

**NASA LIVE**

# NASA'S SPACEX CREW-5 LAUNCH



1  
00:02:22,379 --> 00:02:27,080  
foreign

2  
00:02:27,090 --> 00:02:44,390  
[Music]

3  
00:02:44,400 --> 00:02:53,140  
foreign

4  
00:03:31,670 --> 00:03:15,940  
[Music]

5  
00:03:34,070 --> 00:03:31,680  
you're looking live at the crew Dragon

6  
00:03:36,290 --> 00:03:34,080  
spacecraft on top of a Falcon 9 rocket

7  
00:03:38,270 --> 00:03:36,300  
set to launch three astronauts and one

8  
00:03:40,729 --> 00:03:38,280  
Cosmonaut to the International Space

9  
00:03:42,530 --> 00:03:40,739  
Station in a little more than three

10  
00:03:44,630 --> 00:03:42,540  
hours

11  
00:03:46,369 --> 00:03:44,640  
it's a beautiful sight outside beautiful

12  
00:03:48,649 --> 00:03:46,379  
weather here at the Kennedy Space Center

13  
00:03:51,530 --> 00:03:48,659

where we welcome you for our live

14

00:03:54,470 --> 00:03:51,540

coverage of NASA and spacex's launch of

15

00:03:57,170 --> 00:03:54,480

crew 5. I'm Daryl nail and with me is

16

00:03:59,930 --> 00:03:57,180

NASA astronaut Bob binkin who along with

17

00:04:02,869 --> 00:03:59,940

Doug Hurley were the first astronauts to

18

00:04:04,550 --> 00:04:02,879

fly crew Dragon into space Bob it's

19

00:04:06,470 --> 00:04:04,560

great to have you here you're part of

20

00:04:08,270 --> 00:04:06,480

that historic flight and now here you

21

00:04:09,890 --> 00:04:08,280

are back helping us with our launch

22

00:04:11,750 --> 00:04:09,900

commentary for today's Mission well

23

00:04:13,970 --> 00:04:11,760

thank you Daryl I'm super excited to be

24

00:04:15,830 --> 00:04:13,980

here a beautiful day to relive my launch

25

00:04:17,390 --> 00:04:15,840

experience looking forward to it you

26  
00:04:19,909 --> 00:04:17,400  
certainly will remember this experience

27  
00:04:22,250 --> 00:04:19,919  
well we've got video recorded from just

28  
00:04:24,830 --> 00:04:22,260  
a less than an hour ago of crew 5

29  
00:04:26,210 --> 00:04:24,840  
getting suited up in that historic suit

30  
00:04:29,150 --> 00:04:26,220  
up room and there you see them

31  
00:04:31,670 --> 00:04:29,160  
everything went smoothly you can see the

32  
00:04:34,969 --> 00:04:31,680  
astronauts there in their spacesuits

33  
00:04:37,249 --> 00:04:34,979  
after getting them fitted and tested and

34  
00:04:39,830 --> 00:04:37,259  
those minus three hours and 23 minutes

35  
00:04:42,469 --> 00:04:39,840  
the displays are configured for crew

36  
00:04:43,850 --> 00:04:42,479  
Ingress on schedule that's our law

37  
00:04:45,830 --> 00:04:43,860  
launch audio we're going to pause

38  
00:04:47,210 --> 00:04:45,840

whenever that comes up but tell me a

39

00:04:49,189 --> 00:04:47,220

little bit about those custom flight

40

00:04:51,650 --> 00:04:49,199

suits Bob well Daryl I've heard those

41

00:04:53,810 --> 00:04:51,660

suits referred to as space Tuxedos by

42

00:04:56,210 --> 00:04:53,820

some of the SpaceX team and they are

43

00:04:57,469 --> 00:04:56,220

custom fit and they they are you know

44

00:04:59,330 --> 00:04:57,479

what the crew needs to wear in case

45

00:05:01,490 --> 00:04:59,340

there was any sort of an issue inside of

46

00:05:03,050 --> 00:05:01,500

the capsule they uh they're custom fit

47

00:05:04,909 --> 00:05:03,060

and they'll be ready to wear them when

48

00:05:06,409 --> 00:05:04,919

they head into space not designed to go

49

00:05:07,790 --> 00:05:06,419

outside the capsule but certainly

50

00:05:09,830 --> 00:05:07,800

something would happen inside the

51  
00:05:11,810 --> 00:05:09,840  
capsule they pressurize and that keeps

52  
00:05:14,450 --> 00:05:11,820  
them safe now we want to invite you

53  
00:05:16,310 --> 00:05:14,460  
folks who are watching to participate in

54  
00:05:18,710 --> 00:05:16,320  
our broadcast today if you would like to

55  
00:05:21,350 --> 00:05:18,720  
ask Bob a question over the next three

56  
00:05:24,350 --> 00:05:21,360  
hours you can jump on any number of our

57  
00:05:26,330 --> 00:05:24,360  
social media handles uh one of the ones

58  
00:05:29,270 --> 00:05:26,340  
that we're looking at is the hashtag ask

59  
00:05:31,670 --> 00:05:29,280  
NASA handle on Twitter send us that

60  
00:05:34,850 --> 00:05:31,680  
tweet with a question and the hashtag

61  
00:05:37,010 --> 00:05:34,860  
asknasa and we will get to it now in

62  
00:05:39,170 --> 00:05:37,020  
addition to Bob's analysis we have teams

63  
00:05:41,210 --> 00:05:39,180

across the country covering the action

64

00:05:43,490 --> 00:05:41,220

and there they are we'll get updates

65

00:05:45,189 --> 00:05:43,500

from SpaceX headquarters given us away

66

00:05:48,110 --> 00:05:45,199

from out there in Hawthorne California

67

00:05:50,510 --> 00:05:48,120

and Houston Texas the mission control

68

00:05:52,370 --> 00:05:50,520

center hello to you as well and of

69

00:05:54,590 --> 00:05:52,380

course right here in Florida we've got

70

00:05:56,450 --> 00:05:54,600

our interviewees standing by now let's

71

00:05:58,189 --> 00:05:56,460

check in with our team monitoring

72

00:05:59,629 --> 00:05:58,199

preparations for launch at SpaceX

73

00:06:03,950 --> 00:05:59,639

headquarters in Hawthorne California

74

00:06:09,469 --> 00:06:07,129

hi I'm NASA Sandra Jones with NASA

75

00:06:11,210 --> 00:06:09,479

Communications and I'm Jesse Anderson a

76  
00:06:13,670 --> 00:06:11,220  
production engineering manager here at

77  
00:06:16,370 --> 00:06:13,680  
SpaceX as we count down to liftoff

78  
00:06:18,230 --> 00:06:16,380  
welcome to Mission Control this is where

79  
00:06:20,450 --> 00:06:18,240  
our teams are staffed around the clocks

80  
00:06:22,249 --> 00:06:20,460  
monitor dragon and the mission on

81  
00:06:24,409 --> 00:06:22,259  
Console or headset in Mission Control

82  
00:06:26,930 --> 00:06:24,419  
are six key positions the mission

83  
00:06:28,670 --> 00:06:26,940  
director is in charge of the room and

84  
00:06:31,010 --> 00:06:28,680  
tasked with making real-time decisions

85  
00:06:32,390 --> 00:06:31,020  
to ensure Mission success the person

86  
00:06:34,550 --> 00:06:32,400  
that you'll hear talking to the

87  
00:06:36,529 --> 00:06:34,560  
astronauts is the crew operations and

88  
00:06:38,090 --> 00:06:36,539

resources engineer who you'll hear us

89

00:06:39,529 --> 00:06:38,100

refer to as the core throughout the

90

00:06:41,809 --> 00:06:39,539

broadcast and there you can see them on

91

00:06:43,850 --> 00:06:41,819

the screen the additional positions are

92

00:06:46,370 --> 00:06:43,860

focused on Vehicle Systems including

93

00:06:47,990 --> 00:06:46,380

avionics navigation and Control software

94

00:06:50,270 --> 00:06:48,000

propulsion life support and

95

00:06:53,390 --> 00:06:50,280

communication with ground support teams

96

00:06:55,129 --> 00:06:53,400

and NASA has its own team members in

97

00:06:56,990 --> 00:06:55,139

Mission Control Houston where they've

98

00:06:59,270 --> 00:06:57,000

been preparing the space station for

99

00:07:01,010 --> 00:06:59,280

dragon's arrival we'll meet several of

100

00:07:03,650 --> 00:07:01,020

the key players later when we check in

101  
00:07:05,629 --> 00:07:03,660  
with them and upon liftoff today's ride

102  
00:07:08,809 --> 00:07:05,639  
to the International Space Station will

103  
00:07:11,749 --> 00:07:08,819  
take about 29 hours with dragon flying

104  
00:07:13,790 --> 00:07:11,759  
autonomously the entire way and just

105  
00:07:16,249 --> 00:07:13,800  
like autopilot on a commercial aircraft

106  
00:07:18,950 --> 00:07:16,259  
the crew always has the option or the

107  
00:07:21,469 --> 00:07:18,960  
ability to take manual control of the

108  
00:07:23,390 --> 00:07:21,479  
spacecraft if needed so let's head back

109  
00:07:25,730 --> 00:07:23,400  
over to Florida as we await the cruise

110  
00:07:28,010 --> 00:07:25,740  
departure for the launch pad Daryl

111  
00:07:31,189 --> 00:07:28,020  
Sandra and Jesse thank you very much and

112  
00:07:33,350 --> 00:07:31,199  
here they come true five are

113  
00:07:35,330 --> 00:07:33,360

are they're ready for crew arrival and

114

00:07:38,749 --> 00:07:35,340

crew are walking out of the onc room now

115

00:07:40,550 --> 00:07:38,759

on schedule indeed they are and there

116

00:07:42,830 --> 00:07:40,560

they are

117

00:07:44,629 --> 00:07:42,840

the astronauts of crew 5 taking their

118

00:07:45,830 --> 00:07:44,639

first steps outside as they head to the

119

00:07:47,629 --> 00:07:45,840

pad

120

00:07:51,409 --> 00:07:47,639

from left to right

121

00:08:02,290 --> 00:07:51,419

Cosmonaut Anna kikuna Josh Casada

122

00:08:07,610 --> 00:08:05,450

so that was a pose for a picture

123

00:08:08,450 --> 00:08:07,620

and here they go to their ride out to

124

00:08:11,029 --> 00:08:08,460

the pad

125

00:08:13,370 --> 00:08:11,039

three Teslas all lined up in queue along

126  
00:08:14,809 --> 00:08:13,380  
with a full security escort and the

127  
00:08:17,450 --> 00:08:14,819  
folks you see there

128  
00:08:19,969 --> 00:08:17,460  
family loved ones

129  
00:08:22,309 --> 00:08:19,979  
this is a moment to have

130  
00:08:24,170 --> 00:08:22,319  
an exchange Mom it is it's an

131  
00:08:26,029 --> 00:08:24,180  
opportunity for the crew if you will to

132  
00:08:27,350 --> 00:08:26,039  
take a little bit of a break from the

133  
00:08:29,029 --> 00:08:27,360  
technical briefs that they've been

134  
00:08:30,350 --> 00:08:29,039  
having this morning as they got suited

135  
00:08:32,810 --> 00:08:30,360  
up and understood what the weather

136  
00:08:35,089 --> 00:08:32,820  
conditions were they get a chance to say

137  
00:08:37,190 --> 00:08:35,099  
goodbye to their families uh see some

138  
00:08:38,930 --> 00:08:37,200

smiling faces again have a little bit of

139

00:08:40,730 --> 00:08:38,940

a relaxing moment with their families

140

00:08:43,010 --> 00:08:40,740

before they get serious again and head

141

00:08:44,690 --> 00:08:43,020

out to the launch pad and they keep a

142

00:08:46,730 --> 00:08:44,700

certain distance away you can see the

143

00:08:48,470 --> 00:08:46,740

stanchions you can see the family that

144

00:08:50,090 --> 00:08:48,480

are gathered there and of course that's

145

00:08:52,250 --> 00:08:50,100

in the interest of the astronaut's

146

00:08:53,810 --> 00:08:52,260

Health that's absolutely true Daryl you

147

00:08:56,150 --> 00:08:53,820

know the crew has been in a quarantine

148

00:08:57,410 --> 00:08:56,160

State for the last several days you know

149

00:08:59,329 --> 00:08:57,420

they don't want to bring anything to

150

00:09:01,009 --> 00:08:59,339

space station that we don't have you

151  
00:09:02,870 --> 00:09:01,019  
know really tight control of and so

152  
00:09:04,850 --> 00:09:02,880  
they'll stay back from folks but they'll

153  
00:09:10,150 --> 00:09:04,860  
give some air hugs and some waves all

154  
00:09:10,160 --> 00:09:16,130  
thank you

155  
00:09:16,140 --> 00:09:26,950  
come on

156  
00:09:26,960 --> 00:09:34,150  
[Music]

157  
00:09:38,269 --> 00:09:36,710  
I can't make out exactly what's being

158  
00:09:41,269 --> 00:09:38,279  
said but we know

159  
00:09:44,269 --> 00:09:41,279  
from your experience Bob that

160  
00:09:46,310 --> 00:09:44,279  
it can be an emotional moment absolutely

161  
00:09:48,350 --> 00:09:46,320  
you know for the demo 2 mission my son

162  
00:09:50,509 --> 00:09:48,360  
was super excited to yell launch America

163  
00:09:53,030 --> 00:09:50,519

so that was the one thing that you could

164

00:09:55,009 --> 00:09:53,040

absolutely hear even inside the the suit

165

00:09:56,930 --> 00:09:55,019

with our deep insert earplugs you could

166

00:09:58,250 --> 00:09:56,940

hear that launch America tune when he uh

167

00:10:00,769 --> 00:09:58,260

sang it out

168

00:10:03,769 --> 00:10:00,779

your wife said the same thing that uh

169

00:10:05,870 --> 00:10:03,779

you could hear him shouting out and

170

00:10:08,750 --> 00:10:05,880

and that's something actually particular

171

00:10:10,370 --> 00:10:08,760

to astronauts with young family members

172

00:10:12,230 --> 00:10:10,380

with young children

173

00:10:13,910 --> 00:10:12,240

that you have to prepare them for I was

174

00:10:16,490 --> 00:10:13,920

watching a documentary

175

00:10:18,530 --> 00:10:16,500

um your son wasn't exactly on board at

176

00:10:20,509 --> 00:10:18,540

the beginning absolutely at the

177

00:10:22,070 --> 00:10:20,519

beginning of the idea of a parent

178

00:10:24,230 --> 00:10:22,080

launching into space was something he

179

00:10:25,670 --> 00:10:24,240

was unfamiliar with a little bit scared

180

00:10:27,949 --> 00:10:25,680

of but we brought him down here to

181

00:10:30,410 --> 00:10:27,959

Kennedy got him a chance to see a cargo

182

00:10:32,030 --> 00:10:30,420

launch into space and then by the end of

183

00:10:34,130 --> 00:10:32,040

that experience he was ready for me to

184

00:10:36,230 --> 00:10:34,140

go first Mommy to go second and he said

185

00:10:37,790 --> 00:10:36,240

he was going third so we'll wait to see

186

00:10:39,889 --> 00:10:37,800

if that happens

187

00:10:43,070 --> 00:10:39,899

and then we'll have him on for the crew

188

00:10:45,829 --> 00:10:43,080

37 show now he thinks probably crew 16.

189

00:10:49,069 --> 00:10:45,839

okay earlier schedule yeah I like him

190

00:10:54,290 --> 00:10:51,170

look at that license plate I was just

191

00:10:56,269 --> 00:10:54,300

noticing that blast off

192

00:10:58,009 --> 00:10:56,279

yeah there the SpaceX team has been

193

00:10:59,569 --> 00:10:58,019

creative with those license plates it's

194

00:11:01,310 --> 00:10:59,579

always cool to see what they add to the

195

00:11:03,470 --> 00:11:01,320

Teslas to make the experience just a

196

00:11:05,630 --> 00:11:03,480

little bit personalized

197

00:11:06,949 --> 00:11:05,640

it's a nice touch

198

00:11:08,930 --> 00:11:06,959

you can see the media in the background

199

00:11:12,230 --> 00:11:08,940

positioning themselves for a good shot

200

00:11:16,130 --> 00:11:12,240

as the Teslas roll out with a full

201  
00:11:20,630 --> 00:11:16,140  
security escort on a 20-minute drive to

202  
00:11:25,490 --> 00:11:22,550  
and they're queuing up a playlist right

203  
00:11:27,650 --> 00:11:25,500  
now Bob with some tunes in fact I've got

204  
00:11:29,449 --> 00:11:27,660  
the playlist to one of the vehicles I

205  
00:11:30,769 --> 00:11:29,459  
believe it's the lead astronaut vehicle

206  
00:11:31,610 --> 00:11:30,779  
which would be the second one in this

207  
00:11:32,569 --> 00:11:31,620  
line

208  
00:11:34,490 --> 00:11:32,579  
here's what they're going to be

209  
00:11:36,310 --> 00:11:34,500  
listening to

210  
00:11:40,550 --> 00:11:36,320  
oh yeah by yellow

211  
00:11:43,730 --> 00:11:40,560  
Danger Zone by Kenny Loggins Stronger by

212  
00:11:46,009 --> 00:11:43,740  
the score Slow Ride fog hat everybody

213  
00:11:49,069 --> 00:11:46,019

got their something by Nikki Costa

214

00:11:51,829 --> 00:11:49,079

sabotaged by the Beastie Boys mainstream

215

00:11:54,290 --> 00:11:51,839

kid by Brandy Carlisle and Don't Stop

216

00:11:56,090 --> 00:11:54,300

Believing by Journey it's a nice list

217

00:11:57,590 --> 00:11:56,100

right there it's a wonderful mix there's

218

00:11:59,870 --> 00:11:57,600

a little bit of a slow and react

219

00:12:01,670 --> 00:11:59,880

relaxing portion of it as well as

220

00:12:04,069 --> 00:12:01,680

something with a little bit of emotion

221

00:12:05,509 --> 00:12:04,079

as they head out to the launch pad

222

00:12:07,730 --> 00:12:05,519

you know when Doug and I headed out to

223

00:12:09,829 --> 00:12:07,740

the launch pad we had some tunes as well

224

00:12:11,930 --> 00:12:09,839

and we took the experience to capture

225

00:12:13,910 --> 00:12:11,940

kind of the same things the excitements

226

00:12:16,310 --> 00:12:13,920

of launching into space Back in Black

227

00:12:18,230 --> 00:12:16,320

was one of the songs we selected from AC

228

00:12:20,870 --> 00:12:18,240

DC since we were both headed back into

229

00:12:22,550 --> 00:12:20,880

into space again and uh it was it was an

230

00:12:24,110 --> 00:12:22,560

exciting time for us

231

00:12:26,750 --> 00:12:24,120

and that was followed I Believe by a

232

00:12:29,090 --> 00:12:26,760

Girl from Ipanema which was very much a

233

00:12:30,949 --> 00:12:29,100

contrast and it was Daryl you know this

234

00:12:32,870 --> 00:12:30,959

is a 20-minute ride out to the launch

235

00:12:34,850 --> 00:12:32,880

pad the crew's been on a very tight

236

00:12:36,710 --> 00:12:34,860

schedule as they uh worked their way to

237

00:12:39,110 --> 00:12:36,720

get to this point but now's the time to

238

00:12:41,509 --> 00:12:39,120

sit back and wind your watch and and

239

00:12:43,370 --> 00:12:41,519

wait for the actual launch event so that

240

00:12:45,769 --> 00:12:43,380

that waiting music came from The Blues

241

00:12:47,030 --> 00:12:45,779

Brothers movie and and Doug and I knew

242

00:12:49,009 --> 00:12:47,040

there was just going to be a time where

243

00:12:51,410 --> 00:12:49,019

we had to wait our turn to launch on

244

00:12:53,150 --> 00:12:51,420

that rocket windows are open now on the

245

00:12:55,250 --> 00:12:53,160

Teslas and family members just now

246

00:12:57,110 --> 00:12:55,260

retreating back from the vehicles but

247

00:12:58,310 --> 00:12:57,120

then also getting another moment up

248

00:13:07,870 --> 00:12:58,320

there next to the car which just

249

00:13:15,110 --> 00:13:11,290

there they go

250

00:13:16,850 --> 00:13:15,120

on countdown P minus three hours and 15

251  
00:13:18,769 --> 00:13:16,860  
minutes crew are beginning their

252  
00:13:19,880 --> 00:13:18,779  
transport from the onc room to the pad

253  
00:13:21,290 --> 00:13:19,890  
right on schedule

254  
00:13:23,329 --> 00:13:21,300  
[Applause]

255  
00:13:24,949 --> 00:13:23,339  
call out from the SpaceX team the crew

256  
00:13:28,550 --> 00:13:24,959  
now departing the Neil Armstrong

257  
00:13:31,670 --> 00:13:28,560  
operations and checkout building

258  
00:13:36,230 --> 00:13:33,710  
as they make a shot available for all of

259  
00:13:37,790 --> 00:13:36,240  
the media and photographers down there

260  
00:13:40,250 --> 00:13:37,800  
they're beginning their 20-minute drive

261  
00:13:42,230 --> 00:13:40,260  
with a full security escort across

262  
00:13:45,410 --> 00:13:42,240  
NASA's Kennedy Space Center

263  
00:13:47,329 --> 00:13:45,420

and out to launch pad 39a the track

264

00:13:49,550 --> 00:13:47,339

they're taking goes through the

265

00:13:52,490 --> 00:13:49,560

industrial area

266

00:13:57,829 --> 00:13:52,500

and then gets out to the NASA Causeway

267

00:14:02,870 --> 00:14:00,530

and Bob as we were watching that moment

268

00:14:04,790 --> 00:14:02,880

there I want to put a piece of tape that

269

00:14:07,310 --> 00:14:04,800

we have from your wife Megan talking

270

00:14:09,110 --> 00:14:07,320

about those moments leading up to launch

271

00:14:10,850 --> 00:14:09,120

we're also going to see footage of uh

272

00:14:13,310 --> 00:14:10,860

that historic mission that you

273

00:14:15,470 --> 00:14:13,320

participated in demo two we'll also see

274

00:14:17,030 --> 00:14:15,480

hers and we'll get to see the goodbyes

275

00:14:20,090 --> 00:14:17,040

from either one let's take a look at

276

00:14:23,150 --> 00:14:21,530

we want to give you a little flashback

277

00:14:26,210 --> 00:14:23,160

take a look at the screen now you might

278

00:14:28,490 --> 00:14:26,220

remember this demo 2 and there you are

279

00:14:30,230 --> 00:14:28,500

in the light blue with your son saying

280

00:14:32,210 --> 00:14:30,240

goodbye to your husband Bob bacon on

281

00:14:34,430 --> 00:14:32,220

that historic flight that's right that

282

00:14:36,889 --> 00:14:34,440

was a really special moment and it was

283

00:14:38,750 --> 00:14:36,899

great to see how excited my son was to

284

00:14:41,870 --> 00:14:38,760

see his father there were no tears it

285

00:14:43,490 --> 00:14:41,880

was all smiles and cheering my son I

286

00:14:45,949 --> 00:14:43,500

think was determined to say launch

287

00:14:47,569 --> 00:14:45,959

America First and loudest and so that's

288

00:14:49,790 --> 00:14:47,579

uh that's what he was doing he did a

289

00:14:51,829 --> 00:14:49,800

great job and then in April crew two

290

00:14:53,569 --> 00:14:51,839

this was your launch and now the roll

291

00:14:55,069 --> 00:14:53,579

was reversed you were in the astronaut

292

00:14:57,110 --> 00:14:55,079

suit getting ready to go out and launch

293

00:14:58,850 --> 00:14:57,120

and your husband was there with your son

294

00:15:01,730 --> 00:14:58,860

that's right and I was listening out for

295

00:15:03,170 --> 00:15:01,740

that for that launch America and I sure

296

00:15:07,310 --> 00:15:03,180

enough I could hear it from probably 20

297

00:15:09,650 --> 00:15:07,320

feet away that was a wonderful moment

298

00:15:11,389 --> 00:15:09,660

your wife Megan McArthur who flew on

299

00:15:13,430 --> 00:15:11,399

Crew 2 to the International Space

300

00:15:16,069 --> 00:15:13,440

Station following up your certification

301  
00:15:17,449 --> 00:15:16,079  
Mission yeah it was a a moment that we

302  
00:15:19,250 --> 00:15:17,459  
wanted our son to have a positive

303  
00:15:22,189 --> 00:15:19,260  
experience with and he certainly did

304  
00:15:23,870 --> 00:15:22,199  
again smiles and hugs and cheering and

305  
00:15:25,850 --> 00:15:23,880  
while we didn't hear the voices of the

306  
00:15:27,530 --> 00:15:25,860  
crew's uh families and guests as they

307  
00:15:29,449 --> 00:15:27,540  
walked out we did definitely hear that

308  
00:15:30,470 --> 00:15:29,459  
cheering when they got their chance to

309  
00:15:32,449 --> 00:15:30,480  
drive away

310  
00:15:34,189 --> 00:15:32,459  
and we continue to follow the Convoy

311  
00:15:36,650 --> 00:15:34,199  
from high above our flight operations

312  
00:15:38,750 --> 00:15:36,660  
team the helicopter crew getting a good

313  
00:15:42,410 --> 00:15:38,760

shot there as they go

314

00:15:45,110 --> 00:15:42,420

now let's uh check in with Hawthorne and

315

00:15:47,389 --> 00:15:45,120

get our first update from spacex's Kate

316

00:15:49,910 --> 00:15:47,399

Tice who by the way was at this very

317

00:15:53,509 --> 00:15:49,920

desk Bob when you launched good to have

318

00:15:58,009 --> 00:15:55,910

thanks Daryl I'm Kate Tice and I'm the

319

00:16:00,050 --> 00:15:58,019

quality systems engineering manager here

320

00:16:01,670 --> 00:16:00,060

at SpaceX and I'm going to be bringing

321

00:16:04,069 --> 00:16:01,680

you live status updates from the launch

322

00:16:05,509 --> 00:16:04,079

teams uh this morning now for those

323

00:16:07,550 --> 00:16:05,519

following along with our launch

324

00:16:09,170 --> 00:16:07,560

preparations over the last week you'll

325

00:16:11,870 --> 00:16:09,180

know that we had a successful dress

326

00:16:13,850 --> 00:16:11,880

rehearsal a couple days ago that of our

327

00:16:16,490 --> 00:16:13,860

launch operations on October 2nd

328

00:16:19,189 --> 00:16:16,500

followed by a successful static fire of

329

00:16:21,410 --> 00:16:19,199

our nine Merlin 1D engines now fast

330

00:16:23,689 --> 00:16:21,420

forward a bit to this morning and we're

331

00:16:26,389 --> 00:16:23,699

coming up on there it is the T-minus 3

332

00:16:29,329 --> 00:16:26,399

hour and 12 minute Mark and so far all

333

00:16:31,250 --> 00:16:29,339

is going well for launch earlier in the

334

00:16:34,490 --> 00:16:31,260

night the team began clearing the hazard

335

00:16:37,490 --> 00:16:34,500

area and buildings around pad 39a known

336

00:16:39,889 --> 00:16:37,500

as the blast danger area or BDA as you

337

00:16:42,110 --> 00:16:39,899

might hear it called out today at T

338

00:16:44,449 --> 00:16:42,120

minus four hours there was a briefing by

339

00:16:46,249 --> 00:16:44,459

the SpaceX launch director and good news

340

00:16:48,829 --> 00:16:46,259

there is nothing significant to report

341

00:16:50,810 --> 00:16:48,839

on the rocket at this time the advanced

342

00:16:53,210 --> 00:16:50,820

team was also cleared to enter the pad

343

00:16:54,829 --> 00:16:53,220

and start prepping the vehicle for the

344

00:16:57,110 --> 00:16:54,839

crew's arrival which we're tracking

345

00:16:59,629 --> 00:16:57,120

there on screen and we're expecting them

346

00:17:03,230 --> 00:16:59,639

to arrive at about T minus two hours and

347

00:17:06,289 --> 00:17:03,240

55 minutes so just shortly coming up

348

00:17:08,150 --> 00:17:06,299

so uh the only people remaining on the

349

00:17:11,150 --> 00:17:08,160

pad at this point in time are those

350

00:17:13,069 --> 00:17:11,160

needed for Ingress of the astronauts at

351

00:17:15,289 --> 00:17:13,079

the launch pad Falcon 9 is powered on

352

00:17:17,809 --> 00:17:15,299

and we're currently monitoring Telemetry

353

00:17:19,909 --> 00:17:17,819

and pressurizing gas gas storage vessels

354

00:17:22,309 --> 00:17:19,919

engine and Stage checkouts were

355

00:17:23,870 --> 00:17:22,319

performed several hours ago on top of

356

00:17:26,210 --> 00:17:23,880

Falcon 9 of course we have the dragon

357

00:17:28,250 --> 00:17:26,220

spacecraft and it is ready for the crew

358

00:17:30,049 --> 00:17:28,260

functional checkouts were performed and

359

00:17:32,030 --> 00:17:30,059

most recently the dragon propellant

360

00:17:34,370 --> 00:17:32,040

system was pressurized to final flight

361

00:17:36,590 --> 00:17:34,380

pressure and the side hatch has been

362

00:17:38,510 --> 00:17:36,600

opened by the advanced team so at this

363

00:17:41,450 --> 00:17:38,520

point in time I can report that all

364

00:17:43,789 --> 00:17:41,460

spacecraft systems are go and as for the

365

00:17:46,909 --> 00:17:43,799

range launch range is ready to support

366

00:17:49,010 --> 00:17:46,919

and working no issues at this time and

367

00:17:50,990 --> 00:17:49,020

as you have probably been following

368

00:17:53,150 --> 00:17:51,000

along we have been tracking the weather

369

00:17:55,070 --> 00:17:53,160

conditions carefully over the last week

370

00:17:57,409 --> 00:17:55,080

as we've dealt with the remnants of

371

00:17:59,930 --> 00:17:57,419

Hurricane Ian as you can see on your

372

00:18:01,909 --> 00:17:59,940

screen it's a gorgeous morning out there

373

00:18:04,070 --> 00:18:01,919

at Kennedy Space Center the weather the

374

00:18:06,850 --> 00:18:04,080

weather is cooperating as we count down

375

00:18:11,270 --> 00:18:06,860

to liftoff we have been tracking

376

00:18:13,970 --> 00:18:11,280

downed range winds that had been no go

377

00:18:16,310 --> 00:18:13,980

overnight but as of the T-minus six hour

378

00:18:18,590 --> 00:18:16,320

weather brief this morning it cleared

379

00:18:20,150 --> 00:18:18,600

and we were green there so everything is

380

00:18:22,789 --> 00:18:20,160

looking good for weather at this point

381

00:18:24,350 --> 00:18:22,799

but we will continue to monitor now with

382

00:18:27,409 --> 00:18:24,360

all that being said let's head back over

383

00:18:29,450 --> 00:18:27,419

to Daryl and Bob for another check-in

384

00:18:31,970 --> 00:18:29,460

from Kennedy all right thank you Kate

385

00:18:33,470 --> 00:18:31,980

and yes the weather here at Kennedy is

386

00:18:35,630 --> 00:18:33,480

nearly perfect for launch let's

387

00:18:37,250 --> 00:18:35,640

introduce you now to today's crew we

388

00:18:39,169 --> 00:18:37,260

begin with Nicole Mann the California

389

00:18:41,270 --> 00:18:39,179

Native holds a master of science in

390

00:18:42,890 --> 00:18:41,280

mechanical engineering and is a colonel

391

00:18:45,590 --> 00:18:42,900

in the Marine Corps the goal was

392

00:18:47,750 --> 00:18:45,600

selected by NASA in June 2013 and today

393

00:18:50,390 --> 00:18:47,760

the crew 5 Commander will be flying into

394

00:18:52,250 --> 00:18:50,400

space for the first time and once she

395

00:18:54,289 --> 00:18:52,260

reaches the space station she'll be the

396

00:18:57,350 --> 00:18:54,299

first Native of a Native American woman

397

00:18:59,990 --> 00:18:57,360

to stay on station sitting next to

398

00:19:02,090 --> 00:19:00,000

Nicole is Josh cassida he grew up in

399

00:19:05,150 --> 00:19:02,100

Bear Lake Minnesota the physicist and

400

00:19:07,250 --> 00:19:05,160

U.S Navy test pilot it flew 23 combat

401  
00:19:09,650 --> 00:19:07,260  
missions he later became an instructor

402  
00:19:11,570 --> 00:19:09,660  
at the U.S naval test pilot school and

403  
00:19:13,070 --> 00:19:11,580  
more recently he served as the capsule

404  
00:19:16,190 --> 00:19:13,080  
Communicator in mission control but

405  
00:19:17,750 --> 00:19:16,200  
today he's the pilot aboard dragon

406  
00:19:20,330 --> 00:19:17,760  
in the role of mission specialist is

407  
00:19:23,150 --> 00:19:20,340  
veteran Japanese astronaut koichi wakata

408  
00:19:26,150 --> 00:19:23,160  
altogether koichi flew four space

409  
00:19:27,950 --> 00:19:26,160  
shuttle missions a Ross Cosmos soyuz and

410  
00:19:29,930 --> 00:19:27,960  
was on a long duration stay aboard the

411  
00:19:33,830 --> 00:19:29,940  
International Space Station altogether

412  
00:19:36,169 --> 00:19:33,840  
koichi has spent 11 months in Space the

413  
00:19:38,390 --> 00:19:36,179

veteran and the and the fourth member

414

00:19:41,029 --> 00:19:38,400

the second mission specialist is Ross

415

00:19:43,370 --> 00:19:41,039

Cosmos Cosmonaut Anna kikuna she

416

00:19:46,610 --> 00:19:43,380

graduated from the Nova sabersk State

417

00:19:48,830 --> 00:19:46,620

Academy of water transport in 2006. in

418

00:19:51,529 --> 00:19:48,840

2012 Anna officially became a candidate

419

00:19:53,330 --> 00:19:51,539

for the position of Tess Cosmonaut crew

420

00:19:55,250 --> 00:19:53,340

5 will be on his first flight into space

421

00:19:56,930 --> 00:19:55,260

as part of the recent resumption of

422

00:19:59,330 --> 00:19:56,940

integrated Crews on U.S Cruise

423

00:20:01,250 --> 00:19:59,340

spacecraft and the soyuz with the

424

00:20:03,830 --> 00:20:01,260

Russian State space Corporation Ross

425

00:20:08,630 --> 00:20:05,810

as part of integrated crew a week and a

426  
00:20:10,850 --> 00:20:08,640  
half ago NASA astronaut Frank Rubio flew

427  
00:20:13,430 --> 00:20:10,860  
to the ISS the board of soyuz flying

428  
00:20:15,770 --> 00:20:13,440  
integrated Crews ensures operational

429  
00:20:17,570 --> 00:20:15,780  
safety crew members on station are

430  
00:20:19,310 --> 00:20:17,580  
trained to do maintenance and spacewalks

431  
00:20:22,370 --> 00:20:19,320  
it also protects against contingencies

432  
00:20:24,830 --> 00:20:22,380  
such as problems that could arise on on

433  
00:20:26,090 --> 00:20:24,840  
the station serious medical issues or an

434  
00:20:28,610 --> 00:20:26,100  
emergency aboard the station that

435  
00:20:30,590 --> 00:20:28,620  
requires a crew and vehicle that they

436  
00:20:32,630 --> 00:20:30,600  
are assigned to return to Earth sooner

437  
00:20:34,370 --> 00:20:32,640  
than planned

438  
00:20:36,230 --> 00:20:34,380

all right the crew taking a turn onto

439

00:20:38,090 --> 00:20:36,240

the Saturn Causeway

440

00:20:42,770 --> 00:20:38,100

and this is the road that leads to the

441

00:20:47,930 --> 00:20:44,990

which is notable Bob

442

00:20:51,529 --> 00:20:47,940

because the astronauts right now

443

00:20:53,510 --> 00:20:51,539

taking a similar path to Hurricane Ian

444

00:20:55,789 --> 00:20:53,520

as it crossed the state and came over

445

00:20:57,289 --> 00:20:55,799

our area

446

00:20:59,870 --> 00:20:57,299

that's the operations and support

447

00:21:01,310 --> 00:20:59,880

building behind it but then behind that

448

00:21:03,049 --> 00:21:01,320

going through here is the Vehicle

449

00:21:05,450 --> 00:21:03,059

Assembly Building and

450

00:21:07,549 --> 00:21:05,460

after studying studying the data we

451  
00:21:10,789 --> 00:21:07,559  
learned the storm took uh that similar

452  
00:21:14,570 --> 00:21:10,799  
path and as we widen out the view here

453  
00:21:16,190 --> 00:21:14,580  
you can see there it is the Artemis logo

454  
00:21:17,570 --> 00:21:16,200  
and a great shot of that Vehicle

455  
00:21:22,370 --> 00:21:17,580  
Assembly Building where the crew going

456  
00:21:26,390 --> 00:21:24,529  
now the crew 5 launch was delayed

457  
00:21:28,789 --> 00:21:26,400  
several days due to Hurricane Ian taking

458  
00:21:30,710 --> 00:21:28,799  
aim at Florida

459  
00:21:33,529 --> 00:21:30,720  
and after studying the data here's the

460  
00:21:36,669 --> 00:21:33,539  
path that we found it took take a look

461  
00:21:39,710 --> 00:21:36,679  
at this graphic put together by

462  
00:21:42,289 --> 00:21:39,720  
meteorologists with satellite data

463  
00:21:43,850 --> 00:21:42,299

it shows the track through the state you

464

00:21:45,649 --> 00:21:43,860

can see the center of circulation of

465

00:21:47,450 --> 00:21:45,659

course the devastating impacts to the

466

00:21:48,950 --> 00:21:47,460

Fort Myers Beach area more than 100

467

00:21:50,810 --> 00:21:48,960

people killed

468

00:21:52,730 --> 00:21:50,820

and complete Devastation by the time

469

00:21:56,090 --> 00:21:52,740

across our area right there you can see

470

00:21:59,390 --> 00:21:56,100

it came out the other side on Florida

471

00:22:02,090 --> 00:21:59,400

between pad 39a and 39b

472

00:22:05,390 --> 00:22:02,100

and 39b is where we had our moon rocket

473

00:22:07,130 --> 00:22:05,400

the SLS and Orion spacecraft

474

00:22:10,190 --> 00:22:07,140

but officials here at Nasa and the

475

00:22:13,130 --> 00:22:10,200

launch team with SLS made the decision

476  
00:22:17,149 --> 00:22:13,140  
to move the SLS indoors and this is

477  
00:22:19,549 --> 00:22:17,159  
video from that day three days prior

478  
00:22:21,590 --> 00:22:19,559  
the mighty SLS and Orion spacecraft

479  
00:22:24,110 --> 00:22:21,600  
going into the shelter of the Vehicle

480  
00:22:26,270 --> 00:22:24,120  
Assembly Building as hurricane Ian

481  
00:22:29,450 --> 00:22:26,280  
passed overhead it's a Four Mile ten

482  
00:22:33,470 --> 00:22:29,460  
hour Trek it was that day

483  
00:22:35,750 --> 00:22:33,480  
and we got winds Bob over 96 knots at

484  
00:22:37,909 --> 00:22:35,760  
the top of one of the lightning Towers

485  
00:22:39,169 --> 00:22:37,919  
out at pad 39b so certainly the winds

486  
00:22:42,289 --> 00:22:39,179  
were whipping

487  
00:22:44,270 --> 00:22:42,299  
up high and down below around 60 knots

488  
00:22:46,490 --> 00:22:44,280

it was a good move to put that rocket in

489

00:22:48,649 --> 00:22:46,500

the shelter yes it's just remarkable to

490

00:22:50,210 --> 00:22:48,659

kind of have seen the pack track of the

491

00:22:52,070 --> 00:22:50,220

storm have it come right through the

492

00:22:53,510 --> 00:22:52,080

Kennedy Space Center and to be sitting

493

00:23:01,490 --> 00:22:53,520

here just a couple of days later getting

494

00:23:06,470 --> 00:23:04,190

so now we await a new launch date for

495

00:23:11,810 --> 00:23:06,480

Artemis which we know is going to be

496

00:23:16,669 --> 00:23:14,390

and the astronauts just passing the

497

00:23:18,049 --> 00:23:16,679

Vehicle Assembly Building crew 4 when

498

00:23:20,210 --> 00:23:18,059

they were here the rocket was out on the

499

00:23:21,470 --> 00:23:20,220

pad and they got to actually go out and

500

00:23:22,730 --> 00:23:21,480

get a tour

501  
00:23:24,710 --> 00:23:22,740  
this team

502  
00:23:26,750 --> 00:23:24,720  
getting to drive by that rocket and

503  
00:23:28,130 --> 00:23:26,760  
certainly astronauts must be thinking

504  
00:23:31,669 --> 00:23:28,140  
about

505  
00:23:34,070 --> 00:23:31,679  
that mission right Artemis one two and

506  
00:23:36,590 --> 00:23:34,080  
three going on a test flight out to the

507  
00:23:38,270 --> 00:23:36,600  
moon and then ultimately Landing back on

508  
00:23:39,890 --> 00:23:38,280  
the moon to establish

509  
00:23:42,350 --> 00:23:39,900  
more of a permanent presence there

510  
00:23:44,690 --> 00:23:42,360  
absolutely Daryl it's a super exciting

511  
00:23:46,130 --> 00:23:44,700  
time from an astronaut perspective as

512  
00:23:47,330 --> 00:23:46,140  
you know we still have missions headed

513  
00:23:50,029 --> 00:23:47,340

to the International Space Station

514

00:23:52,370 --> 00:23:50,039

taking Crews up both on the soyuz rocket

515

00:23:54,230 --> 00:23:52,380

and on the the Falcon 9 and the dragon

516

00:23:56,390 --> 00:23:54,240

at this time we look forward to seeing

517

00:23:57,830 --> 00:23:56,400

the Starliner vehicle make its arrival

518

00:24:00,529 --> 00:23:57,840

on board the International Space Station

519

00:24:02,270 --> 00:24:00,539

as well but Orion with the Artemis

520

00:24:04,310 --> 00:24:02,280

missions that are upcoming is just an

521

00:24:07,909 --> 00:24:04,320

exciting time returning to the Moon is

522

00:24:13,130 --> 00:24:09,470

and there they are making the right hand

523

00:24:17,210 --> 00:24:13,140

turn to go towards pad 39a

524

00:24:20,690 --> 00:24:19,070

as well as

525

00:24:24,350 --> 00:24:20,700

the launch Tower

526  
00:24:24,360 --> 00:24:28,130  
a brand new booster

527  
00:24:31,970 --> 00:24:30,289  
and the Good Ship endurance as you would

528  
00:24:33,770 --> 00:24:31,980  
say Bob

529  
00:24:35,570 --> 00:24:33,780  
on its second flight on its second

530  
00:24:38,029 --> 00:24:35,580  
flight you know this is the time for

531  
00:24:39,890 --> 00:24:38,039  
that uh that slow ride song probably to

532  
00:24:41,750 --> 00:24:39,900  
kind of play back for the crew you know

533  
00:24:44,090 --> 00:24:41,760  
Doug and I had our waiting room music

534  
00:24:46,970 --> 00:24:44,100  
our elevator music to kind of pass the

535  
00:24:48,409 --> 00:24:46,980  
time uh the crew's of course excited for

536  
00:24:50,149 --> 00:24:48,419  
the mission in front of them but they've

537  
00:24:51,770 --> 00:24:50,159  
got to wait for the actual time to

538  
00:24:54,289 --> 00:24:51,780

launch into space

539

00:24:57,289 --> 00:24:54,299

and this is a great shot uh point of

540

00:24:58,909 --> 00:24:57,299

view camera from the lead Tesla looking

541

00:25:01,010 --> 00:24:58,919

at the security vehicle in the front you

542

00:25:04,909 --> 00:25:01,020

can see there the launch pad to the left

543

00:25:07,970 --> 00:25:04,919

as that rocket gets closer and closer

544

00:25:10,190 --> 00:25:07,980

and I wonder Bob at what point do you

545

00:25:11,630 --> 00:25:10,200

do you start to feel some nerves kick in

546

00:25:13,430 --> 00:25:11,640

because there's this excitement as

547

00:25:15,409 --> 00:25:13,440

you've described but then also

548

00:25:16,970 --> 00:25:15,419

especially for your flight being the

549

00:25:18,830 --> 00:25:16,980

first one there must have been some

550

00:25:20,570 --> 00:25:18,840

nerves you know there's definitely some

551  
00:25:22,789 --> 00:25:20,580  
nervousness associated with launching

552  
00:25:25,070 --> 00:25:22,799  
into space the crew gets a lot of

553  
00:25:26,750 --> 00:25:25,080  
training and and and it from an

554  
00:25:28,909 --> 00:25:26,760  
experienced perspective they try to

555  
00:25:31,010 --> 00:25:28,919  
check off as many blocks as they can so

556  
00:25:32,750 --> 00:25:31,020  
that uh that nervousness is something at

557  
00:25:34,610 --> 00:25:32,760  
least that they're familiar with and so

558  
00:25:37,250 --> 00:25:34,620  
for Doug and I you know we had made this

559  
00:25:38,810 --> 00:25:37,260  
ride before as a shuttle crew members we

560  
00:25:40,610 --> 00:25:38,820  
climbed up to the launch pad as shuttle

561  
00:25:42,529 --> 00:25:40,620  
crew members that wasn't new it was

562  
00:25:44,450 --> 00:25:42,539  
really the fueling operation for us

563  
00:25:46,370 --> 00:25:44,460

where we really felt like we were doing

564

00:25:48,789 --> 00:25:46,380

something new and that nervousness

565

00:25:51,890 --> 00:25:48,799

started to kick in

566

00:25:55,010 --> 00:25:51,900

interesting because yes that's a

567

00:25:57,169 --> 00:25:55,020

an operation unique to SpaceX

568

00:25:59,149 --> 00:25:57,179

yes the fueling of the rocket with the

569

00:26:01,610 --> 00:25:59,159

crew on board is something that was new

570

00:26:02,990 --> 00:26:01,620

with the Falcon 9 rocket and it's a new

571

00:26:04,970 --> 00:26:03,000

from a crew from an astronaut

572

00:26:07,130 --> 00:26:04,980

perspective from our experience base but

573

00:26:08,930 --> 00:26:07,140

uh they've managed to accomplish it uh

574

00:26:10,549 --> 00:26:08,940

super successfully

575

00:26:12,649 --> 00:26:10,559

there you see the security vehicle

576

00:26:15,470 --> 00:26:12,659

pauses comes off to the side and the

577

00:26:17,870 --> 00:26:15,480

Tesla vehicles roll on along with the

578

00:26:20,690 --> 00:26:17,880

mrapp in tow

579

00:26:23,930 --> 00:26:20,700

and this Begins the part of a really

580

00:26:26,269 --> 00:26:23,940

neat experience going up the slow grade

581

00:26:28,490 --> 00:26:26,279

as they pass the security checkpoint and

582

00:26:31,850 --> 00:26:28,500

into the blast danger area this is area

583

00:26:35,029 --> 00:26:31,860

only for the astronauts and the advanced

584

00:26:36,230 --> 00:26:35,039

team as well as the closeout crew it's a

585

00:26:38,990 --> 00:26:36,240

restricted area

586

00:26:40,970 --> 00:26:39,000

and you go up that slow Hill and you're

587

00:26:42,710 --> 00:26:40,980

looking right at that rocket you know

588

00:26:45,289 --> 00:26:42,720

Daryl as you make your way to the launch

589

00:26:47,390 --> 00:26:45,299

pad you kind of go through layers if you

590

00:26:48,590 --> 00:26:47,400

will of people that can be near you so

591

00:26:50,269 --> 00:26:48,600

whether that's your family and your

592

00:26:52,490 --> 00:26:50,279

guests when you're back at the onc

593

00:26:54,169 --> 00:26:52,500

building but as you make your way to the

594

00:26:55,909 --> 00:26:54,179

pad surface there are these Milestones

595

00:26:58,310 --> 00:26:55,919

that you get past where you become more

596

00:27:00,470 --> 00:26:58,320

and more alone on your ride into orbit

597

00:27:02,390 --> 00:27:00,480

and so heading up this hill to the

598

00:27:04,490 --> 00:27:02,400

launch pad surface it's definitely a

599

00:27:07,909 --> 00:27:04,500

smaller group and that group continues

600

00:27:10,610 --> 00:27:07,919

to shrink all the way to hatch closure

601  
00:27:13,310 --> 00:27:10,620  
and in your case until it was just you

602  
00:27:16,430 --> 00:27:13,320  
and Doug Hurley that's true it was just

603  
00:27:18,110 --> 00:27:16,440  
a Doug and I and of course all the

604  
00:27:20,450 --> 00:27:18,120  
support team that's reaching out to you

605  
00:27:21,590 --> 00:27:20,460  
via the radio to make sure that they're

606  
00:27:23,390 --> 00:27:21,600  
watching over and making sure that

607  
00:27:25,130 --> 00:27:23,400  
you're ready to head off into space but

608  
00:27:28,370 --> 00:27:25,140  
it was definitely Doug and I alone with

609  
00:27:33,409 --> 00:27:30,950  
these four crew 5 astronauts now

610  
00:27:35,269 --> 00:27:33,419  
actually on the pad surface as you can

611  
00:27:37,190 --> 00:27:35,279  
see them driving onto it there's a track

612  
00:27:39,950 --> 00:27:37,200  
that they just came over that goes

613  
00:27:42,649 --> 00:27:39,960

around the launch pad that's a

614

00:27:44,390 --> 00:27:42,659

A Relic from the space shuttle era as

615

00:27:46,430 --> 00:27:44,400

well as the Apollo

616

00:27:48,350 --> 00:27:46,440

there's the base of the rocket and get

617

00:27:50,630 --> 00:27:48,360

ahead the elevators to the launch tower

618

00:27:53,269 --> 00:27:50,640

that will take them up to the top of the

619

00:27:54,529 --> 00:27:53,279

crew access arm and allow them to make

620

00:28:02,090 --> 00:27:54,539

entryway

621

00:28:06,350 --> 00:28:04,250

and at T minus two hours and 55 minutes

622

00:28:08,210 --> 00:28:06,360

we'll get that announcement

623

00:28:12,350 --> 00:28:08,220

if the crew has arrived so they're a

624

00:28:15,890 --> 00:28:14,090

it's always best to be a little bit

625

00:28:18,169 --> 00:28:15,900

early if you can for each of these major

626  
00:28:20,029 --> 00:28:18,179  
events of course and so for them to

627  
00:28:23,870 --> 00:28:20,039  
arrive when they're supposed to be there

628  
00:28:28,789 --> 00:28:23,880  
is of course T minus three hours a crew

629  
00:28:31,970 --> 00:28:30,890  
and so the crews arrived at the pad of

630  
00:28:33,769 --> 00:28:31,980  
course they'll have a couple of

631  
00:28:35,330 --> 00:28:33,779  
opportunities to pause as they make

632  
00:28:37,970 --> 00:28:35,340  
their way up there'll be some photo

633  
00:28:40,310 --> 00:28:37,980  
opportunities for them to take a mental

634  
00:28:42,289 --> 00:28:40,320  
picture of the rocket itself look up

635  
00:28:44,090 --> 00:28:42,299  
from below before they climb into the

636  
00:28:46,490 --> 00:28:44,100  
capsule

637  
00:28:48,230 --> 00:28:46,500  
now crew 5 is NASA and spacex's fifth

638  
00:28:50,510 --> 00:28:48,240

crew rotation to the International Space

639

00:28:52,250 --> 00:28:50,520

Station since 2020

640

00:28:54,649 --> 00:28:52,260

the successful NASA program is called

641

00:28:56,990 --> 00:28:54,659

commercial crew it's based right here at

642

00:28:59,690 --> 00:28:57,000

the Kennedy Space Center

643

00:29:01,909 --> 00:28:59,700

time now to join Megan Cruz she is live

644

00:29:04,010 --> 00:29:01,919

on top of the operations and support

645

00:29:05,990 --> 00:29:04,020

building number two

646

00:29:08,690 --> 00:29:06,000

was one of the leaders of this program

647

00:29:10,730 --> 00:29:08,700

Megan Daryl thank you so much yes we are

648

00:29:12,830 --> 00:29:10,740

here with Phil McAllister director of

649

00:29:14,390 --> 00:29:12,840

NASA's commercial space division fell

650

00:29:16,310 --> 00:29:14,400

we're so happy to have you here thank

651  
00:29:18,049 --> 00:29:16,320  
you happy to be here well today you know

652  
00:29:20,750 --> 00:29:18,059  
we just saw the crew arrive at the pad

653  
00:29:23,210 --> 00:29:20,760  
this is NASA's crew five

654  
00:29:24,769 --> 00:29:23,220  
um uh with SpaceX how has working with

655  
00:29:25,789 --> 00:29:24,779  
these commercial companies benefited

656  
00:29:27,830 --> 00:29:25,799  
NASA

657  
00:29:30,049 --> 00:29:27,840  
so we both benefit I think that's what's

658  
00:29:32,269 --> 00:29:30,059  
key with these Partnerships obviously

659  
00:29:33,889 --> 00:29:32,279  
SpaceX benefits from our 50 years of

660  
00:29:35,450 --> 00:29:33,899  
human space flight experience but we

661  
00:29:38,210 --> 00:29:35,460  
also benefit by seeing these commercial

662  
00:29:40,970 --> 00:29:38,220  
companies and how they do business and

663  
00:29:42,529 --> 00:29:40,980

how Innovative they can be and we find

664

00:29:44,750 --> 00:29:42,539

there's new ways of doing things that

665

00:29:46,730 --> 00:29:44,760

maybe we haven't thought of so I I see

666

00:29:48,529 --> 00:29:46,740

the partnership as benefit benefiting

667

00:29:50,049 --> 00:29:48,539

both groups it's kind of like when we

668

00:29:52,250 --> 00:29:50,059

first started working with the Russians

669

00:29:54,289 --> 00:29:52,260

they had a very different way of doing

670

00:29:56,630 --> 00:29:54,299

business and I think both programs

671

00:29:57,950 --> 00:29:56,640

benefited from that experience right but

672

00:30:00,710 --> 00:29:57,960

it's not just the commercial crew

673

00:30:02,870 --> 00:30:00,720

program how else have we fostered

674

00:30:05,210 --> 00:30:02,880

commercial space and sending more people

675

00:30:06,289 --> 00:30:05,220

and science to low earth orbit well I

676

00:30:09,970 --> 00:30:06,299

think it all started with the commercial

677

00:30:12,710 --> 00:30:09,980

cargo program in 2005 that was the first

678

00:30:13,970 --> 00:30:12,720

I think real commercial partnership that

679

00:30:15,889 --> 00:30:13,980

we had certainly on the human space

680

00:30:18,350 --> 00:30:15,899

flight side so then we had this cargo

681

00:30:20,870 --> 00:30:18,360

capability and then we Advanced that to

682

00:30:22,310 --> 00:30:20,880

crew and now we can launch people to low

683

00:30:23,630 --> 00:30:22,320

earth orbit and the International Space

684

00:30:24,889 --> 00:30:23,640

Station and the thing that we have on

685

00:30:27,529 --> 00:30:24,899

our Horizon the thing that I'm working

686

00:30:29,149 --> 00:30:27,539

on right now is destinations or

687

00:30:30,649 --> 00:30:29,159

commercial space stations we know the

688

00:30:33,710 --> 00:30:30,659

space station the International Space

689

00:30:36,169 --> 00:30:33,720

Station is going to be retired in 2030.

690

00:30:38,450 --> 00:30:36,179

we need to have continuous access to

691

00:30:40,549 --> 00:30:38,460

space and a destination to go to so now

692

00:30:41,990 --> 00:30:40,559

we want commercial companies to build a

693

00:30:44,149 --> 00:30:42,000

private space station where we can just

694

00:30:45,950 --> 00:30:44,159

be one of many customers yeah and to

695

00:30:48,409 --> 00:30:45,960

that end what are we doing to encourage

696

00:30:51,190 --> 00:30:48,419

that we have four agreements and

697

00:30:53,930 --> 00:30:51,200

contracts with companies now Axiom space

698

00:30:55,909 --> 00:30:53,940

nanoracks blue origin and Northrop

699

00:30:58,250 --> 00:30:55,919

Grumman they all have different concepts

700

00:31:00,350 --> 00:30:58,260

and they all have different

701  
00:31:01,970 --> 00:31:00,360  
Transportation modes and they all are

702  
00:31:03,769 --> 00:31:01,980  
kind of targeting different markets so

703  
00:31:05,750 --> 00:31:03,779  
it's really interesting this is sort of

704  
00:31:07,549 --> 00:31:05,760  
the early development time and I think

705  
00:31:09,889 --> 00:31:07,559  
things will shake out I don't think

706  
00:31:13,370 --> 00:31:09,899  
we'll have a big enough market to keep

707  
00:31:15,409 --> 00:31:13,380  
four space stations on orbit so this is

708  
00:31:17,630 --> 00:31:15,419  
the time when they innovate and they're

709  
00:31:19,310 --> 00:31:17,640  
competing and it's kind of cool to see

710  
00:31:21,409 --> 00:31:19,320  
each one of these stations and how they

711  
00:31:23,630 --> 00:31:21,419  
develop and again why is this important

712  
00:31:25,310 --> 00:31:23,640  
to us why do we want to be one of many

713  
00:31:27,230 --> 00:31:25,320

customers in low Earth so I think

714

00:31:28,909 --> 00:31:27,240

there's lots of reasons number one when

715

00:31:30,289 --> 00:31:28,919

we first still started building the

716

00:31:32,269 --> 00:31:30,299

International Space Station there wasn't

717

00:31:34,610 --> 00:31:32,279

any other space stations that we could

718

00:31:37,070 --> 00:31:34,620

use at that time so NASA had to build it

719

00:31:39,409 --> 00:31:37,080

but today we can leverage private sector

720

00:31:41,210 --> 00:31:39,419

Investments because there are other

721

00:31:43,010 --> 00:31:41,220

customers other than NASA who want to go

722

00:31:45,409 --> 00:31:43,020

to low earth orbit and either for

723

00:31:47,810 --> 00:31:45,419

science or just to look out the window

724

00:31:49,250 --> 00:31:47,820

or whatever for whatever reason so we

725

00:31:51,769 --> 00:31:49,260

can take advantage of that we don't have

726

00:31:53,990 --> 00:31:51,779

to pay for the entire infrastructure we

727

00:31:57,169 --> 00:31:54,000

can just be a customer and just pay our

728

00:31:58,909 --> 00:31:57,179

own sort of uh fare for what we do and

729

00:32:00,830 --> 00:31:58,919

so it's more beneficial for NASA and

730

00:32:03,470 --> 00:32:00,840

then we can take that savings and put it

731

00:32:06,769 --> 00:32:03,480

in into our moon Mars initiative I

732

00:32:08,330 --> 00:32:06,779

really feel like the Artemis Mission the

733

00:32:10,070 --> 00:32:08,340

SLS and the Orion that was on the pad

734

00:32:11,930 --> 00:32:10,080

and we will hopefully launch next month

735

00:32:13,909 --> 00:32:11,940

I don't think it would be as far along

736

00:32:15,230 --> 00:32:13,919

as it is today if it weren't for our

737

00:32:17,510 --> 00:32:15,240

commercial Partnerships because they

738

00:32:19,130 --> 00:32:17,520

helped save us money and we could take

739

00:32:20,930 --> 00:32:19,140

that savings and put it into our deep

740

00:32:22,250 --> 00:32:20,940

space exploration program yeah and you

741

00:32:23,870 --> 00:32:22,260

said personally this is what you've been

742

00:32:25,430 --> 00:32:23,880

working on for years now how does it

743

00:32:27,470 --> 00:32:25,440

make you feel knowing that as you just

744

00:32:29,330 --> 00:32:27,480

said you know the the success we've had

745

00:32:31,070 --> 00:32:29,340

with commercial space is really fueling

746

00:32:33,830 --> 00:32:31,080

what what we will see in the future with

747

00:32:35,210 --> 00:32:33,840

NASA it's been very gratifying I have to

748

00:32:38,269 --> 00:32:35,220

say you know when we were first starting

749

00:32:39,970 --> 00:32:38,279

out I had to say I think this will work

750

00:32:43,010 --> 00:32:39,980

I think this is going to be a better way

751  
00:32:45,110 --> 00:32:43,020  
to do this particular Mission but I

752  
00:32:46,970 --> 00:32:45,120  
didn't have any proof but then in 2012

753  
00:32:48,169 --> 00:32:46,980  
we launched the first Falcon to the

754  
00:32:50,450 --> 00:32:48,179  
International Space Station for the

755  
00:32:53,149 --> 00:32:50,460  
cargo program that showed that the model

756  
00:32:54,889 --> 00:32:53,159  
could work and then in 2020 we had Bob

757  
00:32:56,389 --> 00:32:54,899  
and Doug who flew on the demo 2 mission

758  
00:32:59,450 --> 00:32:56,399  
went to the International Space Station

759  
00:33:01,310 --> 00:32:59,460  
that was just uh it was just an amazing

760  
00:33:03,049 --> 00:33:01,320  
Mission it was great yeah yeah and Bob

761  
00:33:04,549 --> 00:33:03,059  
we have he's co-hosting the show today

762  
00:33:06,649 --> 00:33:04,559  
so that's full circle how we're coming

763  
00:33:09,049 --> 00:33:06,659

here can you imagine it's crew five and

764

00:33:10,909 --> 00:33:09,059

just uh a couple of years ago we had Bob

765

00:33:12,350 --> 00:33:10,919

flying for the first time with Doug I

766

00:33:13,850 --> 00:33:12,360

know it is amazing I was just telling

767

00:33:14,990 --> 00:33:13,860

some of my relatives I was like oh this

768

00:33:17,570 --> 00:33:15,000

is the fifth one and they're like what

769

00:33:20,029 --> 00:33:17,580

how did it happen so fast and we go

770

00:33:21,649 --> 00:33:20,039

every six months and so we tend to

771

00:33:23,090 --> 00:33:21,659

accumulate missions and so we're putting

772

00:33:24,409 --> 00:33:23,100

the plaques on the wall outside my

773

00:33:25,610 --> 00:33:24,419

office and it's getting pretty full and

774

00:33:26,990 --> 00:33:25,620

that's pretty nice to see that's

775

00:33:28,190 --> 00:33:27,000

absolutely great thank you so much Phil

776

00:33:30,529 --> 00:33:28,200

for being here and I can't wait to watch

777

00:33:32,269 --> 00:33:30,539

the launch of you thanks so much back to

778

00:33:34,070 --> 00:33:32,279

you guys thank you Megan T-minus two

779

00:33:36,110 --> 00:33:34,080

hours and 54 minutes and Counting and

780

00:33:38,450 --> 00:33:36,120

you must hear that a lot Bob but the

781

00:33:40,789 --> 00:33:38,460

people who so many people were watching

782

00:33:42,889 --> 00:33:40,799

and following uh your mission since it

783

00:33:45,409 --> 00:33:42,899

was a historic first and kind of feel an

784

00:33:47,630 --> 00:33:45,419

attachment uh to what you did that day

785

00:33:49,250 --> 00:33:47,640

yeah it was an exciting time of course I

786

00:33:51,590 --> 00:33:49,260

think it was a little bit strained with

787

00:33:53,269 --> 00:33:51,600

the covid situation and folks kind of at

788

00:33:55,370 --> 00:33:53,279

home watching kind of electronically

789

00:33:57,889 --> 00:33:55,380

rather than in person here at the

790

00:33:59,330 --> 00:33:57,899

causeway potentially and so uh a lot

791

00:34:01,370 --> 00:33:59,340

folk a lot of folks watch the mission

792

00:34:03,110 --> 00:34:01,380

and with the Bob and the Doug and space

793

00:34:04,669 --> 00:34:03,120

dads I think they made a connection and

794

00:34:06,889 --> 00:34:04,679

and they appreciated you know just being

795

00:34:09,349 --> 00:34:06,899

a part of it Doug and Bob and Bob and

796

00:34:10,970 --> 00:34:09,359

Doug and their Excellent Adventure I

797

00:34:12,349 --> 00:34:10,980

don't know about all that but we had a

798

00:34:13,970 --> 00:34:12,359

wonderful experience on board the

799

00:34:16,490 --> 00:34:13,980

International Space Station and it was

800

00:34:19,550 --> 00:34:16,500

wonderful to watch and Chronicle as you

801  
00:34:22,070 --> 00:34:19,560  
guys went along got to the space station

802  
00:34:23,810 --> 00:34:22,080  
and came back safely

803  
00:34:26,149 --> 00:34:23,820  
and we see some beautiful shots from

804  
00:34:27,829 --> 00:34:26,159  
high above the weather

805  
00:34:30,169 --> 00:34:27,839  
I mentioned at the beginning less than

806  
00:34:33,230 --> 00:34:30,179  
uh 10 chance of violating we've got

807  
00:34:34,369 --> 00:34:33,240  
onshore breezes here that are kicking up

808  
00:34:36,829 --> 00:34:34,379  
some waves

809  
00:34:39,109 --> 00:34:36,839  
that's some rough surf conditions that

810  
00:34:40,849 --> 00:34:39,119  
of course no impact to the launch today

811  
00:34:43,669 --> 00:34:40,859  
but uh

812  
00:34:45,109 --> 00:34:43,679  
you can see the flags flying and the

813  
00:34:46,669 --> 00:34:45,119

clock ticking down

814

00:34:49,250 --> 00:34:46,679

if you're just joining us you're

815

00:34:51,889 --> 00:34:49,260

watching live coverage of SpaceX Mission

816

00:34:54,050 --> 00:34:51,899

known as crew 5. as we watch the first

817

00:34:55,490 --> 00:34:54,060

two astronauts walk out onto the pad

818

00:34:57,589 --> 00:34:55,500

surface

819

00:34:59,630 --> 00:34:57,599

getting ready to do

820

00:35:01,690 --> 00:34:59,640

what and I have to admit this is I have

821

00:35:04,730 --> 00:35:01,700

to attribute this the rocket recline

822

00:35:06,829 --> 00:35:04,740

there it is I like the way they did it

823

00:35:07,970 --> 00:35:06,839

kind of in coordination as well I think

824

00:35:09,950 --> 00:35:07,980

that was something that Doug and I

825

00:35:12,290 --> 00:35:09,960

didn't quite nail on the demo II Mission

826

00:35:14,390 --> 00:35:12,300

but I appreciate them getting it sorted

827

00:35:16,970 --> 00:35:14,400

out by crew five that was commander

828

00:35:18,349 --> 00:35:16,980

Nicole Mann and pilot Josh cassida that

829

00:35:21,710 --> 00:35:18,359

just took that look up and I mentioned

830

00:35:23,630 --> 00:35:21,720

the attribution that was uh our voice of

831

00:35:25,310 --> 00:35:23,640

Mission Control Rob navius came up with

832

00:35:27,230 --> 00:35:25,320

that phrase so got to give him credit

833

00:35:28,790 --> 00:35:27,240

for that the rocket recline we'll get

834

00:35:30,650 --> 00:35:28,800

the next two Mission Specialists who

835

00:35:32,569 --> 00:35:30,660

will do the same move but for now

836

00:35:35,329 --> 00:35:32,579

they'll go into the elevator the same

837

00:35:37,910 --> 00:35:35,339

elevator Bob that you rode on two

838

00:35:39,109 --> 00:35:37,920

missions aboard the space shuttle and

839

00:35:41,569 --> 00:35:39,119

crew dragon

840

00:35:44,810 --> 00:35:41,579

that's true Daryl that that elevator

841

00:35:46,970 --> 00:35:44,820

there on the 39 Alpha launch pad is just

842

00:35:48,710 --> 00:35:46,980

a a wonderful experience to kind of be

843

00:35:51,589 --> 00:35:48,720

able to bring it back into the game and

844

00:35:53,630 --> 00:35:51,599

be able to fly kind of if you will uh

845

00:35:56,089 --> 00:35:53,640

slowly up to the pad surface before

846

00:35:57,470 --> 00:35:56,099

making a Stairway walk up to the actual

847

00:35:59,030 --> 00:35:57,480

location where you walk out to the

848

00:36:01,069 --> 00:35:59,040

Dragon capsule

849

00:36:03,050 --> 00:36:01,079

and there we see the

850

00:36:05,630 --> 00:36:03,060

top of the elevators well where they'll

851  
00:36:07,310 --> 00:36:05,640  
walk out and uh this is something that

852  
00:36:09,290 --> 00:36:07,320  
they have rehearsed a few times

853  
00:36:10,730 --> 00:36:09,300  
certainly we were here when they

854  
00:36:14,569 --> 00:36:10,740  
rehearsed it the other day during what's

855  
00:36:17,990 --> 00:36:16,190  
yeah the crew has been through this

856  
00:36:19,970 --> 00:36:18,000  
before and like I mentioned a little bit

857  
00:36:21,650 --> 00:36:19,980  
earlier it is really important to kind

858  
00:36:24,109 --> 00:36:21,660  
of get the nervousness out to have done

859  
00:36:26,630 --> 00:36:24,119  
these operations uh once before we can

860  
00:36:27,710 --> 00:36:26,640  
see uh Nicole and and Josh there as

861  
00:36:29,270 --> 00:36:27,720  
they've made their way out of the

862  
00:36:31,609 --> 00:36:29,280  
elevator they'll walk around the back

863  
00:36:33,650 --> 00:36:31,619

and make their way up the stairs to the

864

00:36:35,210 --> 00:36:33,660

actual walkout area where they'll

865

00:36:37,130 --> 00:36:35,220

potentially have a chance to make a

866

00:36:39,410 --> 00:36:37,140

phone call reach out to their family one

867

00:36:41,150 --> 00:36:39,420

more time before heading out to the

868

00:36:42,050 --> 00:36:41,160

white room itself and climbing into the

869

00:36:44,390 --> 00:36:42,060

ship

870

00:36:46,609 --> 00:36:44,400

and the closeout team right behind him

871

00:36:48,109 --> 00:36:46,619

from SpaceX as they greet some of the

872

00:36:50,510 --> 00:36:48,119

members of that team with some fist

873

00:36:53,089 --> 00:36:50,520

bumps

874

00:36:55,670 --> 00:36:53,099

the telephone you mentioned Bob is there

875

00:36:59,150 --> 00:36:55,680

on the right hand side of that uh that

876

00:37:01,010 --> 00:36:59,160

hallway there but uh what I notice is

877

00:37:03,470 --> 00:37:01,020

the astronauts tend to pause right about

878

00:37:06,170 --> 00:37:03,480

here because it looks like that is a

879

00:37:07,670 --> 00:37:06,180

spectacular view it is still it is their

880

00:37:08,990 --> 00:37:07,680

chance of course you know that you've

881

00:37:10,430 --> 00:37:09,000

mentioned the rocket recline where

882

00:37:12,170 --> 00:37:10,440

they're able to look up at the rocket

883

00:37:13,550 --> 00:37:12,180

they're kind of co-level with the

884

00:37:15,829 --> 00:37:13,560

vehicle at this point they're able to

885

00:37:18,770 --> 00:37:15,839

look out see the ocean see the rocket

886

00:37:20,630 --> 00:37:18,780

see the capsule itself before

887

00:37:23,089 --> 00:37:20,640

getting ready to kind of take that next

888

00:37:25,370 --> 00:37:23,099

step and head into the vehicle and there

889

00:37:27,349 --> 00:37:25,380

you see one of the astronauts doing just

890

00:37:31,310 --> 00:37:27,359

that

891

00:37:33,950 --> 00:37:31,320

to the right they are looking out over

892

00:37:36,230 --> 00:37:33,960

launch complex 39a and the Space Coast

893

00:37:37,670 --> 00:37:36,240

no doubt having a view that is similar

894

00:37:40,910 --> 00:37:37,680

to this

895

00:37:44,690 --> 00:37:40,920

from our flight Ops Team here at Kennedy

896

00:37:47,930 --> 00:37:46,609

on the left on the left there you've got

897

00:37:49,910 --> 00:37:47,940

the launch Tower

898

00:37:52,430 --> 00:37:49,920

and that is the crew access arm that

899

00:37:56,569 --> 00:37:52,440

Bridges the gap between the launch Tower

900

00:38:00,530 --> 00:37:58,730

and you can see Daryl the second two

901  
00:38:02,390 --> 00:38:00,540  
crew members getting ready to do their

902  
00:38:04,550 --> 00:38:02,400  
rocket recline if you will and get a

903  
00:38:06,230 --> 00:38:04,560  
chance to look up at the vehicle I know

904  
00:38:08,329 --> 00:38:06,240  
they're excited to get their chance to

905  
00:38:11,150 --> 00:38:08,339  
climb in and strap down not quite as

906  
00:38:13,010 --> 00:38:11,160  
perfect and in sync as uh as Josh and

907  
00:38:16,069 --> 00:38:13,020  
Nicole were but they did a great job

908  
00:38:18,170 --> 00:38:16,079  
again better than Bob and Doug so

909  
00:38:20,450 --> 00:38:18,180  
better than Bob and Doug

910  
00:38:23,510 --> 00:38:20,460  
but not quitely as tightly choreographed

911  
00:38:26,270 --> 00:38:23,520  
as Nicole and Josh they nailed him

912  
00:38:28,250 --> 00:38:26,280  
nonetheless they get a great View

913  
00:38:30,349 --> 00:38:28,260

right before they make their way into

914

00:38:31,849 --> 00:38:30,359

their spacecraft

915

00:38:34,190 --> 00:38:31,859

that will ultimately take them into

916

00:38:35,810 --> 00:38:34,200

space we've got a split screen now the

917

00:38:37,970 --> 00:38:35,820

two Mission Specialists on the left and

918

00:38:44,470 --> 00:38:37,980

to the right we're tracking our pilot

919

00:38:49,970 --> 00:38:47,750

now they stagger the astronauts

920

00:38:51,470 --> 00:38:49,980

in this fashion

921

00:38:55,069 --> 00:38:51,480

because everything is highly

922

00:38:57,470 --> 00:38:55,079

proceduralized right as they go through

923

00:39:00,050 --> 00:38:57,480

the lines check off the the mission

924

00:39:01,670 --> 00:39:00,060

milestones and then also it's carefully

925

00:39:04,069 --> 00:39:01,680

choreographed because you want to have

926  
00:39:06,050 --> 00:39:04,079  
everybody being orderly as they get into

927  
00:39:08,270 --> 00:39:06,060  
the spacecraft absolutely Daryl there's

928  
00:39:10,849 --> 00:39:08,280  
a well choreographed checklist that the

929  
00:39:12,650 --> 00:39:10,859  
SpaceX team has on their tablets as they

930  
00:39:14,630 --> 00:39:12,660  
follow along with the crew accomplishing

931  
00:39:16,670 --> 00:39:14,640  
the steps in front of them but remember

932  
00:39:18,410 --> 00:39:16,680  
there's just a single hatchway and they

933  
00:39:20,030 --> 00:39:18,420  
need to go in in sequence and it

934  
00:39:22,490 --> 00:39:20,040  
wouldn't be helpful for all four of them

935  
00:39:24,290 --> 00:39:22,500  
to be there at the same time so we do

936  
00:39:26,030 --> 00:39:24,300  
bring them in in sequence and Nicole

937  
00:39:28,310 --> 00:39:26,040  
boarding first followed by the rest of

938  
00:39:31,609 --> 00:39:28,320

the crew looking at the launch Tower

939

00:39:34,130 --> 00:39:31,619

there pad 39a Bob this is the same

940

00:39:36,530 --> 00:39:34,140

launch tower that launched the space

941

00:39:38,329 --> 00:39:36,540

shuttle it's been of course renovated by

942

00:39:40,069 --> 00:39:38,339

SpaceX they've made a lot of

943

00:39:42,950 --> 00:39:40,079

improvements in order to accommodate the

944

00:39:45,410 --> 00:39:42,960

Falcon 9 but it also has some throwback

945

00:39:48,050 --> 00:39:45,420

to the shuttle era and there's part of

946

00:39:50,089 --> 00:39:48,060

the the fixed service structure that's

947

00:39:53,210 --> 00:39:50,099

still a part of that structure today

948

00:39:55,430 --> 00:39:53,220

that's true Daryl the 39 Alpha launch

949

00:39:58,250 --> 00:39:55,440

complex was modified to be able to to

950

00:39:59,750 --> 00:39:58,260

handle the Falcon 9 rocket and Doug and

951  
00:40:01,910 --> 00:39:59,760  
I were super excited to launch again

952  
00:40:03,770 --> 00:40:01,920  
from the exact same location there are

953  
00:40:06,470 --> 00:40:03,780  
remnants of the shuttle program that are

954  
00:40:08,329 --> 00:40:06,480  
still kind of out there there's a series

955  
00:40:10,849 --> 00:40:08,339  
of Chevrons you can kind of see them in

956  
00:40:12,770 --> 00:40:10,859  
the in the image there the kind of the

957  
00:40:14,930 --> 00:40:12,780  
yellow pathway if you will the crews go

958  
00:40:16,730 --> 00:40:14,940  
in the opposite direction there those

959  
00:40:18,410 --> 00:40:16,740  
Chevrons Point towards the slide wire

960  
00:40:20,510 --> 00:40:18,420  
baskets that they would use if they

961  
00:40:22,730 --> 00:40:20,520  
needed to do an emergency egress off the

962  
00:40:24,410 --> 00:40:22,740  
pad surface those slide wire baskets are

963  
00:40:27,290 --> 00:40:24,420

a legacy item from the shuttle program

964

00:40:29,089 --> 00:40:27,300

and here we go the first two astronauts

965

00:40:31,190 --> 00:40:29,099

to board crew dragon

966

00:40:34,370 --> 00:40:31,200

on the left Josh cassida and on the

967

00:40:36,589 --> 00:40:34,380

right Commander Nicole Mann

968

00:40:40,730 --> 00:40:36,599

all smiles as they make their way down

969

00:40:44,089 --> 00:40:42,290

you can see the fist pumps they're

970

00:40:48,230 --> 00:40:44,099

definitely getting excited now as they

971

00:40:56,030 --> 00:40:49,790

and they make their way into What's

972

00:40:56,040 --> 00:40:59,569

do a photo op there

973

00:41:04,849 --> 00:41:02,030

core on countdown and you can see this

974

00:41:06,470 --> 00:41:04,859

face and 47 minutes crew have arrived at

975

00:41:08,150 --> 00:41:06,480

the white room just a little bit ahead

976  
00:41:10,609 --> 00:41:08,160  
of schedule

977  
00:41:12,589 --> 00:41:10,619  
there's the announcement and uh you can

978  
00:41:16,010 --> 00:41:12,599  
see one of the SpaceX techs handed

979  
00:41:17,270 --> 00:41:16,020  
Nicole Mann and Josh a Sharpie which

980  
00:41:19,370 --> 00:41:17,280  
this is something that's actually on

981  
00:41:22,370 --> 00:41:19,380  
their to-do list for launch operations

982  
00:41:25,310 --> 00:41:22,380  
and what they're going to do now is sign

983  
00:41:26,870 --> 00:41:25,320  
their signature onto the NASA meatball

984  
00:41:29,990 --> 00:41:26,880  
or right there around it

985  
00:41:32,930 --> 00:41:30,000  
that NASA meatball is

986  
00:41:35,870 --> 00:41:32,940  
encircled with signatures from all the

987  
00:41:37,790 --> 00:41:35,880  
previous NASA Crews that have gone up to

988  
00:41:40,310 --> 00:41:37,800

the International Space Station that

989

00:41:42,710 --> 00:41:40,320

signature would include yours Bob as

990

00:41:44,210 --> 00:41:42,720

well as your wife Megan MacArthur yes

991

00:41:46,550 --> 00:41:44,220

Joe that's a nice tradition that the

992

00:41:48,710 --> 00:41:46,560

SpaceX team added and allowed kind of

993

00:41:50,450 --> 00:41:48,720

Doug and I to get started and uh it's

994

00:41:52,910 --> 00:41:50,460

pretty neat to get your name added to

995

00:41:54,470 --> 00:41:52,920

the wall there the white room wall that

996

00:41:56,510 --> 00:41:54,480

leads to the dragon capsules that head

997

00:41:59,150 --> 00:41:56,520

to space station

998

00:42:02,390 --> 00:41:59,160

and there you see her

999

00:42:05,930 --> 00:42:02,400

putting her signature

1000

00:42:07,970 --> 00:42:05,940

making the way around the NASA meatball

1001  
00:42:10,250 --> 00:42:07,980  
handing off the PIN to Josh and to the

1002  
00:42:12,109 --> 00:42:10,260  
right you see the SpaceX logo for their

1003  
00:42:14,510 --> 00:42:12,119  
commercial missions they're also

1004  
00:42:16,250 --> 00:42:14,520  
starting a set of signatures which is a

1005  
00:42:19,130 --> 00:42:16,260  
great sign

1006  
00:42:20,690 --> 00:42:19,140  
about starting to establish that economy

1007  
00:42:23,390 --> 00:42:20,700  
and low earth orbit the

1008  
00:42:25,670 --> 00:42:23,400  
commercialization of low earth organ

1009  
00:42:27,829 --> 00:42:25,680  
it's it's exciting to see the the

1010  
00:42:30,050 --> 00:42:27,839  
economy and low earth orbit continue to

1011  
00:42:32,329 --> 00:42:30,060  
grow Daryl it's also exciting to see the

1012  
00:42:34,910 --> 00:42:32,339  
Cadre of astronauts continue to grow and

1013  
00:42:37,130 --> 00:42:34,920

and view that group as as our partners

1014

00:42:39,290 --> 00:42:37,140

of folks who've been to low earth orbit

1015

00:42:40,910 --> 00:42:39,300

who've been into the black of space and

1016

00:42:44,210 --> 00:42:40,920

uh it's just exciting to see that group

1017

00:42:48,470 --> 00:42:46,609

as the astronauts prepare to go inside

1018

00:42:50,630 --> 00:42:48,480

the first two the commander and pilot

1019

00:42:52,970 --> 00:42:50,640

we've got the mission specialist on the

1020

00:42:54,710 --> 00:42:52,980

left hand side of your screen

1021

00:42:57,410 --> 00:42:54,720

making their way

1022

00:42:59,329 --> 00:42:57,420

towards the crew access arm

1023

00:43:01,190 --> 00:42:59,339

the white room was a term first used

1024

00:43:03,290 --> 00:43:01,200

during the Gemini era

1025

00:43:05,630 --> 00:43:03,300

literally describing the color of the

1026  
00:43:08,809 --> 00:43:05,640  
room which is painted white you can see

1027  
00:43:10,190 --> 00:43:08,819  
an inflatable seal which is black

1028  
00:43:13,849 --> 00:43:10,200  
colored

1029  
00:43:16,370 --> 00:43:13,859  
connected to the spacecraft and

1030  
00:43:17,450 --> 00:43:16,380  
it inflates to create that environmental

1031  
00:43:20,150 --> 00:43:17,460  
seal

1032  
00:43:22,730 --> 00:43:20,160  
around the side of the spacecraft

1033  
00:43:25,010 --> 00:43:22,740  
connecting it with the white room

1034  
00:43:26,809 --> 00:43:25,020  
it does trail that seal you know of

1035  
00:43:28,370 --> 00:43:26,819  
course would protect if there was a kind

1036  
00:43:29,809 --> 00:43:28,380  
of rain or anything else kind of going

1037  
00:43:32,329 --> 00:43:29,819  
on in the area we don't have that today

1038  
00:43:34,309 --> 00:43:32,339

we have beautiful weather but it does

1039

00:43:37,130 --> 00:43:34,319

ensure that the elements of Florida

1040

00:43:38,990 --> 00:43:37,140

don't make too far of a way into the

1041

00:43:40,970 --> 00:43:39,000

capsule itself so you don't want any

1042

00:43:42,950 --> 00:43:40,980

mosquitoes or anything uh headed into

1043

00:43:43,790 --> 00:43:42,960

orbit with you and so that seal does its

1044

00:43:45,530 --> 00:43:43,800

job

1045

00:43:47,930 --> 00:43:45,540

does indeed there's a lot of humidity

1046

00:43:49,849 --> 00:43:47,940

and mosquitoes out here in Florida

1047

00:43:53,329 --> 00:43:49,859

fortunately today

1048

00:43:56,030 --> 00:43:53,339

got a nice little breeze that's keeping

1049

00:43:57,950 --> 00:43:56,040

it off us here at the desk which is nice

1050

00:44:00,890 --> 00:43:57,960

and kept it off the astronauts and crew

1051  
00:44:04,490 --> 00:44:00,900  
when they were getting in their vehicles

1052  
00:44:06,170 --> 00:44:04,500  
running about a 10 knot onshore Breeze

1053  
00:44:09,050 --> 00:44:06,180  
which should help push the clouds around

1054  
00:44:10,730 --> 00:44:09,060  
we've got a few of them out overhead

1055  
00:44:12,650 --> 00:44:10,740  
our launch weather officer for today

1056  
00:44:16,130 --> 00:44:12,660  
Ryan sizek

1057  
00:44:18,170 --> 00:44:16,140  
for the 45th space wing

1058  
00:44:20,270 --> 00:44:18,180  
telling us that we've got a nice high

1059  
00:44:22,970 --> 00:44:20,280  
pressure system in the area Bob that's

1060  
00:44:25,370 --> 00:44:22,980  
uh keeping everything clear as the first

1061  
00:44:28,670 --> 00:44:25,380  
astronaut climbed before the core on

1062  
00:44:30,710 --> 00:44:28,680  
countdown at T minus two hours and 44

1063  
00:44:36,890 --> 00:44:30,720

minutes crew have begun ingressing

1064

00:44:40,849 --> 00:44:38,510

you gotta be careful to not bump your

1065

00:44:42,410 --> 00:44:40,859

head it looks like you absolutely Daryl

1066

00:44:44,750 --> 00:44:42,420

need to be careful as you climb through

1067

00:44:47,030 --> 00:44:44,760

that hatchway there's a pressure seal

1068

00:44:48,710 --> 00:44:47,040

that needs to be kind of maintained in

1069

00:44:50,630 --> 00:44:48,720

pristine condition so when the time

1070

00:44:52,849 --> 00:44:50,640

comes to close the hatch you'll actually

1071

00:44:55,550 --> 00:44:52,859

get a good seal with that hatch closure

1072

00:44:57,170 --> 00:44:55,560

operation and so the crew is a keenly

1073

00:44:58,849 --> 00:44:57,180

aware that they need to protect that

1074

00:45:02,150 --> 00:44:58,859

environment and they climb into the

1075

00:45:06,650 --> 00:45:04,670

carefully stepping over that seal that

1076

00:45:09,109 --> 00:45:06,660

uh

1077

00:45:10,550 --> 00:45:09,119

that's important and later we'll see the

1078

00:45:13,069 --> 00:45:10,560

closeout team

1079

00:45:14,809 --> 00:45:13,079

closely inspecting that seal

1080

00:45:17,030 --> 00:45:14,819

just to make sure

1081

00:45:19,970 --> 00:45:17,040

that there's no debris

1082

00:45:22,730 --> 00:45:19,980

know what they call fod for an object

1083

00:45:24,410 --> 00:45:22,740

debris which could compromise the seal

1084

00:45:26,930 --> 00:45:24,420

something you want to make sure you keep

1085

00:45:28,309 --> 00:45:26,940

the environment on the inside and space

1086

00:45:30,950 --> 00:45:28,319

on the outside

1087

00:45:32,450 --> 00:45:30,960

now that's absolutely true that team of

1088

00:45:34,910 --> 00:45:32,460

course it's a little bit difficult in

1089

00:45:36,109 --> 00:45:34,920

the suit itself to be able to Monitor

1090

00:45:37,730 --> 00:45:36,119

and make sure that you don't bump

1091

00:45:41,150 --> 00:45:37,740

anything that you're not supposed to

1092

00:45:43,190 --> 00:45:41,160

bump into but that team of SpaceX folks

1093

00:45:45,170 --> 00:45:43,200

just does a great job with assisting the

1094

00:45:47,270 --> 00:45:45,180

crew letting them do as much as they

1095

00:45:49,010 --> 00:45:47,280

they would like to do on their own but

1096

00:45:51,530 --> 00:45:49,020

also ensuring that everything's done

1097

00:45:53,690 --> 00:45:51,540

perfectly so that nothing has to be

1098

00:45:55,730 --> 00:45:53,700

redone in the time critical situation

1099

00:45:57,470 --> 00:45:55,740

for launch and here come our second two

1100

00:46:00,410 --> 00:45:57,480

astronauts Mission specialists

1101  
00:46:06,890 --> 00:46:00,420  
koichiwakata

1102  
00:46:12,290 --> 00:46:08,630  
they're next up in the white room big

1103  
00:46:18,770 --> 00:46:15,349  
he's the veteran of this uh group uh Bob

1104  
00:46:20,690 --> 00:46:18,780  
we've got three first-time Flyers

1105  
00:46:23,150 --> 00:46:20,700  
and a guy that has a lot of experience

1106  
00:46:25,550 --> 00:46:23,160  
in space that's true Daryl you know

1107  
00:46:28,190 --> 00:46:25,560  
koichi was in the astronaut office when

1108  
00:46:30,410 --> 00:46:28,200  
I arrived a couple decades ago you know

1109  
00:46:32,329 --> 00:46:30,420  
just having joined and trained as a

1110  
00:46:34,430 --> 00:46:32,339  
shuttle astronaut getting the

1111  
00:46:36,470 --> 00:46:34,440  
opportunity to fly on his third space

1112  
00:46:38,210 --> 00:46:36,480  
vehicle kind of going forward here it's

1113  
00:46:40,010 --> 00:46:38,220

got to be exciting for him to try on a

1114

00:46:47,809 --> 00:46:40,020

new spaceship

1115

00:46:51,910 --> 00:46:49,730

got the green light flashing above and

1116

00:46:54,170 --> 00:46:51,920

I'm going to take that as green as go

1117

00:47:05,270 --> 00:46:54,180

certainly better than a red flashing

1118

00:47:09,349 --> 00:47:07,550

so it does take a relatively large team

1119

00:47:10,849 --> 00:47:09,359

it does seem like uh you know the crew

1120

00:47:13,069 --> 00:47:10,859

being able to head out to the launch pad

1121

00:47:15,230 --> 00:47:13,079

and climb in almost by themselves would

1122

00:47:16,730 --> 00:47:15,240

be a be a thing but in order to make

1123

00:47:19,130 --> 00:47:16,740

sure that things are all done perfectly

1124

00:47:20,750 --> 00:47:19,140

that team of SpaceX folks follow us

1125

00:47:22,730 --> 00:47:20,760

along very carefully with the procedure

1126  
00:47:27,650 --> 00:47:22,740  
to just to make sure everything's done

1127  
00:47:31,730 --> 00:47:29,690  
and our mission Specialists will now put

1128  
00:47:34,609 --> 00:47:31,740  
their signatures on the white room

1129  
00:47:37,430 --> 00:47:34,619  
as the Commander in Pilot

1130  
00:47:41,089 --> 00:47:37,440  
finish up securing their five-point

1131  
00:47:43,250 --> 00:47:41,099  
harness into their seat getting a snug

1132  
00:47:45,710 --> 00:47:43,260  
fit as you can see there Josh casana

1133  
00:47:47,690 --> 00:47:45,720  
making sure everything

1134  
00:47:50,750 --> 00:47:47,700  
is lined up correctly

1135  
00:47:52,490 --> 00:47:50,760  
looks like he's got four hands those are

1136  
00:47:54,530 --> 00:47:52,500  
his gloves I'm sure an extra set of

1137  
00:47:56,390 --> 00:47:54,540  
hands couldn't hurt yeah no he just has

1138  
00:47:58,069 --> 00:47:56,400

the two hands just like the rest of us

1139

00:47:59,870 --> 00:47:58,079

but he does have the the gloves there

1140

00:48:02,690 --> 00:47:59,880

kind of taken off to kind of give him

1141

00:48:04,490 --> 00:48:02,700

some additional dexterity as he tries to

1142

00:48:06,290 --> 00:48:04,500

work through getting all the strap in

1143

00:48:08,150 --> 00:48:06,300

process completed you mentioned the

1144

00:48:10,430 --> 00:48:08,160

five-point harness much like a racing

1145

00:48:13,250 --> 00:48:10,440

harness that the astronauts strap in

1146

00:48:15,109 --> 00:48:13,260

with likely they won't need all of the

1147

00:48:17,630 --> 00:48:15,119

capability of that harness as they head

1148

00:48:19,430 --> 00:48:17,640

into orbit and take their ride but it

1149

00:48:22,250 --> 00:48:19,440

does have a provide some capability

1150

00:48:24,170 --> 00:48:22,260

should the emergency escape system be

1151  
00:48:26,870 --> 00:48:24,180  
activated to really keep them strapped

1152  
00:48:28,030 --> 00:48:26,880  
tightly into their seats seats that are

1153  
00:48:32,630 --> 00:48:28,040  
also

1154  
00:48:34,730 --> 00:48:32,640  
sized to your proportions right and uh

1155  
00:48:36,230 --> 00:48:34,740  
a suit is custom but the seat I believe

1156  
00:48:38,329 --> 00:48:36,240  
has three different sizes I believe

1157  
00:48:40,490 --> 00:48:38,339  
small medium and large the seat has some

1158  
00:48:42,230 --> 00:48:40,500  
different sizes the armrests have some

1159  
00:48:43,490 --> 00:48:42,240  
different lengths and the fit rest have

1160  
00:48:45,650 --> 00:48:43,500  
some different lengths so there are

1161  
00:48:49,309 --> 00:48:45,660  
several adjustments that can be made not

1162  
00:48:50,630 --> 00:48:49,319  
quite completely custom but uh it does I

1163  
00:48:52,250 --> 00:48:50,640

guess with you look it all the way up to

1164

00:48:54,470 --> 00:48:52,260

crew five we probably haven't exercised

1165

00:48:56,630 --> 00:48:54,480

all the options that are out there but

1166

00:48:58,790 --> 00:48:56,640

uh definitely have some flexibility in

1167

00:49:00,349 --> 00:48:58,800

customizing the seat to make it fit the

1168

00:49:02,630 --> 00:49:00,359

astronaut

1169

00:49:05,870 --> 00:49:02,640

and interesting note about

1170

00:49:08,930 --> 00:49:05,880

the spacecraft endurance that uh SpaceX

1171

00:49:11,530 --> 00:49:08,940

and NASA recently uh hitting a really uh

1172

00:49:13,970 --> 00:49:11,540

incredible joint Milestone crew 5 is

1173

00:49:16,670 --> 00:49:13,980

SpaceX of course is eighth crude Mission

1174

00:49:20,450 --> 00:49:16,680

since May of 2020 but as of this Mission

1175

00:49:23,990 --> 00:49:20,460

Bob dragon is now certified for five

1176

00:49:26,030 --> 00:49:24,000

times reuse prior to that it was one

1177

00:49:29,510 --> 00:49:26,040

time reuse but they've gone through the

1178

00:49:31,730 --> 00:49:29,520

process with NASA and accomplished that

1179

00:49:33,470 --> 00:49:31,740

uh reuse Milestone which

1180

00:49:34,550 --> 00:49:33,480

that's impressive we'll see more flights

1181

00:49:36,829 --> 00:49:34,560

from endurance

1182

00:49:38,690 --> 00:49:36,839

that's true Daryl it is really critical

1183

00:49:41,150 --> 00:49:38,700

that these commercial vehicles kind of

1184

00:49:42,829 --> 00:49:41,160

meet their reuse Milestones you know so

1185

00:49:44,450 --> 00:49:42,839

that we can continue servicing the

1186

00:49:46,609 --> 00:49:44,460

International Space Station by rotating

1187

00:49:48,890 --> 00:49:46,619

Crews and so it's a huge accomplishment

1188

00:49:50,690 --> 00:49:48,900

to get that behind folks so that we can

1189

00:49:53,030 --> 00:49:50,700

continue planning for you know the

1190

00:49:55,790 --> 00:49:53,040

duration of Space Station's lifetime of

1191

00:49:57,650 --> 00:49:55,800

being accessible by the Dragon capsule

1192

00:49:59,569 --> 00:49:57,660

we continue to watch the action live in

1193

00:50:04,069 --> 00:49:59,579

the meantime let's toss it out back to

1194

00:50:09,050 --> 00:50:06,770

thanks Daryl this is always an exciting

1195

00:50:12,050 --> 00:50:09,060

moment watching the crew climb aboard

1196

00:50:14,750 --> 00:50:12,060

Dragon this phase of the mission is also

1197

00:50:16,849 --> 00:50:14,760

referred to as crew Ingress and that

1198

00:50:19,430 --> 00:50:16,859

term Ingress is used when crew members

1199

00:50:22,250 --> 00:50:19,440

are getting into a spacecraft or airlock

1200

00:50:24,829 --> 00:50:22,260

while egress means the exact opposite

1201

00:50:26,990 --> 00:50:24,839

they're exiting so prior to getting on

1202

00:50:30,050 --> 00:50:27,000

board the crew completed a foreign

1203

00:50:31,910 --> 00:50:30,060

object debris check or fod check and

1204

00:50:34,670 --> 00:50:31,920

that means they themselves have to be

1205

00:50:36,530 --> 00:50:34,680

inspected for any substances or debris

1206

00:50:38,569 --> 00:50:36,540

that isn't supposed to be on them or

1207

00:50:41,329 --> 00:50:38,579

their spacesuits because this could

1208

00:50:42,829 --> 00:50:41,339

potentially cause damage to dragon and

1209

00:50:44,870 --> 00:50:42,839

that's also why the crew is wearing

1210

00:50:47,329 --> 00:50:44,880

covers on their boots and on the

1211

00:50:49,309 --> 00:50:47,339

umbilical Port of their spacesuits those

1212

00:50:50,870 --> 00:50:49,319

covers get removed before they enter the

1213

00:50:52,609 --> 00:50:50,880

spacecraft

1214

00:50:55,130 --> 00:50:52,619

foreign object debris prevention

1215

00:50:57,230 --> 00:50:55,140

actually begins right here in Hawthorne

1216

00:50:59,270 --> 00:50:57,240

before the spacecraft leaves SpaceX

1217

00:51:00,770 --> 00:50:59,280

headquarters and is carefully controlled

1218

00:51:03,470 --> 00:51:00,780

all the way through launch day until

1219

00:51:05,329 --> 00:51:03,480

dragon's hatch is closed they are now

1220

00:51:07,430 --> 00:51:05,339

getting buckled in and attaching their

1221

00:51:09,349 --> 00:51:07,440

umbilicals to their suits and you can

1222

00:51:12,170 --> 00:51:09,359

see these suit techs or close out texts

1223

00:51:14,210 --> 00:51:12,180

are present helping them out as needed

1224

00:51:16,250 --> 00:51:14,220

the umbilicals allow the crew to have

1225

00:51:18,049 --> 00:51:16,260

calms through their suit air to help

1226

00:51:20,150 --> 00:51:18,059

keep them cool as well as delivers

1227

00:51:21,710 --> 00:51:20,160

nitrox for soup pressurization as we

1228

00:51:23,809 --> 00:51:21,720

mentioned earlier in the broadcast the

1229

00:51:25,250 --> 00:51:23,819

suit's primary function is to protect

1230

00:51:26,990 --> 00:51:25,260

the crew in the event of a cabin

1231

00:51:29,809 --> 00:51:27,000

depressurization

1232

00:51:32,329 --> 00:51:29,819

and there are four seats configured

1233

00:51:34,549 --> 00:51:32,339

right now inside of dragon and are

1234

00:51:37,069 --> 00:51:34,559

numbered one to four from right to left

1235

00:51:39,589 --> 00:51:37,079

when looking at the seats from the hatch

1236

00:51:41,210 --> 00:51:39,599

Anna kikuno will be in seat one on the

1237

00:51:43,210 --> 00:51:41,220

very far left and you see she just

1238

00:51:47,089 --> 00:51:43,220

climbed in a couple of moments ago

1239

00:51:48,290 --> 00:51:47,099

Nicole Nicole Mann will be Josh cassida

1240

00:51:50,990 --> 00:51:48,300

will be in seat two where the

1241

00:51:53,809 --> 00:51:51,000

Commander's uh seat and Josh cassida

1242

00:51:56,270 --> 00:51:53,819

will be beside her in the pilot seat and

1243

00:51:57,890 --> 00:51:56,280

then on the very end is koichiwakata who

1244

00:51:59,930 --> 00:51:57,900

is in seat four all the way to the right

1245

00:52:01,130 --> 00:51:59,940

who just climbed aboard just a moment

1246

00:52:03,349 --> 00:52:01,140

ago as well

1247

00:52:05,750 --> 00:52:03,359

and directly in front of the crew

1248

00:52:07,370 --> 00:52:05,760

members are three displays which they'll

1249

00:52:10,130 --> 00:52:07,380

use throughout the flight getting

1250

00:52:12,890 --> 00:52:10,140

insight into dragons systems seeing any

1251  
00:52:14,930 --> 00:52:12,900  
alerts or issues with the vehicle and if

1252  
00:52:16,790 --> 00:52:14,940  
required taking control and manually

1253  
00:52:20,210 --> 00:52:16,800  
flying dragon

1254  
00:52:23,030 --> 00:52:20,220  
now if the crew is all settled in coming

1255  
00:52:24,710 --> 00:52:23,040  
up will be a Comm check and that will be

1256  
00:52:27,589 --> 00:52:24,720  
to make sure that they can communicate

1257  
00:52:29,390 --> 00:52:27,599  
with mission control and then once

1258  
00:52:33,589 --> 00:52:29,400  
that's complete their suit their seats

1259  
00:52:35,690 --> 00:52:33,599  
will be rotated in position for launch

1260  
00:52:37,970 --> 00:52:35,700  
so very exciting watching them getting

1261  
00:52:41,809 --> 00:52:37,980  
settled in we've got this awesome view

1262  
00:52:43,670 --> 00:52:41,819  
of the Falcon 9 with dragon on top crew

1263  
00:52:46,730 --> 00:52:43,680

on board already

1264

00:52:48,470 --> 00:52:46,740

we have been watching the crew since

1265

00:52:50,690 --> 00:52:48,480

this morning make their way to the

1266

00:52:53,030 --> 00:52:50,700

launch pad climb up the fixed service

1267

00:52:54,890 --> 00:52:53,040

structure walk across that beautiful

1268

00:52:58,370 --> 00:52:54,900

crew arm that you see there on your

1269

00:53:01,549 --> 00:52:58,380

screen and now they are getting settled

1270

00:53:03,710 --> 00:53:01,559

into each one of their seats and there

1271

00:53:05,329 --> 00:53:03,720

is the crew 5 crew there on your right

1272

00:53:07,609 --> 00:53:05,339

hand screen

1273

00:53:09,950 --> 00:53:07,619

and the crew will remain in these

1274

00:53:11,930 --> 00:53:09,960

spacesuits through the ascent portion of

1275

00:53:13,190 --> 00:53:11,940

today's flight we'll be able to get out

1276

00:53:16,790 --> 00:53:13,200

of their suits and get a little more

1277

00:53:19,190 --> 00:53:16,800

comfortable short shortly after liftoff

1278

00:53:20,990 --> 00:53:19,200

but for the portion that is the most

1279

00:53:23,510 --> 00:53:21,000

dynamic portion of the flight they will

1280

00:53:25,490 --> 00:53:23,520

remain in those spacesuits and the

1281

00:53:27,549 --> 00:53:25,500

primary function of the spacesuits is to

1282

00:53:30,290 --> 00:53:27,559

protect the crew in an event of a cabin

1283

00:53:32,210 --> 00:53:30,300

depressurization and if that would occur

1284

00:53:34,549 --> 00:53:32,220

the suit could inflate to provide a

1285

00:53:37,069 --> 00:53:34,559

habitable habitable environment long

1286

00:53:39,530 --> 00:53:37,079

enough for the crew to return home but

1287

00:53:41,809 --> 00:53:39,540

with the crew now inside of the Dragon

1288

00:53:44,270 --> 00:53:41,819

vehicle let's go ahead and check in with

1289

00:53:45,530 --> 00:53:44,280

Kate Tice for the latest how's it going

1290

00:53:47,630 --> 00:53:45,540

Kate

1291

00:53:50,089 --> 00:53:47,640

I've been following along with the

1292

00:53:52,130 --> 00:53:50,099

launch teams and they continue to work

1293

00:53:54,890 --> 00:53:52,140

through the countdown currently no

1294

00:53:57,710 --> 00:53:54,900

issues are in work and we are awaiting

1295

00:54:00,349 --> 00:53:57,720

the context uh with the crew inside

1296

00:54:02,569 --> 00:54:00,359

Dragon which you seated there the first

1297

00:54:04,430 --> 00:54:02,579

check that we will hear is to check the

1298

00:54:06,710 --> 00:54:04,440

umbilical which is the harness that is

1299

00:54:09,109 --> 00:54:06,720

attached from each spacesuit to the

1300

00:54:12,290 --> 00:54:09,119

vehicle itself you can actually see the

1301  
00:54:14,809 --> 00:54:12,300  
umbilical Port there on the right thigh

1302  
00:54:16,670 --> 00:54:14,819  
it's that little black box that's the

1303  
00:54:19,790 --> 00:54:16,680  
umbilical Port that connects the

1304  
00:54:21,710 --> 00:54:19,800  
spacesuit to their seat the second check

1305  
00:54:24,530 --> 00:54:21,720  
that we'll hear will check the ground

1306  
00:54:27,109 --> 00:54:24,540  
stations which as the name suggests are

1307  
00:54:29,150 --> 00:54:27,119  
the ground-based support staff here on

1308  
00:54:31,370 --> 00:54:29,160  
Earth and then the third contact that

1309  
00:54:34,309 --> 00:54:31,380  
we'll hear will be for tedris or the

1310  
00:54:36,710 --> 00:54:34,319  
tracking and data relay satellites and

1311  
00:54:38,630 --> 00:54:36,720  
those are that's a constellation of 10

1312  
00:54:42,049 --> 00:54:38,640  
geosynchronous satellites that help us

1313  
00:54:44,109 --> 00:54:42,059

maintain contact around the globe as of

1314

00:54:47,329 --> 00:54:44,119

right now the dragon Lawn Shop team

1315

00:54:49,970 --> 00:54:47,339

tracking no issue shoes I was listening

1316

00:54:51,710 --> 00:54:49,980

in throughout the webcast on their Nets

1317

00:54:53,630 --> 00:54:51,720

and it sounds like that we are running

1318

00:54:56,210 --> 00:54:53,640

perfectly on time and just a little bit

1319

00:54:57,829 --> 00:54:56,220

early we have plenty of margins so if

1320

00:54:59,510 --> 00:54:57,839

for you know whatever reason something

1321

00:55:02,390 --> 00:54:59,520

arises and we need a little bit extra

1322

00:55:04,910 --> 00:55:02,400

time to work through an issue we we've

1323

00:55:06,829 --> 00:55:04,920

got it in the countdown for those that

1324

00:55:09,049 --> 00:55:06,839

are new to our launch webcasts of course

1325

00:55:12,410 --> 00:55:09,059

our countdown is the framework that

1326  
00:55:15,950 --> 00:55:12,420  
helps to sync all of our teams up so we

1327  
00:55:18,470 --> 00:55:15,960  
build margin into each step that we walk

1328  
00:55:19,849 --> 00:55:18,480  
through or proceed through on the

1329  
00:55:21,650 --> 00:55:19,859  
countdown to make sure that we have

1330  
00:55:24,410 --> 00:55:21,660  
plenty of time to work any issues that

1331  
00:55:26,270 --> 00:55:24,420  
might arise so with all that being said

1332  
00:55:30,049 --> 00:55:26,280  
everything is looking good on the dragon

1333  
00:55:32,870 --> 00:55:30,059  
side as for the Falcon 9 team they are

1334  
00:55:34,970 --> 00:55:32,880  
located in firing room four in the

1335  
00:55:37,010 --> 00:55:34,980  
launch control center at Kennedy Space

1336  
00:55:39,650 --> 00:55:37,020  
Center which you see there on your

1337  
00:55:41,990 --> 00:55:39,660  
screen those folks are settling in for

1338  
00:55:44,870 --> 00:55:42,000

final checkouts propellant loading and

1339

00:55:47,210 --> 00:55:44,880

launch the Falcon 9 team will undergo

1340

00:55:50,270 --> 00:55:47,220

their own contracts with the crew at

1341

00:55:52,190 --> 00:55:50,280

about the T-minus two hour mark As for

1342

00:55:53,630 --> 00:55:52,200

the range they continue to report no

1343

00:55:56,809 --> 00:55:53,640

issues and the weather forecast

1344

00:55:58,910 --> 00:55:56,819

continues to be acceptable we had a less

1345

00:56:00,349 --> 00:55:58,920

than 10 percent chance of violation of

1346

00:56:02,390 --> 00:56:00,359

our weather conditions and as you can

1347

00:56:04,549 --> 00:56:02,400

see on your screen it's a beautiful

1348

00:56:06,470 --> 00:56:04,559

morning there at Kennedy Space Center

1349

00:56:08,510 --> 00:56:06,480

now of course we are looking at whether

1350

00:56:10,730 --> 00:56:08,520

not only at the launch site but around

1351

00:56:12,950 --> 00:56:10,740

the world we need to make sure that

1352

00:56:15,530 --> 00:56:12,960

conditions are acceptable if dragon has

1353

00:56:17,809 --> 00:56:15,540

to splash down in the in the Atlantic in

1354

00:56:20,150 --> 00:56:17,819

case of an escape we're also monitoring

1355

00:56:22,130 --> 00:56:20,160

contingency Splashdown locations if the

1356

00:56:24,710 --> 00:56:22,140

crew had to come back to earth before

1357

00:56:26,690 --> 00:56:24,720

docking with the space station now if

1358

00:56:28,549 --> 00:56:26,700

that were to happen SpaceX and NASA

1359

00:56:30,950 --> 00:56:28,559

would coordinate with the U.S Coast

1360

00:56:33,410 --> 00:56:30,960

Guard to ensure safety upon Splashdown

1361

00:56:35,390 --> 00:56:33,420

including extra ships and air assets to

1362

00:56:37,849 --> 00:56:35,400

patrol the 10 nautical mile keep out

1363

00:56:39,530 --> 00:56:37,859

Zone that's of course to help mitigate

1364

00:56:41,690 --> 00:56:39,540

safety concerns for any boaters

1365

00:56:43,730 --> 00:56:41,700

approaching the landing area and of

1366

00:56:45,950 --> 00:56:43,740

course we've also been monitoring down

1367

00:56:49,010 --> 00:56:45,960

range weather which as I reported

1368

00:56:50,809 --> 00:56:49,020

earlier was no go yesterday but at the T

1369

00:56:54,349 --> 00:56:50,819

minus six hour weather brief turned to

1370

00:56:56,329 --> 00:56:54,359

Green so we're proceeding but keeping an

1371

00:56:59,030 --> 00:56:56,339

eye on those down range wind conditions

1372

00:57:01,609 --> 00:56:59,040

so as the clock continues to tick we're

1373

00:57:04,490 --> 00:57:01,619

approaching the T-minus 2 hour and 31

1374

00:57:06,890 --> 00:57:04,500

minute Mark all systems to continue to

1375

00:57:08,809 --> 00:57:06,900

be go for launch let's head back over to

1376  
00:57:12,650 --> 00:57:08,819  
Jesse who's actually here in Hawthorne

1377  
00:57:17,630 --> 00:57:14,569  
thanks Kate

1378  
00:57:19,970 --> 00:57:17,640  
not only is today an exciting day

1379  
00:57:22,309 --> 00:57:19,980  
because it's launch day but it's also a

1380  
00:57:24,470 --> 00:57:22,319  
pretty exciting year as this year marks

1381  
00:57:26,930 --> 00:57:24,480  
dragon's 10th year in operational flight

1382  
00:57:28,790 --> 00:57:26,940  
it took a lot of love and dedication to

1383  
00:57:31,370 --> 00:57:28,800  
get here today and we are still learning

1384  
00:57:32,630 --> 00:57:31,380  
and innovating from each launch from the

1385  
00:57:35,390 --> 00:57:32,640  
beginning Dragon was designed to

1386  
00:57:37,010 --> 00:57:35,400  
eventually fly people the dragon hanging

1387  
00:57:39,770 --> 00:57:37,020  
from the ceiling next to us was

1388  
00:57:41,930 --> 00:57:39,780

initially flown to certify SpaceX for

1389

00:57:45,650 --> 00:57:41,940

cargo missions to the space station over

1390

00:57:47,930 --> 00:57:45,660

10 years ago which flew in 2010 yet a

1391

00:57:50,510 --> 00:57:47,940

window was added to hint at our plans

1392

00:57:53,030 --> 00:57:50,520

for flying crew in the near future

1393

00:57:54,650 --> 00:57:53,040

now of course the dragon behind us and

1394

00:57:57,349 --> 00:57:54,660

the dragon supporting today's Mission

1395

00:57:59,510 --> 00:57:57,359

taking crew 5 to the space station are

1396

00:58:00,710 --> 00:57:59,520

very different a testament to how far

1397

00:58:02,270 --> 00:58:00,720

we've come

1398

00:58:05,329 --> 00:58:02,280

it's been a little over two years since

1399

00:58:08,150 --> 00:58:05,339

we flew demo 2 which was on May 30th of

1400

00:58:10,609 --> 00:58:08,160

2020 and since then SpaceX has been

1401  
00:58:11,990 --> 00:58:10,619  
regularly flying crew missions for NASA

1402  
00:58:14,450 --> 00:58:12,000  
to and from the International Space

1403  
00:58:17,690 --> 00:58:14,460  
Station at an average Cadence of one

1404  
00:58:20,870 --> 00:58:17,700  
flight every six months since crew one

1405  
00:58:23,329 --> 00:58:20,880  
crew 5 marks spacex's sixth crude space

1406  
00:58:25,370 --> 00:58:23,339  
flight for NASA and our eighth human

1407  
00:58:27,530 --> 00:58:25,380  
space flight Mission overall including

1408  
00:58:29,569 --> 00:58:27,540  
private passenger missions inspiration 4

1409  
00:58:32,990 --> 00:58:29,579  
and Axiom 1.

1410  
00:58:34,849 --> 00:58:33,000  
now speaking of inspiration 4 you may

1411  
00:58:36,470 --> 00:58:34,859  
remember Jared isaacman who served as

1412  
00:58:38,930 --> 00:58:36,480  
Commander for the inspiration for a

1413  
00:58:40,730 --> 00:58:38,940

mission Jared is planning to return to

1414

00:58:43,130 --> 00:58:40,740

space with us under the Polaris program

1415

00:58:45,170 --> 00:58:43,140

now through this program Jared along

1416

00:58:47,450 --> 00:58:45,180

with his crew will embark on three human

1417

00:58:49,490 --> 00:58:47,460

space flight missions culminating in the

1418

00:58:53,270 --> 00:58:49,500

inaugural flight of spacex's Starship

1419

00:58:55,490 --> 00:58:53,280

with humans on board the crew for the

1420

00:58:57,109 --> 00:58:55,500

first mission Polaris Don has been busy

1421

00:58:59,150 --> 00:58:57,119

preparing for their flight which is

1422

00:59:02,329 --> 00:58:59,160

currently targeted for no earlier than

1423

00:59:04,730 --> 00:59:02,339

March 2023. in addition to Jared

1424

00:59:07,569 --> 00:59:04,740

isaacman the Polaris Dawn crew consists

1425

00:59:09,650 --> 00:59:07,579

of Scott Kidd Poteet the missions pilot

1426

00:59:12,589 --> 00:59:09,660

spacex's Sarah Gillis as Mission

1427

00:59:14,210 --> 00:59:12,599

specialist and spacex's Anna Menon the

1428

00:59:16,190 --> 00:59:14,220

second mission specialist and medical

1429

00:59:18,410 --> 00:59:16,200

officer and there you can see them on

1430

00:59:20,630 --> 00:59:18,420

the screen the Polaris Dawn Mission will

1431

00:59:23,329 --> 00:59:20,640

endeavor to fly higher than any other

1432

00:59:25,789 --> 00:59:23,339

dragon mission to date the crew will

1433

00:59:28,190 --> 00:59:25,799

also be attempting the world's first

1434

00:59:31,430 --> 00:59:28,200

ever commercial spacewalk using our

1435

00:59:34,010 --> 00:59:31,440

newly designed Eva suits and our

1436

00:59:37,010 --> 00:59:34,020

progress with humanspace exploration

1437

00:59:39,109 --> 00:59:37,020

does not stop there as you can see we've

1438

00:59:41,690 --> 00:59:39,119

started construction on a new starship

1439

00:59:44,089 --> 00:59:41,700

pad at Kennedy Space Center the same pad

1440

00:59:47,089 --> 00:59:44,099

that will take NASA's human space Lander

1441

00:59:50,329 --> 00:59:47,099

system to the Moon

1442

00:59:52,309 --> 00:59:50,339

Jessie NASA's efforts particularly with

1443

00:59:55,130 --> 00:59:52,319

the commercial crew program and the

1444

00:59:57,650 --> 00:59:55,140

certification of the SpaceX Dragon are

1445

01:00:00,890 --> 00:59:57,660

aiding in building the foundation for a

1446

01:00:03,530 --> 01:00:00,900

robust U.S led commercial economy in low

1447

01:00:06,289 --> 01:00:03,540

earth orbit commercial transportation to

1448

01:00:09,109 --> 01:00:06,299

space is but one element of NASA's

1449

01:00:10,549 --> 01:00:09,119

larger plan for commercialization and

1450

01:00:12,710 --> 01:00:10,559

we're enabling the development of

1451

01:00:15,349 --> 01:00:12,720

commercial space stations private

1452

01:00:19,190 --> 01:00:15,359

astronaut missions to station demand for

1453

01:00:21,710 --> 01:00:19,200

in-space manufacturing and much more and

1454

01:00:24,109 --> 01:00:21,720

soon the agency will launch Artemis to

1455

01:00:26,750 --> 01:00:24,119

the moon and Beyond as part of a test

1456

01:00:30,770 --> 01:00:26,760

flight of the space launch system rocket

1457

01:00:37,490 --> 01:00:33,589

copy Dragon standby for umbilical

1458

01:00:42,670 --> 01:00:40,010

and we did just hear those words that

1459

01:00:45,770 --> 01:00:42,680

comchecks will be starting here shortly

1460

01:00:47,930 --> 01:00:45,780

so the Orion spacecraft and all of its

1461

01:00:50,930 --> 01:00:47,940

components will be tested from end to

1462

01:00:53,450 --> 01:00:50,940

end in this uncrewed test flight this is

1463

01:00:56,030 --> 01:00:53,460

a key Milestone before we fly humans on

1464

01:00:59,270 --> 01:00:56,040

board as part of Artemis 2 and then have

1465

01:01:01,430 --> 01:00:59,280

humans land on the moon on Artemis 3.

1466

01:01:04,069 --> 01:01:01,440

now on your screen you're seeing some

1467

01:01:06,230 --> 01:01:04,079

waves some thumbs up some goodbyes to

1468

01:01:12,470 --> 01:01:06,240

the team on the ground once they close

1469

01:01:21,230 --> 01:01:16,069

ton PDR has you loud and clear

1470

01:01:26,630 --> 01:01:23,030

unclear

1471

01:01:31,549 --> 01:01:29,089

core loud and clear

1472

01:01:40,430 --> 01:01:31,559

umbilical Comcheck is complete standby

1473

01:01:44,630 --> 01:01:42,770

and those calm checks have begun we're

1474

01:01:46,789 --> 01:01:44,640

going to hear a series of those

1475

01:01:48,410 --> 01:01:46,799

communication checks to make sure that

1476

01:01:50,690 --> 01:01:48,420

the crew can hear the folks on the

1477

01:01:52,910 --> 01:01:50,700

ground and vice versa

1478

01:01:56,750 --> 01:01:52,920

and looks like the crew is very excited

1479

01:01:58,789 --> 01:01:56,760

waving at the camera to the world

1480

01:02:01,970 --> 01:01:58,799

maybe some poses for some photos there

1481

01:02:03,829 --> 01:02:01,980

as well yeah absolutely and as I was

1482

01:02:05,569 --> 01:02:03,839

saying right before the comchecks

1483

01:02:06,950 --> 01:02:05,579

started once they closed this hatch

1484

01:02:09,230 --> 01:02:06,960

that's the last human being they're

1485

01:02:22,789 --> 01:02:09,240

gonna see on Earth until they splash

1486

01:02:28,609 --> 01:02:25,609

you can also see the crew uh with their

1487

01:02:30,890 --> 01:02:28,619

iPads on their their tablets on their

1488

01:02:34,130 --> 01:02:30,900

legs there they have a variety of

1489

01:02:36,650 --> 01:02:34,140

different procedures and reference

1490

01:02:38,390 --> 01:02:36,660

materials that they can view during the

1491

01:02:40,730 --> 01:02:38,400

mission as well you'll see them getting

1492

01:02:45,230 --> 01:02:40,740

that configured and ready for launch now

1493

01:02:50,270 --> 01:02:48,049

and these procedures are very very

1494

01:02:53,210 --> 01:02:50,280

specific they are following them all the

1495

01:02:54,829 --> 01:02:53,220

way step by step all the way through

1496

01:02:57,470 --> 01:02:54,839

this does include if you're just now

1497

01:02:59,930 --> 01:02:57,480

joining us we are

1498

01:03:01,490 --> 01:02:59,940

awaiting some comchecks which they have

1499

01:03:03,069 --> 01:03:01,500

begun

1500

01:03:05,809 --> 01:03:03,079

and they will be stepping through

1501

01:03:08,329 --> 01:03:05,819

several different Comm checks to make

1502

01:03:10,849 --> 01:03:08,339

sure that the crew can hear and

1503

01:03:13,250 --> 01:03:10,859

communicate with the ground teams here

1504

01:03:15,650 --> 01:03:13,260

in Mission Control

1505

01:03:17,870 --> 01:03:15,660

and we will do those calm checks through

1506

01:03:20,089 --> 01:03:17,880

multiple paths to Dragon including

1507

01:03:21,589 --> 01:03:20,099

tedris and ground stations which you'll

1508

01:03:24,230 --> 01:03:21,599

hear coming up throughout the

1509

01:03:25,970 --> 01:03:24,240

continuation of these Comm checks the

1510

01:03:28,430 --> 01:03:25,980

ground of course refers to the different

1511

01:03:30,829 --> 01:03:28,440

ground stations and SpaceX has ground

1512

01:03:34,730 --> 01:03:30,839

stations all around the globe and then

1513

01:03:36,829 --> 01:03:34,740

you'll also hear from core MD and LD the

1514

01:03:40,370 --> 01:03:36,839

core in Hawthorne is the crew operations

1515

01:03:41,930 --> 01:03:40,380

and resource engineer the LD is the

1516

01:03:45,230 --> 01:03:41,940

launch director down in Florida and

1517

01:03:47,390 --> 01:03:45,240

oversees the space the countdown Ops and

1518

01:03:49,730 --> 01:03:47,400

then MD is the mission director here in

1519

01:03:53,870 --> 01:03:49,740

Hawthorne is who is the overall flight

1520

01:03:53,880 --> 01:03:56,240

foreign

1521

01:04:00,950 --> 01:03:58,609

[Laughter]

1522

01:04:03,049 --> 01:04:00,960

and this is a pretty cool view inside of

1523

01:04:04,670 --> 01:04:03,059

dragon you can see the four seats for

1524

01:04:06,410 --> 01:04:04,680

the four crew members but dragon's

1525

01:04:09,410 --> 01:04:06,420

actually designed to have up to seven

1526  
01:04:10,910 --> 01:04:09,420  
crew members so right below this row of

1527  
01:04:16,190 --> 01:04:10,920  
seats

1528  
01:04:18,230 --> 01:04:16,200  
today since we only have four crew

1529  
01:04:20,630 --> 01:04:18,240  
members below the crew that you see on

1530  
01:04:23,270 --> 01:04:20,640  
your screen is actually cargo stowed

1531  
01:04:29,150 --> 01:04:23,280  
inside of dragon

1532  
01:04:29,160 --> 01:04:32,930  
Dragon loud and clear

1533  
01:04:38,150 --> 01:04:35,089  
core loud and clear ground station

1534  
01:05:01,670 --> 01:04:38,160  
Comcheck is complete standby for tdrs

1535  
01:05:07,730 --> 01:05:04,609  
we did have a good calm check with the

1536  
01:05:19,789 --> 01:05:07,740  
core standing by for the next Comcheck

1537  
01:05:19,799 --> 01:05:24,670  
Dragon SpaceX Comcheck

1538  
01:05:31,730 --> 01:05:28,730

SpaceX Dragon loud and clear

1539

01:05:35,210 --> 01:05:31,740

core loud and clear titrus Comcheck is

1540

01:05:47,030 --> 01:05:35,220

complete standby for comchecks with DC

1541

01:05:47,040 --> 01:05:52,870

Dragon DC on countdown one Comcheck

1542

01:05:52,880 --> 01:05:58,549

DC Dragon loud and clear

1543

01:06:07,549 --> 01:06:01,190

DC loud and clear stand buy for comp

1544

01:06:07,559 --> 01:06:13,309

Dragon mdn counts on one Comcheck

1545

01:06:13,319 --> 01:06:19,250

MD Dragon loud and clear

1546

01:06:26,270 --> 01:06:20,930

the loud and clear standby for comp

1547

01:06:32,150 --> 01:06:28,430

dragons empty Dragon the ground comp

1548

01:06:37,730 --> 01:06:35,270

D Dragon cloud and clear

1549

01:06:41,450 --> 01:06:37,740

MD loud and clear standby for com checks

1550

01:06:41,460 --> 01:06:47,829

Dragon LD on countdown one comp check

1551

01:06:47,839 --> 01:06:52,430

LD Dragon loud and clear

1552

01:06:52,440 --> 01:07:00,529

LD alone clear standby four

1553

01:07:00,539 --> 01:07:07,029

Dragon LD on Dragon to ground Comcheck

1554

01:07:07,039 --> 01:07:11,569

LD Dragon loud and clear

1555

01:07:11,579 --> 01:07:18,650

and LD bun clear let's go have some fun

1556

01:07:23,930 --> 01:07:21,710

Dragon SpaceX launch configuration comp

1557

01:07:36,589 --> 01:07:23,940

checks are complete report when ready

1558

01:07:40,910 --> 01:07:39,109

and now that we have successful calm

1559

01:07:43,850 --> 01:07:40,920

checks let's go over to the Johnson

1560

01:07:47,210 --> 01:07:43,860

Space rotation

1561

01:07:50,870 --> 01:07:49,010

looks like the crew is getting ready for

1562

01:07:52,970 --> 01:07:50,880

seat rotation but let's head over to the

1563

01:07:59,089 --> 01:07:52,980

## Johnson Space Center in Houston Texas

1564

01:08:03,109 --> 01:08:01,670

thanks Sandra and welcome to the

1565

01:08:05,329 --> 01:08:03,119

International Space Station flight

1566

01:08:07,609 --> 01:08:05,339

control room or mission control center

1567

01:08:09,529 --> 01:08:07,619

Houston a team of flight controllers

1568

01:08:11,990 --> 01:08:09,539

behind me is actively monitoring the

1569

01:08:14,089 --> 01:08:12,000

space station as we speak the crew in

1570

01:08:16,729 --> 01:08:14,099

orbit has completed a number of tests to

1571

01:08:18,890 --> 01:08:16,739

prepare for prepare the station for crew

1572

01:08:21,169 --> 01:08:18,900

5 like setting up tools to monitor

1573

01:08:23,510 --> 01:08:21,179

dragon's arrival and preparing the Sleep

1574

01:08:25,070 --> 01:08:23,520

stations for the new residents many of

1575

01:08:27,169 --> 01:08:25,080

their clothes and other belongings

1576

01:08:28,070 --> 01:08:27,179

launched on a previous cargo resupply

1577

01:08:30,590 --> 01:08:28,080

mission

1578

01:08:32,689 --> 01:08:30,600

back here in Houston flight director

1579

01:08:34,430 --> 01:08:32,699

Greg Whitney and his team are in

1580

01:08:36,709 --> 01:08:34,440

constant communication with the SpaceX

1581

01:08:38,809 --> 01:08:36,719

Mission director for crew 5's launch to

1582

01:08:40,910 --> 01:08:38,819

the space station once we get into

1583

01:08:42,769 --> 01:08:40,920

integrated operations the NASA flight

1584

01:08:45,229 --> 01:08:42,779

director will be conducting a series of

1585

01:08:47,570 --> 01:08:45,239

go no-go polls at the predetermined

1586

01:08:49,370 --> 01:08:47,580

checkpoints for dragon's approach for

1587

01:08:51,110 --> 01:08:49,380

now we'll continue to follow along from

1588

01:08:53,030 --> 01:08:51,120

here in Mission Control Houston so I'll

1589

01:08:55,430 --> 01:08:53,040

send it back down to the team in Kennedy

1590

01:08:56,930 --> 01:08:55,440

over to you Daryl all right thank you

1591

01:08:59,570 --> 01:08:56,940

Shaniqua and if you're just joining us

1592

01:09:02,630 --> 01:08:59,580

it is T minus two hours and 19 minutes

1593

01:09:05,090 --> 01:09:02,640

until crew 5 launches as part of the

1594

01:09:07,249 --> 01:09:05,100

NASA commercial crew program we've got

1595

01:09:09,709 --> 01:09:07,259

Commander Nicole Mann pilot Josh cassida

1596

01:09:11,749 --> 01:09:09,719

and Mission specialist koichiwakata and

1597

01:09:13,910 --> 01:09:11,759

Anna kikuna they are strapped into their

1598

01:09:15,769 --> 01:09:13,920

seats inside Dragon endurance I'm Daryl

1599

01:09:18,289 --> 01:09:15,779

nail and this is Bob binkin history

1600

01:09:20,410 --> 01:09:18,299

making astronaut here if you want to get

1601

01:09:23,870 --> 01:09:20,420

a question in to Bob live on the show

1602

01:09:25,669 --> 01:09:23,880

just hop on to a social media platform

1603

01:09:27,650 --> 01:09:25,679

any of the following Twitter Youtube and

1604

01:09:30,650 --> 01:09:27,660

twitch we're streaming on Facebook as

1605

01:09:33,470 --> 01:09:30,660

well use the hashtag asknasa and we will

1606

01:09:35,990 --> 01:09:33,480

take your question live on the air to

1607

01:09:37,789 --> 01:09:36,000

Bob binikin now the commercial crew

1608

01:09:39,950 --> 01:09:37,799

program has hundreds of super smart

1609

01:09:42,349 --> 01:09:39,960

engineers and technicians doing amazing

1610

01:09:45,650 --> 01:09:42,359

work to get us up to the station and

1611

01:09:47,570 --> 01:09:45,660

Megan Cruz is with one of them Megan yes

1612

01:09:50,030 --> 01:09:47,580

I do have a super smart engineer with me

1613

01:09:51,829 --> 01:09:50,040

this is Crystal Jones she's with ccp's

1614

01:09:53,570 --> 01:09:51,839

grounds and Mission operations office

1615

01:09:56,150 --> 01:09:53,580

Crystal can you tell everyone what that

1616

01:09:59,510 --> 01:09:56,160

office is in charge of sure yeah we have

1617

01:10:01,970 --> 01:09:59,520

a right wide range of functions that we

1618

01:10:05,689 --> 01:10:01,980

do for the commercial crew program one

1619

01:10:08,150 --> 01:10:05,699

is assessing ground systems for crew

1620

01:10:11,030 --> 01:10:08,160

safety for both launch Ops and Recovery

1621

01:10:12,890 --> 01:10:11,040

an example of a ground system is the

1622

01:10:15,290 --> 01:10:12,900

crew access arm which we just saw the

1623

01:10:16,910 --> 01:10:15,300

crew walk through to get to the

1624

01:10:19,729 --> 01:10:16,920

spacecraft and Ingress the spacecraft

1625

01:10:21,709 --> 01:10:19,739

that arm has to swing away from the

1626

01:10:23,270 --> 01:10:21,719

vehicle for launch but if there were

1627

01:10:24,649 --> 01:10:23,280

some sort of emergency and the

1628

01:10:26,930 --> 01:10:24,659

astronauts needed to get out of the

1629

01:10:29,689 --> 01:10:26,940

spacecraft that arm needs to come back

1630

01:10:31,370 --> 01:10:29,699

really quickly to allow the astronauts

1631

01:10:32,930 --> 01:10:31,380

to egress

1632

01:10:34,490 --> 01:10:32,940

um so you're responsible for just making

1633

01:10:35,750 --> 01:10:34,500

sure that everything is operating the

1634

01:10:37,850 --> 01:10:35,760

way that it should be if that were to

1635

01:10:39,410 --> 01:10:37,860

happen yes correct okay and then right

1636

01:10:41,149 --> 01:10:39,420

after this you're also going to go to

1637

01:10:42,590 --> 01:10:41,159

the nearby Cape Canaveral space force

1638

01:10:44,090 --> 01:10:42,600

station you're going to be inside a room

1639

01:10:45,649 --> 01:10:44,100

there and I believe we have a live shot

1640

01:10:48,410 --> 01:10:45,659

of that room and you're going to go

1641

01:10:50,330 --> 01:10:48,420

there so that you can serve as ccp's

1642

01:10:53,149 --> 01:10:50,340

mishap manager right this is the room

1643

01:10:56,570 --> 01:10:53,159

right here yes that's correct and I have

1644

01:11:00,110 --> 01:10:56,580

my FAA and NTSB colleagues uh they're

1645

01:11:02,390 --> 01:11:00,120

with me as well since this is a an FAA

1646

01:11:04,930 --> 01:11:02,400

commercially licensed Mission they have

1647

01:11:07,430 --> 01:11:04,940

mishap jurisdiction for some of the

1648

01:11:09,950 --> 01:11:07,440

phases of flight and so we all work

1649

01:11:11,810 --> 01:11:09,960

together if an incident were to occur I

1650

01:11:14,270 --> 01:11:11,820

don't expect anything to happen I have

1651  
01:11:16,250 --> 01:11:14,280  
full confidence in The Joint Nasa and

1652  
01:11:17,990 --> 01:11:16,260  
SpaceX team you have such an important

1653  
01:11:19,850 --> 01:11:18,000  
role here like you said a wide variety

1654  
01:11:22,610 --> 01:11:19,860  
of things that you're overseeing you've

1655  
01:11:24,169 --> 01:11:22,620  
been here at Nasa for almost 15 years I

1656  
01:11:25,550 --> 01:11:24,179  
mean did you know that you always wanted

1657  
01:11:26,330 --> 01:11:25,560  
to work here and how did you make it

1658  
01:11:29,390 --> 01:11:26,340  
happen

1659  
01:11:31,550 --> 01:11:29,400  
yes I did always know that I wanted to

1660  
01:11:34,270 --> 01:11:31,560  
work at NASA ever since I was a very

1661  
01:11:38,090 --> 01:11:34,280  
young girl I dreamed of working for NASA

1662  
01:11:41,870 --> 01:11:38,100  
unfortunately when I was about 10 11 12

1663  
01:11:44,330 --> 01:11:41,880

my parents drug and alcohol use began to

1664

01:11:47,090 --> 01:11:44,340

impact our lives in a severe way

1665

01:11:49,370 --> 01:11:47,100

we ended up homeless I had to stay in an

1666

01:11:51,830 --> 01:11:49,380

abandoned bus and eventually

1667

01:11:54,189 --> 01:11:51,840

transitioned to a homeless shelter wow

1668

01:11:56,810 --> 01:11:54,199

after that time

1669

01:11:59,930 --> 01:11:56,820

it we never seemed to be able to recover

1670

01:12:02,870 --> 01:11:59,940

as a family we lived in extreme poverty

1671

01:12:06,169 --> 01:12:02,880

in a bad neighborhood but it didn't stop

1672

01:12:08,709 --> 01:12:06,179

me from trying to reach my goals I still

1673

01:12:11,510 --> 01:12:08,719

had that dream so

1674

01:12:13,370 --> 01:12:11,520

in high school I've learned how to use a

1675

01:12:15,050 --> 01:12:13,380

computer no one in my area had a

1676

01:12:16,570 --> 01:12:15,060

computer I didn't have one didn't know

1677

01:12:19,910 --> 01:12:16,580

so learn how to use a computer

1678

01:12:22,310 --> 01:12:19,920

researched colleges how to apply how to

1679

01:12:25,490 --> 01:12:22,320

get applications the whole financial aid

1680

01:12:27,169 --> 01:12:25,500

process and I was accepted into Florida

1681

01:12:28,550 --> 01:12:27,179

Institute of Technology here in

1682

01:12:31,729 --> 01:12:28,560

Melbourne Florida

1683

01:12:33,830 --> 01:12:31,739

and got a Bachelor's in astrophysics and

1684

01:12:35,689 --> 01:12:33,840

a masters in Space Systems wow you're

1685

01:12:37,910 --> 01:12:35,699

not even at Nasa and you've had such a

1686

01:12:40,669 --> 01:12:37,920

long road ahead of you but but I hope

1687

01:12:42,410 --> 01:12:40,679

that people learn to to take away from

1688

01:12:44,450 --> 01:12:42,420

your story that really you can just

1689

01:12:45,950 --> 01:12:44,460

follow your dreams if you have a passion

1690

01:12:48,169 --> 01:12:45,960

for it to do it right that would be your

1691

01:12:50,570 --> 01:12:48,179

message and I'm happy to say that that

1692

01:12:53,390 --> 01:12:50,580

my parents have conquered the their

1693

01:12:55,970 --> 01:12:53,400

addictions and I was extremely proud of

1694

01:12:56,930 --> 01:12:55,980

my mom before her passing earlier this

1695

01:12:59,090 --> 01:12:56,940

year

1696

01:13:01,669 --> 01:12:59,100

in fact this necklace that I'm wearing

1697

01:13:04,310 --> 01:13:01,679

is made with her ashes wow and I wear it

1698

01:13:05,570 --> 01:13:04,320

for every launch in her memory and I'm

1699

01:13:07,130 --> 01:13:05,580

sure she's very proud of you Crystal

1700

01:13:08,990 --> 01:13:07,140

thank you so much for being here yeah

1701

01:13:11,510 --> 01:13:09,000

we'll send it back to you guys thank you

1702

01:13:14,390 --> 01:13:11,520

so much Megan what a powerful story from

1703

01:13:17,450 --> 01:13:14,400

Crystal Jones the CCP ground and Mission

1704

01:13:19,910 --> 01:13:17,460

operations office that is inspiring to

1705

01:13:21,950 --> 01:13:19,920

hear how she came from that difficult

1706

01:13:24,890 --> 01:13:21,960

background to where she is now

1707

01:13:26,570 --> 01:13:24,900

absolutely Daryl and it's amazing too

1708

01:13:29,090 --> 01:13:26,580

when you when you think about going

1709

01:13:32,209 --> 01:13:29,100

through a difficult Road like that and

1710

01:13:33,830 --> 01:13:32,219

then achieving such a high level of uh

1711

01:13:36,169 --> 01:13:33,840

accomplishment here at Nasa we're just

1712

01:13:38,450 --> 01:13:36,179

so proud of Crystal Jones and thank you

1713

01:13:40,430 --> 01:13:38,460

Crystal for sharing that story with us

1714

01:13:41,750 --> 01:13:40,440

we want to introduce you now to today's

1715

01:13:43,669 --> 01:13:41,760

crew

1716

01:13:46,130 --> 01:13:43,679

if you're just joining us now as you're

1717

01:13:48,229 --> 01:13:46,140

looking inside the capsule endurance you

1718

01:13:52,970 --> 01:13:48,239

are go for section three suit leak check

1719

01:13:52,980 --> 01:13:58,550

dragons

1720

01:14:01,790 --> 01:13:59,689

and there you hear the confirmation

1721

01:14:04,490 --> 01:14:01,800

feedback crew is ready to begin their

1722

01:14:06,470 --> 01:14:04,500

suit leak checks let's start off by

1723

01:14:09,050 --> 01:14:06,480

talking about our commander for the day

1724

01:14:12,350 --> 01:14:09,060

as they pull down their visors she is

1725

01:14:14,689 --> 01:14:12,360

the second from the right of your screen

1726

01:14:16,010 --> 01:14:14,699

Nicole Mann the California Native holds

1727

01:14:17,990 --> 01:14:16,020

a master of science in mechanical

1728

01:14:20,930 --> 01:14:18,000

engineering she is a colonel in the

1729

01:14:23,330 --> 01:14:20,940

Marine Corps she was an fa-18 Hornet and

1730

01:14:25,189 --> 01:14:23,340

Super Hornet test pilot and deployed

1731

01:14:27,830 --> 01:14:25,199

twice aboard aircraft carriers in

1732

01:14:30,470 --> 01:14:27,840

support of combat operations and Iraq

1733

01:14:32,689 --> 01:14:30,480

and Afghanistan Nicole was selected by

1734

01:14:35,209 --> 01:14:32,699

NASA in June of 2013 and in the years

1735

01:14:37,130 --> 01:14:35,219

that followed led the astronaut Corps in

1736

01:14:39,649 --> 01:14:37,140

the development of Hardware in the

1737

01:14:41,990 --> 01:14:39,659

Artemis program today the crew 5

1738

01:14:45,290 --> 01:14:42,000

Commander will be flying into space for

1739

01:14:47,630 --> 01:14:45,300

the first time and after crew crew 5

1740

01:14:50,930 --> 01:14:47,640

launches she will be the first Native

1741

01:14:52,850 --> 01:14:50,940

American woman to go to space which is a

1742

01:14:55,130 --> 01:14:52,860

wonderful accomplishment

1743

01:14:56,450 --> 01:14:55,140

absolutely Nicole joined the astronaut

1744

01:14:58,490 --> 01:14:56,460

office when I was the chief of the

1745

01:15:00,350 --> 01:14:58,500

astronaut office I'm just super excited

1746

01:15:02,330 --> 01:15:00,360

to see a colonel in the Marine Corps

1747

01:15:03,950 --> 01:15:02,340

head to the International Space Station

1748

01:15:05,870 --> 01:15:03,960

from that Commander sheet just like we

1749

01:15:08,330 --> 01:15:05,880

had for demo 2.

1750

01:15:11,090 --> 01:15:08,340

and you being a colonel in the Air Force

1751

01:15:13,610 --> 01:15:11,100

I'm sure you appreciate the military

1752

01:15:15,649 --> 01:15:13,620

discipline that she brings to that role

1753

01:15:17,570 --> 01:15:15,659

just like your partner Doug Hurley

1754

01:15:20,270 --> 01:15:17,580

brought a little bit of that

1755

01:15:23,090 --> 01:15:20,280

sitting next to Nicole is Josh cassida

1756

01:15:25,550 --> 01:15:23,100

he grew up in Bear Lake Minnesota the

1757

01:15:28,250 --> 01:15:25,560

physicist and U.S Navy test pilot flew

1758

01:15:31,570 --> 01:15:28,260

23 combat missions he later became an

1759

01:15:34,370 --> 01:15:31,580

instructor at the U.S naval test pilots

1760

01:15:36,950 --> 01:15:34,380

care complete and complete the section

1761

01:15:41,209 --> 01:15:39,110

there you hear the call that the leaked

1762

01:15:43,610 --> 01:15:41,219

checks have been completed

1763

01:15:46,070 --> 01:15:43,620

good sign as we move forward I believe

1764

01:15:48,350 --> 01:15:46,080

that was Josh castle that came over the

1765

01:15:50,450 --> 01:15:48,360

line there who we are talking about copy

1766

01:15:52,430 --> 01:15:50,460

that Dragon you are go for section four

1767

01:15:54,110 --> 01:15:52,440

suit leak check

1768

01:15:58,209 --> 01:15:54,120

that was a confirmation rather that they

1769

01:15:58,219 --> 01:16:02,450

I want to correct that

1770

01:16:05,330 --> 01:16:03,950

cassida

1771

01:16:07,490 --> 01:16:05,340

he's one of more than a hundred

1772

01:16:09,649 --> 01:16:07,500

graduates who became astronauts going

1773

01:16:11,330 --> 01:16:09,659

back to the Mercury program more

1774

01:16:14,149 --> 01:16:11,340

recently he served as capsule

1775

01:16:16,790 --> 01:16:14,159

Communicator in Mission Control

1776

01:16:18,410 --> 01:16:16,800

but Bob today he's in the position of

1777

01:16:20,390 --> 01:16:18,420

pilot aboard dragon and that's a

1778

01:16:22,910 --> 01:16:20,400

position you know well

1779

01:16:24,890 --> 01:16:22,920

yes it's it's exciting to see Josh and

1780

01:16:27,050 --> 01:16:24,900

in that seat you know as all of our

1781

01:16:29,209 --> 01:16:27,060

astronauts who come into the program he

1782

01:16:31,669 --> 01:16:29,219

brings a balance of operational and and

1783

01:16:35,270 --> 01:16:31,679

scientific expertise kind of to the

1784

01:16:39,530 --> 01:16:36,950

in the role of mission specialist is

1785

01:16:41,149 --> 01:16:39,540

veteran Japanese astronaut koichiwakata

1786

01:16:43,669 --> 01:16:41,159

he has a doctorate in aerospace

1787

01:16:46,070 --> 01:16:43,679

engineering and in 1996 became the first

1788

01:16:48,430 --> 01:16:46,080

Japanese Mission specialist aboard the

1789

01:16:51,050 --> 01:16:48,440

Space Shuttle Endeavor for sts-72

1790

01:16:53,930 --> 01:16:51,060

altogether koichi flew four space

1791

01:16:55,550 --> 01:16:53,940

shuttle missions a Russian soyuz and was

1792

01:16:57,530 --> 01:16:55,560

on a long duration stay aboard the

1793

01:16:59,689 --> 01:16:57,540

International Space Station

1794

01:17:02,810 --> 01:16:59,699

during his two decade career as an

1795

01:17:05,090 --> 01:17:02,820

astronaut koichi has spent 11 months in

1796

01:17:07,130 --> 01:17:05,100

space and so he is the guy with the

1797

01:17:09,590 --> 01:17:07,140

experience on This Crew the other three

1798

01:17:10,970 --> 01:17:09,600

first-time Flyers joining kuichi in the

1799

01:17:13,490 --> 01:17:10,980

role of mission Specialists is Ross

1800

01:17:15,530 --> 01:17:13,500

Cosmos Cosmonaut on a kikuna she

1801  
01:17:18,649 --> 01:17:15,540  
graduated from the Nova sabirsk State

1802  
01:17:20,630 --> 01:17:18,659  
Academy of water transport in 2006 and

1803  
01:17:23,570 --> 01:17:20,640  
2012 Anna officially became a candidate

1804  
01:17:28,250 --> 01:17:23,580  
for the position of test cosmonaut crew

1805  
01:17:30,410 --> 01:17:28,260  
5 will be Anna's first flight into space

1806  
01:17:32,570 --> 01:17:30,420  
now let's check in with our team out at

1807  
01:17:33,470 --> 01:17:32,580  
Hawthorne California k-touch what do you

1808  
01:17:36,610 --> 01:17:33,480  
have

1809  
01:17:41,990 --> 01:17:39,649  
along with the launch countdown and our

1810  
01:17:44,870 --> 01:17:42,000  
procedures we're now coming up to T

1811  
01:17:47,390 --> 01:17:44,880  
minus two hours and 10 minutes as you

1812  
01:17:49,310 --> 01:17:47,400  
can see there on your screen the crew is

1813  
01:17:51,709 --> 01:17:49,320

ready for it leak checks those should be

1814

01:17:53,450 --> 01:17:51,719

commencing any moment now

1815

01:17:55,610 --> 01:17:53,460

um the countdown is proceeding nominally

1816

01:17:57,950 --> 01:17:55,620

at this point on board the brand new

1817

01:17:59,990 --> 01:17:57,960

dragon spacecraft endurance we've

1818

01:18:03,530 --> 01:18:00,000

already heard those communication checks

1819

01:18:07,430 --> 01:18:03,540

between the dragon team and the crew we

1820

01:18:08,570 --> 01:18:07,440

will hear checks com checks which is

1821

01:18:10,850 --> 01:18:08,580

about I'm hearing is about a minute

1822

01:18:12,470 --> 01:18:10,860

remaining in that leap check there will

1823

01:18:14,330 --> 01:18:12,480

be another communication check with the

1824

01:18:17,270 --> 01:18:14,340

Falcon 9 launch Team and the crew that

1825

01:18:19,189 --> 01:18:17,280

comes up at about T minus two hours so

1826

01:18:21,950 --> 01:18:19,199

at this point we were in the leak check

1827

01:18:24,470 --> 01:18:21,960

uh less than a minute remaining and

1828

01:18:26,510 --> 01:18:24,480

after that we'll be able to say the

1829

01:18:28,430 --> 01:18:26,520

checks are hopefully good and at that

1830

01:18:30,229 --> 01:18:28,440

point the closeout lead will then verify

1831

01:18:32,570 --> 01:18:30,239

that the cabin environment's inside

1832

01:18:34,910 --> 01:18:32,580

Dragon are good to go and then begin

1833

01:18:37,189 --> 01:18:34,920

procedures to close the side hatch of

1834

01:18:39,530 --> 01:18:37,199

the dragon spacecraft so that's always

1835

01:18:41,450 --> 01:18:39,540

an exciting moment of course the

1836

01:18:43,790 --> 01:18:41,460

closeout team will perform the final

1837

01:18:45,890 --> 01:18:43,800

leak check on the hatch and then once

1838

01:18:48,470 --> 01:18:45,900

that is finished the team will begin all

1839

01:18:51,050 --> 01:18:48,480

their steps to ready the crew access arm

1840

01:18:53,930 --> 01:18:51,060

for retraction and then the closeout

1841

01:18:55,910 --> 01:18:53,940

team will leave the pad at about T minus

1842

01:18:58,550 --> 01:18:55,920

one hour and we'll hear that called out

1843

01:19:01,130 --> 01:18:58,560

on the Nets that the team has Departed

1844

01:19:03,950 --> 01:19:01,140

the pad and at that point in time only

1845

01:19:07,370 --> 01:19:03,960

our crew 5 astronauts will remain on the

1846

01:19:09,590 --> 01:19:07,380

pad now as for Falcon 9 that team is on

1847

01:19:12,649 --> 01:19:09,600

console and firing room four they are

1848

01:19:15,470 --> 01:19:12,659

preparing for their communication checks

1849

01:19:18,110 --> 01:19:15,480

which will occur at T minus one hour and

1850

01:19:19,850 --> 01:19:18,120

55 minutes SpaceX Engineers have

1851

01:19:22,370 --> 01:19:19,860

pressurized the launch vehicle gas

1852

01:19:25,310 --> 01:19:22,380

storage bottles those are composite over

1853

01:19:26,930 --> 01:19:25,320

wrap pressure vessels or copvs they

1854

01:19:41,830 --> 01:19:26,940

contain gases that are used to fill

1855

01:19:41,840 --> 01:19:57,890

long term and then for uh next actions

1856

01:20:01,850 --> 01:19:59,870

so as the propellant is drained out of

1857

01:20:04,310 --> 01:20:01,860

the first and second stages uh we'll top

1858

01:20:06,890 --> 01:20:04,320

those off in the last half hour so uh

1859

01:20:09,110 --> 01:20:06,900

before lift off those copds now we also

1860

01:20:11,090 --> 01:20:09,120

use pressurized gases to spin the Merlin

1861

01:20:13,430 --> 01:20:11,100

engine turbo pump when we start an

1862

01:20:15,169 --> 01:20:13,440

engine in Space the second stage and

1863

01:20:17,510 --> 01:20:15,179

back engine starts up after the first

1864

01:20:19,850 --> 01:20:17,520

stage separates and then the first stage

1865

01:20:22,550 --> 01:20:19,860

engines need to be restarted for that

1866

01:20:25,130 --> 01:20:22,560

Landing sequence the gases are also used

1867

01:20:27,830 --> 01:20:25,140

for attitude Control Systems which help

1868

01:20:30,950 --> 01:20:27,840

the with the help the vehicle with its

1869

01:20:32,930 --> 01:20:30,960

orientation for deploying the grid fins

1870

01:20:34,729 --> 01:20:32,940

and Landing lights

1871

01:20:36,770 --> 01:20:34,739

now of course we're continuing to keep

1872

01:20:40,310 --> 01:20:36,780

an eye on the weather you can see it

1873

01:20:42,410 --> 01:20:40,320

remains a beautiful day at pad 39a we

1874

01:20:44,030 --> 01:20:42,420

are watching watching weather at the

1875

01:20:46,910 --> 01:20:44,040

launch site as well as around the world

1876  
01:20:49,330 --> 01:20:46,920  
uh for contingency abort and Landing

1877  
01:20:53,870 --> 01:20:51,590  
and it sounds like we're going to get

1878  
01:20:55,790 --> 01:20:53,880  
confirmation with leak checks now go

1879  
01:20:58,070 --> 01:20:55,800  
ahead SpaceX

1880  
01:20:59,390 --> 01:20:58,080  
all right Josh we saw you come in a

1881  
01:21:01,430 --> 01:20:59,400  
little bit lower than you did on dry

1882  
01:21:03,050 --> 01:21:01,440  
dress so just as a measure of precaution

1883  
01:21:04,430 --> 01:21:03,060  
we're going to have a close-up we need

1884  
01:21:05,689 --> 01:21:04,440  
to come in and just take a quick look

1885  
01:21:07,610 --> 01:21:05,699  
and double check that everything is

1886  
01:21:11,450 --> 01:21:07,620  
looking secure for zippers and

1887  
01:21:18,770 --> 01:21:13,669  
we copy and we were thinking the same

1888  
01:21:24,410 --> 01:21:20,930

all right so it sounds like pilot Josh

1889

01:21:25,910 --> 01:21:24,420

cassida um his pre his suit pressure is

1890

01:21:28,070 --> 01:21:25,920

a little bit lower than what we read

1891

01:21:29,450 --> 01:21:28,080

during the dry dress which was the

1892

01:21:32,510 --> 01:21:29,460

basically dress rehearsal that we

1893

01:21:34,370 --> 01:21:32,520

performed early on Sunday October 2nd so

1894

01:21:36,050 --> 01:21:34,380

the team the closeout team is going to

1895

01:21:38,450 --> 01:21:36,060

come back in and just make sure that all

1896

01:21:40,250 --> 01:21:38,460

the zippers on this face suit are zipped

1897

01:21:42,050 --> 01:21:40,260

up to the appropriate height just make

1898

01:21:44,750 --> 01:21:42,060

sure that everything is locked into

1899

01:21:47,270 --> 01:21:44,760

place so um we have plenty of margin in

1900

01:21:49,250 --> 01:21:47,280

the launch countdown uh the countdown is

1901

01:21:51,110 --> 01:21:49,260

uh to make sure that all the teams are

1902

01:21:53,209 --> 01:21:51,120

working toward t0 in a coordinated

1903

01:21:55,910 --> 01:21:53,219

fashion and we have lots of margin uh

1904

01:21:58,250 --> 01:21:55,920

built in so we are okay to go in and

1905

01:22:01,490 --> 01:21:58,260

recheck that and re-perform that suit

1906

01:22:03,890 --> 01:22:01,500

that suit the check on Josh so at this

1907

01:22:05,630 --> 01:22:03,900

point in time everything continues to be

1908

01:22:08,270 --> 01:22:05,640

acceptable for launch we're coming up to

1909

01:22:09,950 --> 01:22:08,280

T minus two hours and six minutes so I'm

1910

01:22:11,750 --> 01:22:09,960

gonna toss it back to Daryl over at

1911

01:22:13,250 --> 01:22:11,760

Kennedy Space Center all right thank you

1912

01:22:16,850 --> 01:22:13,260

Kate and I'm here with Bob binkin

1913

01:22:18,709 --> 01:22:16,860

astronaut from demo two and uh NASA's

1914

01:22:21,169 --> 01:22:18,719

first mission and we want to talk a

1915

01:22:23,209 --> 01:22:21,179

little bit about that leak check Bob you

1916

01:22:26,990 --> 01:22:23,219

were following along as they were doing

1917

01:22:29,270 --> 01:22:27,000

the checks a crew now going inside to

1918

01:22:30,590 --> 01:22:29,280

double check Josh Cassidy's suit what's

1919

01:22:32,030 --> 01:22:30,600

that all about yeah that's that's

1920

01:22:34,070 --> 01:22:32,040

correct Daryl you know we heard the

1921

01:22:35,930 --> 01:22:34,080

words from the SpaceX team what they saw

1922

01:22:38,330 --> 01:22:35,940

was a slightly different indication than

1923

01:22:39,770 --> 01:22:38,340

they saw during Josh's last leak check

1924

01:22:41,330 --> 01:22:39,780

and the team is just going to double

1925

01:22:43,550 --> 01:22:41,340

check that to make sure that they don't

1926

01:22:45,470 --> 01:22:43,560

see anything awry just a abundance of

1927

01:22:46,970 --> 01:22:45,480

caution as you heard the crew reported

1928

01:22:48,770 --> 01:22:46,980

that they had a good leak check and so

1929

01:22:50,450 --> 01:22:48,780

the team's just using again an abundance

1930

01:22:52,430 --> 01:22:50,460

of caution and a little bit of air

1931

01:22:54,110 --> 01:22:52,440

obviously comes through that suit and

1932

01:22:55,310 --> 01:22:54,120

goes out the suit right so this is a

1933

01:22:57,590 --> 01:22:55,320

level that would be maybe a little

1934

01:23:00,110 --> 01:22:57,600

higher than than what they normally see

1935

01:23:01,910 --> 01:23:00,120

that's correct all right very good well

1936

01:23:03,410 --> 01:23:01,920

we're back here at Kennedy and the

1937

01:23:04,910 --> 01:23:03,420

weather is beautiful launch As We Stand

1938

01:23:08,030 --> 01:23:04,920

By and there you can see the suit Tech

1939

01:23:12,890 --> 01:23:08,040

in there examining the zippers and the

1940

01:23:17,570 --> 01:23:14,810

so they uh

1941

01:23:19,370 --> 01:23:17,580

they hadn't shut the hatch yet so that

1942

01:23:20,090 --> 01:23:19,380

was an easy entry for that Tech to go in

1943

01:23:25,669 --> 01:23:20,100

there

1944

01:23:28,970 --> 01:23:27,350

yeah so they'll check each of the places

1945

01:23:31,010 --> 01:23:28,980

where there could possibly be a league

1946

01:23:32,450 --> 01:23:31,020

one of the places is that umbilical that

1947

01:23:33,830 --> 01:23:32,460

you've seen them a disconnect and

1948

01:23:35,689 --> 01:23:33,840

they're now reattaching after they

1949

01:23:37,250 --> 01:23:35,699

checked the seal that was there they'll

1950

01:23:39,110 --> 01:23:37,260

verify the zippers that are on the suit

1951

01:23:41,870 --> 01:23:39,120

to make sure that those are all closed

1952

01:23:43,790 --> 01:23:41,880

all the way to the very end and I know

1953

01:23:45,890 --> 01:23:43,800

that for the crew these sorts of

1954

01:23:47,750 --> 01:23:45,900

situations can be a little bit uh

1955

01:23:49,310 --> 01:23:47,760

frustrating they can kind of break the

1956

01:23:50,930 --> 01:23:49,320

the sequence of events but I know

1957

01:23:52,610 --> 01:23:50,940

they'll get right back on track here and

1958

01:23:54,709 --> 01:23:52,620

uh continue

1959

01:23:56,689 --> 01:23:54,719

right these are highly trained

1960

01:23:58,550 --> 01:23:56,699

astronauts that have been getting ready

1961

01:23:59,630 --> 01:23:58,560

for this moment uh for the past couple

1962

01:24:01,970 --> 01:23:59,640

of years

1963

01:24:04,610 --> 01:24:01,980

certainly ready for all situations that

1964

01:24:07,790 --> 01:24:04,620

uh they may come up against

1965

01:24:10,010 --> 01:24:07,800

and these suits Bob Carey

1966

01:24:14,270 --> 01:24:10,020

a lot right into the spacecraft dragon

1967

01:24:19,490 --> 01:24:16,189

I'll pause P3 I've got you five by five

1968

01:24:19,500 --> 01:24:24,890

got you the same thank you

1969

01:24:29,750 --> 01:24:26,689

so I don't I don't want to speculate too

1970

01:24:31,250 --> 01:24:29,760

much but when you pull the

1971

01:24:33,110 --> 01:24:31,260

umbilical way you know there's an

1972

01:24:34,970 --> 01:24:33,120

opportunity for the calm system to just

1973

01:24:36,350 --> 01:24:34,980

need to be re-verified so we heard Josh

1974

01:24:37,910 --> 01:24:36,360

check back in

1975

01:24:40,010 --> 01:24:37,920

those connection points are grouped

1976

01:24:41,930 --> 01:24:40,020

together right you've got calm and air

1977

01:24:46,130 --> 01:24:41,940

flowing into the suit at the same

1978

01:24:52,250 --> 01:24:50,030

also giving a check to honest

1979

01:24:56,330 --> 01:24:52,260

or maybe just doing some

1980

01:24:56,340 --> 01:25:10,910

rechecking

1981

01:25:15,229 --> 01:25:13,130

we've had uh some social media questions

1982

01:25:18,290 --> 01:25:15,239

coming in we've asked you to participate

1983

01:25:21,050 --> 01:25:18,300

and we want to do that right now by

1984

01:25:26,330 --> 01:25:21,060

asking questions of our expert astronaut

1985

01:25:31,550 --> 01:25:28,570

of course you can hit us up at hashtag

1986

01:25:35,870 --> 01:25:31,560

asknasa on Facebook Twitter Youtube and

1987

01:25:41,510 --> 01:25:38,209

coming in from Andy hughes01

1988

01:25:44,450 --> 01:25:41,520

why do the new spacesuits involve long

1989

01:25:46,130 --> 01:25:44,460

rubber boots those are high boots

1990

01:25:48,470 --> 01:25:46,140

you know that's a it's a it's a great

1991

01:25:50,510 --> 01:25:48,480

question Daryl as to why uh you know the

1992

01:25:52,610 --> 01:25:50,520

SpaceX suit looks the way that it does

1993

01:25:54,290 --> 01:25:52,620

of course as a commercial company they

1994

01:25:56,450 --> 01:25:54,300

were free to come up with a suit that

1995

01:25:58,790 --> 01:25:56,460

really then had to be assessed whether

1996

01:26:01,370 --> 01:25:58,800

it actually accomplished the mission of

1997

01:26:03,229 --> 01:26:01,380

protecting the crew and uh in those

1998

01:26:06,470 --> 01:26:03,239

unlikely cases where there might need to

1999

01:26:07,669 --> 01:26:06,480

be an atmosphere of their own because

2000

01:26:10,370 --> 01:26:07,679

there was something wrong with the one

2001  
01:26:12,649 --> 01:26:10,380  
inside of the spaceship and so SpaceX

2002  
01:26:14,810 --> 01:26:12,659  
chose the the high boot configuration

2003  
01:26:16,610 --> 01:26:14,820  
there but it's a met the mission needs

2004  
01:26:28,129 --> 01:26:16,620  
and so you know the NASA team was able

2005  
01:26:32,209 --> 01:26:29,570  
all right we'll keep an eye on the

2006  
01:26:34,310 --> 01:26:32,219  
action inside crew Dragon endurance and

2007  
01:26:38,629 --> 01:26:34,320  
our four our three astronauts and one

2008  
01:26:42,250 --> 01:26:38,639  
cosmonaut who are standing by the uh

2009  
01:26:44,689 --> 01:26:42,260  
member of the closeout crew has eggs

2010  
01:26:46,910 --> 01:26:44,699  
we got a report from the closeout lead

2011  
01:26:48,350 --> 01:26:46,920  
about verifying all the zippers and

2012  
01:26:49,550 --> 01:26:48,360  
umbilicals we're just chatting with a

2013  
01:26:50,870 --> 01:26:49,560

few more folks to see if there's any

2014

01:26:52,970 --> 01:26:50,880

other actions we want to take at this

2015

01:26:57,790 --> 01:26:52,980

time we do have 15 minutes remaining in

2016

01:27:02,990 --> 01:27:00,649

thank you

2017

01:27:05,930 --> 01:27:03,000

all right there you heard the discussion

2018

01:27:08,689 --> 01:27:05,940

between SpaceX and the NASA astronauts

2019

01:27:11,090 --> 01:27:08,699

and so although going into space is not

2020

01:27:13,070 --> 01:27:11,100

child's play every Dragon astronaut crew

2021

01:27:15,530 --> 01:27:13,080

brings a stuffed toy with them and

2022

01:27:17,689 --> 01:27:15,540

there's one inside the capsule right now

2023

01:27:19,729 --> 01:27:17,699

we're gonna you know step away from this

2024

01:27:21,169 --> 01:27:19,739

part of the uh the operation of course

2025

01:27:23,570 --> 01:27:21,179

we'll keep an eye on it make sure we

2026

01:27:24,950 --> 01:27:23,580

that nothing uh that nothing happens

2027

01:27:26,510 --> 01:27:24,960

that we don't make you aware of while

2028

01:27:27,950 --> 01:27:26,520

they're working on that but we want to

2029

01:27:31,370 --> 01:27:27,960

take a little lighter moment right and

2030

01:27:33,890 --> 01:27:31,380

uh look at the stuffed toys that are

2031

01:27:35,810 --> 01:27:33,900

inside the crew we don't know what the

2032

01:27:39,350 --> 01:27:35,820

uh or at least most people don't know

2033

01:27:42,110 --> 01:27:39,360

what's inside uh crew fives uh capsule

2034

01:27:44,149 --> 01:27:42,120

at the moment but it has a purpose when

2035

01:27:46,669 --> 01:27:44,159

the toy starts floating the strapped in

2036

01:27:49,310 --> 01:27:46,679

crew has confirmation they've reached

2037

01:27:51,470 --> 01:27:49,320

microgravity the toy is called a zero g

2038

01:27:54,590 --> 01:27:51,480

indicator and there's been a half dozen

2039

01:27:56,870 --> 01:27:54,600

or so on Dragon so far starting with

2040

01:27:59,390 --> 01:27:56,880

this little guy who can forget plush

2041

01:28:01,910 --> 01:27:59,400

Earth floating around by himself on the

2042

01:28:03,590 --> 01:28:01,920

first uncrewed test flight in 2017

2043

01:28:05,510 --> 01:28:03,600

called demo one

2044

01:28:06,770 --> 01:28:05,520

and that's Adam McLean there she was the

2045

01:28:08,450 --> 01:28:06,780

one that received it and that was

2046

01:28:10,490 --> 01:28:08,460

followed up by a sequin bedazzled

2047

01:28:12,770 --> 01:28:10,500

dinosaur named Tremor picked out by

2048

01:28:15,470 --> 01:28:12,780

those fellows right there Bob and Doug

2049

01:28:18,590 --> 01:28:15,480

Doug Hurley's son jack

2050

01:28:23,209 --> 01:28:18,600

and Bob's son Theo crew one then took a

2051  
01:28:25,490 --> 01:28:23,219  
toy baby grogu with them to the uh first

2052  
01:28:28,070 --> 01:28:25,500  
four-person crew when they reached space

2053  
01:28:30,649 --> 01:28:28,080  
but since then well it's been all

2054  
01:28:33,950 --> 01:28:30,659  
stuffed animals a penguin for crew two

2055  
01:28:36,770 --> 01:28:33,960  
and a turtle for crew three and a turtle

2056  
01:28:37,729 --> 01:28:36,780  
and a chimp for crew four as you can see

2057  
01:28:40,550 --> 01:28:37,739  
there

2058  
01:28:42,649 --> 01:28:40,560  
and so right here on set Bob was kind

2059  
01:28:45,830 --> 01:28:42,659  
enough to bring Tremor with him that you

2060  
01:28:47,990 --> 01:28:45,840  
saw floating around in his uh capsule uh

2061  
01:28:49,850 --> 01:28:48,000  
this is actually Tremor the one that

2062  
01:28:51,590 --> 01:28:49,860  
went up into space that's true Dale this

2063  
01:28:54,169 --> 01:28:51,600

is the actual trimmer it's got the

2064

01:28:55,970 --> 01:28:54,179

tether still installed if you will that

2065

01:28:57,530 --> 01:28:55,980

we use to keep track of it so that it

2066

01:29:00,290 --> 01:28:57,540

didn't get lost on board the space

2067

01:29:02,209 --> 01:29:00,300

station or float too far away basics for

2068

01:29:03,649 --> 01:29:02,219

suit leak checks

2069

01:29:07,129 --> 01:29:03,659

there they go starting up the Super

2070

01:29:08,990 --> 01:29:07,139

League checks again go ahead Mike

2071

01:29:10,430 --> 01:29:09,000

all right Josh that completes the

2072

01:29:12,110 --> 01:29:10,440

troubleshooting actions we wanted to

2073

01:29:13,729 --> 01:29:12,120

take so we verified that your umbilical

2074

01:29:15,890 --> 01:29:13,739

has been reseeded and your zippers are

2075

01:29:18,229 --> 01:29:15,900

closed given that we are recommending

2076

01:29:21,410 --> 01:29:18,239

that we are that we that you proceed

2077

01:29:22,910 --> 01:29:21,420

back to section three of 4.100 and

2078

01:29:24,709 --> 01:29:22,920

re-perform the suit leak check

2079

01:29:27,709 --> 01:29:24,719

preparation and suit leak checks how

2080

01:29:32,689 --> 01:29:29,930

okay Dragon copies we're gonna step into

2081

01:29:34,490 --> 01:29:32,699

section three of 4.100 and we'll let you

2082

01:29:36,950 --> 01:29:34,500

know when we're ready to re-perform the

2083

01:29:39,590 --> 01:29:36,960

suit leak chest

2084

01:29:41,750 --> 01:29:39,600

good read back

2085

01:29:43,490 --> 01:29:41,760

all right so they're gonna recheck those

2086

01:29:45,709 --> 01:29:43,500

suits and while they do that really

2087

01:29:49,790 --> 01:29:45,719

quickly how did how did your son choose

2088

01:29:51,590 --> 01:29:49,800

a bedazzled sequined uh dinosaur for

2089

01:29:53,149 --> 01:29:51,600

well Daryl you know you're never no

2090

01:29:55,430 --> 01:29:53,159

telling what goes through the minds of

2091

01:29:58,610 --> 01:29:55,440

two uh Young Elementary School boys uh

2092

01:30:00,410 --> 01:29:58,620

my son Theo and Doug's son jack but they

2093

01:30:02,149 --> 01:30:00,420

had a collection and dinosaurs were near

2094

01:30:03,649 --> 01:30:02,159

and dear to their hearts they went

2095

01:30:04,610 --> 01:30:03,659

through the collections that they had in

2096

01:30:07,070 --> 01:30:04,620

front of them and they picked the

2097

01:30:08,390 --> 01:30:07,080

Apatosaurus trimmer and so I'm glad that

2098

01:30:10,129 --> 01:30:08,400

some other folks have been able to

2099

01:30:12,050 --> 01:30:10,139

follow along with that tradition and be

2100

01:30:14,149 --> 01:30:12,060

able to excite a couple of kids if you

2101  
01:30:16,189 --> 01:30:14,159  
will about you know flying in space even

2102  
01:30:18,110 --> 01:30:16,199  
if it's for a stuffed animal it's great

2103  
01:30:19,610 --> 01:30:18,120  
to inspire the younger Generations about

2104  
01:30:21,229 --> 01:30:19,620  
space with something that they can

2105  
01:30:23,330 --> 01:30:21,239  
access and can you confirm that all the

2106  
01:30:25,310 --> 01:30:23,340  
sequins are still there I I can't

2107  
01:30:27,169 --> 01:30:25,320  
confirm and I do know that the teams

2108  
01:30:28,970 --> 01:30:27,179  
look really closely at each of the zero

2109  
01:30:31,310 --> 01:30:28,980  
g indicators to make sure they're

2110  
01:30:33,530 --> 01:30:31,320  
compatible with the SpaceX crew dragons

2111  
01:30:35,510 --> 01:30:33,540  
environment as well as the space station

2112  
01:30:37,370 --> 01:30:35,520  
environment and so we got approval and

2113  
01:30:40,189 --> 01:30:37,380

we were able to take the Apatosaurus

2114

01:30:42,590 --> 01:30:40,199

trimmer with us into space I said and it

2115

01:30:44,510 --> 01:30:42,600

lives now in the Lincoln household crew

2116

01:30:47,629 --> 01:30:44,520

5 is the latest launch by Kennedy's

2117

01:30:53,870 --> 01:30:47,639

commercial crew program and there is

2118

01:30:59,030 --> 01:30:56,090

copy that Dragon you are go for section

2119

01:31:04,250 --> 01:30:59,040

four suit League check

2120

01:31:07,669 --> 01:31:05,810

the communication confirming they're

2121

01:31:09,890 --> 01:31:07,679

going to restart the suit League check

2122

01:31:12,410 --> 01:31:09,900

Bob Ben can tell me that the suits

2123

01:31:14,570 --> 01:31:12,420

inflate just a little bit

2124

01:31:16,310 --> 01:31:14,580

as they make that check

2125

01:31:18,050 --> 01:31:16,320

in the meantime we'll take an interview

2126  
01:31:19,910 --> 01:31:18,060  
now and

2127  
01:31:22,910 --> 01:31:19,920  
check in with Kennedy's commercial crew

2128  
01:31:24,590 --> 01:31:22,920  
program it was created in 2011. and has

2129  
01:31:26,510 --> 01:31:24,600  
been flying astronauts from American

2130  
01:31:28,729 --> 01:31:26,520  
soil to the International Space Station

2131  
01:31:31,070 --> 01:31:28,739  
for the last two years let's bring in

2132  
01:31:33,590 --> 01:31:31,080  
NASA's Megan Cruz who's with Kennedy

2133  
01:31:35,030 --> 01:31:33,600  
Center Director Janet Petro hi I'm Daryl

2134  
01:31:36,530 --> 01:31:35,040  
thank you so much Janet it's always so

2135  
01:31:38,149 --> 01:31:36,540  
great to have you here especially for a

2136  
01:31:41,209 --> 01:31:38,159  
day like today you know we're about to

2137  
01:31:42,950 --> 01:31:41,219  
launch this new crew to the ISS how do

2138  
01:31:45,050 --> 01:31:42,960

you feel about Kennedy again playing

2139

01:31:47,209 --> 01:31:45,060

this important role in continuing what

2140

01:31:49,189 --> 01:31:47,219

we do on the space Oh well thank you so

2141

01:31:51,290 --> 01:31:49,199

much Megan for the question and as you

2142

01:31:53,090 --> 01:31:51,300

know you know Kennedy has a very long

2143

01:31:55,189 --> 01:31:53,100

history of doing really some incredible

2144

01:31:57,470 --> 01:31:55,199

things and of course we were established

2145

01:31:59,930 --> 01:31:57,480

60 years ago to do the incredible

2146

01:32:02,390 --> 01:31:59,940

mission of Landing a man on the moon and

2147

01:32:05,270 --> 01:32:02,400

then returning him safely and in the six

2148

01:32:07,189 --> 01:32:05,280

decades since then we've been doing an

2149

01:32:08,870 --> 01:32:07,199

incredible amount of impactful missions

2150

01:32:11,629 --> 01:32:08,880

and a lot of those missions have really

2151  
01:32:15,229 --> 01:32:11,639  
helped what we do here on Earth and for

2152  
01:32:17,090 --> 01:32:15,239  
the benefit of mankind here on Earth you

2153  
01:32:18,649 --> 01:32:17,100  
know that on orbiting laboratory that we

2154  
01:32:20,990 --> 01:32:18,659  
have out there up there is doing

2155  
01:32:22,669 --> 01:32:21,000  
incredible science and technology and

2156  
01:32:24,590 --> 01:32:22,679  
research that's really benefit getting

2157  
01:32:26,330 --> 01:32:24,600  
humankind here yeah yeah talk to us

2158  
01:32:28,370 --> 01:32:26,340  
about some of the things that that we've

2159  
01:32:29,990 --> 01:32:28,380  
been able to change and impact here on

2160  
01:32:31,250 --> 01:32:30,000  
Earth because we are launching and

2161  
01:32:33,290 --> 01:32:31,260  
because of what we're doing here at

2162  
01:32:35,450 --> 01:32:33,300  
candidates yeah so

2163  
01:32:38,570 --> 01:32:35,460

um it's incredible to think that 24

2164

01:32:39,890 --> 01:32:38,580

years ago was the first uh section the

2165

01:32:42,290 --> 01:32:39,900

module of the International Space

2166

01:32:44,810 --> 01:32:42,300

Station called Unity which was launched

2167

01:32:47,689 --> 01:32:44,820

and in that time since then we've had

2168

01:32:49,370 --> 01:32:47,699

more than 20 years of a human continuous

2169

01:32:51,709 --> 01:32:49,380

presence on the International Space

2170

01:32:53,750 --> 01:32:51,719

Station and every single time we launch

2171

01:32:56,870 --> 01:32:53,760

a vehicle whether it's a cargo or crew

2172

01:32:59,270 --> 01:32:56,880

we send up science and cargo and

2173

01:33:01,310 --> 01:32:59,280

payloads where we do science research

2174

01:33:03,350 --> 01:33:01,320

and Technology development and that and

2175

01:33:04,810 --> 01:33:03,360

all of that not only benefits what we do

2176

01:33:07,910 --> 01:33:04,820

here on Earth

2177

01:33:10,189 --> 01:33:07,920

promoting technology and and bettering

2178

01:33:11,810 --> 01:33:10,199

our life here but also helps us to look

2179

01:33:14,270 --> 01:33:11,820

forward to when we go back to the moon

2180

01:33:16,669 --> 01:33:14,280

and then on to Mars I'll talk about a

2181

01:33:18,770 --> 01:33:16,679

few projects that we do here at Kennedy

2182

01:33:20,629 --> 01:33:18,780

that I'm really proud of one is the m

2183

01:33:23,390 --> 01:33:20,639

solo it's a commercial off-the-shelf

2184

01:33:26,330 --> 01:33:23,400

Mass spectrometer um that'll help us

2185

01:33:30,050 --> 01:33:26,340

seek out and search for ice on the lunar

2186

01:33:32,030 --> 01:33:30,060

surface and then of course we do we have

2187

01:33:34,129 --> 01:33:32,040

the experts resident here at Kennedy for

2188

01:33:35,570 --> 01:33:34,139

plant biology and as we're going to be

2189

01:33:38,270 --> 01:33:35,580

sending our astronauts further and

2190

01:33:39,530 --> 01:33:38,280

further into space uh to the moon and uh

2191

01:33:40,910 --> 01:33:39,540

and then on to Mars you know they're

2192

01:33:42,709 --> 01:33:40,920

going to want some fresh food and so

2193

01:33:45,890 --> 01:33:42,719

that plant research is really going to

2194

01:33:47,450 --> 01:33:45,900

help enable that to happen yeah and of

2195

01:33:48,890 --> 01:33:47,460

course we're alluding to Artemis one you

2196

01:33:50,750 --> 01:33:48,900

know right behind us is the iconic

2197

01:33:53,030 --> 01:33:50,760

Vehicle Assembly Building inside there

2198

01:33:55,129 --> 01:33:53,040

is our Artemis one Moon rocket how

2199

01:33:56,990 --> 01:33:55,139

excited are you for a launch later this

2200

01:33:59,149 --> 01:33:57,000

year and just excited for for again

2201  
01:34:01,669 --> 01:33:59,159  
Kennedy's role in deep space exploration

2202  
01:34:04,010 --> 01:34:01,679  
yeah it's it's an incredible honor to be

2203  
01:34:05,990 --> 01:34:04,020  
here leading the center for that really

2204  
01:34:08,030 --> 01:34:06,000  
really historic Mission coming up and of

2205  
01:34:09,410 --> 01:34:08,040  
course Ian threw us a curve ball and so

2206  
01:34:13,370 --> 01:34:09,420  
we had you know we made the right

2207  
01:34:15,830 --> 01:34:13,380  
decision and went back into the VAB but

2208  
01:34:17,689 --> 01:34:15,840  
the energy around the center and even

2209  
01:34:19,430 --> 01:34:17,699  
across the whole Space Case is still

2210  
01:34:21,470 --> 01:34:19,440  
very palpable

2211  
01:34:23,270 --> 01:34:21,480  
um looking forward to that launch and

2212  
01:34:25,850 --> 01:34:23,280  
when it goes boy it's going to really

2213  
01:34:27,830 --> 01:34:25,860

rock the entire Space Coast and as I

2214

01:34:33,070 --> 01:34:27,840

said and copy that Dragon we saw the

2215

01:34:37,430 --> 01:34:35,990

and then on to Mars Janet thank you so

2216

01:34:40,010 --> 01:34:37,440

much I mean actually just heard a call

2217

01:34:43,370 --> 01:34:40,020

out there we are going to proceed with

2218

01:34:45,890 --> 01:34:43,380

the count uh and move into section five

2219

01:34:47,330 --> 01:34:45,900

of four side hash closure And Delay any

2220

01:34:52,310 --> 01:34:47,340

other troubleshooting steps until we get

2221

01:34:57,110 --> 01:34:55,010

okay that's great news dragons copy and

2222

01:35:00,470 --> 01:34:57,120

we are going to continue into section

2223

01:35:04,129 --> 01:35:00,480

three of 4.100.

2224

01:35:05,930 --> 01:35:04,139

sometimes it's inside of 4.100

2225

01:35:07,850 --> 01:35:05,940

. Jenna thank you so much so sorry about

2226

01:35:09,110 --> 01:35:07,860

that we did want to take a pause so that

2227

01:35:10,490 --> 01:35:09,120

people can hear again the operational

2228

01:35:12,229 --> 01:35:10,500

Loops that we're listening into but

2229

01:35:14,390 --> 01:35:12,239

thank you so much I hope to be watching

2230

01:35:16,669 --> 01:35:14,400

Artemis one with you soon thank you very

2231

01:35:18,169 --> 01:35:16,679

much Megan and go crew five perfect

2232

01:35:20,209 --> 01:35:18,179

Jenna thank you so much back to you

2233

01:35:23,390 --> 01:35:20,219

Daryl and Bob bye-bye thank you Megan

2234

01:35:25,430 --> 01:35:23,400

and Janet and as we were watching uh the

2235

01:35:27,950 --> 01:35:25,440

crew there we saw their suits inflate we

2236

01:35:30,770 --> 01:35:27,960

saw that uh that pressurization happen

2237

01:35:32,090 --> 01:35:30,780

and then you heard a report out and if

2238

01:35:34,129 --> 01:35:32,100

you could just recap that for me Bob

2239

01:35:36,470 --> 01:35:34,139

yeah I think the team saw similar

2240

01:35:38,030 --> 01:35:36,480

indications but uh it was uh four good

2241

01:35:39,830 --> 01:35:38,040

leak checks with similar performance

2242

01:35:41,330 --> 01:35:39,840

from all three suits uh that are all

2243

01:35:42,950 --> 01:35:41,340

four suits that they saw during that

2244

01:35:45,290 --> 01:35:42,960

first leak check that they accomplished

2245

01:35:47,629 --> 01:35:45,300

today inside the capsule

2246

01:35:48,890 --> 01:35:47,639

so they're going to continue with the

2247

01:35:50,450 --> 01:35:48,900

launch count and any further

2248

01:35:52,129 --> 01:35:50,460

troubleshooting will be delayed until

2249

01:35:55,370 --> 01:35:52,139

they're on orbit so we're ready to

2250

01:36:00,950 --> 01:35:57,950

and so up next you can see there is the

2251

01:36:02,750 --> 01:36:00,960

closure of the hatch

2252

01:36:06,709 --> 01:36:02,760

and the closeout team will begin

2253

01:36:10,250 --> 01:36:06,719

performing that there they are

2254

01:36:12,649 --> 01:36:10,260

the hatch is above the entryway

2255

01:36:15,229 --> 01:36:12,659

into dragon

2256

01:36:19,010 --> 01:36:15,239

they'll remove the environmental

2257

01:36:25,129 --> 01:36:21,830

they'll document that seal

2258

01:36:27,110 --> 01:36:25,139

and put that on their mobile pads

2259

01:36:29,450 --> 01:36:27,120

and move through

2260

01:36:30,830 --> 01:36:29,460

the process

2261

01:36:32,990 --> 01:36:30,840

you know I always think of things like

2262

01:36:35,390 --> 01:36:33,000

hatch closure as closing the door and

2263

01:36:37,129 --> 01:36:35,400

it's done in an instant but the closure

2264

01:36:39,470 --> 01:36:37,139

of the hatch on a spacecraft is done

2265

01:36:41,390 --> 01:36:39,480

very carefully with a lot of meticulous

2266

01:36:44,030 --> 01:36:41,400

steps to ensure that that environmental

2267

01:36:45,229 --> 01:36:44,040

seal is uh just pristine and they are

2268

01:36:46,490 --> 01:36:45,239

going to get a good seal when they close

2269

01:36:48,770 --> 01:36:46,500

it up

2270

01:36:50,570 --> 01:36:48,780

you had the tech go over it and in back

2271

01:36:53,390 --> 01:36:50,580

into the spacecraft so

2272

01:36:56,330 --> 01:36:53,400

double check on that

2273

01:36:58,010 --> 01:36:56,340

they also document the seal

2274

01:37:00,110 --> 01:36:58,020

you'll see one of the texts take

2275

01:37:06,709 --> 01:37:00,120

pictures all the way around

2276

01:37:11,209 --> 01:37:08,750

and we can think some about that hatch

2277

01:37:13,010 --> 01:37:11,219

being closed and then it'll be reopened

2278

01:37:15,950 --> 01:37:13,020

when they come back at the end of their

2279

01:37:17,390 --> 01:37:15,960

mission after Splashdown and when the

2280

01:37:19,370 --> 01:37:17,400

when the vehicle is brought on board the

2281

01:37:20,870 --> 01:37:19,380

ship so it's going to stay close for a

2282

01:37:22,550 --> 01:37:20,880

long time if after they get it closed

2283

01:37:24,470 --> 01:37:22,560

for the spacecraft launch that's a great

2284

01:37:30,470 --> 01:37:24,480

point

2285

01:37:34,669 --> 01:37:32,750

Dragon closeout team is taking final

2286

01:37:36,950 --> 01:37:34,679

steps in preparation for side hatch

2287

01:37:39,290 --> 01:37:36,960

closure standby for transition to Pat

2288

01:37:41,990 --> 01:37:39,300

hatch closed ensure that all items are

2289

01:37:43,550 --> 01:37:42,000

secure from now through launch

2290

01:37:46,490 --> 01:37:43,560

and what is that Bob

2291

01:37:48,709 --> 01:37:46,500

it's just a protective piece of dragon

2292

01:37:51,100 --> 01:37:48,719

copy to make sure no fun or anything

2293

01:37:54,709 --> 01:37:51,110

falls down into that area

2294

01:37:57,709 --> 01:37:54,719

[Music]

2295

01:38:02,930 --> 01:38:00,649

so in some protective equipment for the

2296

01:38:04,490 --> 01:38:02,940

seal there on the on the spacecraft all

2297

01:38:06,890 --> 01:38:04,500

right very good we'll keep watching the

2298

01:38:08,750 --> 01:38:06,900

action and tracking the progress as we

2299

01:38:11,330 --> 01:38:08,760

head down towards launch T minus one

2300

01:38:12,770 --> 01:38:11,340

hour and 50 minutes until liftoff of

2301

01:38:14,930 --> 01:38:12,780

crew five

2302

01:38:17,030 --> 01:38:14,940

I want to head on out to Megan Cruz who

2303

01:38:18,709 --> 01:38:17,040

is with our NASA administrator Bill

2304

01:38:20,090 --> 01:38:18,719

Nelson

2305

01:38:22,370 --> 01:38:20,100

yes our honor to have you here

2306

01:38:23,750 --> 01:38:22,380

administrator thank you so much I want

2307

01:38:26,030 --> 01:38:23,760

to talk to you about how we've had this

2308

01:38:27,790 --> 01:38:26,040

continued presence on the ISS for 22

2309

01:38:32,270 --> 01:38:27,800

years what do you think of that Legacy

2310

01:38:34,970 --> 01:38:32,280

isn't that something uh think of the 3

2311

01:38:36,770 --> 01:38:34,980

000 investigations that we have done

2312

01:38:39,649 --> 01:38:36,780

scientific

2313

01:38:42,770 --> 01:38:39,659

uh things and and the innumerable things

2314

01:38:44,330 --> 01:38:42,780

that we've actually discovered doing all

2315

01:38:45,950 --> 01:38:44,340

of this science on the International

2316

01:38:48,410 --> 01:38:45,960

Space Station

2317

01:38:52,010 --> 01:38:48,420

of course it helps us train our

2318

01:38:54,649 --> 01:38:52,020

astronauts as we get ready to go fly to

2319

01:38:57,110 --> 01:38:54,659

the moon and then we're going to go to

2320

01:38:58,790 --> 01:38:57,120

Mars yeah it's such a unique and awesome

2321

01:39:00,770 --> 01:38:58,800

platform so yeah the fact that we can

2322

01:39:01,790 --> 01:39:00,780

have this continued presence is so so

2323

01:39:03,290 --> 01:39:01,800

great

2324

01:39:06,050 --> 01:39:03,300

um and you know crew 5 is this first

2325

01:39:08,090 --> 01:39:06,060

mission to resume integrated uh crew

2326

01:39:10,370 --> 01:39:08,100

flights to the space station with Ross

2327

01:39:11,990 --> 01:39:10,380

Cosmos integrated Crews have always been

2328

01:39:14,570 --> 01:39:12,000

the norm on the space station right

2329

01:39:16,030 --> 01:39:14,580

that's right because we built the Space

2330

01:39:19,629 --> 01:39:16,040

Station together

2331

01:39:22,129 --> 01:39:19,639

now with 15 Nations

2332

01:39:24,729 --> 01:39:22,139

particularly uh with the Russians

2333

01:39:29,209 --> 01:39:24,739

there's a Russian segment on the station

2334

01:39:33,169 --> 01:39:29,219

they provide the propulsion we the U.S

2335

01:39:37,010 --> 01:39:33,179

provides the electricity so for the

2336

01:39:40,010 --> 01:39:37,020

safety of all the crew as well as the

2337

01:39:42,770 --> 01:39:40,020

operation of the station we need both

2338

01:39:46,790 --> 01:39:42,780

there now particularly with regard to

2339

01:39:50,990 --> 01:39:46,800

safety uh if there were a problem for

2340

01:39:53,390 --> 01:39:51,000

example with one of our uh ability to

2341

01:39:56,689 --> 01:39:53,400

get to earth say we had a medical

2342

01:40:00,169 --> 01:39:56,699

emergency and had to get somebody to

2343

01:40:03,649 --> 01:40:00,179

Earth you need that integrated crew so

2344

01:40:06,530 --> 01:40:03,659

we can still operate both parts of the

2345

01:40:09,050 --> 01:40:06,540

space station so safety is a big reason

2346

01:40:11,450 --> 01:40:09,060

for us yeah and you know we are

2347

01:40:14,209 --> 01:40:11,460

launching uh today with the help of

2348

01:40:16,250 --> 01:40:14,219

SpaceX what do you think about uh the

2349

01:40:18,169 --> 01:40:16,260

fact that we've had such a wonderful uh

2350

01:40:19,490 --> 01:40:18,179

Cadence with SpaceX these last two years

2351  
01:40:22,310 --> 01:40:19,500  
with the with the commercial crew

2352  
01:40:24,350 --> 01:40:22,320  
program well SpaceX has been excellent

2353  
01:40:26,990 --> 01:40:24,360  
to work with and the proof's in the

2354  
01:40:28,490 --> 01:40:27,000  
pudding as a matter of fact what's

2355  
01:40:30,709 --> 01:40:28,500  
happening at the cape is just

2356  
01:40:33,470 --> 01:40:30,719  
unbelievable last night there was an

2357  
01:40:36,169 --> 01:40:33,480  
atlas launch today we're launching crew

2358  
01:40:38,750 --> 01:40:36,179  
to the station uh tomorrow they're going

2359  
01:40:43,250 --> 01:40:38,760  
to launch two communication satellites

2360  
01:40:45,830 --> 01:40:43,260  
all within the span of three days so

2361  
01:40:48,890 --> 01:40:45,840  
it's incredible but but SpaceX has

2362  
01:40:52,129 --> 01:40:48,900  
really been inventive creative they've

2363  
01:40:55,270 --> 01:40:52,139

been a good partner for NASA and it it

2364

01:40:57,590 --> 01:40:55,280

shows that this commercial

2365

01:41:00,290 --> 01:40:57,600

public-private partnership is actually

2366

01:41:02,390 --> 01:41:00,300

working yeah and now as we're under two

2367

01:41:03,830 --> 01:41:02,400

minutes uh it's a launch of of crew five

2368

01:41:05,030 --> 01:41:03,840

what do you have to say to the crew any

2369

01:41:06,770 --> 01:41:05,040

message for them

2370

01:41:07,310 --> 01:41:06,780

well not only

2371

01:41:13,129 --> 01:41:07,320

um

2372

01:41:14,570 --> 01:41:13,139

go dragon Go NASA but godspeed and two

2373

01:41:17,510 --> 01:41:14,580

hours to launch I misspoke I'm too

2374

01:41:18,830 --> 01:41:17,520

excited you are administrator thank you

2375

01:41:21,649 --> 01:41:18,840

so much I appreciate you being here

2376

01:41:27,430 --> 01:41:21,659

again check it back in with our partners

2377

01:41:32,030 --> 01:41:30,770

thanks Megan and when crew 5 arrives at

2378

01:41:34,430 --> 01:41:32,040

the space station tomorrow evening

2379

01:41:36,830 --> 01:41:34,440

they'll officially become Expedition 68

2380

01:41:38,750 --> 01:41:36,840

flight Engineers once on board they'll

2381

01:41:41,270 --> 01:41:38,760

do something known as a direct Handover

2382

01:41:42,890 --> 01:41:41,280

basically saying that crew 4 and crew 5

2383

01:41:46,010 --> 01:41:42,900

will be on board the station together

2384

01:41:48,410 --> 01:41:46,020

until crew 4 comes home next week

2385

01:41:49,910 --> 01:41:48,420

crew 4 will be able to give crew 5 and

2386

01:41:52,189 --> 01:41:49,920

orientation and show them the ropes

2387

01:41:55,070 --> 01:41:52,199

which will be particularly helpful for

2388

01:41:58,490 --> 01:41:55,080

first-time space Flyers Nicole Mann Josh

2389

01:42:00,649 --> 01:41:58,500

cassida and Anna kikuna

2390

01:42:02,570 --> 01:42:00,659

a direct Handover also helps ensure

2391

01:42:05,450 --> 01:42:02,580

continuous U.S presence on the space

2392

01:42:07,790 --> 01:42:05,460

station a record we've held almost 22

2393

01:42:10,010 --> 01:42:07,800

years the space station is an orbiting

2394

01:42:12,350 --> 01:42:10,020

laboratory and they will jump right into

2395

01:42:15,470 --> 01:42:12,360

research and investigations

2396

01:42:17,450 --> 01:42:15,480

now I'll toss it over to Daryl at the

2397

01:42:19,850 --> 01:42:17,460

Kennedy Space Center

2398

01:42:22,910 --> 01:42:19,860

with a little bit more of that science

2399

01:42:26,629 --> 01:42:22,920

Daryl absolutely thank you very much

2400

01:42:30,950 --> 01:42:28,790

and we continue to monitor the closure

2401

01:42:34,669 --> 01:42:30,960

of the hatch on the crew dragon

2402

01:42:38,570 --> 01:42:36,590

want to take a closer look now at some

2403

01:42:40,729 --> 01:42:38,580

of the life-changing science astronauts

2404

01:42:43,550 --> 01:42:40,739

are performing aboard the International

2405

01:42:47,750 --> 01:42:45,709

the International Space Station is a

2406

01:42:49,790 --> 01:42:47,760

state-of-the-art microgravity laboratory

2407

01:42:51,950 --> 01:42:49,800

that is unlocking discoveries not

2408

01:42:54,830 --> 01:42:51,960

possible on Earth and helping us push

2409

01:42:57,290 --> 01:42:54,840

farther into deep space every single day

2410

01:42:59,510 --> 01:42:57,300

we are answering big questions about

2411

01:43:00,830 --> 01:42:59,520

Earth and about space about where we

2412

01:43:02,689 --> 01:43:00,840

came from and about where we're going

2413

01:43:05,689 --> 01:43:02,699

but the other thing that we're doing is

2414

01:43:06,430 --> 01:43:05,699

we're learning more questions to ask

2415

01:43:08,629 --> 01:43:06,440

foreign

2416

01:43:11,030 --> 01:43:08,639

[Music]

2417

01:43:13,970 --> 01:43:11,040

microgravity turns almost everything we

2418

01:43:15,530 --> 01:43:13,980

know upside down liquids behave

2419

01:43:18,189 --> 01:43:15,540

completely differently

2420

01:43:20,930 --> 01:43:18,199

Fire Burns in New Waves

2421

01:43:22,850 --> 01:43:20,940

biological systems reveal surprises

2422

01:43:24,770 --> 01:43:22,860

there's a few things that may have made

2423

01:43:26,270 --> 01:43:24,780

me gasp out loud at bombard space

2424

01:43:28,729 --> 01:43:26,280

station watching heart cells actually

2425

01:43:30,890 --> 01:43:28,739

beat has been a pretty big one

2426

01:43:32,149 --> 01:43:30,900

we're studying ways to grow food in

2427

01:43:35,149 --> 01:43:32,159

microgravity

2428

01:43:37,609 --> 01:43:35,159

I gotta tell you these uh

2429

01:43:40,669 --> 01:43:37,619

these are pretty amazing we're learning

2430

01:43:42,590 --> 01:43:40,679

how human bodies react to life in space

2431

01:43:44,629 --> 01:43:42,600

and how to keep crew members safe and

2432

01:43:47,149 --> 01:43:44,639

strong on long duration exploration

2433

01:43:50,450 --> 01:43:47,159

missions deadlifts are awesome on Earth

2434

01:43:52,550 --> 01:43:50,460

they're also awesome in zero gravity

2435

01:43:54,590 --> 01:43:52,560

we're testing technologies that will be

2436

01:43:57,590 --> 01:43:54,600

critical to our return to the moon and

2437

01:43:59,750 --> 01:43:57,600

great leap to Mars

2438

01:44:01,810 --> 01:43:59,760

our research has contributed to medical

2439

01:44:04,550 --> 01:44:01,820

and social benefits on our home planet

2440

01:44:06,830 --> 01:44:04,560

allowing us to find new ways to combat

2441

01:44:09,169 --> 01:44:06,840

disease back on Earth and develop

2442

01:44:13,070 --> 01:44:09,179

Technologies to deliver clean water to

2443

01:44:18,109 --> 01:44:15,470

spectacular vantage point of more than

2444

01:44:20,209 --> 01:44:18,119

200 miles above our planet supports our

2445

01:44:23,390 --> 01:44:20,219

monitoring of Earth's climate natural

2446

01:44:25,430 --> 01:44:23,400

disasters and plant life the orbital

2447

01:44:27,410 --> 01:44:25,440

perspective that we have here on the ISS

2448

01:44:29,050 --> 01:44:27,420

is just absolutely amazing earth is

2449

01:44:32,390 --> 01:44:29,060

gorgeous

2450

01:44:34,850 --> 01:44:32,400

the growing new space economy so vital

2451  
01:44:38,450 --> 01:44:34,860  
to our continued progress in space is

2452  
01:44:41,450 --> 01:44:38,460  
flourishing in lower aborted

2453  
01:44:43,250 --> 01:44:41,460  
we're inspiring future Generations from

2454  
01:44:45,760 --> 01:44:43,260  
a platform that is one of the largest

2455  
01:44:47,330 --> 01:44:45,770  
International collaborations of our time

2456  
01:44:51,229 --> 01:44:47,340  
[Music]

2457  
01:44:52,189 --> 01:44:51,239  
we're doing science at 17 500 miles per

2458  
01:44:55,070 --> 01:44:52,199  
hour

2459  
01:44:57,530 --> 01:44:55,080  
I'm along for the ride

2460  
01:45:00,590 --> 01:44:57,540  
[Music]

2461  
01:45:03,649 --> 01:45:00,600  
so much about what these missions are

2462  
01:45:06,169 --> 01:45:03,659  
about is the science and even though Bob

2463  
01:45:07,910 --> 01:45:06,179

you were telling me test flight

2464

01:45:10,070 --> 01:45:07,920

um of course it was historic at the time

2465

01:45:11,990 --> 01:45:10,080

that was reestablishing America's

2466

01:45:13,850 --> 01:45:12,000

presence to launch from American soil

2467

01:45:15,890 --> 01:45:13,860

get to the space station it didn't have

2468

01:45:17,689 --> 01:45:15,900

a lot of science on your flight but when

2469

01:45:19,129 --> 01:45:17,699

you got up there there was a lot of

2470

01:45:21,530 --> 01:45:19,139

science to do right even a backlog

2471

01:45:23,149 --> 01:45:21,540

absolutely Daryl you know for my guest

2472

01:45:24,649 --> 01:45:23,159

for my launch guest even though it was a

2473

01:45:26,330 --> 01:45:24,659

test flight that we were headed to the

2474

01:45:29,689 --> 01:45:26,340

space station to check out a new vehicle

2475

01:45:31,729 --> 01:45:29,699

my t-shirt said because science and that

2476

01:45:33,649 --> 01:45:31,739

was the reason that we were going and I

2477

01:45:35,629 --> 01:45:33,659

was proud to be a part of the when I

2478

01:45:37,609 --> 01:45:35,639

arrived at space station of the science

2479

01:45:38,810 --> 01:45:37,619

that we were able to accomplish as you

2480

01:45:41,570 --> 01:45:38,820

mentioned there was a bit of a backlog

2481

01:45:44,330 --> 01:45:41,580

we had a single U.S crew member and Doug

2482

01:45:46,250 --> 01:45:44,340

and I were put into a service right away

2483

01:45:48,649 --> 01:45:46,260

trying to support getting the science

2484

01:45:50,629 --> 01:45:48,659

program back up and running and back at

2485

01:45:52,850 --> 01:45:50,639

full speed working hard on that science

2486

01:45:53,810 --> 01:45:52,860

just like our next guest who is joining

2487

01:45:55,609 --> 01:45:53,820

us now

2488

01:45:57,790 --> 01:45:55,619

we have Mike Roberts here with us he is

2489

01:46:00,350 --> 01:45:57,800

the chief scientist for the ISS National

2490

01:46:02,149 --> 01:46:00,360

Laboratory Mike thank you so much for

2491

01:46:04,010 --> 01:46:02,159

being here with us today it's a

2492

01:46:05,629 --> 01:46:04,020

beautiful day to launch and a good day

2493

01:46:07,189 --> 01:46:05,639

to talk about some of the science that's

2494

01:46:10,209 --> 01:46:07,199

on board you've got currently as I

2495

01:46:13,189 --> 01:46:10,219

understand 235 investigations on board

2496

01:46:14,870 --> 01:46:13,199

76 of them are new and you got a little

2497

01:46:16,910 --> 01:46:14,880

bit of them flying right on this rocket

2498

01:46:18,470 --> 01:46:16,920

here behind us yeah it certainly is a

2499

01:46:20,149 --> 01:46:18,480

beautiful day here today and we look

2500

01:46:22,910 --> 01:46:20,159

forward to getting the science off the

2501  
01:46:24,709 --> 01:46:22,920  
ground as Bob indicated it's a very busy

2502  
01:46:27,709 --> 01:46:24,719  
time up in orbit for the crew because

2503  
01:46:30,470 --> 01:46:27,719  
they are very busy not only maintaining

2504  
01:46:33,290 --> 01:46:30,480  
the science portfolio of of NASA so that

2505  
01:46:34,970 --> 01:46:33,300  
we can continue to live and operate in

2506  
01:46:37,850 --> 01:46:34,980  
space they're also conducting Science

2507  
01:46:39,649 --> 01:46:37,860  
and Space that benefits benefits us here

2508  
01:46:41,510 --> 01:46:39,659  
directly on Earth and that's an

2509  
01:46:43,729 --> 01:46:41,520  
important part of why the ISS National

2510  
01:46:45,590 --> 01:46:43,739  
Laboratory exists what are some of the

2511  
01:46:48,890 --> 01:46:45,600  
signs the crew 5 is working on

2512  
01:46:50,510 --> 01:46:48,900  
so as the crew goes up today and and uh

2513  
01:46:52,430 --> 01:46:50,520

docks the station they're going to be

2514

01:46:55,250 --> 01:46:52,440

engaged in a lot of research that

2515

01:46:57,050 --> 01:46:55,260

addresses medical needs here on Earth we

2516

01:46:58,970 --> 01:46:57,060

have Partnerships with the National

2517

01:47:00,109 --> 01:46:58,980

Institutes of Health through the

2518

01:47:02,450 --> 01:47:00,119

national Center for advancing

2519

01:47:04,070 --> 01:47:02,460

translational Sciences which is doing

2520

01:47:05,810 --> 01:47:04,080

some very important research that

2521

01:47:08,810 --> 01:47:05,820

leverages the access to persistent

2522

01:47:10,550 --> 01:47:08,820

microgravity debt environment as Bob I'm

2523

01:47:12,709 --> 01:47:10,560

sure experienced the microgravity

2524

01:47:14,570 --> 01:47:12,719

environment your body's physiology

2525

01:47:17,629 --> 01:47:14,580

adapts to that environment in different

2526

01:47:20,570 --> 01:47:17,639

ways and in some cases those effects of

2527

01:47:22,250 --> 01:47:20,580

microgravity on the body mimic the onset

2528

01:47:24,350 --> 01:47:22,260

and progression of disease and aging

2529

01:47:26,270 --> 01:47:24,360

here on Earth so the National Institutes

2530

01:47:29,390 --> 01:47:26,280

of Health is taking advantage of that by

2531

01:47:31,189 --> 01:47:29,400

sending small cells in tiny bioreactors

2532

01:47:33,649 --> 01:47:31,199

up to space to understand how those

2533

01:47:36,350 --> 01:47:33,659

individual systems respond to that

2534

01:47:38,270 --> 01:47:36,360

environment so that we can design more

2535

01:47:40,910 --> 01:47:38,280

effective Therapeutics for use here on

2536

01:47:42,770 --> 01:47:40,920

Earth we also have experiments launching

2537

01:47:45,290 --> 01:47:42,780

on crew 5 going up with the crew today

2538

01:47:47,930 --> 01:47:45,300

that are going to explore the effects of

2539

01:47:52,129 --> 01:47:47,940

microgravity on the gut microbiome

2540

01:47:53,629 --> 01:47:52,139

a company is uh involved with Los Alamos

2541

01:47:56,629 --> 01:47:53,639

National Laboratory so it's another

2542

01:47:59,390 --> 01:47:56,639

collaboration between ISS National Lab

2543

01:48:01,310 --> 01:47:59,400

Los Alamos National Lab and its Partners

2544

01:48:04,250 --> 01:48:01,320

to better understand how microgravity

2545

01:48:05,149 --> 01:48:04,260

impacts the gut microbiome and the human

2546

01:48:07,189 --> 01:48:05,159

body

2547

01:48:08,990 --> 01:48:07,199

microgravity certainly an impact on

2548

01:48:10,850 --> 01:48:09,000

astronauts the entire time they're out

2549

01:48:12,590 --> 01:48:10,860

there we've been studying this for so

2550

01:48:14,510 --> 01:48:12,600

long and it's great to see a study

2551

01:48:16,370 --> 01:48:14,520

that's uh looking at those internal

2552

01:48:19,370 --> 01:48:16,380

functions of the gut it'd be fascinating

2553

01:48:22,250 --> 01:48:19,380

to see what comes of that as we truck

2554

01:48:25,129 --> 01:48:22,260

along here I understand that we now have

2555

01:48:26,510 --> 01:48:25,139

science on board the actual crew 5

2556

01:48:28,609 --> 01:48:26,520

vehicle that's not something that's

2557

01:48:31,729 --> 01:48:28,619

always been capable of uh happening

2558

01:48:33,410 --> 01:48:31,739

right we do for ISS National Lab and all

2559

01:48:35,810 --> 01:48:33,420

of the sponsors the International Space

2560

01:48:38,149 --> 01:48:35,820

Station the availability of extra crew

2561

01:48:39,890 --> 01:48:38,159

members going up on Commercial crew has

2562

01:48:41,450 --> 01:48:39,900

been a significant Advantage we've

2563

01:48:43,070 --> 01:48:41,460

doubled the amount of time that's

2564

01:48:45,770 --> 01:48:43,080

available for crew to conduct science

2565

01:48:47,750 --> 01:48:45,780

but also we have the ability to utilize

2566

01:48:49,910 --> 01:48:47,760

the crew vehicles to get some science up

2567

01:48:52,609 --> 01:48:49,920

there that can fit within the confines

2568

01:48:54,830 --> 01:48:52,619

that's not occupied by the crew so while

2569

01:48:56,510 --> 01:48:54,840

most of our science and supplies still

2570

01:48:59,450 --> 01:48:56,520

go up on the commercial resupply

2571

01:49:01,070 --> 01:48:59,460

vehicles we're also able to utilize the

2572

01:49:02,990 --> 01:49:01,080

vehicles themselves that are taking the

2573

01:49:04,490 --> 01:49:03,000

crew up to get some expedited science up

2574

01:49:07,310 --> 01:49:04,500

and get it back and we're looking at

2575

01:49:08,750 --> 01:49:07,320

some video now of Lambda Vision if you

2576

01:49:11,109 --> 01:49:08,760

can tell me a little bit about that

2577

01:49:13,609 --> 01:49:11,119

another very important

2578

01:49:15,169 --> 01:49:13,619

development in space is the utilization

2579

01:49:17,750 --> 01:49:15,179

of space and access for commercial

2580

01:49:20,090 --> 01:49:17,760

companies so land division is a small

2581

01:49:23,090 --> 01:49:20,100

Sparta startup biotechnology company

2582

01:49:25,910 --> 01:49:23,100

that is pioneering the use of bacteria

2583

01:49:28,129 --> 01:49:25,920

rhodopsin a protein from bacteria that

2584

01:49:31,189 --> 01:49:28,139

can be used to manufacture artificial

2585

01:49:33,229 --> 01:49:31,199

retinas so lambdivision is utilizing the

2586

01:49:34,970 --> 01:49:33,239

absence of microgravity to improve their

2587

01:49:37,189 --> 01:49:34,980

ability to manufacture these artificial

2588

01:49:39,709 --> 01:49:37,199

retinas in space these artificial

2589

01:49:42,169 --> 01:49:39,719

retinas when they're approved for use by

2590

01:49:44,810 --> 01:49:42,179

the FDA will enable lamb division to

2591

01:49:47,330 --> 01:49:44,820

offer the availability to recover from

2592

01:49:49,310 --> 01:49:47,340

retinitis Pigmentosa and macular

2593

01:49:51,050 --> 01:49:49,320

degeneration here on Earth currently

2594

01:49:52,729 --> 01:49:51,060

there are no effective therapies for

2595

01:49:55,070 --> 01:49:52,739

that that recover full site or full

2596

01:49:56,090 --> 01:49:55,080

vision this technology offers that

2597

01:49:58,490 --> 01:49:56,100

advantage

2598

01:50:01,010 --> 01:49:58,500

offering a lot of Hope for people who

2599

01:50:02,270 --> 01:50:01,020

suffer from those diseases and so be

2600

01:50:04,729 --> 01:50:02,280

exciting to see what kind of results

2601  
01:50:06,350 --> 01:50:04,739  
come from that experiment it is and land

2602  
01:50:09,590 --> 01:50:06,360  
divisions had the opportunity through

2603  
01:50:12,109 --> 01:50:09,600  
ISS National Lab and and NASA to operate

2604  
01:50:15,470 --> 01:50:12,119  
four different experiments in space so

2605  
01:50:17,270 --> 01:50:15,480  
this new era of easy access to space for

2606  
01:50:20,030 --> 01:50:17,280  
supportive science that benefits here on

2607  
01:50:22,490 --> 01:50:20,040  
Earth is really turning into some new

2608  
01:50:24,410 --> 01:50:22,500  
great dividends for people on earth Mike

2609  
01:50:25,729 --> 01:50:24,420  
Roberts Chief scientist for the ISS

2610  
01:50:27,350 --> 01:50:25,739  
National Laboratory thanks for being

2611  
01:50:29,629 --> 01:50:27,360  
here and sharing your knowledge about

2612  
01:50:32,149 --> 01:50:29,639  
the science on board the ISS thanks

2613  
01:50:34,430 --> 01:50:32,159

Daryl all right as we continue to watch

2614

01:50:37,550 --> 01:50:34,440

the operation and our team check through

2615

01:50:38,990 --> 01:50:37,560

the Milestones here we will toss it back

2616

01:50:40,490 --> 01:50:39,000

out to Houston

2617

01:50:43,189 --> 01:50:40,500

actually we're going to throw it to

2618

01:50:47,450 --> 01:50:43,199

California and Hawthorne where Sandra

2619

01:50:52,430 --> 01:50:49,970

thanks dear Daryl earlier we did talk

2620

01:50:54,770 --> 01:50:52,440

about the progress that both NASA and

2621

01:50:56,870 --> 01:50:54,780

SpaceX have made in human space flight

2622

01:50:59,930 --> 01:50:56,880

since we first started flying dragon

2623

01:51:02,030 --> 01:50:59,940

regularly over 10 years ago so to

2624

01:51:04,370 --> 01:51:02,040

support our increasing number of human

2625

01:51:07,669 --> 01:51:04,380

space flight missions your spacesuit

2626

01:51:09,830 --> 01:51:07,679

team has been busy at work Jesse yes we

2627

01:51:12,050 --> 01:51:09,840

have you might be surprised to know that

2628

01:51:15,050 --> 01:51:12,060

the completion of the crew 5 suits Mark

2629

01:51:17,570 --> 01:51:15,060

spacex's 50th completed Iva or

2630

01:51:19,250 --> 01:51:17,580

intrapahicular activity suit including

2631

01:51:22,189 --> 01:51:19,260

development training and qualification

2632

01:51:24,350 --> 01:51:22,199

suits 30 of those suits were created for

2633

01:51:26,450 --> 01:51:24,360

flight this number is inclusive of the

2634

01:51:29,270 --> 01:51:26,460

suits that the crew 5 astronauts are

2635

01:51:30,830 --> 01:51:29,280

wearing today 17 of the 50 were built

2636

01:51:32,810 --> 01:51:30,840

and used for development and training

2637

01:51:35,270 --> 01:51:32,820

one was used to get our suit qualified

2638

01:51:36,950 --> 01:51:35,280

for space and we produce suits to

2639

01:51:39,350 --> 01:51:36,960

support the passengers for a couple

2640

01:51:41,930 --> 01:51:39,360

demonstration missions as well you may

2641

01:51:44,629 --> 01:51:41,940

recall Starman and Ripley

2642

01:51:48,109 --> 01:51:44,639

Starman flew on our first Falcon heavy

2643

01:51:51,229 --> 01:51:48,119

fight flight in 2018 and is still flying

2644

01:51:53,570 --> 01:51:51,239

around out in space and Ripley was the

2645

01:51:55,910 --> 01:51:53,580

anthropomorphic test device that flew on

2646

01:51:58,790 --> 01:51:55,920

demo 1 to help us collect lots of data

2647

01:52:01,609 --> 01:51:58,800

before flying Bob and Doug

2648

01:52:03,410 --> 01:52:01,619

and as a reminder this spacesuit that

2649

01:52:05,750 --> 01:52:03,420

you've seen the crew wearing throughout

2650

01:52:08,390 --> 01:52:05,760

operations today is an intra vehicular

2651  
01:52:11,149 --> 01:52:08,400  
activity suit designed for use inside

2652  
01:52:12,890 --> 01:52:11,159  
Dragon its primary function is to

2653  
01:52:15,410 --> 01:52:12,900  
protect the crew and the event of a

2654  
01:52:16,970 --> 01:52:15,420  
cabin depressurization now when the

2655  
01:52:19,669 --> 01:52:16,980  
astronauts move onto the International

2656  
01:52:22,370 --> 01:52:19,679  
Space Station following docking the

2657  
01:52:24,590 --> 01:52:22,380  
spacesuits will stay on board Dragon the

2658  
01:52:27,770 --> 01:52:24,600  
astronauts will then use NASA's extra

2659  
01:52:29,450 --> 01:52:27,780  
vehicular activity or Eva suit when

2660  
01:52:32,270 --> 01:52:29,460  
outside of the International Space

2661  
01:52:34,790 --> 01:52:32,280  
Station performing space rocks the suit

2662  
01:52:36,470 --> 01:52:34,800  
teams work tirelessly to make sure all

2663  
01:52:38,209 --> 01:52:36,480

of our astronauts have a positive

2664

01:52:40,310 --> 01:52:38,219

experience while wearing our spacesuits

2665

01:52:42,169 --> 01:52:40,320

and ensures the highest level of safety

2666

01:52:44,030 --> 01:52:42,179

now similar to how we innovate and

2667

01:52:46,310 --> 01:52:44,040

further develop our launch vehicles with

2668

01:52:48,050 --> 01:52:46,320

each tester Mission our spacesuits have

2669

01:52:49,970 --> 01:52:48,060

continued to evolve since NASA

2670

01:52:52,430 --> 01:52:49,980

astronauts Bob benkin and Doug Hurley

2671

01:52:54,229 --> 01:52:52,440

first Don them for demo 2. some

2672

01:52:56,870 --> 01:52:54,239

improvements include the patterning

2673

01:52:58,550 --> 01:52:56,880

process for better fit patterns are the

2674

01:53:01,010 --> 01:52:58,560

individual pieces of fabric that go

2675

01:53:02,629 --> 01:53:01,020

together to create the suit our process

2676

01:53:04,850 --> 01:53:02,639

involves taking measurements generating

2677

01:53:06,350 --> 01:53:04,860

patterns based on those measurements for

2678

01:53:08,090 --> 01:53:06,360

each layer of the suit and then

2679

01:53:10,189 --> 01:53:08,100

performing fit checks where we put

2680

01:53:12,109 --> 01:53:10,199

together non-flight quick versions of

2681

01:53:13,850 --> 01:53:12,119

the different layers of the suit to make

2682

01:53:15,890 --> 01:53:13,860

sure that they fit correctly before

2683

01:53:18,109 --> 01:53:15,900

making the flight suit

2684

01:53:19,669 --> 01:53:18,119

and we've also continued custom patterns

2685

01:53:21,890 --> 01:53:19,679

for each crew member and have made

2686

01:53:23,450 --> 01:53:21,900

significant reliability upgrades in the

2687

01:53:26,030 --> 01:53:23,460

spacesuits

2688

01:53:28,490 --> 01:53:26,040

and while the suit is a single piece

2689

01:53:31,910 --> 01:53:28,500

which means the helmet gloves and boots

2690

01:53:36,410 --> 01:53:31,920

all remain attached as one piece with us

2691

01:53:38,450 --> 01:53:36,420

today is a SpaceX helmet lent To Us by

2692

01:53:41,030 --> 01:53:38,460

the spacesuit team and you can see it

2693

01:53:43,850 --> 01:53:41,040

here on the table right now that's right

2694

01:53:46,370 --> 01:53:43,860

Sandra this helmet is made from 3D

2695

01:53:48,890 --> 01:53:46,380

printed nylon and has a visor that

2696

01:53:54,850 --> 01:53:48,900

pivots open and Dragon SpaceX for side

2697

01:54:01,669 --> 01:53:59,030

okay Josh uh we identified a potential

2698

01:54:03,649 --> 01:54:01,679

piece of thought on the side hatch seal

2699

01:54:05,870 --> 01:54:03,659

when we were inspecting everything so

2700

01:54:08,390 --> 01:54:05,880

the closeout team is proceeding to open

2701  
01:54:10,669 --> 01:54:08,400  
the hatch to address that before closing

2702  
01:54:13,310 --> 01:54:10,679  
and re-performing the leak check

2703  
01:54:16,490 --> 01:54:13,320  
for Big Picture awareness we still have

2704  
01:54:18,350 --> 01:54:16,500  
approximately uh 12 minutes remaining in

2705  
01:54:20,629 --> 01:54:18,360  
the margin for this timer to perform

2706  
01:54:22,250 --> 01:54:20,639  
this action so we'll be able to run

2707  
01:54:26,030 --> 01:54:22,260  
through everything with uh out issue

2708  
01:54:30,229 --> 01:54:28,550  
okay Dragon copies will be opened up to

2709  
01:54:32,149 --> 01:54:30,239  
the side hatch and take a look at the

2710  
01:54:34,970 --> 01:54:32,159  
quad and we've got 12 minutes of Mark

2711  
01:54:34,980 --> 01:54:38,570  
good feedback

2712  
01:54:43,550 --> 01:54:41,270  
so we just got an update we were closing

2713  
01:54:45,910 --> 01:54:43,560

the hatch it sounds like they do need to

2714

01:54:48,530 --> 01:54:45,920

do another inspection reopen the hatch

2715

01:54:50,870 --> 01:54:48,540

reinspect uh the hatch lining make sure

2716

01:54:53,930 --> 01:54:50,880

that there's no fod caught in there and

2717

01:54:56,330 --> 01:54:53,940

then perform the procedure to reclose

2718

01:54:57,830 --> 01:54:56,340

the hatch one more time and it sounds

2719

01:54:59,990 --> 01:54:57,840

like we do have some margin

2720

01:55:02,450 --> 01:55:00,000

um 12 minutes of margin so we are still

2721

01:55:05,270 --> 01:55:02,460

on track for liftoff today

2722

01:55:08,030 --> 01:55:05,280

uh but as we were mentioning the helmet

2723

01:55:09,890 --> 01:55:08,040

is made from 3D printed nylon and has a

2724

01:55:11,689 --> 01:55:09,900

visor that pivots open it's also

2725

01:55:13,609 --> 01:55:11,699

equipped with a microphone which is

2726  
01:55:15,169 --> 01:55:13,619  
embedded into the helmet which allows

2727  
01:55:17,270 --> 01:55:15,179  
the crew to communicate with the mission

2728  
01:55:19,189 --> 01:55:17,280  
operators while suited and seated in

2729  
01:55:20,870 --> 01:55:19,199  
Dragon that's right and those

2730  
01:55:23,209 --> 01:55:20,880  
communication systems that you were

2731  
01:55:25,609 --> 01:55:23,219  
talking about you can see inside there

2732  
01:55:26,990 --> 01:55:25,619  
not inside this helmet because it's not

2733  
01:55:29,510 --> 01:55:27,000  
going to be used throughout the mission

2734  
01:55:32,149 --> 01:55:29,520  
but the crew does have the ability to

2735  
01:55:35,209 --> 01:55:32,159  
hear via the helmet and you can see the

2736  
01:55:36,350 --> 01:55:35,219  
slots right there for for that

2737  
01:55:38,689 --> 01:55:36,360  
capability

2738  
01:55:40,609 --> 01:55:38,699

yeah

2739

01:55:42,770 --> 01:55:40,619

um and so now we're gonna check in with

2740

01:55:45,530 --> 01:55:42,780

Kate while the team is working on the

2741

01:55:47,689 --> 01:55:45,540

hatch so Kate how's it going over there

2742

01:55:49,970 --> 01:55:47,699

thanks Jesse yeah it's super cool to see

2743

01:55:52,310 --> 01:55:49,980

that helmet up close uh now turning our

2744

01:55:54,470 --> 01:55:52,320

attention back to the progress with the

2745

01:55:58,070 --> 01:55:54,480

integrated launch teams uh we are coming

2746

01:56:00,050 --> 01:55:58,080

up on T minus one hour and 32 minutes as

2747

01:56:03,050 --> 01:56:00,060

we just heard a couple of moments ago

2748

01:56:06,229 --> 01:56:03,060

the closeout team identified a little

2749

01:56:08,810 --> 01:56:06,239

bit of fod in that hatch seal so

2750

01:56:10,790 --> 01:56:08,820

basically the process is we close the

2751

01:56:14,030 --> 01:56:10,800

side hatch we inflate the seal around

2752

01:56:15,830 --> 01:56:14,040

the hatch to a certain pressure and then

2753

01:56:18,709 --> 01:56:15,840

we hold that pressure to see if there's

2754

01:56:20,090 --> 01:56:18,719

any Decay or leak and if there is that's

2755

01:56:21,709 --> 01:56:20,100

an indication that something is in the

2756

01:56:23,750 --> 01:56:21,719

seal and that's what occurred today so

2757

01:56:25,729 --> 01:56:23,760

the team is in the process of reopening

2758

01:56:27,649 --> 01:56:25,739

the hatch they'll clean the seal Out

2759

01:56:31,129 --> 01:56:27,659

close it and inflate the seal and

2760

01:56:32,810 --> 01:56:31,139

re-perform that leak check so normal as

2761

01:56:34,970 --> 01:56:32,820

we heard mentioned we do have 12 minutes

2762

01:56:37,129 --> 01:56:34,980

of margin in the launch countdown as

2763

01:56:39,290 --> 01:56:37,139

I've mentioned before the countdown is

2764

01:56:41,990 --> 01:56:39,300

to make sure that everybody is all the

2765

01:56:43,669 --> 01:56:42,000

integrated launch teams are aligned and

2766

01:56:45,290 --> 01:56:43,679

we do build margin in in order to make

2767

01:56:47,629 --> 01:56:45,300

sure that we can deal with things like

2768

01:56:51,109 --> 01:56:47,639

this as they come up similar to whenever

2769

01:56:53,209 --> 01:56:51,119

uh pilot Josh cassida had a little bit

2770

01:56:56,570 --> 01:56:53,219

of Decay or excuse me not Decay a lower

2771

01:56:58,790 --> 01:56:56,580

pressure value red on his suit so we

2772

01:57:02,030 --> 01:56:58,800

rechecked the uh the suit pressure there

2773

01:57:04,430 --> 01:57:02,040

as well so working through those uh no

2774

01:57:06,770 --> 01:57:04,440

issues we're still tracking for an on uh

2775

01:57:09,169 --> 01:57:06,780

for launch today and as you can see the

2776

01:57:10,850 --> 01:57:09,179

crew seated there comfortably in the

2777

01:57:14,270 --> 01:57:10,860

capsule it looks like Anna might be

2778

01:57:15,709 --> 01:57:14,280

taking a little uh pre-launch nap uh I

2779

01:57:17,750 --> 01:57:15,719

don't know if I personally would be able

2780

01:57:20,709 --> 01:57:17,760

to pull that off so I really admire the

2781

01:57:24,169 --> 01:57:20,719

calmness that she's demonstrating today

2782

01:57:27,350 --> 01:57:24,179

so once that hatch is closed back up and

2783

01:57:29,089 --> 01:57:27,360

we successfully uh leak check on that uh

2784

01:57:31,729 --> 01:57:29,099

we should be good to go uh we see some

2785

01:57:34,310 --> 01:57:31,739

movement there she's not napping as for

2786

01:57:36,589 --> 01:57:34,320

the launch Engineers they are located in

2787

01:57:38,510 --> 01:57:36,599

firing room four in the NASA launch

2788

01:57:40,729 --> 01:57:38,520

control center at Kennedy Space Center

2789

01:57:43,310 --> 01:57:40,739

they have a view through their large

2790

01:57:45,410 --> 01:57:43,320

Windows of pad 39a which is located just

2791

01:57:48,290 --> 01:57:45,420

five kilometers east of them uh

2792

01:57:50,450 --> 01:57:48,300

currently the Falcon 9 team is loading

2793

01:57:52,669 --> 01:57:50,460

helium and nitrogen gas into storage

2794

01:57:55,430 --> 01:57:52,679

bottles on the launch vehicle you see on

2795

01:57:57,649 --> 01:57:55,440

your screen firing room for there now RF

2796

01:57:59,709 --> 01:57:57,659

checkouts are now also complete and the

2797

01:58:02,870 --> 01:57:59,719

final review of vehicle testing

2798

01:58:05,870 --> 01:58:02,880

performed earlier today is underway so

2799

01:58:08,689 --> 01:58:05,880

the SpaceX chief engineer who for this

2800

01:58:11,030 --> 01:58:08,699

mission is Dan Alex he will check in

2801  
01:58:13,609 --> 01:58:11,040  
with the team at T minus 80 minutes to

2802  
01:58:15,709 --> 01:58:13,619  
verify that we are good to continue with

2803  
01:58:18,770 --> 01:58:15,719  
the countdown now the next major

2804  
01:58:21,470 --> 01:58:18,780  
activity we will flow a small amount of

2805  
01:58:24,589 --> 01:58:21,480  
fuel into the first stage to prime those

2806  
01:58:26,450 --> 01:58:24,599  
Merlin 1D engines for ignition the team

2807  
01:58:28,669 --> 01:58:26,460  
is also monitoring Fuel and liquid

2808  
01:58:30,169 --> 01:58:28,679  
oxygen loading preparations ensuring

2809  
01:58:33,050 --> 01:58:30,179  
that the propellants in the ground takes

2810  
01:58:35,149 --> 01:58:33,060  
are correctly chilled to fire loading

2811  
01:58:38,030 --> 01:58:35,159  
prior to loading them onto Falcon 9.

2812  
01:58:41,390 --> 01:58:38,040  
propellant mode will begin at T minus 35

2813  
01:58:43,070 --> 01:58:41,400

minutes now at just under T minus one

2814

01:58:45,290 --> 01:58:43,080

hour and 30 minutes ourselves the

2815

01:58:47,930 --> 01:58:45,300

weather continues to be green as you can

2816

01:58:50,750 --> 01:58:47,940

see see beautiful clear day at Pad 39a

2817

01:58:53,330 --> 01:58:50,760

but we are of course monitoring whether

2818

01:58:56,149 --> 01:58:53,340

at downrange as well and that continues

2819

01:58:58,970 --> 01:58:56,159

to look good and the range remains green

2820

01:59:00,890 --> 01:58:58,980

and ready to support so all that being

2821

01:59:03,290 --> 01:59:00,900

said we are on track to launch in under

2822

01:59:05,030 --> 01:59:03,300

an hour and a half from now uh and we

2823

01:59:07,070 --> 01:59:05,040

are certainly getting excited here in

2824

01:59:09,470 --> 01:59:07,080

Hawthorne uh with that let's turn it

2825

01:59:10,729 --> 01:59:09,480

back over to Daryl and Bob at Kennedy

2826

01:59:12,229 --> 01:59:10,739

Space Center how's it going over there

2827

01:59:14,270 --> 01:59:12,239

guys all right thank you very much Kate

2828

01:59:16,450 --> 01:59:14,280

and we continue to monitor the work that

2829

01:59:20,450 --> 01:59:16,460

the closeout team is doing right there

2830

01:59:22,370 --> 01:59:20,460

checking rechecking the seal

2831

01:59:25,250 --> 01:59:22,380

to dragon

2832

01:59:27,290 --> 01:59:25,260

between the hatch and the spacecraft and

2833

01:59:29,030 --> 01:59:27,300

there you see the text making that

2834

01:59:32,330 --> 01:59:29,040

inspection now taking a light around it

2835

01:59:36,950 --> 01:59:32,340

they had the hatch closed but reopened

2836

01:59:38,270 --> 01:59:36,960

it after doing the side hatch leak check

2837

01:59:40,310 --> 01:59:38,280

and Bob it was interesting we were

2838

01:59:43,010 --> 01:59:40,320

talking about this just briefly before

2839

01:59:45,050 --> 01:59:43,020

uh Kate threw to us and there's a way

2840

01:59:47,510 --> 01:59:45,060

they can check that seal to see if

2841

01:59:50,209 --> 01:59:47,520

there's any fod in it I thought it was

2842

01:59:52,609 --> 01:59:50,219

interesting how they do that well yes uh

2843

01:59:54,709 --> 01:59:52,619

Daryl Kate gave a great explanation of

2844

01:59:56,330 --> 01:59:54,719

that process just a couple minutes ago

2845

01:59:58,250 --> 01:59:56,340

but what they do is they they need to

2846

01:59:59,990 --> 01:59:58,260

find a way of course before you get into

2847

02:00:02,570 --> 02:00:00,000

space to make sure that the Integrity of

2848

02:00:04,910 --> 02:00:02,580

that seal is good and so what they do is

2849

02:00:07,310 --> 02:00:04,920

they're able to inflate a small portion

2850

02:00:09,530 --> 02:00:07,320

a small volume to ensure that they do

2851  
02:00:12,050 --> 02:00:09,540  
have a good pressurization on the sides

2852  
02:00:14,089 --> 02:00:12,060  
of that seal and if they do have a leak

2853  
02:00:15,890 --> 02:00:14,099  
or or some indication that things aren't

2854  
02:00:17,930 --> 02:00:15,900  
exactly right you know the most likely

2855  
02:00:20,030 --> 02:00:17,940  
culprit is some sort of foreign object

2856  
02:00:22,010 --> 02:00:20,040  
that's kind of captured in that ceiling

2857  
02:00:25,310 --> 02:00:22,020  
surface and so the team goes back in

2858  
02:00:26,870 --> 02:00:25,320  
cleans that area out and then we'll kind

2859  
02:00:28,970 --> 02:00:26,880  
of re-accomplish that leak check to make

2860  
02:00:30,410 --> 02:00:28,980  
sure that it's good before the crew gets

2861  
02:00:31,729 --> 02:00:30,420  
into the vacuum of space with the

2862  
02:00:33,709 --> 02:00:31,739  
spacecraft

2863  
02:00:35,930 --> 02:00:33,719

and you can see they've wrapped up that

2864

02:00:38,030 --> 02:00:35,940

process of inspecting cleaning and

2865

02:00:40,189 --> 02:00:38,040

documenting the seal and now they've

2866

02:00:43,669 --> 02:00:40,199

reclosed the side hatch to crew dragon

2867

02:00:48,109 --> 02:00:43,679

with our crew 5 astronauts inside and

2868

02:00:53,570 --> 02:00:50,930

we'll keep monitoring the action

2869

02:00:55,970 --> 02:00:53,580

and let you know what's going on a quick

2870

02:00:58,850 --> 02:00:55,980

update the closeout team was able to

2871

02:01:01,010 --> 02:00:58,860

open the side hatch and remove the uh

2872

02:01:02,629 --> 02:01:01,020

hair that they identified as fod they've

2873

02:01:05,030 --> 02:01:02,639

closed behind the side hash and they're

2874

02:01:07,430 --> 02:01:05,040

stepping into their leak checks right

2875

02:01:11,270 --> 02:01:07,440

now we are right on schedule for launch

2876

02:01:15,169 --> 02:01:13,250

construction copies that's great news

2877

02:01:17,089 --> 02:01:15,179

and we're standing by for that week

2878

02:01:18,530 --> 02:01:17,099

thank you

2879

02:01:20,270 --> 02:01:18,540

okay well there you heard confirmation

2880

02:01:21,770 --> 02:01:20,280

that they found what it was and real

2881

02:01:23,830 --> 02:01:21,780

quick bomb before we throw it to in the

2882

02:01:26,030 --> 02:01:23,840

interview a hair was identified

2883

02:01:28,850 --> 02:01:26,040

fascinating to me that something as

2884

02:01:31,070 --> 02:01:28,860

small as hair can actually compromise a

2885

02:01:33,050 --> 02:01:31,080

seal yes it's a it's really important

2886

02:01:34,550 --> 02:01:33,060

that that area is super pristine and

2887

02:01:35,930 --> 02:01:34,560

like we talked about a little bit

2888

02:01:37,970 --> 02:01:35,940

earlier you know that hatch is going to

2889

02:01:39,890 --> 02:01:37,980

be closed for six months as they make

2890

02:01:41,390 --> 02:01:39,900

their way into orbit and then won't get

2891

02:01:43,010 --> 02:01:41,400

open until they come back and are on

2892

02:01:44,870 --> 02:01:43,020

aboard the ground is going to be

2893

02:01:47,330 --> 02:01:44,880

commencing a health check for a launch

2894

02:01:48,830 --> 02:01:47,340

Escape system a second time expect a

2895

02:01:50,870 --> 02:01:48,840

momentary flight computer State change

2896

02:02:00,709 --> 02:01:50,880

followed by that transition back to pad

2897

02:02:00,719 --> 02:02:07,310

good read back

2898

02:02:10,970 --> 02:02:09,229

we will keep monitoring the action here

2899

02:02:13,729 --> 02:02:10,980

outside the dragon spacecraft you heard

2900

02:02:15,410 --> 02:02:13,739

the launch Escape system checks are

2901  
02:02:18,229 --> 02:02:15,420  
coming up momentarily as they continue

2902  
02:02:20,689 --> 02:02:18,239  
to secure the side hatch in the meantime

2903  
02:02:22,910 --> 02:02:20,699  
let's go out to Megan Cruz who has a

2904  
02:02:25,550 --> 02:02:22,920  
very special guest Lieutenant General

2905  
02:02:27,950 --> 02:02:25,560  
Thomas Stafford one of the 24 astronauts

2906  
02:02:30,830 --> 02:02:27,960  
we sent to the Moon Megan

2907  
02:02:33,530 --> 02:02:30,840  
yes Daryl I'm very excited to have the

2908  
02:02:36,350 --> 02:02:33,540  
lieutenant general here with me today uh

2909  
02:02:38,510 --> 02:02:36,360  
I mean it's just I'm so honored to be

2910  
02:02:40,550 --> 02:02:38,520  
sitting next to you here I wanted to ask

2911  
02:02:42,850 --> 02:02:40,560  
you is this your first crude launch that

2912  
02:02:45,310 --> 02:02:42,860  
you've seen oh no no

2913  
02:02:49,129 --> 02:02:45,320

I was here before

2914

02:02:51,010 --> 02:02:49,139

the commercial launch number two

2915

02:02:53,750 --> 02:02:51,020

always just love to see how large

2916

02:02:56,450 --> 02:02:53,760

absolutely having done four missions

2917

02:02:58,250 --> 02:02:56,460

yeah yeah I mean does being here does it

2918

02:02:59,629 --> 02:02:58,260

make you kind of reminisce on on those

2919

02:03:01,910 --> 02:02:59,639

four missions you've had you know you're

2920

02:03:03,950 --> 02:03:01,920

a part of the Gemini and Apollo programs

2921

02:03:05,750 --> 02:03:03,960

and we actually have some some pictures

2922

02:03:07,010 --> 02:03:05,760

of you from those missions that we'd

2923

02:03:08,649 --> 02:03:07,020

love to share with everyone can you talk

2924

02:03:12,530 --> 02:03:08,659

us through with this oh yeah

2925

02:03:16,089 --> 02:03:12,540

here we are right after we've landed on

2926

02:03:20,030 --> 02:03:16,099

Gemini nine that was in June 6

2927

02:03:21,709 --> 02:03:20,040

1966. there's Gene cernan my pilot he's

2928

02:03:24,589 --> 02:03:21,719

the first one to walk in space

2929

02:03:27,050 --> 02:03:24,599

completely around the world we did three

2930

02:03:29,750 --> 02:03:27,060

different Rendezvous right now and we

2931

02:03:32,750 --> 02:03:29,760

also touched down closer than any

2932

02:03:34,250 --> 02:03:32,760

Germany or Apollo wow and then we have

2933

02:03:36,229 --> 02:03:34,260

another pitcher actually this one's from

2934

02:03:39,229 --> 02:03:36,239

Apollo 10 right that's you the second

2935

02:03:42,530 --> 02:03:39,239

astronaut farthest from the transport

2936

02:03:48,169 --> 02:03:44,750

yeah that was a great Mission it was the

2937

02:03:50,330 --> 02:03:48,179

first lunar module to the moon and I did

2938

02:03:52,010 --> 02:03:50,340

the first we were too heavy to land or

2939

02:03:55,310 --> 02:03:52,020

we might have had a chance to be the

2940

02:03:56,930 --> 02:03:55,320

first ones to land on the moon but we're

2941

02:03:59,450 --> 02:03:56,940

two different land but we're down to

2942

02:04:03,229 --> 02:03:59,460

nine miles above the lunar surface photo

2943

02:04:05,750 --> 02:04:03,239

map radar map and Visually map picked

2944

02:04:08,689 --> 02:04:05,760

out on our lips and had three potential

2945

02:04:12,109 --> 02:04:08,699

Landing sites he did that twice and came

2946

02:04:14,149 --> 02:04:12,119

up and did the first Rendezvous yeah and

2947

02:04:17,390 --> 02:04:14,159

then on the way back set the all-time

2948

02:04:18,950 --> 02:04:17,400

world speed record this picture is a

2949

02:04:23,390 --> 02:04:18,960

little blurry but it's on

2950

02:04:28,370 --> 02:04:25,310

in here right we're on our way to the

2951  
02:04:31,490 --> 02:04:28,380  
move we're walking to walking slow to

2952  
02:04:32,530 --> 02:04:31,500  
the transfer event but then on the way

2953  
02:04:34,570 --> 02:04:32,540  
back

2954  
02:04:38,330 --> 02:04:34,580  
about 24

2955  
02:04:41,330 --> 02:04:38,340  
791 miles an hour or third block 36

2956  
02:04:44,870 --> 02:04:41,340  
miles per second Mega seven miles a

2957  
02:04:47,149 --> 02:04:44,880  
second wow wow that record still stands

2958  
02:04:49,490 --> 02:04:47,159  
wow you know we're talking about the

2959  
02:04:51,229 --> 02:04:49,500  
Apollo 10 Mission and and and and the

2960  
02:04:52,970 --> 02:04:51,239  
work that you guys were able to to

2961  
02:04:55,010 --> 02:04:52,980  
establish to get us where we are today

2962  
02:04:56,750 --> 02:04:55,020  
with our Artemis one Moon rocket right

2963  
02:04:59,209 --> 02:04:56,760

behind us in the Vehicle Assembly

2964

02:05:01,669 --> 02:04:59,219

Building are you looking forward to the

2965

02:05:04,129 --> 02:05:01,679

Artemis one launch later this year oh

2966

02:05:06,350 --> 02:05:04,139

absolutely I've worked on helping

2967

02:05:08,830 --> 02:05:06,360

getting that through Congress back in

2968

02:05:12,589 --> 02:05:08,840

2010 that's the authorization

2969

02:05:14,689 --> 02:05:12,599

authorized so um yeah I've had 12 years

2970

02:05:16,430 --> 02:05:14,699

of work on that one yes

2971

02:05:17,990 --> 02:05:16,440

Lieutenant General thank you so much for

2972

02:05:19,669 --> 02:05:18,000

being here and I hope you enjoy the crew

2973

02:05:21,290 --> 02:05:19,679

5 launch today well it's great to be

2974

02:05:22,430 --> 02:05:21,300

here the weather's good I'm sure you're

2975

02:05:24,350 --> 02:05:22,440

going to have a great lunch morning

2976

02:05:26,450 --> 02:05:24,360

thank you so much all right Dara we'll

2977

02:05:28,310 --> 02:05:26,460

send it back to you well that was

2978

02:05:30,290 --> 02:05:28,320

fantastic to hear from the lieutenant

2979

02:05:32,750 --> 02:05:30,300

general Adam clear standby from Comcheck

2980

02:05:34,790 --> 02:05:32,760

by launch control

2981

02:05:39,169 --> 02:05:34,800

Dragon launch control on countdown one

2982

02:05:45,410 --> 02:05:43,310

launch control Dragon allowed and clear

2983

02:05:47,810 --> 02:05:45,420

lost control loud and clear stand by for

2984

02:05:52,430 --> 02:05:47,820

Comcheck by the chief engineer

2985

02:05:57,770 --> 02:05:54,589

listening in

2986

02:05:59,870 --> 02:05:57,780

CE Dragon loud and clear

2987

02:06:02,930 --> 02:05:59,880

see you unclear also this completes the

2988

02:06:10,790 --> 02:06:02,940

## Falcon 9 responsible engineer contracts

2989

02:06:14,570 --> 02:06:12,169

establishing

2990

02:06:15,649 --> 02:06:14,580

a number of communication paths to the

2991

02:06:20,270 --> 02:06:15,659

crew

2992

02:06:24,649 --> 02:06:21,950

want to just uh update you really quick

2993

02:06:26,930 --> 02:06:24,659

we got a good side hatch leak check

2994

02:06:30,169 --> 02:06:26,940

again a good

2995

02:06:31,430 --> 02:06:30,179

side hatch leak check after some fod was

2996

02:06:34,010 --> 02:06:31,440

found

2997

02:06:35,330 --> 02:06:34,020

that compromised it following the first

2998

02:06:37,850 --> 02:06:35,340

closure

2999

02:06:40,010 --> 02:06:37,860

teams went back in opened the hatch

3000

02:06:43,430 --> 02:06:40,020

cleaned off the seal

3001  
02:06:45,890 --> 02:06:43,440  
shut the hatch back rechecked the seal

3002  
02:06:48,350 --> 02:06:45,900  
and we are good to go

3003  
02:06:50,450 --> 02:06:48,360  
again good side leak side hatch League

3004  
02:06:53,750 --> 02:06:50,460  
check and we're moving forward now with

3005  
02:06:58,609 --> 02:06:56,990  
the SpaceX team working quickly had 12

3006  
02:07:01,490 --> 02:06:58,619  
minutes of margin

3007  
02:07:04,370 --> 02:07:01,500  
and Whittle that down to

3008  
02:07:07,250 --> 02:07:04,380  
about three or four minutes

3009  
02:07:09,169 --> 02:07:07,260  
and so great job by them

3010  
02:07:13,010 --> 02:07:09,179  
tackling that issue that can pop up is

3011  
02:07:18,109 --> 02:07:13,020  
your preparing to launch a spacecraft

3012  
02:07:22,070 --> 02:07:20,089  
there's the Falcon 9 rocket on the pad

3013  
02:07:24,649 --> 02:07:22,080

with the dragon spacecraft to top we've

3014

02:07:28,609 --> 02:07:24,659

got a beautiful day

3015

02:07:32,570 --> 02:07:30,410

take a little moment to

3016

02:07:34,609 --> 02:07:32,580

listen to a special message now from

3017

02:07:37,310 --> 02:07:34,619

somebody who's familiar to both of us

3018

02:07:40,129 --> 02:07:37,320

more him than me our previous co-host

3019

02:07:42,050 --> 02:07:40,139

from the last crew mission crew 4 and

3020

02:07:43,669 --> 02:07:42,060

the launch broadcast a very special

3021

02:07:45,709 --> 02:07:43,679

person to all of us here let's take a

3022

02:07:47,270 --> 02:07:45,719

listen

3023

02:07:49,070 --> 02:07:47,280

hello husband it looks like you're doing

3024

02:07:51,229 --> 02:07:49,080

a great job with the launch commentary

3025

02:07:52,729 --> 02:07:51,239

keep up the great work seems like all

3026

02:07:54,830 --> 02:07:52,739

those tips that I gave you are paying

3027

02:07:56,689 --> 02:07:54,840

off a couple of things I forgot to

3028

02:07:58,250 --> 02:07:56,699

mention though you should probably share

3029

02:07:59,870 --> 02:07:58,260

some of your snacks with Daryl because

3030

02:08:01,850 --> 02:07:59,880

he does get a little hangry if he

3031

02:08:03,229 --> 02:08:01,860

doesn't get enough to eat and also it's

3032

02:08:05,030 --> 02:08:03,239

important as the co-host to make sure

3033

02:08:07,010 --> 02:08:05,040

you laugh and smile at all of his jokes

3034

02:08:08,030 --> 02:08:07,020

makes him feel really good

3035

02:08:09,350 --> 02:08:08,040

um actually there's a couple other

3036

02:08:10,790 --> 02:08:09,360

people in the family that want to say

3037

02:08:15,310 --> 02:08:10,800

hello to you as well just give me just

3038

02:08:22,310 --> 02:08:19,370

do a good job daddy or else I will find

3039

02:08:25,550 --> 02:08:22,320

new ways to motivate you

3040

02:08:28,129 --> 02:08:25,560

in all seriousness though Nicole and

3041

02:08:29,510 --> 02:08:28,139

Josh and koichi and Anna I want to wish

3042

02:08:31,430 --> 02:08:29,520

you well on your journey you guys have

3043

02:08:33,709 --> 02:08:31,440

worked so hard to get here you're going

3044

02:08:35,270 --> 02:08:33,719

to be absolutely outstanding on the

3045

02:08:37,129 --> 02:08:35,280

International Space Station I cannot

3046

02:08:38,930 --> 02:08:37,139

wait to see you up there we're going to

3047

02:08:40,370 --> 02:08:38,940

be cheering you on from down here have a

3048

02:08:41,990 --> 02:08:40,380

blast and we'll see you when you get

3049

02:08:44,089 --> 02:08:42,000

home

3050

02:08:45,890 --> 02:08:44,099

what a beautiful message she's so good

3051  
02:08:47,689 --> 02:08:45,900  
with the cameraman give him the message

3052  
02:08:49,310 --> 02:08:47,699  
thank you so much to Megan McArthur for

3053  
02:08:51,950 --> 02:08:49,320  
saying that by the way I've taken care

3054  
02:08:53,990 --> 02:08:51,960  
of myself I've got my food here but uh

3055  
02:08:55,729 --> 02:08:54,000  
it's so good to see her and and uh a

3056  
02:08:57,649 --> 02:08:55,739  
little touched by her message no it was

3057  
02:09:00,770 --> 02:08:57,659  
absolutely great to see my wife of

3058  
02:09:03,589 --> 02:09:00,780  
course our our dog shadow who arrived in

3059  
02:09:06,070 --> 02:09:03,599  
our family after we uh returned from the

3060  
02:09:11,149 --> 02:09:06,080  
demo 2 mission you know my son requested

3061  
02:09:11,159 --> 02:09:15,709  
my son requested a approval

3062  
02:09:19,250 --> 02:09:17,689  
to have a dog when uh the mission was

3063  
02:09:20,990 --> 02:09:19,260

accomplished and so that was pretty cool

3064

02:09:22,490 --> 02:09:21,000

to have the dog included and of course

3065

02:09:24,290 --> 02:09:22,500

that Darth Vader making a guest

3066

02:09:26,270 --> 02:09:24,300

appearance and not something that I

3067

02:09:28,609 --> 02:09:26,280

expected but that costume has a little

3068

02:09:30,470 --> 02:09:28,619

bit of History we surprised Megan during

3069

02:09:32,870 --> 02:09:30,480

the mission on board the her time on

3070

02:09:34,490 --> 02:09:32,880

space station with that costume and uh

3071

02:09:36,229 --> 02:09:34,500

surprisingly she found one on board

3072

02:09:39,050 --> 02:09:36,239

space station to surprise us right back

3073

02:09:41,450 --> 02:09:39,060

oh about that

3074

02:09:43,189 --> 02:09:41,460

and uh

3075

02:09:45,649 --> 02:09:43,199

he's using the dark side of the force at

3076

02:09:47,810 --> 02:09:45,659

the moment motivated an answer out of

3077

02:09:50,209 --> 02:09:47,820

you he may have heard that line uh from

3078

02:09:52,910 --> 02:09:50,219

both his mother and myself as we try to

3079

02:09:55,010 --> 02:09:52,920

work through Elementary School

3080

02:09:57,530 --> 02:09:55,020

well a nice moment there thank you Megan

3081

02:09:59,930 --> 02:09:57,540

for uh doing that and uh I'll make sure

3082

02:10:02,990 --> 02:09:59,940

Bob laughs at my jokes or other maybe I

3083

02:10:05,270 --> 02:10:03,000

need to just tell better jokes

3084

02:10:08,149 --> 02:10:05,280

you up on the action we did have uh some

3085

02:10:10,729 --> 02:10:08,159

fog that was found in the seal uh in the

3086

02:10:13,010 --> 02:10:10,739

side hatch and that was removed the

3087

02:10:14,689 --> 02:10:13,020

SpaceX team working quickly to get that

3088

02:10:18,169 --> 02:10:14,699

removed and cleared they resealed the

3089

02:10:20,450 --> 02:10:18,179

hatch and repressurized it and we have a

3090

02:10:23,930 --> 02:10:20,460

confirmation just heard minutes ago of a

3091

02:10:26,330 --> 02:10:23,940

good side Glee catch check and so uh the

3092

02:10:28,850 --> 02:10:26,340

team is preferreding

3093

02:10:31,250 --> 02:10:28,860

a team is moving forward

3094

02:10:33,109 --> 02:10:31,260

with a beautiful shot of there of dragon

3095

02:10:34,850 --> 02:10:33,119

as we look out over the Atlantic we've

3096

02:10:37,010 --> 02:10:34,860

got some social media questions and we

3097

02:10:38,089 --> 02:10:37,020

asked you to submit them we've had a

3098

02:10:39,410 --> 02:10:38,099

little action that we've been dealing

3099

02:10:40,850 --> 02:10:39,420

with this morning so I haven't been able

3100

02:10:42,470 --> 02:10:40,860

to do a whole lot of questions but we're

3101  
02:10:45,709 --> 02:10:42,480  
going to start getting to them now and

3102  
02:10:48,470 --> 02:10:45,719  
at Khan asks what kind of personal items

3103  
02:10:50,270 --> 02:10:48,480  
can the crew take with them to the

3104  
02:10:52,129 --> 02:10:50,280  
International Space Station

3105  
02:10:53,930 --> 02:10:52,139  
it's a great question and one that we

3106  
02:10:55,750 --> 02:10:53,940  
get asked often uh what kind of personal

3107  
02:10:58,430 --> 02:10:55,760  
items can the crew take with them

3108  
02:11:00,229 --> 02:10:58,440  
usually it's something small is probably

3109  
02:11:02,870 --> 02:11:00,239  
the best answer to that question but

3110  
02:11:05,930 --> 02:11:02,880  
they're items that are personal mementos

3111  
02:11:07,970 --> 02:11:05,940  
of family members or otherwise you saw

3112  
02:11:10,970 --> 02:11:07,980  
my son earlier in the Darth Vader

3113  
02:11:13,189 --> 02:11:10,980

costume as you can tell Star Wars has a

3114

02:11:15,290 --> 02:11:13,199

special place in our family and so we

3115

02:11:16,970 --> 02:11:15,300

were able to glue together a small Lego

3116

02:11:19,550 --> 02:11:16,980

ship and have my wife take that into

3117

02:11:20,990 --> 02:11:19,560

space I took one during during my

3118

02:11:22,490 --> 02:11:21,000

mission as well so that we would have

3119

02:11:24,109 --> 02:11:22,500

something that he could connect with

3120

02:11:25,850 --> 02:11:24,119

that was part of our family something to

3121

02:11:28,669 --> 02:11:25,860

talk about you know during our our

3122

02:11:30,470 --> 02:11:28,679

family conferences there are many small

3123

02:11:32,149 --> 02:11:30,480

items with individuals that you want to

3124

02:11:33,830 --> 02:11:32,159

make a personal connections with at the

3125

02:11:35,390 --> 02:11:33,840

typically the the crew will take with

3126

02:11:37,250 --> 02:11:35,400

them they also make take something

3127

02:11:39,530 --> 02:11:37,260

that's special to them that allows them

3128

02:11:40,850 --> 02:11:39,540

to either remember Earth or take

3129

02:11:43,669 --> 02:11:40,860

advantage of a hobby that they have

3130

02:11:45,950 --> 02:11:43,679

whether it's a guitar or other musical

3131

02:11:47,510 --> 02:11:45,960

instrument uh small items like that it

3132

02:11:50,209 --> 02:11:47,520

must be nice to have that connection

3133

02:11:52,790 --> 02:11:50,219

back to Earth and your family

3134

02:11:54,050 --> 02:11:52,800

because of uh you know you're up in

3135

02:11:55,669 --> 02:11:54,060

there in space and especially now with

3136

02:11:58,310 --> 02:11:55,679

these long duration space missions

3137

02:12:00,950 --> 02:11:58,320

lasting six months and it's interesting

3138

02:12:03,169 --> 02:12:00,960

you mentioned the small effects

3139

02:12:05,209 --> 02:12:03,179

Commander Nicole Mann

3140

02:12:07,430 --> 02:12:05,219

um taking her wedding rings but also

3141

02:12:08,209 --> 02:12:07,440

some surprise special gifts for her

3142

02:12:11,089 --> 02:12:08,219

family

3143

02:12:13,310 --> 02:12:11,099

and a dream catcher that her mother made

3144

02:12:15,589 --> 02:12:13,320

for her when she was a child that's a

3145

02:12:18,589 --> 02:12:15,599

board her personal effects which you get

3146

02:12:22,070 --> 02:12:18,599

about 3.3 pounds of personal effects as

3147

02:12:24,350 --> 02:12:22,080

you mentioned so a nice cultural Memento

3148

02:12:26,030 --> 02:12:24,360

part of her Heritage as a Native

3149

02:12:30,890 --> 02:12:26,040

American the first Native American woman

3150

02:12:34,790 --> 02:12:32,750

let's check uh back now with California

3151  
02:12:39,109 --> 02:12:34,800  
and toss it out to Hawthorne with Sandra

3152  
02:12:46,010 --> 02:12:43,250  
thanks Daryl we are just one hour and a

3153  
02:12:47,750 --> 02:12:46,020  
little over 15 minutes from launch and

3154  
02:12:50,390 --> 02:12:47,760  
it is getting more and more exciting as

3155  
02:12:52,250 --> 02:12:50,400  
we get to that t0 the crew has already

3156  
02:12:54,290 --> 02:12:52,260  
ingressed the dragon vehicle they were

3157  
02:12:56,390 --> 02:12:54,300  
helped out by our closeout team

3158  
02:12:58,490 --> 02:12:56,400  
umbilicals were attached uh to their

3159  
02:13:00,950 --> 02:12:58,500  
suits which provides breathing air and

3160  
02:13:02,810 --> 02:13:00,960  
calms to Dragon suit leak treks were

3161  
02:13:04,729 --> 02:13:02,820  
completed as well as comms checks

3162  
02:13:12,410 --> 02:13:04,739  
completed with the core and the launch

3163  
02:13:12,420 --> 02:13:19,209

foreign

3164

02:13:24,470 --> 02:13:22,069

checks the closeout team was able to

3165

02:13:26,330 --> 02:13:24,480

close and seal the hatch we just got

3166

02:13:29,689 --> 02:13:26,340

confirmation that we did have a good

3167

02:13:32,089 --> 02:13:29,699

leak check during the first round of

3168

02:13:34,069 --> 02:13:32,099

closing the hatch they did find a piece

3169

02:13:35,689 --> 02:13:34,079

of fod it was a piece of hair we were

3170

02:13:38,569 --> 02:13:35,699

able to open it back up remove the fod

3171

02:13:41,520 --> 02:13:38,579

and close the hatch and then completed

3172

02:13:42,229 --> 02:13:41,530

that seal check

3173

02:13:42,770 --> 02:13:42,239

[Music]

3174

02:13:44,310 --> 02:13:42,780

um

3175

02:13:45,709 --> 02:13:44,320

and now

3176

02:13:48,370 --> 02:13:45,719

[Music]

3177

02:13:52,250 --> 02:13:48,380

the closeout team is just wrapping up

3178

02:13:56,450 --> 02:13:52,260

and once they wrap up uh in that white

3179

02:13:58,609 --> 02:13:56,460

room they will depart the white room and

3180

02:14:00,830 --> 02:13:58,619

those final weather checks will be

3181

02:14:04,729 --> 02:14:00,840

coming up soon which will be necessary

3182

02:14:06,530 --> 02:14:04,739

before a final go no go

3183

02:14:09,530 --> 02:14:06,540

and there you can see the closeout team

3184

02:14:13,490 --> 02:14:09,540

there on your screen again just wrapping

3185

02:14:18,890 --> 02:14:13,500

up the final procedures for hatch

3186

02:14:23,810 --> 02:14:21,950

so let's check back in with Houston for

3187

02:14:25,550 --> 02:14:23,820

a status on the team supporting the

3188

02:14:30,470 --> 02:14:25,560

space station on their Readiness for

3189

02:14:34,129 --> 02:14:32,209

thanks Jesse the team here in Mission

3190

02:14:35,750 --> 02:14:34,139

Control Houston has polled that they are

3191

02:14:38,330 --> 02:14:35,760

go for the launch the International

3192

02:14:40,370 --> 02:14:38,340

Space Station and its on-board crew are

3193

02:14:42,709 --> 02:14:40,380

ready for crew 5 astronauts to lift off

3194

02:14:44,089 --> 02:14:42,719

when Flight director Greg Whitney pulled

3195

02:14:45,830 --> 02:14:44,099

his team he was asking the flight

3196

02:14:47,569 --> 02:14:45,840

controllers who work on all the

3197

02:14:49,609 --> 02:14:47,579

different systems on board the space

3198

02:14:52,189 --> 02:14:49,619

station if their focus areas were online

3199

02:14:53,930 --> 02:14:52,199

and working properly this includes life

3200

02:14:56,209 --> 02:14:53,940

support systems proper communication

3201  
02:14:58,129 --> 02:14:56,219  
links computers that allow us to command

3202  
02:15:00,830 --> 02:14:58,139  
the station on board and their

3203  
02:15:02,629 --> 02:15:00,840  
subsystems and our ability to maneuver

3204  
02:15:05,330 --> 02:15:02,639  
the space station are fully functional

3205  
02:15:07,129 --> 02:15:05,340  
the crew in orbit is awake and just

3206  
02:15:09,109 --> 02:15:07,139  
finished their midday meals they will

3207  
02:15:10,850 --> 02:15:09,119  
start crew arrival preparation shortly

3208  
02:15:12,890 --> 02:15:10,860  
making sure they are ready to receive

3209  
02:15:14,810 --> 02:15:12,900  
the new crew tomorrow Mission Control

3210  
02:15:16,669 --> 02:15:14,820  
Houston will continue monitoring the

3211  
02:15:19,069 --> 02:15:16,679  
mission as we check off milestones for

3212  
02:15:20,569 --> 02:15:19,079  
today's flight in the meantime I'll send

3213  
02:15:22,490 --> 02:15:20,579

it back over to Hawthorne the

3214

02:15:27,129 --> 02:15:22,500

International Space Station flight

3215

02:15:33,109 --> 02:15:29,990

thank thanks Shaniqua that's great news

3216

02:15:34,850 --> 02:15:33,119

and while crew 5 is launching today just

3217

02:15:36,890 --> 02:15:34,860

a few months ago we were launching

3218

02:15:39,890 --> 02:15:36,900

another crew to the International Space

3219

02:15:41,870 --> 02:15:39,900

Station that is of course crew 4 who

3220

02:15:43,850 --> 02:15:41,880

launched in April the crew for

3221

02:15:45,950 --> 02:15:43,860

astronauts currently on board the

3222

02:15:48,470 --> 02:15:45,960

International Space Station have spent

3223

02:15:51,109 --> 02:15:48,480

nearly six months conducting scientific

3224

02:15:53,689 --> 02:15:51,119

research in areas such as Material

3225

02:15:56,089 --> 02:15:53,699

Science Health Technologies and plant

3226

02:15:58,790 --> 02:15:56,099

science to prepare for human exploration

3227

02:16:02,089 --> 02:15:58,800

Beyond low earth orbit and to benefit

3228

02:16:04,550 --> 02:16:02,099

life on Earth such research also lays

3229

02:16:07,189 --> 02:16:04,560

the groundwork for future exploration of

3230

02:16:09,589 --> 02:16:07,199

the Moon and Mars starting with the

3231

02:16:13,550 --> 02:16:09,599

agency's Artemis missions

3232

02:16:16,310 --> 02:16:13,560

Dr Chell England was born in Tepe Taiwan

3233

02:16:18,890 --> 02:16:16,320

but spent most of his childhood overseas

3234

02:16:21,649 --> 02:16:18,900

in England he was an instructor and jump

3235

02:16:24,530 --> 02:16:21,659

Master with the U.S Air Force Academy

3236

02:16:27,229 --> 02:16:24,540

and also has a doctorate in medicine and

3237

02:16:29,209 --> 02:16:27,239

served as a NASA flight surgeon after he

3238

02:16:32,570 --> 02:16:29,219

was chosen as an astronaut lingard flew

3239

02:16:35,870 --> 02:16:32,580

on soyouz and spent 141 days in space

3240

02:16:37,669 --> 02:16:35,880

during Expedition 44 and 45. he has a

3241

02:16:39,830 --> 02:16:37,679

wife and three children and is the

3242

02:16:43,370 --> 02:16:39,840

commander of dragon freedom

3243

02:16:45,530 --> 02:16:43,380

and up next is fellow Airmen Bob Heinz

3244

02:16:47,509 --> 02:16:45,540

he was born in Fayetteville North

3245

02:16:49,669 --> 02:16:47,519

Carolina and has a wife and three

3246

02:16:52,129 --> 02:16:49,679

daughters he has a master of science in

3247

02:16:54,469 --> 02:16:52,139

aerospace engineering and served 21

3248

02:16:57,169 --> 02:16:54,479

years in the U.S Air Force as a test

3249

02:17:00,469 --> 02:16:57,179

pilot and as a fighter pilot in the

3250

02:17:02,810 --> 02:17:00,479

f-15e he came to NASA as a research

3251

02:17:06,650 --> 02:17:02,820

pilot where he flew the science where he

3252

02:17:09,169 --> 02:17:06,660

flew science missions in the wb-57 he's

3253

02:17:10,969 --> 02:17:09,179

the pilot for NASA's SpaceX crew 4

3254

02:17:11,990 --> 02:17:10,979

Mission which has been his first space

3255

02:17:13,969 --> 02:17:12,000

flight

3256

02:17:16,250 --> 02:17:13,979

now there's a couple Mission Specialists

3257

02:17:18,469 --> 02:17:16,260

on board crew 4 one of which is Jessica

3258

02:17:21,469 --> 02:17:18,479

Watkins who considers Lafayette Colorado

3259

02:17:23,030 --> 02:17:21,479

her hometown a talented rugby player in

3260

02:17:26,929 --> 02:17:23,040

college her team won the National

3261

02:17:29,270 --> 02:17:26,939

Championship in 2008. Watkins was a

3262

02:17:31,429 --> 02:17:29,280

post-doctoral fellow in the division of

3263

02:17:33,950 --> 02:17:31,439

geological and planetary Sciences at the

3264

02:17:36,049 --> 02:17:33,960

California Institute of Technology she

3265

02:17:39,110 --> 02:17:36,059

completed several internships with NASA

3266

02:17:42,349 --> 02:17:39,120

including one testing system designs for

3267

02:17:44,690 --> 02:17:42,359

the Mars perseverance Mission at JPL she

3268

02:17:47,389 --> 02:17:44,700

became an astronaut in 2017 and just

3269

02:17:48,349 --> 02:17:47,399

like Bob crew 4 was her first flight to

3270

02:17:51,230 --> 02:17:48,359

space

3271

02:17:53,629 --> 02:17:51,240

and the second mission specialist is

3272

02:17:56,209 --> 02:17:53,639

Samantha Christopher ready she was born

3273

02:17:57,770 --> 02:17:56,219

in Milan Italy but now lives in Cologne

3274

02:18:01,070 --> 02:17:57,780

Germany with her partner and two

3275

02:18:03,830 --> 02:18:01,080

children in 2006 she earned her fighter

3276

02:18:06,830 --> 02:18:03,840

pilot wings and flew the AMX attack

3277

02:18:09,709 --> 02:18:06,840

fighter pilot fighter at a base in Italy

3278

02:18:12,530 --> 02:18:09,719

in 2013 Christopher ready launched into

3279

02:18:14,330 --> 02:18:12,540

space aboard a soyuz for a long duration

3280

02:18:17,089 --> 02:18:14,340

space flight to the International Space

3281

02:18:19,610 --> 02:18:17,099

Station and several years later she was

3282

02:18:21,589 --> 02:18:19,620

awarded the Knight Grand Cross of the

3283

02:18:24,669 --> 02:18:21,599

order of Merit from the president of

3284

02:18:27,230 --> 02:18:24,679

Italy crew 4 was her second space flight

3285

02:18:30,230 --> 02:18:27,240

this four-person crew is currently

3286

02:18:32,450 --> 02:18:30,240

preparing for crew 5's arrival and also

3287

02:18:33,530 --> 02:18:32,460

their return back to Earth just days

3288

02:18:36,110 --> 02:18:33,540

from now

3289

02:18:38,349 --> 02:18:36,120

and while crew 4 was on board they

3290

02:18:41,330 --> 02:18:38,359

received a visit from another Dragon

3291

02:18:43,250 --> 02:18:41,340

spacex's 25th resupply mission to the

3292

02:18:46,849 --> 02:18:43,260

international space station launched on

3293

02:18:49,190 --> 02:18:46,859

July 14th carrying over 5 800 pounds of

3294

02:18:50,750 --> 02:18:49,200

science research hardware and other crew

3295

02:18:53,750 --> 02:18:50,760

supplies to the orbiting laboratory

3296

02:18:55,669 --> 02:18:53,760

Dragon stayed on station for a little

3297

02:18:57,349 --> 02:18:55,679

over a month before being packed with

3298

02:18:59,570 --> 02:18:57,359

critical research and Hardware to be

3299

02:19:02,389 --> 02:18:59,580

analyzed after a safe Splashdown off the

3300

02:19:04,429 --> 02:19:02,399

coast of Florida on August 20th now

3301

02:19:06,049 --> 02:19:04,439

let's head over to Daryl at Kennedy

3302

02:19:08,330 --> 02:19:06,059

Space Center Daryl how are you guys

3303

02:19:10,009 --> 02:19:08,340

doing over there well thank you Jesse

3304

02:19:11,810 --> 02:19:10,019

and Sandra well we're having a beautiful

3305

02:19:13,910 --> 02:19:11,820

day here at the Kennedy Space Center you

3306

02:19:16,790 --> 02:19:13,920

can see behind us we're at the launch

3307

02:19:18,770 --> 02:19:16,800

complex 39 where meteor Gathering

3308

02:19:21,650 --> 02:19:18,780

getting ready to count down the final

3309

02:19:25,790 --> 02:19:21,660

hour as we get ready to watch crew 5

3310

02:19:28,129 --> 02:19:25,800

launch into space it is a big day

3311

02:19:30,049 --> 02:19:28,139

and especially here at the Kennedy Space

3312

02:19:33,049 --> 02:19:30,059

Center where we have just been cranking

3313

02:19:35,330 --> 02:19:33,059

out the launches Bob three launches in

3314

02:19:37,310 --> 02:19:35,340

three days from three different paths we

3315

02:19:39,950 --> 02:19:37,320

had the atlas five going off from 40

3316

02:19:42,049 --> 02:19:39,960

yesterday we've got crew five of course

3317

02:19:44,030 --> 02:19:42,059

from launch complex 39a today and then

3318

02:19:46,810 --> 02:19:44,040

tomorrow SpaceX launching from their

3319

02:19:49,310 --> 02:19:46,820

other launch pad pad 41. it's hopping

3320

02:19:50,929 --> 02:19:49,320

outstanding to see all that action down

3321

02:19:52,370 --> 02:19:50,939

here at the Kennedy Space Center and

3322

02:19:54,410 --> 02:19:52,380

again it's a beautiful day I'm looking

3323

02:19:57,050 --> 02:19:54,420

forward to seeing the crew five uh folks

3324

02:19:59,810 --> 02:19:57,060

uh get into orbit indeed and liftoff

3325

02:20:03,110 --> 02:19:59,820

time is still holding for noon eastern

3326  
02:20:04,910 --> 02:20:03,120  
time 56 seconds afternoon if you want to

3327  
02:20:07,370 --> 02:20:04,920  
be right on the second

3328  
02:20:09,349 --> 02:20:07,380  
we're also tracking no issues at the

3329  
02:20:11,630 --> 02:20:09,359  
moment with Falcon 9 or Dragon we did

3330  
02:20:14,150 --> 02:20:11,640  
have additional suit leak check that we

3331  
02:20:16,550 --> 02:20:14,160  
performed as well as a spacecraft leak

3332  
02:20:19,070 --> 02:20:16,560  
check those are good to go

3333  
02:20:21,290 --> 02:20:19,080  
dragon now good to go the range is green

3334  
02:20:23,330 --> 02:20:21,300  
and of course the weather is doing

3335  
02:20:25,429 --> 02:20:23,340  
fabulous here at the Kennedy Space

3336  
02:20:28,849 --> 02:20:25,439  
Center downrange they're watching some

3337  
02:20:30,770 --> 02:20:28,859  
wins in the uh the abort Corridor but

3338  
02:20:34,250 --> 02:20:30,780

they're looking good right now

3339

02:20:36,110 --> 02:20:34,260

and so the crew of crew five

3340

02:20:38,630 --> 02:20:36,120

talking about Commander Nicole Mann

3341

02:20:39,830 --> 02:20:38,640

pilot Josh cassida and Mission

3342

02:20:42,110 --> 02:20:39,840

specialists

3343

02:20:44,030 --> 02:20:42,120

koichiwakada

3344

02:20:46,250 --> 02:20:44,040

oh they Don their spacesuits in the

3345

02:20:48,830 --> 02:20:46,260

historic crew quarter suit up room this

3346

02:20:51,290 --> 02:20:48,840

morning they woke up around 4 30 A.M

3347

02:20:53,990 --> 02:20:51,300

those suits around 7 A.M they walked out

3348

02:20:56,570 --> 02:20:54,000

of the crew quarters building as every

3349

02:20:58,490 --> 02:20:56,580

NASA astronaut has done

3350

02:21:01,190 --> 02:20:58,500

since Apollo 7

3351  
02:21:03,830 --> 02:21:01,200  
and then they were transported to the

3352  
02:21:06,710 --> 02:21:03,840  
pad where they climbed inside the SpaceX

3353  
02:21:09,530 --> 02:21:06,720  
Dragon endurance for its second flight

3354  
02:21:12,590 --> 02:21:09,540  
now we are seeing them live while they

3355  
02:21:15,950 --> 02:21:14,330  
Bob you live this with your fellow

3356  
02:21:17,630 --> 02:21:15,960  
astronaut Doug Hurley

3357  
02:21:19,670 --> 02:21:17,640  
what is the crew doing right now at this

3358  
02:21:21,110 --> 02:21:19,680  
moment you know Daryl it's a it's a good

3359  
02:21:22,910 --> 02:21:21,120  
question at this point I think you can

3360  
02:21:24,710 --> 02:21:22,920  
see on the camera that what the crews

3361  
02:21:26,809 --> 02:21:24,720  
really focused on right now is uh

3362  
02:21:28,910 --> 02:21:26,819  
relaxing you know they've had a hectic

3363  
02:21:31,130 --> 02:21:28,920

morning if you will one that's very well

3364

02:21:33,469 --> 02:21:31,140

scripted one that's very well controlled

3365

02:21:35,210 --> 02:21:33,479

but one that causes them to need to be

3366

02:21:37,309 --> 02:21:35,220

on schedule through all the individual

3367

02:21:38,870 --> 02:21:37,319

Milestones leading up to launch that

3368

02:21:40,849 --> 02:21:38,880

part's behind them now and they're

3369

02:21:43,070 --> 02:21:40,859

taking a chance to relax and catch their

3370

02:21:46,670 --> 02:21:43,080

breath before the tanking operations

3371

02:21:49,250 --> 02:21:46,680

begin here in just a few minutes

3372

02:21:51,830 --> 02:21:49,260

indeed tanking coming up as well as the

3373

02:21:55,490 --> 02:21:51,840

launch Escape system check out and the

3374

02:22:01,849 --> 02:21:58,790

the rocket is on the pad

3375

02:22:03,770 --> 02:22:01,859

ready to go and over the next hour we

3376

02:22:05,389 --> 02:22:03,780

will conduct a series of polls to get

3377

02:22:07,550 --> 02:22:05,399

ready for launch

3378

02:22:09,230 --> 02:22:07,560

the crew will also as I mentioned will

3379

02:22:12,530 --> 02:22:09,240

be arming that launch Escape system and

3380

02:22:14,090 --> 02:22:12,540

then the fueling the Falcon 9 will begin

3381

02:22:16,309 --> 02:22:14,100

let's talk a little bit about the

3382

02:22:18,650 --> 02:22:16,319

details of today's flight

3383

02:22:22,370 --> 02:22:18,660

watch of course as we mentioned

3384

02:22:24,590 --> 02:22:22,380

set for just a few seconds after noon

3385

02:22:26,809 --> 02:22:24,600

a little more than an hour from now and

3386

02:22:29,809 --> 02:22:26,819

then crew 5 astronauts will race towards

3387

02:22:32,750 --> 02:22:29,819

space reaching orbit in about 12 minutes

3388

02:22:34,490 --> 02:22:32,760

that's followed by roughly 29 hour

3389

02:22:37,190 --> 02:22:34,500

flight to dock with the International

3390

02:22:39,950 --> 02:22:37,200

Space Station one of the longer transit

3391

02:22:43,250 --> 02:22:39,960

times to the ISS and then that docking

3392

02:22:44,630 --> 02:22:43,260

will happen at 4 57 PM eastern time

3393

02:22:49,490 --> 02:22:44,640

tomorrow and of course we'll have

3394

02:22:53,990 --> 02:22:51,230

a quick history of NASA's commercial

3395

02:22:56,770 --> 02:22:54,000

crew program it all began with the first

3396

02:22:59,809 --> 02:22:56,780

successful and historic test flight

3397

02:23:02,389 --> 02:22:59,819

the closeout team has Departed the crew

3398

02:23:04,849 --> 02:23:02,399

arm and with that ground is going to

3399

02:23:10,370 --> 02:23:04,859

cycle the orbit tank isolation valves to

3400

02:23:10,380 --> 02:23:14,210

dragon attack

3401

02:23:18,590 --> 02:23:15,950

all right they're cycling the valve

3402

02:23:23,330 --> 02:23:18,600

there and as well closeout team is now

3403

02:23:25,010 --> 02:23:23,340

departing that location that you see 39a

3404

02:23:27,590 --> 02:23:25,020

they'll be making their way off the pad

3405

02:23:29,809 --> 02:23:27,600

and that will lead us into getting ready

3406

02:23:31,130 --> 02:23:29,819

to fuel the rocket

3407

02:23:32,690 --> 02:23:31,140

of course I was talking about the

3408

02:23:35,630 --> 02:23:32,700

historic test flight

3409

02:23:38,210 --> 02:23:35,640

for my partner here and co-host Bob

3410

02:23:42,469 --> 02:23:40,429

his crewmate Doug Hurley

3411

02:23:45,650 --> 02:23:42,479

together they flew the mission that was

3412

02:23:48,530 --> 02:23:45,660

called demo two and after Bob and Doug

3413

02:23:50,510 --> 02:23:48,540

returned of course NASA was certified uh

3414

02:23:52,309 --> 02:23:50,520

with SpaceX to fly astronauts regularly

3415

02:23:54,410 --> 02:23:52,319

to and from the International Space

3416

02:23:56,389 --> 02:23:54,420

Station and of course that led to the

3417

02:23:59,510 --> 02:23:56,399

regular rotational missions that we see

3418

02:24:05,929 --> 02:23:59,520

today the fifth rotational mission to

3419

02:24:13,370 --> 02:24:08,150

let's check in now with Kate Tice in

3420

02:24:18,469 --> 02:24:16,190

thanks Daryl a quick status update for

3421

02:24:21,410 --> 02:24:18,479

those that have recently tuned in we've

3422

02:24:23,270 --> 02:24:21,420

had a smooth countdown so far today that

3423

02:24:26,510 --> 02:24:23,280

you can see there on your screen are

3424

02:24:28,250 --> 02:24:26,520

four crew 5 astronauts have Ingress they

3425

02:24:32,210 --> 02:24:28,260

are in their seats their five-point

3426  
02:24:34,910 --> 02:24:32,220  
safety harnesses buckled in and they are

3427  
02:24:37,490 --> 02:24:34,920  
looking relaxed and ready to go they

3428  
02:24:40,130 --> 02:24:37,500  
ingressed about an hour and 45 minutes

3429  
02:24:42,349 --> 02:24:40,140  
ago and the teams have completed the

3430  
02:24:44,929 --> 02:24:42,359  
required comp checks the suit leak

3431  
02:24:47,210 --> 02:24:44,939  
checks the side hatch closure and its

3432  
02:24:50,030 --> 02:24:47,220  
Associated big check we did have to redo

3433  
02:24:52,190 --> 02:24:50,040  
that leak check as a piece of fod was

3434  
02:24:55,309 --> 02:24:52,200  
found in the seal so we opened the hatch

3435  
02:24:57,710 --> 02:24:55,319  
back up cleared out the seal cleaned it

3436  
02:24:59,330 --> 02:24:57,720  
and then uh closed the hatch again and

3437  
02:25:02,030 --> 02:24:59,340  
re-performed that leak check and we got

3438  
02:25:04,190 --> 02:25:02,040

good lead check there and we heard just

3439

02:25:07,130 --> 02:25:04,200

moments ago that the closeout team is

3440

02:25:09,110 --> 02:25:07,140

beginning to depart the pad and at that

3441

02:25:11,210 --> 02:25:09,120

point in time it'll just be the crew 5

3442

02:25:14,090 --> 02:25:11,220

astronauts left on the pad once the

3443

02:25:15,530 --> 02:25:14,100

closeout team departs the BDA at this

3444

02:25:17,809 --> 02:25:15,540

point in time I'm happy to report that

3445

02:25:19,550 --> 02:25:17,819

the SpaceX team is working no issues and

3446

02:25:22,730 --> 02:25:19,560

the pace is certainly beginning to pick

3447

02:25:24,650 --> 02:25:22,740

up as for Falcon 9 our two-stage

3448

02:25:26,450 --> 02:25:24,660

reusable rocket final propulsion

3449

02:25:28,910 --> 02:25:26,460

checkouts of the first and second stages

3450

02:25:30,830 --> 02:25:28,920

and the engine began a few minutes ago

3451  
02:25:33,530 --> 02:25:30,840  
in preparation for propellant loading

3452  
02:25:36,230 --> 02:25:33,540  
this involves testing and cycling Valves

3453  
02:25:39,290 --> 02:25:36,240  
and engine pneumatics pressurization at

3454  
02:25:41,330 --> 02:25:39,300  
t40 at T minus 45 minutes the team will

3455  
02:25:44,929 --> 02:25:41,340  
report their Readiness for prop load

3456  
02:25:47,090 --> 02:25:44,939  
with a final electronic go no-go poll

3457  
02:25:50,210 --> 02:25:47,100  
again that prop load will begin at T

3458  
02:25:52,130 --> 02:25:50,220  
minus 35 minutes as for Dragon before we

3459  
02:25:54,710 --> 02:25:52,140  
can start loading propellant on Falcon 9

3460  
02:25:57,530 --> 02:25:54,720  
we still have a few Dragon related tasks

3461  
02:25:59,929 --> 02:25:57,540  
to perform first we need to retract the

3462  
02:26:02,690 --> 02:25:59,939  
crew access arm away from the Dragon

3463  
02:26:05,510 --> 02:26:02,700

capsule we can see it there uh currently

3464

02:26:07,790 --> 02:26:05,520

connecting the crew Tower to the capsule

3465

02:26:10,610 --> 02:26:07,800

we will need to retract that access arm

3466

02:26:14,510 --> 02:26:10,620

away to its launch position uh that will

3467

02:26:17,030 --> 02:26:14,520

happen between T minus 44 and 42 minutes

3468

02:26:18,650 --> 02:26:17,040

so shortly coming up that will be the

3469

02:26:23,270 --> 02:26:18,660

back that will be the last physical

3470

02:26:25,010 --> 02:26:23,280

change to the crew Tower with the access

3471

02:26:28,370 --> 02:26:25,020

arm out of the way the launch Escape

3472

02:26:30,830 --> 02:26:28,380

system will then be armed once those two

3473

02:26:34,070 --> 02:26:30,840

events are complete Dragon will be ready

3474

02:26:36,889 --> 02:26:34,080

for uh Falcon propellant loading we did

3475

02:26:39,530 --> 02:26:36,899

hear earlier uh in one of the pre-launch

3476

02:26:42,230 --> 02:26:39,540

briefs that once the launch Escape

3477

02:26:44,870 --> 02:26:42,240

system is armed we will not have the

3478

02:26:47,389 --> 02:26:44,880

ability to recycle so we are basically

3479

02:26:49,550 --> 02:26:47,399

locked in for launch today as soon as we

3480

02:26:51,170 --> 02:26:49,560

have that launch system

3481

02:26:53,990 --> 02:26:51,180

um art

3482

02:26:56,150 --> 02:26:54,000

as for weather we will also verify with

3483

02:26:57,950 --> 02:26:56,160

the launch weather officer that all the

3484

02:27:00,290 --> 02:26:57,960

weather meets all of the associated

3485

02:27:03,309 --> 02:27:00,300

constraints including items such as wind

3486

02:27:06,530 --> 02:27:03,319

speed lightning and precipitation

3487

02:27:09,410 --> 02:27:06,540

looks like with those beautiful blue sky

3488

02:27:11,090 --> 02:27:09,420

behind Falcon and barely any clouds we

3489

02:27:13,510 --> 02:27:11,100

don't think rain is going to be an issue

3490

02:27:15,889 --> 02:27:13,520

nor lightning now we do expect

3491

02:27:18,170 --> 02:27:15,899

acceptable weather conditions for launch

3492

02:27:20,150 --> 02:27:18,180

both at surface level and upper

3493

02:27:22,070 --> 02:27:20,160

altitudes as I mentioned earlier we have

3494

02:27:24,590 --> 02:27:22,080

been watching those downrange wins and

3495

02:27:26,809 --> 02:27:24,600

they continue to Trend favorably so

3496

02:27:29,270 --> 02:27:26,819

everything green there as for the range

3497

02:27:32,270 --> 02:27:29,280

currently clear for launch from historic

3498

02:27:34,190 --> 02:27:32,280

launch pads 39a the worldwide network of

3499

02:27:36,469 --> 02:27:34,200

ground stations and the tracking and

3500

02:27:39,590 --> 02:27:36,479

data relay satellites or tdras as you

3501

02:27:41,990 --> 02:27:39,600

hear us refer refer to it as those are

3502

02:27:44,809 --> 02:27:42,000

ready to support dragon as it heads into

3503

02:27:47,929 --> 02:27:44,819

orbit today we have an instantaneous

3504

02:27:50,330 --> 02:27:47,939

launch window at 12 pm Eastern noon on

3505

02:27:52,849 --> 02:27:50,340

the dot once we begin loading propellant

3506

02:27:55,610 --> 02:27:52,859

there is no opportunity to change that

3507

02:27:57,710 --> 02:27:55,620

t0 the timing for Dragon to Rendezvous

3508

02:27:59,630 --> 02:27:57,720

with the International Space Station is

3509

02:28:02,570 --> 02:27:59,640

incredibly precise down to the very

3510

02:28:05,929 --> 02:28:02,580

second so we only get one chance at it

3511

02:28:09,770 --> 02:28:05,939

today but at good news at T minus one

3512

02:28:14,030 --> 02:28:09,780

hour uh on the dot and Counting we are

3513

02:28:20,450 --> 02:28:16,790

and we are now less than one hour until

3514

02:28:26,730 --> 02:28:20,460

liftoff this day you are go for Section

3515

02:28:30,550 --> 02:28:28,000

[Applause]

3516

02:28:35,210 --> 02:28:30,560

[Music]

3517

02:28:35,220 --> 02:28:38,570

good read back

3518

02:28:43,309 --> 02:28:40,849

so again we are now a less than one hour

3519

02:28:45,710 --> 02:28:43,319

until liftoff and this day is the

3520

02:28:48,290 --> 02:28:45,720

continuation of regular crew flights to

3521

02:28:50,809 --> 02:28:48,300

this space station from U.S soil

3522

02:28:53,150 --> 02:28:50,819

spacex's crew 5 Mission will be the

3523

02:28:55,490 --> 02:28:53,160

company's sixth crude space flight for

3524

02:28:57,889 --> 02:28:55,500

NASA following the crude test flight

3525

02:28:59,570 --> 02:28:57,899

demo 2 and four previous operational

3526

02:29:02,630 --> 02:28:59,580

crude missions to the International

3527

02:29:04,429 --> 02:29:02,640

Space Station it will also be spacex's

3528

02:29:06,410 --> 02:29:04,439

eighth crude space flight overall

3529

02:29:08,270 --> 02:29:06,420

including the private orbital Mission

3530

02:29:10,969 --> 02:29:08,280

inspiration 4.

3531

02:29:13,309 --> 02:29:10,979

today our crew is flying on board Dragon

3532

02:29:15,469 --> 02:29:13,319

endurance it will be the second flight

3533

02:29:18,530 --> 02:29:15,479

for this capsule and it will be taking a

3534

02:29:20,630 --> 02:29:18,540

ride on a brand new Falcon 9. now it's

3535

02:29:23,270 --> 02:29:20,640

been a great countdown so far weather as

3536

02:29:25,730 --> 02:29:23,280

Kate has been updating us with is still

3537

02:29:28,130 --> 02:29:25,740

good for t0 so the excitement just

3538

02:29:30,290 --> 02:29:28,140

continues to pick up here as we get

3539

02:29:32,690 --> 02:29:30,300

closer to that's easier dragon in

3540

02:29:41,090 --> 02:29:32,700

section six six through five is go for

3541

02:29:46,790 --> 02:29:44,030

and you just heard it yourself crew 5 is

3542

02:29:49,190 --> 02:29:46,800

go for launch another exciting Milestone

3543

02:29:51,110 --> 02:29:49,200

we did start our coverage earlier today

3544

02:29:53,990 --> 02:29:51,120

with the crew heading to the launch pad

3545

02:29:55,969 --> 02:29:54,000

and prior to that the SpaceX team did

3546

02:29:58,610 --> 02:29:55,979

help the crew put on their spacesuits

3547

02:30:01,309 --> 02:29:58,620

and conduct initial checkouts before

3548

02:30:04,670 --> 02:30:01,319

crew walkout crew walkout was where

3549

02:30:07,429 --> 02:30:04,680

Nicole Mann Josh cassida kuichiwakata

3550

02:30:09,830 --> 02:30:07,439

and Anya kikuna gave final goodbyes with

3551  
02:30:11,990 --> 02:30:09,840  
friends and family gathered outside the

3552  
02:30:14,330 --> 02:30:12,000  
operations and checkout building before

3553  
02:30:16,429 --> 02:30:14,340  
they began that roughly 20-minute ride

3554  
02:30:19,070 --> 02:30:16,439  
to pad 39a

3555  
02:30:21,290 --> 02:30:19,080  
and we were able to watch the crew as

3556  
02:30:23,270 --> 02:30:21,300  
they boarded their Teslas and headed

3557  
02:30:25,610 --> 02:30:23,280  
down the NASA Causeway headed towards

3558  
02:30:27,530 --> 02:30:25,620  
the launch pad and once they arrived at

3559  
02:30:29,690 --> 02:30:27,540  
the pad the crew took a moment to enjoy

3560  
02:30:32,030 --> 02:30:29,700  
the view of the vehicle as that they

3561  
02:30:34,370 --> 02:30:32,040  
will be taking flight on uh this

3562  
02:30:35,929 --> 02:30:34,380  
afternoon and then headed up the fixed

3563  
02:30:38,030 --> 02:30:35,939

service structure to begin a process

3564

02:30:39,770 --> 02:30:38,040

known as crew Ingress where the

3565

02:30:42,170 --> 02:30:39,780

astronauts entered the dragon spacecraft

3566

02:30:44,389 --> 02:30:42,180

the SpaceX team then performed a series

3567

02:30:45,770 --> 02:30:44,399

of checks to ensure the suits seats and

3568

02:30:47,450 --> 02:30:45,780

vehicle interactions were all

3569

02:30:50,929 --> 02:30:47,460

functioning properly

3570

02:30:53,150 --> 02:30:50,939

and a short time a short time ago the

3571

02:30:56,330 --> 02:30:53,160

team did close out dragon's hatch and

3572

02:30:58,490 --> 02:30:56,340

the crew is safely inside so with less

3573

02:31:00,650 --> 02:30:58,500

than an hour to go until liftoff things

3574

02:31:03,290 --> 02:31:00,660

will continue to pick up as we get close

3575

02:31:05,270 --> 02:31:03,300

to the go no go Pole to arm the launch

3576

02:31:06,170 --> 02:31:05,280

Escape system and begin propellant

3577

02:31:08,090 --> 02:31:06,180

loading

3578

02:31:10,790 --> 02:31:08,100

the crew pull for Readiness was

3579

02:31:13,910 --> 02:31:10,800

completed at the T minus 60 Minute Mark

3580

02:31:16,130 --> 02:31:13,920

and the dragon pull for prop load is

3581

02:31:19,070 --> 02:31:16,140

coming up here at T minus 55 minutes

3582

02:31:20,750 --> 02:31:19,080

after that at 2 minus 45 minutes will be

3583

02:31:22,429 --> 02:31:20,760

an internal Mission Control Hawthorne

3584

02:31:24,530 --> 02:31:22,439

pole and then the launch director's Poll

3585

02:31:26,450 --> 02:31:24,540

for propellant loading when we get to

3586

02:31:28,370 --> 02:31:26,460

about T minus 40 minutes the crew access

3587

02:31:30,290 --> 02:31:28,380

arm will retract and the crew will get

3588

02:31:32,750 --> 02:31:30,300

the call to close their visors and to

3589

02:31:34,670 --> 02:31:32,760

arm the launch Escape system now this is

3590

02:31:36,410 --> 02:31:34,680

the automated safety system in place

3591

02:31:39,170 --> 02:31:36,420

that can fire the eight super Draco

3592

02:31:41,210 --> 02:31:39,180

thrusters on Dragon to quickly separate

3593

02:31:42,710 --> 02:31:41,220

the crew from the rocket either on the

3594

02:31:43,730 --> 02:31:42,720

pad or during the flight on the ride

3595

02:31:47,210 --> 02:31:43,740

uphill

3596

02:31:49,070 --> 02:31:47,220

and then once we reach about T minus 35

3597

02:31:59,450 --> 02:31:49,080

minutes propellant loading for the

3598

02:32:05,870 --> 02:32:03,050

so we did hear that the crew is go for

3599

02:32:08,389 --> 02:32:05,880

launch great news so with that let's

3600

02:32:10,670 --> 02:32:08,399

send it back to the team in Florida

3601

02:32:12,889 --> 02:32:10,680

Megan

3602

02:32:14,929 --> 02:32:12,899

great news guys so yeah now I'm joined

3603

02:32:16,250 --> 02:32:14,939

with uh Brian onyate but I'm gonna have

3604

02:32:17,690 --> 02:32:16,260

him say his title because I think I'm

3605

02:32:19,790 --> 02:32:17,700

gonna mess it up so you say what you are

3606

02:32:21,170 --> 02:32:19,800

sure good morning yeah I'm the chief of

3607

02:32:22,670 --> 02:32:21,180

utilization and Life Sciences office

3608

02:32:24,050 --> 02:32:22,680

here at Kennedy Space Center it was a

3609

02:32:25,730 --> 02:32:24,060

little long I was like I'm gonna have

3610

02:32:27,050 --> 02:32:25,740

him say it yeah long title so I wanted

3611

02:32:28,790 --> 02:32:27,060

to talk to you about how NASA has been

3612

02:32:30,530 --> 02:32:28,800

studying plant growth and microgravity

3613

02:32:32,330 --> 02:32:30,540

for many years now so tell us about the

3614

02:32:33,469 --> 02:32:32,340

two experiments that crew 5 is going to

3615

02:32:35,690 --> 02:32:33,479

be working on while they're on station

3616

02:32:36,950 --> 02:32:35,700

sure we have two uh experiments going up

3617

02:32:39,349 --> 02:32:36,960

one is more of a plant research

3618

02:32:41,510 --> 02:32:39,359

experiment we call it plant habitat O3

3619

02:32:43,550 --> 02:32:41,520

it will be going into the advanced plant

3620

02:32:45,770 --> 02:32:43,560

habitat and actually that plant

3621

02:32:47,870 --> 02:32:45,780

experiment is doing a generational study

3622

02:32:49,849 --> 02:32:47,880

so as you can see that's the advanced

3623

02:32:50,809 --> 02:32:49,859

plan habitat and those uh the plant that

3624

02:32:53,929 --> 02:32:50,819

is growing in there is called

3625

02:32:55,849 --> 02:32:53,939

arabidopsis it's our model plant and uh

3626

02:32:58,670 --> 02:32:55,859

basically we're going to grow that and

3627

02:33:00,290 --> 02:32:58,680

get it all the way to seed and the study

3628

02:33:02,630 --> 02:33:00,300

is basically getting those seeds

3629

02:33:04,130 --> 02:33:02,640

bringing them back and then re-flying

3630

02:33:05,750 --> 02:33:04,140

those seeds to see what happens so

3631

02:33:07,309 --> 02:33:05,760

what's interesting is and the second

3632

02:33:09,290 --> 02:33:07,319

picture right that we have that's how

3633

02:33:10,370 --> 02:33:09,300

you capture the seeds yeah that's how we

3634

02:33:12,290 --> 02:33:10,380

capture seeds what's interesting about

3635

02:33:13,610 --> 02:33:12,300

those seats they're actually the size of

3636

02:33:16,010 --> 02:33:13,620

pepper so imagine the pepper that you

3637

02:33:17,809 --> 02:33:16,020

put on your food very tiny very small so

3638

02:33:20,030 --> 02:33:17,819

we had to actually develop these capture

3639

02:33:21,889 --> 02:33:20,040

bags to grab those seeds so what we're

3640

02:33:24,410 --> 02:33:21,899

noticing is in the previous experiment

3641

02:33:26,150 --> 02:33:24,420

the DNA of the plant actually changed

3642

02:33:28,250 --> 02:33:26,160

and it almost seemed like it was trying

3643

02:33:30,170 --> 02:33:28,260

to protect itself from the environment

3644

02:33:32,750 --> 02:33:30,180

of space the harsh environment that's up

3645

02:33:35,630 --> 02:33:32,760

there so what we want to study is can we

3646

02:33:37,250 --> 02:33:35,640

actually grab those seeds and will those

3647

02:33:39,349 --> 02:33:37,260

seeds remember that environment so when

3648

02:33:40,670 --> 02:33:39,359

we fly the second generation well they

3649

02:33:42,349 --> 02:33:40,680

kind of have a leg up well they go

3650

02:33:44,090 --> 02:33:42,359

already kind of pre-programmed to

3651  
02:33:45,349 --> 02:33:44,100  
protect themselves so that way the

3652  
02:33:47,030 --> 02:33:45,359  
plants will thrive in space that's

3653  
02:33:48,950 --> 02:33:47,040  
interesting why is that something that

3654  
02:33:51,110 --> 02:33:48,960  
you wanted to see what can we learn from

3655  
02:33:53,450 --> 02:33:51,120  
that or use yeah so what we can do is

3656  
02:33:54,950 --> 02:33:53,460  
for exploration with NASA obviously we

3657  
02:33:56,630 --> 02:33:54,960  
want to get to the orbiting station

3658  
02:33:58,790 --> 02:33:56,640  
around the Moon one day or the surface

3659  
02:34:00,710 --> 02:33:58,800  
or the transit vehicle or Mars how can

3660  
02:34:02,270 --> 02:34:00,720  
we better prepare the plants that we

3661  
02:34:04,190 --> 02:34:02,280  
send or the crops that we send up there

3662  
02:34:05,870 --> 02:34:04,200  
so that they actually are ready to go

3663  
02:34:07,550 --> 02:34:05,880

they'll Thrive and we understand what's

3664

02:34:09,290 --> 02:34:07,560

happening so that the crew can actually

3665

02:34:11,650 --> 02:34:09,300

consume something great always Forward

3666

02:34:13,370 --> 02:34:11,660

Thinking here

3667

02:34:15,590 --> 02:34:13,380

well let's talk about the second

3668

02:34:17,210 --> 02:34:15,600

experiment that one's called veg 05 and

3669

02:34:18,710 --> 02:34:17,220

we have some props here to kind of walk

3670

02:34:20,690 --> 02:34:18,720

people through that yeah we do yeah so

3671

02:34:23,389 --> 02:34:20,700

bedroom five it's actually

3672

02:34:25,309 --> 02:34:23,399

um we're growing dwarf tomato plants

3673

02:34:27,410 --> 02:34:25,319

um and we're gonna put them in this uh

3674

02:34:28,610 --> 02:34:27,420

what we call here is a plant pillow

3675

02:34:30,710 --> 02:34:28,620

um it's what's interesting it's actually

3676

02:34:32,690 --> 02:34:30,720

made out of Kevlar so exactly what

3677

02:34:34,849 --> 02:34:32,700

Police use in the police vest so I guess

3678

02:34:36,349 --> 02:34:34,859

they might be bulletproof um my pillows

3679

02:34:38,389 --> 02:34:36,359

but yeah so these plant pillows it's

3680

02:34:40,070 --> 02:34:38,399

just basically how do we hold the soil

3681

02:34:42,230 --> 02:34:40,080

how do we put the fertilizer and the

3682

02:34:43,370 --> 02:34:42,240

seed in there in order for us to um grow

3683

02:34:44,690 --> 02:34:43,380

the plants because they would just fly

3684

02:34:46,070 --> 02:34:44,700

around on the spaces they would just fly

3685

02:34:47,270 --> 02:34:46,080

around on the space station so we have a

3686

02:34:49,250 --> 02:34:47,280

little what we call a quick disconnect

3687

02:34:51,469 --> 02:34:49,260

here this is where we apply the water so

3688

02:34:53,030 --> 02:34:51,479

once we apply the water in there we have

3689

02:34:55,250 --> 02:34:53,040

to keep watering it like here on Earth

3690

02:34:57,290 --> 02:34:55,260

and just let the plants grow and let

3691

02:34:59,210 --> 02:34:57,300

them thrive in space so you mentioned

3692

02:35:01,190 --> 02:34:59,220

the fertilizer yep the fertilizer and

3693

02:35:03,590 --> 02:35:01,200

the arsenite so what you see there on on

3694

02:35:05,750 --> 02:35:03,600

the right there is the um arsolite which

3695

02:35:07,790 --> 02:35:05,760

is actually clay chips right it's the

3696

02:35:09,410 --> 02:35:07,800

soil that basically allows the water to

3697

02:35:10,969 --> 02:35:09,420

be absorbed and allows the plants the

3698

02:35:13,010 --> 02:35:10,979

roots to kind of grow in their grab

3699

02:35:14,750 --> 02:35:13,020

water and nutrients I'm the second there

3700

02:35:16,730 --> 02:35:14,760

that you see there is a fertilizer and

3701

02:35:18,290 --> 02:35:16,740

it's a slow release fertilizer so when

3702

02:35:19,490 --> 02:35:18,300

we add water into it it kind of

3703

02:35:20,929 --> 02:35:19,500

dissolves little by little and it

3704

02:35:23,450 --> 02:35:20,939

provides the food that the plants need

3705

02:35:26,450 --> 02:35:23,460

so that they can grow okay so why is

3706

02:35:27,889 --> 02:35:26,460

this important for us on space but also

3707

02:35:29,990 --> 02:35:27,899

here on Earth to learn about this

3708

02:35:31,730 --> 02:35:30,000

particular experiment sure um both of

3709

02:35:34,550 --> 02:35:31,740

these experiments are important one is

3710

02:35:35,809 --> 02:35:34,560

obviously for exploration we want to

3711

02:35:37,550 --> 02:35:35,819

make sure that the seeds that we send

3712

02:35:39,710 --> 02:35:37,560

the plants that we grow will Thrive

3713

02:35:42,170 --> 02:35:39,720

right so what how can we make them excel

3714

02:35:44,030 --> 02:35:42,180

in space right and the second piece with

3715

02:35:46,070 --> 02:35:44,040

Federal 5 which we find interesting is

3716

02:35:49,070 --> 02:35:46,080

how can we actually get food for the

3717

02:35:50,630 --> 02:35:49,080

crew so you don't orbit right so healthy

3718

02:35:53,030 --> 02:35:50,640

nutritious food this is actually going

3719

02:35:55,250 --> 02:35:53,040

to be our second flowering plant that we

3720

02:35:56,690 --> 02:35:55,260

grow in space which is awesome so

3721

02:35:58,670 --> 02:35:56,700

they'll grow up there they'll have to

3722

02:36:00,530 --> 02:35:58,680

pollinate you know and the crew members

3723

02:36:01,849 --> 02:36:00,540

might have to be our space bees you know

3724

02:36:03,230 --> 02:36:01,859

we don't have bees up there to help us

3725

02:36:05,450 --> 02:36:03,240

pollinate so they might have to you know

3726

02:36:06,889 --> 02:36:05,460

help with pollination they'll grow and

3727

02:36:09,110 --> 02:36:06,899

then hopefully they'll get some

3728

02:36:11,030 --> 02:36:09,120

nutritious fresh food up there and the

3729

02:36:12,650 --> 02:36:11,040

benefit what I find interesting in here

3730

02:36:14,809 --> 02:36:12,660

for Earth is there's a lot of things

3731

02:36:17,090 --> 02:36:14,819

that we learn with ISS ISS is basically

3732

02:36:19,070 --> 02:36:17,100

a laboratory or another test tool so we

3733

02:36:21,290 --> 02:36:19,080

really want to see what data Can We

3734

02:36:22,910 --> 02:36:21,300

Gather from growing up there so when we

3735

02:36:24,230 --> 02:36:22,920

bring it down to earth if we're in a

3736

02:36:26,210 --> 02:36:24,240

stressful environment or another

3737

02:36:27,830 --> 02:36:26,220

environment that is challenging sure

3738

02:36:29,450 --> 02:36:27,840

what did we learn up there so we can

3739

02:36:30,710 --> 02:36:29,460

actually grow better better crops here

3740

02:36:32,030 --> 02:36:30,720

on Earth I love hearing about the

3741

02:36:33,469 --> 02:36:32,040

science Brian thank you so much for

3742

02:36:35,150 --> 02:36:33,479

sharing that no problem sounds great

3743

02:36:37,250 --> 02:36:35,160

we'll send it back to you guys

3744

02:36:39,650 --> 02:36:37,260

thank you Megan Brian and throughout the

3745

02:36:42,170 --> 02:36:39,660

show we've been taking your hashtag ask

3746

02:36:44,090 --> 02:36:42,180

NASA questions from social media we have

3747

02:36:45,410 --> 02:36:44,100

time for a few more that have been

3748

02:36:46,790 --> 02:36:45,420

coming in and we appreciate those

3749

02:36:49,190 --> 02:36:46,800

questions coming if you want to submit

3750

02:36:50,990 --> 02:36:49,200

one it's hashtag asknasa on our

3751  
02:36:53,330 --> 02:36:51,000  
streaming channels NASA Facebook Twitter

3752  
02:36:56,030 --> 02:36:53,340  
Youtube and twitch the question is from

3753  
02:36:57,710 --> 02:36:56,040  
a DD on YouTube he asked Bob binkin how

3754  
02:36:59,990 --> 02:36:57,720  
was the launch experience different on

3755  
02:37:02,150 --> 02:37:00,000  
Space Shuttle and crew Dragon was one

3756  
02:37:04,190 --> 02:37:02,160  
better than the other no it's a great

3757  
02:37:06,050 --> 02:37:04,200  
question Daryl we often get asked which

3758  
02:37:07,969 --> 02:37:06,060  
vehicle is better uh which one we love

3759  
02:37:09,230 --> 02:37:07,979  
the most and from my perspective I love

3760  
02:37:11,450 --> 02:37:09,240  
them both you know I had a great

3761  
02:37:13,190 --> 02:37:11,460  
opportunity to fly and build space

3762  
02:37:14,809 --> 02:37:13,200  
station with a space shuttle but then

3763  
02:37:16,849 --> 02:37:14,819

rotate as a crew member with the dragon

3764

02:37:18,650 --> 02:37:16,859

on a modern spacecraft you know that was

3765

02:37:20,570 --> 02:37:18,660

a really neat aspect to see something

3766

02:37:22,250 --> 02:37:20,580

that was kind of built in the 21st

3767

02:37:24,830 --> 02:37:22,260

century versus something that was built

3768

02:37:26,150 --> 02:37:24,840

you know almost the middle of the 20th

3769

02:37:27,650 --> 02:37:26,160

century if you look back at the

3770

02:37:29,389 --> 02:37:27,660

technology that was on board the shuttle

3771

02:37:30,950 --> 02:37:29,399

just super excited to have an

3772

02:37:32,750 --> 02:37:30,960

opportunity to fly on such a cool modern

3773

02:37:36,650 --> 02:37:32,760

new ship

3774

02:37:38,030 --> 02:37:36,660

and now next question at Mike Mangano I

3775

02:37:40,190 --> 02:37:38,040

hope I'm pronouncing that correctly

3776

02:37:41,630 --> 02:37:40,200

asked and this is a fitting question for

3777

02:37:43,730 --> 02:37:41,640

you Bob

3778

02:37:46,670 --> 02:37:43,740

did the NASA astronauts who fly the

3779

02:37:49,730 --> 02:37:46,680

Dragon capsule help in the design of the

3780

02:37:51,710 --> 02:37:49,740

capsule why yes they did you know it's a

3781

02:37:53,570 --> 02:37:51,720

it was an interesting experience I think

3782

02:37:55,490 --> 02:37:53,580

for both Doug and I to have the

3783

02:37:57,530 --> 02:37:55,500

opportunity to not only fly on a new

3784

02:37:59,690 --> 02:37:57,540

spacecraft but be a part of shaping It

3785

02:38:01,490 --> 02:37:59,700

For Crews to come forward and I think as

3786

02:38:03,530 --> 02:38:01,500

we went through that process the SpaceX

3787

02:38:05,030 --> 02:38:03,540

team really learned how to work with us

3788

02:38:06,710 --> 02:38:05,040

and how to take our inputs and

3789

02:38:08,750 --> 02:38:06,720

incorporate them into design whenever

3790

02:38:10,010 --> 02:38:08,760

they could and explain to us when they

3791

02:38:12,230 --> 02:38:10,020

couldn't because everything that we

3792

02:38:13,910 --> 02:38:12,240

wanted they couldn't necessarily do but

3793

02:38:15,950 --> 02:38:13,920

we were able to compromise and come up

3794

02:38:18,170 --> 02:38:15,960

with good Solutions so that years later

3795

02:38:19,849 --> 02:38:18,180

maybe in crew 5's case you know they

3796

02:38:21,770 --> 02:38:19,859

wouldn't be cursing Bob and Doug's name

3797

02:38:23,929 --> 02:38:21,780

as to what they had agreed to or said

3798

02:38:25,790 --> 02:38:23,939

was acceptable when the time came we

3799

02:38:27,889 --> 02:38:25,800

wanted to have opportunities for them to

3800

02:38:29,690 --> 02:38:27,899

have choices we included the opportunity

3801

02:38:31,550 --> 02:38:29,700

to write on paper but also to have a

3802

02:38:32,929 --> 02:38:31,560

tablet you know so that Cruz as they

3803

02:38:34,910 --> 02:38:32,939

went forward with their missions would

3804

02:38:36,349 --> 02:38:34,920

be able to find the place that you know

3805

02:38:38,510 --> 02:38:36,359

helped them be as successful as they

3806

02:38:40,130 --> 02:38:38,520

could be and so I'm hopeful that there

3807

02:38:41,570 --> 02:38:40,140

just aren't too many curses associated

3808

02:38:44,210 --> 02:38:41,580

with the Bob and Doug and it's most

3809

02:38:46,130 --> 02:38:44,220

honestly you know hey those guys uh they

3810

02:38:48,410 --> 02:38:46,140

were thinking when they did this so and

3811

02:38:51,469 --> 02:38:48,420

we've had good results so far with uh

3812

02:38:53,870 --> 02:38:51,479

four launches in the fifth today our

3813

02:38:56,210 --> 02:38:53,880

next question comes from atmorearts.com

3814

02:38:58,130 --> 02:38:56,220

if the astronaut schedule shifts during

3815

02:39:00,469 --> 02:38:58,140

docking activities does their schedule

3816

02:39:02,690 --> 02:39:00,479

shift later in the day or the next

3817

02:39:04,670 --> 02:39:02,700

morning you know we do know that the the

3818

02:39:06,410 --> 02:39:04,680

ISS crew is sleep shifting in order to

3819

02:39:08,389 --> 02:39:06,420

accommodate this crew

3820

02:39:09,650 --> 02:39:08,399

it's true Daryl that the the crew

3821

02:39:11,750 --> 02:39:09,660

actually has to sleep shift to

3822

02:39:13,370 --> 02:39:11,760

accommodate the schedules of the vehicle

3823

02:39:15,050 --> 02:39:13,380

traffic that arrives on board the space

3824

02:39:16,790 --> 02:39:15,060

station there are even times when the

3825

02:39:18,170 --> 02:39:16,800

vehicle arrives a few minutes earlier a

3826  
02:39:20,450 --> 02:39:18,180  
few minutes late and the crew needs to

3827  
02:39:22,370 --> 02:39:20,460  
be ready for that as well and so the

3828  
02:39:24,230 --> 02:39:22,380  
crew does shift their day around to

3829  
02:39:26,450 --> 02:39:24,240  
support all the operational activities

3830  
02:39:28,910 --> 02:39:26,460  
not only vehicle traffic and arrivals

3831  
02:39:30,950 --> 02:39:28,920  
but a spacewalk may impact things or

3832  
02:39:32,510 --> 02:39:30,960  
other activities that are happening on

3833  
02:39:34,550 --> 02:39:32,520  
the ground for example might drive is

3834  
02:39:36,410 --> 02:39:34,560  
scheduled to be specific as well but the

3835  
02:39:39,110 --> 02:39:36,420  
crew's given time to recover after each

3836  
02:39:40,550 --> 02:39:39,120  
of those sleep shifts very good and for

3837  
02:39:43,130 --> 02:39:40,560  
those watching if you want to ask a

3838  
02:39:44,870 --> 02:39:43,140

question of Bob binkin just follow us on

3839

02:39:47,809 --> 02:39:44,880

Twitter at Nasa social or check us out

3840

02:39:49,969 --> 02:39:47,819

on the web at nasa.gov forward slash

3841

02:39:51,590 --> 02:39:49,979

social thanks for asking or answering

3842

02:39:53,990 --> 02:39:51,600

those questions Bob great job let's send

3843

02:39:57,590 --> 02:39:54,000

it now back out to Kate at SpaceX for an

3844

02:40:02,150 --> 02:40:00,170

always love hearing those responses from

3845

02:40:06,170 --> 02:40:02,160

any astronaut but especially Bob because

3846

02:40:08,750 --> 02:40:06,180

he flew uh on our dm2 mission a couple

3847

02:40:10,969 --> 02:40:08,760

years ago so at this point in time we're

3848

02:40:13,790 --> 02:40:10,979

now under an hour we're at T minus 48

3849

02:40:15,770 --> 02:40:13,800

minutes and the SpaceX launch Team uh is

3850

02:40:18,110 --> 02:40:15,780

finishing the final review of data from

3851  
02:40:21,110 --> 02:40:18,120  
checkouts of Falcon 9 over the last hour

3852  
02:40:23,030 --> 02:40:21,120  
the launch director has verified with

3853  
02:40:25,250 --> 02:40:23,040  
the launch weather officer that weather

3854  
02:40:27,050 --> 02:40:25,260  
meets propellant loading constraints so

3855  
02:40:29,870 --> 02:40:27,060  
next up will be to pull the team for

3856  
02:40:32,090 --> 02:40:29,880  
Readiness both for propellant load and

3857  
02:40:34,550 --> 02:40:32,100  
for launch this will be the last poll

3858  
02:40:37,030 --> 02:40:34,560  
before liftoff the seven SpaceX

3859  
02:40:39,410 --> 02:40:37,040  
responsible Engineers often called res

3860  
02:40:41,270 --> 02:40:39,420  
indicate that they are go by

3861  
02:40:43,730 --> 02:40:41,280  
electronically voting on the online

3862  
02:40:46,250 --> 02:40:43,740  
countdown procedure the launch director

3863  
02:40:47,990 --> 02:40:46,260

or LD as you hear it called on the Nets

3864

02:40:50,750 --> 02:40:48,000

also checks with the dragon mission

3865

02:40:52,790 --> 02:40:50,760

director or MD and the NASA launch

3866

02:40:53,750 --> 02:40:52,800

manager to make sure that they are also

3867

02:40:55,849 --> 02:40:53,760

ready

3868

02:40:58,370 --> 02:40:55,859

earlier you saw the Vehicle Assembly

3869

02:41:01,309 --> 02:40:58,380

Building called the VAB the Falcon and

3870

02:41:03,170 --> 02:41:01,319

Dragon launch team as well as key NASA

3871

02:41:05,990 --> 02:41:03,180

launch members are in the launch control

3872

02:41:08,270 --> 02:41:06,000

center adjacent to the VAV they have a

3873

02:41:11,210 --> 02:41:08,280

view straight toward pad 39a through the

3874

02:41:12,830 --> 02:41:11,220

large Windows of firing room 4. now

3875

02:41:15,170 --> 02:41:12,840

they're on screen you can see the Dragon

3876

02:41:17,270 --> 02:41:15,180

capsule on the right hand side the crew

3877

02:41:19,969 --> 02:41:17,280

access arm is still in the service

3878

02:41:22,550 --> 02:41:19,979

position I've recently heard that the

3879

02:41:24,290 --> 02:41:22,560

closeout team has Departed the tower and

3880

02:41:27,290 --> 02:41:24,300

they are in the process of departing the

3881

02:41:29,630 --> 02:41:27,300

blast danger area now with the crew

3882

02:41:32,090 --> 02:41:29,640

onboard Dragon waiting for next

3883

02:41:34,030 --> 02:41:32,100

instructions which will be to Stow the

3884

02:41:38,030 --> 02:41:34,040

crew arm for launch

3885

02:41:40,190 --> 02:41:38,040

and the crew arm sequence will be armed

3886

02:41:43,010 --> 02:41:40,200

and initiated we should get a good view

3887

02:41:44,270 --> 02:41:43,020

of the axis arm as it squares on

3888

02:41:47,210 --> 02:41:44,280

countdown

3889

02:41:50,870 --> 02:41:47,220

polling is complete the team has pulled

3890

02:41:53,929 --> 02:41:50,880

go for crew access arm retract Les arm

3891

02:41:56,630 --> 02:41:53,939

account load and launch

3892

02:41:58,849 --> 02:41:56,640

for all operators in mccx and firing or

3893

02:42:01,190 --> 02:41:58,859

both control rooms that go into lockdown

3894

02:42:02,690 --> 02:42:01,200

18 minus 45 minutes and remain in that

3895

02:42:04,969 --> 02:42:02,700

state until launch Escape system is

3896

02:42:06,349 --> 02:42:04,979

disarmed all operators are to remain at

3897

02:42:08,750 --> 02:42:06,359

their console and maintain a sterile

3898

02:42:10,190 --> 02:42:08,760

cockpit until MD confirms successful

3899

02:42:12,830 --> 02:42:10,200

disarming of the large scale system

3900

02:42:15,770 --> 02:42:12,840

following orbit insertion or propellant

3901

02:42:18,349 --> 02:42:15,780

offload the event of a scrub

3902

02:42:20,450 --> 02:42:18,359

for non-urgent no-go conditions brief

3903

02:42:21,710 --> 02:42:20,460

the CE or LD and they will approve a

3904

02:42:23,389 --> 02:42:21,720

boarding the countdown

3905

02:42:25,190 --> 02:42:23,399

virgin issues affecting the safety of

3906

02:42:27,469 --> 02:42:25,200

the operation operators shall call hold

3907

02:42:29,450 --> 02:42:27,479

hold hold hold hold account.net plus

3908

02:42:31,490 --> 02:42:29,460

total will afford to launch Auto

3909

02:42:33,050 --> 02:42:31,500

sequence and immediately proceed into

3910

02:42:34,730 --> 02:42:33,060

launch report

3911

02:42:36,530 --> 02:42:34,740

the D minus 10 seconds launch control

3912

02:42:38,450 --> 02:42:36,540

will be hands off relying on automated

3913

02:42:39,530 --> 02:42:38,460

support criteria for the remainder of

3914

02:42:40,969 --> 02:42:39,540

the count

3915

02:42:42,469 --> 02:42:40,979

operators advise the law instructor

3916

02:42:44,270 --> 02:42:42,479

whether structural breakup or fires

3917

02:42:46,250 --> 02:42:44,280

eminent or occurring for Dragon manual

3918

02:42:48,410 --> 02:42:46,260

Escape flight rules

3919

02:42:52,070 --> 02:42:48,420

launch troll at this time we proceed

3920

02:42:54,230 --> 02:42:52,080

with arming the crew armor for movement

3921

02:42:59,090 --> 02:42:54,240

lost control of copies proceeding to arm

3922

02:43:02,870 --> 02:43:01,670

all right quick recap there all really

3923

02:43:05,870 --> 02:43:02,880

good news

3924

02:43:07,730 --> 02:43:05,880

um it sounds like the final poll has

3925

02:43:11,389 --> 02:43:07,740

been conducted and all of the

3926

02:43:13,309 --> 02:43:11,399

responsible Engineers hold go as well as

3927

02:43:17,090 --> 02:43:13,319

the range they pulled ready for launch

3928

02:43:19,910 --> 02:43:17,100

and the NASA team for LA the NASA launch

3929

02:43:22,010 --> 02:43:19,920

team is also ready for launch so

3930

02:43:23,870 --> 02:43:22,020

everything continuing to look good we

3931

02:43:26,210 --> 02:43:23,880

just heard there that the crew arm

3932

02:43:28,429 --> 02:43:26,220

excuse me the crew access arm will be

3933

02:43:30,710 --> 02:43:28,439

armed for retraction meaning it will

3934

02:43:32,090 --> 02:43:30,720

move away from the driver arm retraction

3935

02:43:34,010 --> 02:43:32,100

started

3936

02:43:36,650 --> 02:43:34,020

all right and there we should get a view

3937

02:43:38,990 --> 02:43:36,660

of that crew access arm now moving away

3938

02:43:41,389 --> 02:43:39,000

from Dragon capsule again this will

3939

02:43:43,910 --> 02:43:41,399

swing out into its launch position this

3940

02:43:46,610 --> 02:43:43,920

is the final change to the crew access

3941

02:43:48,889 --> 02:43:46,620

arm excuse me to the crew Tower

3942

02:43:52,070 --> 02:43:48,899

um of course the transporter erector

3943

02:43:53,750 --> 02:43:52,080

will move away from the rocket as it

3944

02:43:55,730 --> 02:43:53,760

lifts off and just shortly before

3945

02:43:57,830 --> 02:43:55,740

liftoff so that in fact will be the last

3946

02:44:00,469 --> 02:43:57,840

major physical change that we see to the

3947

02:44:03,469 --> 02:44:00,479

pad but this crew access arm retraction

3948

02:44:08,030 --> 02:44:03,479

is the final uh will be the final State

3949

02:44:13,490 --> 02:44:10,610

this retraction should take about a

3950

02:44:16,010 --> 02:44:13,500

minute to complete now as I mentioned

3951  
02:44:17,750 --> 02:44:16,020  
before the range continues to be go for

3952  
02:44:20,510 --> 02:44:17,760  
launch monitoring the clearance area

3953  
02:44:23,450 --> 02:44:20,520  
around the launch pad as well as air and

3954  
02:44:25,849 --> 02:44:23,460  
sea space around the flight Corridor and

3955  
02:44:27,889 --> 02:44:25,859  
of course uh here at Kennedy Space

3956  
02:44:30,110 --> 02:44:27,899  
Center as you see on your screen the

3957  
02:44:32,150 --> 02:44:30,120  
conditions are gorgeous everything

3958  
02:44:34,550 --> 02:44:32,160  
continues to be acceptable for launch

3959  
02:44:38,090 --> 02:44:34,560  
many things go into considerations such

3960  
02:44:39,830 --> 02:44:38,100  
as round wins any rain that might be in

3961  
02:44:41,929 --> 02:44:39,840  
the area as well as potential for

3962  
02:44:44,090 --> 02:44:41,939  
lightning any thick clouds and of course

3963  
02:44:46,490 --> 02:44:44,100

as I mentioned before downrange landing

3964

02:44:47,870 --> 02:44:46,500

zones we have mentioned before that

3965

02:44:51,170 --> 02:44:47,880

we've been tracking those but everything

3966

02:44:53,090 --> 02:44:51,180

continues to look green for launch at

3967

02:44:56,570 --> 02:44:53,100

this point in time everything is looking

3968

02:44:58,610 --> 02:44:56,580

on time for our lift off at noon Eastern

3969

02:45:01,250 --> 02:44:58,620

we can see that crew access arm

3970

02:45:02,990 --> 02:45:01,260

continuing to retract pretty cool shot

3971

02:45:04,730 --> 02:45:03,000

there from inside the arm on the right

3972

02:45:08,389 --> 02:45:04,740

hand side of your screen as we see

3973

02:45:10,190 --> 02:45:08,399

Dragon slowly move out of the frame so

3974

02:45:13,250 --> 02:45:10,200

with all that being said the teams are

3975

02:45:17,510 --> 02:45:13,260

ready we will begin the propellant load

3976  
02:45:20,090 --> 02:45:17,520  
at T minus 35 minutes and we are getting

3977  
02:45:21,530 --> 02:45:20,100  
excited here at SpaceX headquarters the

3978  
02:45:24,349 --> 02:45:21,540  
energy is definitely starting to pick up

3979  
02:45:26,809 --> 02:45:24,359  
outside of Mission Control but with that

3980  
02:45:29,030 --> 02:45:26,819  
let's hand it off to Daryl to check in

3981  
02:45:31,670 --> 02:45:29,040  
back over there at Kennedy Space Center

3982  
02:45:34,429 --> 02:45:31,680  
all right thank you Kate and uh back

3983  
02:45:36,290 --> 02:45:34,439  
here on the lawn and the host desk

3984  
02:45:39,349 --> 02:45:36,300  
looking out at uh what one of my

3985  
02:45:41,809 --> 02:45:39,359  
co-workers called a picnic Vibe with the

3986  
02:45:45,230 --> 02:45:41,819  
media and NASA social folks all joined

3987  
02:45:48,050 --> 02:45:45,240  
here to watch crew 5 launch and just

3988  
02:45:49,969 --> 02:45:48,060

backfit arm retraction complete and

3989

02:45:53,389 --> 02:45:49,979

there you heard confirmation that that

3990

02:45:56,210 --> 02:45:53,399

crew access arm has fully retracted from

3991

02:45:58,190 --> 02:45:56,220

the rocket a gorgeous shot there from

3992

02:45:59,630 --> 02:45:58,200

our flight operations team here at the

3993

02:46:01,910 --> 02:45:59,640

Kennedy Space Center a helicopter

3994

02:46:03,290 --> 02:46:01,920

encircling the pad right now to give you

3995

02:46:05,630 --> 02:46:03,300

that view

3996

02:46:08,630 --> 02:46:05,640

great job fellas

3997

02:46:12,950 --> 02:46:08,640

T-minus 42 minutes and Counting

3998

02:46:14,510 --> 02:46:12,960

as we zip around launch complex 39a

3999

02:46:17,030 --> 02:46:14,520

the background

4000

02:46:17,990 --> 02:46:17,040

the launch tower for Dragon and in the

4001  
02:46:20,150 --> 02:46:18,000  
foreground

4002  
02:46:21,710 --> 02:46:20,160  
a Starship launch tower under

4003  
02:46:23,510 --> 02:46:21,720  
construction

4004  
02:46:25,969 --> 02:46:23,520  
up next we're looking at the launch

4005  
02:46:28,070 --> 02:46:25,979  
Escape system getting ready to arm and

4006  
02:46:30,230 --> 02:46:28,080  
of course that comes right before we

4007  
02:46:31,969 --> 02:46:30,240  
start loading propellant

4008  
02:46:34,790 --> 02:46:31,979  
we're expecting to hear those call outs

4009  
02:46:41,809 --> 02:46:38,630  
on a beautiful Bluebird day

4010  
02:46:45,349 --> 02:46:41,819  
at the Kennedy Space Center

4011  
02:46:47,090 --> 02:46:45,359  
our crew crew 5 is in their seats at the

4012  
02:46:49,429 --> 02:46:47,100  
very top of that rocket inside the

4013  
02:46:51,469 --> 02:46:49,439

capsule endurance making its second

4014

02:46:53,090 --> 02:46:51,479

flight

4015

02:46:56,270 --> 02:46:53,100

there they are

4016

02:47:01,190 --> 02:46:59,270

cosmonaut anakikina

4017

02:47:02,870 --> 02:47:01,200

Josh cassida

4018

02:47:06,889 --> 02:47:02,880

Nicole Mann

4019

02:47:11,150 --> 02:47:08,929

and Daryl getting into position to begin

4020

02:47:12,889 --> 02:47:11,160

their procedure that'll have them arming

4021

02:47:15,230 --> 02:47:12,899

that launch Escape system that you

4022

02:47:17,510 --> 02:47:15,240

mentioned they'll be able to hear some

4023

02:47:19,250 --> 02:47:17,520

clicking of valves and follow along on

4024

02:47:21,230 --> 02:47:19,260

their display screen as once they've

4025

02:47:23,270 --> 02:47:21,240

kicked off that procedure as the the

4026  
02:47:25,309 --> 02:47:23,280  
vehicle kind of catches up and completes

4027  
02:47:28,969 --> 02:47:25,319  
that arming sequence and as you know

4028  
02:47:30,710 --> 02:47:28,979  
once the fueling operations begin the

4029  
02:47:33,230 --> 02:47:30,720  
crew has to be ready to potentially

4030  
02:47:34,670 --> 02:47:33,240  
launch us somewhere if there was sort of

4031  
02:47:36,950 --> 02:47:34,680  
some sort of a problem and so that

4032  
02:47:39,110 --> 02:47:36,960  
launches Eight system needs to be in

4033  
02:47:42,710 --> 02:47:39,120  
place and armed in preparation for that

4034  
02:47:47,270 --> 02:47:45,170  
that system will stay armed throughout

4035  
02:47:49,670 --> 02:47:47,280  
the ascent phase until the crew is

4036  
02:47:51,650 --> 02:47:49,680  
actually safely in orbit allowing them a

4037  
02:47:53,750 --> 02:47:51,660  
safe way to escape from the Falcon 9

4038  
02:47:56,990 --> 02:47:53,760

rocket should there be any sort of a a

4039

02:47:58,250 --> 02:47:57,000

problem with the vehicle

4040

02:48:00,349 --> 02:47:58,260

and we're expecting to see the

4041

02:48:02,090 --> 02:48:00,359

astronauts close their visors and arm

4042

02:48:03,530 --> 02:48:02,100

the launch Escape system that you just

4043

02:48:06,410 --> 02:48:03,540

talked about Bob

4044

02:48:08,990 --> 02:48:06,420

here in a little over a minute

4045

02:48:12,290 --> 02:48:09,000

we'll get the call out

4046

02:48:16,610 --> 02:48:14,389

you'll also see them ensure that their

4047

02:48:19,190 --> 02:48:16,620

feet are in the appropriate locked in

4048

02:48:21,110 --> 02:48:19,200

position their straps are tight because

4049

02:48:23,389 --> 02:48:21,120

again should that system be required

4050

02:48:25,969 --> 02:48:23,399

they might be going for a pretty

4051  
02:48:28,309 --> 02:48:25,979  
significant Dynamic ride but of course

4052  
02:48:30,469 --> 02:48:28,319  
we don't expect that to happen today but

4053  
02:48:31,969 --> 02:48:30,479  
they'll have that system in place just

4054  
02:48:33,770 --> 02:48:31,979  
in case does the appropriate safety

4055  
02:48:36,110 --> 02:48:33,780  
measure now Bob that launch Escape

4056  
02:48:38,090 --> 02:48:36,120  
system powered by super Draco engines

4057  
02:48:41,150 --> 02:48:38,100  
capable of moving Dragon a half a mile

4058  
02:48:43,790 --> 02:48:41,160  
in just seven and a half seconds which

4059  
02:48:45,590 --> 02:48:43,800  
is equivalent to a peak velocity of 436

4060  
02:48:47,389 --> 02:48:45,600  
miles per hour I know you know this

4061  
02:48:49,849 --> 02:48:47,399  
system well you were very much like

4062  
02:48:50,990 --> 02:48:49,859  
briefed and very aware of its

4063  
02:48:52,790 --> 02:48:51,000

capabilities

4064

02:48:54,830 --> 02:48:52,800

you want to be able to not only get off

4065

02:48:56,690 --> 02:48:54,840

the launch pad but also get off the

4066

02:48:59,450 --> 02:48:56,700

rocket while in flight so it's got to

4067

02:49:01,429 --> 02:48:59,460

move fast absolutely Daryl and for

4068

02:49:03,110 --> 02:49:01,439

shuttle systems you know the crew would

4069

02:49:05,570 --> 02:49:03,120

really have to do a lot of manual

4070

02:49:07,730 --> 02:49:05,580

activities to to steer the vehicle uh

4071

02:49:09,950 --> 02:49:07,740

through the uh appropriate Escape or

4072

02:49:12,230 --> 02:49:09,960

abort scenarios as we talked about them

4073

02:49:14,330 --> 02:49:12,240

in those days but this system is highly

4074

02:49:16,849 --> 02:49:14,340

automated and the crew primarily follows

4075

02:49:20,690 --> 02:49:16,859

along with its operations

4076  
02:49:23,270 --> 02:49:20,700  
Dragon you are gopher section 7 of 4.100

4077  
02:49:34,330 --> 02:49:23,280  
to close visors and arm the launch

4078  
02:49:40,190 --> 02:49:36,830  
SpaceX Dragon copies stepping into

4079  
02:49:42,110 --> 02:49:40,200  
section seven All crew advisors are

4080  
02:49:45,230 --> 02:49:42,120  
closed we are arming the launch Escape

4081  
02:49:49,969 --> 02:49:47,389  
he's all

4082  
02:49:53,389 --> 02:49:49,979  
it's Commander Nicole Mann reporting

4083  
02:49:57,950 --> 02:49:55,610  
their visors are closed

4084  
02:50:03,050 --> 02:49:57,960  
they are ready to arm the launch Escape

4085  
02:50:06,710 --> 02:50:04,790  
and you can see the crew members are

4086  
02:50:08,270 --> 02:50:06,720  
pulling their straps and ensuring that

4087  
02:50:10,969 --> 02:50:08,280  
they are they are buckled in because

4088  
02:50:12,830 --> 02:50:10,979

from a crew perspective that relaxation

4089

02:50:16,370 --> 02:50:12,840

period that I talked about earlier is

4090

02:50:18,590 --> 02:50:16,380

now over yeah it's all business now I

4091

02:50:21,290 --> 02:50:18,600

want to make sure that you're in your

4092

02:50:25,190 --> 02:50:21,300

seat firm and tight

4093

02:50:28,550 --> 02:50:26,990

this is also the part of the operation

4094

02:50:30,410 --> 02:50:28,560

that starts to be a little bit different

4095

02:50:33,490 --> 02:50:30,420

than training you know you really can't

4096

02:50:40,130 --> 02:50:33,500

uh capture the

4097

02:50:44,990 --> 02:50:41,990

all right we got the verification of the

4098

02:50:46,849 --> 02:50:45,000

Armed Escape system

4099

02:50:48,590 --> 02:50:46,859

so from a training perspective the

4100

02:50:50,330 --> 02:50:48,600

sounds and and things that the crew will

4101  
02:50:51,590 --> 02:50:50,340  
hear during the loading operation are

4102  
02:50:53,450 --> 02:50:51,600  
just different than they're able to

4103  
02:50:55,370 --> 02:50:53,460  
capture from a training perspective and

4104  
02:50:56,389 --> 02:50:55,380  
so now is when it starts to again be a

4105  
02:50:57,469 --> 02:50:56,399  
little bit different from a crew

4106  
02:50:59,870 --> 02:50:57,479  
perspective

4107  
02:51:01,370 --> 02:50:59,880  
there's no simulating that system you

4108  
02:51:03,410 --> 02:51:01,380  
know there is some Acoustics that they

4109  
02:51:05,090 --> 02:51:03,420  
tried to capture nine tanks will

4110  
02:51:08,510 --> 02:51:05,100  
be venting for the start of prop load

4111  
02:51:14,030 --> 02:51:10,730  
that they tried to capture with the demo

4112  
02:51:15,889 --> 02:51:14,040  
one uh audio if you will but as you

4113  
02:51:17,630 --> 02:51:15,899

heard in the the com that just came

4114

02:51:19,730 --> 02:51:17,640

through there you know do you need to

4115

02:51:21,349 --> 02:51:19,740

get reminded to expect loud venting

4116

02:51:22,730 --> 02:51:21,359

during some of the operations and these

4117

02:51:24,770 --> 02:51:22,740

are new things from a crew perspective

4118

02:51:25,849 --> 02:51:24,780

that uh you've been briefed on but now

4119

02:51:26,690 --> 02:51:25,859

you're going to hear them for the first

4120

02:51:29,389 --> 02:51:26,700

time

4121

02:51:31,429 --> 02:51:29,399

three of the four crew members inside

4122

02:51:33,170 --> 02:51:31,439

that capsule right now have never flown

4123

02:51:35,389 --> 02:51:33,180

to space before they are first time

4124

02:51:38,630 --> 02:51:35,399

Flyers

4125

02:51:40,429 --> 02:51:38,640

the loan exception koichiwakata

4126  
02:51:42,710 --> 02:51:40,439  
was a veteran

4127  
02:51:44,690 --> 02:51:42,720  
with jaxa

4128  
02:51:50,210 --> 02:51:44,700  
and he's getting ready to embark on his

4129  
02:51:50,220 --> 02:51:56,809  
and as we wait for the next mark

4130  
02:52:00,950 --> 02:51:58,670  
you know the crew's experience whether

4131  
02:52:04,130 --> 02:52:00,960  
it's a space shuttle or a soyuz or the

4132  
02:52:06,170 --> 02:52:04,140  
dragon vehicle or Starliner or artemisa

4133  
02:52:07,849 --> 02:52:06,180  
as we move towards that these

4134  
02:52:10,490 --> 02:52:07,859  
experiences are all slightly different

4135  
02:52:12,230 --> 02:52:10,500  
and so I'm excited to hear you know

4136  
02:52:14,330 --> 02:52:12,240  
koichi's discussion as he tries to

4137  
02:52:15,950 --> 02:52:14,340  
balance and describe all three of them

4138  
02:52:18,410 --> 02:52:15,960

side by side when he gets back from this

4139

02:52:21,950 --> 02:52:20,450

would love to hear him talk about the

4140

02:52:24,710 --> 02:52:21,960

comparisons

4141

02:52:26,750 --> 02:52:24,720

there's only a few of a few astronauts

4142

02:52:30,110 --> 02:52:26,760

like him right that have been able to

4143

02:52:32,210 --> 02:52:30,120

fly on all three vehicles yes and and as

4144

02:52:34,190 --> 02:52:32,220

we go forward here with the Artemis

4145

02:52:36,830 --> 02:52:34,200

missions coming forward I'm excited to

4146

02:52:39,170 --> 02:52:36,840

have folks compare and contrast uh their

4147

02:52:41,750 --> 02:52:39,180

Orion experience their SLS experience

4148

02:52:45,050 --> 02:52:41,760

with a falcon 9 or our other Rockets

4149

02:52:49,550 --> 02:52:47,330

just a few seconds now and

4150

02:52:52,610 --> 02:52:49,560

we're awaiting the confirmation

4151  
02:52:55,429 --> 02:52:52,620  
to the beginning of loading propellant

4152  
02:52:57,170 --> 02:52:55,439  
into the Falcon 9 rocket

4153  
02:53:07,130 --> 02:52:57,180  
with a beautiful shot there as we

4154  
02:53:20,210 --> 02:53:09,110  
just a few more seconds until that call

4155  
02:53:20,220 --> 02:53:27,590  
propellant loading has started

4156  
02:53:33,050 --> 02:53:30,290  
And So It Begins the loading of

4157  
02:53:38,630 --> 02:53:33,060  
propellant aboard the Falcon 9 rocket

4158  
02:53:44,450 --> 02:53:41,990  
got your propellant and your oxidizer

4159  
02:53:46,790 --> 02:53:44,460  
which Blended together

4160  
02:53:49,190 --> 02:53:46,800  
make quite the combustion

4161  
02:53:50,809 --> 02:53:49,200  
millions of pounds of thrust to get crew

4162  
02:53:52,370 --> 02:53:50,819  
5 into space

4163  
02:53:54,469 --> 02:53:52,380

now there are a lot of details to that

4164

02:53:56,929 --> 02:53:54,479

operation Daryl with the each of the

4165

02:53:58,969 --> 02:53:56,939

stages and as you mentioned the oxidizer

4166

02:54:00,889 --> 02:53:58,979

and the fuel both need to be loaded and

4167

02:54:03,170 --> 02:54:00,899

so the crew will follow along with that

4168

02:54:05,570 --> 02:54:03,180

carefully as the loading operation

4169

02:54:08,330 --> 02:54:05,580

commences uh if there was any reason for

4170

02:54:10,910 --> 02:54:08,340

them to need to stop that operation the

4171

02:54:13,610 --> 02:54:10,920

the crew would expect that that

4172

02:54:15,290 --> 02:54:13,620

propellant loading to kind of be backed

4173

02:54:17,090 --> 02:54:15,300

out and reversed and so they'll want to

4174

02:54:19,010 --> 02:54:17,100

understand the state of that fueling

4175

02:54:20,929 --> 02:54:19,020

operation going forward just in case

4176

02:54:22,969 --> 02:54:20,939

they had to back out of it

4177

02:54:26,150 --> 02:54:22,979

and we got a social question now from

4178

02:54:28,070 --> 02:54:26,160

add Grant b117

4179

02:54:30,110 --> 02:54:28,080

who asks how long does it take to

4180

02:54:31,790 --> 02:54:30,120

complete the fueling operations

4181

02:54:34,370 --> 02:54:31,800

you know it's a great question Daryl and

4182

02:54:36,590 --> 02:54:34,380

they started it at 35 minutes because

4183

02:54:38,389 --> 02:54:36,600

that's really a prior to liftoff because

4184

02:54:40,190 --> 02:54:38,399

that's how really how long it takes for

4185

02:54:43,309 --> 02:54:40,200

the loading operations to kind of get

4186

02:54:45,590 --> 02:54:43,319

executed the the crew goes through the

4187

02:54:47,750 --> 02:54:45,600

process the ground team of loading that

4188

02:54:50,510 --> 02:54:47,760

propellant ensuring that they get the

4189

02:54:52,550 --> 02:54:50,520

proper Commodities on board the actual

4190

02:54:55,130 --> 02:54:52,560

sequencing of things might be affected a

4191

02:54:57,410 --> 02:54:55,140

little bit by the temperature on a given

4192

02:54:59,570 --> 02:54:57,420

day but they have that that process well

4193

02:55:02,210 --> 02:54:59,580

monitored and they begin at 35 minutes

4194

02:55:04,429 --> 02:55:02,220

because that's how long it takes to to

4195

02:55:06,650 --> 02:55:04,439

get the rocket all fueled up thank you

4196

02:55:09,110 --> 02:55:06,660

for asking for answering those questions

4197

02:55:10,990 --> 02:55:09,120

and to you out there for asking the

4198

02:55:13,969 --> 02:55:11,000

questions keep them coming

4199

02:55:16,550 --> 02:55:13,979

#ask NASA on our various social

4200

02:55:18,290 --> 02:55:16,560

platforms and again now that fueling for

4201  
02:55:20,330 --> 02:55:18,300  
Falcon 9 has started that means the

4202  
02:55:23,030 --> 02:55:20,340  
eight super Draco engines inside crew

4203  
02:55:25,730 --> 02:55:23,040  
Dragon are ready if needed to launch the

4204  
02:55:27,590 --> 02:55:25,740  
capsule away from Falcon 9 in an instant

4205  
02:55:29,929 --> 02:55:27,600  
should there be any kind of emergency

4206  
02:55:32,090 --> 02:55:29,939  
associated with the rocket or the pad

4207  
02:55:34,429 --> 02:55:32,100  
the NASA and SpaceX teams have trained

4208  
02:55:36,469 --> 02:55:34,439  
extensively for exactly that type of

4209  
02:55:38,690 --> 02:55:36,479  
contingency

4210  
02:55:40,790 --> 02:55:38,700  
and so now let's go over to Kate Tice at

4211  
02:55:45,110 --> 02:55:40,800  
SpaceX headquarters in Hawthorne for

4212  
02:55:49,610 --> 02:55:47,690  
thanks Daryl you can probably tell by

4213  
02:55:51,110 --> 02:55:49,620

the background noise that uh things are

4214

02:55:53,389 --> 02:55:51,120

starting to get more exciting now that

4215

02:55:55,910 --> 02:55:53,399

we're just practically 30 minutes away

4216

02:55:57,889 --> 02:55:55,920

from launch of crew 5 certainly counting

4217

02:56:00,590 --> 02:55:57,899

down the final minutes everything's

4218

02:56:03,110 --> 02:56:00,600

still looking good for Falcon 9 and

4219

02:56:05,570 --> 02:56:03,120

dragon with that launch Escape system

4220

02:56:08,510 --> 02:56:05,580

now armed we are heading for an on-time

4221

02:56:11,030 --> 02:56:08,520

launch uh just 32 minutes from now as

4222

02:56:14,150 --> 02:56:11,040

you saw Falcon 9 propellant load began

4223

02:56:16,309 --> 02:56:14,160

right on time at T minus 35 minutes the

4224

02:56:18,230 --> 02:56:16,319

first and second stages of Falcon 9 are

4225

02:56:20,389 --> 02:56:18,240

each loaded with two liquid propellants

4226

02:56:22,429 --> 02:56:20,399

one is fuel which is loaded into a tank

4227

02:56:24,230 --> 02:56:22,439

at the bottom of each stage and the

4228

02:56:26,990 --> 02:56:24,240

other is an oxidizer and that's loaded

4229

02:56:28,670 --> 02:56:27,000

into a tank at the top of each stage the

4230

02:56:31,190 --> 02:56:28,680

fuel that we use to power the Merlin

4231

02:56:35,210 --> 02:56:31,200

engines is a refined kerosene referred

4232

02:56:37,429 --> 02:56:35,220

to as rp1 or rocket propellant one the

4233

02:56:39,590 --> 02:56:37,439

oxidizer loaded on each stage is a

4234

02:56:41,570 --> 02:56:39,600

densified liquid oxygen or loss

4235

02:56:43,730 --> 02:56:41,580

densified means that it's kept much

4236

02:56:46,309 --> 02:56:43,740

colder than typical for launch vehicles

4237

02:56:48,349 --> 02:56:46,319

and it takes up less volume and as such

4238

02:56:50,150 --> 02:56:48,359

this allows for more oxidizer to be

4239

02:56:53,030 --> 02:56:50,160

loaded into the first and second stages

4240

02:56:55,070 --> 02:56:53,040

now to ignite the fuel and oxidizer in

4241

02:56:57,830 --> 02:56:55,080

the Merlin rocket engine we use an

4242

02:57:00,290 --> 02:56:57,840

ignition fluid called t-tep when t-tep

4243

02:57:02,990 --> 02:57:00,300

comes into contact with oxygen it burns

4244

02:57:04,670 --> 02:57:03,000

giving off a green colored flame once we

4245

02:57:06,950 --> 02:57:04,680

have that flame going we add in the

4246

02:57:09,170 --> 02:57:06,960

kerosene fuel to the Merlin chamber and

4247

02:57:10,670 --> 02:57:09,180

the engine ramps up to full power you

4248

02:57:12,950 --> 02:57:10,680

might actually be able to see that green

4249

02:57:15,889 --> 02:57:12,960

flash just as the second stage engine

4250

02:57:17,929 --> 02:57:15,899

ignites following stage separation which

4251  
02:57:20,510 --> 02:57:17,939  
is expected to happen about 2 minutes

4252  
02:57:22,670 --> 02:57:20,520  
and 48 seconds into play

4253  
02:57:25,610 --> 02:57:22,680  
right now we're topping off helium into

4254  
02:57:27,950 --> 02:57:25,620  
pressure vessels on both stages this is

4255  
02:57:29,870 --> 02:57:27,960  
used to pressurize tanks in flight AS

4256  
02:57:32,690 --> 02:57:29,880  
propellant is pulled out of those tanks

4257  
02:57:34,250 --> 02:57:32,700  
by the Merlin turbo pumps now on board

4258  
02:57:36,469 --> 02:57:34,260  
the spacecraft the astronauts are

4259  
02:57:40,429 --> 02:57:36,479  
monitoring systems from their crew

4260  
02:57:44,630 --> 02:57:41,870  
all right there we just heard that the

4261  
02:57:46,550 --> 02:57:44,640  
cryo helium load has begun again that is

4262  
02:57:48,590 --> 02:57:46,560  
going into those uh pressure vessels

4263  
02:57:51,230 --> 02:57:48,600

that I mentioned earlier now the crew

4264

02:57:53,990 --> 02:57:51,240

training simulator has included playback

4265

02:57:56,450 --> 02:57:54,000

of the sounds that uh were recorded in a

4266

02:57:58,730 --> 02:57:56,460

previous Dragon capsule during recent

4267

02:58:01,670 --> 02:57:58,740

flights so all of the pops and the

4268

02:58:03,830 --> 02:58:01,680

hisses that the vehicle puts out all the

4269

02:58:05,870 --> 02:58:03,840

crew has heard those before though not

4270

02:58:07,370 --> 02:58:05,880

live so they are prepared for all the

4271

02:58:10,130 --> 02:58:07,380

noises the extra noises that they're now

4272

02:58:12,290 --> 02:58:10,140

hearing as for the range continues to

4273

02:58:14,870 --> 02:58:12,300

report no problems they are go to

4274

02:58:16,250 --> 02:58:14,880

support launch weather also clearly

4275

02:58:18,469 --> 02:58:16,260

looking great I think we're actually

4276

02:58:21,650 --> 02:58:18,479

seeing even fewer clouds than we were

4277

02:58:24,110 --> 02:58:21,660

about 20 minutes ago we had a less than

4278

02:58:26,269 --> 02:58:24,120

10 percent chance or probability of

4279

02:58:28,969 --> 02:58:26,279

violation of our weather constraints

4280

02:58:32,389 --> 02:58:28,979

also known as a POV so that's really

4281

02:58:34,370 --> 02:58:32,399

good that is for the launch site

4282

02:58:36,530 --> 02:58:34,380

conditions we are also tracking down

4283

02:58:39,170 --> 02:58:36,540

range weather conditions as well as

4284

02:58:42,290 --> 02:58:39,180

launch sites around the world in the

4285

02:58:44,330 --> 02:58:42,300

unlikely event that dragon to escape now

4286

02:58:45,950 --> 02:58:44,340

as a reminder today we have an

4287

02:58:47,090 --> 02:58:45,960

instantaneous launch time because we're

4288

02:58:49,670 --> 02:58:47,100

heading to the International Space

4289

02:58:52,010 --> 02:58:49,680

Station so at this point in time if we

4290

02:58:53,809 --> 02:58:52,020

hear a hold for any reason we will have

4291

02:58:55,670 --> 02:58:53,819

to stand down and Target our backup

4292

02:58:58,730 --> 02:58:55,680

launch opportunity which is tomorrow

4293

02:59:01,309 --> 02:58:58,740

just under 24 hours from today's planned

4294

02:59:03,410 --> 02:59:01,319

launch at this point in time at just

4295

02:59:05,330 --> 02:59:03,420

under T minus 30 minutes till launch

4296

02:59:07,490 --> 02:59:05,340

let's turn it back over to Jesse and

4297

02:59:10,670 --> 02:59:07,500

Sandra for an overview of what's to come

4298

02:59:14,990 --> 02:59:12,950

great thanks Kate always great to hear

4299

02:59:18,050 --> 02:59:15,000

that we've got good weather and it looks

4300

02:59:19,849 --> 02:59:18,060

beautiful over there at KSC for crew 5

4301  
02:59:22,250 --> 02:59:19,859  
the astronauts flight to station will

4302  
02:59:26,210 --> 02:59:22,260  
take about 29 hours

4303  
02:59:28,309 --> 02:59:26,220  
and as we await t0 in just about 28

4304  
02:59:31,429 --> 02:59:28,319  
minutes from now the ground operations

4305  
02:59:33,830 --> 02:59:31,439  
team is doing a series of system checks

4306  
02:59:36,230 --> 02:59:33,840  
to make sure both dragon and Falcon 9

4307  
02:59:38,929 --> 02:59:36,240  
are ready for launch you're looking at a

4308  
02:59:41,210 --> 02:59:38,939  
live view of our teams at the cape as

4309  
02:59:43,309 --> 02:59:41,220  
they prepare for liftoff and as we wait

4310  
02:59:45,170 --> 02:59:43,319  
for the launch clock to hit zero we want

4311  
02:59:46,969 --> 02:59:45,180  
to give you an overview of what the

4312  
02:59:47,809 --> 02:59:46,979  
ascent portion of the mission will look

4313  
02:59:50,630 --> 02:59:47,819

like

4314

02:59:53,269 --> 02:59:50,640

now once we hit t0 and a successful

4315

02:59:55,790 --> 02:59:53,279

launch occurs we will watch Falcon 9 and

4316

02:59:58,190 --> 02:59:55,800

dragon lift off from historic launch pad

4317

03:00:01,010 --> 02:59:58,200

39a and make their ascent

4318

03:00:03,650 --> 03:00:01,020

about 50 seconds into flight Falcons

4319

03:00:05,570 --> 03:00:03,660

nine engines will Throttle Down to half

4320

03:00:07,969 --> 03:00:05,580

to help pass through the period of a

4321

03:00:10,969 --> 03:00:07,979

maximum Dynamic pressure on the rocket

4322

03:00:13,490 --> 03:00:10,979

or what we typically refer to as Max Q

4323

03:00:15,650 --> 03:00:13,500

at this point in time the vehicle will

4324

03:00:17,330 --> 03:00:15,660

be going supersonic

4325

03:00:19,130 --> 03:00:17,340

once we're through the period of Maximum

4326  
03:00:23,150 --> 03:00:19,140  
Dynamic pressure we can throttle up our

4327  
03:00:27,830 --> 03:00:25,010  
a series of three events that will

4328  
03:00:30,950 --> 03:00:27,840  
happen in Rapid succession the first is

4329  
03:00:33,830 --> 03:00:30,960  
Mikko or main engine cutoff and this is

4330  
03:00:36,349 --> 03:00:33,840  
where all nine Merlin 1D engines shut

4331  
03:00:39,410 --> 03:00:36,359  
off in preparation for stage separation

4332  
03:00:41,809 --> 03:00:39,420  
which is of course our second event this

4333  
03:00:43,849 --> 03:00:41,819  
is where the first stage detaches from

4334  
03:00:45,590 --> 03:00:43,859  
the second stage and the first stage

4335  
03:00:47,929 --> 03:00:45,600  
will make its way back to Earth for

4336  
03:00:49,790 --> 03:00:47,939  
landing while the second stage continues

4337  
03:00:53,450 --> 03:00:49,800  
on its Journey with the third event

4338  
03:00:55,849 --> 03:00:53,460

which is ses1 or second stage engine

4339

03:00:58,670 --> 03:00:55,859

start number one and this is where the

4340

03:01:00,590 --> 03:00:58,680

mvac engine lights up and propels the

4341

03:01:02,450 --> 03:01:00,600

second stage along with our crew 5

4342

03:01:04,910 --> 03:01:02,460

astronauts to orbit

4343

03:01:06,950 --> 03:01:04,920

as stage two head towards its targeted

4344

03:01:09,110 --> 03:01:06,960

drop-off orbit stage one will execute

4345

03:01:11,510 --> 03:01:09,120

two Burns in order to make its way back

4346

03:01:13,370 --> 03:01:11,520

down to earth the first is the entry

4347

03:01:15,290 --> 03:01:13,380

burn and that's where three of the nine

4348

03:01:17,090 --> 03:01:15,300

and windy engines will reignite and shut

4349

03:01:18,830 --> 03:01:17,100

down and this helps to slow the stage

4350

03:01:20,450 --> 03:01:18,840

down in preparation for entry back into

4351  
03:01:22,610 --> 03:01:20,460  
the Earth's atmosphere

4352  
03:01:25,070 --> 03:01:22,620  
while the first stage is heading back to

4353  
03:01:27,170 --> 03:01:25,080  
Earth the second stage will cut off its

4354  
03:01:29,570 --> 03:01:27,180  
one Merlin engine that was ignited right

4355  
03:01:31,790 --> 03:01:29,580  
after stage separation once this happens

4356  
03:01:34,730 --> 03:01:31,800  
we will wait for confirmation of a good

4357  
03:01:37,550 --> 03:01:34,740  
orbital insertion about 90 seconds after

4358  
03:01:39,830 --> 03:01:37,560  
Dragon gets into orbit Falcon 9 will

4359  
03:01:41,450 --> 03:01:39,840  
land back on Earth The Landing burn is

4360  
03:01:43,250 --> 03:01:41,460  
just a single engine burn powerful

4361  
03:01:45,410 --> 03:01:43,260  
enough to bring the vehicle's speed down

4362  
03:01:46,849 --> 03:01:45,420  
rapidly in order to touchdown on the

4363  
03:01:48,469 --> 03:01:46,859

Drone ship at about nine and a half

4364

03:01:51,050 --> 03:01:48,479  
minutes into the mission

4365

03:01:53,330 --> 03:01:51,060  
while Falcon 9's first Sage is landing

4366

03:01:55,490 --> 03:01:53,340  
dragon is preparing to separate from the

4367

03:01:57,650 --> 03:01:55,500  
second stage about three minutes after

4368

03:01:59,750 --> 03:01:57,660  
the second stage gets into orbit we

4369

03:02:02,450 --> 03:01:59,760  
should have a great view of dragon with

4370

03:02:05,150 --> 03:02:02,460  
its four-person crew drifting away from

4371

03:02:07,250 --> 03:02:05,160  
the second stage once dragon is a short

4372

03:02:10,070 --> 03:02:07,260  
distance away it will begin checking out

4373

03:02:12,050 --> 03:02:10,080  
its Draco maneuvering thrusters to make

4374

03:02:14,150 --> 03:02:12,060  
sure Dragon continues to increase

4375

03:02:16,790 --> 03:02:14,160  
separation distance from the second

4376  
03:02:18,769 --> 03:02:16,800  
stage and it is worth noting that these

4377  
03:02:21,590 --> 03:02:18,779  
are not the Super Draco engines that

4378  
03:02:23,809 --> 03:02:21,600  
would be used during an abort scenario

4379  
03:02:25,910 --> 03:02:23,819  
about 40 seconds after separation

4380  
03:02:28,010 --> 03:02:25,920  
dragon's nosecon deploy sequence will

4381  
03:02:29,929 --> 03:02:28,020  
begin it will take roughly four minutes

4382  
03:02:31,969 --> 03:02:29,939  
for the nose Cone Heads to unlatch and

4383  
03:02:33,530 --> 03:02:31,979  
open exposing its guidance navigation

4384  
03:02:36,769 --> 03:02:33,540  
controls that will help dragon

4385  
03:02:39,230 --> 03:02:36,779  
autonomously fly to the space station

4386  
03:02:41,570 --> 03:02:39,240  
and lastly once the nose cone is

4387  
03:02:44,030 --> 03:02:41,580  
deployed the remaining Draco thrusters

4388  
03:02:46,490 --> 03:02:44,040

on the forward bulkhead will be checked

4389

03:02:49,670 --> 03:02:46,500

from there over the next cryo helium

4390

03:02:54,830 --> 03:02:52,790

from there over the next 29 hours Dragon

4391

03:02:57,349 --> 03:02:54,840

will be in its Rendezvous and approach

4392

03:02:59,150 --> 03:02:57,359

phases undergoing a number of phasing

4393

03:03:01,490 --> 03:02:59,160

Burns as it makes its way back to

4394

03:03:03,889 --> 03:03:01,500

station all that will be coming up soon

4395

03:03:05,630 --> 03:03:03,899

but for now let's check back in with

4396

03:03:09,889 --> 03:03:05,640

Shaniqua in Mission Control Houston

4397

03:03:13,790 --> 03:03:12,050

thanks Sandra the flight control is here

4398

03:03:16,010 --> 03:03:13,800

and Mission Control Houston are laser

4399

03:03:17,809 --> 03:03:16,020

focused on the onboard systems of the

4400

03:03:20,630 --> 03:03:17,819

space station making sure it is ready to

4401  
03:03:22,429 --> 03:03:20,640  
receive Dragon vehicle tomorrow they're

4402  
03:03:24,290 --> 03:03:22,439  
also making sure communication links

4403  
03:03:26,150 --> 03:03:24,300  
between the station dragon and the

4404  
03:03:28,010 --> 03:03:26,160  
ground are working properly the

4405  
03:03:30,230 --> 03:03:28,020  
consensus right now is that everything

4406  
03:03:31,969 --> 03:03:30,240  
is proceeding nominally teams here in

4407  
03:03:33,950 --> 03:03:31,979  
Mission Control Houston the teams in

4408  
03:03:35,870 --> 03:03:33,960  
Hawthorne and the astronauts aboard the

4409  
03:03:37,190 --> 03:03:35,880  
space station will monitor the

4410  
03:03:39,590 --> 03:03:37,200  
autonomous docking of the Dragon

4411  
03:03:41,389 --> 03:03:39,600  
spacecraft tomorrow evening they'll

4412  
03:03:43,490 --> 03:03:41,399  
perform a series of leaked chicks then

4413  
03:03:45,349 --> 03:03:43,500

work to open the hatches both on the

4414

03:03:47,870 --> 03:03:45,359

dragon side and inside the Space

4415

03:03:49,610 --> 03:03:47,880

Station's pressurized mating adapter we

4416

03:03:52,130 --> 03:03:49,620

expect hatch opening to take a place

4417

03:03:54,290 --> 03:03:52,140

around an hour and a half after docking

4418

03:03:56,090 --> 03:03:54,300

and once aboard the astronauts will be

4419

03:03:58,309 --> 03:03:56,100

greeted by station Commander Samantha

4420

03:04:01,190 --> 03:03:58,319

Christopher ready and then the whole

4421

03:04:04,309 --> 03:04:01,200

station will station crew will join in

4422

03:04:06,710 --> 03:04:04,319

from for welcoming remarks to the new

4423

03:04:08,990 --> 03:04:06,720

crew members now due to critical science

4424

03:04:13,670 --> 03:04:09,000

this welcoming remarks will be about 90

4425

03:04:17,450 --> 03:04:15,830

once on board the crew members will no

4426  
03:04:19,490 --> 03:04:17,460  
longer be referred to as crew 5 but

4427  
03:04:21,349 --> 03:04:19,500  
rather as flight Engineers of the

4428  
03:04:23,389 --> 03:04:21,359  
International Space Station

4429  
03:04:26,030 --> 03:04:23,399  
here in mission control flight director

4430  
03:04:28,370 --> 03:04:26,040  
Greg Whitney is on Console overseeing

4431  
03:04:30,889 --> 03:04:28,380  
the team for launch and he will be back

4432  
03:04:32,809 --> 03:04:30,899  
tomorrow for docking we'll be on air

4433  
03:04:35,330 --> 03:04:32,819  
continuously through crew 5's arrival

4434  
03:04:37,910 --> 03:04:35,340  
but live coverage of docking is expected

4435  
03:04:40,490 --> 03:04:37,920  
tomorrow around 4 57 PM eastern time

4436  
03:04:42,349 --> 03:04:40,500  
that's it from now from Mission Control

4437  
03:04:44,870 --> 03:04:42,359  
Houston I'll toss it back to the team in

4438  
03:04:46,730 --> 03:04:44,880

Florida Daryl how's it looking well it's

4439

03:04:49,370 --> 03:04:46,740

wonderful out here Shaniqua wish you

4440

03:04:50,870 --> 03:04:49,380

could be here we got picnic weather out

4441

03:04:54,170 --> 03:04:50,880

here at the Press site and launch

4442

03:04:56,750 --> 03:04:54,180

complex 39 where we are looking out for

4443

03:04:59,450 --> 03:04:56,760

the launch of crew 5 from historic

4444

03:05:01,309 --> 03:04:59,460

launch complex 39a a beautiful sweeping

4445

03:05:04,130 --> 03:05:01,319

shot of the lawn where we have our

4446

03:05:06,110 --> 03:05:04,140

special guests the media are here we've

4447

03:05:08,990 --> 03:05:06,120

got NASA social folks who are out on the

4448

03:05:11,389 --> 03:05:09,000

lawn and of course me and Bob

4449

03:05:13,190 --> 03:05:11,399

Bob's riding shotgun here as we take our

4450

03:05:16,490 --> 03:05:13,200

coverage to the next level at the final

4451  
03:05:18,469 --> 03:05:16,500  
23 minutes of liftoff now from the

4452  
03:05:20,389 --> 03:05:18,479  
countdown rather uh we are just seconds

4453  
03:05:21,710 --> 03:05:20,399  
away from the fifth astronaut rotation

4454  
03:05:23,750 --> 03:05:21,720  
mission to the International Space

4455  
03:05:26,510 --> 03:05:23,760  
Station under NASA's commercial crew

4456  
03:05:28,330 --> 03:05:26,520  
program Commander Nicole Mann pilot Josh

4457  
03:05:30,950 --> 03:05:28,340  
cassida and Mission specialist

4458  
03:05:33,170 --> 03:05:30,960  
koichiwakata and Anna kikuna are

4459  
03:05:34,910 --> 03:05:33,180  
strapped into their seats inside the

4460  
03:05:38,150 --> 03:05:34,920  
dragon endurance at the very top of this

4461  
03:05:39,710 --> 03:05:38,160  
rocket here we can uh we are listening

4462  
03:05:43,309 --> 03:05:39,720  
into the communications as they talk

4463  
03:05:46,490 --> 03:05:43,319

live to the Falcon 9 team the rocket is

4464

03:05:49,190 --> 03:05:46,500

fueling the operation is doing well

4465

03:05:50,809 --> 03:05:49,200

and the launch Escape system is armed of

4466

03:05:52,670 --> 03:05:50,819

course that means dragon is prepared to

4467

03:05:55,250 --> 03:05:52,680

launch itself away from the Falcon 9

4468

03:05:57,290 --> 03:05:55,260

rocket in case of an emergency on the

4469

03:05:59,750 --> 03:05:57,300

pad or after liftoff

4470

03:06:02,389 --> 03:05:59,760

so far operations looking and sounding

4471

03:06:07,370 --> 03:06:02,399

as expected and we are counting down to

4472

03:06:11,269 --> 03:06:07,380

our liftoff at just afternoon 12 p.m and

4473

03:06:13,250 --> 03:06:11,279

57 seconds after the hour eastern time

4474

03:06:15,889 --> 03:06:13,260

there was a one second adjustment that's

4475

03:06:19,190 --> 03:06:15,899

pretty typical as happens when we get to

4476

03:06:21,110 --> 03:06:19,200

this stage of the mission

4477

03:06:22,910 --> 03:06:21,120

the mission is the continuation of

4478

03:06:25,130 --> 03:06:22,920

rotational crew flights to the

4479

03:06:27,349 --> 03:06:25,140

International Space Station from U.S

4480

03:06:29,269 --> 03:06:27,359

soil on private rockets and spacecraft

4481

03:06:31,849 --> 03:06:29,279

of course this would not have been

4482

03:06:35,150 --> 03:06:31,859

possible without the success of the NASA

4483

03:06:36,530 --> 03:06:35,160

SpaceX demo 2 test flight now two years

4484

03:06:38,150 --> 03:06:36,540

ago

4485

03:06:41,210 --> 03:06:38,160

and of course the safe delivery and

4486

03:06:43,849 --> 03:06:41,220

return of cruise one two

4487

03:06:45,830 --> 03:06:43,859

three and eventually here in about a

4488

03:06:49,010 --> 03:06:45,840

week crew four of course we're happy to

4489

03:06:50,809 --> 03:06:49,020

have the pilot from uh demo 2 and that's

4490

03:06:53,150 --> 03:06:50,819

Bob binkin appreciate you being here be

4491

03:06:54,410 --> 03:06:53,160

giving us some great thoughts and

4492

03:06:56,150 --> 03:06:54,420

explanations about everything that's

4493

03:06:58,309 --> 03:06:56,160

been happening well thank you Daryl I'm

4494

03:07:00,110 --> 03:06:58,319

super excited to be here for crew 5 and

4495

03:07:02,570 --> 03:07:00,120

get a chance to relive my experience

4496

03:07:04,130 --> 03:07:02,580

during the demo 2 mission and it's been

4497

03:07:06,469 --> 03:07:04,140

a great one so far we've watched the

4498

03:07:08,210 --> 03:07:06,479

crew get into the capsule we've watched

4499

03:07:09,830 --> 03:07:08,220

uh they've worked through a couple of

4500

03:07:13,370 --> 03:07:09,840

issues early on but those have been

4501  
03:07:15,650 --> 03:07:13,380  
cleared a suit leak check and a hatch

4502  
03:07:18,170 --> 03:07:15,660  
leak check that had to be double checked

4503  
03:07:20,809 --> 03:07:18,180  
now we're rolling along and moving

4504  
03:07:26,150 --> 03:07:20,819  
towards liftoff a couple things that are

4505  
03:07:29,990 --> 03:07:28,429  
we're going to have stage 2 rp1 load

4506  
03:07:32,929 --> 03:07:30,000  
complete

4507  
03:07:34,790 --> 03:07:32,939  
that's in 20 seconds

4508  
03:07:36,769 --> 03:07:34,800  
a few seconds later we'll get strong

4509  
03:07:38,630 --> 03:07:36,779  
back chill

4510  
03:07:41,269 --> 03:07:38,640  
that will begin in order to set the

4511  
03:07:41,279 --> 03:07:59,030  
for the stage 2 liquid oxygen load

4512  
03:07:59,040 --> 03:08:02,690  
of course propellants load

4513  
03:08:06,830 --> 03:08:04,969

is not an exact science

4514

03:08:08,870 --> 03:08:06,840

but once it completes we'll hear that

4515

03:08:14,030 --> 03:08:08,880

call out

4516

03:08:18,469 --> 03:08:16,250

and there you heard it

4517

03:08:20,690 --> 03:08:18,479

let's talk a little bit about the crew

4518

03:08:22,429 --> 03:08:20,700

if you're just joining us we have a

4519

03:08:24,230 --> 03:08:22,439

four-person crew

4520

03:08:27,050 --> 03:08:24,240

that we call crew five and it's

4521

03:08:28,309 --> 03:08:27,060

commanded by Nicole Mann she owns a

4522

03:08:30,230 --> 03:08:28,319

master of science in mechanical

4523

03:08:33,290 --> 03:08:30,240

engineering and is a colonel in the

4524

03:08:35,510 --> 03:08:33,300

Marine Corps she was an fa-18 Hornet and

4525

03:08:37,190 --> 03:08:35,520

Super Hornet test pilot and deployed

4526  
03:08:39,950 --> 03:08:37,200  
twice aboard aircraft carriers in

4527  
03:08:42,590 --> 03:08:39,960  
support of combat operations in Iraq and

4528  
03:08:44,990 --> 03:08:42,600  
Afghanistan Nicole was selected by NASA

4529  
03:08:47,330 --> 03:08:45,000  
in June of 2013 and in the years that

4530  
03:08:49,910 --> 03:08:47,340  
followed led the astronaut Corps in the

4531  
03:08:52,250 --> 03:08:49,920  
development of hardware for our Artemis

4532  
03:08:54,290 --> 03:08:52,260  
program today the crucified Commander

4533  
03:08:57,710 --> 03:08:54,300  
will be flying into space for the first

4534  
03:09:00,050 --> 03:08:57,720  
time and once she reaches space she will

4535  
03:09:02,510 --> 03:09:00,060  
be the first Native American woman to

4536  
03:09:04,790 --> 03:09:02,520  
stay on station a historic verse for

4537  
03:09:07,250 --> 03:09:04,800  
NASA and for her absolutely Daryl the

4538  
03:09:09,530 --> 03:09:07,260

astronaut core is a widely diverse and

4539

03:09:10,849 --> 03:09:09,540

I'm just proud to see Nicole join that

4540

03:09:11,690 --> 03:09:10,859

crew onboard the International Space

4541

03:09:14,030 --> 03:09:11,700

Station

4542

03:09:16,429 --> 03:09:14,040

with her is pilot Josh Cassidy he grew

4543

03:09:19,790 --> 03:09:16,439

up in Bear Lake Minnesota the physicist

4544

03:09:21,230 --> 03:09:19,800

and U.S Navy test pilot flew the p3c and

4545

03:09:24,710 --> 03:09:21,240

the p8a

4546

03:09:26,570 --> 03:09:24,720

as well as 23 combat missions he later

4547

03:09:28,730 --> 03:09:26,580

became an instructor at the U.S naval

4548

03:09:31,610 --> 03:09:28,740

test pilot school which is a path to

4549

03:09:33,710 --> 03:09:31,620

NASA for Military Officers cassida is

4550

03:09:35,570 --> 03:09:33,720

one of more than a hundred graduates who

4551  
03:09:37,670 --> 03:09:35,580  
have become astronauts going all the way

4552  
03:09:39,469 --> 03:09:37,680  
back to the Mercury program more

4553  
03:09:41,510 --> 03:09:39,479  
recently he served as capsule

4554  
03:09:44,690 --> 03:09:41,520  
communicator and Mission Control but

4555  
03:09:46,550 --> 03:09:44,700  
today he is the pilot aboard Dragon it's

4556  
03:09:48,290 --> 03:09:46,560  
a seed I know well and I look forward to

4557  
03:09:49,670 --> 03:09:48,300  
seeing Josh support Nicole and the rest

4558  
03:09:51,650 --> 03:09:49,680  
of the crew on their way towards the

4559  
03:09:55,370 --> 03:09:51,660  
International Space Station

4560  
03:09:58,010 --> 03:09:55,380  
the mission specialist now koichiwakata

4561  
03:09:59,750 --> 03:09:58,020  
he's the veteran a Japanese astronaut

4562  
03:10:01,010 --> 03:09:59,760  
who has a doctorate in aerospace

4563  
03:10:03,469 --> 03:10:01,020

engineering

4564

03:10:05,570 --> 03:10:03,479

in 1996 he became the first Japanese

4565

03:10:09,170 --> 03:10:05,580

Mission specialist aboard the Space

4566

03:10:11,630 --> 03:10:09,180

Shuttle Endeavor for sts-72 altogether

4567

03:10:14,510 --> 03:10:11,640

koichi flew four space shuttle missions

4568

03:10:16,070 --> 03:10:14,520

a Ross Cosmos soyuz and was on a long

4569

03:10:18,650 --> 03:10:16,080

duration stay aboard the International

4570

03:10:21,110 --> 03:10:18,660

Space Station during his two-decade

4571

03:10:23,450 --> 03:10:21,120

career as an astronaut koichi has spent

4572

03:10:25,429 --> 03:10:23,460

11 months in space

4573

03:10:26,990 --> 03:10:25,439

Bob you spent a fair amount of time in

4574

03:10:28,849 --> 03:10:27,000

space yourself

4575

03:10:31,429 --> 03:10:28,859

it's great to have a veteran aboard it

4576  
03:10:33,170 --> 03:10:31,439  
absolutely is and in addition to being a

4577  
03:10:35,809 --> 03:10:33,180  
veteran koichi just has a wonderful

4578  
03:10:37,550 --> 03:10:35,819  
personality that I know is just a it's

4579  
03:10:40,550 --> 03:10:37,560  
key to kind of success on board the

4580  
03:10:45,290 --> 03:10:42,590  
our second mission specialist is Ross

4581  
03:10:47,389 --> 03:10:45,300  
Cosmos Cosmonaut on akikuna she

4582  
03:10:50,690 --> 03:10:47,399  
graduated from the Nova sabirsk State

4583  
03:10:53,150 --> 03:10:50,700  
Academy of water transport in 2006. in

4584  
03:10:56,090 --> 03:10:53,160  
2012 Anna officially became a candidate

4585  
03:10:58,790 --> 03:10:56,100  
for the position of test cosmonaut crew

4586  
03:11:01,490 --> 03:10:58,800  
5 will be Anna's first flight into space

4587  
03:11:02,990 --> 03:11:01,500  
along with two of her other fellow

4588  
03:11:05,090 --> 03:11:03,000

astronauts

4589

03:11:08,269 --> 03:11:05,100

now each of these four crew members will

4590

03:11:10,070 --> 03:11:08,279

be part of expedition 68 once they

4591

03:11:12,110 --> 03:11:10,080

arrive at the International Space

4592

03:11:15,050 --> 03:11:12,120

Station and there you see them there

4593

03:11:19,309 --> 03:11:15,060

inside crew Dragon endurance a second

4594

03:11:21,650 --> 03:11:20,630

I want to let you know if you're here

4595

03:11:24,110 --> 03:11:21,660

locally

4596

03:11:26,750 --> 03:11:24,120

you want to step outside and enjoy the

4597

03:11:30,550 --> 03:11:26,760

launch get a small radio you can pick us

4598

03:11:34,010 --> 03:11:30,560

up on VHF radio frequency

4599

03:11:37,990 --> 03:11:34,020

146.940 on the megahertz scale

4600

03:11:41,690 --> 03:11:38,000

and on UHF radio frequency

4601  
03:11:43,730 --> 03:11:41,700  
444.925 megahertz FM bone you can hear

4602  
03:11:49,849 --> 03:11:43,740  
that all within Brevard County

4603  
03:11:54,710 --> 03:11:52,130  
and you can see the stage 2 locks load

4604  
03:11:58,790 --> 03:11:56,450  
just got the call out that the stage 2

4605  
03:12:00,950 --> 03:11:58,800  
locks load has started

4606  
03:12:08,809 --> 03:12:00,960  
putting that liquid propellant

4607  
03:12:15,349 --> 03:12:10,670  
let's check back in with Kate Tice and

4608  
03:12:20,269 --> 03:12:18,710  
thanks Daryl we are T-minus 16 minutes

4609  
03:12:23,330 --> 03:12:20,279  
away from launch and everything

4610  
03:12:26,450 --> 03:12:23,340  
continues to look great for Falcon 9 and

4611  
03:12:28,550 --> 03:12:26,460  
dragon uh Falcon 9 began prop load at T

4612  
03:12:31,790 --> 03:12:28,560  
minus 35 minutes

4613  
03:12:35,150 --> 03:12:31,800

um the loading of rp1 fuel on the second

4614

03:12:37,370 --> 03:12:35,160

stage is complete uh that finished at T

4615

03:12:41,030 --> 03:12:37,380

minus 20 minutes fuel loading continues

4616

03:12:42,230 --> 03:12:41,040

on the first stage it is almost complete

4617

03:12:44,330 --> 03:12:42,240

that should be wrapping up here

4618

03:12:45,710 --> 03:12:44,340

momentarily

4619

03:12:48,230 --> 03:12:45,720

um

4620

03:12:50,330 --> 03:12:48,240

densified liquid oxygen loading is

4621

03:12:55,490 --> 03:12:50,340

underway on both the first and second

4622

03:13:01,910 --> 03:12:59,150

about 80 percent on the first stage and

4623

03:13:04,190 --> 03:13:01,920

has only just recently begun on the

4624

03:13:06,590 --> 03:13:04,200

second stage so not much there yet that

4625

03:13:08,389 --> 03:13:06,600

will that will wrap up at T minus three

4626  
03:13:11,389 --> 03:13:08,399  
minutes and T minus two minutes

4627  
03:13:14,389 --> 03:13:11,399  
respectively now as for checkouts of

4628  
03:13:17,750 --> 03:13:14,399  
thrust Vector controllers uh what we

4629  
03:13:20,090 --> 03:13:17,760  
call TVC Wiggles those are coming up we

4630  
03:13:22,370 --> 03:13:20,100  
basically check to make sure that the

4631  
03:13:25,610 --> 03:13:22,380  
thrust Vector controllers are able to

4632  
03:13:27,650 --> 03:13:25,620  
actuate the engines themselves they

4633  
03:13:30,650 --> 03:13:27,660  
that's what that's what helps create

4634  
03:13:32,450 --> 03:13:30,660  
gimbal for those engines and gimbal

4635  
03:13:35,510 --> 03:13:32,460  
images actually how Falcon 9 steers

4636  
03:13:38,809 --> 03:13:35,520  
itself so those are coming up along with

4637  
03:13:40,969 --> 03:13:38,819  
throttle valve checkouts on engines the

4638  
03:13:42,950 --> 03:13:40,979

dragon mission director and team are

4639

03:13:44,570 --> 03:13:42,960

currently reporting no issues so really

4640

03:13:46,730 --> 03:13:44,580

good on that front communication

4641

03:13:49,370 --> 03:13:46,740

checkouts are complete the crew access

4642

03:13:51,950 --> 03:13:49,380

arm is retracted as we can see there and

4643

03:13:53,870 --> 03:13:51,960

the crew is strapped in and ready to go

4644

03:13:55,849 --> 03:13:53,880

as you can see there on the right hand

4645

03:13:58,130 --> 03:13:55,859

side of your screen everybody can

4646

03:14:00,710 --> 03:13:58,140

monitor pop load there on their crew

4647

03:14:03,410 --> 03:14:00,720

monitors now final instructions to the

4648

03:14:04,790 --> 03:14:03,420

crew come at T minus 10 minutes at that

4649

03:14:06,530 --> 03:14:04,800

point their crew displays will be

4650

03:14:08,750 --> 03:14:06,540

configured for launch this setup gives

4651  
03:14:11,210 --> 03:14:08,760  
the crew insight into how the launch is

4652  
03:14:13,910 --> 03:14:11,220  
proceeding and provides constant updates

4653  
03:14:15,830 --> 03:14:13,920  
on Vehicle Health at T minus five

4654  
03:14:17,929 --> 03:14:15,840  
minutes we'll hear the call out that

4655  
03:14:20,389 --> 03:14:17,939  
will be in terminal count and at that

4656  
03:14:23,150 --> 03:14:20,399  
point Dragon will transition to internal

4657  
03:14:25,610 --> 03:14:23,160  
power we'll hear continued call outs on

4658  
03:14:28,790 --> 03:14:25,620  
the countdown Nets as we get closer to

4659  
03:14:31,190 --> 03:14:28,800  
liftoff as for range they continue to be

4660  
03:14:34,190 --> 03:14:31,200  
go continuing to monitor the launch

4661  
03:14:36,050 --> 03:14:34,200  
Corridor and everything remains green as

4662  
03:14:39,170 --> 03:14:36,060  
for weather we're looking at seven mile

4663  
03:14:41,570 --> 03:14:39,180

per hour winds at the launch site and as

4664

03:14:43,550 --> 03:14:41,580

I said before as the countdown continues

4665

03:14:45,889 --> 03:14:43,560

we are seeing fewer and fewer clouds

4666

03:14:48,050 --> 03:14:45,899

just an absolutely stunning day there at

4667

03:14:50,150 --> 03:14:48,060

Kennedy Space Center let's check back in

4668

03:14:51,889 --> 03:14:50,160

with Daryl to see the last couple

4669

03:14:53,870 --> 03:14:51,899

minutes prior to liftoff

4670

03:14:55,790 --> 03:14:53,880

thanks Kate and it really couldn't be

4671

03:14:57,950 --> 03:14:55,800

more perfect out here weather-wise for a

4672

03:14:59,690 --> 03:14:57,960

launch how about that Bob it just looks

4673

03:15:02,389 --> 03:14:59,700

uh absolutely stunning to look out and

4674

03:15:04,130 --> 03:15:02,399

see the the vehicle ready to go the crew

4675

03:15:05,510 --> 03:15:04,140

on board strapped in I'm just super

4676

03:15:07,130 --> 03:15:05,520

excited for them

4677

03:15:09,590 --> 03:15:07,140

there's a view of the countdown clock

4678

03:15:11,389 --> 03:15:09,600

and the historic American flag that has

4679

03:15:14,030 --> 03:15:11,399

been standing there

4680

03:15:16,190 --> 03:15:14,040

since the space shuttle program now

4681

03:15:18,950 --> 03:15:16,200

you're looking at a pic of uh crew five

4682

03:15:20,870 --> 03:15:18,960

crew 5 Flying aboard the Dragon capsule

4683

03:15:22,969 --> 03:15:20,880

endurance and the booster that you see

4684

03:15:24,530 --> 03:15:22,979

behind them that they're posing with is

4685

03:15:26,870 --> 03:15:24,540

a brand new one

4686

03:15:29,210 --> 03:15:26,880

actually was damaged in transit from

4687

03:15:31,610 --> 03:15:29,220

California to Texas but it was fixed

4688

03:15:34,550 --> 03:15:31,620

repaired crew did a great job the SpaceX

4689

03:15:37,250 --> 03:15:34,560

team and getting it all ready

4690

03:15:40,190 --> 03:15:37,260

and at the time that Falcon 9 launches

4691

03:15:41,870 --> 03:15:40,200

Dragon to space

4692

03:15:47,330 --> 03:15:41,880

the International Space Station will be

4693

03:15:50,330 --> 03:15:47,340

260 statute miles over Australia

4694

03:15:52,250 --> 03:15:50,340

crew 5 will then spend the next 21 hours

4695

03:15:54,349 --> 03:15:52,260

with Mission Control team that you see

4696

03:15:56,389 --> 03:15:54,359

there in Houston standing by getting

4697

03:15:59,090 --> 03:15:56,399

ready

4698

03:16:01,790 --> 03:15:59,100

for the beginning of this mission

4699

03:16:03,650 --> 03:16:01,800

they'll spend 21 or 29 hours rather

4700

03:16:06,889 --> 03:16:03,660

chasing down the International Space

4701

03:16:09,410 --> 03:16:06,899

Station for a rendezvous at 4 57 PM

4702

03:16:11,870 --> 03:16:09,420

eastern time tomorrow evening one of the

4703

03:16:14,450 --> 03:16:11,880

longer transits Bob it's true it's a

4704

03:16:16,550 --> 03:16:14,460

little bit longer than usual or average

4705

03:16:18,590 --> 03:16:16,560

I would say as we work towards crew 5

4706

03:16:19,910 --> 03:16:18,600

but as the launch date shift around that

4707

03:16:21,889 --> 03:16:19,920

changes the time that you can actually

4708

03:16:23,990 --> 03:16:21,899

arrive on Space Station they've got

4709

03:16:26,570 --> 03:16:24,000

plenty of consumables so it should be

4710

03:16:28,250 --> 03:16:26,580

fun to have some time and space

4711

03:16:31,130 --> 03:16:28,260

and when they arrive tomorrow evening

4712

03:16:33,710 --> 03:16:31,140

we'll have live coverage on NASA TV of

4713

03:16:38,269 --> 03:16:33,720

docking as well as the crew 5 welcome

4714

03:16:42,170 --> 03:16:38,279

ceremony at 8 15 PM Eastern Time 7 15

4715

03:16:46,510 --> 03:16:44,150

and some final thoughts Bob as we get

4716

03:16:49,370 --> 03:16:46,520

ready to watch crew 5 launch into space

4717

03:16:51,530 --> 03:16:49,380

you know I my opportunity to sit here

4718

03:16:53,450 --> 03:16:51,540

and watch crew 5 go has just been uh

4719

03:16:54,889 --> 03:16:53,460

inspiring again to see another vehicle

4720

03:16:57,530 --> 03:16:54,899

head towards the International Space

4721

03:17:00,650 --> 03:16:57,540

Station again I'm excited for them and

4722

03:17:02,990 --> 03:17:00,660

uh just hopeful that Nicole joshuichi

4723

03:17:04,190 --> 03:17:03,000

and Anna have just a wonderful Mission I

4724

03:17:06,110 --> 03:17:04,200

know that they've got a wonderful launch

4725

03:17:08,330 --> 03:17:06,120

in front of them absolutely and that's

4726  
03:17:10,790 --> 03:17:08,340  
what we're rooting for here and so with

4727  
03:17:12,230 --> 03:17:10,800  
T-minus 11 minutes and Counting we're

4728  
03:17:14,090 --> 03:17:12,240  
we're going to spin our chairs around

4729  
03:17:16,250 --> 03:17:14,100  
and watch the launch but we're going to

4730  
03:17:17,809 --> 03:17:16,260  
let Pat Kate and the team focus on the

4731  
03:17:20,030 --> 03:17:17,819  
pad as we proceed through the final

4732  
03:17:21,889 --> 03:17:20,040  
stretch of the countdown we'll turn it

4733  
03:17:24,530 --> 03:17:21,899  
over to Kate Tice at SpaceX headquarters

4734  
03:17:27,769 --> 03:17:24,540  
in California take us through take it

4735  
03:17:31,730 --> 03:17:30,110  
thanks Daryl as you can probably tell by

4736  
03:17:33,830 --> 03:17:31,740  
the background noise the crowd is

4737  
03:17:35,889 --> 03:17:33,840  
definitely growing here at SpaceX

4738  
03:17:38,510 --> 03:17:35,899

headquarters in Hawthorne California

4739

03:17:41,210 --> 03:17:38,520

certainly one of our company Traditions

4740

03:17:42,830 --> 03:17:41,220

is to watch the launch itself from

4741

03:17:45,469 --> 03:17:42,840

behind mission control which you see

4742

03:17:47,570 --> 03:17:45,479

there on your screen uh you can see this

4743

03:17:50,809 --> 03:17:47,580

is Mission Control Hawthorne or as you

4744

03:17:52,790 --> 03:17:50,819

sometimes hear referred to as mccx and

4745

03:17:55,490 --> 03:17:52,800

then of course a crowd of employees

4746

03:17:57,290 --> 03:17:55,500

watching from behind I personally also

4747

03:17:59,809 --> 03:17:57,300

stand there if I'm not doing the webcast

4748

03:18:02,570 --> 03:17:59,819

so I can confirm it's a great spot to

4749

03:18:04,730 --> 03:18:02,580

watch launch like I said as you can see

4750

03:18:07,250 --> 03:18:04,740

the the energy is certainly starting to

4751  
03:18:09,410 --> 03:18:07,260  
grow now that we're about to hit T minus

4752  
03:18:11,630 --> 03:18:09,420  
10 minutes beautiful view there of

4753  
03:18:17,030 --> 03:18:11,640  
Falcon 9 and dragon on the pad you're

4754  
03:18:25,790 --> 03:18:20,330  
we did discuss the SpaceX confirmed crew

4755  
03:18:30,710 --> 03:18:28,610  
welcome we would like to give a huge

4756  
03:18:33,290 --> 03:18:30,720  
thanks to their names from NASA and

4757  
03:18:35,510 --> 03:18:33,300  
state 16 to thousands of people for

4758  
03:18:37,910 --> 03:18:35,520  
their development preparation and

4759  
03:18:40,490 --> 03:18:37,920  
training been getting endurance and true

4760  
03:18:42,410 --> 03:18:40,500  
fire to the launch pad today and your

4761  
03:18:44,870 --> 03:18:42,420  
continued support in helping to make

4762  
03:18:47,090 --> 03:18:44,880  
this a successful Mission we look

4763  
03:18:49,849 --> 03:18:47,100

forward to joining the rest of our

4764

03:18:51,710 --> 03:18:49,859

Expedition 68 crew members aboard the

4765

03:18:54,349 --> 03:18:51,720

International Space Station

4766

03:18:57,650 --> 03:18:54,359

and a sort of fish on behalf of all the

4767

03:19:00,050 --> 03:18:57,660

crew to our family and friends it is

4768

03:19:03,230 --> 03:19:00,060

your love and support to help make

4769

03:19:05,929 --> 03:19:03,240

dreams come true now let's do this

4770

03:19:09,830 --> 03:19:05,939

preside displays of configured for

4771

03:19:16,190 --> 03:19:13,969

coffee and Nicole Josh koichi and Anna

4772

03:19:20,710 --> 03:19:16,200

on behalf of the entire team at SpaceX

4773

03:19:24,650 --> 03:19:20,720

good luck godspeed and enjoy the ride

4774

03:19:27,590 --> 03:19:24,660

and those words from Nicole Mann the

4775

03:19:29,510 --> 03:19:27,600

first female commander of a dragon as

4776  
03:19:31,910 --> 03:19:29,520  
she thanked the many folks that have

4777  
03:19:34,429 --> 03:19:31,920  
helped get them to this point we're now

4778  
03:19:37,429 --> 03:19:34,439  
less than nine minutes away from launch

4779  
03:19:39,469 --> 03:19:37,439  
today upon liftoff you'll hear a number

4780  
03:19:41,929 --> 03:19:39,479  
and letter combinations which Mark

4781  
03:19:44,630 --> 03:19:41,939  
different abort zones throughout the

4782  
03:19:47,809 --> 03:19:44,640  
flight as well as some performance calls

4783  
03:19:50,630 --> 03:19:47,819  
the first two are 1A and 1B and those

4784  
03:19:53,150 --> 03:19:50,640  
signify the first stage and will last up

4785  
03:19:56,450 --> 03:19:53,160  
to the very North tip of North Carolina

4786  
03:19:58,309 --> 03:19:56,460  
the next are 2A through 2E and those

4787  
03:20:00,950 --> 03:19:58,319  
will come into play once the second

4788  
03:20:02,990 --> 03:20:00,960

stage kicks in lasting from the top of

4789

03:20:05,570 --> 03:20:03,000

North Carolina all the way to the tip of

4790

03:20:07,670 --> 03:20:05,580

Newfoundland into Northern Atlantic

4791

03:20:10,429 --> 03:20:07,680

you'll also hear a spot that is to be

4792

03:20:12,410 --> 03:20:10,439

avoided and you might hear Shannon or

4793

03:20:14,750 --> 03:20:12,420

forward to Shannon and that actually

4794

03:20:16,550 --> 03:20:14,760

refers to Shannon Ireland meaning they

4795

03:20:18,590 --> 03:20:16,560

would Target off the east coast of

4796

03:20:21,110 --> 03:20:18,600

Ireland if they were later in that

4797

03:20:22,429 --> 03:20:21,120

second stage and did need to abort for

4798

03:20:24,349 --> 03:20:22,439

some reason

4799

03:20:26,389 --> 03:20:24,359

so the next major Milestone that we're

4800

03:20:28,429 --> 03:20:26,399

looking towards will come just seconds

4801  
03:20:31,010 --> 03:20:28,439  
from now and that will be when Engine

4802  
03:20:31,969 --> 03:20:31,020  
chill begins on the first stage of the

4803  
03:20:36,110 --> 03:20:31,979  
engine

4804  
03:20:38,150 --> 03:20:36,120  
basically when we take a little bit of

4805  
03:20:40,730 --> 03:20:38,160  
that super chilled densified liquid

4806  
03:20:44,030 --> 03:20:40,740  
oxygen and we flow it through the turbo

4807  
03:20:46,670 --> 03:20:44,040  
pumps of the Merlin m1d engines on the

4808  
03:20:49,370 --> 03:20:46,680  
first stage this helps to prepare the

4809  
03:20:51,530 --> 03:20:49,380  
turbo pumps and avoid any thermal shock

4810  
03:20:53,330 --> 03:20:51,540  
to the hardware when they see the full

4811  
03:20:56,990 --> 03:20:53,340  
flow of liquid oxygen during the

4812  
03:20:58,910 --> 03:20:57,000  
ignition we're also expecting the uh

4813  
03:21:00,950 --> 03:20:58,920

conclusion of

4814

03:21:04,429 --> 03:21:00,960

uh prop load

4815

03:21:07,309 --> 03:21:04,439

um for the rp1 on first stage to wrap up

4816

03:21:09,170 --> 03:21:07,319

at T minus six minutes lox load

4817

03:21:11,809 --> 03:21:09,180

continues to be underway on both first

4818

03:21:14,570 --> 03:21:11,819

and second stages again wrapping those

4819

03:21:16,429 --> 03:21:14,580

uh at T minus three minutes and two

4820

03:21:18,590 --> 03:21:16,439

minutes

4821

03:21:21,050 --> 03:21:18,600

and after that we'll hear a number of

4822

03:21:23,290 --> 03:21:21,060

call outs related to dragon's flight

4823

03:21:25,040 --> 03:21:23,300

computer

4824

03:21:27,110 --> 03:21:25,050

has started

4825

03:21:29,210 --> 03:21:27,120

[Music]

4826  
03:21:34,610 --> 03:21:29,220  
and you did just hear that call out that

4827  
03:21:40,130 --> 03:21:37,670  
coming up in just about 45 seconds we

4828  
03:21:43,190 --> 03:21:40,140  
should expect to hear that rp1 load is

4829  
03:21:45,410 --> 03:21:43,200  
complete our P1 load is that densified

4830  
03:21:48,230 --> 03:21:45,420  
kerosene or Rocket Fuel that will help

4831  
03:21:51,230 --> 03:21:48,240  
Propel the crew into orbit

4832  
03:21:53,510 --> 03:21:51,240  
all of that rp1 is loaded into the first

4833  
03:21:55,969 --> 03:21:53,520  
stage and we are standing by to hear

4834  
03:21:58,969 --> 03:21:55,979  
that it was uh loaded into the second

4835  
03:22:04,130 --> 03:22:01,610  
again we expect that to wrap at T minus

4836  
03:22:06,469 --> 03:22:04,140  
six minutes uh the venting that you see

4837  
03:22:09,650 --> 03:22:06,479  
on screen is totally normal that is just

4838  
03:22:12,050 --> 03:22:09,660

some page one rp1 load is complete

4839

03:22:14,090 --> 03:22:12,060

great news there that rp1 mode is now

4840

03:22:15,650 --> 03:22:14,100

finished as I was saying the venting

4841

03:22:17,690 --> 03:22:15,660

that you see on the vehicle is totally

4842

03:22:20,870 --> 03:22:17,700

normal that's just some of the super

4843

03:22:22,910 --> 03:22:20,880

chill densified liquid oxygen uh just

4844

03:22:25,309 --> 03:22:22,920

vaporizing as it comes into contact and

4845

03:22:27,769 --> 03:22:25,319

vents from the beach

4846

03:22:30,290 --> 03:22:27,779

and coming up we'll also hear the call

4847

03:22:32,570 --> 03:22:30,300

for Dragon to configure for terminal

4848

03:22:34,969 --> 03:22:32,580

count and then it will be transferred

4849

03:22:37,250 --> 03:22:34,979

over to internal power and then we'll

4850

03:22:39,769 --> 03:22:37,260

hear that propellant tanks on Falcon 9

4851  
03:22:42,110 --> 03:22:39,779  
are getting ready to pressurize which

4852  
03:22:43,550 --> 03:22:42,120  
helps add some additional rigidity and

4853  
03:22:50,870 --> 03:22:43,560  
structural support

4854  
03:22:54,950 --> 03:22:53,090  
that strong back will retract a couple

4855  
03:22:57,290 --> 03:22:54,960  
of degrees at first

4856  
03:23:00,889 --> 03:22:57,300  
and you'll see it swing open completely

4857  
03:23:02,389 --> 03:23:00,899  
uh just shortly or at the moment tanks

4858  
03:23:04,490 --> 03:23:02,399  
will be pressurizing for strong back

4859  
03:23:06,230 --> 03:23:04,500  
retract

4860  
03:23:07,610 --> 03:23:06,240  
and there's that indication that we are

4861  
03:23:12,170 --> 03:23:07,620  
preparing for that strong back

4862  
03:23:15,889 --> 03:23:14,150  
coming up in just a few seconds we

4863  
03:23:20,090 --> 03:23:15,899

should hear that dragon is in terminal

4864

03:23:25,610 --> 03:23:22,250

the dragon is in configured for terminal

4865

03:23:31,309 --> 03:23:28,849

all right there we heard that call

4866

03:23:33,530 --> 03:23:31,319

dragon on board computers have now taken

4867

03:23:36,290 --> 03:23:33,540

control of the vehicle

4868

03:23:38,090 --> 03:23:36,300

as I mentioned before first stage locks

4869

03:23:40,309 --> 03:23:38,100

were liquid oxygen loading is underway

4870

03:23:41,929 --> 03:23:40,319

and we'll wrap up at T minus three

4871

03:23:43,849 --> 03:23:41,939

minutes

4872

03:23:46,250 --> 03:23:43,859

so I can see if we wrap its locks load

4873

03:23:48,170 --> 03:23:46,260

at T minus two minutes

4874

03:23:50,750 --> 03:23:48,180

longest teams continue to report no

4875

03:23:55,490 --> 03:23:50,760

issues and everything remains green and

4876  
03:23:55,500 --> 03:23:59,650  
foreign

4877  
03:24:04,849 --> 03:24:02,090  
just a couple seconds you might be able

4878  
03:24:07,309 --> 03:24:04,859  
to see the strong back arm as it does

4879  
03:24:10,389 --> 03:24:07,319  
begin to retract as Kate said it will

4880  
03:24:19,480 --> 03:24:14,030  
we can just barely make out the clamp on

4881  
03:24:19,490 --> 03:24:26,090  
[Music]

4882  
03:24:30,050 --> 03:24:27,950  
all right now that this clamp arm's

4883  
03:24:33,110 --> 03:24:30,060  
removed as you just said this will

4884  
03:24:34,849 --> 03:24:33,120  
retract by two degrees and then at lifts

4885  
03:24:38,929 --> 03:24:34,859  
off the strong back will retract another

4886  
03:24:40,510 --> 03:24:38,939  
to 45 degrees uh allowing Falcon 9 to

4887  
03:24:42,830 --> 03:24:40,520  
clear

4888  
03:24:45,050 --> 03:24:42,840

this drop back is part of the

4889

03:24:48,170 --> 03:24:45,060

transporter erector and the transporter

4890

03:24:49,969 --> 03:24:48,180

erector is what provides the liquid the

4891

03:24:51,710 --> 03:24:49,979

gasoline electrical connections to the

4892

03:24:53,929 --> 03:24:51,720

vehicle it's also what we use to

4893

03:24:55,309 --> 03:24:53,939

integrate the vehicle in its horizontal

4894

03:24:57,100 --> 03:24:55,319

position and you can see that two

4895

03:25:00,610 --> 03:24:57,110

degrees of Attraction just now

4896

03:25:02,830 --> 03:25:00,620

[Applause]

4897

03:25:05,389 --> 03:25:02,840

foreign

4898

03:25:08,210 --> 03:25:05,399

that we should hear in about 20 seconds

4899

03:25:12,300 --> 03:25:08,220

is that the first stage locks load is

4900

03:25:12,310 --> 03:25:15,550

[Applause]

4901  
03:25:21,469 --> 03:25:19,070  
stage one locks load is complete and

4902  
03:25:24,229 --> 03:25:21,479  
there we go all of the oxidizer loaded

4903  
03:25:27,050 --> 03:25:24,239  
on stage one

4904  
03:25:29,510 --> 03:25:27,060  
soon we'll hear that stage two locks

4905  
03:25:31,429 --> 03:25:29,520  
load is complete and that will be the

4906  
03:25:34,070 --> 03:25:31,439  
last propellant call out we'll hear

4907  
03:25:35,690 --> 03:25:34,080  
today now less than three minutes until

4908  
03:25:37,849 --> 03:25:35,700  
launch

4909  
03:25:41,030 --> 03:25:37,859  
dragon is in terminal count and is on

4910  
03:25:44,630 --> 03:25:42,590  
all right there we heard the good news

4911  
03:25:46,790 --> 03:25:44,640  
the dragon is now on internal power

4912  
03:25:49,010 --> 03:25:46,800  
again the white clouds that you see

4913  
03:25:51,650 --> 03:25:49,020

there at the base of the Dragon trunk

4914

03:25:54,710 --> 03:25:51,660

totally normal that's just the vapor uh

4915

03:25:58,550 --> 03:25:54,720

from the liquid oxygen again second

4916

03:26:00,170 --> 03:25:58,560

stage now wrapping up its lost load

4917

03:26:01,729 --> 03:26:00,180

excuse me first stage wrapping up it's

4918

03:26:03,830 --> 03:26:01,739

locked load

4919

03:26:06,349 --> 03:26:03,840

um just a few minutes ago and now moving

4920

03:26:07,969 --> 03:26:06,359

toward wrap up a second stage locks load

4921

03:26:09,769 --> 03:26:07,979

which will complete at T minus two

4922

03:26:14,929 --> 03:26:09,779

minutes

4923

03:26:20,020 --> 03:26:14,939

standing by for word that stage two

4924

03:26:20,030 --> 03:26:35,150

[Applause]

4925

03:26:40,309 --> 03:26:37,370

dragon is in Auto Idol

4926  
03:26:42,469 --> 03:26:40,319  
stage two locks load is complete there

4927  
03:26:45,110 --> 03:26:42,479  
we heard the call out Falcon 9 is now

4928  
03:26:48,889 --> 03:26:45,120  
completely fueled wow all of its

4929  
03:26:50,630 --> 03:26:48,899  
propellants are starting effects

4930  
03:26:53,750 --> 03:26:50,640  
all of its propellants and we can see

4931  
03:26:56,809 --> 03:26:53,760  
that leftover liquid oxygen uh now being

4932  
03:26:59,210 --> 03:26:56,819  
vented or released uh now flowing

4933  
03:27:02,030 --> 03:26:59,220  
further away from the vehicle so nearly

4934  
03:27:05,389 --> 03:27:02,040  
one million pounds of liquid oxygen in

4935  
03:27:07,849 --> 03:27:05,399  
rp1 now on board Falcon 9. it is fully

4936  
03:27:10,309 --> 03:27:07,859  
loaded and ready for lunch

4937  
03:27:12,610 --> 03:27:10,319  
and coming up at T minus one minute

4938  
03:27:14,870 --> 03:27:12,620

we'll hear that dragon is in countdown

4939

03:27:16,610 --> 03:27:14,880

its flight computer will switch to

4940

03:27:20,889 --> 03:27:16,620

countdown mode and we'll hear that the

4941

03:27:23,750 --> 03:27:20,899

flight termination system on Falcon 9 is

4942

03:27:25,849 --> 03:27:23,760

startup and is now controlling and there

4943

03:27:28,070 --> 03:27:25,859

you heard it dragons countdown Dragon

4944

03:27:32,630 --> 03:27:28,080

Supply computer in Countdown the flight

4945

03:27:38,269 --> 03:27:34,969

to get the final go for launch from

4946

03:27:38,279 --> 03:27:43,250

godspeed go for launch

4947

03:27:43,260 --> 03:27:48,790

SpaceX dragon go for launch

4948

03:27:57,950 --> 03:27:53,090

SpaceX Let's Go Crew reports go 30

4949

03:27:57,960 --> 03:28:13,900

foreign

4950

03:28:36,050 --> 03:28:15,870

[Applause]

4951  
03:28:39,349 --> 03:28:36,060

[Music]

4952  
03:28:45,110 --> 03:28:42,769  
stage one propulsion vehicle is pitching

4953  
03:28:53,450 --> 03:28:45,120  
down range stage one propulsion is

4954  
03:28:58,969 --> 03:28:56,809  
we're now at t plus 35 seconds into the

4955  
03:29:07,729 --> 03:28:58,979  
fifth rotational crew mission on board

4956  
03:29:07,739 --> 03:29:13,130  
out for stage one Throttle Down

4957  
03:29:17,870 --> 03:29:15,830  
Falcon 9 engines throttling down to help

4958  
03:29:20,630 --> 03:29:17,880  
pass through the

4959  
03:29:23,450 --> 03:29:20,640  
through the dynamic pressure

4960  
03:29:24,429 --> 03:29:23,460  
this period is known as Max q and what's

4961  
03:29:26,450 --> 03:29:24,439  
the field

4962  
03:29:28,250 --> 03:29:26,460  
there we just heard that the vehicles

4963  
03:29:30,710 --> 03:29:28,260

now traveling faster than the speed of

4964

03:29:37,080 --> 03:29:30,720

sound once through Max Q will throttle

4965

03:29:37,090 --> 03:29:42,550

[Music]

4966

03:29:48,290 --> 03:29:46,130

copy one Bravo that call out for one

4967

03:29:50,510 --> 03:29:48,300

Bravo means we're in the second and

4968

03:29:53,330 --> 03:29:50,520

final abort mode for the first stage

4969

03:29:56,630 --> 03:29:53,340

continuing to get good performance the

4970

03:29:58,969 --> 03:29:56,640

crew is already pulling over two G's

4971

03:30:02,210 --> 03:29:58,979

and next up is going to be a couple of

4972

03:30:04,370 --> 03:30:02,220

events in Rapid succession first will be

4973

03:30:06,950 --> 03:30:04,380

engine Chill on the second stage and

4974

03:30:09,469 --> 03:30:06,960

back engine and there you heard that

4975

03:30:11,630 --> 03:30:09,479

call out and then we'll have Mikko or

4976

03:30:13,969 --> 03:30:11,640

main engine cut off where the nine

4977

03:30:18,410 --> 03:30:13,979

engines igniting will cut off in

4978

03:30:23,750 --> 03:30:21,290

then we'll see the single Merlin vacuum

4979

03:30:25,849 --> 03:30:23,760

engine on the second stage ignite and

4980

03:30:28,490 --> 03:30:25,859

continue to carry the crew 5 astronauts

4981

03:30:33,830 --> 03:30:30,650

just like we did on first stage that

4982

03:30:36,050 --> 03:30:33,840

mvac chill is intended to help pre-chill

4983

03:30:39,110 --> 03:30:36,060

the hardware prior to the full flow of

4984

03:30:41,330 --> 03:30:39,120

that densified liquid oxygen

4985

03:30:43,610 --> 03:30:41,340

one problem

4986

03:30:45,590 --> 03:30:43,620

at this point in time those nine Merlin

4987

03:30:48,170 --> 03:30:45,600

engines are beginning to Throttle Down

4988

03:30:54,650 --> 03:30:48,180

in preparation for Miko or main engine

4989

03:30:54,660 --> 03:31:02,870

standing by for Mikko

4990

03:31:07,670 --> 03:31:05,510

hear me stage separation confirmed copy

4991

03:31:09,950 --> 03:31:07,680

to Alpha

4992

03:31:12,530 --> 03:31:09,960

there we should see that second engine

4993

03:31:16,849 --> 03:31:12,540

begin to ignite now

4994

03:31:26,349 --> 03:31:16,859

[Applause]

4995

03:31:32,809 --> 03:31:29,510

second stage is lit and continuing to

4996

03:31:34,670 --> 03:31:32,819

carry the crew 5 astronauts into orbit

4997

03:31:37,550 --> 03:31:34,680

we're now getting a view of the first

4998

03:31:39,290 --> 03:31:37,560

stage after that stage separation the

4999

03:31:41,750 --> 03:31:39,300

second stage is still being illuminated

5000

03:31:43,190 --> 03:31:41,760

by that single Merlin vacuum engine and

5001  
03:31:45,530 --> 03:31:43,200  
that's on the right hand side of your

5002  
03:31:47,450 --> 03:31:45,540  
screen first stage on the left hand side

5003  
03:31:49,490 --> 03:31:47,460  
of your screen making its way back to

5004  
03:31:52,490 --> 03:31:49,500  
Earth we will be attempting to land it

5005  
03:31:55,130 --> 03:31:52,500  
on our drone ship which today we're

5006  
03:31:59,280 --> 03:31:55,140  
using just read the instructions they

5007  
03:32:03,830 --> 03:32:01,190  
[Music]

5008  
03:32:07,550 --> 03:32:03,840  
and we did hear that acquisition of the

5009  
03:32:11,450 --> 03:32:09,410  
the first stage is continuing to make

5010  
03:32:13,849 --> 03:32:11,460  
its way back to Earth and the second

5011  
03:32:14,990 --> 03:32:13,859  
stage is going to continue trajectory

5012  
03:32:20,750 --> 03:32:15,000  
nominal

5013  
03:32:24,469 --> 03:32:22,910

confirmation there from Commander Nicole

5014

03:32:27,650 --> 03:32:24,479

Mann

5015

03:32:29,510 --> 03:32:27,660

you can also sort of see the the Space

5016

03:32:31,190 --> 03:32:29,520

Coast there in the background of the

5017

03:32:33,290 --> 03:32:31,200

first stage on the left hand side of

5018

03:32:36,950 --> 03:32:33,300

your screen it also looks like you can

5019

03:32:38,870 --> 03:32:36,960

actually see the thrust plume uh created

5020

03:32:44,450 --> 03:32:38,880

by the first stage as it's now rotating

5021

03:32:49,550 --> 03:32:47,210

second stage is going to continue firing

5022

03:32:51,769 --> 03:32:49,560

until a little over eight minutes into

5023

03:32:56,330 --> 03:32:51,779

the flight really doing the heavy

5024

03:33:00,830 --> 03:32:58,429

everything continues to look nominal on

5025

03:33:02,929 --> 03:33:00,840

both first and second stages as I

5026  
03:33:05,870 --> 03:33:02,939  
mentioned before the first stage will be

5027  
03:33:07,610 --> 03:33:05,880  
making a landing on one of our drone

5028  
03:33:09,410 --> 03:33:07,620  
ships which is currently parked a couple

5029  
03:33:12,229 --> 03:33:09,420  
hundred miles off the coast of Florida

5030  
03:33:16,610 --> 03:33:12,239  
in the Atlantic Ocean so we can see now

5031  
03:33:23,570 --> 03:33:18,349  
good confirmation there that we have a

5032  
03:33:31,849 --> 03:33:26,630  
the second stage now traveling over 5

5033  
03:33:36,170 --> 03:33:34,130  
crew is pulling a little more than one G

5034  
03:33:38,690 --> 03:33:36,180  
right now that's going to continue to

5035  
03:33:40,729 --> 03:33:38,700  
ramp up peaking just before we get to

5036  
03:33:41,490 --> 03:33:40,739  
Second Stage cut off here in just a few

5037  
03:33:47,510 --> 03:33:41,500  
minutes from now

5038  
03:33:52,790 --> 03:33:49,729

first stage will be performing two

5039

03:33:55,550 --> 03:33:52,800

separate Burns a re-entry burn where we

5040

03:33:57,710 --> 03:33:55,560

reignite three of the Merlin back excuse

5041

03:34:00,170 --> 03:33:57,720

me the Merlin m1d engines on the first

5042

03:34:02,510 --> 03:34:00,180

stage we ignite the center engine into

5043

03:34:04,370 --> 03:34:02,520

radial engines to help slow it down as

5044

03:34:06,950 --> 03:34:04,380

it re-enters the Earth's atmosphere and

5045

03:34:10,790 --> 03:34:06,960

then the second final burn and that will

5046

03:34:13,190 --> 03:34:10,800

be the landing burn on our drone ship

5047

03:34:17,030 --> 03:34:13,200

and the single M back engine that you

5048

03:34:21,349 --> 03:34:19,670

the single and back

5049

03:34:23,570 --> 03:34:21,359

see on the right of your screen is

5050

03:34:26,330 --> 03:34:23,580

continuing to fire we did hear another

5051  
03:34:28,190 --> 03:34:26,340  
call out that trajectory is nominal

5052  
03:34:33,410 --> 03:34:28,200  
crew heading in the direction that they

5053  
03:34:38,870 --> 03:34:36,889  
this single engine can produce over 220

5054  
03:34:42,110 --> 03:34:38,880  
000 pounds of thrust in the vacuum of

5055  
03:34:46,670 --> 03:34:42,120  
space now over 200 kilometers in

5056  
03:34:51,290 --> 03:34:49,309  
we will start to hit events now in a

5057  
03:34:53,090 --> 03:34:51,300  
rapid succession as the first stage

5058  
03:34:55,370 --> 03:34:53,100  
continues to make its way back to Earth

5059  
03:34:59,030 --> 03:34:55,380  
and the second stage continues its burn

5060  
03:35:01,010 --> 03:34:59,040  
just a couple minutes left in that burn

5061  
03:35:04,309 --> 03:35:01,020  
for those of you just joining us just

5062  
03:35:06,710 --> 03:35:04,319  
over six and a half minutes ago are four

5063  
03:35:09,110 --> 03:35:06,720

crew 5 astronauts launched from Kennedy

5064

03:35:11,450 --> 03:35:09,120

Space Center in Florida and they are now

5065

03:35:13,969 --> 03:35:11,460

making their way into orbit on the

5066

03:35:15,349 --> 03:35:13,979

second stage inside

5067

03:35:17,210 --> 03:35:15,359

help

5068

03:35:19,010 --> 03:35:17,220

which we're hearing that the trajectory

5069

03:35:19,990 --> 03:35:19,020

on that is nominal

5070

03:35:23,150 --> 03:35:20,000

um

5071

03:35:25,130 --> 03:35:23,160

they are in safe inside uh dragon

5072

03:35:27,349 --> 03:35:25,140

endurance whereas the first stage on the

5073

03:35:29,130 --> 03:35:27,359

left hand side of your screen is making

5074

03:35:30,410 --> 03:35:29,140

its way back to Earth

5075

03:35:34,309 --> 03:35:30,420

[Applause]

5076  
03:35:36,349 --> 03:35:34,319  
we are coming up to the re-entry burn

5077  
03:35:38,809 --> 03:35:36,359  
which as I said before we ignite three

5078  
03:35:40,910 --> 03:35:38,819  
of the nine Merlin engines

5079  
03:35:42,830 --> 03:35:40,920  
to help slow the booster down as it

5080  
03:35:46,010 --> 03:35:42,840  
re-enters the Death part of the Earth's

5081  
03:35:51,370 --> 03:35:47,870  
as the entry burn completes we'll be in

5082  
03:36:02,690 --> 03:35:53,389  
you can either see it on your screen

5083  
03:36:08,389 --> 03:36:06,050  
and as that entry burn completes will be

5084  
03:36:10,490 --> 03:36:08,399  
in the final

5085  
03:36:12,889 --> 03:36:10,500  
um different abort phases here shortly

5086  
03:36:15,590 --> 03:36:12,899  
which essentially correspond to areas

5087  
03:36:16,630 --> 03:36:15,600  
along the very Northeastern Seaboard of

5088  
03:36:19,729 --> 03:36:16,640

the U.S

5089

03:36:24,889 --> 03:36:19,739

shut down

5090

03:36:26,929 --> 03:36:24,899

and then those last all the way across

5091

03:36:33,530 --> 03:36:26,939

the Atlantic Ocean Atlantic off the

5092

03:36:33,540 --> 03:36:37,330

foreign

5093

03:36:47,269 --> 03:36:39,889

continues to look nominal for both the

5094

03:36:53,690 --> 03:36:50,990

and the crew with the second stage still

5095

03:36:56,090 --> 03:36:53,700

attached is now traveling over 13

5096

03:36:59,990 --> 03:36:56,100

000 miles per hour

5097

03:37:03,910 --> 03:37:00,000

for about 10 seconds away from Seco one

5098

03:37:09,170 --> 03:37:06,229

that call out for Shannon Ireland

5099

03:37:11,690 --> 03:37:09,180

indicative of our final abort Zone after

5100

03:37:13,490 --> 03:37:11,700

this we'll see second stage shut off and

5101  
03:37:15,650 --> 03:37:13,500  
we'll be listening for confirmation of a

5102  
03:37:21,469 --> 03:37:15,660  
good orbit which tells us the crew and

5103  
03:37:28,190 --> 03:37:24,190  
there we had confirmation

5104  
03:37:32,510 --> 03:37:28,200  
has shut down simultaneously uh the

5105  
03:37:36,830 --> 03:37:34,610  
and you heard that call for a good

5106  
03:37:38,330 --> 03:37:36,840  
insertion we will Coast for a few

5107  
03:37:40,670 --> 03:37:38,340  
minutes

5108  
03:37:43,790 --> 03:37:40,680  
there we can see the Drone ship coming

5109  
03:37:45,769 --> 03:37:43,800  
into view as Falcon 9 attempts the stage

5110  
03:37:47,150 --> 03:37:45,779  
one Landing light deploy

5111  
03:37:52,429 --> 03:37:47,160  
and see those Landing lights have now

5112  
03:38:02,510 --> 03:37:55,030  
and

5113  
03:38:04,550 --> 03:38:02,520

on our drone ship just with the

5114

03:38:08,929 --> 03:38:04,560

instructions for toss the coast of

5115

03:38:13,969 --> 03:38:12,410

and again that second stage separation

5116

03:38:16,070 --> 03:38:13,979

will be coming up just a couple of

5117

03:38:16,809 --> 03:38:16,080

minutes now we do Coast for a few

5118

03:38:20,330 --> 03:38:16,819

minutes

5119

03:38:23,570 --> 03:38:20,340

after second engine cutoff to allow any

5120

03:38:26,269 --> 03:38:23,580

rates to our emotions that dampen out

5121

03:38:30,950 --> 03:38:28,070

and looks like we're gonna get a view of

5122

03:38:35,330 --> 03:38:30,960

the second stage as it separates here

5123

03:38:49,969 --> 03:38:37,309

we did hear that the crew has been

5124

03:39:04,370 --> 03:38:52,190

again the crew is still attached to the

5125

03:39:08,990 --> 03:39:06,590

we are expecting stage separation to

5126  
03:39:11,870 --> 03:39:09,000  
occur and just over a minute from now

5127  
03:39:15,349 --> 03:39:11,880  
about one minute and eight seconds

5128  
03:39:17,750 --> 03:39:15,359  
and that's when the uh excuse me when

5129  
03:39:21,410 --> 03:39:17,760  
the second stage will separate from the

5130  
03:39:27,229 --> 03:39:23,750  
Dragon trunk is the part of Hardware

5131  
03:39:29,269 --> 03:39:27,239  
where we are able to house the cargo

5132  
03:39:32,030 --> 03:39:29,279  
that is able to be exposed to the vacuum

5133  
03:39:40,969 --> 03:39:34,250  
as well as the solar panels which help

5134  
03:39:45,710 --> 03:39:42,769  
again that stage separation is now

5135  
03:39:48,170 --> 03:39:45,720  
coming up in about 30 seconds

5136  
03:39:50,870 --> 03:39:48,180  
after stage separation we will have nose

5137  
03:39:53,150 --> 03:39:50,880  
cone deployment now that dragon is in

5138  
03:39:54,889 --> 03:39:53,160

the vacuum of space we're able to we

5139

03:39:57,349 --> 03:39:54,899

will be able to open the nose cone and

5140

03:40:00,050 --> 03:39:57,359

expose that forward hatch which is what

5141

03:40:02,750 --> 03:40:00,060

is utilized to dock autonomously with

5142

03:40:05,330 --> 03:40:02,760

the International Space Station

5143

03:40:07,729 --> 03:40:05,340

and that nose cone does stay closed for

5144

03:40:09,650 --> 03:40:07,739

the flight uphill to help protect all of

5145

03:40:12,410 --> 03:40:09,660

the guidance navigation and control

5146

03:40:27,410 --> 03:40:15,410

we are standing by for second stage

5147

03:40:27,420 --> 03:40:38,390

foreign

5148

03:40:38,400 --> 03:40:52,870

[Applause]

5149

03:40:56,269 --> 03:40:55,130

a pleasure to be a part of this Mission

5150

03:40:58,849 --> 03:40:56,279

with you

5151  
03:40:59,809 --> 03:40:58,859  
and while October 3rd May belong to the

5152  
03:41:02,090 --> 03:40:59,819  
Mean Girls

5153  
03:41:09,130 --> 03:41:02,100  
October 5th will forever belong to crew

5154  
03:41:09,140 --> 03:41:13,830  
awesome thank you so much

5155  
03:41:18,110 --> 03:41:15,190  
[Music]

5156  
03:41:19,729 --> 03:41:18,120  
he's got three rookies that are pretty

5157  
03:41:22,490 --> 03:41:19,739  
happy to be floating in space right now

5158  
03:41:24,410 --> 03:41:22,500  
and one veteran astronaut who's pretty

5159  
03:41:27,110 --> 03:41:24,420  
happy to be back as well let's see what

5160  
03:41:29,870 --> 03:41:27,120  
you got to say creatures

5161  
03:41:33,110 --> 03:41:29,880  
soccer team man know it was a smooth

5162  
03:41:36,110 --> 03:41:33,120  
ride and I see all the three happy faces

5163  
03:41:38,570 --> 03:41:36,120

here is back in zero Z

5164

03:41:40,790 --> 03:41:38,580

I appreciate all the helps to give us a

5165

03:41:43,480 --> 03:41:40,800

smooth ride and training and thank you

5166

03:41:53,950 --> 03:41:43,580

[Applause]

5167

03:41:53,960 --> 03:42:04,450

thank you for your support

5168

03:42:09,769 --> 03:42:07,670

exactly for uh giving us this

5169

03:42:12,590 --> 03:42:09,779

opportunity we saw the way to do it

5170

03:42:13,630 --> 03:42:12,600

together and thank you for everybody for

5171

03:42:33,170 --> 03:42:13,640

people

5172

03:42:38,990 --> 03:42:35,450

some really nice words there from the

5173

03:42:41,510 --> 03:42:39,000

crew 5 crew as well as dragons thanks

5174

03:42:46,190 --> 03:42:41,520

for the words uh I had a great ride have

5175

03:42:50,690 --> 03:42:48,349

uh wonderful Mean Girls reference there

5176  
03:42:52,610 --> 03:42:50,700  
by launch director uh Mark soltis and

5177  
03:42:57,229 --> 03:42:52,620  
then we just heard from

5178  
03:42:57,239 --> 03:43:04,630  
we just heard our first quindar town

5179  
03:43:04,640 --> 03:43:10,370  
New Hampshire

5180  
03:43:14,090 --> 03:43:12,229  
and Kate it did look like we were

5181  
03:43:16,969 --> 03:43:14,100  
getting our first views of that

5182  
03:43:21,170 --> 03:43:16,979  
microgravity indicator I did see that as

5183  
03:43:26,150 --> 03:43:23,690  
and we're getting views now of the crew

5184  
03:43:28,070 --> 03:43:26,160  
on orbit three of them for the first

5185  
03:43:31,070 --> 03:43:28,080  
time ever

5186  
03:43:42,290 --> 03:43:31,080  
we saw some cheers some high fives looks

5187  
03:43:46,969 --> 03:43:44,210  
hopefully we can see that zero g

5188  
03:43:48,650 --> 03:43:46,979

indicator float back into view and

5189

03:43:50,150 --> 03:43:48,660

hopefully get a better shot of it I

5190

03:43:52,070 --> 03:43:50,160

couldn't quite tell what it was although

5191

03:43:54,530 --> 03:43:52,080

it kind of looked like it may have been

5192

03:43:55,969 --> 03:43:54,540

an Einstein doll that's just kind of

5193

03:43:58,190 --> 03:43:55,979

what it looked like from the the back

5194

03:44:03,469 --> 03:43:58,200

side I think you're right okay it looked

5195

03:44:15,830 --> 03:44:05,690

so the next Milestone that we're looking

5196

03:44:22,010 --> 03:44:18,710

if you've just joined us joined us we

5197

03:44:26,450 --> 03:44:22,020

had a successful liftoff uh exactly 16

5198

03:44:29,389 --> 03:44:26,460

minutes ago of the crew 5 Mission uh

5199

03:44:32,210 --> 03:44:29,399

they had an on-time liftoff from Kennedy

5200

03:44:35,269 --> 03:44:32,220

Space Center at noon eastern time they

5201

03:44:37,550 --> 03:44:35,279

had a smooth ride up to orbit the first

5202

03:44:40,490 --> 03:44:37,560

stage landed successfully on our drone

5203

03:44:42,590 --> 03:44:40,500

ship just read the instructions and

5204

03:44:45,290 --> 03:44:42,600

everything has been looking good so far

5205

03:44:48,170 --> 03:44:45,300

we are hoping to get another view on

5206

03:44:51,050 --> 03:44:48,180

board Dragon once we're able to get that

5207

03:44:53,269 --> 03:44:51,060

camera back but so far uh you know

5208

03:44:55,429 --> 03:44:53,279

everything leading up to this point in

5209

03:44:57,710 --> 03:44:55,439

time we got a shot there of the mvac

5210

03:45:00,710 --> 03:44:57,720

engine which is no longer firing it is

5211

03:45:02,570 --> 03:45:00,720

uh hosting um but that's attached to the

5212

03:45:03,950 --> 03:45:02,580

second stage which has been separated

5213

03:45:05,690 --> 03:45:03,960

from Dragon

5214

03:45:07,969 --> 03:45:05,700

um yeah so everything was super smooth

5215

03:45:11,030 --> 03:45:07,979

this morning uh starting all the way

5216

03:45:13,790 --> 03:45:11,040

back I think we got here around C minus

5217

03:45:15,830 --> 03:45:13,800

four hours and a super smooth countdown

5218

03:45:18,170 --> 03:45:15,840

beautiful day from Kennedy Space Center

5219

03:45:20,750 --> 03:45:18,180

it looked like a gorgeous view from

5220

03:45:23,809 --> 03:45:20,760

where Daryl and Bob were sitting but

5221

03:45:25,670 --> 03:45:23,819

yeah we are standing by for the nose

5222

03:45:27,950 --> 03:45:25,680

cone opening now that the dragon

5223

03:45:28,690 --> 03:45:27,960

spacecraft is in space we are able to

5224

03:45:31,790 --> 03:45:28,700

Target

5225

03:45:33,650 --> 03:45:31,800

we are able to open up that uh dose cone

5226

03:45:36,590 --> 03:45:33,660

and expose the forward hatch which is

5227

03:45:38,330 --> 03:45:36,600

what is utilized to autonomously dock

5228

03:45:40,610 --> 03:45:38,340

with the International Space Station but

5229

03:45:41,809 --> 03:45:40,620

of course to protect that Hardware as

5230

03:45:48,170 --> 03:45:41,819

well

5231

03:45:50,570 --> 03:45:48,180

and navigation control Hardware we keep

5232

03:45:52,550 --> 03:45:50,580

that nose cone closed during launch

5233

03:45:55,150 --> 03:45:52,560

preparations and during the ascent

5234

03:45:59,210 --> 03:45:55,160

portion so as you can see saw there

5235

03:46:01,309 --> 03:45:59,220

momentarily uh dragon is in space and uh

5236

03:46:04,729 --> 03:46:01,319

the crew 4 or excuse me the crew five

5237

03:46:07,550 --> 03:46:04,739

astronauts all four of them are floating

5238

03:46:10,370 --> 03:46:07,560

or they will be able to float soon uh

5239

03:46:12,170 --> 03:46:10,380

we're hoping to get another view of that

5240

03:46:15,410 --> 03:46:12,180

zero g indicator once we're able to

5241

03:46:18,530 --> 03:46:15,420

bring cabin on board cabin views back to

5242

03:46:21,349 --> 03:46:18,540

you of the crew 5 crew we always like to

5243

03:46:23,510 --> 03:46:21,359

see what the uh with the zero g gravity

5244

03:46:27,710 --> 03:46:23,520

indicator is as you saw earlier in the

5245

03:46:30,590 --> 03:46:27,720

web webcast uh Bob actually brought the

5246

03:46:34,070 --> 03:46:30,600

zero g indicator that he and Doug used

5247

03:46:36,349 --> 03:46:34,080

on the demo 2 mission a lovely sequin

5248

03:46:38,389 --> 03:46:36,359

dinosaur which I also have one at my

5249

03:46:40,729 --> 03:46:38,399

desk not the Bob obviously has the one

5250

03:46:42,590 --> 03:46:40,739

that went to space mine is a replica but

5251  
03:46:45,710 --> 03:46:42,600  
we love seeing these zero g indicators

5252  
03:46:48,110 --> 03:46:45,720  
it's a really nice way to connect those

5253  
03:46:50,929 --> 03:46:48,120  
of us on ground with the folks up in

5254  
03:46:53,269 --> 03:46:50,939  
space so as I said before we are

5255  
03:46:55,490 --> 03:46:53,279  
anticipating a nose cone deployment

5256  
03:46:58,190 --> 03:46:55,500  
shortly uh just you can do a quick

5257  
03:46:59,870 --> 03:46:58,200  
check-in and oh there we can see now uh

5258  
03:47:01,250 --> 03:46:59,880  
the nose cone the hooks have been

5259  
03:47:11,200 --> 03:47:01,260  
released and we see that nose cone

5260  
03:47:16,070 --> 03:47:13,150  
[Applause]

5261  
03:47:17,950 --> 03:47:16,080  
we're continuing to see that nose cone

5262  
03:47:20,870 --> 03:47:17,960  
open and yeah

5263  
03:47:22,610 --> 03:47:20,880

as we've mentioned this does uncover a

5264

03:47:24,469 --> 03:47:22,620

number of critical systems for the

5265

03:47:29,929 --> 03:47:24,479

flight up to the space station that will

5266

03:47:33,830 --> 03:47:32,090

there are six hooks that hold the nose

5267

03:47:36,110 --> 03:47:33,840

cone in place during the launch and

5268

03:47:38,450 --> 03:47:36,120

Ascent portions those have begun to

5269

03:47:46,610 --> 03:47:38,460

retract and the nose cone is beginning

5270

03:47:50,929 --> 03:47:48,950

the nose cone is about two-thirds of the

5271

03:48:01,570 --> 03:47:50,939

way open at this time so we do expect it

5272

03:48:06,530 --> 03:48:04,490

shortly after nose cone deployment the

5273

03:48:08,929 --> 03:48:06,540

crew will be able to get their visors

5274

03:48:10,910 --> 03:48:08,939

open and they'll be given the okay to

5275

03:48:13,429 --> 03:48:10,920

get out of their suits and that will

5276

03:48:16,010 --> 03:48:13,439

allow them to settle in for their ride

5277

03:48:18,110 --> 03:48:16,020

to the International Space Station

5278

03:48:21,410 --> 03:48:18,120

all right

5279

03:48:23,750 --> 03:48:21,420

it is about a 29 hour Journey for the

5280

03:48:25,849 --> 03:48:23,760

crew from launch to docking to the space

5281

03:48:26,929 --> 03:48:25,859

station but as you said they'll be able

5282

03:48:29,210 --> 03:48:26,939

to get out of their suits get

5283

03:48:31,130 --> 03:48:29,220

comfortable get some rest and just enjoy

5284

03:48:33,650 --> 03:48:31,140

being in the microgravity environment of

5285

03:48:36,530 --> 03:48:33,660

space again we have three first-time

5286

03:48:39,110 --> 03:48:36,540

flyers and one veteran on today's flight

5287

03:48:40,910 --> 03:48:39,120

but I'm sure it was an exciting moment

5288

03:48:42,830 --> 03:48:40,920

no matter how many times you've been to

5289

03:48:43,870 --> 03:48:42,840

space I can't imagine that it ever gets

5290

03:48:47,150 --> 03:48:43,880

old

5291

03:48:50,269 --> 03:48:47,160

I would probably agree with that I would

5292

03:48:53,630 --> 03:48:50,279

also imagine that the three first-time

5293

03:48:55,429 --> 03:48:53,640

space goers will have a brief period of

5294

03:48:57,650 --> 03:48:55,439

acclimation to gravity I know I

5295

03:48:59,389 --> 03:48:57,660

certainly would and I also recognize

5296

03:49:01,969 --> 03:48:59,399

that my period probably wouldn't be very

5297

03:49:03,469 --> 03:49:01,979

brief in order to get acclimated to that

5298

03:49:06,110 --> 03:49:03,479

lack of gravity

5299

03:49:07,750 --> 03:49:06,120

um but yeah this is something that um

5300

03:49:10,729 --> 03:49:07,760

the veteran

5301  
03:49:13,370 --> 03:49:10,739  
astronauts on board station uh are you

5302  
03:49:16,670 --> 03:49:13,380  
know always happy to help really

5303  
03:49:19,250 --> 03:49:16,680  
introduce the the new space goes uh to

5304  
03:49:21,830 --> 03:49:19,260  
the new environment

5305  
03:49:24,050 --> 03:49:21,840  
absolutely and we did also hear that

5306  
03:49:26,510 --> 03:49:24,060  
there was good service section at Draco

5307  
03:49:28,429 --> 03:49:26,520  
checkouts that took place we are

5308  
03:49:30,290 --> 03:49:28,439  
standing by for that nose cone to be

5309  
03:49:38,450 --> 03:49:30,300  
fully deployed but it should be coming

5310  
03:49:42,229 --> 03:49:40,370  
Dragon we see a nominal nose cone

5311  
03:49:47,210 --> 03:49:42,239  
opening TCS and forward bulkhead Draco

5312  
03:49:47,220 --> 03:49:53,630  
Dragon copies

5313  
03:50:01,550 --> 03:49:57,110

X burn is a the upcoming phase burn per

5314

03:50:17,929 --> 03:50:04,080

we see the phase burn in 28 minutes

5315

03:50:23,510 --> 03:50:20,510

so you heard it there the nose cone has

5316

03:50:25,190 --> 03:50:23,520

fully been opened successfully we had

5317

03:50:28,309 --> 03:50:25,200

some good checkouts

5318

03:50:30,410 --> 03:50:28,319

on the Draco thrusters

5319

03:50:31,550 --> 03:50:30,420

on the service section Draco thrusters

5320

03:50:34,610 --> 03:50:31,560

rather

5321

03:50:39,650 --> 03:50:34,620

and we also had nominal forward bulkhead

5322

03:50:44,570 --> 03:50:42,229

that's right and the astronauts should

5323

03:50:46,969 --> 03:50:44,580

be getting the okay to doff or remove

5324

03:50:50,210 --> 03:50:46,979

their suits uh in about six or seven

5325

03:50:52,429 --> 03:50:50,220

minutes I would imagine that um as

5326

03:50:54,830 --> 03:50:52,439

Sandra mentioned before we do have three

5327

03:50:55,910 --> 03:50:54,840

space newbies on board today I would

5328

03:50:58,070 --> 03:50:55,920

imagine that they would be pretty

5329

03:51:00,769 --> 03:50:58,080

excited to get out of their seats

5330

03:51:03,830 --> 03:51:00,779

they've been in uh in these seats for a

5331

03:51:06,229 --> 03:51:03,840

while the crew ingressed hours ago and

5332

03:51:08,630 --> 03:51:06,239

uh if I would imagine that the three

5333

03:51:10,910 --> 03:51:08,640

folks and even the veteran everybody

5334

03:51:12,469 --> 03:51:10,920

would be excited to get out and be able

5335

03:51:16,309 --> 03:51:12,479

to float around a little bit for the

5336

03:51:21,769 --> 03:51:18,950

yes absolutely and you do see the crew

5337

03:51:23,750 --> 03:51:21,779

working through some procedures there on

5338

03:51:25,130 --> 03:51:23,760

the touch pads that they do have in

5339

03:51:27,710 --> 03:51:25,140

front of them they'll continue to have

5340

03:51:29,510 --> 03:51:27,720

those available for them throughout

5341

03:51:32,690 --> 03:51:29,520

their flight uphill again this is going

5342

03:51:39,590 --> 03:51:32,700

to be about a 29 hour launch to docking

5343

03:51:46,670 --> 03:51:42,110

it seems as though that zero g indicator

5344

03:51:52,309 --> 03:51:46,680

may have floated out of view perhaps up

5345

03:51:57,889 --> 03:51:54,889

we can see that the visors are up

5346

03:52:00,469 --> 03:51:57,899

Dragon SpaceX environments are looking

5347

03:52:02,929 --> 03:52:00,479

good for suit Doffing

5348

03:52:04,849 --> 03:52:02,939

for today we can leave the camera

5349

03:52:07,150 --> 03:52:04,859

configured for a little while longer but

5350

03:52:11,750 --> 03:52:07,160

at this time you are go for

5351  
03:52:13,849 --> 03:52:11,760  
4.012 and 4.300 as a reminder please

5352  
03:52:18,830 --> 03:52:13,859  
Stow the suits with the visors closed

5353  
03:52:24,170 --> 03:52:21,650  
okay Dragon copies we are go for four

5354  
03:52:25,910 --> 03:52:24,180  
decimal of zero one two and four decimal

5355  
03:52:27,889 --> 03:52:25,920  
of 300 we're going to keep the cameras

5356  
03:52:29,920 --> 03:52:27,899  
configured and then restore the suit

5357  
03:52:32,150 --> 03:52:29,930  
we'll do it with the advisors

5358  
03:52:35,150 --> 03:52:32,160  
[Applause]

5359  
03:52:36,650 --> 03:52:35,160  
good repack at this time you're also

5360  
03:52:38,750 --> 03:52:36,660  
going to tell the world a little bit

5361  
03:52:44,990 --> 03:52:38,760  
about that stowaway we saw shortly after

5362  
03:52:45,000 --> 03:52:54,290  
[Applause]

5363  
03:52:59,809 --> 03:52:57,590

so we're standing by from a few words

5364

03:53:00,830 --> 03:52:59,819

standing by for a few words from the

5365

03:53:05,929 --> 03:53:00,840

crew

5366

03:53:23,530 --> 03:53:08,210

foreign

5367

03:53:29,750 --> 03:53:25,330

the last part of your trip

5368

03:53:33,410 --> 03:53:31,550

and no worries repeating my last one

5369

03:53:35,389 --> 03:53:33,420

there I was going to uh have you all

5370

03:53:37,370 --> 03:53:35,399

talk a little bit about your zero g

5371

03:53:40,070 --> 03:53:37,380

indicator uh but we could hold that up

5372

03:53:42,469 --> 03:53:40,080

for the next uh ground station pass here

5373

03:53:44,330 --> 03:53:42,479

for Dubai at this time what I'll do is

5374

03:53:46,070 --> 03:53:44,340

I'll take the cameras external or suit

5375

03:53:53,830 --> 03:53:46,080

nothing and then uh you let me know when

5376  
03:53:56,990 --> 03:53:54,440  
[Applause]

5377  
03:53:57,480 --> 03:53:57,000  
[Music]

5378  
03:53:59,410 --> 03:53:57,490  
[Applause]

5379  
03:54:02,150 --> 03:53:59,420  
[Music]

5380  
03:54:06,469 --> 03:54:02,160  
I guess

5381  
03:54:11,990 --> 03:54:09,290  
and it does sound like we are in a brief

5382  
03:54:13,969 --> 03:54:12,000  
expected loss of signal with the crew

5383  
03:54:16,370 --> 03:54:13,979  
this does happen from time to time when

5384  
03:54:18,229 --> 03:54:16,380  
we're in between our satellites but we

5385  
03:54:20,450 --> 03:54:18,239  
will have views and communication back

5386  
03:54:23,330 --> 03:54:20,460  
with them here shortly and we're looking

5387  
03:54:25,910 --> 03:54:23,340  
forward to hearing their words on their

5388  
03:54:29,410 --> 03:54:25,920

stowaway and what that special meaning

5389

03:54:32,630 --> 03:54:29,420

is for the crew so with crew 5 now

5390

03:54:35,030 --> 03:54:32,640

successfully on orbit let's head over to

5391

03:54:39,170 --> 03:54:35,040

our counterparts at Kennedy Space Center

5392

03:54:41,630 --> 03:54:39,180

in Florida Daryl it was spectacular to

5393

03:54:43,130 --> 03:54:41,640

watch this launch from here in Hawthorne

5394

03:54:44,170 --> 03:54:43,140

but tell me what was it like to see it

5395

03:54:48,229 --> 03:54:44,180

on the ground

5396

03:54:51,050 --> 03:54:48,239

it was amazing first of all we got an

5397

03:54:52,610 --> 03:54:51,060

idyllic day right here uh on the Space

5398

03:54:54,950 --> 03:54:52,620

Coast I mean the temperatures are like

5399

03:54:57,889 --> 03:54:54,960

uh you know mid 70s there's a cool

5400

03:55:00,170 --> 03:54:57,899

breeze phenomenal launch Bob I want to

5401  
03:55:02,990 --> 03:55:00,180  
get your thoughts you've flown you've

5402  
03:55:04,969 --> 03:55:03,000  
watched this is pretty perfect no this

5403  
03:55:06,410 --> 03:55:04,979  
was just outstanding it was picturesque

5404  
03:55:08,809 --> 03:55:06,420  
you know with the blue sky the blue back

5405  
03:55:11,269 --> 03:55:08,819  
Crown a beautiful day here in Florida

5406  
03:55:12,889 --> 03:55:11,279  
the only thing I I wish was that I was

5407  
03:55:14,809 --> 03:55:12,899  
there with them because that is the one

5408  
03:55:16,670 --> 03:55:14,819  
place that is better to watch a launch

5409  
03:55:18,650 --> 03:55:16,680  
from uh than right here at the Kennedy

5410  
03:55:21,170 --> 03:55:18,660  
Space Center is on board the rocket ship

5411  
03:55:22,729 --> 03:55:21,180  
I gotta believe that and uh though we

5412  
03:55:24,469 --> 03:55:22,739  
weren't on board we did get to watch The

5413  
03:55:26,929 --> 03:55:24,479

Views as we were going up and saw them

5414

03:55:29,809 --> 03:55:26,939

land the booster which by the way that

5415

03:55:33,110 --> 03:55:29,819

booster also going to be spacex's and

5416

03:55:35,030 --> 03:55:33,120

NASA's crew 6 booster so more the ReUse

5417

03:55:37,309 --> 03:55:35,040

NASA taking advantage of that as well

5418

03:55:39,950 --> 03:55:37,319

absolutely every chance that we get to

5419

03:55:41,929 --> 03:55:39,960

reuse a a capsule or reuse a booster

5420

03:55:43,969 --> 03:55:41,939

kind of drives down costs and uh

5421

03:55:46,189 --> 03:55:43,979

increases the opportunity for more folks

5422

03:55:48,830 --> 03:55:46,199

to fly in space now I'm headed out to

5423

03:55:51,229 --> 03:55:48,840

take a swim right yeah I mean this is

5424

03:55:53,030 --> 03:55:51,239

just perfect out here Bob thank you for

5425

03:55:54,889 --> 03:55:53,040

your thoughts um and now we're going to

5426  
03:55:57,229 --> 03:55:54,899  
move on we've got an interview here with

5427  
03:55:59,389 --> 03:55:57,239  
uh Robin gaytons the director of the

5428  
03:56:01,250 --> 03:55:59,399  
International Space Station who also

5429  
03:56:03,469 --> 03:56:01,260  
joins us here and you got to experience

5430  
03:56:05,809 --> 03:56:03,479  
the launch from right here uh outside

5431  
03:56:08,090 --> 03:56:05,819  
the the Press site and I want to ask you

5432  
03:56:09,889 --> 03:56:08,100  
how did you enjoy it well it's always

5433  
03:56:11,389 --> 03:56:09,899  
exciting to see launch to the

5434  
03:56:14,689 --> 03:56:11,399  
International Space Station I've seen

5435  
03:56:17,210 --> 03:56:14,699  
many but especially uh to see a new

5436  
03:56:19,370 --> 03:56:17,220  
international crew uh headed to the

5437  
03:56:21,530 --> 03:56:19,380  
International Space Station was was very

5438  
03:56:24,110 --> 03:56:21,540

exciting and of course you nailed a

5439

03:56:25,849 --> 03:56:24,120

beautiful day really glad we we got this

5440

03:56:28,370 --> 03:56:25,859

one off today absolutely and they'll

5441

03:56:30,229 --> 03:56:28,380

make that 29-hour transit to the space

5442

03:56:31,729 --> 03:56:30,239

station you're the director of the

5443

03:56:33,710 --> 03:56:31,739

International Space Station so I want to

5444

03:56:37,130 --> 03:56:33,720

ask you I I heard there's a book coming

5445

03:56:38,389 --> 03:56:37,140

out uh that's uh there have been books

5446

03:56:40,490 --> 03:56:38,399

before about the International Space

5447

03:56:41,990 --> 03:56:40,500

Station but a new one's coming out tell

5448

03:56:44,630 --> 03:56:42,000

me a little bit about that yeah it's

5449

03:56:46,910 --> 03:56:44,640

called our benefits to humanity it is a

5450

03:56:48,950 --> 03:56:46,920

publication we have put out before and

5451  
03:56:52,309 --> 03:56:48,960  
we actually released it in July so it's

5452  
03:56:55,189 --> 03:56:52,319  
out uh it's both in print format as well

5453  
03:56:57,349 --> 03:56:55,199  
as online so people can just search on

5454  
03:57:00,050 --> 03:56:57,359  
benefits for Humanity International

5455  
03:57:02,809 --> 03:57:00,060  
Space Station and find that book and it

5456  
03:57:04,910 --> 03:57:02,819  
highlights all of the wonderful research

5457  
03:57:07,790 --> 03:57:04,920  
that's going on on the space station

5458  
03:57:10,130 --> 03:57:07,800  
This Crew will be doing doing over 200

5459  
03:57:12,550 --> 03:57:10,140  
experiments during their time on the

5460  
03:57:16,309 --> 03:57:12,560  
International Space Station ranging from

5461  
03:57:19,790 --> 03:57:16,319  
medical kinds of research that that will

5462  
03:57:22,550 --> 03:57:19,800  
help treat diseases and produce new new

5463  
03:57:25,630 --> 03:57:22,560

drugs here on Earth regenerative

5464

03:57:29,150 --> 03:57:25,640

medicine one day we might even print

5465

03:57:31,670 --> 03:57:29,160

organs for transplant on Earth we have

5466

03:57:35,050 --> 03:57:31,680

earth science going on on Space Station

5467

03:57:38,030 --> 03:57:35,060

number of climate instruments to help us

5468

03:57:40,969 --> 03:57:38,040

understand earth's climate really

5469

03:57:43,309 --> 03:57:40,979

exciting results this is truly what we

5470

03:57:45,950 --> 03:57:43,319

call the decade of results on the

5471

03:57:49,969 --> 03:57:45,960

International Space Station where we're

5472

03:57:53,389 --> 03:57:49,979

we're building on past lessons and

5473

03:57:54,889 --> 03:57:53,399

capabilities to just compound the

5474

03:57:56,150 --> 03:57:54,899

results that we're able to get out of

5475

03:58:01,490 --> 03:57:56,160

the space station

5476  
03:58:03,950 --> 03:58:01,500  
and 235 investigations 76 new ones and

5477  
03:58:05,330 --> 03:58:03,960  
you mentioned the decade two decades

5478  
03:58:08,269 --> 03:58:05,340  
more than two decades the International

5479  
03:58:10,309 --> 03:58:08,279  
Space Station has been operating you

5480  
03:58:11,450 --> 03:58:10,319  
mentioned some of the science that

5481  
03:58:13,070 --> 03:58:11,460  
they're going to be doing I'm wondering

5482  
03:58:14,929 --> 03:58:13,080  
if you have a favorite that you've kind

5483  
03:58:17,090 --> 03:58:14,939  
of identified like oh I can't wait to

5484  
03:58:18,769 --> 03:58:17,100  
find out the results of that well I've

5485  
03:58:20,389 --> 03:58:18,779  
been tracking a lot of them

5486  
03:58:23,030 --> 03:58:20,399  
um I'm really excited about some of the

5487  
03:58:26,330 --> 03:58:23,040  
medical uh things uh we're flying again

5488  
03:58:29,150 --> 03:58:26,340

a uh a payload by a company called Lam

5489

03:58:31,809 --> 03:58:29,160

Division and they're producing uh

5490

03:58:36,550 --> 03:58:31,819

retinal implants that could be used to

5491

03:58:38,990 --> 03:58:36,560

help patients with ocular degeneration

5492

03:58:41,809 --> 03:58:39,000

so that's really exciting I'm excited

5493

03:58:44,269 --> 03:58:41,819

about what we're learning

5494

03:58:46,070 --> 03:58:44,279

um you know with respect to the climate

5495

03:58:47,590 --> 03:58:46,080

we got brand new climate instruments up

5496

03:58:50,090 --> 03:58:47,600

on board

5497

03:58:52,429 --> 03:58:50,100

we've got companies learning how to make

5498

03:58:56,630 --> 03:58:52,439

better products through their research

5499

03:58:59,110 --> 03:58:56,640

on through the issn National Lab and

5500

03:59:01,729 --> 03:58:59,120

their their work on the space station so

5501

03:59:03,650 --> 03:59:01,739

I'm also excited about plant research

5502

03:59:05,150 --> 03:59:03,660

going on on Space Station I think that's

5503

03:59:08,510 --> 03:59:05,160

not only important for future

5504

03:59:11,210 --> 03:59:08,520

exploration missions but also to help us

5505

03:59:15,229 --> 03:59:11,220

grow plants in harsh environments small

5506

03:59:17,450 --> 03:59:15,239

spaces here on Earth and also NASA while

5507

03:59:20,450 --> 03:59:17,460

doing all of that is continuing to work

5508

03:59:22,490 --> 03:59:20,460

towards its ultimate goal of uh getting

5509

03:59:24,590 --> 03:59:22,500

to the moon going back to the moon and

5510

03:59:27,650 --> 03:59:24,600

sustaining our presence there a lot of

5511

03:59:29,269 --> 03:59:27,660

Technology at the station that works

5512

03:59:31,610 --> 03:59:29,279

towards that end we want to actually

5513

03:59:33,110 --> 03:59:31,620

pause though for one second because we

5514

03:59:36,590 --> 03:59:33,120

understand that one of the astronauts

5515

03:59:40,370 --> 03:59:36,600

Josh cassida has a statement that he is

5516

03:59:43,969 --> 03:59:40,380

going to make uh it uh it is relatively

5517

03:59:46,729 --> 03:59:43,979

about uh his zero g indicator which if

5518

03:59:48,290 --> 03:59:46,739

you saw on the coverage it was uh I

5519

03:59:50,150 --> 03:59:48,300

don't know if it was a baby Einstein Bob

5520

03:59:51,769 --> 03:59:50,160

but it was a little Einstein it

5521

03:59:53,210 --> 03:59:51,779

definitely looked like a small Einstein

5522

04:00:00,650 --> 03:59:53,220

but we'll listen to Josh and hear

5523

04:00:00,660 --> 04:00:10,250

let's listen in

5524

04:00:16,130 --> 04:00:13,790

again waiting for astronaut Josh cassida

5525

04:00:34,010 --> 04:00:16,140

with a special message

5526

04:00:39,469 --> 04:00:36,469

Dragon copies we are internal with the

5527

04:00:42,290 --> 04:00:39,479

weight bands off and stand by for the

5528

04:00:44,450 --> 04:00:42,300

cabin mic chain

5529

04:00:52,670 --> 04:00:44,460

did you see koichi wakada is out of his

5530

04:00:52,680 --> 04:00:56,570

the cabin mic contact

5531

04:01:04,670 --> 04:00:59,330

and koichi I've got you five by five how

5532

04:01:04,680 --> 04:01:08,809

would be loud and clear also

5533

04:01:12,769 --> 04:01:10,370

great news and we're also getting some

5534

04:01:14,269 --> 04:01:12,779

great views inside the capsule here so

5535

04:01:16,250 --> 04:01:14,279

if you all want to get a chance to talk

5536

04:01:22,370 --> 04:01:16,260

about your indicator we'd all love to

5537

04:01:27,290 --> 04:01:24,070

absolutely Mike

5538

04:01:30,110 --> 04:01:27,300

a couple years after

5539

04:01:31,910 --> 04:01:30,120

come up with his groundbreaking theory

5540

04:01:34,189 --> 04:01:31,920

of special relativity

5541

04:01:36,410 --> 04:01:34,199

Albert Einstein in his mind still had a

5542

04:01:38,570 --> 04:01:36,420

couple loose ends to tie up

5543

04:01:40,849 --> 04:01:38,580

while he was sitting in the patent

5544

04:01:42,889 --> 04:01:40,859

office because he wasn't famous yet

5545

04:01:45,410 --> 04:01:42,899

definitely should have been

5546

04:01:49,130 --> 04:01:45,420

he had

5547

04:01:51,050 --> 04:01:49,140

his happiest thought of his entire life

5548

04:01:53,269 --> 04:01:51,060

I thought was

5549

04:01:55,849 --> 04:01:53,279

person in free fall

5550

04:01:58,309 --> 04:01:55,859

doesn't feel their own weight

5551  
04:01:59,929 --> 04:01:58,319  
that thought along with the mothers that

5552  
04:02:02,090 --> 04:01:59,939  
he built upon

5553  
04:02:04,189 --> 04:02:02,100  
led to general relativity and our

5554  
04:02:08,510 --> 04:02:04,199  
understanding of gravitation and

5555  
04:02:13,250 --> 04:02:11,150  
we're experiencing Einstein's happiest

5556  
04:02:15,050 --> 04:02:13,260  
thoughts continuously

5557  
04:02:19,670 --> 04:02:15,060  
at the International Space Station has

5558  
04:02:23,689 --> 04:02:21,710  
on true five

5559  
04:02:24,889 --> 04:02:23,699  
all this little guy our free ball

5560  
04:02:26,809 --> 04:02:24,899  
indicator

5561  
04:02:28,790 --> 04:02:26,819  
we're here to tell you there's plenty of

5562  
04:02:31,250 --> 04:02:28,800  
gravity up here in fact that's what's

5563  
04:02:32,990 --> 04:02:31,260

keeping us in orbit right now and

5564

04:02:35,450 --> 04:02:33,000

preventing this trip on a crew dragon

5565

04:02:37,910 --> 04:02:35,460

from being a one-way trip

5566

04:02:39,950 --> 04:02:37,920

a little bit like life

5567

04:02:41,870 --> 04:02:39,960

we live in the same world we live in the

5568

04:02:44,090 --> 04:02:41,880

same universe

5569

04:02:46,729 --> 04:02:44,100

sometimes we experience it in a very

5570

04:02:49,070 --> 04:02:46,739

different way from our neighbors

5571

04:02:51,410 --> 04:02:49,080

we can all keep that in mind

5572

04:02:53,269 --> 04:02:51,420

employees can all continue to do an

5573

04:03:00,460 --> 04:02:53,279

absolutely amazing thing

5574

04:03:00,470 --> 04:03:03,769

[Music]

5575

04:03:07,130 --> 04:03:05,330

well that was excellent Josh we

5576

04:03:08,210 --> 04:03:07,140

appreciate you all taking the chance to

5577

04:03:10,010 --> 04:03:08,220

share with us some of those special

5578

04:03:16,070 --> 04:03:10,020

words and some of the meanings to you

5579

04:03:19,130 --> 04:03:17,570

I'll tell you my crewmates are just

5580

04:03:23,110 --> 04:03:19,140

happy that we didn't break out a dry

5581

04:03:30,410 --> 04:03:24,290

[Music]

5582

04:03:35,870 --> 04:03:33,110

absolutely

5583

04:03:39,290 --> 04:03:35,880

a message from me at the time astronaut

5584

04:03:42,110 --> 04:03:39,300

Josh cassida a pilot of crew five and

5585

04:03:44,030 --> 04:03:42,120

his fellow astronauts and cosmonaut

5586

04:03:45,650 --> 04:03:44,040

floating in space high above the Earth

5587

04:03:48,110 --> 04:03:45,660

as they head to the International Space

5588

04:03:52,670 --> 04:03:48,120

Station with a special message about

5589

04:03:55,010 --> 04:03:52,680

Albert Einstein who is represented there

5590

04:03:57,590 --> 04:03:55,020

floating around space as the zero g

5591

04:04:00,469 --> 04:03:57,600

indicator but then also a nod to his

5592

04:04:03,050 --> 04:04:00,479

theory of relativity  $E$  equals  $m c$

5593

04:04:04,670 --> 04:04:03,060

squared I believe Bob well there are a

5594

04:04:07,010 --> 04:04:04,680

lot of great things that Einstein was

5595

04:04:09,170 --> 04:04:07,020

responsible for and I would just say

5596

04:04:11,809 --> 04:04:09,180

that maybe there are five folks

5597

04:04:13,870 --> 04:04:11,819

experiencing his uh happiest thought on

5598

04:04:16,610 --> 04:04:13,880

board the Dragon capsule just right now

5599

04:04:19,070 --> 04:04:16,620

absolutely and NASA is looking to return

5600

04:04:20,809 --> 04:04:19,080

humans to the surface of the Moon and

5601  
04:04:22,370 --> 04:04:20,819  
this is part of it going to the

5602  
04:04:24,950 --> 04:04:22,380  
International Space Station we mentioned

5603  
04:04:26,330 --> 04:04:24,960  
some of the efforts in uh in going up

5604  
04:04:28,130 --> 04:04:26,340  
there and of course the science that's

5605  
04:04:30,469 --> 04:04:28,140  
going to be done by crew five we're

5606  
04:04:32,269 --> 04:04:30,479  
looking forward to that as well some

5607  
04:04:33,050 --> 04:04:32,279  
final thoughts uh Bob about the day

5608  
04:04:34,910 --> 04:04:33,060  
today

5609  
04:04:36,769 --> 04:04:34,920  
well it was just a wonderful day a

5610  
04:04:38,750 --> 04:04:36,779  
chance for me to relive the launch

5611  
04:04:40,790 --> 04:04:38,760  
experience with the Falcon 9 and the

5612  
04:04:43,790 --> 04:04:40,800  
Dragon capsule and I'm just super

5613  
04:04:46,550 --> 04:04:43,800

excited for the uh the crew 5 and Little

5614

04:04:47,269 --> 04:04:46,560

Einstein on board and in free fall right

5615

04:04:49,189 --> 04:04:47,279

now

5616

04:04:50,990 --> 04:04:49,199

a very special moment indeed before we

5617

04:04:52,790 --> 04:04:51,000

wrap up I want to send it over to Megan

5618

04:04:55,429 --> 04:04:52,800

Cruz who is with Deputy Administrator

5619

04:04:56,929 --> 04:04:55,439

and former space shuttle astronaut Pam

5620

04:04:58,610 --> 04:04:56,939

melroy

5621

04:05:00,469 --> 04:04:58,620

I am Pam and I've just been chatting

5622

04:05:03,290 --> 04:05:00,479

about how wonderful of a day this was

5623

04:05:05,689 --> 04:05:03,300

for a launch oh it's a gorgeous day here

5624

04:05:07,610 --> 04:05:05,699

at the historic Kennedy Space Center for

5625

04:05:09,349 --> 04:05:07,620

me to see the next generation of launch

5626  
04:05:11,030 --> 04:05:09,359  
Vehicles launching to the space station

5627  
04:05:13,070 --> 04:05:11,040  
was thrilling and also the next

5628  
04:05:14,750 --> 04:05:13,080  
generation of young explorers you know

5629  
04:05:17,990 --> 04:05:14,760  
you and I were talking about a young boy

5630  
04:05:20,510 --> 04:05:18,000  
here guys that bought a a space suit an

5631  
04:05:22,429 --> 04:05:20,520  
astronaut suit from downstairs at our uh

5632  
04:05:23,870 --> 04:05:22,439  
our store and was wearing it around and

5633  
04:05:25,670 --> 04:05:23,880  
running around how cute was that to see

5634  
04:05:27,530 --> 04:05:25,680  
him so excited well I found it pretty

5635  
04:05:29,330 --> 04:05:27,540  
cute to see the three rookies who were

5636  
04:05:31,849 --> 04:05:29,340  
on the flight as well as my very dear

5637  
04:05:35,630 --> 04:05:31,859  
personal friend koichiwakata who I flew

5638  
04:05:37,550 --> 04:05:35,640

with in 2000 to the space station so I'm

5639

04:05:39,229 --> 04:05:37,560

inspired by both The Young and the

5640

04:05:40,910 --> 04:05:39,239

experienced and speak to me about that

5641

04:05:42,769 --> 04:05:40,920

that like you said you you've flown on

5642

04:05:44,570 --> 04:05:42,779

the space shuttle three times talk to me

5643

04:05:45,849 --> 04:05:44,580

about that Ascent how it must feel as

5644

04:05:48,889 --> 04:05:45,859

they're going up through the atmosphere

5645

04:05:50,809 --> 04:05:48,899

it's absolutely a remarkable experience

5646

04:05:53,269 --> 04:05:50,819

and I found myself thinking as I was

5647

04:05:56,150 --> 04:05:53,279

looking at the the schedule for this

5648

04:05:58,849 --> 04:05:56,160

rocket how physics drives so much of

5649

04:06:00,189 --> 04:05:58,859

what we do so it's very similar in the

5650

04:06:02,870 --> 04:06:00,199

timing of everything

5651

04:06:04,849 --> 04:06:02,880

but the space shuttle was a little bit

5652

04:06:06,530 --> 04:06:04,859

of a wild ride I have to say it had a

5653

04:06:08,750 --> 04:06:06,540

lot of vibration particularly the first

5654

04:06:10,429 --> 04:06:08,760

two minutes but you know it's a very

5655

04:06:13,189 --> 04:06:10,439

different experience when you're here on

5656

04:06:15,290 --> 04:06:13,199

the ground it always brings tears to my

5657

04:06:18,170 --> 04:06:15,300

eyes I pray for the crew when you're

5658

04:06:19,550 --> 04:06:18,180

inside the vehicle you're having a blast

5659

04:06:21,469 --> 04:06:19,560

so I'm glad to hear that they were

5660

04:06:23,090 --> 04:06:21,479

having a blast talk to me about why

5661

04:06:25,309 --> 04:06:23,100

these commercial crew missions are so

5662

04:06:28,070 --> 04:06:25,319

important well they're really important

5663

04:06:30,889 --> 04:06:28,080

to us for a lot of different reasons the

5664

04:06:32,750 --> 04:06:30,899

whole value that NASA brings to the

5665

04:06:34,510 --> 04:06:32,760

American people and in fact to humanity

5666

04:06:37,790 --> 04:06:34,520

is around science

5667

04:06:41,389 --> 04:06:37,800

a strong Science and Technology posture

5668

04:06:42,889 --> 04:06:41,399

for the country and inspiration and we

5669

04:06:45,590 --> 04:06:42,899

see that all wrapped up in commercial

5670

04:06:47,389 --> 04:06:45,600

crew because we see the ability to do

5671

04:06:49,910 --> 04:06:47,399

more science on orbit because we can

5672

04:06:51,830 --> 04:06:49,920

carry more crew members we see the

5673

04:06:53,809 --> 04:06:51,840

advancements that have been made through

5674

04:06:56,809 --> 04:06:53,819

NASA investments in commercial crew and

5675

04:06:58,969 --> 04:06:56,819

Commercial cargo that are lifting our

5676

04:07:00,590 --> 04:06:58,979

entire space industry and of course

5677

04:07:02,510 --> 04:07:00,600

there's nothing better than seeing an

5678

04:07:05,030 --> 04:07:02,520

astronaut fly to space for inspiration

5679

04:07:06,530 --> 04:07:05,040

sure and what's next for NASA you know

5680

04:07:08,689 --> 04:07:06,540

right behind us we have the Vehicle

5681

04:07:10,969 --> 04:07:08,699

Assembly Building inside is NASA's

5682

04:07:13,550 --> 04:07:10,979

Artemis one rocket are you excited for

5683

04:07:15,349 --> 04:07:13,560

that oh I'm I'm very excited I'll tell

5684

04:07:18,110 --> 04:07:15,359

you it's a big deal when a new rocket

5685

04:07:21,050 --> 04:07:18,120

flies for the first time and we have

5686

04:07:23,150 --> 04:07:21,060

learned a lot we we have a lot to learn

5687

04:07:25,189 --> 04:07:23,160

just like I was a test pilot so when we

5688

04:07:26,929 --> 04:07:25,199

flew airplanes we never actually

5689

04:07:29,269 --> 04:07:26,939

launched the first try usually we just

5690

04:07:30,830 --> 04:07:29,279

taxied down the runway so we've we've

5691

04:07:33,349 --> 04:07:30,840

taken her out to the runway a couple of

5692

04:07:35,269 --> 04:07:33,359

times now and we've learned a lot and I

5693

04:07:38,210 --> 04:07:35,279

cannot wait to see the most powerful

5694

04:07:39,469 --> 04:07:38,220

rocket in the world launch going to the

5695

04:07:41,090 --> 04:07:39,479

Moon yeah we're doing a lot of great

5696

04:07:43,189 --> 04:07:41,100

stuff here and we're so happy to bring

5697

04:07:45,590 --> 04:07:43,199

viewers on the ride with us right you

5698

04:07:47,210 --> 04:07:45,600

bet that's the whole idea NASA shares

5699

04:07:48,830 --> 04:07:47,220

and inspires perfect Pam thank you so

5700

04:07:49,910 --> 04:07:48,840

much I appreciate you being here guys

5701

04:07:51,170 --> 04:07:49,920

we're going to send it back to you for

5702

04:07:53,150 --> 04:07:51,180

the last time today

5703

04:07:55,969 --> 04:07:53,160

thank you very much Megan great job out

5704

04:07:58,849 --> 04:07:55,979

there appreciate it

5705

04:08:00,590 --> 04:07:58,859

and Nicole Josh and koichi and Anna are

5706

04:08:03,410 --> 04:08:00,600

now on course to rise at the

5707

04:08:05,750 --> 04:08:03,420

International Space Station around 4 57

5708

04:08:08,090 --> 04:08:05,760

p.m eastern time tomorrow and of course

5709

04:08:10,550 --> 04:08:08,100

NASA TV will stay on the air for

5710

04:08:12,410 --> 04:08:10,560

continuous live coverage along crew 5's

5711

04:08:14,809 --> 04:08:12,420

entire ride to station meanwhile

5712

04:08:16,790 --> 04:08:14,819

spacex's YouTube channel will join live

5713

04:08:19,550 --> 04:08:16,800

coverage starting at roughly two hours

5714

04:08:22,370 --> 04:08:19,560

prior to docking and though our coverage

5715

04:08:24,290 --> 04:08:22,380

here at Kennedy is coming to a close we

5716

04:08:26,990 --> 04:08:24,300

will turn it over to the team in Houston

5717

04:08:29,030 --> 04:08:27,000

to take us through the next phases of

5718

04:08:31,429 --> 04:08:29,040

the crew 5 Mission all the way through

5719

04:08:33,110 --> 04:08:31,439

the arrival at the International Space

5720

04:08:35,210 --> 04:08:33,120

Station

5721

04:08:37,070 --> 04:08:35,220

for those of you watching online on

5722

04:08:39,170 --> 04:08:37,080

NASA's YouTube make sure you take a look

5723

04:08:41,210 --> 04:08:39,180

at the description below you'll see the

5724

04:08:43,670 --> 04:08:41,220

video link there and you'll find that

5725

04:08:47,570 --> 04:08:43,680

for crew 5 Coast phase live coverage

5726

04:08:49,189 --> 04:08:47,580

will continue at that link shortly

5727

04:08:51,830 --> 04:08:49,199

you can see it at the bottom of your

5728

04:08:54,229 --> 04:08:51,840

screen pull that up for you if you're

5729

04:08:57,110 --> 04:08:54,239

watching on NASA TV you won't notice a

5730

04:08:59,210 --> 04:08:57,120

thing and coverage will continue

5731

04:09:02,210 --> 04:08:59,220

so a post-launch news conference is

5732

04:09:04,550 --> 04:09:02,220

scheduled for 1 30 PM Eastern Time on

5733

04:09:07,610 --> 04:09:04,560

NASA TV and you can find Mission updates

5734

04:09:11,450 --> 04:09:07,620

on Twitter at Nasa at SpaceX and on the

5735

04:09:14,389 --> 04:09:11,460

web at nasa.gov including timing on any

5736

04:09:16,670 --> 04:09:14,399

potential Live tours of dragon endurance

5737

04:09:18,769 --> 04:09:16,680

during the trip to station

5738

04:09:21,170 --> 04:09:18,779

now before we sign off from Kennedy I

5739

04:09:22,670 --> 04:09:21,180

want to thank my partner and co-host Bob

5740

04:09:24,650 --> 04:09:22,680

benkin for being on the launch broadcast

5741

04:09:26,389 --> 04:09:24,660

sharing your incredible insight and

5742

04:09:28,250 --> 04:09:26,399

experiences Bob I really enjoyed

5743

04:09:30,830 --> 04:09:28,260

listening to you today thank you so much

5744

04:09:33,889 --> 04:09:30,840

to you and to Megan your wife who helped

5745

04:09:36,349 --> 04:09:33,899

us with crew for we look forward to

5746

04:09:38,450 --> 04:09:36,359

hearing more from your family as well as

5747

04:09:40,429 --> 04:09:38,460

uh maybe seeing Theo on uh on a future

5748

04:09:42,410 --> 04:09:40,439

watch broadcast well well thank you

5749

04:09:44,630 --> 04:09:42,420

Daryl I very much appreciate that and of

5750

04:09:46,729 --> 04:09:44,640

course thank you to my wife and my son

5751  
04:09:48,650 --> 04:09:46,739  
and our dog shadow for joining us uh for

5752  
04:09:50,870 --> 04:09:48,660  
a short period of time during the during

5753  
04:09:53,150 --> 04:09:50,880  
today's broadcast and again I just want

5754  
04:09:54,830 --> 04:09:53,160  
to Echo Deputy Administrator Pam

5755  
04:09:57,170 --> 04:09:54,840  
mordoroy's words with uh it's been an

5756  
04:09:59,330 --> 04:09:57,180  
exciting year uh the crew five folks are

5757  
04:10:01,010 --> 04:09:59,340  
just getting started on their excitement

5758  
04:10:02,689 --> 04:10:01,020  
for the year if you will on their way to

5759  
04:10:04,550 --> 04:10:02,699  
the space station right now but we've

5760  
04:10:06,530 --> 04:10:04,560  
got an Artemis uh one rocket over there

5761  
04:10:08,510 --> 04:10:06,540  
the SLS and the Vehicle Assembly

5762  
04:10:10,550 --> 04:10:08,520  
Building looking forward to seeing that

5763  
04:10:12,710 --> 04:10:10,560

back out on pad and getting her launch

5764

04:10:16,010 --> 04:10:12,720

later this year coming to a launch pad

5765

04:10:17,809 --> 04:10:16,020

soon mid-november we all hope and we're

5766

04:10:20,389 --> 04:10:17,819

looking forward to that as well

5767

04:10:22,370 --> 04:10:20,399

immensely huge thanks to all of our

5768

04:10:24,830 --> 04:10:22,380

guests for joining us today and thank

5769

04:10:26,990 --> 04:10:24,840

you to all of you for watching here now

5770

04:10:29,150 --> 04:10:27,000

are the highlights from the journey we

5771

04:10:31,189 --> 04:10:29,160

took today and just a reminder from here

5772

04:10:38,269 --> 04:10:31,199

at the Kennedy Space Center to keep

5773

04:10:43,189 --> 04:10:40,790

they're getting suited up inside that

5774

04:10:46,450 --> 04:10:43,199

historic Suit Up Room everything going

5775

04:10:51,050 --> 04:10:48,710

and there they are

5776

04:11:02,110 --> 04:10:51,060

the astronauts of crew 5 taking their

5777

04:11:02,120 --> 04:11:05,930

[Music]