03:10:19,040  
walker and jaxa astronaut suichi naguchi

4638  
03:10:23,030 --> 03:10:20,800

to the international space station and

4639

03:10:25,190 --> 03:10:23,040

those four are nearing the end of their

4640

03:10:27,590 --> 03:10:25,200

six-month science mission they are

4641

03:10:30,070 --> 03:10:27,600

scheduled to return home to earth just a

4642

03:10:31,990 --> 03:10:30,080

few days after the crew 2 astronauts

4643

03:10:34,150 --> 03:10:32,000

arrive on station

4644

03:10:36,469 --> 03:10:34,160

over the next hour we will conduct a

4645

03:10:38,710 --> 03:10:36,479

series of polls to get ready for launch

4646

03:10:41,910 --> 03:10:38,720

have the crew arm the launch escape

4647

03:10:45,190 --> 03:10:41,920

system and begin fueling falcon 9.

4648

03:10:47,269 --> 03:10:45,200

launch is set for 5 49 a.m eastern time

4649

03:10:50,710 --> 03:10:47,279

this will include a 12-minute flight to

4650

03:10:52,229 --> 03:10:50,720

orbit and then a 23.5 hour flight to

4651  
03:10:55,030 --> 03:10:52,239  
dock with the international space

4652  
03:10:56,710 --> 03:10:55,040  
station tomorrow at approximately 5 10

4653  
03:11:00,070 --> 03:10:56,720  
a.m eastern time

4654  
03:11:02,710 --> 03:11:00,080  
so we're approaching t minus one hour

4655  
03:11:04,229 --> 03:11:02,720  
till launch tracy

4656  
03:11:06,229 --> 03:11:04,239  
what is going through the astronauts

4657  
03:11:07,910 --> 03:11:06,239  
head right now as they're they're seated

4658  
03:11:09,910 --> 03:11:07,920  
in their capsule and they're they're

4659  
03:11:11,190 --> 03:11:09,920  
ready to go they still have another 60

4660  
03:11:13,110 --> 03:11:11,200  
minutes to go

4661  
03:11:15,349 --> 03:11:13,120  
can you give us any insight into what

4662  
03:11:17,110 --> 03:11:15,359  
they may be experiencing right now well

4663  
03:11:19,750 --> 03:11:17,120

normally i would say you know building

4664

03:11:21,590 --> 03:11:19,760

off of experience that um inside

4665

03:11:23,590 --> 03:11:21,600

an hour you're

4666

03:11:25,429 --> 03:11:23,600

it seems like eternity before those

4667

03:11:27,590 --> 03:11:25,439

engines light uh you're in there

4668

03:11:29,110 --> 03:11:27,600

chatting it up with your crewmates but

4669

03:11:31,590 --> 03:11:29,120

watching these guys they're they're

4670

03:11:33,590 --> 03:11:31,600

having a little party in there uh hand

4671

03:11:34,950 --> 03:11:33,600

signals are flying i understand the plan

4672

03:11:37,020 --> 03:11:34,960

they're playing a game that we thought

4673

03:11:38,309 --> 03:11:37,030

was rock paper scissors

4674

03:11:41,030 --> 03:11:38,319

[Laughter]

4675

03:11:43,030 --> 03:11:41,040

i'm learning from friends uh that um

4676  
03:11:45,429 --> 03:11:43,040  
it's actually a game that tomah knew

4677  
03:11:47,190 --> 03:11:45,439  
when he was a kid and um had shared it

4678  
03:11:49,269 --> 03:11:47,200  
with his crewmates and so

4679  
03:11:51,830 --> 03:11:49,279  
uh i guess there's no better way to bond

4680  
03:11:54,389 --> 03:11:51,840  
than through childhood memories and that

4681  
03:11:55,910 --> 03:11:54,399  
are being recreated in in the capsule

4682  
03:11:58,870 --> 03:11:55,920  
right now

4683  
03:12:01,349 --> 03:11:58,880  
but uh all kidding aside um these guys

4684  
03:12:03,750 --> 03:12:01,359  
are um probably glancing back and forth

4685  
03:12:06,550 --> 03:12:03,760  
at their monitors so like you see there

4686  
03:12:09,750 --> 03:12:06,560  
and um just checking systems uh making

4687  
03:12:11,910 --> 03:12:09,760  
sure that they're uh keeping track that

4688  
03:12:13,990 --> 03:12:11,920

of what's going on with the vehicle

4689

03:12:16,630 --> 03:12:14,000

listening to the sights and sounds maybe

4690

03:12:18,870 --> 03:12:16,640

a little bit of chit chat but

4691

03:12:20,630 --> 03:12:18,880

inside an hour they're listening up for

4692

03:12:21,990 --> 03:12:20,640

uh what might be coming in through their

4693

03:12:23,990 --> 03:12:22,000

ear from the

4694

03:12:26,229 --> 03:12:24,000

teams on the ground sure

4695

03:12:28,550 --> 03:12:26,239

today's flight is the second of six

4696

03:12:31,110 --> 03:12:28,560

planned rotational missions nasa has

4697

03:12:33,670 --> 03:12:31,120

contracted already with spacex as part

4698

03:12:35,910 --> 03:12:33,680

of the agency's commercial crew program

4699

03:12:38,070 --> 03:12:35,920

the success of the demo2 test flight

4700

03:12:40,550 --> 03:12:38,080

last year allowed nasa to complete

4701

03:12:42,710 --> 03:12:40,560

certification for spacex to fly

4702

03:12:44,950 --> 03:12:42,720

astronauts like these regularly to and

4703

03:12:46,950 --> 03:12:44,960

from the international space station and

4704

03:12:48,630 --> 03:12:46,960

that paved the way for the crew one

4705

03:12:50,389 --> 03:12:48,640

launch last fall

4706

03:12:53,510 --> 03:12:50,399

now this next crew is getting ready to

4707

03:12:55,830 --> 03:12:53,520

lift off in the exact same capsule named

4708

03:12:59,590 --> 03:12:55,840

endeavour that bob benkin and doug

4709

03:13:01,110 --> 03:12:59,600

hurley first flew in almost one year ago

4710

03:13:02,710 --> 03:13:01,120

we've been hearing from the crew on

4711

03:13:04,309 --> 03:13:02,720

board dragon

4712

03:13:05,830 --> 03:13:04,319

like you can see there they're currently

4713

03:13:07,190 --> 03:13:05,840

strapped into their seats and they've

4714

03:13:09,670 --> 03:13:07,200

already gone through all of their

4715

03:13:10,550 --> 03:13:09,680

communication and suitly check leak

4716

03:13:11,910 --> 03:13:10,560

checks

4717

03:13:13,590 --> 03:13:11,920

they're able to follow all the

4718

03:13:15,510 --> 03:13:13,600

milestones that they still have ahead of

4719

03:13:16,229 --> 03:13:15,520

them on the displays there just above

4720

03:13:20,469 --> 03:13:16,239

them

4721

03:13:23,190 --> 03:13:20,479

all of the dragon and falcon 9 systems

4722

03:13:25,269 --> 03:13:23,200

as we continue to proceed towards launch

4723

03:13:27,269 --> 03:13:25,279

so right now as we're coming up to the t

4724

03:13:29,030 --> 03:13:27,279

minus one hour and five minute mark

4725

03:13:31,190 --> 03:13:29,040

let's check in with hawthorne for his

4726  
03:13:35,190 --> 03:13:31,200  
status on both vehicles john what

4727  
03:13:39,510 --> 03:13:37,190  
okay we've had as you've been saying a

4728  
03:13:41,349 --> 03:13:39,520  
smooth countdown the spacex team is

4729  
03:13:43,110 --> 03:13:41,359  
working no issues in the pace is

4730  
03:13:45,349 --> 03:13:43,120  
beginning to pick up

4731  
03:13:47,030 --> 03:13:45,359  
the falcon 9 final propulsion checkouts

4732  
03:13:49,590 --> 03:13:47,040  
of the first and second stages in the

4733  
03:13:51,990 --> 03:13:49,600  
engines began just a few minutes ago in

4734  
03:13:54,710 --> 03:13:52,000  
preparation for propellant loading

4735  
03:13:56,469 --> 03:13:54,720  
now t-minus 45 minutes the team will

4736  
03:13:58,870 --> 03:13:56,479  
report their readiness with a final

4737  
03:14:01,429 --> 03:13:58,880  
electronic go no-go poll

4738  
03:14:04,469 --> 03:14:01,439

at t-minus 35 minutes falcon 9

4739

03:14:06,469 --> 03:14:04,479

propellant loading will begin

4740

03:14:08,309 --> 03:14:06,479

the dragon spacecraft you can see right

4741

03:14:10,870 --> 03:14:08,319

here on the monitor with the crew access

4742

03:14:12,469 --> 03:14:10,880

arm next to it earlier today the dragon

4743

03:14:14,870 --> 03:14:12,479

operators performed a series of

4744

03:14:17,110 --> 03:14:14,880

checkouts of the dragon flight systems

4745

03:14:19,349 --> 03:14:17,120

and the spacecraft is also currently go

4746

03:14:21,670 --> 03:14:19,359

for launch the four astronauts are

4747

03:14:29,050 --> 03:14:21,680

currently inside dragon and the hatch is

4748

03:14:29,060 --> 03:14:37,030

[Music]

4749

03:14:41,110 --> 03:14:39,349

we need to retract that crew access arm

4750

03:14:42,550 --> 03:14:41,120

away from the dragon capsule to its

4751  
03:14:45,030 --> 03:14:42,560  
launch position

4752  
03:14:47,269 --> 03:14:45,040  
now that will happen between t minus 44

4753  
03:14:49,030 --> 03:14:47,279  
and t minus 42 minutes

4754  
03:14:51,349 --> 03:14:49,040  
now we move the axis arm away to

4755  
03:14:53,269 --> 03:14:51,359  
obviously clear the way for launch

4756  
03:14:55,269 --> 03:14:53,279  
but we also do it in case the dragon

4757  
03:14:58,229 --> 03:14:55,279  
capsule has to leave the launch pad in

4758  
03:15:00,229 --> 03:14:58,239  
the event of an emergency before launch

4759  
03:15:02,870 --> 03:15:00,239  
now once the arm is out of the way the

4760  
03:15:05,190 --> 03:15:02,880  
launch escape system will be armed

4761  
03:15:07,190 --> 03:15:05,200  
with these two events complete dragon

4762  
03:15:08,710 --> 03:15:07,200  
will be ready for falcon propellant

4763  
03:15:10,389 --> 03:15:08,720

loading

4764

03:15:13,110 --> 03:15:10,399

now the range is currently clear for

4765

03:15:15,349 --> 03:15:13,120

launch from historic pad 39a

4766

03:15:16,950 --> 03:15:15,359

the worldwide network of ground stations

4767

03:15:18,950 --> 03:15:16,960

and the tracking and data relay

4768

03:15:21,110 --> 03:15:18,960

satellites are ready to support dragon

4769

03:15:22,950 --> 03:15:21,120

as it heads into orbit

4770

03:15:25,110 --> 03:15:22,960

on the weather front weather continues

4771

03:15:26,790 --> 03:15:25,120

to look good both at the surface level

4772

03:15:29,269 --> 03:15:26,800

the upper altitudes

4773

03:15:31,190 --> 03:15:29,279

we are continuing to wait for a final

4774

03:15:33,910 --> 03:15:31,200

input from the weather team coming up in

4775

03:15:36,229 --> 03:15:33,920

about five minutes on ground level winds

4776

03:15:38,309 --> 03:15:36,239

in case we had a dragon abort somewhere

4777

03:15:41,590 --> 03:15:38,319

near the launch pad right now those

4778

03:15:43,349 --> 03:15:41,600

contin those conditions are go but we're

4779

03:15:46,710 --> 03:15:43,359

getting one more set of balloon data to

4780

03:15:48,790 --> 03:15:46,720

make sure that everything is good

4781

03:15:50,070 --> 03:15:48,800

now today we have an instantaneous

4782

03:15:51,309 --> 03:15:50,080

launch window

4783

03:15:54,950 --> 03:15:51,319

at

4784

03:15:59,110 --> 03:15:54,960

549.02 eastern daylight saving time or

4785

03:16:01,830 --> 03:15:59,120

just after 49 minutes past this hour

4786

03:16:04,389 --> 03:16:01,840

now once we begin loading propellant

4787

03:16:06,309 --> 03:16:04,399

there's no opportunity to change the t0

4788

03:16:08,150 --> 03:16:06,319

we are committed we're going to get one

4789

03:16:11,110 --> 03:16:08,160

chance at it today

4790

03:16:13,429 --> 03:16:11,120

but the good news jesse at t minus 62

4791

03:16:15,349 --> 03:16:13,439

minutes and counting we are go for

4792

03:16:17,110 --> 03:16:15,359

launch

4793

03:16:18,630 --> 03:16:17,120

thanks john it's good to hear that we

4794

03:16:21,190 --> 03:16:18,640

are still go

4795

03:16:23,590 --> 03:16:21,200

today's launch marks the second time a

4796

03:16:25,510 --> 03:16:23,600

rotational crew will fly on a commercial

4797

03:16:27,750 --> 03:16:25,520

spacecraft and each of our crew members

4798

03:16:29,349 --> 03:16:27,760

brings a diverse set of experiences to

4799

03:16:31,110 --> 03:16:29,359

today's flight

4800

03:16:33,349 --> 03:16:31,120

crew dragon commander shane kimbrough

4801

03:16:35,190 --> 03:16:33,359

will be making his third trip to space

4802

03:16:37,030 --> 03:16:35,200

he was born in colleen texas and raised

4803

03:16:39,269 --> 03:16:37,040

in atlanta and was selected as an

4804

03:16:41,510 --> 03:16:39,279

astronaut in 2004.

4805

03:16:42,950 --> 03:16:41,520

kimbrough is a retired u.s army colonel

4806

03:16:45,349 --> 03:16:42,960

and holds degrees in aerospace

4807

03:16:46,950 --> 03:16:45,359

engineering and operations research

4808

03:16:49,670 --> 03:16:46,960

he first launched aboard the space

4809

03:16:51,590 --> 03:16:49,680

shuttle endeavour on sts-126

4810

03:16:54,389 --> 03:16:51,600

then aboard a russian soyuz spacecraft

4811

03:16:57,269 --> 03:16:54,399

for expedition 49 and 50. kimbrough has

4812

03:17:00,229 --> 03:16:57,279

spent a total of 189 days in space and

4813

03:17:02,229 --> 03:17:00,239

has performed six spacewalks pilot megan

4814

03:17:04,229 --> 03:17:02,239

mcArthur will be making her second trip

4815

03:17:06,309 --> 03:17:04,239

to space but her first one to the space

4816

03:17:08,630 --> 03:17:06,319

station she was born in honolulu but

4817

03:17:10,790 --> 03:17:08,640

considers california her home state she

4818

03:17:12,550 --> 03:17:10,800

holds degrees in aerospace engineering

4819

03:17:14,630 --> 03:17:12,560

and oceanography and was selected as a

4820

03:17:16,710 --> 03:17:14,640

nasa astronaut in 2000

4821

03:17:19,670 --> 03:17:16,720

macArthur served as a mission specialist

4822

03:17:21,110 --> 03:17:19,680

aboard space shuttle atlantis on sts-125

4823

03:17:23,750 --> 03:17:21,120

the final servicing mission of the

4824

03:17:25,590 --> 03:17:23,760

hubble space telescope in 2009. she

4825

03:17:27,910 --> 03:17:25,600

operated the shuttle's robotic arm over

4826  
03:17:29,830 --> 03:17:27,920  
the course of 12 days and 21 hours

4827  
03:17:31,190 --> 03:17:29,840  
capturing the telescope and maneuvering

4828  
03:17:33,110 --> 03:17:31,200  
crew members throughout the five

4829  
03:17:34,710 --> 03:17:33,120  
spacewalks to upgrade hubble science

4830  
03:17:36,469 --> 03:17:34,720  
instruments along with removal and

4831  
03:17:38,389 --> 03:17:36,479  
replacement of other components to

4832  
03:17:40,389 --> 03:17:38,399  
lengthen the telescope's life

4833  
03:17:42,150 --> 03:17:40,399  
hubble continues to operate to this day

4834  
03:17:43,590 --> 03:17:42,160  
providing scientists the opportunity to

4835  
03:17:45,429 --> 03:17:43,600  
make more and more deep space

4836  
03:17:47,990 --> 03:17:45,439  
discoveries

4837  
03:17:49,910 --> 03:17:48,000  
mission specialist aki hoshide has

4838  
03:17:53,110 --> 03:17:49,920

suited up for his third space flight

4839

03:17:55,990 --> 03:17:53,120

today born in tokyo hoshide was selected

4840

03:17:58,229 --> 03:17:56,000

as an astronaut in 1999 by the national

4841

03:18:01,349 --> 03:17:58,239

space development agency of japan known

4842

03:18:03,269 --> 03:18:01,359

today as jaxa hoshide earned his degrees

4843

03:18:06,389 --> 03:18:03,279

in aerospace engineering and mechanical

4844

03:18:08,309 --> 03:18:06,399

engineering he flew on sts-124 aboard

4845

03:18:10,389 --> 03:18:08,319

the space shuttle discovery to deliver

4846

03:18:12,790 --> 03:18:10,399

and install japan's science laboratory

4847

03:18:16,950 --> 03:18:12,800

kibo he also flew aboard the russian

4848

03:18:19,110 --> 03:18:16,960

soyuz on expeditions 32 and 33 for a 124

4849

03:18:21,030 --> 03:18:19,120

day visit to the space station things

4850

03:18:22,870 --> 03:18:21,040

continue to progress nominally

4851

03:18:24,710 --> 03:18:22,880

next up is cycling the orbit tank

4852

03:18:33,990 --> 03:18:24,720

isolation valves to equalize low flow

4853

03:18:40,550 --> 03:18:37,910

got some good callouts there in 2014 he

4854

03:18:42,150 --> 03:18:40,560

also served as commander of the 18th

4855

03:18:44,070 --> 03:18:42,160

nasa extreme environment mission

4856

03:18:46,150 --> 03:18:44,080

operation which was an underwater

4857

03:18:48,550 --> 03:18:46,160

expedition at the national oceanic and

4858

03:18:51,590 --> 03:18:48,560

atmospheric administration's aquarius

4859

03:18:53,670 --> 03:18:51,600

habitat off of florida's key largo coast

4860

03:18:55,990 --> 03:18:53,680

mission specialist thomas pesquet will

4861

03:18:58,070 --> 03:18:56,000

be making his second trip to space born

4862

03:19:01,110 --> 03:18:58,080

in ruan france pesquet was selected by

4863

03:19:03,510 --> 03:19:01,120

issa as an astronaut in 2009 he has a

4864

03:19:05,670 --> 03:19:03,520

degree in spacecraft design and control

4865

03:19:07,510 --> 03:19:05,680

and more than 2 300 flight hours as a

4866

03:19:09,910 --> 03:19:07,520

commercial airline pilot

4867

03:19:12,070 --> 03:19:09,920

pisgah first flew to space on the soyuz

4868

03:19:14,550 --> 03:19:12,080

as a flight engineer for expeditions 50

4869

03:19:16,710 --> 03:19:14,560

and 51. in that time he worked on more

4870

03:19:19,030 --> 03:19:16,720

than 50 experiments and performed two

4871

03:19:23,110 --> 03:19:19,040

spacewalks to maintain the space station

4872

03:19:24,950 --> 03:19:23,120

he's logged 197 days in space basket

4873

03:19:26,630 --> 03:19:24,960

will be the first european to fly in

4874

03:19:28,150 --> 03:19:26,640

crew dragon and it will be the first

4875

03:19:30,950 --> 03:19:28,160

time a european has launched from

4876

03:19:32,870 --> 03:19:30,960

america in more than a decade

4877

03:19:35,429 --> 03:19:32,880

each of these four crew members will

4878

03:19:37,670 --> 03:19:35,439

join expedition 65 once they arrive at

4879

03:19:40,229 --> 03:19:37,680

the international space station with aki

4880

03:19:46,150 --> 03:19:40,239

hoshide taking over as commander of the

4881

03:19:51,349 --> 03:19:49,030

all right all right we're inside 59

4882

03:19:53,910 --> 03:19:51,359

minutes uh from launch the day is a

4883

03:19:56,229 --> 03:19:53,920

continuation of regular crew flights to

4884

03:19:58,550 --> 03:19:56,239

space station from u.s soil this will be

4885

03:20:00,229 --> 03:19:58,560

the third crew dragon flight with crew

4886

03:20:03,030 --> 03:20:00,239

and its second long-duration mission to

4887

03:20:05,190 --> 03:20:03,040

the international space station

4888

03:20:10,710 --> 03:20:05,200

spacex you are go for section six when

4889

03:20:10,720 --> 03:20:19,190

tapping section six and work

4890

03:20:24,469 --> 03:20:21,750

the astronauts are also flying on the

4891

03:20:26,870 --> 03:20:24,479

crew dragon endeavor which is the same

4892

03:20:28,469 --> 03:20:26,880

capsule that launched bob bacon and doug

4893

03:20:30,870 --> 03:20:28,479

hurley last year

4894

03:20:33,510 --> 03:20:30,880

and today bob's wife megan is the pilot

4895

03:20:34,870 --> 03:20:33,520

on this flight sitting in the same seat

4896

03:20:37,269 --> 03:20:34,880

that he did

4897

03:20:40,229 --> 03:20:37,279

it's been an awesome countdown so far

4898

03:20:42,550 --> 03:20:40,239

weather is still looking good and the

4899

03:20:44,389 --> 03:20:42,560

excitement is picking up as we get

4900

03:20:45,910 --> 03:20:44,399

closer and closer to that t-zero that's

4901  
03:20:47,670 --> 03:20:45,920  
right jesse we had a great countdown

4902  
03:20:49,670 --> 03:20:47,680  
today starting with suit up just over

4903  
03:20:51,670 --> 03:20:49,680  
three hours ago

4904  
03:20:53,190 --> 03:20:51,680  
the spacex team helped the

4905  
03:20:55,830 --> 03:20:53,200  
crew put on their suits and conduct

4906  
03:20:57,750 --> 03:20:55,840  
initial checkouts before crew walkout

4907  
03:21:01,110 --> 03:20:57,760  
crew walkout was where shane kimbrough

4908  
03:21:05,510 --> 03:21:03,510  
spacex copies go for launch

4909  
03:21:07,030 --> 03:21:05,520  
all right the crew reporting go for

4910  
03:21:08,790 --> 03:21:07,040  
launch real time

4911  
03:21:10,309 --> 03:21:08,800  
this just comes right after crew walkout

4912  
03:21:12,389 --> 03:21:10,319  
where shane kimbrough megan macarthur

4913  
03:21:13,910 --> 03:21:12,399

tomorrow pesquet and aki hoshide gave

4914

03:21:15,830 --> 03:21:13,920

final goodbyes with friends and family

4915

03:21:17,750 --> 03:21:15,840

gathered outside the operations and

4916

03:21:21,110 --> 03:21:17,760

checkout building before they begin that

4917

03:21:23,670 --> 03:21:21,120

roughly 20 minute ride out to pad 39a

4918

03:21:26,309 --> 03:21:23,680

and though it was early morning before

4919

03:21:28,630 --> 03:21:26,319

dawn we did still get some awesome views

4920

03:21:30,950 --> 03:21:28,640

of those teslas heading down the nasa

4921

03:21:32,150 --> 03:21:30,960

causeway before the crew arrived at the

4922

03:21:33,830 --> 03:21:32,160

pad

4923

03:21:35,429 --> 03:21:33,840

and once they arrived they all took a

4924

03:21:37,349 --> 03:21:35,439

brief moment to enjoy the view of the

4925

03:21:39,349 --> 03:21:37,359

vehicle that they will be taking flight

4926  
03:21:41,190 --> 03:21:39,359  
on and then they headed up the fixed

4927  
03:21:43,750 --> 03:21:41,200  
service structure to begin a process

4928  
03:21:45,349 --> 03:21:43,760  
known as crew ingress that is where the

4929  
03:21:47,429 --> 03:21:45,359  
astronauts entered the vehicle and the

4930  
03:21:49,830 --> 03:21:47,439  
spacex team performed a series of checks

4931  
03:21:51,429 --> 03:21:49,840  
to ensure the suits seats and vehicle

4932  
03:21:52,550 --> 03:21:51,439  
interactions were all functioning

4933  
03:21:54,469 --> 03:21:52,560  
properly

4934  
03:21:57,429 --> 03:21:54,479  
about 30 minutes ago the team closed

4935  
03:22:00,469 --> 03:21:57,439  
dragon's hatch with crew safely inside

4936  
03:22:02,070 --> 03:22:00,479  
so now uh in let's see less than 57

4937  
03:22:04,150 --> 03:22:02,080  
minutes to go until dragon starts

4938  
03:22:06,389 --> 03:22:04,160

breathing fire things will pick up as we

4939

03:22:07,910 --> 03:22:06,399

get close to the go no-go pole to arm

4940

03:22:09,910 --> 03:22:07,920

the launch escape system and begin

4941

03:22:11,990 --> 03:22:09,920

propellant loading

4942

03:22:15,110 --> 03:22:12,000

the crew pull for readiness was

4943

03:22:17,190 --> 03:22:15,120

completed at t minus 60 seconds to 60

4944

03:22:20,550 --> 03:22:17,200

minutes and we did hear those call outs

4945

03:22:23,269 --> 03:22:20,560

and the dragon pole for prop load will

4946

03:22:26,550 --> 03:22:23,279

occur here in just about a minute at t

4947

03:22:29,269 --> 03:22:26,560

minus t uh t minus 55 minutes

4948

03:22:31,030 --> 03:22:29,279

after that will be t minus 45 minutes

4949

03:22:32,469 --> 03:22:31,040

will be the internal mission control

4950

03:22:35,269 --> 03:22:32,479

hawthorne poll and then the launch

4951  
03:22:36,870 --> 03:22:35,279  
director's pull for propellant loading

4952  
03:22:39,110 --> 03:22:36,880  
and when we get to about t minus 40

4953  
03:22:40,710 --> 03:22:39,120  
minutes the crew access arm will retract

4954  
03:22:42,630 --> 03:22:40,720  
and the crew will get the call to close

4955  
03:22:45,030 --> 03:22:42,640  
the risers and arm the launch escape

4956  
03:22:46,950 --> 03:22:45,040  
system now this is the automated system

4957  
03:22:49,110 --> 03:22:46,960  
in place that can fire the eight super

4958  
03:22:51,110 --> 03:22:49,120  
draco thrusters on dragon to quickly

4959  
03:22:52,550 --> 03:22:51,120  
separate the crew from the rocket either

4960  
03:22:54,469 --> 03:22:52,560  
on the pad or during the flight on the

4961  
03:22:56,870 --> 03:22:54,479  
ride up hill and then once we reach

4962  
03:22:58,950 --> 03:22:56,880  
about t-minus 35 minutes propellant

4963  
03:23:00,070 --> 03:22:58,960

loading for the falcon 9 will begin

4964

03:23:01,670 --> 03:23:00,080

throughout the countdown we've been

4965

03:23:02,950 --> 03:23:01,680

getting some pretty incredible views of

4966

03:23:05,030 --> 03:23:02,960

the astronauts you see there on the

4967

03:23:07,510 --> 03:23:05,040

right making their final preparations as

4968

03:23:09,030 --> 03:23:07,520

well some close-up views of the suits

4969

03:23:10,870 --> 03:23:09,040

the teams have often described the suits

4970

03:23:12,950 --> 03:23:10,880

as an extension of the dragon spacecraft

4971

03:23:15,190 --> 03:23:12,960

almost a mini spacecraft inside of a

4972

03:23:17,750 --> 03:23:15,200

spacecraft so we're hearing that the

4973

03:23:19,349 --> 03:23:17,760

spacex teams are go for launch and we'll

4974

03:23:51,110 --> 03:23:19,359

wait for that call for propellant

4975

03:23:55,429 --> 03:23:53,510

now as we wait for that call

4976  
03:23:57,830 --> 03:23:55,439  
for the teams to begin uh propellant

4977  
03:23:59,990 --> 03:23:57,840  
loading we are hearing that the

4978  
03:24:01,110 --> 03:24:00,000  
there was a weather brief at I minus one

4979  
03:24:03,510 --> 03:24:01,120  
hour

4980  
03:24:05,910 --> 03:24:03,520  
we're still looking go

4981  
03:24:07,030 --> 03:24:05,920  
for today's launch pad escape winds are

4982  
03:24:11,990 --> 03:24:07,040  
go

4983  
03:24:59,590 --> 03:24:12,000  
everything tracking as we're inside now

4984  
03:25:02,710 --> 03:25:00,870  
all right so again there are several

4985  
03:25:04,710 --> 03:25:02,720  
miles milestones here now that we're

4986  
03:25:06,469 --> 03:25:04,720  
less than an hour away from launch most

4987  
03:25:08,550 --> 03:25:06,479  
of the calls will be the team's

4988  
03:25:12,070 --> 03:25:08,560

readiness to get ready for propellant

4989

03:25:13,910 --> 03:25:12,080

loading at t minus 35 minutes

4990

03:25:15,670 --> 03:25:13,920

once we reach that uh that mark

4991

03:25:18,150 --> 03:25:15,680

propellant loading will begin some of

4992

03:25:20,870 --> 03:25:18,160

the rp1 refined kerosene will start to

4993

03:25:23,510 --> 03:25:20,880

fill the uh tanks of both the stage 1

4994

03:25:25,910 --> 03:25:23,520

and stage 2 elements of the falcon 9

4995

03:25:27,990 --> 03:25:25,920

rocket

4996

03:25:31,750 --> 03:25:28,000

stage 2 is smaller and expected to fill

4997

03:25:34,389 --> 03:25:31,760

up just about 20 minutes prior to launch

4998

03:25:36,550 --> 03:25:34,399

but rp1 refined kerosene will continue

4999

03:25:38,229 --> 03:25:36,560

to load into the rocket as well as

5000

03:25:40,550 --> 03:25:38,239

liquid oxygen on both the first and

5001  
03:25:42,550 --> 03:25:40,560  
second stages filling up just about

5002  
03:25:43,990 --> 03:25:42,560  
three minutes before launch

5003  
03:25:57,830 --> 03:25:44,000  
for the first stage and two minutes

5004  
03:26:01,349 --> 03:25:58,950  
all right and we are hearing that the

5005  
03:26:02,950 --> 03:26:01,359  
dragon teams did conduct that gold pole

5006  
03:26:04,870 --> 03:26:02,960  
electronically here in mission control

5007  
03:26:07,670 --> 03:26:04,880  
houston the first checked and the first

5008  
03:26:08,870 --> 03:26:07,680  
milestone uh to go for prop load is

5009  
03:26:10,950 --> 03:26:08,880  
underway there's going to be another

5010  
03:26:13,030 --> 03:26:10,960  
poll coming up at t minus 45 minutes

5011  
03:26:15,750 --> 03:26:13,040  
with the launch teams and then prop load

5012  
03:26:17,670 --> 03:26:15,760  
is set to begin at t minus 35. until

5013  
03:26:19,990 --> 03:26:17,680

then let's go over to jasmine over at

5014

03:26:22,469 --> 03:26:20,000

the kennedy space center jasmine

5015

03:26:24,550 --> 03:26:22,479

thank you gary joining me now is nasa's

5016

03:26:26,150 --> 03:26:24,560

acting administrator steve jertzik thank

5017

03:26:28,229 --> 03:26:26,160

you so much for being here today

5018

03:26:30,229 --> 03:26:28,239

thanks for having me on of course of

5019

03:26:32,389 --> 03:26:30,239

course so it's a big day um the

5020

03:26:34,070 --> 03:26:32,399

commercial crew program is in full force

5021

03:26:35,590 --> 03:26:34,080

last summer we launched demo two and

5022

03:26:37,110 --> 03:26:35,600

then crew one in the fall and we're

5023

03:26:39,030 --> 03:26:37,120

gearing up to launch four more

5024

03:26:40,070 --> 03:26:39,040

astronauts from american soil how does

5025

03:26:42,630 --> 03:26:40,080

that feel

5026  
03:26:44,950 --> 03:26:42,640  
it feels amazing um now if you would

5027  
03:26:47,030 --> 03:26:44,960  
have told me a year ago that we would

5028  
03:26:49,269 --> 03:26:47,040  
get um three crew flights launched in

5029  
03:26:51,910 --> 03:26:49,279  
less than a year i would have just been

5030  
03:26:54,870 --> 03:26:51,920  
ecstatic and i am ecstatic today for the

5031  
03:26:56,630 --> 03:26:54,880  
for the third flight with with spacex um

5032  
03:26:59,510 --> 03:26:56,640  
it's a lot of firsts with this flight

5033  
03:27:02,710 --> 03:26:59,520  
including the first crew rotation um so

5034  
03:27:04,870 --> 03:27:02,720  
um it it having that four crew

5035  
03:27:06,469 --> 03:27:04,880  
uh on station in the u.s segment um

5036  
03:27:08,550 --> 03:27:06,479  
continuously with the commercial crew

5037  
03:27:10,469 --> 03:27:08,560  
program transportation capability is

5038  
03:27:11,830 --> 03:27:10,479

gonna accelerate the research and

5039

03:27:12,710 --> 03:27:11,840

technology development we're doing on

5040

03:27:15,110 --> 03:27:12,720

station

5041

03:27:17,110 --> 03:27:15,120

uh both the benefit uh folks here on

5042

03:27:19,349 --> 03:27:17,120

earth as well as prepare for our artemis

5043

03:27:21,030 --> 03:27:19,359

missions right right and with this uh

5044

03:27:22,550 --> 03:27:21,040

mission today we're looking at the space

5045

03:27:24,630 --> 03:27:22,560

station of course with artemis we're

5046

03:27:26,790 --> 03:27:24,640

going even further to the moon and nasa

5047

03:27:29,110 --> 03:27:26,800

just announced that they selected spacex

5048

03:27:30,710 --> 03:27:29,120

to develop the first human lunar lander

5049

03:27:32,630 --> 03:27:30,720

since the apollo days what does that

5050

03:27:35,429 --> 03:27:32,640

mean for our sustained return to the

5051  
03:27:38,630 --> 03:27:35,439  
moon yeah so that kind of completes all

5052  
03:27:39,510 --> 03:27:38,640  
the systems we need to develop for the

5053  
03:27:41,349 --> 03:27:39,520  
first

5054  
03:27:44,710 --> 03:27:41,359  
astronaut landing on the moon under

5055  
03:27:47,190 --> 03:27:44,720  
artemis so we have the sls um the core

5056  
03:27:49,590 --> 03:27:47,200  
stage test i was successful a month ago

5057  
03:27:52,070 --> 03:27:49,600  
at stennis and so that core stage for

5058  
03:27:53,670 --> 03:27:52,080  
sls for artist one is on a barge and

5059  
03:27:55,990 --> 03:27:53,680  
headed to kennedy space center as you

5060  
03:27:58,070 --> 03:27:56,000  
speak it will arrive here next week and

5061  
03:28:00,150 --> 03:27:58,080  
that'll mean all the components of sls

5062  
03:28:03,269 --> 03:28:00,160  
are here at kennedy for integration for

5063  
03:28:05,030 --> 03:28:03,279

the rms1 mission orion is ready to go

5064

03:28:07,349 --> 03:28:05,040

for artemis one

5065

03:28:08,790 --> 03:28:07,359

um the gateway

5066

03:28:10,309 --> 03:28:08,800

we did a review of the gateway the other

5067

03:28:11,990 --> 03:28:10,319

day and the gateway is starting to come

5068

03:28:13,990 --> 03:28:12,000

together and then of course the last

5069

03:28:16,229 --> 03:28:14,000

piece is the ewing landing system will

5070

03:28:18,389 --> 03:28:16,239

trent which will transport astronauts

5071

03:28:20,630 --> 03:28:18,399

from lunar orbit to the surface and back

5072

03:28:22,630 --> 03:28:20,640

to back to lunar orbit so

5073

03:28:25,110 --> 03:28:22,640

um it's really exciting to have the

5074

03:28:27,349 --> 03:28:25,120

landing system uh in full development

5075

03:28:30,389 --> 03:28:27,359

it's the last piece that we need for our

5076

03:28:33,590 --> 03:28:30,399

first artemis missions and uh later this

5077

03:28:36,469 --> 03:28:33,600

year hopefully um we'll conduct the

5078

03:28:38,790 --> 03:28:36,479

first artemis one mission uh which will

5079

03:28:40,550 --> 03:28:38,800

be an uncrew test flight around the moon

5080

03:28:42,229 --> 03:28:40,560

right right so that is exciting you know

5081

03:28:43,670 --> 03:28:42,239

as we are looking at going to the moon

5082

03:28:45,750 --> 03:28:43,680

we're also looking at even further to

5083

03:28:47,830 --> 03:28:45,760

mars we made history just this week with

5084

03:28:49,349 --> 03:28:47,840

the first flight of ingenuity uh there's

5085

03:28:51,910 --> 03:28:49,359

also the moxie experiment that is

5086

03:28:53,670 --> 03:28:51,920

converting the martian atmosphere into

5087

03:28:55,429 --> 03:28:53,680

oxygen so what does that mean for our

5088

03:28:58,790 --> 03:28:55,439

hopeful uh one day putting people on

5089

03:29:00,229 --> 03:28:58,800

mars yes so um

5090

03:29:01,830 --> 03:29:00,239

the science missions the robotic

5091

03:29:03,990 --> 03:29:01,840

missions are really important because

5092

03:29:06,309 --> 03:29:04,000

they fill knowledge gaps for us that we

5093

03:29:08,710 --> 03:29:06,319

need to fill to plan out eventually

5094

03:29:10,870 --> 03:29:08,720

human emissions to mars so for example

5095

03:29:12,469 --> 03:29:10,880

there's a weather station on

5096

03:29:13,990 --> 03:29:12,479

perseverance

5097

03:29:15,990 --> 03:29:14,000

and for the first time we're getting

5098

03:29:16,950 --> 03:29:16,000

five-day weather forecasts from mars

5099

03:29:19,030 --> 03:29:16,960

right so

5100

03:29:20,469 --> 03:29:19,040

also that weather station characterizes

5101

03:29:23,830 --> 03:29:20,479

the dust

5102

03:29:25,910 --> 03:29:23,840

that's really important for mitigating

5103

03:29:28,469 --> 03:29:25,920

that dust in suits and systems so it

5104

03:29:30,630 --> 03:29:28,479

fills knowledge gaps but moxie is really

5105

03:29:32,469 --> 03:29:30,640

important right we generated oxygen from

5106

03:29:35,670 --> 03:29:32,479

atmospheric co2

5107

03:29:37,590 --> 03:29:35,680

and using the resources of mars is

5108

03:29:40,150 --> 03:29:37,600

critical because it will be very

5109

03:29:42,150 --> 03:29:40,160

challenging to take all the oxygen and

5110

03:29:42,790 --> 03:29:42,160

all the fuel and water that we need with

5111

03:29:44,790 --> 03:29:42,800

us

5112

03:29:47,110 --> 03:29:44,800

for an astronaut mission to mars so

5113

03:29:49,110 --> 03:29:47,120

getting oxygen from the atmosphere and

5114

03:29:51,030 --> 03:29:49,120

exploiting the frozen water in the

5115

03:29:52,630 --> 03:29:51,040

regolith or martian soil is really

5116

03:29:54,790 --> 03:29:52,640

important because we can break that

5117

03:29:57,269 --> 03:29:54,800

water down into oxygen and hydrogen for

5118

03:29:59,590 --> 03:29:57,279

fuel we can use it for potable water as

5119

03:30:02,150 --> 03:29:59,600

well as for breathable air so

5120

03:30:05,110 --> 03:30:02,160

this what we call in situ utilization or

5121

03:30:07,510 --> 03:30:05,120

living off the land is a real enabler

5122

03:30:08,790 --> 03:30:07,520

for our human missions to mars right

5123

03:30:10,309 --> 03:30:08,800

right and of course we've got our site

5124

03:30:12,550 --> 03:30:10,319

set on the moon and mars but we're

5125

03:30:14,309 --> 03:30:12,560

taking care of earth at the same time

5126  
03:30:16,469 --> 03:30:14,319  
nasa recently joined the white house

5127  
03:30:17,750 --> 03:30:16,479  
climate task force uh can you tell us

5128  
03:30:19,510 --> 03:30:17,760  
how nasa is going to expand its

5129  
03:30:22,389 --> 03:30:19,520  
exploration and understanding of our

5130  
03:30:25,190 --> 03:30:22,399  
home planet right here yeah so we have

5131  
03:30:28,070 --> 03:30:25,200  
um over about two dozen spacecraft in

5132  
03:30:31,110 --> 03:30:28,080  
earth orbit right now looking down

5133  
03:30:34,550 --> 03:30:31,120  
making observations of the oceans

5134  
03:30:36,630 --> 03:30:34,560  
the atmosphere the land vegetation

5135  
03:30:39,030 --> 03:30:36,640  
um what we call the cryosphere or

5136  
03:30:41,190 --> 03:30:39,040  
measuring the height of ice sheets both

5137  
03:30:43,510 --> 03:30:41,200  
in the arctic and antarctic so

5138  
03:30:45,990 --> 03:30:43,520

we use the unique

5139

03:30:48,870 --> 03:30:46,000

view from space to make global

5140

03:30:50,790 --> 03:30:48,880

measurements over years and decades and

5141

03:30:52,790 --> 03:30:50,800

we use that data to conduct research and

5142

03:30:56,150 --> 03:30:52,800

also to improve models of the earth

5143

03:30:58,630 --> 03:30:56,160

systems and modeling because if we can't

5144

03:31:00,389 --> 03:30:58,640

predict climate using our research we

5145

03:31:02,550 --> 03:31:00,399

can mitigate climate and so that's

5146

03:31:06,630 --> 03:31:02,560

really important that the research we do

5147

03:31:07,830 --> 03:31:06,640

informs policy making and informs

5148

03:31:09,670 --> 03:31:07,840

the most

5149

03:31:11,110 --> 03:31:09,680

effective policies to mitigate climate

5150

03:31:13,590 --> 03:31:11,120

change which is really really important

5151  
03:31:14,790 --> 03:31:13,600  
not always not only for the us but for

5152  
03:31:17,349 --> 03:31:14,800  
the world

5153  
03:31:20,070 --> 03:31:17,359  
station we on iss we also have

5154  
03:31:22,309 --> 03:31:20,080  
instruments mounted externally on iss

5155  
03:31:23,750 --> 03:31:22,319  
it's in a unique orbit that in an

5156  
03:31:25,190 --> 03:31:23,760  
inclined orbit that's different from

5157  
03:31:26,550 --> 03:31:25,200  
most of our earth orbiting spacecraft

5158  
03:31:28,389 --> 03:31:26,560  
that look down which are in a polar

5159  
03:31:29,910 --> 03:31:28,399  
orbit and for certain types of

5160  
03:31:31,429 --> 03:31:29,920  
instruments that orbit is very

5161  
03:31:34,070 --> 03:31:31,439  
advantageous it gives us a lot of

5162  
03:31:36,710 --> 03:31:34,080  
coverage and a unique perspective um and

5163  
03:31:39,429 --> 03:31:36,720

so we're using iss more and more as an

5164

03:31:41,349 --> 03:31:39,439

earth observation platform so you know

5165

03:31:43,030 --> 03:31:41,359

both with both with the research we do

5166

03:31:45,429 --> 03:31:43,040

with nasa with our other government

5167

03:31:47,510 --> 03:31:45,439

aging partners through the u.s global

5168

03:31:49,590 --> 03:31:47,520

change research program and also in

5169

03:31:51,030 --> 03:31:49,600

collaboration our international partners

5170

03:31:52,790 --> 03:31:51,040

um you know we're going to continue to

5171

03:31:55,269 --> 03:31:52,800

make those observations do that research

5172

03:31:57,429 --> 03:31:55,279

and improve our ability to

5173

03:31:59,510 --> 03:31:57,439

predict uh climate change right right we

5174

03:32:01,429 --> 03:31:59,520

are making progress across the universe

5175

03:32:03,269 --> 03:32:01,439

nasa acting administrator steve jerzik

5176  
03:32:05,190 --> 03:32:03,279  
thank you so much for joining us today

5177  
03:32:06,950 --> 03:32:05,200  
uh now we're gonna take it back to john

5178  
03:32:11,590 --> 03:32:06,960  
and hawthorne as action begins to pick

5179  
03:32:16,710 --> 03:32:14,229  
thanks jasmine it's just inside 46 and a

5180  
03:32:18,229 --> 03:32:16,720  
half minutes to launch the spacex launch

5181  
03:32:20,070 --> 03:32:18,239  
team they're finishing their final

5182  
03:32:22,469 --> 03:32:20,080  
review of data from checkouts of falcon

5183  
03:32:24,150 --> 03:32:22,479  
9 over the last hour the launch director

5184  
03:32:26,469 --> 03:32:24,160  
is about to pull the team for readiness

5185  
03:32:28,150 --> 03:32:26,479  
both to load propellant and to launch

5186  
03:32:30,710 --> 03:32:28,160  
this will be the last poll before

5187  
03:32:32,710 --> 03:32:30,720  
liftoff the seven spacex engineers

5188  
03:32:35,349 --> 03:32:32,720

indicate they are go by electronically

5189

03:32:37,190 --> 03:32:35,359

voting on an online countdown procedure

5190

03:32:39,030 --> 03:32:37,200

we won't hear a verbal poll something

5191

03:32:42,070 --> 03:32:39,040

folks may remember from the earlier days

5192

03:32:43,590 --> 03:32:42,080

of launch and movies like apollo 13.

5193

03:32:45,190 --> 03:32:43,600

the launch director is also checking

5194

03:32:46,870 --> 03:32:45,200

with dragon mission director and the

5195

03:32:49,429 --> 03:32:46,880

nasa launch manager to make sure

5196

03:32:51,990 --> 03:32:49,439

everyone is ready to go

5197

03:32:54,150 --> 03:32:52,000

meanwhile on the dragon spacecraft on

5198

03:32:55,910 --> 03:32:54,160

the screen you can see the crew arm is

5199

03:32:58,070 --> 03:32:55,920

still in the service position

5200

03:32:59,910 --> 03:32:58,080

the crew is on board dragon waiting for

5201  
03:33:01,910 --> 03:32:59,920  
next instructions which will be to stow

5202  
03:33:03,349 --> 03:33:01,920  
the arm for launch and to arm the launch

5203  
03:33:05,269 --> 03:33:03,359  
escape system

5204  
03:33:06,710 --> 03:33:05,279  
once the launch director gives final

5205  
03:33:09,030 --> 03:33:06,720  
instructions to the launch team which

5206  
03:33:11,429 --> 03:33:09,040  
should be coming up in about 30 seconds

5207  
03:33:14,309 --> 03:33:11,439  
the crew arm sequence will be armed and

5208  
03:33:16,469 --> 03:33:14,319  
initiated we should get a good view of

5209  
03:33:18,950 --> 03:33:16,479  
the axis arm as it swings away from the

5210  
03:33:22,630 --> 03:33:18,960  
capsule taking about two minutes to move

5211  
03:33:26,070 --> 03:33:24,389  
now the range continues to be go for

5212  
03:33:28,309 --> 03:33:26,080  
launch they're monitoring the area

5213  
03:33:30,790 --> 03:33:28,319

around the pad as well as air and sea

5214

03:33:33,030 --> 03:33:30,800

space around the flight corridor

5215

03:33:35,750 --> 03:33:33,040

and on the weather front the weather

5216

03:33:37,349 --> 03:33:35,760

officer gave a fantastic at the t-minus

5217

03:33:38,950 --> 03:33:37,359

one hour briefing

5218

03:33:41,670 --> 03:33:38,960

the winds for

5219

03:33:43,510 --> 03:33:41,680

all conditions of flight liftoff uh

5220

03:33:45,030 --> 03:33:43,520

contingencies getting into space

5221

03:33:50,150 --> 03:33:45,040

everything looks good both at ground

5222

03:33:54,950 --> 03:33:51,750

so right now we're just waiting to

5223

03:33:56,950 --> 03:33:54,960

listen to the spacex launch director

5224

03:33:59,030 --> 03:33:56,960

give the poll

5225

03:34:01,269 --> 03:33:59,040

and then also

5226

03:34:03,510 --> 03:34:01,279

give the instructions to the team and

5227

03:34:04,870 --> 03:34:03,520

move into retracting the crew access arm

5228

03:34:21,830 --> 03:34:04,880

so we're going to listen for a minute to

5229

03:34:26,830 --> 03:34:23,990

poll is complete ever and team is ready

5230

03:34:29,670 --> 03:34:26,840

for propellant load and correct his arm

5231

03:34:31,590 --> 03:34:29,680

retract for non-urgent no-go conditions

5232

03:34:33,110 --> 03:34:31,600

brief the ce or ld and they'll approve

5233

03:34:35,269 --> 03:34:33,120

aborting the launch auto sequence and

5234

03:34:36,550 --> 03:34:35,279

proceed into launch abort for urgent

5235

03:34:38,710 --> 03:34:36,560

issues affecting the safety of the

5236

03:34:41,030 --> 03:34:38,720

countdown operators shall call hold hold

5237

03:34:42,309 --> 03:34:41,040

hold on the countdown net launch control

5238

03:34:43,670 --> 03:34:42,319

will abort the launch auto sequence

5239

03:34:45,830 --> 03:34:43,680

immediately and proceed into the launch

5240

03:34:47,190 --> 03:34:45,840

report auto sequence operators advise

5241

03:34:48,710 --> 03:34:47,200

launch director whether structural break

5242

03:34:50,870 --> 03:34:48,720

up or fire is eminent or occurring per

5243

03:34:52,389 --> 03:34:50,880

dragon manual escape flight rules

5244

03:34:53,910 --> 03:34:52,399

the event of a fire alarm key operators

5245

03:34:55,910 --> 03:34:53,920

will man their post while the alarm is

5246

03:34:57,670 --> 03:34:55,920

evaluated in the event that personal

5247

03:34:59,990 --> 03:34:57,680

safety is threatened evacuate to the

5248

03:35:01,510 --> 03:35:00,000

south facing emergency exit which leads

5249

03:35:02,870 --> 03:35:01,520

directly outside

5250

03:35:17,269 --> 03:35:02,880

launch control you may proceed with

5251  
03:35:17,279 --> 03:35:53,590  
crew access arm retraction started

5252  
03:35:57,429 --> 03:35:55,269  
there you see a live view of the crew

5253  
03:36:00,070 --> 03:35:57,439  
access arm retracting away from crew

5254  
03:36:01,910 --> 03:36:00,080  
dragon in preparation for launch the

5255  
03:36:06,469 --> 03:36:01,920  
countdown clock continues to tick and

5256  
03:36:08,150 --> 03:36:06,479  
we're now at t minus 42 minutes and 33

5257  
03:36:10,630 --> 03:36:08,160  
seconds

5258  
03:36:13,750 --> 03:36:10,640  
we're standing by for the completion of

5259  
03:36:15,750 --> 03:36:13,760  
the crew access retraction

5260  
03:36:17,590 --> 03:36:15,760  
this is one of the last major visual

5261  
03:36:19,110 --> 03:36:17,600  
milestones that we'll see in preparation

5262  
03:36:21,190 --> 03:36:19,120  
for liftoff

5263  
03:36:23,030 --> 03:36:21,200

shortly thereafter we should hear the

5264

03:36:25,269 --> 03:36:23,040

call out that the launch escape system

5265

03:36:27,830 --> 03:36:25,279

is armed and from there

5266

03:36:29,990 --> 03:36:27,840

we'll hear that falcon 9 prop load has

5267

03:36:32,550 --> 03:36:30,000

started which is one of my favorite

5268

03:36:35,110 --> 03:36:32,560

milestones of the launch countdown

5269

03:36:37,990 --> 03:36:35,120

we just saw a beautiful shot from inside

5270

03:36:39,750 --> 03:36:38,000

the white room as the crew arm was uh

5271

03:36:42,469 --> 03:36:39,760

moving away there it is

5272

03:36:45,429 --> 03:36:42,479

um the capsule you can just barely see

5273

03:36:48,710 --> 03:36:45,439

it in the corner now that opening where

5274

03:36:51,190 --> 03:36:48,720

um that is where the side hatch was

5275

03:36:53,510 --> 03:36:51,200

uh where the astronauts ingress dragon

5276  
03:36:56,469 --> 03:36:53,520  
and now you can see it continuing to

5277  
03:36:58,790 --> 03:36:56,479  
swing away from the falcon 9 rocket and

5278  
03:37:01,030 --> 03:36:58,800  
crew dragon endeavor in preparation for

5279  
03:37:09,670 --> 03:37:01,040  
launch

5280  
03:37:15,429 --> 03:37:12,229  
and tracy um as we're watching the crew

5281  
03:37:17,429 --> 03:37:15,439  
arm uh still retracting here we are

5282  
03:37:18,469 --> 03:37:17,439  
about to have the international space

5283  
03:37:22,229 --> 03:37:18,479  
station

5284  
03:37:24,790 --> 03:37:22,239  
fly over us right we are yes here um at

5285  
03:37:26,790 --> 03:37:24,800  
ksc kennedy space center um it looks

5286  
03:37:29,510 --> 03:37:26,800  
like in another minute

5287  
03:37:30,630 --> 03:37:29,520  
to the southeast traveling across east

5288  
03:37:34,630 --> 03:37:30,640

northeast

5289

03:37:39,830 --> 03:37:34,640

the station should be visible overhead

5290

03:37:47,830 --> 03:37:42,469

now we just heard confirmation that the

5291

03:37:59,030 --> 03:37:50,150

up next we'll expect to hear a call to

5292

03:38:03,429 --> 03:38:01,670

dragon spacex you are go for section 7

5293

03:38:10,550 --> 03:38:03,439

close visors and arm launch escape

5294

03:38:10,560 --> 03:38:15,510

copy

5295

03:38:15,520 --> 03:38:20,790

latex endeavor advisors are down

5296

03:38:20,800 --> 03:38:24,469

copy visors down

5297

03:38:28,870 --> 03:38:26,309

okay so the crew there reporting that

5298

03:38:30,790 --> 03:38:28,880

they have closed and locked their visors

5299

03:38:37,910 --> 03:38:30,800

in place in preparation for the launch

5300

03:38:44,229 --> 03:38:41,670

the launch escape system is a critical

5301  
03:38:47,269 --> 03:38:44,239  
safety feature this is something that

5302  
03:38:48,870 --> 03:38:47,279  
the shuttle did not have

5303  
03:38:50,389 --> 03:38:48,880  
we take

5304  
03:38:53,030 --> 03:38:50,399  
very seriously the fact that the

5305  
03:38:55,269 --> 03:38:53,040  
astronauts lives are in our hands and we

5306  
03:38:57,110 --> 03:38:55,279  
take every measure possible to ensure

5307  
03:38:58,630 --> 03:38:57,120  
that the crew has options

5308  
03:39:00,229 --> 03:38:58,640  
and has an escape in the worst of

5309  
03:39:03,590 --> 03:39:00,239  
scenarios so

5310  
03:39:04,870 --> 03:39:03,600  
this is simply a a path to safety for

5311  
03:39:06,469 --> 03:39:04,880  
the crew

5312  
03:39:09,110 --> 03:39:06,479  
in the event that

5313  
03:39:10,229 --> 03:39:09,120

they need to depart the pad in an

5314

03:39:12,389 --> 03:39:10,239

emergency

5315

03:39:14,229 --> 03:39:12,399

and also applies to

5316

03:39:16,790 --> 03:39:14,239

aborting the mission even

5317

03:39:19,269 --> 03:39:16,800

after liftoff and through ascent

5318

03:39:22,150 --> 03:39:19,279

and the crew dragon endeavor actually

5319

03:39:24,710 --> 03:39:22,160

has an enhanced abort capability now

5320

03:39:28,710 --> 03:39:24,720

that was one of the improvements made on

5321

03:39:31,110 --> 03:39:28,720

to this capsule after demo two and um it

5322

03:39:34,070 --> 03:39:31,120

increased uh the propulsion system on

5323

03:39:35,990 --> 03:39:34,080

dragon escape system is verified armed

5324

03:39:39,189 --> 03:39:36,000

okay so that was confirmation that the

5325

03:39:42,710 --> 03:39:39,199

launch escape system is armed um and so

5326

03:39:45,030 --> 03:39:42,720

that is uh what we have to hear before

5327

03:39:47,349 --> 03:39:45,040

fueling on the falcon 9 rocket can begin

5328

03:39:49,830 --> 03:39:47,359

so we're we are about just under four

5329

03:39:51,910 --> 03:39:49,840

minutes away from that milestone uh but

5330

03:39:54,389 --> 03:39:51,920

again we were saying the the propulsion

5331

03:39:58,710 --> 03:39:54,399

system oh there's a shot of the space

5332

03:39:59,910 --> 03:39:58,720

station there it is yeah everybody wave

5333

03:40:01,670 --> 03:39:59,920

they're waving down and up i think

5334

03:40:02,550 --> 03:40:01,680

they're watching right now so they are

5335

03:40:05,189 --> 03:40:02,560

you know

5336

03:40:10,710 --> 03:40:07,670

so that's super cool um

5337

03:40:12,790 --> 03:40:10,720

but yeah the the abort system um it's

5338

03:40:14,950 --> 03:40:12,800

it's been improved by about 10 that's

5339

03:40:17,189 --> 03:40:14,960

the super draco thrusters there's eight

5340

03:40:20,309 --> 03:40:17,199

of them built directly into

5341

03:40:22,710 --> 03:40:20,319

the crew dragon and so that actually

5342

03:40:25,750 --> 03:40:22,720

allowed for a wider

5343

03:40:28,150 --> 03:40:25,760

margin in terms of wind speeds

5344

03:40:30,950 --> 03:40:28,160

so there's greater opportunities for

5345

03:40:33,269 --> 03:40:30,960

launch but weather not looking like much

5346

03:40:34,870 --> 03:40:33,279

of a concern at all today in fact uh

5347

03:40:37,349 --> 03:40:34,880

last we heard there's less than five

5348

03:40:40,710 --> 03:40:37,359

percent chance of violation so more than

5349

03:40:42,070 --> 03:40:40,720

95 percent go conditions which is great

5350

03:40:45,189 --> 03:40:42,080

pretty rare for

5351  
03:40:50,229 --> 03:40:47,510  
and that launch escape system um how

5352  
03:40:52,870 --> 03:40:50,239  
that works is once the fueling begins at

5353  
03:40:55,750 --> 03:40:52,880  
t minus 35 minutes if there's any kind

5354  
03:40:58,150 --> 03:40:55,760  
of emergency uh crew dragon can launch

5355  
03:41:00,469 --> 03:40:58,160  
itself off the top of the falcon 9

5356  
03:41:02,550 --> 03:41:00,479  
rocket and then it would splash down

5357  
03:41:04,309 --> 03:41:02,560  
under parachutes off the coast in the

5358  
03:41:06,950 --> 03:41:04,319  
atlantic and we have

5359  
03:41:08,389 --> 03:41:06,960  
rescue teams pre-positioned in the event

5360  
03:41:10,630 --> 03:41:08,399  
of an emergency

5361  
03:41:12,710 --> 03:41:10,640  
if that happens which is highly unlikely

5362  
03:41:15,030 --> 03:41:12,720  
but it's something the nasa and spacex

5363  
03:41:17,189 --> 03:41:15,040

and department of defense teams

5364

03:41:19,590 --> 03:41:17,199

practice for extensively

5365

03:41:22,229 --> 03:41:19,600

that launch escape system is also

5366

03:41:24,710 --> 03:41:22,239

equipped to perform an abort after

5367

03:41:27,349 --> 03:41:24,720

liftoff we would call that an in-flight

5368

03:41:31,429 --> 03:41:27,359

launch escape and that can happen at any

5369

03:41:33,910 --> 03:41:31,439

point throughout the ascent trajectory

5370

03:41:36,550 --> 03:41:33,920

yeah we actually tested this this launch

5371

03:41:38,870 --> 03:41:36,560

escape system in multiple ways we've uh

5372

03:41:41,429 --> 03:41:38,880

we performed a pad abort test

5373

03:41:44,389 --> 03:41:41,439

where a dragon capsule

5374

03:41:47,110 --> 03:41:44,399

was on the pad and simulated an abort

5375

03:41:49,269 --> 03:41:47,120

where it took off like a rocket like

5376

03:41:50,469 --> 03:41:49,279

you've never seen

5377

03:41:54,469 --> 03:41:50,479

and

5378

03:41:56,309 --> 03:41:54,479

the in the atlantic ocean

5379

03:41:59,110 --> 03:41:56,319

we also conducted an in-flight abort

5380

03:42:00,710 --> 03:41:59,120

test uh which was incredible to witness

5381

03:42:02,469 --> 03:42:00,720

i mean it was a test unlike any other

5382

03:42:05,750 --> 03:42:02,479

that that we'd performed performed

5383

03:42:07,670 --> 03:42:05,760

before uh and where basically where we

5384

03:42:10,950 --> 03:42:07,680

launched a falcon 9 rocket with a dragon

5385

03:42:13,830 --> 03:42:10,960

on top and about 100 seconds into flight

5386

03:42:16,229 --> 03:42:13,840

simulated an anomaly dragon took off and

5387

03:42:18,710 --> 03:42:16,239

deployed parachutes splashed down and

5388

03:42:20,550 --> 03:42:18,720

yes so this is a system that we have

5389

03:42:26,150 --> 03:42:20,560

that we have tested but

5390

03:42:29,110 --> 03:42:27,590

once again the booster that you're

5391

03:42:31,349 --> 03:42:29,120

looking at now

5392

03:42:34,309 --> 03:42:31,359

if you're wondering why it looks a

5393

03:42:37,750 --> 03:42:34,319

little dirty that is actually soot that

5394

03:42:40,070 --> 03:42:37,760

was uh left from re-entry after its last

5395

03:42:43,750 --> 03:42:40,080

mission uh this particular booster

5396

03:42:46,950 --> 03:42:43,760

supported the crew one mission uh very

5397

03:42:48,870 --> 03:42:46,960

recently and um

5398

03:42:52,550 --> 03:42:48,880

we have yeah there we could there we can

5399

03:42:54,469 --> 03:42:52,560

see a photo of our crew two astronauts

5400

03:42:57,349 --> 03:42:54,479

actually they they're holding up their

5401  
03:42:59,510 --> 03:42:57,359  
fingers because they have so they signed

5402  
03:43:01,910 --> 03:42:59,520  
their initials their names uh into the

5403  
03:43:03,910 --> 03:43:01,920  
so they're in the background so um i've

5404  
03:43:05,429 --> 03:43:03,920  
said before i really i love the space

5405  
03:43:07,349 --> 03:43:05,439  
human space flight traditions that we

5406  
03:43:10,150 --> 03:43:07,359  
that we have and i i think this is a new

5407  
03:43:11,830 --> 03:43:10,160  
one tracy you said it earlier yeah

5408  
03:43:13,750 --> 03:43:11,840  
we never got to draw on the shuttle

5409  
03:43:14,140 --> 03:43:13,760  
before we launched so this is kind of

5410  
03:43:16,070 --> 03:43:14,150  
cool

5411  
03:43:17,990 --> 03:43:16,080  
[Laughter]

5412  
03:43:19,830 --> 03:43:18,000  
they were they were answering questions

5413  
03:43:21,110 --> 03:43:19,840

about it and he started to say we carved

5414

03:43:22,550 --> 03:43:21,120

our initials and he quickly stopped

5415

03:43:25,030 --> 03:43:22,560

himself no no we didn't

5416

03:43:27,910 --> 03:43:25,040

carve anything into the falcon 9 we drew

5417

03:43:29,590 --> 03:43:27,920

we you know traced our um initials in

5418

03:43:31,429 --> 03:43:29,600

the side of the rocket and so you could

5419

03:43:33,429 --> 03:43:31,439

see closely in that photo if you look

5420

03:43:35,349 --> 03:43:33,439

you can see the initials of each

5421

03:43:37,269 --> 03:43:35,359

astronaut so that's really cool and

5422

03:43:40,790 --> 03:43:37,279

something that we look forward to seeing

5423

03:43:44,790 --> 03:43:40,800

on future uh reused boosters this one is

5424

03:43:53,349 --> 03:43:47,510

okay we just heard confirmation that

5425

03:43:58,389 --> 03:43:55,269

and this first stage booster is set to

5426  
03:44:06,710 --> 03:43:58,399  
land on a spacex drone ship at sea

5427  
03:44:11,990 --> 03:44:09,910  
we are now at t minus 34 minutes 30

5428  
03:44:14,389 --> 03:44:12,000  
seconds and counting from crew dragon's

5429  
03:44:18,070 --> 03:44:14,399  
third launch with astronauts and the

5430  
03:44:19,990 --> 03:44:18,080  
first for 2021. today begins the next

5431  
03:44:22,389 --> 03:44:20,000  
six-month rotation mission to the

5432  
03:44:24,870 --> 03:44:22,399  
international space station the launch

5433  
03:44:26,229 --> 03:44:24,880  
escape system is armed which happened

5434  
03:44:29,670 --> 03:44:26,239  
just before

5435  
03:44:31,429 --> 03:44:29,680  
fueling began at t-minus 35 minutes the

5436  
03:44:33,670 --> 03:44:31,439  
dragon capsule was loaded with

5437  
03:44:36,070 --> 03:44:33,680  
propellants about a week and a half ago

5438  
03:44:38,950 --> 03:44:36,080

just a few miles down the road at what

5439

03:44:41,910 --> 03:44:38,960

we call dragon land and in order to fly

5440

03:44:43,189 --> 03:44:41,920

dragon needs a fuel and an oxidizer and

5441

03:44:45,870 --> 03:44:43,199

kate i'll let you talk more about the

5442

03:44:49,189 --> 03:44:45,880

fuel yeah so for that fuel we use

5443

03:44:52,870 --> 03:44:49,199

monomethylhydrazine or mmh and nitrogen

5444

03:44:54,950 --> 03:44:52,880

tetroxide or nto for the oxidizer

5445

03:44:57,349 --> 03:44:54,960

together these two propellants feed the

5446

03:44:59,670 --> 03:44:57,359

draco engines that maneuver dragon on

5447

03:45:01,590 --> 03:44:59,680

orbit as well as the eight super draco

5448

03:45:05,030 --> 03:45:01,600

engines that would power the launch

5449

03:45:07,030 --> 03:45:05,040

escape system in an abort scenario

5450

03:45:09,429 --> 03:45:07,040

and again now that the fueling is

5451  
03:45:12,630 --> 03:45:09,439  
underway on falcon 9 that means the

5452  
03:45:16,070 --> 03:45:12,640  
eight super draco engines built directly

5453  
03:45:18,550 --> 03:45:16,080  
into crew dragon are ready if needed to

5454  
03:45:20,710 --> 03:45:18,560  
launch the capsule off of the falcon 9

5455  
03:45:22,550 --> 03:45:20,720  
rocket in an instant should there be any

5456  
03:45:25,429 --> 03:45:22,560  
kind of emergency associated with the

5457  
03:45:27,990 --> 03:45:25,439  
rocket or the launch pad the nasa and

5458  
03:45:30,950 --> 03:45:28,000  
spacex teams have trained extensively

5459  
03:45:32,630 --> 03:45:30,960  
for exactly that type of contingency

5460  
03:45:35,429 --> 03:45:32,640  
along with the department of defense

5461  
03:45:38,070 --> 03:45:35,439  
detachment 3 who does a fantastic job in

5462  
03:45:40,150 --> 03:45:38,080  
those training scenarios now over to

5463  
03:45:44,550 --> 03:45:40,160

spacex headquarters in hawthorne for an

5464

03:45:48,550 --> 03:45:46,469

while we are counting down those final

5465

03:45:50,870 --> 03:45:48,560

minutes and everything still looking

5466

03:45:52,229 --> 03:45:50,880

good for falcon 9 and dragon for an

5467

03:45:55,349 --> 03:45:52,239

on-time launch

5468

03:45:57,269 --> 03:45:55,359

just under 33 minutes from now

5469

03:45:59,910 --> 03:45:57,279

falcon 9 did begin propellant loading

5470

03:46:01,590 --> 03:45:59,920

just a couple of minutes ago we heard it

5471

03:46:03,830 --> 03:46:01,600

now the first and second stages of

5472

03:46:05,030 --> 03:46:03,840

falcon 9 are each loaded with two liquid

5473

03:46:07,189 --> 03:46:05,040

propellants

5474

03:46:09,269 --> 03:46:07,199

one is fuel that's loaded into the tank

5475

03:46:11,510 --> 03:46:09,279

at the bottom of each stage the other is

5476  
03:46:13,910 --> 03:46:11,520  
an oxidizer and that goes obviously into

5477  
03:46:15,750 --> 03:46:13,920  
the tank at the top of each stage

5478  
03:46:18,150 --> 03:46:15,760  
now the field that we use to power the

5479  
03:46:19,990 --> 03:46:18,160  
merlin engines is a refined kerosene

5480  
03:46:23,110 --> 03:46:20,000  
called rp1

5481  
03:46:26,229 --> 03:46:23,120  
and the oxidizer loaded on each stage is

5482  
03:46:28,229 --> 03:46:26,239  
densified liquid oxygen called locks

5483  
03:46:30,309 --> 03:46:28,239  
densified means that it is kept much

5484  
03:46:32,309 --> 03:46:30,319  
colder than typical for launch vehicles

5485  
03:46:34,950 --> 03:46:32,319  
and it takes up less volumes

5486  
03:46:38,150 --> 03:46:34,960  
so this allows us to get more oxidizer

5487  
03:46:40,309 --> 03:46:38,160  
loaded onto the first and second stages

5488  
03:46:42,389 --> 03:46:40,319

now to ignite the fuel and oxidizer in

5489

03:46:44,950 --> 03:46:42,399

the merlin rocket engine we use an

5490

03:46:47,670 --> 03:46:44,960

ignition fluid called t-tub

5491

03:46:49,750 --> 03:46:47,680

when t-tub comes in contact with oxygen

5492

03:46:51,110 --> 03:46:49,760

it burns and it gives off a green

5493

03:46:53,110 --> 03:46:51,120

colored flame

5494

03:46:55,030 --> 03:46:53,120

now once we've got the flame going we

5495

03:46:57,189 --> 03:46:55,040

add the kerosene fuel into the merlin

5496

03:46:58,469 --> 03:46:57,199

chamber and the engine ramps up to full

5497

03:47:00,550 --> 03:46:58,479

power

5498

03:47:02,790 --> 03:47:00,560

you might see the green flash just as

5499

03:47:06,070 --> 03:47:02,800

the second stage engine ignites

5500

03:47:08,389 --> 03:47:06,080

following stage separation

5501  
03:47:10,630 --> 03:47:08,399  
now currently we've just begun the first

5502  
03:47:12,710 --> 03:47:10,640  
stage fuel tank is about right now a

5503  
03:47:14,950 --> 03:47:12,720  
little under 10 full

5504  
03:47:16,790 --> 03:47:14,960  
the first stage is the bottom two thirds

5505  
03:47:18,790 --> 03:47:16,800  
of the vehicle you see on your screen

5506  
03:47:21,030 --> 03:47:18,800  
the white cylinder topped off by the

5507  
03:47:22,309 --> 03:47:21,040  
black cylinder that makes up the first

5508  
03:47:24,070 --> 03:47:22,319  
stage

5509  
03:47:25,910 --> 03:47:24,080  
and then the top one third underneath

5510  
03:47:28,389 --> 03:47:25,920  
the dragon capsule that's our second

5511  
03:47:31,030 --> 03:47:28,399  
stage now at this time the second stage

5512  
03:47:33,269 --> 03:47:31,040  
fuel tank is about eight percent full

5513  
03:47:36,309 --> 03:47:33,279

now the fuel tank if you were to zoom in

5514

03:47:38,550 --> 03:47:36,319

that's where the nasa

5515

03:47:40,309 --> 03:47:38,560

meatball logo is positioned

5516

03:47:42,710 --> 03:47:40,319

and right above it you can just make out

5517

03:47:44,870 --> 03:47:42,720

the red nasa worm logo and that's where

5518

03:47:47,429 --> 03:47:44,880

the liquid oxygen tank is on the second

5519

03:47:49,349 --> 03:47:47,439

stage and there's a closer view

5520

03:47:51,830 --> 03:47:49,359

now in addition to loading the fuel

5521

03:47:53,990 --> 03:47:51,840

we're also loading oxygen the liquid

5522

03:47:55,910 --> 03:47:54,000

oxygen onto the first stage

5523

03:47:58,070 --> 03:47:55,920

we won't start liquid oxygen loading on

5524

03:48:01,750 --> 03:47:58,080

the second stage until t minus 16

5525

03:48:03,830 --> 03:48:01,760

minutes and 30 seconds and liquid oxygen

5526  
03:48:05,269 --> 03:48:03,840  
will continue loading on both stages

5527  
03:48:06,790 --> 03:48:05,279  
until the last few minutes of the

5528  
03:48:08,870 --> 03:48:06,800  
countdown

5529  
03:48:10,309 --> 03:48:08,880  
helium loading into pressure vessels is

5530  
03:48:12,229 --> 03:48:10,319  
also underway

5531  
03:48:14,070 --> 03:48:12,239  
we use that to pressurize the tanks in

5532  
03:48:17,189 --> 03:48:14,080  
flight as the propellant is pulled out

5533  
03:48:19,110 --> 03:48:17,199  
by the merlin turbo pumps

5534  
03:48:21,590 --> 03:48:19,120  
onboard the dragon spacecraft you can

5535  
03:48:23,030 --> 03:48:21,600  
see here in a close-up the astronauts

5536  
03:48:25,750 --> 03:48:23,040  
are monitoring systems while the

5537  
03:48:27,670 --> 03:48:25,760  
propellant is loaded into the falcon 9

5538  
03:48:29,510 --> 03:48:27,680

the crew training in the simulator

5539

03:48:31,269 --> 03:48:29,520

included playback of sounds that we've

5540

03:48:33,429 --> 03:48:31,279

recorded in a dragon capsule during

5541

03:48:36,309 --> 03:48:33,439

recent flights so they get an idea what

5542

03:48:37,830 --> 03:48:36,319

all that hissing and popping and banging

5543

03:48:40,630 --> 03:48:37,840

is from the vent valves and the

5544

03:48:42,389 --> 03:48:40,640

pressurization systems

5545

03:48:44,790 --> 03:48:42,399

now the range continues to report no

5546

03:48:46,389 --> 03:48:44,800

problems there go to support launch

5547

03:48:48,550 --> 03:48:46,399

and the weather also looks good i

5548

03:48:50,389 --> 03:48:48,560

mentioned the t-minus one hour briefing

5549

03:48:52,469 --> 03:48:50,399

we called it fantastic

5550

03:48:54,710 --> 03:48:52,479

currently we don't have anything that we

5551  
03:48:56,950 --> 03:48:54,720  
are tracking that could be a concern

5552  
03:48:58,870 --> 03:48:56,960  
we have a very small possibility of a

5553  
03:49:01,429 --> 03:48:58,880  
pop-up rain shower but nothing showing

5554  
03:49:04,630 --> 03:49:01,439  
up so right now 29 minutes 40 seconds

5555  
03:49:06,229 --> 03:49:04,640  
ago it looks like we've got good weather

5556  
03:49:08,790 --> 03:49:06,239  
now as a reminder

5557  
03:49:11,429 --> 03:49:08,800  
today we have an instantaneous launch

5558  
03:49:13,910 --> 03:49:11,439  
window so at this point if we hear a

5559  
03:49:15,670 --> 03:49:13,920  
hold for any reason we'll have to stand

5560  
03:49:18,710 --> 03:49:15,680  
down and target our backup launch

5561  
03:49:20,550 --> 03:49:18,720  
opportunity coming in three days

5562  
03:49:22,630 --> 03:49:20,560  
so right now let's turn it back over to

5563  
03:49:24,229 --> 03:49:22,640

jesse and gary for an overview of events

5564

03:49:27,590 --> 03:49:24,239

that are going to happen after the

5565

03:49:30,309 --> 03:49:27,600

liftoff of falcon 9.

5566

03:49:32,229 --> 03:49:30,319

great news john for crew 2 the

5567

03:49:34,309 --> 03:49:32,239

astronauts flight to station will take

5568

03:49:36,790 --> 03:49:34,319

about 23 hours and their journey will be

5569

03:49:39,189 --> 03:49:36,800

fairly similar to the trip crew one made

5570

03:49:42,070 --> 03:49:39,199

in november of last year

5571

03:49:43,910 --> 03:49:42,080

right as we wait t-zero in just about 29

5572

03:49:45,830 --> 03:49:43,920

minutes the ground operations teams are

5573

03:49:48,389 --> 03:49:45,840

doing a series of systems checks to make

5574

03:49:50,309 --> 03:49:48,399

sure both dragon and falcon 9 are ready

5575

03:49:52,070 --> 03:49:50,319

for launch you're looking at a live view

5576  
03:49:54,389 --> 03:49:52,080  
of our teams at the cape as they prepare

5577  
03:49:56,150 --> 03:49:54,399  
for liftoff as we wait for the launch

5578  
03:49:58,150 --> 03:49:56,160  
clock to hit zero we wanted to give you

5579  
03:50:00,710 --> 03:49:58,160  
an overview of what the ascent portion

5580  
03:50:03,510 --> 03:50:00,720  
of the mission will look like

5581  
03:50:05,990 --> 03:50:03,520  
once we hit t0 and a successful launch

5582  
03:50:08,550 --> 03:50:06,000  
occurs we will watch falcon 9 and dragon

5583  
03:50:10,150 --> 03:50:08,560  
lift off from historic launch pad 39a

5584  
03:50:12,469 --> 03:50:10,160  
and make their ascent

5585  
03:50:15,269 --> 03:50:12,479  
at about 50 seconds into the flight

5586  
03:50:17,349 --> 03:50:15,279  
falcon 9 engines will throttle up to

5587  
03:50:19,590 --> 03:50:17,359  
help pass through the period of maximum

5588  
03:50:22,229 --> 03:50:19,600

dynamic pressure on the rocket or what

5589

03:50:24,469 --> 03:50:22,239

we typically refer to as max-q

5590

03:50:27,269 --> 03:50:24,479

it's worth noting that once we hit max-q

5591

03:50:28,710 --> 03:50:27,279

the vehicle will be going supersonic

5592

03:50:30,870 --> 03:50:28,720

once we are through the period of

5593

03:50:33,269 --> 03:50:30,880

maximum dynamic pressure we can throttle

5594

03:50:34,790 --> 03:50:33,279

up our nine merlin engines again and

5595

03:50:36,790 --> 03:50:34,800

from there at about two and a half

5596

03:50:38,790 --> 03:50:36,800

minutes into flight we have a series of

5597

03:50:40,469 --> 03:50:38,800

three events that will happen it happen

5598

03:50:43,349 --> 03:50:40,479

in rapid succession

5599

03:50:46,229 --> 03:50:43,359

first is miko or main engine cutoff this

5600

03:50:48,790 --> 03:50:46,239

is where all nine merlin 1d engines shut

5601  
03:50:50,790 --> 03:50:48,800  
off in preparation for stage separation

5602  
03:50:52,469 --> 03:50:50,800  
which is our second event this is where

5603  
03:50:53,910 --> 03:50:52,479  
the first stage detaches from the second

5604  
03:50:56,070 --> 03:50:53,920  
stage with the first stage making its

5605  
03:50:57,910 --> 03:50:56,080  
way back to earth for landing as the

5606  
03:50:59,550 --> 03:50:57,920  
second stage continues on its journey

5607  
03:51:02,469 --> 03:50:59,560  
with the third event

5608  
03:51:04,870 --> 03:51:02,479  
ses1 or second stage engine start number

5609  
03:51:06,710 --> 03:51:04,880  
one is where the mvac engine lights up

5610  
03:51:09,110 --> 03:51:06,720  
and propels the second stage along with

5611  
03:51:11,510 --> 03:51:09,120  
our crew two astronauts to orbit

5612  
03:51:13,670 --> 03:51:11,520  
as stage two heads towards its targeted

5613  
03:51:15,429 --> 03:51:13,680

drop-off orbit stage one will execute

5614

03:51:17,510 --> 03:51:15,439

two burns in order to make its way back

5615

03:51:19,750 --> 03:51:17,520

to earth the first is the entry burn

5616

03:51:21,830 --> 03:51:19,760

where three of the nine m1d engines will

5617

03:51:23,189 --> 03:51:21,840

reignite and then shut down and this

5618

03:51:25,030 --> 03:51:23,199

helps to slow the stage down in

5619

03:51:27,030 --> 03:51:25,040

preparation for entry back into the

5620

03:51:28,870 --> 03:51:27,040

upper parts of the earth's atmosphere

5621

03:51:30,790 --> 03:51:28,880

while the first stage is heading back to

5622

03:51:32,790 --> 03:51:30,800

earth the second stage will cut off its

5623

03:51:35,269 --> 03:51:32,800

one berlin engine that was ignited right

5624

03:51:37,189 --> 03:51:35,279

after stage separation once this happens

5625

03:51:39,110 --> 03:51:37,199

we'll wait for confirmation of a good

5626  
03:51:41,110 --> 03:51:39,120  
orbital insertion

5627  
03:51:43,750 --> 03:51:41,120  
about 90 seconds after dragon gets into

5628  
03:51:45,590 --> 03:51:43,760  
orbit falcon 9 will land back on earth

5629  
03:51:47,670 --> 03:51:45,600  
the landing burn is just a single engine

5630  
03:51:49,990 --> 03:51:47,680  
burn powerful enough to bring the

5631  
03:51:52,469 --> 03:51:50,000  
vehicle speed down rapidly in order to

5632  
03:51:54,469 --> 03:51:52,479  
land on the drone ship about nine and a

5633  
03:51:56,469 --> 03:51:54,479  
half minutes into the mission

5634  
03:51:58,469 --> 03:51:56,479  
while falcon 9 first stage is landing

5635  
03:52:00,710 --> 03:51:58,479  
dragon is preparing to separate from the

5636  
03:52:02,870 --> 03:52:00,720  
second stage at about three minutes

5637  
03:52:05,030 --> 03:52:02,880  
after the second stage gets into orbit

5638  
03:52:07,269 --> 03:52:05,040

we should have a great view of dragon

5639

03:52:09,590 --> 03:52:07,279

with its four-person crew drifting away

5640

03:52:11,189 --> 03:52:09,600

from the second stage once dragon is a

5641

03:52:12,950 --> 03:52:11,199

short distance away it will begin

5642

03:52:14,870 --> 03:52:12,960

checking out its draco maneuvering

5643

03:52:16,790 --> 03:52:14,880

thrusters to make sure dragon continues

5644

03:52:18,870 --> 03:52:16,800

to increase separation distance from the

5645

03:52:21,189 --> 03:52:18,880

second stage it's worth noting that

5646

03:52:22,469 --> 03:52:21,199

these are not the super draco engines

5647

03:52:23,670 --> 03:52:22,479

that would be used during an abort

5648

03:52:25,830 --> 03:52:23,680

scenario

5649

03:52:27,830 --> 03:52:25,840

about 40 seconds after separation

5650

03:52:28,710 --> 03:52:27,840

dragon's nose cone deploy sequence will

5651  
03:52:30,710 --> 03:52:28,720

begin

5652  
03:52:32,870 --> 03:52:30,720

it will take roughly four minutes for

5653  
03:52:34,550 --> 03:52:32,880

the nose cone hooks to unlatch and open

5654  
03:52:37,189 --> 03:52:34,560

exposing its guidance navigation

5655  
03:52:39,510 --> 03:52:37,199

controls or what we call gnc that will

5656  
03:52:40,630 --> 03:52:39,520

help dragon autonomously fly to the

5657  
03:52:42,309 --> 03:52:40,640

space station

5658  
03:52:44,550 --> 03:52:42,319

and lastly once the nose cone is

5659  
03:52:46,870 --> 03:52:44,560

deployed the remaining draco thrusters

5660  
03:52:49,349 --> 03:52:46,880

on the forward bulkhead will be checked

5661  
03:52:51,349 --> 03:52:49,359

from there over the next 23 plus hours

5662  
03:52:53,670 --> 03:52:51,359

dragon will be in its rendezvous and

5663  
03:52:55,590 --> 03:52:53,680

approach phases undergoing a number of

5664

03:52:56,710 --> 03:52:55,600

phasing burns as it makes its way to

5665

03:52:58,229 --> 03:52:56,720

station

5666

03:53:00,229 --> 03:52:58,239

all of that will be coming up soon for

5667

03:53:04,630 --> 03:53:00,239

now let's check back in with courtney in

5668

03:53:08,550 --> 03:53:06,710

thanks gary the space station team here

5669

03:53:10,229 --> 03:53:08,560

in houston is focused and the critical

5670

03:53:12,070 --> 03:53:10,239

systems on the station continue to

5671

03:53:16,950 --> 03:53:12,080

function normally the teams have

5672

03:53:19,429 --> 03:53:17,990

from the ground through our

5673

03:53:21,670 --> 03:53:19,439

constellation of communication

5674

03:53:23,429 --> 03:53:21,680

satellites to the station everything is

5675

03:53:25,269 --> 03:53:23,439

nominal and the station will be ready to

5676

03:53:26,790 --> 03:53:25,279

receive dragon tomorrow

5677

03:53:29,510 --> 03:53:26,800

once the crew arrives at the station

5678

03:53:31,670 --> 03:53:29,520

they'll join expedition 65. while on

5679

03:53:33,670 --> 03:53:31,680

board their official designation will be

5680

03:53:36,070 --> 03:53:33,680

flight engineers except for jack says

5681

03:53:38,469 --> 03:53:36,080

aki hoshide who will take command of the

5682

03:53:40,790 --> 03:53:38,479

space station from nasa's shannon walker

5683

03:53:42,469 --> 03:53:40,800

just before crew one comes home he'll be

5684

03:53:45,670 --> 03:53:42,479

the station commander until the fall

5685

03:53:48,870 --> 03:53:45,680

when he'll hand the reins to european

5686

03:53:51,269 --> 03:53:48,880

european space agency tomorrow pasquee

5687

03:53:53,910 --> 03:53:51,279

for the final part of their mission

5688

03:53:55,349 --> 03:53:53,920

flight director paul kanya is on console

5689

03:53:57,269 --> 03:53:55,359

now leading flight controllers in

5690

03:53:59,110 --> 03:53:57,279

houston for launch and flight director

5691

03:54:00,150 --> 03:53:59,120

scott stover will lead teams for docking

5692

03:54:01,750 --> 03:54:00,160

tomorrow

5693

03:54:03,990 --> 03:54:01,760

just a reminder that a launch today will

5694

03:54:05,830 --> 03:54:04,000

take about 23.5 hours to get to station

5695

03:54:08,229 --> 03:54:05,840

with a docking to the node 2 forward

5696

03:54:09,349 --> 03:54:08,239

port scheduled tomorrow at 4 10 am

5697

03:54:11,750 --> 03:54:09,359

central

5698

03:54:13,590 --> 03:54:11,760

once dragon is docked to the station the

5699

03:54:15,510 --> 03:54:13,600

team here in houston will assist dragon

5700

03:54:17,269 --> 03:54:15,520

and space station astronauts with leak

5701  
03:54:19,510 --> 03:54:17,279  
checks as they will work to open hatches

5702  
03:54:22,309 --> 03:54:19,520  
on both dragon and the inside of the

5703  
03:54:24,229 --> 03:54:22,319  
station's pressurized mating adapter

5704  
03:54:26,309 --> 03:54:24,239  
we expect hatch open to take place

5705  
03:54:28,070 --> 03:54:26,319  
approximately two hours after dock

5706  
03:54:29,590 --> 03:54:28,080  
docking that's it for us here in mission

5707  
03:54:34,389 --> 03:54:29,600  
control houston i'll send it back over

5708  
03:54:38,950 --> 03:54:36,150  
all right thanks courtney uh you're

5709  
03:54:40,950 --> 03:54:38,960  
looking live at the falcon 9 rocket and

5710  
03:54:43,990 --> 03:54:40,960  
spacex crew dragon

5711  
03:54:46,150 --> 03:54:44,000  
and we can see liquid oxygen venting

5712  
03:54:49,990 --> 03:54:46,160  
off the rocket that is normal and

5713  
03:54:52,309 --> 03:54:50,000

expected it is now t minus 23 minutes 50

5714

03:54:55,110 --> 03:54:52,319

seconds and counting from the third

5715

03:54:57,349 --> 03:54:55,120

astronaut launch from u.s soil in the

5716

03:54:59,910 --> 03:54:57,359

past year and the first with two

5717

03:55:01,429 --> 03:54:59,920

international partners aboard commander

5718

03:55:03,189 --> 03:55:01,439

shane kimbrough

5719

03:55:06,070 --> 03:55:03,199

pilot megan macarthur and mission

5720

03:55:07,990 --> 03:55:06,080

specialist toma pesque and aki hoshide

5721

03:55:10,229 --> 03:55:08,000

are strapped into their seats inside the

5722

03:55:12,950 --> 03:55:10,239

crew dragon endeavor on top there's an

5723

03:55:15,349 --> 03:55:12,960

inside view we can see them live as the

5724

03:55:17,590 --> 03:55:15,359

falcon 9 rocket fueling operation is

5725

03:55:19,670 --> 03:55:17,600

well underway now the launch escape

5726  
03:55:22,550 --> 03:55:19,680  
system is armed and that means the crew

5727  
03:55:24,870 --> 03:55:22,560  
dragon is prepared to launch itself away

5728  
03:55:27,110 --> 03:55:24,880  
from the falcon 9 rocket in case of an

5729  
03:55:28,950 --> 03:55:27,120  
emergency on the pad

5730  
03:55:31,189 --> 03:55:28,960  
or after liftoff

5731  
03:55:33,189 --> 03:55:31,199  
so far operations look and sound as

5732  
03:55:37,030 --> 03:55:33,199  
expected and we are counting down to

5733  
03:55:39,269 --> 03:55:37,040  
liftoff at 5 49 eastern time

5734  
03:55:40,950 --> 03:55:39,279  
this mission is the continuation of

5735  
03:55:43,110 --> 03:55:40,960  
rotational crew flights to the

5736  
03:55:46,150 --> 03:55:43,120  
international space station from u.s

5737  
03:55:47,990 --> 03:55:46,160  
soil on private rockets and spacecraft

5738  
03:55:50,550 --> 03:55:48,000

this wouldn't have been possible without

5739

03:55:52,710 --> 03:55:50,560

the success of the nasa spacex demo 2

5740

03:55:54,870 --> 03:55:52,720

test flight last year and the safe

5741

03:55:57,189 --> 03:55:54,880

delivery of the crew 1 astronauts to the

5742

03:55:59,429 --> 03:55:57,199

space station last fall for a long

5743

03:56:01,429 --> 03:55:59,439

duration mission those crew one

5744

03:56:03,830 --> 03:56:01,439

astronauts are preparing to return to

5745

03:56:05,110 --> 03:56:03,840

earth shortly after crew 2 arrives at

5746

03:56:06,550 --> 03:56:05,120

station

5747

03:56:08,950 --> 03:56:06,560

and this will be the first time we'll

5748

03:56:11,429 --> 03:56:08,960

see two crew dragons docked to the space

5749

03:56:13,910 --> 03:56:11,439

station at the same time crew wants

5750

03:56:19,030 --> 03:56:13,920

resilience and crew 2's endeavor that's

5751  
03:56:24,790 --> 03:56:22,389  
with the arrival of the crew 2 team

5752  
03:56:27,429 --> 03:56:24,800  
i believe that'll bring the head count

5753  
03:56:30,070 --> 03:56:27,439  
on station to 11 people

5754  
03:56:31,910 --> 03:56:30,080  
and as much as i love camping that

5755  
03:56:34,150 --> 03:56:31,920  
downtown that does sound like it would

5756  
03:56:36,309 --> 03:56:34,160  
be a little crowded up there yeah you

5757  
03:56:38,870 --> 03:56:36,319  
know you counted 11 people on board the

5758  
03:56:40,630 --> 03:56:38,880  
station nine of them in the u.s segment

5759  
03:56:42,870 --> 03:56:40,640  
we've got four crew quarters which are

5760  
03:56:45,189 --> 03:56:42,880  
basically crew bedrooms uh we've got

5761  
03:56:47,030 --> 03:56:45,199  
both commanders of the dragons sleeping

5762  
03:56:49,269 --> 03:56:47,040  
in their vehicles that leaves three

5763  
03:56:52,630 --> 03:56:49,279

people needing a place to sleep that's

5764

03:56:54,630 --> 03:56:52,640

suici shannon and victor they'll be in

5765

03:56:56,229 --> 03:56:54,640

the gym the columbus and the airlock

5766

03:56:58,550 --> 03:56:56,239

respectively so you could you could say

5767

03:57:00,150 --> 03:56:58,560

it's a quite a full house they'll be

5768

03:57:01,910 --> 03:57:00,160

camping out rolling out their sleeping

5769

03:57:04,229 --> 03:57:01,920

bags on rack fronts

5770

03:57:06,070 --> 03:57:04,239

so it'll be uh it'll be tight what a

5771

03:57:09,110 --> 03:57:06,080

what a great benefit to being commander

5772

03:57:11,590 --> 03:57:09,120

you have your own private suite

5773

03:57:13,670 --> 03:57:11,600

with windows and yeah it's a nice place

5774

03:57:15,990 --> 03:57:13,680

to be yeah and that's honestly the the

5775

03:57:17,189 --> 03:57:16,000

window shots that we have been receiving

5776

03:57:19,269 --> 03:57:17,199

from the crew have been one of my

5777

03:57:21,269 --> 03:57:19,279

favorite things from the crew one team

5778

03:57:23,830 --> 03:57:21,279

up there and even bob and doug whenever

5779

03:57:26,150 --> 03:57:23,840

they were up there as well um just the

5780

03:57:27,590 --> 03:57:26,160

the view outside of the the crew dragon

5781

03:57:29,510 --> 03:57:27,600

window it's it's actually my phone

5782

03:57:31,510 --> 03:57:29,520

background right now

5783

03:57:33,590 --> 03:57:31,520

um and it's just incredible and i love

5784

03:57:35,590 --> 03:57:33,600

what that we get to that they share

5785

03:57:37,349 --> 03:57:35,600

their perspective with us

5786

03:57:38,550 --> 03:57:37,359

from from uh

5787

03:57:40,790 --> 03:57:38,560

above

5788

03:57:42,950 --> 03:57:40,800

let's give you a quick recap of who the

5789

03:57:45,269 --> 03:57:42,960

astronauts are uh sitting inside the

5790

03:57:47,990 --> 03:57:45,279

capsule here in the foreground uh

5791

03:57:50,550 --> 03:57:48,000

sitting closest to uh the front of your

5792

03:57:52,550 --> 03:57:50,560

screen is commander shane kimbrough

5793

03:57:55,189 --> 03:57:52,560

uh he is commanding the crew dragon

5794

03:57:58,389 --> 03:57:55,199

endeavor today and he is a native of

5795

03:58:00,790 --> 03:57:58,399

texas making his third trip to space uh

5796

03:58:02,469 --> 03:58:00,800

the retired u.s army colonel first

5797

03:58:03,630 --> 03:58:02,479

launched aboard the space shuttle

5798

03:58:06,710 --> 03:58:03,640

endeavour on

5799

03:58:10,070 --> 03:58:06,720

sts-126 then aboard a russian soyuz

5800

03:58:13,030 --> 03:58:10,080

spacecraft for expeditions 49 and 50.

5801  
03:58:16,790 --> 03:58:13,040  
kimbrough has spent a total of 189 days

5802  
03:58:19,110 --> 03:58:16,800  
in space and performed six spacewalks

5803  
03:58:21,510 --> 03:58:19,120  
pilot megan macarthur will be making her

5804  
03:58:23,590 --> 03:58:21,520  
second trip to space but her first to

5805  
03:58:26,150 --> 03:58:23,600  
the space station she was born in

5806  
03:58:31,269 --> 03:58:26,160  
honolulu

5807  
03:58:33,349 --> 03:58:31,279  
california her home state macarthur

5808  
03:58:36,469 --> 03:58:33,359  
served as a mission specialist aboard

5809  
03:58:38,150 --> 03:58:36,479  
space shuttle atlantis on sts-125

5810  
03:58:40,630 --> 03:58:38,160  
the final servicing mission of the

5811  
03:58:42,950 --> 03:58:40,640  
hubble space telescope she operated the

5812  
03:58:45,670 --> 03:58:42,960  
shuttle's robotic arm over the course of

5813  
03:58:47,510 --> 03:58:45,680

12 days and 21 hours capturing the

5814

03:58:49,590 --> 03:58:47,520

telescope and maneuvering the crew

5815

03:58:52,870 --> 03:58:49,600

members throughout five space walks to

5816

03:58:55,269 --> 03:58:52,880

lengthen the telescope's life

5817

03:58:57,189 --> 03:58:55,279

and mission specialist aki hoshide is

5818

03:58:59,830 --> 03:58:57,199

embarking on his third space flight

5819

03:59:02,950 --> 03:58:59,840

today the jaxa astronaut from tokyo

5820

03:59:05,030 --> 03:59:02,960

previously flew on sts-124 aboard the

5821

03:59:08,309 --> 03:59:05,040

space shuttle discovery to deliver and

5822

03:59:10,790 --> 03:59:08,319

install japan's science laboratory kivo

5823

03:59:15,110 --> 03:59:10,800

he also flew aboard the russian soyuz on

5824

03:59:17,429 --> 03:59:15,120

expeditions 32 and 33 for a 124 day

5825

03:59:19,110 --> 03:59:17,439

visit to the space station

5826

03:59:21,110 --> 03:59:19,120

and in the

5827

03:59:23,269 --> 03:59:21,120

far corner of your screen as mission

5828

03:59:26,389 --> 03:59:23,279

specialist toma pesquet he will be

5829

03:59:29,269 --> 03:59:26,399

making his second trip to space born in

5830

03:59:31,429 --> 03:59:29,279

ruan france pesquet first flew to space

5831

03:59:34,710 --> 03:59:31,439

on the russian soyuz as a flight

5832

03:59:36,710 --> 03:59:34,720

engineer for expeditions 50 and 51. in

5833

03:59:39,030 --> 03:59:36,720

that time he worked on more than 50

5834

03:59:40,950 --> 03:59:39,040

different experiments and performed two

5835

03:59:44,950 --> 03:59:40,960

space walks with kimbrough to maintain

5836

03:59:47,349 --> 03:59:44,960

the space station he has logged 197 days

5837

03:59:50,070 --> 03:59:47,359

in space pesquet will be the first

5838

03:59:51,750 --> 03:59:50,080

european to fly in crew dragon and it

5839

03:59:54,070 --> 03:59:51,760

will be the first time a european

5840

03:59:55,590 --> 03:59:54,080

astronaut has launched from america in

5841

03:59:57,429 --> 03:59:55,600

more than a decade

5842

04:00:00,389 --> 03:59:57,439

each of these four crew members will

5843

04:00:02,950 --> 04:00:00,399

join expedition 65 once they arrive at

5844

04:00:05,429 --> 04:00:02,960

the international space station with aki

5845

04:00:09,510 --> 04:00:05,439

hoshide taking over as commander of the

5846

04:00:12,070 --> 04:00:09,520

station right before crew one departs

5847

04:00:14,710 --> 04:00:12,080

and as we're looking at a live view of

5848

04:00:17,830 --> 04:00:14,720

the pad again fueling is underway we

5849

04:00:19,030 --> 04:00:17,840

heard a call out during those bio recaps

5850

04:00:22,150 --> 04:00:19,040

that

5851  
04:00:24,389 --> 04:00:22,160  
the rp1 load is complete on the second

5852  
04:00:26,950 --> 04:00:24,399  
stage

5853  
04:00:29,030 --> 04:00:26,960  
and we have a really uh special treat if

5854  
04:00:32,950 --> 04:00:29,040  
we could take a view of

5855  
04:00:36,070 --> 04:00:32,960  
bob benkin's spacesuit we have that

5856  
04:00:39,269 --> 04:00:36,080  
in studio that is the uh the actual

5857  
04:00:41,269 --> 04:00:39,279  
spacesuit worn by bob benkin uh during

5858  
04:00:44,309 --> 04:00:41,279  
the demo two test flight and you can see

5859  
04:00:46,790 --> 04:00:44,319  
the photo of his wife megan macarthur uh

5860  
04:00:49,990 --> 04:00:46,800  
in the photo there and she is sitting in

5861  
04:00:51,670 --> 04:00:50,000  
the same spacecraft in the same seat

5862  
04:00:54,309 --> 04:00:51,680  
that bob did

5863  
04:00:56,550 --> 04:00:54,319

almost a year ago on the demo 2 mission

5864

04:00:59,269 --> 04:00:56,560

megan is the pilot for this mission

5865

04:01:01,269 --> 04:00:59,279

there's a shot of uh bob's spacesuit on

5866

04:01:02,790 --> 04:01:01,279

the left and doug hurley's spacesuit on

5867

04:01:07,750 --> 04:01:02,800

the right this was a couple days ago

5868

04:01:12,950 --> 04:01:10,790

so again looking live at the pad

5869

04:01:16,469 --> 04:01:12,960

falcon 9 will have

5870

04:01:18,870 --> 04:01:16,479

1.7 million pounds of thrust at liftoff

5871

04:01:20,710 --> 04:01:18,880

and uh we've we've heard it sounds like

5872

04:01:23,269 --> 04:01:20,720

a gorilla sitting on your chest would

5873

04:01:25,269 --> 04:01:23,279

you say that's accurate tracy yeah yeah

5874

04:01:28,710 --> 04:01:25,279

i've never had actually a gorilla on my

5875

04:01:30,630 --> 04:01:28,720

chest but i imagine that um uh

5876

04:01:32,389 --> 04:01:30,640

one would be that heavy that

5877

04:01:36,070 --> 04:01:32,399

the feeling that you have in your chest

5878

04:01:40,630 --> 04:01:37,670

once again the white cloud that we see

5879

04:01:43,189 --> 04:01:40,640

there is expected totally normal

5880

04:01:44,950 --> 04:01:43,199

that's just the liquid oxygen

5881

04:01:46,389 --> 04:01:44,960

vaporizing essentially as it comes into

5882

04:01:48,229 --> 04:01:46,399

contact with this

5883

04:01:50,229 --> 04:01:48,239

humid florida air

5884

04:01:53,750 --> 04:01:50,239

as a point of reference this the liquid

5885

04:01:56,870 --> 04:01:53,760

oxygen that we load on board falcon 9 is

5886

04:01:59,269 --> 04:01:56,880

uh super chilled to help densify

5887

04:02:01,910 --> 04:01:59,279

the that liquid oxygen when i say super

5888

04:02:05,670 --> 04:02:01,920

chilled i mean really really cold uh

5889

04:02:08,550 --> 04:02:05,680

we're talking like negative 336 degrees

5890

04:02:11,269 --> 04:02:08,560

so um of course whenever it comes into

5891

04:02:14,389 --> 04:02:11,279

ambient air um it will turn into its

5892

04:02:15,670 --> 04:02:14,399

gaseous species

5893

04:02:17,590 --> 04:02:15,680

okay and there we just heard the call

5894

04:02:19,670 --> 04:02:17,600

out that second stage locks load has

5895

04:02:22,469 --> 04:02:19,680

just begun

5896

04:02:24,710 --> 04:02:22,479

and so the mission teams um that we've

5897

04:02:27,750 --> 04:02:24,720

seen in control rooms from kennedy space

5898

04:02:30,550 --> 04:02:27,760

center to houston to hawthorne are all

5899

04:02:32,550 --> 04:02:30,560

laser focused on keeping this crew safe

5900

04:02:34,309 --> 04:02:32,560

from this point and all the way to the

5901  
04:02:36,550 --> 04:02:34,319  
space station and back home in six

5902  
04:02:39,429 --> 04:02:36,560  
months we had a chance to ask about

5903  
04:02:41,429 --> 04:02:39,439  
their mindset right now from a couple of

5904  
04:02:43,990 --> 04:02:41,439  
their leaders

5905  
04:02:45,349 --> 04:02:44,000  
there's a very delicate dance between

5906  
04:02:50,550 --> 04:02:45,359  
the weather

5907  
04:02:53,269 --> 04:02:50,560  
and you know making sure all these

5908  
04:02:55,910 --> 04:02:53,279  
complex systems are working correctly

5909  
04:02:57,030 --> 04:02:55,920  
together and what is really important is

5910  
04:02:58,389 --> 04:02:57,040  
just how

5911  
04:03:01,269 --> 04:02:58,399  
calmly

5912  
04:03:03,750 --> 04:03:01,279  
quietly efficiently the team's working

5913  
04:03:05,670 --> 04:03:03,760

through every single one of those things

5914

04:03:07,830 --> 04:03:05,680

it's why we train people are very

5915

04:03:10,150 --> 04:03:07,840

passionate about this program as am i

5916

04:03:11,269 --> 04:03:10,160

and they know the consequences of what

5917

04:03:13,030 --> 04:03:11,279

they're doing

5918

04:03:14,950 --> 04:03:13,040

they know that the crew's lives depend

5919

04:03:17,030 --> 04:03:14,960

on what they're doing this human space

5920

04:03:18,790 --> 04:03:17,040

flight endeavor requires

5921

04:03:20,790 --> 04:03:18,800

diligence every day on the job and i

5922

04:03:22,950 --> 04:03:20,800

think our team knows that i definitely

5923

04:03:25,750 --> 04:03:22,960

feel like those crew members are in our

5924

04:03:27,030 --> 04:03:25,760

hands and we need to

5925

04:03:29,189 --> 04:03:27,040

be there

5926

04:03:31,670 --> 04:03:29,199

thinking straight making sure we're

5927

04:03:33,110 --> 04:03:31,680

making the right decisions so that we're

5928

04:03:38,630 --> 04:03:33,120

getting that crew safely to the

5929

04:03:45,030 --> 04:03:42,229

and that was um kathy leaders and steve

5930

04:03:47,189 --> 04:03:45,040

stitch who have been in charge of the

5931

04:03:49,510 --> 04:03:47,199

nasa team for much of the life of the

5932

04:03:51,590 --> 04:03:49,520

commercial crew program and have worked

5933

04:03:53,830 --> 04:03:51,600

very closely with the folks on the

5934

04:03:55,590 --> 04:03:53,840

spacex side who have gotten to know

5935

04:03:58,469 --> 04:03:55,600

these astronauts

5936

04:03:59,830 --> 04:03:58,479

on a personal level and have taken such

5937

04:04:01,990 --> 04:03:59,840

care in

5938

04:04:04,070 --> 04:04:02,000

all of the checkouts and the the

5939

04:04:05,990 --> 04:04:04,080

paranoia reviews as they're called to

5940

04:04:08,710 --> 04:04:06,000

make sure that they're constantly

5941

04:04:10,389 --> 04:04:08,720

looking for problems to uncover

5942

04:04:11,349 --> 04:04:10,399

to make sure that

5943

04:04:15,429 --> 04:04:11,359

every

5944

04:04:21,110 --> 04:04:15,439

make the safest this flight is safe as

5945

04:04:26,790 --> 04:04:24,870

again it is now t minus 14 minutes 15

5946

04:04:29,189 --> 04:04:26,800

seconds and counting

5947

04:04:31,349 --> 04:04:29,199

liftoff will be about one hour before

5948

04:04:33,830 --> 04:04:31,359

sunrise here on florida space coast and

5949

04:04:35,670 --> 04:04:33,840

if we're lucky we may see a beautiful

5950

04:04:38,550 --> 04:04:35,680

contrail at first light

5951  
04:04:40,710 --> 04:04:38,560  
at the time of launch at 5 49 and 2

5952  
04:04:43,910 --> 04:04:40,720  
seconds eastern time the space station

5953  
04:04:47,349 --> 04:04:43,920  
will be flying 258 miles over the indian

5954  
04:04:49,990 --> 04:04:47,359  
ocean south of sri lanka and now with t

5955  
04:04:51,670 --> 04:04:50,000  
minus 13 minutes 50 seconds and counting

5956  
04:04:53,349 --> 04:04:51,680  
we want to focus on the pad as we

5957  
04:04:55,269 --> 04:04:53,359  
proceed through the final stretch of the

5958  
04:04:57,910 --> 04:04:55,279  
countdown we will turn it over to

5959  
04:05:03,269 --> 04:04:57,920  
hawthorne to take us through launch at 5

5960  
04:05:07,189 --> 04:05:05,670  
we're inside t minus 14 minutes

5961  
04:05:10,150 --> 04:05:07,199  
everything is still looking good for

5962  
04:05:12,389 --> 04:05:10,160  
launch of falcon 9 and dragon 49 minutes

5963  
04:05:14,229 --> 04:05:12,399

and two seconds after the hour

5964

04:05:17,750 --> 04:05:14,239

falcon 9 began propellant load at t

5965

04:05:19,990 --> 04:05:17,760

minus 35 minutes loading of the rp1 fuel

5966

04:05:21,990 --> 04:05:20,000

onto stage 2 is complete

5967

04:05:24,309 --> 04:05:22,000

fuel loading is continuing on the first

5968

04:05:26,950 --> 04:05:24,319

stage we're over half full and it'll

5969

04:05:29,189 --> 04:05:26,960

finish at t minus 6 minutes

5970

04:05:31,670 --> 04:05:29,199

the densified liquid oxygen loading is

5971

04:05:34,150 --> 04:05:31,680

continuing on the first stage

5972

04:05:36,630 --> 04:05:34,160

and we began loading liquid oxygen onto

5973

04:05:39,269 --> 04:05:36,640

the second stage a few minutes ago

5974

04:05:41,030 --> 04:05:39,279

the liquid oxygen loading will wrap up t

5975

04:05:42,950 --> 04:05:41,040

minus three minutes on the first stage

5976  
04:05:45,670 --> 04:05:42,960  
about t minus two minutes on the second

5977  
04:05:48,229 --> 04:05:45,680  
stage checkouts of the thrust vector

5978  
04:05:50,309 --> 04:05:48,239  
controllers what we call tvc wiggles are

5979  
04:05:52,469 --> 04:05:50,319  
coming up along with throttle valve

5980  
04:05:53,910 --> 04:05:52,479  
checkouts on the engines that's where we

5981  
04:05:56,309 --> 04:05:53,920  
move the engines a little bit make sure

5982  
04:05:58,550 --> 04:05:56,319  
the hydraulics are ready to go

5983  
04:06:00,790 --> 04:05:58,560  
currently the range is go ready to

5984  
04:06:03,429 --> 04:06:00,800  
support working no issues and we

5985  
04:06:05,590 --> 04:06:03,439  
continue to have good weather both at

5986  
04:06:07,990 --> 04:06:05,600  
the launch pad at ground level at the

5987  
04:06:10,710 --> 04:06:08,000  
upper altitude winds and downrange at

5988  
04:06:12,469 --> 04:06:10,720

the contingency landing sites

5989

04:06:13,750 --> 04:06:12,479

on the dragon spacecraft the dragon

5990

04:06:15,990 --> 04:06:13,760

mission director and team they're

5991

04:06:17,590 --> 04:06:16,000

reporting no issues their communication

5992

04:06:19,830 --> 04:06:17,600

checkouts are complete

5993

04:06:21,590 --> 04:06:19,840

the crew access arm is retracted as you

5994

04:06:23,990 --> 04:06:21,600

see on your monitors away from the

5995

04:06:26,469 --> 04:06:24,000

vehicle the launch escape system is

5996

04:06:28,070 --> 04:06:26,479

armed the crew is strapped in and ready

5997

04:06:29,590 --> 04:06:28,080

to go

5998

04:06:31,590 --> 04:06:29,600

final instructions of the crew will be

5999

04:06:34,070 --> 04:06:31,600

coming at t minus 10 minutes they'll

6000

04:06:35,590 --> 04:06:34,080

just configure their displays for launch

6001  
04:06:36,630 --> 04:06:35,600  
that will give them insight to how the

6002  
04:06:39,110 --> 04:06:36,640  
launch is

6003  
04:06:41,830 --> 04:06:39,120  
proceeding and it provides constant

6004  
04:06:43,990 --> 04:06:41,840  
updates on vehicle health and for dragon

6005  
04:06:45,990 --> 04:06:44,000  
at t minus five minutes we'll hear it

6006  
04:06:48,150 --> 04:06:46,000  
enter terminal count as they transition

6007  
04:06:50,070 --> 04:06:48,160  
to internal power now we're going to

6008  
04:06:53,189 --> 04:06:50,080  
hear continued callouts on the countdown

6009  
04:06:55,830 --> 04:06:53,199  
net as we get close to t minus zero and

6010  
04:06:58,070 --> 04:06:55,840  
to the lift off

6011  
04:06:59,910 --> 04:06:58,080  
now gary we talked about the ascent

6012  
04:07:01,429 --> 04:06:59,920  
sequence of events that are coming up

6013  
04:07:03,349 --> 04:07:01,439

here you and jesse went through that a

6014

04:07:05,349 --> 04:07:03,359

little while ago but we're also going to

6015

04:07:06,950 --> 04:07:05,359

have abort modes can you explain a

6016

04:07:09,750 --> 04:07:06,960

little bit about what the abort mode

6017

04:07:12,070 --> 04:07:09,760

callouts are that we might hear

6018

04:07:13,590 --> 04:07:12,080

that's right john uh we're continuing to

6019

04:07:15,510 --> 04:07:13,600

track that the falcon 9 and dragon are

6020

04:07:17,510 --> 04:07:15,520

looking good for launch but just in case

6021

04:07:18,630 --> 04:07:17,520

anything were to happen dragon is fully

6022

04:07:21,030 --> 04:07:18,640

prepared

6023

04:07:23,349 --> 04:07:21,040

to initiate an abort and use those super

6024

04:07:25,510 --> 04:07:23,359

draco engines to escape from a speeding

6025

04:07:27,910 --> 04:07:25,520

falcon 9. on the way up hill you'll hear

6026

04:07:30,309 --> 04:07:27,920

a series of letter and number

6027

04:07:32,469 --> 04:07:30,319

combinations uh those will denote the

6028

04:07:34,790 --> 04:07:32,479

stage that the rocket is on and the

6029

04:07:36,630 --> 04:07:34,800

abort zone that we're on as well on

6030

04:07:37,510 --> 04:07:36,640

first stage you'll hear abort zones a

6031

04:07:39,750 --> 04:07:37,520

and b

6032

04:07:42,790 --> 04:07:39,760

that will cover the falcon 9's ascent up

6033

04:07:45,429 --> 04:07:42,800

to about the northern border of north

6034

04:07:48,790 --> 04:07:45,439

carolina about seven and a half to eight

6035

04:07:51,269 --> 04:07:48,800

miles in altitude and the stage two will

6036

04:07:54,630 --> 04:07:51,279

have stage two a through e mostly it

6037

04:07:56,389 --> 04:07:54,640

will be stage a our stage two a uh abort

6038

04:07:58,469 --> 04:07:56,399

zone but towards the end of the six

6039

04:08:00,229 --> 04:07:58,479

minutes that stage two will be firing

6040

04:08:04,149 --> 04:08:00,239

you'll hear the numbers start going out

6041

04:08:05,110 --> 04:08:04,159

from b to e uh with e being an abort to

6042

04:08:07,349 --> 04:08:05,120

orbit

6043

04:08:09,269 --> 04:08:07,359

all of these capabilities enabled on the

6044

04:08:10,149 --> 04:08:09,279

dragon spacecraft to make sure that the

6045

04:08:12,550 --> 04:08:10,159

crew

6046

04:08:14,630 --> 04:08:12,560

will be delivered safely into orbit

6047

04:08:16,950 --> 04:08:14,640

inside 10 minutes and 30 seconds we

6048

04:08:19,269 --> 04:08:16,960

should be hearing uh some final status

6049

04:08:21,189 --> 04:08:19,279

maybe a good luck and god speed from

6050

04:08:23,189 --> 04:08:21,199

some of the ground teams here uh

6051  
04:08:25,349 --> 04:08:23,199  
ensuring that the crew is ready to go

6052  
04:08:43,429 --> 04:08:25,359  
that falcon 9 dragon and all the support

6053  
04:08:50,469 --> 04:08:45,590  
dragon spacex confirmed crew displays

6054  
04:08:58,550 --> 04:08:53,990  
displays are configured for launch

6055  
04:09:00,229 --> 04:08:58,560  
spacex copies shane megan aki tama

6056  
04:09:02,229 --> 04:09:00,239  
we're thrilled to have crew on board

6057  
04:09:04,870 --> 04:09:02,239  
endeavor once again and truly honored to

6058  
04:09:06,389 --> 04:09:04,880  
have you you all at the helm it's been a

6059  
04:09:08,149 --> 04:09:06,399  
pleasure training alongside you ahead of

6060  
04:09:09,990 --> 04:09:08,159  
this historic launch we wish you a great

6061  
04:09:15,030 --> 04:09:10,000  
mission good luck

6062  
04:09:20,070 --> 04:09:17,429  
thank you chad christian frank and all

6063  
04:09:21,830 --> 04:09:20,080

the teams who got our crew and vehicle

6064

04:09:23,510 --> 04:09:21,840

ready for this mission

6065

04:09:25,590 --> 04:09:23,520

i want to say a special thank you to our

6066

04:09:27,429 --> 04:09:25,600

families and friends we're incredibly

6067

04:09:29,590 --> 04:09:27,439

grateful for your support

6068

04:09:31,910 --> 04:09:29,600

and sacrifice during our training and

6069

04:09:34,309 --> 04:09:31,920

our upcoming flight

6070

04:09:36,710 --> 04:09:34,319

our crew is flying astronauts from nasa

6071

04:09:38,309 --> 04:09:36,720

esa and jaxa which hasn't happened in

6072

04:09:40,389 --> 04:09:38,319

over 20 years

6073

04:09:43,030 --> 04:09:40,399

we're excited to represent our nations

6074

04:09:45,429 --> 04:09:43,040

agencies and all of humanity

6075

04:09:54,070 --> 04:09:45,439

off the earth for the earth endeavor is

6076  
04:09:57,830 --> 04:09:56,149  
alright some celebratory handshakes from

6077  
04:10:00,790 --> 04:09:57,840  
inside the crew dragon that was the

6078  
04:10:03,269 --> 04:10:00,800  
voice of the core uh chad healy here in

6079  
04:10:05,349 --> 04:10:03,279  
uh mission control hawthorne uh next

6080  
04:10:07,750 --> 04:10:05,359  
series of events john will be the engine

6081  
04:10:09,990 --> 04:10:07,760  
chill everything's looking good so far

6082  
04:10:12,870 --> 04:10:10,000  
there it is uh we're actually watching

6083  
04:10:14,870 --> 04:10:12,880  
uh the field trim valves on the merlin

6084  
04:10:15,990 --> 04:10:14,880  
1d engines going through some checkouts

6085  
04:10:18,070 --> 04:10:16,000  
right now

6086  
04:10:19,910 --> 04:10:18,080  
and as you said at t-minus seven minutes

6087  
04:10:22,309 --> 04:10:19,920  
we're going to start

6088  
04:10:24,389 --> 04:10:22,319

a sequence of events that begins with

6089

04:10:26,630 --> 04:10:24,399

opening the pre-valves currently the

6090

04:10:28,550 --> 04:10:26,640

liquid oxygen the kerosene fuel on the

6091

04:10:30,870 --> 04:10:28,560

falcon 9 first second stages is

6092

04:10:32,870 --> 04:10:30,880

separated from the merlin engines

6093

04:10:34,870 --> 04:10:32,880

t-minus seven minutes just over a minute

6094

04:10:36,710 --> 04:10:34,880

from now we open the pre-valves that

6095

04:10:40,070 --> 04:10:36,720

allows propellant down to the top of the

6096

04:10:42,309 --> 04:10:40,080

engine or the inlet to the turbo pumps

6097

04:10:44,149 --> 04:10:42,319

at the same time we open up bleed valves

6098

04:10:45,590 --> 04:10:44,159

on the turbo pumps and that allows a

6099

04:10:48,550 --> 04:10:45,600

little bit of that

6100

04:10:50,550 --> 04:10:48,560

densified ultra cold liquid oxygen

6101  
04:10:52,790 --> 04:10:50,560  
to flow through the pump and to chill

6102  
04:10:54,790 --> 04:10:52,800  
down the liquid oxygen pump

6103  
04:10:56,710 --> 04:10:54,800  
that way when we get to t minus two

6104  
04:10:58,790 --> 04:10:56,720  
seconds and we spin the pumps up and

6105  
04:11:00,950 --> 04:10:58,800  
everything comes to full power we're not

6106  
04:11:02,309 --> 04:11:00,960  
pulling very cold liquid oxygen through

6107  
04:11:04,389 --> 04:11:02,319  
a warm pump

6108  
04:11:06,309 --> 04:11:04,399  
so as that cools it down right now

6109  
04:11:10,229 --> 04:11:06,319  
that'll get it ready for that ignition

6110  
04:11:11,990 --> 04:11:10,239  
sequence in the last couple of seconds

6111  
04:11:14,309 --> 04:11:12,000  
we should hear that call out that the

6112  
04:11:16,710 --> 04:11:14,319  
stage one engine chill has started

6113  
04:11:18,309 --> 04:11:16,720

you'll also hear in flight

6114

04:11:20,950 --> 04:11:18,319

about a minute and a half two minutes

6115

04:11:23,269 --> 04:11:20,960

into flight mvac chill has begun

6116

04:11:25,830 --> 04:11:23,279

that's also a repeat sequence there

6117

04:11:27,349 --> 04:11:25,840

where we open the bleed valve and begin

6118

04:11:35,990 --> 04:11:27,359

chilling that engine one more time

6119

04:11:43,590 --> 04:11:37,269

right now we're waiting to see the

6120

04:11:43,600 --> 04:11:49,830

stage one engine chill has started

6121

04:11:53,910 --> 04:11:51,910

yep and there's the call out we've got

6122

04:11:55,750 --> 04:11:53,920

indication pre-valve's coming open on

6123

04:11:57,990 --> 04:11:55,760

the engines

6124

04:12:01,510 --> 04:11:58,000

and we have begun to chill in the merlin

6125

04:12:06,309 --> 04:12:03,670

that's right john now inside six minutes

6126  
04:12:08,710 --> 04:12:06,319  
40 seconds

6127  
04:12:11,750 --> 04:12:08,720  
rp1 rocket grade kerosene is completely

6128  
04:12:13,990 --> 04:12:11,760  
filled in the second stage

6129  
04:12:15,990 --> 04:12:14,000  
we're anticipating about 30 more seconds

6130  
04:12:25,830 --> 04:12:16,000  
for the first stage to be completely

6131  
04:12:28,950 --> 04:12:27,510  
liquid oxygen will continue to flow

6132  
04:12:32,309 --> 04:12:28,960  
through the first and second stages up

6133  
04:12:35,349 --> 04:12:32,319  
to the final minutes before t-zero

6134  
04:12:40,389 --> 04:12:37,990  
all right confirmation we have 100 fill

6135  
04:12:42,229 --> 04:12:40,399  
of rp-1 on both the first and second

6136  
04:12:47,030 --> 04:12:42,239  
stages six minutes to go until an

6137  
04:12:51,750 --> 04:12:49,670  
the next milestone will be uh dragon to

6138  
04:12:52,630 --> 04:12:51,760

transition to configure for terminal

6139

04:12:57,670 --> 04:12:52,640

count

6140

04:13:01,910 --> 04:12:57,680

will be on internal power no longer

6141

04:13:05,830 --> 04:13:03,750

and from there the falcon 9 propellant

6142

04:13:07,030 --> 04:13:05,840

tanks will pressurize for strong back

6143

04:13:08,870 --> 04:13:07,040

retract

6144

04:13:10,469 --> 04:13:08,880

that'll be another visual milestone the

6145

04:13:12,630 --> 04:13:10,479

clamps just uh

6146

04:13:14,550 --> 04:13:12,640

below the dragons and pressurized trunk

6147

04:13:17,349 --> 04:13:14,560

will open and the strong back will tilt

6148

04:13:19,830 --> 04:13:17,359

back just two degrees

6149

04:13:23,030 --> 04:13:19,840

then right after lift off back to 45

6150

04:13:28,309 --> 04:13:25,750

again rp-1 kerosene both on the first

6151  
04:13:31,269 --> 04:13:28,319  
and second stages

6152  
04:13:34,630 --> 04:13:31,279  
liquid oxygen continues to flow through

6153  
04:13:36,790 --> 04:13:34,640  
on the first and second stages

6154  
04:13:41,269 --> 04:13:36,800  
that very densified very cold liquid

6155  
04:13:46,870 --> 04:13:43,189  
dragon has transitioned to configure for

6156  
04:13:52,229 --> 04:13:48,550  
falcon 9 propellant tanks are

6157  
04:13:54,229 --> 04:13:52,239  
pressurizing for strong back retract

6158  
04:13:59,750 --> 04:13:54,239  
all right john good calls and right on

6159  
04:14:04,229 --> 04:14:01,830  
okay next major event coming up is going

6160  
04:14:06,229 --> 04:14:04,239  
to be opening the clamp arms around the

6161  
04:14:08,309 --> 04:14:06,239  
second stage in preparation for

6162  
04:14:10,149 --> 04:14:08,319  
retracting the strongback

6163  
04:14:12,630 --> 04:14:10,159

away from the vehicle to get ready for

6164

04:14:14,790 --> 04:14:12,640

liftoff

6165

04:14:16,550 --> 04:14:14,800

strongback is retracting we heard the

6166

04:14:18,630 --> 04:14:16,560

call out strongback is beginning to

6167

04:14:21,030 --> 04:14:18,640

retract we're into the automated

6168

04:14:23,429 --> 04:14:21,040

sequence we should see the clamp arms

6169

04:14:25,189 --> 04:14:23,439

that are just visible there

6170

04:14:27,349 --> 04:14:25,199

around the top of the second stage begin

6171

04:14:29,670 --> 04:14:27,359

to open up

6172

04:14:31,590 --> 04:14:29,680

once they are open then the strongback

6173

04:14:47,830 --> 04:14:31,600

will begin to move away from the falcon

6174

04:14:51,990 --> 04:14:49,670

watching the sequence a nice view from

6175

04:14:57,349 --> 04:14:52,000

up on top of the fixed service structure

6176  
04:15:01,510 --> 04:14:59,590  
and we beginning to recline away from

6177  
04:15:03,429 --> 04:15:01,520  
the falcon 9

6178  
04:15:05,269 --> 04:15:03,439  
we'll move the strong back two degrees

6179  
04:15:08,070 --> 04:15:05,279  
away from the falcon 9 that'll get it

6180  
04:15:10,389 --> 04:15:08,080  
ready for liftoff and at t0

6181  
04:15:12,790 --> 04:15:10,399  
when we the flight computer commands

6182  
04:15:15,110 --> 04:15:12,800  
liftoff the hydraulics on the strong

6183  
04:15:17,429 --> 04:15:15,120  
back will pull it to a position 45

6184  
04:15:19,670 --> 04:15:17,439  
degrees away from the falcon 9 giving it

6185  
04:15:21,750 --> 04:15:19,680  
the clearance for launch

6186  
04:15:25,030 --> 04:15:21,760  
so right now the strongback is moving

6187  
04:15:25,040 --> 04:15:29,990  
everything proceeding nominally

6188  
04:15:33,830 --> 04:15:31,349

it's great to

6189

04:15:35,750 --> 04:15:33,840

hear uh john we're also anxiously

6190

04:15:37,429 --> 04:15:35,760

awaiting the liquid oxygen complete on

6191

04:15:52,229 --> 04:15:37,439

the first stage

6192

04:15:57,030 --> 04:15:54,070

dragon has transitioned to terminal

6193

04:16:05,189 --> 04:15:57,040

count and is on internal power

6194

04:16:09,990 --> 04:16:07,189

okay we've heard the call out stage one

6195

04:16:11,990 --> 04:16:10,000

locks load is complete we're loading

6196

04:16:14,710 --> 04:16:12,000

liquid oxygen on the second stage for

6197

04:16:16,870 --> 04:16:14,720

about another 30 seconds or so

6198

04:16:19,030 --> 04:16:16,880

once we get the liquid oxygen load

6199

04:16:20,950 --> 04:16:19,040

complete on the second stage

6200

04:16:22,469 --> 04:16:20,960

the propellant line that runs up the

6201

04:16:24,630 --> 04:16:22,479

side of the strong back that carries

6202

04:16:26,229 --> 04:16:24,640

liquid oxygen will vent that line down

6203

04:16:27,830 --> 04:16:26,239

and make sure there's no liquid in it

6204

04:16:30,149 --> 04:16:27,840

when we get to lift

6205

04:16:32,790 --> 04:16:30,159

when we do that we open up valves on the

6206

04:16:34,469 --> 04:16:32,800

strongback and as uh kate and marie were

6207

04:16:37,429 --> 04:16:34,479

talking earlier

6208

04:16:38,710 --> 04:16:37,439

when we vent off that very cold gaseous

6209

04:16:40,389 --> 04:16:38,720

oxygen

6210

04:16:42,469 --> 04:16:40,399

it'll merge with the

6211

04:16:45,030 --> 04:16:42,479

warm humid florida air and you'll get a

6212

04:16:46,950 --> 04:16:45,040

large white plume of condensation off of

6213

04:16:48,870 --> 04:16:46,960

the back of the strongback that'll be

6214

04:16:50,870 --> 04:16:48,880

normal coming about a minute and a half

6215

04:16:56,070 --> 04:16:50,880

before launch everything continuing to

6216

04:17:01,110 --> 04:16:58,950

dragon is an auto idol

6217

04:17:02,950 --> 04:17:01,120

all right with that the falcon 9 is

6218

04:17:05,349 --> 04:17:02,960

fully fueled we have fuel in both the

6219

04:17:08,229 --> 04:17:05,359

first and second stages and both stages

6220

04:17:10,309 --> 04:17:08,239

are filled with liquid oxygen

6221

04:17:14,229 --> 04:17:10,319

gas closeout has started expect loud

6222

04:17:19,990 --> 04:17:16,389

dragon is also in auto idle the flight

6223

04:17:26,389 --> 04:17:21,830

maintaining their calculations standing

6224

04:17:31,349 --> 04:17:30,070

one minute 15 seconds until launch

6225

04:17:32,790 --> 04:17:31,359

the one-minute mark dragon will

6226  
04:17:34,309 --> 04:17:32,800  
transition to countdown and the flight

6227  
04:17:36,309 --> 04:17:34,319  
termination system will arm the

6228  
04:17:38,389 --> 04:17:36,319  
computers on falcon 9

6229  
04:17:39,990 --> 04:17:38,399  
we'll be talking to the computers on

6230  
04:17:42,469 --> 04:17:40,000  
dragon and can issue an abort if

6231  
04:17:45,189 --> 04:17:42,479  
necessary

6232  
04:17:46,790 --> 04:17:45,199  
fts is armed falcon 9 is in startup and

6233  
04:17:49,429 --> 04:17:46,800  
is now controlling

6234  
04:17:51,590 --> 04:17:49,439  
fargo news and countdown

6235  
04:17:55,189 --> 04:17:51,600  
all right 50 seconds to go everything is

6236  
04:18:00,790 --> 04:17:55,199  
ready for an on time launch today

6237  
04:18:00,800 --> 04:18:04,550  
copy go for launch

6238  
04:18:08,710 --> 04:18:06,149

ground teams are ready and the crew

6239

04:18:24,550 --> 04:18:08,720

inside dragon is ready

6240

04:18:24,560 --> 04:18:30,229

t-minus 15 seconds

6241

04:18:32,070 --> 04:18:31,189

10

6242

04:18:32,950 --> 04:18:32,080

9

6243

04:18:33,990 --> 04:18:32,960

8

6244

04:18:34,870 --> 04:18:34,000

seven

6245

04:18:35,910 --> 04:18:34,880

six

6246

04:18:36,870 --> 04:18:35,920

five

6247

04:18:37,910 --> 04:18:36,880

four

6248

04:18:38,870 --> 04:18:37,920

three

6249

04:18:39,750 --> 04:18:38,880

two

6250

04:18:41,189 --> 04:18:39,760

one

6251  
04:18:42,630 --> 04:18:41,199  
zero

6252  
04:18:47,990 --> 04:18:42,640  
mission

6253  
04:18:52,630 --> 04:18:50,630  
endeavor launches once again four

6254  
04:18:54,550 --> 04:18:52,640  
astronauts from three countries on crew

6255  
04:18:57,110 --> 04:18:54,560  
two now making their way to the one and

6256  
04:18:58,950 --> 04:18:57,120  
only international space station

6257  
04:19:00,309 --> 04:18:58,960  
vehicle is pitching down range nine

6258  
04:19:03,110 --> 04:19:00,319  
merlin engines on the first stage

6259  
04:19:04,710 --> 04:19:03,120  
providing 1.7 billion pounds of thrust

6260  
04:19:12,870 --> 04:19:04,720  
hearing good calls first stage

6261  
04:19:18,309 --> 04:19:15,429  
30 seconds into the second rotational

6262  
04:19:20,469 --> 04:19:18,319  
crew mission on board dragon and falcon

6263  
04:19:23,110 --> 04:19:20,479

9.

6264

04:19:25,510 --> 04:19:23,120

falcon 9 will be throttling down the

6265

04:19:28,550 --> 04:19:25,520

nine merlin engines shortly here in

6266

04:19:33,030 --> 04:19:30,710

in preparation for maximum dynamic

6267

04:19:34,149 --> 04:19:33,040

pressure

6268

04:19:35,670 --> 04:19:34,159

and there's that call out for the

6269

04:19:38,149 --> 04:19:35,680

throttle down

6270

04:19:39,750 --> 04:19:38,159

maximum dynamic pressure max q is the

6271

04:19:42,149 --> 04:19:39,760

largest structural load that the vehicle

6272

04:19:56,389 --> 04:19:42,159

sees throughout ascent so throttling

6273

04:20:02,790 --> 04:20:00,229

max q stage one throttle up

6274

04:20:09,510 --> 04:20:02,800

one bravo

6275

04:20:11,189 --> 04:20:09,520

mode on the first stage first stage

6276  
04:20:13,510 --> 04:20:11,199  
continues to fire for

6277  
04:20:23,189 --> 04:20:13,520  
two minutes 35 seconds one and a half

6278  
04:20:34,309 --> 04:20:26,070  
falcon 9 now traveling at

6279  
04:20:34,319 --> 04:20:39,269  
and the engine chills started

6280  
04:20:42,550 --> 04:20:40,469  
all right the engine chill for the

6281  
04:20:43,830 --> 04:20:42,560  
second stage single merlin engine has

6282  
04:20:46,389 --> 04:20:43,840  
started

6283  
04:20:48,469 --> 04:20:46,399  
about 30 more seconds of the first stage

6284  
04:20:52,710 --> 04:20:48,479  
firing to bring our four astronauts into

6285  
04:20:56,710 --> 04:20:54,950  
now from here coming up in about 20 some

6286  
04:20:58,630 --> 04:20:56,720  
seconds we're going to have three major

6287  
04:21:00,710 --> 04:20:58,640  
milestones we'll have shutdown of the

6288  
04:21:03,189 --> 04:21:00,720

nine merlin engines we're beginning to

6289

04:21:06,070 --> 04:21:03,199

throttle them down

6290

04:21:07,670 --> 04:21:06,080

we will then get state separation

6291

04:21:09,830 --> 04:21:07,680

and then we will get ignition of the

6292

04:21:23,349 --> 04:21:09,840

second stage engine to propel dragon and

6293

04:21:23,359 --> 04:21:28,200

copy to alpha confirmed

6294

04:21:28,210 --> 04:21:39,910

[Applause]

6295

04:21:44,149 --> 04:21:42,469

and we have ignition of the second stage

6296

04:21:45,990 --> 04:21:44,159

you see the green flash of that t-tep

6297

04:21:48,389 --> 04:21:46,000

fluid

6298

04:21:50,229 --> 04:21:48,399

the extent expansion nozzle on the

6299

04:21:52,229 --> 04:21:50,239

second stage merlin vacuum glowing that

6300

04:21:55,110 --> 04:21:52,239

bright red that we like to see good

6301  
04:21:56,950 --> 04:21:55,120  
performance on the second stage so far

6302  
04:21:59,670 --> 04:21:56,960  
and on the left side of your screen we

6303  
04:22:02,469 --> 04:21:59,680  
saw the exhaust of the second stage

6304  
04:22:04,229 --> 04:22:02,479  
engine streaming past the first stage as

6305  
04:22:05,830 --> 04:22:04,239  
the grid fins are coming out we also

6306  
04:22:08,309 --> 04:22:05,840  
briefly had a view

6307  
04:22:10,070 --> 04:22:08,319  
of the lights of central florida in the

6308  
04:22:11,910 --> 04:22:10,080  
background

6309  
04:22:15,269 --> 04:22:11,920  
currently the first stage is continuing

6310  
04:22:17,030 --> 04:22:15,279  
to coast up to apogee it's unpowered

6311  
04:22:19,030 --> 04:22:17,040  
it'll reach a peak height and then begin

6312  
04:22:21,189 --> 04:22:19,040  
to descend back down toward the earth's

6313  
04:22:23,510 --> 04:22:21,199

atmosphere where it will light three

6314

04:22:25,349 --> 04:22:23,520

engines to slow down in preparation for

6315

04:22:27,349 --> 04:22:25,359

what will be a landing burn on the drone

6316

04:22:29,349 --> 04:22:27,359

ship in the atlantic ocean

6317

04:22:32,149 --> 04:22:29,359

you can see the grid fins are deployed

6318

04:22:33,670 --> 04:22:32,159

right now the first stage

6319

04:22:36,630 --> 04:22:33,680

trajectory nominal

6320

04:22:39,030 --> 04:22:36,640

we're pulsing the thrusters

6321

04:22:40,790 --> 04:22:39,040

copy nominal trajectory

6322

04:22:41,990 --> 04:22:40,800

we hear a call out from the crew nominal

6323

04:22:43,349 --> 04:22:42,000

trajectory

6324

04:22:45,349 --> 04:22:43,359

so we're beginning to move the first

6325

04:22:57,510 --> 04:22:45,359

stage into position so it can do the

6326  
04:23:00,630 --> 04:22:59,189  
four minutes fifteen seconds into

6327  
04:23:01,910 --> 04:23:00,640  
today's flight

6328  
04:23:03,590 --> 04:23:01,920  
second stage propelling our four

6329  
04:23:06,229 --> 04:23:03,600  
astronauts up the eastern seaboard will

6330  
04:23:08,229 --> 04:23:06,239  
continue to fire it's a six minute burn

6331  
04:23:10,309 --> 04:23:08,239  
to deliver the astronauts into orbit

6332  
04:23:12,149 --> 04:23:10,319  
we'll wait for a cue for a good orbital

6333  
04:23:13,590 --> 04:23:12,159  
insertion after that meanwhile we will

6334  
04:23:15,349 --> 04:23:13,600  
be hearing

6335  
04:23:17,030 --> 04:23:15,359  
check-ins on the vehicle's trajectory

6336  
04:23:18,469 --> 04:23:17,040  
and performance as well as check-ins

6337  
04:23:20,229 --> 04:23:18,479  
with some of the ground stations as it

6338  
04:23:21,269 --> 04:23:20,239

passes over

6339

04:23:22,070 --> 04:23:21,279

throughout

6340

04:23:30,630 --> 04:23:22,080

the

6341

04:23:30,640 --> 04:23:36,309

dragon spacex trajectory nominal

6342

04:23:36,319 --> 04:23:45,990

copy nominal trajectory

6343

04:23:50,630 --> 04:23:47,990

getting good views of both the first and

6344

04:23:54,229 --> 04:23:50,640

second stage from the onboard cameras

6345

04:23:57,590 --> 04:23:55,910

the new hampshire tracking station has

6346

04:23:58,950 --> 04:23:57,600

acquired the second stage telemetry

6347

04:24:01,349 --> 04:23:58,960

signal

6348

04:24:03,110 --> 04:24:01,359

meanwhile the first stage

6349

04:24:05,110 --> 04:24:03,120

has reached apogee and it's now

6350

04:24:07,510 --> 04:24:05,120

beginning to descend from

6351

04:24:09,750 --> 04:24:07,520

a height it's currently about 167

6352

04:24:12,149 --> 04:24:09,760

kilometers up and in a few minutes we

6353

04:24:30,950 --> 04:24:12,159

will get the entry burn of the second

6354

04:24:30,960 --> 04:24:36,469

dragon spacex trajectory nominal

6355

04:24:36,479 --> 04:24:41,030

copy nominal trajectory

6356

04:24:44,950 --> 04:24:42,630

right on cue those check-ins on the

6357

04:24:57,830 --> 04:24:44,960

second stage performance once a minute

6358

04:25:03,189 --> 04:25:00,309

stage 2 continues to climb the vehicle

6359

04:25:08,630 --> 04:25:03,199

now exceeding 8 000 miles an hour

6360

04:25:13,030 --> 04:25:10,950

and just about one minute from now we

6361

04:25:14,149 --> 04:25:13,040

will begin the entry burn of the first

6362

04:25:15,830 --> 04:25:14,159

stage

6363

04:25:17,990 --> 04:25:15,840

that will consist of lighting the center

6364

04:25:20,149 --> 04:25:18,000

engine and then shortly afterwards two

6365

04:25:22,469 --> 04:25:20,159

more engines for a three engine burn to

6366

04:25:32,149 --> 04:25:22,479

slow down the first stage in preparation

6367

04:25:32,159 --> 04:25:37,590

dragon spacex trajectory nominal

6368

04:25:37,600 --> 04:25:43,110

stopping nominal trajectory

6369

04:25:46,550 --> 04:25:44,870

another check in the crew confirming

6370

04:25:48,790 --> 04:25:46,560

they're hearing the same thing the

6371

04:25:56,070 --> 04:25:48,800

vehicle exceeding are about to exceed

6372

04:25:59,990 --> 04:25:57,910

meanwhile first stage down at 90

6373

04:26:01,429 --> 04:26:00,000

kilometers getting ready to relight

6374

04:26:12,710 --> 04:26:01,439

three engines

6375

04:26:12,720 --> 04:26:18,070

stage two fts has saved

6376  
04:26:22,309 --> 04:26:19,830  
we've got the center engine ignition and

6377  
04:26:24,790 --> 04:26:22,319  
there come the two side engines

6378  
04:26:25,830 --> 04:26:24,800  
now this entry burn will last about 29

6379  
04:26:27,750 --> 04:26:25,840  
seconds

6380  
04:26:29,429 --> 04:26:27,760  
it's gonna significantly slow down the

6381  
04:26:43,030 --> 04:26:29,439  
vehicle in preparation for hitting the

6382  
04:26:47,910 --> 04:26:45,269  
entry burned complete we're down below

6383  
04:26:49,510 --> 04:26:47,920  
35 kilometers continuing to look good on

6384  
04:26:53,110 --> 04:26:49,520  
the first stage heading to the atlantic

6385  
04:26:54,870 --> 04:26:53,120  
ocean for a landing on the drone ship

6386  
04:27:02,149 --> 04:26:54,880  
while second stage is less than a minute

6387  
04:27:02,159 --> 04:27:17,310  
stage two in terminal guidance

6388  
04:27:21,269 --> 04:27:20,149

[Music]

6389

04:27:25,510 --> 04:27:21,279

shannon

6390

04:27:35,910 --> 04:27:25,520

the stage two a few seconds until cut

6391

04:27:35,920 --> 04:27:44,550

in the shutdown

6392

04:27:49,990 --> 04:27:46,790

dragon spacex launch escape system

6393

04:28:00,070 --> 04:27:53,189

launch escape system disarm copy

6394

04:28:05,510 --> 04:28:03,110

copy nominal orbital insertion

6395

04:28:07,990 --> 04:28:05,520

all right the falcon 9 second stage has

6396

04:28:12,070 --> 04:28:08,000

done its job delivering our four crew

6397

04:28:16,309 --> 04:28:14,309

you hear the applause here on hawthorne

6398

04:28:18,389 --> 04:28:16,319

we're waiting to get a video signal back

6399

04:28:19,910 --> 04:28:18,399

from the drone ship of course i still

6400

04:28:21,750 --> 04:28:19,920

love you

6401  
04:28:23,590 --> 04:28:21,760  
and the view from the onboard camera we

6402  
04:28:26,469 --> 04:28:23,600  
saw it just briefly it looks like first

6403  
04:28:29,590 --> 04:28:26,479  
stage on the drone ship

6404  
04:28:31,750 --> 04:28:29,600  
getting views of the dragon trunk

6405  
04:28:34,309 --> 04:28:31,760  
so the first stage is on the drone ship

6406  
04:28:36,309 --> 04:28:34,319  
successfully landed and more importantly

6407  
04:28:38,630 --> 04:28:36,319  
second stage is in a nominal orbit with

6408  
04:28:41,830 --> 04:28:38,640  
the dragon spacecraft getting ready for

6409  
04:28:44,389 --> 04:28:41,840  
some important events coming up gary

6410  
04:28:46,229 --> 04:28:44,399  
that's right about two more minutes the

6411  
04:28:50,469 --> 04:28:46,239  
dragon and the second stage of the

6412  
04:28:51,910 --> 04:28:50,479  
falcon 9 will be in a coast phase

6413  
04:28:56,389 --> 04:28:51,920

it'll take that long until the

6414

04:29:02,070 --> 04:28:56,399

spacecraft separates from the falcon 9.

6415

04:29:06,070 --> 04:29:04,149

it's great to see some of the views of

6416

04:29:29,830 --> 04:29:06,080

the earth as it passes by over the north

6417

04:29:33,110 --> 04:29:30,950

all right we're getting shots of the

6418

04:29:37,429 --> 04:29:33,120

crew in orbit

6419

04:29:38,790 --> 04:29:37,439

i'm looking uh for that zero g indicator

6420

04:29:40,870 --> 04:29:38,800

can't seem to see it in this shot but we

6421

04:29:45,990 --> 04:29:40,880

have a minute to go until we have uh

6422

04:29:50,790 --> 04:29:47,990

dragon traveling at

6423

04:30:02,550 --> 04:29:50,800

nearly 17 000 miles per hour at an

6424

04:30:12,950 --> 04:30:05,429

again the four person crew of endeavor

6425

04:30:30,469 --> 04:30:14,469

less than 30 seconds until we have

6426  
04:30:35,269 --> 04:30:33,590  
10 seconds to spacecraft separation

6427  
04:30:37,510 --> 04:30:35,279  
we should hear words from the core here

6428  
04:30:54,980 --> 04:30:37,520  
in mission control hawthorne once we

6429  
04:31:09,110 --> 04:31:05,500  
[Applause]

6430  
04:31:13,110 --> 04:31:10,630  
from us and let them know your rocket is

6431  
04:31:15,910 --> 04:31:13,120  
home safe thanks for flying our first

6432  
04:31:20,229 --> 04:31:15,920  
life proven crude falcon 9. see your

6433  
04:31:23,429 --> 04:31:21,750  
thank you very much we're great it's

6434  
04:31:25,590 --> 04:31:23,439  
glad to be back in space for all of us

6435  
04:31:37,110 --> 04:31:25,600  
and we'll send our regards to crew one

6436  
04:31:41,510 --> 04:31:39,349  
absolutely stunning views

6437  
04:31:43,189 --> 04:31:41,520  
from both inside the cabin seeing the

6438  
04:31:45,429 --> 04:31:43,199

excitement of our four-person crew

6439

04:31:47,750 --> 04:31:45,439

inside endeavor and watching endeavour

6440

04:31:49,910 --> 04:31:47,760

drift away from the camera on the second

6441

04:31:52,389 --> 04:31:49,920

stage as the earth passes by on an

6442

04:31:58,389 --> 04:31:52,399

orbital sunrise

6443

04:32:02,070 --> 04:32:00,229

and endeavor you uh cut out a little bit

6444

04:32:04,229 --> 04:32:02,080

there if the question was uh if you're

6445

04:32:08,229 --> 04:32:04,239

go to open visors you are go to

6446

04:32:08,239 --> 04:32:13,030

got the end work thanks

6447

04:32:19,510 --> 04:32:15,990

all right 13 and a half minutes past

6448

04:32:29,030 --> 04:32:19,520

liftoff the crew is in orbit traveling

6449

04:32:34,469 --> 04:32:32,229

well gary i don't know about you but uh

6450

04:32:36,469 --> 04:32:34,479

that was a great countdown

6451

04:32:38,389 --> 04:32:36,479

everything sounded great

6452

04:32:40,710 --> 04:32:38,399

right on time actually a little ahead of

6453

04:32:43,110 --> 04:32:40,720

you nominal dehumidifier activation and

6454

04:32:45,349 --> 04:32:43,120

service section draco checkouts

6455

04:32:48,070 --> 04:32:45,359

got a good orbit out of falcon 9 and

6456

04:32:49,830 --> 04:32:48,080

first stage landed on the drone ship and

6457

04:32:52,149 --> 04:32:49,840

we're in the sunlight over the atlantic

6458

04:32:55,510 --> 04:32:52,159

ocean with the dragon spacecraft all in

6459

04:33:00,229 --> 04:32:57,349

i think everybody's jealous of the crew

6460

04:33:01,590 --> 04:33:00,239

in orbit right now john uh these views

6461

04:33:04,070 --> 04:33:01,600

even just from the cameras are

6462

04:33:06,150 --> 04:33:04,080

absolutely stunning

6463

04:33:08,230 --> 04:33:06,160

it was great to see our crew members uh

6464

04:33:10,230 --> 04:33:08,240

get into orbit they already performed

6465

04:33:12,551 --> 04:33:10,240

successful checkouts of the 12 server

6466

04:33:14,390 --> 04:33:12,561

section draco's around dragon

6467

04:33:16,230 --> 04:33:14,400

the next uh

6468

04:33:18,709 --> 04:33:16,240

milestone will be the deployment of the

6469

04:33:20,390 --> 04:33:18,719

nose cone that'll be about a five minute

6470

04:33:23,429 --> 04:33:20,400

process but that'll expose the forward

6471

04:33:24,470 --> 04:33:23,439

bulkhead draco's and prepare them uh for

6472

04:33:26,789 --> 04:33:24,480

checkout

6473

04:33:29,029 --> 04:33:26,799

there's a phase burn there's five major

6474

04:33:30,949 --> 04:33:29,039

burns that are needed to get

6475

04:33:32,629 --> 04:33:30,959

the crew dragon up to rendezvous with

6476  
04:33:35,109 --> 04:33:32,639  
the international space station over the

6477  
04:33:36,869 --> 04:33:35,119  
next 23 hours

6478  
04:33:39,269 --> 04:33:36,879  
and so that first phase burn is coming

6479  
04:33:55,670 --> 04:33:39,279  
up real soon in about 35 minutes

6480  
04:33:59,670 --> 04:33:57,189  
jesse i don't know if you could see the

6481  
04:34:02,230 --> 04:33:59,680  
zero g indicator but i was told it's a

6482  
04:34:06,070 --> 04:34:02,240  
penguin i'm trying to look for it

6483  
04:34:06,080 --> 04:34:12,551  
keep an eye out on that left-hand screen

6484  
04:34:17,109 --> 04:34:15,029  
meanwhile the dragon is configured for

6485  
04:34:23,910 --> 04:34:17,119  
for a nosecone deployment

6486  
04:34:27,590 --> 04:34:25,429  
the nose code itself

6487  
04:34:30,709 --> 04:34:27,600  
opens uh just beyond 90 degrees about

6488  
04:34:33,029 --> 04:34:30,719

105 degrees to expose the forward uh

6489

04:34:34,310 --> 04:34:33,039

bulkhead dracos those forward bulkhead

6490

04:34:36,869 --> 04:34:34,320

dracos

6491

04:34:38,949 --> 04:34:36,879

four of them at the very top of the

6492

04:34:40,390 --> 04:34:38,959

dragon will do the bulk of the work when

6493

04:34:42,629 --> 04:34:40,400

it comes to

6494

04:34:45,910 --> 04:34:42,639

firing the draco engines for minutes at

6495

04:34:48,230 --> 04:34:45,920

a time to increase the uh dragon speed

6496

04:34:49,990 --> 04:34:48,240

altitude and phasing

6497

04:34:53,109 --> 04:34:50,000

to catch up with the international space

6498

04:34:54,390 --> 04:34:53,119

station again over the next 23 hours

6499

04:34:56,949 --> 04:34:54,400

meanwhile we're still getting camera

6500

04:34:59,349 --> 04:34:56,959

views from the second stage looking at

6501  
04:35:01,189 --> 04:34:59,359  
that expansion nozzle

6502  
04:35:03,910 --> 04:35:01,199  
did its work beautifully to deliver the

6503  
04:35:07,189 --> 04:35:03,920  
four crew into orbit

6504  
04:35:09,189 --> 04:35:07,199  
dragon over the north atlantic ocean

6505  
04:35:11,109 --> 04:35:09,199  
and gary this is john i think i heard

6506  
04:35:13,109 --> 04:35:11,119  
the call out on one of the dragon nets

6507  
04:35:15,349 --> 04:35:13,119  
that the first set of nose count hooks

6508  
04:35:20,789 --> 04:35:15,359  
is open so it sounds like that sequence

6509  
04:35:25,590 --> 04:35:23,269  
very good

6510  
04:35:28,551 --> 04:35:25,600  
well from here in hawthorne it was very

6511  
04:35:30,470 --> 04:35:28,561  
exciting to see the uh falcon 9 lift off

6512  
04:35:32,070 --> 04:35:30,480  
and deliver our four-person crew into

6513  
04:35:34,150 --> 04:35:32,080

orbit we're going to be with you

6514

04:35:36,709 --> 04:35:34,160

throughout the entire phase of the

6515

04:35:38,470 --> 04:35:36,719

rendezvous phase uh until dragon and

6516

04:35:39,990 --> 04:35:38,480

this four-person crew docks with the

6517

04:35:42,070 --> 04:35:40,000

international space station that'll be

6518

04:35:43,910 --> 04:35:42,080

over the next 23 hours we'll bring you

6519

04:35:45,910 --> 04:35:43,920

through some of those major burns uh

6520

04:35:47,990 --> 04:35:45,920

that are happening but i am so jealous

6521

04:35:49,670 --> 04:35:48,000

of marie and the group over there over

6522

04:35:52,390 --> 04:35:49,680

at the kennedy space center you actually

6523

04:35:55,670 --> 04:35:52,400

got to see the launch and probably feel

6524

04:35:59,510 --> 04:35:55,680

it as well marie what was that like

6525

04:36:01,990 --> 04:35:59,520

oh it was just spectacular and you know

6526  
04:36:03,349 --> 04:36:02,000  
this the sun hasn't come up yet here in

6527  
04:36:05,029 --> 04:36:03,359  
florida but

6528  
04:36:06,869 --> 04:36:05,039  
uh you know we were able to just turn

6529  
04:36:10,230 --> 04:36:06,879  
around and see the launch right behind

6530  
04:36:13,510 --> 04:36:10,240  
us and it lit up the sky just absolutely

6531  
04:36:16,230 --> 04:36:13,520  
breathtaking it was so um it was so

6532  
04:36:19,109 --> 04:36:16,240  
astounding to see the the colors i mean

6533  
04:36:21,830 --> 04:36:19,119  
it was not just your your usual fireball

6534  
04:36:23,830 --> 04:36:21,840  
but uh there was um pulsating towards

6535  
04:36:25,990 --> 04:36:23,840  
the end and kate you're much more

6536  
04:36:27,590 --> 04:36:26,000  
eloquent uh describing that sequence

6537  
04:36:29,429 --> 04:36:27,600  
which i appreciate you doing that well

6538  
04:36:32,310 --> 04:36:29,439

we were happy to help

6539

04:36:34,789 --> 04:36:32,320

it was um it was so fun and knowing that

6540

04:36:37,990 --> 04:36:34,799

um those guys were enjoying the ride

6541

04:36:39,510 --> 04:36:38,000

along with the sites that we got to see

6542

04:36:43,510 --> 04:36:39,520

made all the difference there's nothing

6543

04:36:46,070 --> 04:36:43,520

more relieving than um crew in orbit

6544

04:36:48,150 --> 04:36:46,080

and of course uh it we were so lucky to

6545

04:36:48,949 --> 04:36:48,160

have clear weather here being able to

6546

04:36:50,709 --> 04:36:48,959

see

6547

04:36:51,990 --> 04:36:50,719

the reentry burn as well i was hoping we

6548

04:36:54,070 --> 04:36:52,000

were going to be able to catch landing

6549

04:36:56,230 --> 04:36:54,080

burn but unfortunately clouds on the

6550

04:36:57,109 --> 04:36:56,240

horizon did block that view but it was

6551  
04:36:58,709 --> 04:36:57,119  
also

6552  
04:37:02,150 --> 04:36:58,719  
such a treat to be able to see the the

6553  
04:37:04,709 --> 04:37:02,160  
reentry of that that first stage as well

6554  
04:37:06,949 --> 04:37:04,719  
let's go over to uh jasmine to get some

6555  
04:37:09,349 --> 04:37:06,959  
reaction i think she's with the nasa

6556  
04:37:10,789 --> 04:37:09,359  
administrator now jasmine

6557  
04:37:12,789 --> 04:37:10,799  
thanks

6558  
04:37:14,949 --> 04:37:12,799  
thank you marie yes i'm joined again

6559  
04:37:16,230 --> 04:37:14,959  
here with steve jersey thank you so much

6560  
04:37:17,269 --> 04:37:16,240  
for being here

6561  
04:37:19,109 --> 04:37:17,279  
thank you

6562  
04:37:21,750 --> 04:37:19,119  
so we just had the privilege of watching

6563  
04:37:23,109 --> 04:37:21,760

that spectacular launch in person what

6564

04:37:24,150 --> 04:37:23,119

was that like

6565

04:37:26,390 --> 04:37:24,160

uh

6566

04:37:29,349 --> 04:37:26,400

watching a launch a particularly human

6567

04:37:31,349 --> 04:37:29,359

space launch will never get old for me

6568

04:37:34,390 --> 04:37:31,359

it's just thrilling to see those nine

6569

04:37:36,310 --> 04:37:34,400

engines light up and it lift off the pad

6570

04:37:38,150 --> 04:37:36,320

get to the main engine cutoff and

6571

04:37:39,429 --> 04:37:38,160

separation and get that second stage

6572

04:37:41,910 --> 04:37:39,439

started and

6573

04:37:44,629 --> 04:37:41,920

um of course freedom launches are always

6574

04:37:46,869 --> 04:37:44,639

amazing and uh you know we could see

6575

04:37:47,990 --> 04:37:46,879

um the vehicle pretty much through the

6576  
04:37:50,551 --> 04:37:48,000  
entire

6577  
04:37:52,470 --> 04:37:50,561  
trajectory up to earth orbit it was just

6578  
04:37:54,310 --> 04:37:52,480  
spectacular right no absolutely it was

6579  
04:37:56,470 --> 04:37:54,320  
just stunning and the sun is just now

6580  
04:37:58,070 --> 04:37:56,480  
starting to peak over the clouds here so

6581  
04:37:59,830 --> 04:37:58,080  
do you have any final words of

6582  
04:38:01,670 --> 04:37:59,840  
encouragement for our nasa team our

6583  
04:38:02,709 --> 04:38:01,680  
spacex team and our international

6584  
04:38:05,029 --> 04:38:02,719  
partners

6585  
04:38:07,349 --> 04:38:05,039  
yeah you know um

6586  
04:38:09,510 --> 04:38:07,359  
partnerships are key to what we do

6587  
04:38:11,109 --> 04:38:09,520  
particularly in human space flight our

6588  
04:38:13,590 --> 04:38:11,119

partnership with spacex has been

6589

04:38:16,789 --> 04:38:13,600

tremendous third launch in less than a

6590

04:38:18,949 --> 04:38:16,799

year um after almost a 10-year

6591

04:38:20,789 --> 04:38:18,959

uh gap in human space flight launching

6592

04:38:22,551 --> 04:38:20,799

astronauts from american soil on

6593

04:38:24,310 --> 04:38:22,561

american rockets

6594

04:38:25,510 --> 04:38:24,320

so our partnership with spacex our

6595

04:38:27,109 --> 04:38:25,520

commercial partners other commercial

6596

04:38:29,590 --> 04:38:27,119

partners is critical and our

6597

04:38:31,590 --> 04:38:29,600

international partners uh we could not

6598

04:38:33,429 --> 04:38:31,600

do this without them uh very

6599

04:38:35,910 --> 04:38:33,439

international mission with two u.s

6600

04:38:39,590 --> 04:38:35,920

astronauts and one for nissan one from

6601  
04:38:41,029 --> 04:38:39,600  
jaxa and uh obviously the iss is

6602  
04:38:43,189 --> 04:38:41,039  
the largest

6603  
04:38:45,510 --> 04:38:43,199  
engineering collab international

6604  
04:38:48,709 --> 04:38:45,520  
collaboration in the history of

6605  
04:38:51,429 --> 04:38:48,719  
humankind and it continues to amaze me

6606  
04:38:53,910 --> 04:38:51,439  
how well we work together and doing all

6607  
04:38:56,470 --> 04:38:53,920  
the research and technology on iss

6608  
04:38:59,029 --> 04:38:56,480  
and i'm just so grateful for that the

6609  
04:39:01,670 --> 04:38:59,039  
nasa spacex

6610  
04:39:03,990 --> 04:39:01,680  
team uh for their hard work

6611  
04:39:06,869 --> 04:39:04,000  
and uh getting this third launch off the

6612  
04:39:09,029 --> 04:39:06,879  
crew 2 launch and uh looking forward to

6613  
04:39:10,310 --> 04:39:09,039

uh docking and hatch opening in the

6614

04:39:12,470 --> 04:39:10,320

welcome ceremony and also looking

6615

04:39:14,789 --> 04:39:12,480

forward to crew one return uh next

6616

04:39:16,551 --> 04:39:14,799

thursday on the 28th right right a lot

6617

04:39:18,470 --> 04:39:16,561

of action still going on at the station

6618

04:39:21,029 --> 04:39:18,480

right now so as you mentioned the next

6619

04:39:22,470 --> 04:39:21,039

big milestone for crew 2 will be docking

6620

04:39:24,551 --> 04:39:22,480

at the station so where are you going to

6621

04:39:26,310 --> 04:39:24,561

be for that action i'm actually going to

6622

04:39:28,869 --> 04:39:26,320

stay here kennedy space center and

6623

04:39:31,269 --> 04:39:28,879

follow the free flight uh up to docking

6624

04:39:34,869 --> 04:39:31,279

and then i'm going to participate in the

6625

04:39:37,029 --> 04:39:34,879

welcoming ceremony with um with my

6626

04:39:39,430 --> 04:39:37,039

counterparts from issa the director

6627

04:39:42,230 --> 04:39:39,440

general visa and the president of jaxa

6628

04:39:44,788 --> 04:39:42,240

and welcome the crew 2 astronauts to the

6629

04:39:46,948 --> 04:39:44,798

iss fantastic kennedy is the place to be

6630

04:39:48,390 --> 04:39:46,958

right now then i guess do you have any

6631

04:39:49,670 --> 04:39:48,400

uh final remarks that you want to share

6632

04:39:51,750 --> 04:39:49,680

with us today

6633

04:39:53,990 --> 04:39:51,760

hey you know i'm just i'm again i'm just

6634

04:39:56,470 --> 04:39:54,000

so proud of the team um

6635

04:39:58,868 --> 04:39:56,480

i'm so proud of what this team has been

6636

04:40:00,830 --> 04:39:58,878

able to accomplish uh over the past year

6637

04:40:03,590 --> 04:40:00,840

particularly it's been especially

6638

04:40:06,230 --> 04:40:03,600

challenging uh global pandemic and other

6639

04:40:08,310 --> 04:40:06,240

challenges and uh and just the focus of

6640

04:40:09,670 --> 04:40:08,320

the team to get these three crew

6641

04:40:13,030 --> 04:40:09,680

launches off as well as launch

6642

04:40:15,350 --> 04:40:13,040

perseverance land perseverance uh first

6643

04:40:16,948 --> 04:40:15,360

powered flight uh a control powered

6644

04:40:19,670 --> 04:40:16,958

flight of a vehicle on another planet

6645

04:40:22,868 --> 04:40:19,680

first time generating oxygen from the

6646

04:40:25,030 --> 04:40:22,878

atmosphere of mars um and uh and really

6647

04:40:28,550 --> 04:40:25,040

looking forward to um

6648

04:40:30,470 --> 04:40:28,560

the core stage for sls getting here and

6649

04:40:31,750 --> 04:40:30,480

us moving forward to the first uh

6650

04:40:34,310 --> 04:40:31,760

uncrewed

6651  
04:40:35,030 --> 04:40:34,320  
test flight artemis one of sls and orion

6652  
04:40:36,788 --> 04:40:35,040  
so

6653  
04:40:38,550 --> 04:40:36,798  
uh accomplished a credible amount in

6654  
04:40:40,070 --> 04:40:38,560  
this last year and much more to

6655  
04:40:42,070 --> 04:40:40,080  
accomplish in the year to come

6656  
04:40:44,550 --> 04:40:42,080  
absolutely we've got a bright future

6657  
04:40:46,150 --> 04:40:44,560  
right here at nasa thank you so much

6658  
04:40:47,830 --> 04:40:46,160  
nasa administrator steve jerzik for

6659  
04:40:50,550 --> 04:40:47,840  
joining us today now we're going to take

6660  
04:40:52,070 --> 04:40:50,560  
it back to the ksc host desk

6661  
04:40:55,350 --> 04:40:52,080  
thanks jasmine

6662  
04:40:57,190 --> 04:40:55,360  
shane megan toma and aki are on course

6663  
04:40:59,990 --> 04:40:57,200

to arrive at the international space

6664

04:41:02,070 --> 04:41:00,000

station around 5 10 a.m eastern time

6665

04:41:04,150 --> 04:41:02,080

tomorrow and we're going to stay on the

6666

04:41:06,628 --> 04:41:04,160

air for continuous live coverage along

6667

04:41:09,110 --> 04:41:06,638

their entire ride to station though our

6668

04:41:10,788 --> 04:41:09,120

coverage here at kennedy space center is

6669

04:41:13,110 --> 04:41:10,798

concluding we're going to turn it over

6670

04:41:14,788 --> 04:41:13,120

to the teams in hawthorne and houston to

6671

04:41:17,110 --> 04:41:14,798

take us through the next phases of the

6672

04:41:18,948 --> 04:41:17,120

crew 2 mission all the way through hatch

6673

04:41:19,910 --> 04:41:18,958

opening and a welcome ceremony for the

6674

04:41:22,150 --> 04:41:19,920

crew

6675

04:41:24,230 --> 04:41:22,160

and for those of you watching online on

6676  
04:41:26,310 --> 04:41:24,240  
youtube take a look at the description

6677  
04:41:28,150 --> 04:41:26,320  
below the video there you'll find the

6678  
04:41:30,550 --> 04:41:28,160  
new link for the new for the crew 2

6679  
04:41:32,230 --> 04:41:30,560  
rendezvous and coast phase live coverage

6680  
04:41:33,190 --> 04:41:32,240  
will continue at that new location

6681  
04:41:35,030 --> 04:41:33,200  
shortly

6682  
04:41:36,708 --> 04:41:35,040  
and if you're watching on nasa tv you

6683  
04:41:37,830 --> 04:41:36,718  
won't miss a thing and coverage will

6684  
04:41:39,830 --> 04:41:37,840  
continue

6685  
04:41:41,910 --> 04:41:39,840  
that's right and as you follow along we

6686  
04:41:45,270 --> 04:41:41,920  
invite you to tune into a post-launch

6687  
04:41:47,670 --> 04:41:45,280  
news conference at 7 30 a.m eastern time

6688  
04:41:50,150 --> 04:41:47,680

right here on nasa tv where nasa and

6689

04:41:52,150 --> 04:41:50,160

spacex will take questions live in

6690

04:41:54,788 --> 04:41:52,160

addition to nasa tv you can always

6691

04:41:58,628 --> 04:41:54,798

follow along on twitter at nasa at

6692

04:42:00,390 --> 04:41:58,638

spacex and nasa.gov for mission updates

6693

04:42:02,788 --> 04:42:00,400

huge thanks to all of our guests for

6694

04:42:05,190 --> 04:42:02,798

joining us today and thank all of you

6695

04:42:07,670 --> 04:42:05,200

for getting up early early on the sp on

6696

04:42:09,750 --> 04:42:07,680

the east coast uh and watching now here

6697

04:42:13,750 --> 04:42:09,760

are highlights from the journey to orbit

6698

04:42:18,550 --> 04:42:16,230

we can see the astronauts are now

6699

04:42:20,788 --> 04:42:18,560

working with spacex suit technicians in

6700

04:42:21,990 --> 04:42:20,798

the closeout team

6701  
04:42:25,030 --> 04:42:22,000  
and that looked yeah that's our

6702  
04:42:26,788 --> 04:42:25,040  
commander shane kimbrough

6703  
04:42:29,270 --> 04:42:26,798  
there's uh megan macarthur getting

6704  
04:42:31,190 --> 04:42:29,280  
helped into her uh gloves in her

6705  
04:42:33,910 --> 04:42:31,200  
spacesuit

6706  
04:42:37,990 --> 04:42:33,920  
and mission specialist toma pesquet will

6707  
04:42:40,708 --> 04:42:38,000  
be making his second trip to space

6708  
04:42:43,350 --> 04:42:40,718  
but that's aki hoshide

6709  
04:42:46,390 --> 04:42:43,360  
having a laugh with some of the suit

6710  
04:42:51,750 --> 04:42:48,708  
shane kimbrough pilot megan macarthur in

6711  
04:42:54,868 --> 04:42:51,760  
the front megan blowing kisses

6712  
04:42:57,510 --> 04:42:54,878  
soma and aki ready for their ride to the

6713  
04:43:00,550 --> 04:42:57,520

space station

6714

04:43:03,350 --> 04:43:00,560

and here they come the crew 2 astronauts

6715

04:43:06,690 --> 04:43:03,360

taking their first steps outside before

6716

04:43:06,700 --> 04:43:12,310

[Applause]

6717

04:43:15,830 --> 04:43:13,990

i love this moment you're now going to

6718

04:43:18,470 --> 04:43:15,840

have the opportunity to

6719

04:43:21,910 --> 04:43:18,480

wave goodbye from a safe distance and it

6720

04:43:26,010 --> 04:43:21,920

looks like bob benton is there with

6721

04:43:27,350 --> 04:43:26,020

the son of he and megan macarthur

6722

04:43:30,470 --> 04:43:27,360

[Music]

6723

04:43:32,390 --> 04:43:30,480

o departure on schedule

6724

04:43:34,948 --> 04:43:32,400

right so we just heard that announcement

6725

04:43:36,868 --> 04:43:34,958

that the crew has departed the

6726  
04:43:38,610 --> 04:43:36,878  
operations and checkout building on

6727  
04:43:40,070 --> 04:43:38,620  
schedule

6728  
04:43:43,110 --> 04:43:40,080  
[Music]

6729  
04:43:46,310 --> 04:43:43,120  
and we can see the astronauts inside the

6730  
04:43:54,788 --> 04:43:46,320  
crew access arm

6731  
04:43:59,050 --> 04:43:54,798  
[Music]

6732  
04:44:00,470 --> 04:43:59,060  
endeavor we call this process ingress

6733  
04:44:03,510 --> 04:44:00,480  
[Music]

6734  
04:44:05,510 --> 04:44:03,520  
um we see we now see suit technicians uh

6735  
04:44:06,230 --> 04:44:05,520  
will help the crew members get buckled

6736  
04:44:08,070 --> 04:44:06,240  
in

6737  
04:44:11,670 --> 04:44:08,080  
as you can see the side hatch has just

6738  
04:44:27,190 --> 04:44:12,708

five

6739

04:44:31,190 --> 04:44:29,190

four astronauts from three countries on

6740

04:44:33,750 --> 04:44:31,200

crew 2 now making their way to the one

6741

04:44:35,750 --> 04:44:33,760

and only international space station

6742

04:44:37,110 --> 04:44:35,760

the vehicle is pitching down range nine

6743

04:44:39,910 --> 04:44:37,120

merlin engines on the first stage

6744

04:44:41,590 --> 04:44:39,920

providing 1.7 billion pounds of thrust

6745

04:44:49,350 --> 04:44:41,600

hearing good calls on first stage

6746

04:44:54,310 --> 04:44:51,510

plus 30 seconds into the second