



1
00:24:42,590 --> 00:24:40,010
and you're looking live at crew six on

2
00:24:44,750 --> 00:24:42,600
the Move inside astronaut crew quarters

3
00:24:46,370 --> 00:24:44,760
the three astronauts and one Cosmonaut

4
00:24:48,289 --> 00:24:46,380
finished putting on their spacesuits in

5
00:24:49,850 --> 00:24:48,299
the historic suit up room and now they

6
00:24:51,950 --> 00:24:49,860
are walking down the hallway to the

7
00:24:54,350 --> 00:24:51,960
elevator in front Commander Stephen

8
00:24:56,690 --> 00:24:54,360
Bowen and pilot Woody hoberg behind them

9
00:24:58,909 --> 00:24:56,700
Mission specialist Sultan alnayadi and

10
00:25:01,070 --> 00:24:58,919
Andre fedaf they are getting into the

11
00:25:02,690 --> 00:25:01,080
elevator to the first floor well they

12
00:25:08,690 --> 00:25:02,700
where they will begin their journey to

13
00:25:13,070 --> 00:25:10,070

amazing

14

00:25:13,080 --> 00:25:16,250

before

15

00:25:28,310 --> 00:25:17,390

the has started

16

00:25:54,669 --> 00:25:28,320

[Music]

17

00:25:54,679 --> 00:26:05,580

shuttle program

18

00:26:17,810 --> 00:26:12,580

[Music]

19

00:26:19,909 --> 00:26:17,820

and now you're looking live at the crew

20

00:26:22,250 --> 00:26:19,919

Dragon spacecraft on top of a SpaceX

21

00:26:24,529 --> 00:26:22,260

Falcon 9 rocket that will launch the

22

00:26:26,390 --> 00:26:24,539

crew 6 crew to the International Space

23

00:26:27,350 --> 00:26:26,400

Station in a little more than three

24

00:26:29,870 --> 00:26:27,360

hours

25

00:26:32,330 --> 00:26:29,880

welcome to the Kennedy Space Center in

26

00:26:34,789 --> 00:26:32,340

Florida for live coverage of NASA and

27

00:26:37,909 --> 00:26:34,799

spacex's launch of crew six now

28

00:26:40,610 --> 00:26:37,919

streaming in 4k I'm NASA's Daryl nail

29

00:26:42,710 --> 00:26:40,620

and with me is NASA astronaut rajachari

30

00:26:44,210 --> 00:26:42,720

back by popular demand thanks for coming

31

00:26:46,070 --> 00:26:44,220

back glad to be back Daryl and hope for

32

00:26:47,810 --> 00:26:46,080

the second time is the charm and hoping

33

00:26:50,269 --> 00:26:47,820

to see my first launch absolutely we're

34

00:26:52,370 --> 00:26:50,279

excited to get your reaction on that in

35

00:26:54,409 --> 00:26:52,380

addition to raja's analysis we have live

36

00:26:56,390 --> 00:26:54,419

updates from Mission Control in Houston

37

00:26:58,850 --> 00:26:56,400

and live interviews from our VIP

38

00:27:01,549 --> 00:26:58,860

location here at Kennedy there you see

39

00:27:03,470 --> 00:27:01,559

him hello Houston and hello Jasmine and

40

00:27:05,690 --> 00:27:03,480

later on at T minus one hour we will

41

00:27:07,610 --> 00:27:05,700

welcome in SpaceX live from Hawthorne

42

00:27:09,890 --> 00:27:07,620

California but let's begin quickly with

43

00:27:11,930 --> 00:27:09,900

a recap of the first launch attempt

44

00:27:13,909 --> 00:27:11,940

early Sunday morning the day started

45

00:27:15,769 --> 00:27:13,919

here with the crew signing the mission

46

00:27:17,210 --> 00:27:15,779

patch inside crew Quarters at the Neil

47

00:27:18,890 --> 00:27:17,220

Armstrong operations and checkout

48

00:27:20,810 --> 00:27:18,900

building they went through the entire

49

00:27:23,510 --> 00:27:20,820

process of suit up and transport to the

50

00:27:25,789 --> 00:27:23,520

pad where they ingressed into the Dragon

51
00:27:29,029 --> 00:27:25,799
capsule the countdown moved along

52
00:27:31,430 --> 00:27:29,039
smoothly until reduced flow in an engine

53
00:27:33,590 --> 00:27:31,440
ignition fluid line was detected by the

54
00:27:35,510 --> 00:27:33,600
launch Team the launch was scrubbed with

55
00:27:37,730 --> 00:27:35,520
less than three minutes in the count the

56
00:27:40,909 --> 00:27:37,740
astronauts remained in the capsule until

57
00:27:42,590 --> 00:27:40,919
the rocket was completely detanked a

58
00:27:44,269 --> 00:27:42,600
disappointing moment for the astronauts

59
00:27:46,250 --> 00:27:44,279
certainly Raja yeah I mean I think

60
00:27:47,930 --> 00:27:46,260
they're obviously like an instantaneous

61
00:27:49,070 --> 00:27:47,940
uh you know instead of a little bit of

62
00:27:51,350 --> 00:27:49,080
disappointment but obviously the right

63
00:27:52,970 --> 00:27:51,360

safe thing to do and the team all knows

64

00:27:54,649 --> 00:27:52,980

that and so they're ready to Ray to do

65

00:27:56,269 --> 00:27:54,659

it again today and have learned from all

66

00:27:57,769 --> 00:27:56,279

that and some great lessons learned and

67

00:27:59,269 --> 00:27:57,779

now we want to focus on the front doors

68

00:28:01,010 --> 00:27:59,279

of the astronaut crew quarters where

69

00:28:03,049 --> 00:28:01,020

those astronauts are ready to walk out

70

00:28:04,669 --> 00:28:03,059

we saw him briefly in the window and

71

00:28:08,090 --> 00:28:04,679

they are ready to go

72

00:28:08,100 --> 00:28:13,430

be doing it for a second time

73

00:28:16,789 --> 00:28:15,230

yep and we see the uh the stickers

74

00:28:18,049 --> 00:28:16,799

around the outside so they got a chance

75

00:28:20,149 --> 00:28:18,059

when they came back from the scrub to

76

00:28:21,830 --> 00:28:20,159

smack their crew six sticker on the way

77

00:28:26,930 --> 00:28:21,840

in so some extra luck for tonight

78

00:28:29,930 --> 00:28:28,310

and we're going to try and give them

79

00:28:37,130 --> 00:28:29,940

some more good luck along the way we'll

80

00:28:42,590 --> 00:28:39,529

you see the sign above them with the

81

00:28:45,950 --> 00:28:44,330

now and one of the reasons we didn't

82

00:28:48,950 --> 00:28:45,960

show some earlier suit up tonight was uh

83

00:28:54,409 --> 00:28:52,490

and here they come crew six

84

00:28:56,269 --> 00:28:54,419

walking outside of astronaut crew

85

00:28:59,269 --> 00:28:56,279

quarters for the second time

86

00:29:01,490 --> 00:28:59,279

hoping to make the flight happen

87

00:29:02,289 --> 00:29:01,500

all right countdown left to right Chris

88

00:29:04,789 --> 00:29:02,299

please

89

00:29:07,909 --> 00:29:04,799

Andre fedayev

90

00:29:10,500 --> 00:29:07,919

Woody hoberg Stephen Bowen and sultan

91

00:29:11,330 --> 00:29:10,510

olneyadi

92

00:29:18,830 --> 00:29:11,340

[Music]

93

00:29:20,830 --> 00:29:18,840

[Applause]

94

00:29:35,950 --> 00:29:20,840

Ator yeah

95

00:29:40,130 --> 00:29:38,269

you can see in the background there the

96

00:29:41,269 --> 00:29:40,140

the SpaceX Personnel getting ready to

97

00:29:43,490 --> 00:29:41,279

take them out in their Teslas they're

98

00:29:48,370 --> 00:29:43,500

pre-positioning their cooling packs

99

00:29:53,210 --> 00:29:50,930

sounds like our microphone is close to

100

00:29:54,889 --> 00:29:53,220

Mission Specialists it is yep close to

101
00:29:56,810 --> 00:29:54,899
the UAE area

102
00:30:01,010 --> 00:29:56,820
and looking at uh

103
00:30:05,210 --> 00:30:03,409
there's Andre so a great chance for the

104
00:30:07,310 --> 00:30:05,220
the friends family loved ones to come

105
00:30:09,470 --> 00:30:07,320
out and say say uh

106
00:30:10,669 --> 00:30:09,480
good luck and see you later to the

107
00:30:12,470 --> 00:30:10,679
astronauts you saw the administrator

108
00:30:14,330 --> 00:30:12,480
Nelson and Pam wildroyd out at the end

109
00:30:16,610 --> 00:30:14,340
there

110
00:30:19,990 --> 00:30:16,620
the back of her head and then the

111
00:30:24,769 --> 00:30:22,850
they're doing this what's the kind of

112
00:30:27,470 --> 00:30:24,779
the mindset now is as you see your

113
00:30:28,909 --> 00:30:27,480

family now for the second time it's

114

00:30:30,409 --> 00:30:28,919

actually kind of nice because you get a

115

00:30:32,510 --> 00:30:30,419

little bit of time in between that scrub

116

00:30:33,769 --> 00:30:32,520

and this time to have you know you know

117

00:30:35,090 --> 00:30:33,779

you build up to a lot of it thinking

118

00:30:36,110 --> 00:30:35,100

you're not going to have a whole lot of

119

00:30:37,250 --> 00:30:36,120

time then you get a little bit of extra

120

00:30:38,510 --> 00:30:37,260

time with your family I'm sorry I

121

00:30:40,250 --> 00:30:38,520

misspoke that wasn't Pat Miller there's

122

00:30:43,010 --> 00:30:40,260

Katie Maynard down there but yeah it's

123

00:30:44,330 --> 00:30:43,020

it's actually uh it's definitely busy so

124

00:30:45,830 --> 00:30:44,340

inside career course we talk about that

125

00:30:47,630 --> 00:30:45,840

later there's there's plenty of Sims in

126

00:30:53,090 --> 00:30:47,640

there but it's a nice chance to have a

127

00:30:56,389 --> 00:30:54,830

and you were able to have some

128

00:30:58,430 --> 00:30:56,399

communication with the commander during

129

00:31:00,409 --> 00:30:58,440

the down time what uh what did he say

130

00:31:02,630 --> 00:31:00,419

about kind of their mindset well so

131

00:31:04,669 --> 00:31:02,640

Steve uh commented that this is you know

132

00:31:05,810 --> 00:31:04,679

essentially all in today's life uh Woody

133

00:31:07,490 --> 00:31:05,820

pointed out that this is almost like a

134

00:31:08,630 --> 00:31:07,500

free training SIM for him so and that's

135

00:31:09,889 --> 00:31:08,640

kind of one of the reasons we saw them

136

00:31:11,330 --> 00:31:09,899

ahead of timeline tonight in the suit up

137

00:31:12,950 --> 00:31:11,340

room is they've done it all before so a

138

00:31:14,450 --> 00:31:12,960

lot of uh doing something the second

139

00:31:15,889 --> 00:31:14,460

time makes it a lot easier so they

140

00:31:17,990 --> 00:31:15,899

essentially had another another free

141

00:31:20,690 --> 00:31:18,000

dress rehearsal to practice it all

142

00:31:25,370 --> 00:31:20,700

there's Woody hoberg

143

00:31:30,289 --> 00:31:26,810

you can see there's a sense of

144

00:31:31,610 --> 00:31:30,299

familiarity as they get into the Teslas

145

00:31:34,610 --> 00:31:31,620

yep and now you can see administer

146

00:31:36,710 --> 00:31:34,620

Nelson there uh the bottom right and

147

00:31:38,810 --> 00:31:36,720

then Bob caban is just to his right and

148

00:31:43,190 --> 00:31:38,820

I think that's Calvin Manning to his

149

00:31:45,350 --> 00:31:43,200

right the deputy Kennedy Center Director

150

00:31:47,090 --> 00:31:45,360

so definitely a sign of the importance

151
00:31:48,350 --> 00:31:47,100
of this mission to have all the

152
00:31:50,149 --> 00:31:48,360
headquarters folks come down here stay

153
00:31:51,409 --> 00:31:50,159
down here the crew's not the only ones

154
00:31:54,110 --> 00:31:51,419
that stays down here between scrubs they

155
00:31:55,970 --> 00:31:54,120
do too so it's a all hands on deck so

156
00:31:58,190 --> 00:31:55,980
the second Tesla the doors are closed

157
00:32:00,049 --> 00:31:58,200
for the commander and the pilot for the

158
00:32:02,930 --> 00:32:00,059
mission and behind them the admission

159
00:32:04,549 --> 00:32:02,940
Specialists and that second Tesla they

160
00:32:06,950 --> 00:32:04,559
also include the flight surgeon They

161
00:32:08,990 --> 00:32:06,960
Ride Along and then in the third Tesla

162
00:32:11,630 --> 00:32:09,000
those astronauts are with a second

163
00:32:13,909 --> 00:32:11,640

closeout lead they take some of the

164

00:32:15,049 --> 00:32:13,919

closeout team with them on the way to

165

00:32:17,690 --> 00:32:15,059

the pad and take a look at the license

166

00:32:19,909 --> 00:32:17,700

plate we saw this last time crew dragon

167

00:32:21,830 --> 00:32:19,919

with a number six

168

00:32:23,750 --> 00:32:21,840

for the G

169

00:32:25,010 --> 00:32:23,760

yeah and this time I know so last time I

170

00:32:26,750 --> 00:32:25,020

was surprised to find out that it

171

00:32:28,130 --> 00:32:26,760

changes his time I was thought that it

172

00:32:29,330 --> 00:32:28,140

always said send it with a three but it

173

00:32:32,269 --> 00:32:29,340

turns out that was only for crew three

174

00:32:33,950 --> 00:32:32,279

so crew 3 was a special edition maybe

175

00:32:35,090 --> 00:32:33,960

not special enough for to put it on

176
00:32:35,730 --> 00:32:35,100
everything maybe I've been watching that

177
00:32:39,710 --> 00:32:35,740
video too much

178
00:32:43,370 --> 00:32:41,690
you see uh Nora is at the back of that

179
00:32:46,430 --> 00:32:43,380
third car she's uh in the new class of

180
00:32:48,049 --> 00:32:46,440
astronaut candidates from the UAE

181
00:32:50,990 --> 00:32:48,059
training with who we call the Flies

182
00:32:54,169 --> 00:32:51,000
which is the 2021 class

183
00:32:59,149 --> 00:32:56,630
new partnership with the UAE for

184
00:33:01,250 --> 00:32:59,159
commercial crew and now the families get

185
00:33:02,930 --> 00:33:01,260
to go up to the window

186
00:33:04,370 --> 00:33:02,940
yeah man you just saw huzzah leave the

187
00:33:06,769 --> 00:33:04,380
frame who was the first astronaut from

188
00:33:07,909 --> 00:33:06,779

the UAE to go into space and then he and

189

00:33:09,649 --> 00:33:07,919

Sultan actually trained together in

190

00:33:11,810 --> 00:33:09,659

Russia and then huzzah has been Sultan's

191

00:33:13,009 --> 00:33:11,820

back up here in the U.S so uh a long

192

00:33:14,690 --> 00:33:13,019

partnership between the two of them

193

00:33:17,269 --> 00:33:14,700

training together both in Russia and

194

00:33:19,610 --> 00:33:17,279

here and we'll hear from Hassan a little

195

00:33:21,889 --> 00:33:19,620

bit later on in the show our own Jasmine

196

00:33:23,210 --> 00:33:21,899

Hopkins is uh going to be interviewing

197

00:33:25,490 --> 00:33:23,220

him again tonight

198

00:33:26,810 --> 00:33:25,500

look forward to getting the words from

199

00:33:29,570 --> 00:33:26,820

him and find out

200

00:33:37,509 --> 00:33:29,580

he was able to catch up with Sultan and

201
00:33:41,389 --> 00:33:40,070
so the final chance here so when they

202
00:33:43,310 --> 00:33:41,399
get in the Tesla's there they actually

203
00:33:44,509 --> 00:33:43,320
hook them up to cooling boxes so I

204
00:33:46,250 --> 00:33:44,519
mentioned before you saw the SpaceX

205
00:33:47,570 --> 00:33:46,260
people kind of going behind the scenes

206
00:33:49,070 --> 00:33:47,580
they get those positions in the Teslas

207
00:33:50,330 --> 00:33:49,080
so that's why there's some more time and

208
00:33:51,529 --> 00:33:50,340
they use every second they can to talk

209
00:33:52,850 --> 00:33:51,539
to the families which is why they have

210
00:33:54,649 --> 00:33:52,860
the windows down still chatting with

211
00:33:56,450 --> 00:33:54,659
them while the flight docs connect their

212
00:33:59,090 --> 00:33:56,460
suit umbilicals to those cooling boxes

213
00:34:00,950 --> 00:33:59,100

and essentially this pumps cool air into

214

00:34:02,930 --> 00:34:00,960

the suit is in the warm humid Florida

215

00:34:04,070 --> 00:34:02,940

whether it can get somewhat sweaty in

216

00:34:05,509 --> 00:34:04,080

there if you don't have some cool air

217

00:34:11,510 --> 00:34:05,519

flowing through it right especially in

218

00:34:15,829 --> 00:34:13,490

did you roll down your window when uh

219

00:34:17,930 --> 00:34:15,839

you were riding out I saw during demo

220

00:34:19,970 --> 00:34:17,940

two Bob and Doug rolled down the window

221

00:34:23,030 --> 00:34:19,980

briefly we did initially but that put

222

00:34:24,950 --> 00:34:23,040

him up uh once we got going and here we

223

00:34:26,690 --> 00:34:24,960

go with the crew departing the Neil

224

00:34:29,210 --> 00:34:26,700

Armstrong operations and checkout

225

00:34:31,909 --> 00:34:29,220

building this Begins the 20-minute drive

226

00:34:34,190 --> 00:34:31,919

with a full security escort across

227

00:34:36,829 --> 00:34:34,200

NASA's Kennedy Space Center to launch

228

00:34:38,750 --> 00:34:36,839

pad 39a

229

00:34:40,909 --> 00:34:38,760

and they're firing up the playlists

230

00:34:43,550 --> 00:34:40,919

right now Raj as you know

231

00:34:45,710 --> 00:34:43,560

in that first car if you want to look up

232

00:34:47,869 --> 00:34:45,720

these songs and get the vibe of what

233

00:34:50,450 --> 00:34:47,879

they're listening to well Stephen and

234

00:34:52,669 --> 00:34:50,460

Woody are listening to traveling Band by

235

00:34:55,010 --> 00:34:52,679

Creedence Clearwater Revival

236

00:34:57,710 --> 00:34:55,020

may we all by Florida Georgia Line and

237

00:34:59,990 --> 00:34:57,720

Tim McGraw the space traveler's Lullaby

238

00:35:02,510 --> 00:35:00,000

by kamasi he's a American Jazz

239

00:35:06,650 --> 00:35:02,520

saxophonist sing me to sleep by Alan

240

00:35:11,450 --> 00:35:06,660

Walker Spaceman by Harry Nielsen

241

00:35:15,410 --> 00:35:13,609

they got quite a playlist as well yes

242

00:35:17,089 --> 00:35:15,420

what did you listen to so this is a

243

00:35:18,530 --> 00:35:17,099

collaborate it was a collaboration so uh

244

00:35:20,630 --> 00:35:18,540

Tom and I were in the first car and then

245

00:35:23,089 --> 00:35:20,640

Kayla and Matthias had a mix of uh us

246

00:35:24,589 --> 00:35:23,099

and German songs uh so there was it was

247

00:35:26,630 --> 00:35:24,599

it's like you said it's kind of the

248

00:35:28,849 --> 00:35:26,640

emotional setup for the ride I think the

249

00:35:30,770 --> 00:35:28,859

other benefit of a scrub uh was we had

250

00:35:32,930 --> 00:35:30,780

the benefit of having uh multiple trips

251
00:35:35,510 --> 00:35:32,940
out there is that the person uh who's

252
00:35:37,910 --> 00:35:35,520
your DJ has the chance to actually zero

253
00:35:39,470 --> 00:35:37,920
in the songs and so uh Melissa who's our

254
00:35:41,150 --> 00:35:39,480
chief trainer at SpaceX actually took

255
00:35:44,510 --> 00:35:41,160
the time while we were in quarantine to

256
00:35:46,430 --> 00:35:44,520
like mix together like a a 2021 version

257
00:35:49,670 --> 00:35:46,440
of a mixtape um so that we could just

258
00:35:51,230 --> 00:35:49,680
play it on on uh on the iPod they had in

259
00:35:52,609 --> 00:35:51,240
there and time it so that exactly as we

260
00:35:54,109 --> 00:35:52,619
were pulling up we were you know

261
00:35:56,930 --> 00:35:54,119
finished with the list yeah exactly so

262
00:35:59,569 --> 00:35:56,940
we had a mix of uh uh everything from

263
00:36:02,930 --> 00:35:59,579

Blue Light Orchestra to Some Guns and

264

00:36:05,750 --> 00:36:02,940

Roses uh yeah a little bit of

265

00:36:06,950 --> 00:36:05,760

um yeah some huge accent it was a it was

266

00:36:09,770 --> 00:36:06,960

a pretty good mix

267

00:36:11,210 --> 00:36:09,780

um and uh actually Tom and I think Kayla

268

00:36:13,250 --> 00:36:11,220

and Matthias you know in the travel back

269

00:36:14,810 --> 00:36:13,260

and for the SpaceX and back and forth to

270

00:36:16,550 --> 00:36:14,820

different training locations that's how

271

00:36:17,930 --> 00:36:16,560

we sort of sussed out what's on that

272

00:36:20,329 --> 00:36:17,940

playlist I'm sure they did the same for

273

00:36:22,790 --> 00:36:20,339

tonight in with a great finish of the

274

00:36:24,290 --> 00:36:22,800

song as we just saw there we have of

275

00:36:26,089 --> 00:36:24,300

course permission to go through those

276

00:36:27,470 --> 00:36:26,099

stop lights with the full security

277

00:36:30,470 --> 00:36:27,480

escort

278

00:36:32,990 --> 00:36:30,480

and hey folks listen Raja has some great

279

00:36:35,210 --> 00:36:33,000

insight into space flight what it takes

280

00:36:36,530 --> 00:36:35,220

to be an astronaut how he got there if

281

00:36:38,930 --> 00:36:36,540

you want to ask some questions we want

282

00:36:40,190 --> 00:36:38,940

to invite you to participate if you'd

283

00:36:41,990 --> 00:36:40,200

like to ask him a question over the next

284

00:36:44,450 --> 00:36:42,000

three hours jump on Twitter Facebook

285

00:36:47,270 --> 00:36:44,460

YouTube or twitch and send your question

286

00:36:49,190 --> 00:36:47,280

with a hashtag asknasa

287

00:36:51,589 --> 00:36:49,200

we look forward to hearing from you and

288

00:36:53,089 --> 00:36:51,599

I know Raja really enjoyed answering the

289

00:36:54,829 --> 00:36:53,099

questions the other night and he'll do

290

00:36:57,530 --> 00:36:54,839

it again

291

00:37:00,530 --> 00:36:57,540

let's introduce you now to today's crew

292

00:37:02,329 --> 00:37:00,540

Captain Stephen Bowen he hails from

293

00:37:04,430 --> 00:37:02,339

Cohasset Massachusetts and is married

294

00:37:06,470 --> 00:37:04,440

with three children he holds the title

295

00:37:08,089 --> 00:37:06,480

of first U.S Navy submarine officer to

296

00:37:10,910 --> 00:37:08,099

be selected as a mission specialist by

297

00:37:12,950 --> 00:37:10,920

NASA Captain Bowen is also a veteran of

298

00:37:17,030 --> 00:37:12,960

NASA's space flights including space

299

00:37:20,450 --> 00:37:17,040

shuttle flights on the sts-126 120 132

300

00:37:21,650 --> 00:37:20,460

rather and 133. during those missions he

301

00:37:23,990 --> 00:37:21,660

and his crew expanded the living

302

00:37:26,390 --> 00:37:24,000

quarters on the ISS delivered an

303

00:37:29,210 --> 00:37:26,400

integrated Cargo Carrier and a Russian

304

00:37:31,730 --> 00:37:29,220

mini research module he has logged more

305

00:37:34,730 --> 00:37:31,740

than 40 days in space including 47 hours

306

00:37:37,430 --> 00:37:34,740

and 18 minutes in seven spacewalks he's

307

00:37:39,710 --> 00:37:37,440

the Wily old veteran and today he's the

308

00:37:41,450 --> 00:37:39,720

commander of crew six a position you

309

00:37:43,370 --> 00:37:41,460

know well I do yeah and it's a it's a

310

00:37:44,750 --> 00:37:43,380

great position for him to be in like you

311

00:37:46,490 --> 00:37:44,760

mentioned he's got some serious

312

00:37:49,069 --> 00:37:46,500

experience in street cred and much like

313

00:37:51,890 --> 00:37:49,079

Tom marshburn on my flight trusted to

314

00:37:54,290 --> 00:37:51,900

mentor and Lead three rookies going up

315

00:37:56,210 --> 00:37:54,300

there and so I know he's well up to the

316

00:37:57,050 --> 00:37:56,220

task and enjoying enjoying going on this

317

00:37:59,390 --> 00:37:57,060

trip

318

00:38:02,030 --> 00:37:59,400

sitting next to Stephen is pilot Warren

319

00:38:04,250 --> 00:38:02,040

Woody hoberg the 37-year-old is from

320

00:38:06,410 --> 00:38:04,260

Pittsburgh Pennsylvania he studied

321

00:38:08,690 --> 00:38:06,420

Aeronautics and astronautics from MIT

322

00:38:10,670 --> 00:38:08,700

before getting a doctorate in electrical

323

00:38:12,770 --> 00:38:10,680

engineering and computer science from

324

00:38:15,470 --> 00:38:12,780

the University of California Berkeley

325

00:38:17,810 --> 00:38:15,480

during grad school hoberg worked as an

326

00:38:20,030 --> 00:38:17,820

EMT with the Yosemite search and rescue

327

00:38:21,950 --> 00:38:20,040

crew 6 will be hoberg's first flight

328

00:38:24,530 --> 00:38:21,960

since NASA selected him to be an

329

00:38:26,750 --> 00:38:24,540

astronaut in 2017. he is also a

330

00:38:29,089 --> 00:38:26,760

commercial pilot with instrument single

331

00:38:30,589 --> 00:38:29,099

engine and multi-engine ratings as pilot

332

00:38:33,349 --> 00:38:30,599

for cruise six he will be responsible

333

00:38:35,930 --> 00:38:33,359

for spacecraft systems and performance

334

00:38:39,290 --> 00:38:35,940

aboard the station he will serve as an

335

00:38:40,849 --> 00:38:39,300

expedition 68 and 69 flight engineer and

336

00:38:42,349 --> 00:38:40,859

his and most important rule is to

337

00:38:44,990 --> 00:38:42,359

continue the presence of turtles on the

338

00:38:46,550 --> 00:38:45,000

space station so what he also commonly

339

00:38:47,750 --> 00:38:46,560

refer to as the smartest Turtle but also

340

00:38:51,370 --> 00:38:47,760

the most humble one you wouldn't know

341

00:38:55,190 --> 00:38:53,510

you just heard the core call for a

342

00:38:56,329 --> 00:38:55,200

countdown uh comment for the career

343

00:38:58,550 --> 00:38:56,339

arrival but yeah all those things what

344

00:39:00,470 --> 00:38:58,560

he's done by themselves would be amazing

345

00:39:02,329 --> 00:39:00,480

let alone in combination

346

00:39:05,150 --> 00:39:02,339

in the role of mission specialist is

347

00:39:07,250 --> 00:39:05,160

astronaut Sultan al-niadi he was chosen

348

00:39:09,950 --> 00:39:07,260

by the Mohammed bin Rasheed space center

349

00:39:13,310 --> 00:39:09,960

of the United Arab Emirates to be part

350

00:39:15,890 --> 00:39:13,320

of expedition 6869 the father of five

351
00:39:18,710 --> 00:39:15,900
spent most of his life in Alain and Abu

352
00:39:21,290 --> 00:39:18,720
Dhabi but in 2020 traded that in for

353
00:39:23,569 --> 00:39:21,300
Astronaut training in Houston at NASA's

354
00:39:25,849 --> 00:39:23,579
Johnson Space Center this will be his

355
00:39:28,550 --> 00:39:25,859
first trip to space you're familiar with

356
00:39:30,950 --> 00:39:28,560
flying with a bunch of rookies exactly

357
00:39:33,349 --> 00:39:30,960
and uh can't under State how important

358
00:39:35,569 --> 00:39:33,359
this is the first UAE astronaut going up

359
00:39:37,730 --> 00:39:35,579
on a U.S commercial vehicle to the U.S

360
00:39:39,710 --> 00:39:37,740
segment of the station this is amazing

361
00:39:41,930 --> 00:39:39,720
uh the fruit you know coming to fruition

362
00:39:43,970 --> 00:39:41,940
of a long partnership and a lot of work

363
00:39:46,550 --> 00:39:43,980

to get us here we saw a shot of the

364

00:39:48,650 --> 00:39:46,560

Vehicle Assembly Building dead ahead and

365

00:39:51,589 --> 00:39:48,660

they'll get up make that right hand turn

366

00:39:53,450 --> 00:39:51,599

and go right by it talking about the

367

00:39:55,790 --> 00:39:53,460

mission Specialists it's also the first

368

00:39:58,550 --> 00:39:55,800

trip to space for the second mission

369

00:40:01,790 --> 00:39:58,560

specialist Ross Cosmos Cosmonaut Andre

370

00:40:04,310 --> 00:40:01,800

fedev Andre was elected as a cosmonaut

371

00:40:05,930 --> 00:40:04,320

back in 2012 he will be working to

372

00:40:08,210 --> 00:40:05,940

monitor the spacecraft during the

373

00:40:10,790 --> 00:40:08,220

dynamic launch and re-entry phases of

374

00:40:13,310 --> 00:40:10,800

flight and once on board station he will

375

00:40:16,010 --> 00:40:13,320

be a flight engineer for expeditions 68

376

00:40:17,569 --> 00:40:16,020

and 69. yeah and great to have Andre on

377

00:40:19,010 --> 00:40:17,579

board I flew out here and back with

378

00:40:20,630 --> 00:40:19,020

Christina cook for the first launch

379

00:40:22,250 --> 00:40:20,640

attempt and she knows him and just says

380

00:40:23,569 --> 00:40:22,260

just an amazingly big heart and it's

381

00:40:25,790 --> 00:40:23,579

going to be a joy to work with on the

382

00:40:28,730 --> 00:40:25,800

space station missed getting into space

383

00:40:30,650 --> 00:40:28,740

on his 42nd birthday the other day but

384

00:40:34,609 --> 00:40:30,660

I'm sure he'll take a belated birthday

385

00:40:36,290 --> 00:40:34,619

present in the form of a launch tonight

386

00:40:45,650 --> 00:40:36,300

I'm sure they had some extra cake back

387

00:40:48,349 --> 00:40:47,390

so we also got to break in we mentioned

388

00:40:49,910 --> 00:40:48,359

last time it's the first time they're

389

00:40:52,849 --> 00:40:49,920

using the black Teslas versus the white

390

00:40:54,650 --> 00:40:52,859

Teslas so not sure if maybe Cruise 6 May

391

00:40:57,349 --> 00:40:54,660

maybe have Zapped the windshields an

392

00:40:58,849 --> 00:40:57,359

extra time to cop for their second trip

393

00:41:00,410 --> 00:40:58,859

out there so there's definitely some

394

00:41:02,750 --> 00:41:00,420

room to be filled on these wind chills

395

00:41:04,910 --> 00:41:02,760

and maybe hide some stickers a few

396

00:41:07,370 --> 00:41:04,920

places where they find after the fact

397

00:41:09,230 --> 00:41:07,380

yeah those stickers will uh you know get

398

00:41:11,870 --> 00:41:09,240

to go on those Teslas for the first time

399

00:41:14,510 --> 00:41:11,880

since SpaceX told us they're expanding

400

00:41:15,530 --> 00:41:14,520

their Fleet of ride out Vehicles we know

401
00:41:17,810 --> 00:41:15,540
they're getting close because I can hear

402
00:41:19,970 --> 00:41:17,820
the helicopter There It Is Passing

403
00:41:23,810 --> 00:41:19,980
overhead as they pass in front of the

404
00:41:27,290 --> 00:41:23,820
Kennedy Space Center uh VAB and just a

405
00:41:29,690 --> 00:41:27,300
few feet away from the turn basin

406
00:41:33,710 --> 00:41:29,700
and while we're looking at the VAB the

407
00:41:35,810 --> 00:41:33,720
home of the Artemis One mission and all

408
00:41:37,609 --> 00:41:35,820
Artemis missions

409
00:41:39,109 --> 00:41:37,619
it's a good time to talk about what

410
00:41:40,730 --> 00:41:39,119
happened at the turn Basin the other day

411
00:41:42,950 --> 00:41:40,740
they're getting ready to pass by that

412
00:41:47,210 --> 00:41:42,960
body of water as we see some folks

413
00:41:49,490 --> 00:41:47,220

waving at those cars as they go by

414

00:41:51,410 --> 00:41:49,500

several weeks ago NASA's recovery team

415

00:41:53,870 --> 00:41:51,420

was in the water

416

00:41:56,690 --> 00:41:53,880

training to return NASA astronauts after

417

00:41:58,849 --> 00:41:56,700

a flight back from the Moon

418

00:42:00,650 --> 00:41:58,859

so as they get ready to pass this part

419

00:42:02,210 --> 00:42:00,660

of the Kennedy Space Center

420

00:42:08,589 --> 00:42:02,220

let's get an update about what happened

421

00:42:14,150 --> 00:42:11,329

right now NASA scientists and Engineers

422

00:42:15,950 --> 00:42:14,160

are preparing for Artemis 2. the mission

423

00:42:18,829 --> 00:42:15,960

will send four astronauts on a trip

424

00:42:21,230 --> 00:42:18,839

around the moon in 2024 but before that

425

00:42:23,089 --> 00:42:21,240

happens test crews are practicing how to

426
00:42:25,430 --> 00:42:23,099
recover astronauts from the Orion

427
00:42:26,930 --> 00:42:25,440
spacecraft after splashing down in the

428
00:42:29,569 --> 00:42:26,940
Pacific Ocean

429
00:42:32,210 --> 00:42:29,579
this black full-scale replica capsule

430
00:42:35,089 --> 00:42:32,220
named Vader stands for vehicle advance

431
00:42:36,589 --> 00:42:35,099
demonstrator for emergency rescue it

432
00:42:38,210 --> 00:42:36,599
spent the last couple of weeks in the

433
00:42:41,810 --> 00:42:38,220
turn Basin here at the Kennedy Space

434
00:42:44,569 --> 00:42:41,820
Center where it was floated on the water

435
00:42:46,910 --> 00:42:44,579
and tested

436
00:42:49,490 --> 00:42:46,920
Crews practice opening the hatch and

437
00:42:51,050 --> 00:42:49,500
installing an inflatable porch an

438
00:42:53,210 --> 00:42:51,060

important piece of equipment to make

439

00:42:56,510 --> 00:42:53,220

sure astronauts can be recovered safely

440

00:42:58,130 --> 00:42:56,520

if needed adjustments will be made and

441

00:43:00,470 --> 00:42:58,140

then it will be shipped to San Diego

442

00:43:05,450 --> 00:43:00,480

where NASA and the Navy can perform

443

00:43:10,550 --> 00:43:08,150

and for more Artemis updates check out

444

00:43:13,130 --> 00:43:10,560

the QR code on your screen we're going

445

00:43:16,190 --> 00:43:13,140

to pop it up right there

446

00:43:17,990 --> 00:43:16,200

just scan that with your smartphone and

447

00:43:20,109 --> 00:43:18,000

you'll get updates from our official

448

00:43:25,609 --> 00:43:20,119

blog

449

00:43:28,609 --> 00:43:25,619

we're always updating it with frequent

450

00:43:33,890 --> 00:43:31,130

as we gear up for Artemis 2. it's nice

451
00:43:35,690 --> 00:43:33,900
to see them out there already working on

452
00:43:38,030 --> 00:43:35,700
the next mission yeah it's been a long

453
00:43:39,950 --> 00:43:38,040
Pro long iteration and since uh Artemis

454
00:43:41,450 --> 00:43:39,960
just Orion just as part of the Artemis

455
00:43:43,069 --> 00:43:41,460
just likes the dragon lands in the water

456
00:43:47,270 --> 00:43:43,079
a lot of training goes into making sure

457
00:43:52,430 --> 00:43:49,130
we talked about the mission specialist

458
00:43:54,530 --> 00:43:52,440
Raj and how we've got the UAE we've got

459
00:43:56,569 --> 00:43:54,540
Ross Cosmos

460
00:43:58,490 --> 00:43:56,579
it's all a part of flying integrated

461
00:44:01,130 --> 00:43:58,500
Crews

462
00:44:03,530 --> 00:44:01,140
and for NASA this ensures operational

463
00:44:05,510 --> 00:44:03,540

safety crew members on station are

464

00:44:07,069 --> 00:44:05,520

trained to do maintenance and spacewalks

465

00:44:09,589 --> 00:44:07,079

and it also protects against

466

00:44:12,109 --> 00:44:09,599

contingencies such as a problem with any

467

00:44:14,450 --> 00:44:12,119

crew spacecraft serious crew medical

468

00:44:16,190 --> 00:44:14,460

issues or an emergency aboard the

469

00:44:18,410 --> 00:44:16,200

station that requires a crew and the

470

00:44:21,770 --> 00:44:18,420

vehicle that they are assigned to to

471

00:44:23,809 --> 00:44:21,780

return to Earth sooner than planned

472

00:44:25,130 --> 00:44:23,819

we had an issue with the spacecraft on

473

00:44:28,010 --> 00:44:25,140

station

474

00:44:30,770 --> 00:44:28,020

a backup spacecraft the soyuz was flown

475

00:44:33,050 --> 00:44:30,780

up there but in the interim NASA always

476
00:44:36,290 --> 00:44:33,060
has a backup plan and so the astronaut

477
00:44:38,630 --> 00:44:36,300
that flew up on the soyuz had a ride to

478
00:44:40,370 --> 00:44:38,640
go home if it was needed that's right

479
00:44:41,750 --> 00:44:40,380
yeah so we're always uh we always talk

480
00:44:43,490 --> 00:44:41,760
about the next worst failure when we're

481
00:44:45,530 --> 00:44:43,500
looking as kind of the mindset we have

482
00:44:47,569 --> 00:44:45,540
at Johnson Space Center and in the

483
00:44:49,010 --> 00:44:47,579
astronaut core and so yeah exactly you

484
00:44:50,510 --> 00:44:49,020
know always thinking about what could go

485
00:44:51,950 --> 00:44:50,520
wrong and having a plan to deal with

486
00:44:53,930 --> 00:44:51,960
that and that's exactly the case we're

487
00:44:55,430 --> 00:44:53,940
in uh now have another soyuz up there

488
00:44:56,990 --> 00:44:55,440

and so now back to what I would call

489

00:44:59,809 --> 00:44:57,000

more nominal Ops

490

00:45:03,770 --> 00:44:59,819

as the Caravan passes the security gate

491

00:45:05,089 --> 00:45:03,780

at the launch complex 39. let's check in

492

00:45:07,790 --> 00:45:05,099

now for the first time with Johnson

493

00:45:09,890 --> 00:45:07,800

Space Center in Houston Texas and that's

494

00:45:11,390 --> 00:45:09,900

where we find Courtney Beasley with an

495

00:45:14,990 --> 00:45:11,400

update from Mission Control good evening

496

00:45:19,250 --> 00:45:17,630

good evening thanks Daryl and welcome to

497

00:45:21,530 --> 00:45:19,260

the International Space Station flight

498

00:45:23,930 --> 00:45:21,540

control room at NASA's Johnson Space

499

00:45:25,910 --> 00:45:23,940

Center in Houston Texas mission control

500

00:45:27,290 --> 00:45:25,920

is essentially the nerve center for

501
00:45:29,270 --> 00:45:27,300
operating the International Space

502
00:45:31,069 --> 00:45:29,280
Station working in tandem with our

503
00:45:32,990 --> 00:45:31,079
partner agencies and providers around

504
00:45:34,990 --> 00:45:33,000
the globe together we've ensured the

505
00:45:37,309 --> 00:45:35,000
station is ready to welcome Cruise six

506
00:45:39,290 --> 00:45:37,319
leading the team inside the room right

507
00:45:41,990 --> 00:45:39,300
now is flight director Judd freeling he

508
00:45:43,790 --> 00:45:42,000
will also lead the Joint Nasa SpaceX go

509
00:45:45,829 --> 00:45:43,800
no-go polls once we're in integrated

510
00:45:48,349 --> 00:45:45,839
operations with Mission controls here in

511
00:45:50,270 --> 00:45:48,359
Houston and at SpaceX in Hawthorne

512
00:45:53,089 --> 00:45:50,280
working together to bring crew Dragon to

513
00:45:54,770 --> 00:45:53,099

its new home in space meanwhile the crew

514

00:45:56,510 --> 00:45:54,780

aboard the space station is currently in

515

00:45:59,089 --> 00:45:56,520

a sleep period set to wake up around

516

00:46:00,950 --> 00:45:59,099

midnight central time when we check back

517

00:46:02,450 --> 00:46:00,960

in later we'll talk a little more about

518

00:46:04,609 --> 00:46:02,460

what the crew on the International Space

519

00:46:06,710 --> 00:46:04,619

Station has been doing to prepare for

520

00:46:09,470 --> 00:46:06,720

cruise 6. but for now we'll send it back

521

00:46:11,030 --> 00:46:09,480

to the team over at Kennedy Daryl all

522

00:46:13,430 --> 00:46:11,040

right thank you very much Courtney and

523

00:46:15,470 --> 00:46:13,440

Mission Control ready to go

524

00:46:18,050 --> 00:46:15,480

back here

525

00:46:21,530 --> 00:46:18,060

at America's Spaceport

526

00:46:24,050 --> 00:46:21,540

for watching the Teslas with four or

527

00:46:26,870 --> 00:46:24,060

three astronauts and one Cosmonaut going

528

00:46:30,050 --> 00:46:26,880

through the security gate at launch

529

00:46:32,569 --> 00:46:30,060

complex 39a so this is inside the pad

530

00:46:34,849 --> 00:46:32,579

perimeter it's inside the blast danger

531

00:46:36,470 --> 00:46:34,859

area yep and you see them going by

532

00:46:37,730 --> 00:46:36,480

what's called The Horizon horizontal

533

00:46:39,710 --> 00:46:37,740

integration facility so you saw him

534

00:46:41,150 --> 00:46:39,720

drive by the VAB which is the vertical

535

00:46:43,550 --> 00:46:41,160

Assembly Building we use for Artemis

536

00:46:45,589 --> 00:46:43,560

SpaceX actually integrates their vehicle

537

00:46:46,849 --> 00:46:45,599

horizontally uh and then that rolls out

538

00:46:48,650 --> 00:46:46,859

you see those railroad tracks there

539

00:46:50,690 --> 00:46:48,660

that's how it goes out on the The

540

00:46:53,329 --> 00:46:50,700

Transporter Rector launcher there that

541

00:46:55,130 --> 00:46:53,339

Patel so they actually stacked the

542

00:46:56,569 --> 00:46:55,140

capsule and the trunk inside that

543

00:46:58,670 --> 00:46:56,579

vehicle and rolled it up the tracks

544

00:47:00,890 --> 00:46:58,680

there and then the towel lifts it up

545

00:47:02,510 --> 00:47:00,900

into position on the pad and a cool view

546

00:47:04,430 --> 00:47:02,520

there from the lead Tesla with that out

547

00:47:05,870 --> 00:47:04,440

the window view as they're coming up you

548

00:47:09,170 --> 00:47:05,880

gotta love that it was worth looking at

549

00:47:12,410 --> 00:47:09,180

the base of the rocket and

550

00:47:14,450 --> 00:47:12,420

you know recapping again the issue from

551
00:47:17,390 --> 00:47:14,460
Sunday night

552
00:47:20,809 --> 00:47:17,400
there was a a problem

553
00:47:22,790 --> 00:47:20,819
with uh actually a crawl a clogged drain

554
00:47:25,910 --> 00:47:22,800
line

555
00:47:28,309 --> 00:47:25,920
for the t-tab system this is the engine

556
00:47:30,890 --> 00:47:28,319
ignition fluid that fills the bottom

557
00:47:32,690 --> 00:47:30,900
there the base of the rocket to make

558
00:47:34,670 --> 00:47:32,700
sure that each

559
00:47:36,530 --> 00:47:34,680
each of the engines of the Falcon 9

560
00:47:39,710 --> 00:47:36,540
lights up

561
00:47:41,150 --> 00:47:39,720
they found out about it and uh

562
00:47:43,490 --> 00:47:41,160
didn't have the confidence that they

563
00:47:46,190 --> 00:47:43,500

would have enough engine ignition fluid

564

00:47:49,069 --> 00:47:46,200

to light those engines so they scrubbed

565

00:47:50,690 --> 00:47:49,079

rosley later found out that there was a

566

00:47:53,630 --> 00:47:50,700

clogged filter in one of the engine

567

00:47:57,230 --> 00:47:53,640

lines and so they changed the filter

568

00:47:58,430 --> 00:47:57,240

they blew out the lines with gaseous

569

00:48:00,109 --> 00:47:58,440

nitrogen

570

00:48:02,510 --> 00:48:00,119

cleaned them all out

571

00:48:04,430 --> 00:48:02,520

and now it's up and running great yeah

572

00:48:05,930 --> 00:48:04,440

so it's great news so yeah the t-tab in

573

00:48:07,670 --> 00:48:05,940

super simple terms is kind of like the

574

00:48:08,990 --> 00:48:07,680

spark plug of an engine so we'll talk

575

00:48:11,270 --> 00:48:09,000

later tonight as they're loading prop

576

00:48:13,370 --> 00:48:11,280

you know there's Fuel and oxidizer that

577

00:48:15,530 --> 00:48:13,380

feeds the engines but that initial spark

578

00:48:17,390 --> 00:48:15,540

comes from the t-tab that you know sort

579

00:48:18,410 --> 00:48:17,400

of like lighting a gas grill and you

580

00:48:20,030 --> 00:48:18,420

know reaching in there with that wand

581

00:48:22,550 --> 00:48:20,040

and clicking it on so that's basically

582

00:48:23,870 --> 00:48:22,560

what was was going on uh whenever you

583

00:48:25,309 --> 00:48:23,880

see signals like that initially it's

584

00:48:27,829 --> 00:48:25,319

like well is it actually a problem or is

585

00:48:28,849 --> 00:48:27,839

it just bad Telemetry and that's why you

586

00:48:30,530 --> 00:48:28,859

know they talk about it through Mission

587

00:48:32,569 --> 00:48:30,540

Control try to look for alternate sensor

588

00:48:34,010 --> 00:48:32,579

readings But ultimately the safe and

589

00:48:36,170 --> 00:48:34,020

that has proved out the right thing to

590

00:48:38,270 --> 00:48:36,180

do is to to call the launch

591

00:48:42,190 --> 00:48:38,280

um and and do what's absolutely safest

592

00:48:46,730 --> 00:48:44,510

core call that to the team that the

593

00:48:48,349 --> 00:48:46,740

crews on the pad and that word goes out

594

00:48:50,809 --> 00:48:48,359

so the closeout crew and the folks who

595

00:48:52,550 --> 00:48:50,819

are setting up displays uh who don't are

596

00:48:53,630 --> 00:48:52,560

watching the 4K stream know what's going

597

00:48:56,230 --> 00:48:53,640

on

598

00:48:58,250 --> 00:48:56,240

um that's right but uh yeah so that's it

599

00:48:59,750 --> 00:48:58,260

exactly hopefully they're not watching

600

00:49:02,990 --> 00:48:59,760

right

601
00:49:04,370 --> 00:49:03,000
um but uh yeah so the t-tab again uh if

602
00:49:06,170 --> 00:49:04,380
there's ever a doubt you know we do have

603
00:49:07,670 --> 00:49:06,180
protocols for like is it a bad Telemetry

604
00:49:09,230 --> 00:49:07,680
or just one bad sensor but in this case

605
00:49:10,370 --> 00:49:09,240
there's a few indications that there was

606
00:49:12,890 --> 00:49:10,380
something wrong

607
00:49:14,690 --> 00:49:12,900
um and uh they made the right call to

608
00:49:16,490 --> 00:49:14,700
stand down and as you said found an

609
00:49:18,410 --> 00:49:16,500
actual clog and fixed that and so the

610
00:49:20,510 --> 00:49:18,420
good news is we're back on track

611
00:49:23,930 --> 00:49:20,520
that's a great point about the Telemetry

612
00:49:26,450 --> 00:49:23,940
versus you know the problem it can look

613
00:49:27,710 --> 00:49:26,460

one way and you could find out there's a

614

00:49:29,690 --> 00:49:27,720

problem with a sensor like you mentioned

615

00:49:31,309 --> 00:49:29,700

but in this case it literally was an

616

00:49:35,210 --> 00:49:31,319

issue that they were able to identify

617

00:49:37,790 --> 00:49:35,220

and then uh quickly correct and so

618

00:49:40,970 --> 00:49:37,800

we're excited to light them up tonight

619

00:49:42,410 --> 00:49:40,980

crew six and NASA and SpaceX this is our

620

00:49:45,470 --> 00:49:42,420

sixth crew rotation to the International

621

00:49:47,150 --> 00:49:45,480

Space Station since 2020 this successful

622

00:49:49,130 --> 00:49:47,160

NASA program is called commercial crew

623

00:49:51,650 --> 00:49:49,140

and it's based right here at the Kennedy

624

00:49:53,809 --> 00:49:51,660

Space Center Jasmine Hopkins now joins

625

00:49:56,870 --> 00:49:53,819

us live with one of the leaders of this

626
00:49:58,970 --> 00:49:56,880
program program Jasmine thank you so

627
00:50:00,650 --> 00:49:58,980
much Daryl we are back tonight on the

628
00:50:02,690 --> 00:50:00,660
balcony of the operation support

629
00:50:04,370 --> 00:50:02,700
building number two here at Kennedy

630
00:50:06,050 --> 00:50:04,380
Space Center and right now we're so glad

631
00:50:08,030 --> 00:50:06,060
to be joined by Kathy leaders the

632
00:50:10,130 --> 00:50:08,040
associate administrator for NASA's space

633
00:50:13,010 --> 00:50:10,140
operations Mission directorate good

634
00:50:15,170 --> 00:50:13,020
evening Kathy good evening so happy to

635
00:50:17,329 --> 00:50:15,180
be here of course we are happy to have

636
00:50:19,130 --> 00:50:17,339
you this is round two as we said earlier

637
00:50:20,510 --> 00:50:19,140
you know a second time's the charm but

638
00:50:22,849 --> 00:50:20,520

really let's talk about that seriously

639

00:50:24,230 --> 00:50:22,859

that we prioritize safety here at Nasa

640

00:50:27,890 --> 00:50:24,240

we only launch when we're ready right

641

00:50:29,750 --> 00:50:27,900

yes and you know there's a it kind of

642

00:50:31,970 --> 00:50:29,760

seems like a cliché because we say it

643

00:50:34,609 --> 00:50:31,980

over and over you know space flight's

644

00:50:36,770 --> 00:50:34,619

hard we say it's really really hard and

645

00:50:38,930 --> 00:50:36,780

but when you look at all the things that

646

00:50:41,990 --> 00:50:38,940

have to be done perfectly to make sure

647

00:50:44,809 --> 00:50:42,000

we're flying safely it is hard and and

648

00:50:47,750 --> 00:50:44,819

it's that attention to detail that makes

649

00:50:50,030 --> 00:50:47,760

us ensure that we're flying our crews

650

00:50:52,190 --> 00:50:50,040

safely and so you just got to step

651
00:50:55,010 --> 00:50:52,200
through it carefully you know and I tell

652
00:50:59,089 --> 00:50:55,020
the team one step at a time and you know

653
00:51:02,089 --> 00:50:59,099
sometimes you can be almost at that you

654
00:51:03,650 --> 00:51:02,099
know that five yard line seeing the goal

655
00:51:04,930 --> 00:51:03,660
in sight like we were you know early

656
00:51:07,849 --> 00:51:04,940
Monday morning

657
00:51:10,430 --> 00:51:07,859
and you can have a clog filter and you

658
00:51:13,010 --> 00:51:10,440
just gotta stop and say okay we're not

659
00:51:16,549 --> 00:51:13,020
ready to go fly today and we're gonna

660
00:51:21,170 --> 00:51:16,559
stop take our time get ready to go and

661
00:51:23,150 --> 00:51:21,180
reset up again and but it it is really

662
00:51:24,650 --> 00:51:23,160
I'm very proud of the team because the

663
00:51:26,210 --> 00:51:24,660

way they work through that problem and

664

00:51:28,549 --> 00:51:26,220

the way they said

665

00:51:31,549 --> 00:51:28,559

hey we aren't ready right now to be able

666

00:51:33,530 --> 00:51:31,559

to say we're safe and so we're gonna

667

00:51:35,450 --> 00:51:33,540

stop and make sure we've got this all

668

00:51:37,730 --> 00:51:35,460

figured out and then come back and fly

669

00:51:39,890 --> 00:51:37,740

again I think it gives a real testimony

670

00:51:41,930 --> 00:51:39,900

to the team it really is Kathy and as

671

00:51:43,549 --> 00:51:41,940

you said space flight is hard but we

672

00:51:45,170 --> 00:51:43,559

have been just pushing forward with the

673

00:51:47,390 --> 00:51:45,180

commercial crew program as Daryl said

674

00:51:49,490 --> 00:51:47,400

earlier this is the sixth crew rotation

675

00:51:50,930 --> 00:51:49,500

flight from NASA and SpaceX to the space

676
00:51:52,510 --> 00:51:50,940
station what do you think of that

677
00:51:55,190 --> 00:51:52,520
Cadence from the commercial crew program

678
00:51:57,710 --> 00:51:55,200
well you know this is near and dear to

679
00:52:00,650 --> 00:51:57,720
my heart and so obviously you know as

680
00:52:03,609 --> 00:52:00,660
the ex commercial crew program manager

681
00:52:07,130 --> 00:52:03,619
I'm awfully proud of the way the team

682
00:52:09,410 --> 00:52:07,140
has you know and not only the six crew

683
00:52:11,510 --> 00:52:09,420
rotation Mission but you know really the

684
00:52:14,630 --> 00:52:11,520
seventh Mission with also doing demo two

685
00:52:16,250 --> 00:52:14,640
you know in March of 2020 as we were

686
00:52:18,109 --> 00:52:16,260
kind of in our campaign getting ready

687
00:52:18,829 --> 00:52:18,119
for the demo flight

688
00:52:21,470 --> 00:52:18,839

um

689

00:52:23,569 --> 00:52:21,480

I would have dreamed this would have

690

00:52:25,309 --> 00:52:23,579

been like the the greatest dream for me

691

00:52:26,990 --> 00:52:25,319

that we would be here you know three

692

00:52:29,630 --> 00:52:27,000

years later less than three years later

693

00:52:31,910 --> 00:52:29,640

and have maintained this Cadence of

694

00:52:34,309 --> 00:52:31,920

safely being able to rotate or Cruise so

695

00:52:36,109 --> 00:52:34,319

extremely proud of the team yeah and it

696

00:52:37,910 --> 00:52:36,119

really does seem like almost surreal

697

00:52:39,710 --> 00:52:37,920

that we've come this far and of course

698

00:52:41,630 --> 00:52:39,720

we're working very closely with SpaceX

699

00:52:43,130 --> 00:52:41,640

on this Mission but we're adding more

700

00:52:45,290 --> 00:52:43,140

Partners to this what are we doing for

701
00:52:48,890 --> 00:52:45,300
the commercialization of low earth orbit

702
00:52:51,470 --> 00:52:48,900
well this next you know four or five

703
00:52:53,329 --> 00:52:51,480
months is just going to be incredible

704
00:52:56,750 --> 00:52:53,339
for the International Space Station I

705
00:52:59,569 --> 00:52:56,760
mean it's a really busy port for a lot

706
00:53:02,329 --> 00:52:59,579
of vehicles coming up so obviously we've

707
00:53:04,190 --> 00:53:02,339
got you know crew Six coming up but then

708
00:53:06,349 --> 00:53:04,200
we've got another SpaceX cargo Mission

709
00:53:09,730 --> 00:53:06,359
also coming up in the March time frame

710
00:53:12,410 --> 00:53:09,740
and that's Paving the way for our Boeing

711
00:53:14,809 --> 00:53:12,420
first crude flight test vehicle that

712
00:53:17,569 --> 00:53:14,819
will be coming up in end of April and

713
00:53:20,750 --> 00:53:17,579

then we have Axiom 2 our second private

714

00:53:22,730 --> 00:53:20,760

astronaut Mission and and following that

715

00:53:24,890 --> 00:53:22,740

two more cargo vehicles in the next four

716

00:53:26,930 --> 00:53:24,900

or five months so there's no rest for

717

00:53:28,549 --> 00:53:26,940

the wicked and these people must be very

718

00:53:31,250 --> 00:53:28,559

Wicked because

719

00:53:33,410 --> 00:53:31,260

they're not getting a break or not much

720

00:53:36,650 --> 00:53:33,420

of a break in here but honestly this is

721

00:53:38,569 --> 00:53:36,660

this is what we dreamed that the space

722

00:53:40,370 --> 00:53:38,579

station program would be doing at this

723

00:53:42,470 --> 00:53:40,380

stage you know we dreamed that we'd be

724

00:53:45,290 --> 00:53:42,480

having cargo vehicles and crew Vehicles

725

00:53:48,049 --> 00:53:45,300

because this is when we get to maximize

726

00:53:49,970 --> 00:53:48,059

the use and the science that's created

727

00:53:51,950 --> 00:53:49,980

on the International Space Station right

728

00:53:53,930 --> 00:53:51,960

we really are living the dream it's a

729

00:53:55,730 --> 00:53:53,940

dream to be at Nasa at this time and

730

00:53:57,410 --> 00:53:55,740

we've been at this for a very long time

731

00:54:00,230 --> 00:53:57,420

actually the space station is going into

732

00:54:02,150 --> 00:54:00,240

its 22nd year what do you think of

733

00:54:04,790 --> 00:54:02,160

America's continuous presence on the

734

00:54:07,130 --> 00:54:04,800

space station well we always talk about

735

00:54:09,470 --> 00:54:07,140

not only staying on the space station

736

00:54:12,650 --> 00:54:09,480

but not giving up our presence in low

737

00:54:16,250 --> 00:54:12,660

earth orbit and so you know not only are

738

00:54:18,530 --> 00:54:16,260

we preparing for the next eight to ten

739

00:54:20,690 --> 00:54:18,540

years with the space station but we're

740

00:54:22,370 --> 00:54:20,700

also preparing for our continued

741

00:54:25,910 --> 00:54:22,380

presence in low earth orbit with our

742

00:54:28,130 --> 00:54:25,920

commercial Leo destinations and so we

743

00:54:30,410 --> 00:54:28,140

have a lot of work that we have planned

744

00:54:31,970 --> 00:54:30,420

to do on on the space station but we

745

00:54:33,650 --> 00:54:31,980

also have a lot of work that we need to

746

00:54:36,470 --> 00:54:33,660

continue to do on our commercial Leo

747

00:54:39,170 --> 00:54:36,480

destinations to get us ready to buy down

748

00:54:41,569 --> 00:54:39,180

the human risks that we have for our

749

00:54:44,809 --> 00:54:41,579

expiration missions there's really no

750

00:54:48,890 --> 00:54:44,819

other place except for Leo to really be

751
00:54:51,290 --> 00:54:48,900
buying down those crew risks and and we

752
00:54:53,210 --> 00:54:51,300
need to have those who are spot down for

753
00:54:55,490 --> 00:54:53,220
us to really be able to do another long

754
00:54:57,230 --> 00:54:55,500
duration flight like a mission to Mars

755
00:54:58,970 --> 00:54:57,240
will be exactly we're just looking

756
00:55:00,230 --> 00:54:58,980
forward to the Moon forward on to Mars

757
00:55:02,690 --> 00:55:00,240
Kathy thank you so much for being here

758
00:55:04,910 --> 00:55:02,700
tonight oh thank you of course Daryl

759
00:55:07,609 --> 00:55:04,920
back to you thank you Jasmine and great

760
00:55:09,290 --> 00:55:07,619
words from Kathy leaders there if you're

761
00:55:11,870 --> 00:55:09,300
just joining us well you're watching

762
00:55:14,690 --> 00:55:11,880
live coverage of NASA's and spacex's

763
00:55:16,609 --> 00:55:14,700

Mission known as Cruise six good evening

764

00:55:18,710 --> 00:55:16,619

and welcome to Kennedy Space Center in

765

00:55:21,950 --> 00:55:18,720

Florida I'm Daryl nail along with a

766

00:55:25,309 --> 00:55:21,960

recent flyer on a SpaceX dragon and that

767

00:55:26,450 --> 00:55:25,319

is crew 3 Commander rajachary I

768

00:55:27,770 --> 00:55:26,460

appreciate you being here thanks they're

769

00:55:30,170 --> 00:55:27,780

all happy to be back and get another

770

00:55:31,309 --> 00:55:30,180

chance to hopefully get the crew sticks

771

00:55:32,750 --> 00:55:31,319

off the ground

772

00:55:34,490 --> 00:55:32,760

um we're getting to see uh right now

773

00:55:36,650 --> 00:55:34,500

that them showing up to take a look at

774

00:55:38,329 --> 00:55:36,660

the look up the rocket we talked about

775

00:55:39,950 --> 00:55:38,339

last time the reason they have to Crane

776

00:55:42,170 --> 00:55:39,960

back like that is the way that the suit

777

00:55:44,089 --> 00:55:42,180

constrains you and it's it's meant it's

778

00:55:45,589 --> 00:55:44,099

built to be pressurized but when it's

779

00:55:46,910 --> 00:55:45,599

not pressurized and it kind of pushes

780

00:55:48,829 --> 00:55:46,920

down on your head and neck just a little

781

00:55:50,329 --> 00:55:48,839

bit so taking one more look at the

782

00:55:52,130 --> 00:55:50,339

rocket before they they head into the

783

00:55:54,230 --> 00:55:52,140

elevator and I did hear from Woody that

784

00:55:56,630 --> 00:55:54,240

uh they did in fact change the labels on

785

00:55:58,549 --> 00:55:56,640

the button pad inside that so it does

786

00:56:00,829 --> 00:55:58,559

actually say space on the top button and

787

00:56:03,650 --> 00:56:00,839

Earth on the bottom button the elevator

788

00:56:05,089 --> 00:56:03,660

buttons inside yes if uh folks you

789

00:56:07,250 --> 00:56:05,099

haven't seen that Meme floating around

790

00:56:09,770 --> 00:56:07,260

there's a picture that shows all the

791

00:56:12,410 --> 00:56:09,780

buttons inside this elevator and they're

792

00:56:15,470 --> 00:56:12,420

marked out by the foot level the top

793

00:56:17,930 --> 00:56:15,480

used to be the 255 foot level but

794

00:56:19,970 --> 00:56:17,940

apparently it now says modified to say

795

00:56:22,849 --> 00:56:19,980

space which is appropriate uh this this

796

00:56:24,770 --> 00:56:22,859

the 39 complex is historic we've been

797

00:56:26,750 --> 00:56:24,780

using it since the early days of the

798

00:56:29,510 --> 00:56:26,760

Space Age and you know continuing to

799

00:56:31,270 --> 00:56:29,520

upgrade uh even the labels how cool was

800

00:56:33,710 --> 00:56:31,280

that to reach over and press space

801
00:56:35,270 --> 00:56:33,720
that's yeah that's the awesome awesome

802
00:56:37,130 --> 00:56:35,280
to be able to hit the destination that

803
00:56:38,390 --> 00:56:37,140
you're going to yeah

804
00:56:39,710 --> 00:56:38,400
this is the view at the top of the

805
00:56:41,690 --> 00:56:39,720
elevator so they pop out here and they

806
00:56:43,970 --> 00:56:41,700
walk up a floor uh you can see there's

807
00:56:45,770 --> 00:56:43,980
the graded floors or for if in the event

808
00:56:46,910 --> 00:56:45,780
of an emergency egress they douse this

809
00:56:48,410 --> 00:56:46,920
whole thing with a whole bunch of water

810
00:56:50,150 --> 00:56:48,420
so you don't have to get slippery so

811
00:56:56,210 --> 00:56:50,160
that's why they're grated floors so the

812
00:57:03,650 --> 00:57:00,170
and you see astronaut Nick Hague is with

813
00:57:08,870 --> 00:57:06,049

see him turning the corner there this is

814

00:57:11,569 --> 00:57:08,880

the astronaut's support person and Nick

815

00:57:14,270 --> 00:57:11,579

Hague of course an experienced astronaut

816

00:57:16,730 --> 00:57:14,280

been up to space station uh been through

817

00:57:19,130 --> 00:57:16,740

in a launch abort himself

818

00:57:21,230 --> 00:57:19,140

great resource to the astronauts yeah

819

00:57:22,430 --> 00:57:21,240

it's amazing uh Reed Wiseman who's the

820

00:57:23,990 --> 00:57:22,440

the former Chief of the office likes to

821

00:57:26,329 --> 00:57:24,000

say that Nick is a unicorn he's pretty

822

00:57:28,190 --> 00:57:26,339

much the only person uh you know right

823

00:57:29,870 --> 00:57:28,200

now that's well he's been to space twice

824

00:57:30,950 --> 00:57:29,880

even though he only won one mission is

825

00:57:32,510 --> 00:57:30,960

the first time they aborted they

826

00:57:35,390 --> 00:57:32,520

actually ballistically went into orbit

827

00:57:37,309 --> 00:57:35,400

so he counts at us too rightfully so uh

828

00:57:38,630 --> 00:57:37,319

but yeah that's really really unusual

829

00:57:39,710 --> 00:57:38,640

there's I don't think there's anyone

830

00:57:41,510 --> 00:57:39,720

else in the office that's been through a

831

00:57:42,829 --> 00:57:41,520

launch abort um which as we know the

832

00:57:43,849 --> 00:57:42,839

commercial crew program has that as a

833

00:57:45,890 --> 00:57:43,859

requirements so we've got that system

834

00:57:48,650 --> 00:57:45,900

now with both dragon and Starliner but

835

00:57:50,690 --> 00:57:48,660

to actually have done that as a way it's

836

00:57:52,910 --> 00:57:50,700

pretty extreme you see Sultan and Andre

837

00:57:54,530 --> 00:57:52,920

heading up the elevator uh you notice

838

00:57:55,849 --> 00:57:54,540

tonight everything's going faster which

839

00:57:57,049 --> 00:57:55,859

is a testament to the fact that we've

840

00:57:58,730 --> 00:57:57,059

practiced this once

841

00:58:01,069 --> 00:57:58,740

um so they're you know now this is the

842

00:58:02,390 --> 00:58:01,079

second time the team's doing this uh and

843

00:58:03,710 --> 00:58:02,400

you know Woody himself commented there's

844

00:58:05,809 --> 00:58:03,720

almost like a free Sim that they got to

845

00:58:08,690 --> 00:58:05,819

do the other day

846

00:58:10,609 --> 00:58:08,700

things are going a lot faster certainly

847

00:58:12,890 --> 00:58:10,619

notice that just to fill finish the

848

00:58:14,890 --> 00:58:12,900

thought on the launcher board that was a

849

00:58:19,849 --> 00:58:14,900

soyuz in 2018

850

00:58:24,049 --> 00:58:21,589

waiting for the mission Specialists and

851

00:58:25,430 --> 00:58:24,059

here they come

852

00:58:26,750 --> 00:58:25,440

so they'll head up the stairs as well

853

00:58:27,890 --> 00:58:26,760

you saw Woody and Steve were just

854

00:58:29,809 --> 00:58:27,900

starting to make their phone calls we

855

00:58:31,130 --> 00:58:29,819

talked the last time that one of the

856

00:58:32,210 --> 00:58:31,140

other jobs so Nick Hague as the

857

00:58:34,490 --> 00:58:32,220

astronaut sport person one of the things

858

00:58:36,170 --> 00:58:34,500

they're doing is uh like items like

859

00:58:37,789 --> 00:58:36,180

glasses watches things like that that

860

00:58:39,289 --> 00:58:37,799

have to be carried that they don't have

861

00:58:42,230 --> 00:58:39,299

room for in their pockets he's kind of

862

00:58:44,210 --> 00:58:42,240

handling that Logistics he's also the

863

00:58:45,829 --> 00:58:44,220

one who dials the numbers which is not a

864

00:58:49,370 --> 00:58:45,839

trivial task calling on a government

865

00:58:50,990 --> 00:58:49,380

phone to the UAE or to Russia so you got

866

00:58:52,730 --> 00:58:51,000

to figure out yeah the country codes the

867

00:58:55,510 --> 00:58:52,740

do I have dial plus nine or plus nine

868

00:58:57,530 --> 00:58:55,520

plus one but yeah

869

00:58:58,970 --> 00:58:57,540

exactly which number gets you the

870

00:59:00,049 --> 00:58:58,980

international make sure you've done that

871

00:59:01,789 --> 00:59:00,059

and you want to make sure the person

872

00:59:03,349 --> 00:59:01,799

who's going to get the call knows that

873

00:59:04,309 --> 00:59:03,359

it's not a Spam call so you need to make

874

00:59:06,589 --> 00:59:04,319

sure you give them that number in

875

00:59:08,930 --> 00:59:06,599

advance the Chevrons on the ground there

876
00:59:10,190 --> 00:59:08,940
they're going to be uh when they go onto

877
00:59:11,750 --> 00:59:10,200
the spacecraft they're walking against

878
00:59:14,329 --> 00:59:11,760
the Chevrons but those Chevrons are

879
00:59:15,770 --> 00:59:14,339
meant for in a low visibility egress

880
00:59:17,390 --> 00:59:15,780
because I make a mention the water

881
00:59:18,890 --> 00:59:17,400
system is on so you would be getting

882
00:59:20,569 --> 00:59:18,900
doused with water so you can look down

883
00:59:22,730 --> 00:59:20,579
and that's pointing you to the egress

884
00:59:24,349 --> 00:59:22,740
baskets which on the far left side of

885
00:59:26,030 --> 00:59:24,359
the screen just kind of went out of view

886
00:59:28,430 --> 00:59:26,040
but you can see where these slide wires

887
00:59:29,510 --> 00:59:28,440
are at and that's how you would get down

888
00:59:31,309 --> 00:59:29,520

to the ground now you can just see them

889

00:59:33,530 --> 00:59:31,319

on the left side they're like a super

890

00:59:35,870 --> 00:59:33,540

fun zip line ride that you would get

891

00:59:37,190 --> 00:59:35,880

into a basket and then go down to the

892

00:59:39,770 --> 00:59:37,200

bottom of the pad and there's a

893

00:59:42,049 --> 00:59:39,780

loudspeaker system up there and so as

894

00:59:43,970 --> 00:59:42,059

you're egressing the launch director

895

00:59:45,410 --> 00:59:43,980

would be giving you instructions most

896

00:59:47,329 --> 00:59:45,420

key like how many people are still on

897

00:59:49,130 --> 00:59:47,339

the pad because as the crew if it's just

898

00:59:50,809 --> 00:59:49,140

four of you that's relatively easy but

899

00:59:52,010 --> 00:59:50,819

if the closeout crew is there you got to

900

00:59:53,390 --> 00:59:52,020

make sure you count baskets and people

901
00:59:54,950 --> 00:59:53,400
to make sure everyone gets down to the

902
00:59:56,630 --> 00:59:54,960
ground want to have a full head count

903
00:59:58,970 --> 00:59:56,640
everybody who don't want to leave anyone

904
01:00:00,349 --> 00:59:58,980
up there right

905
01:00:02,569 --> 01:00:00,359
so it looks like they're cycling through

906
01:00:04,910 --> 01:00:02,579
the phone calls now

907
01:00:07,430 --> 01:00:04,920
this is the view looking towards the

908
01:00:10,130 --> 01:00:07,440
crew access arm it is behind the black

909
01:00:12,410 --> 01:00:10,140
door so when they wrap up their call

910
01:00:15,890 --> 01:00:12,420
there they'll be headed through the door

911
01:00:19,130 --> 01:00:15,900
and we'll get ready to see our

912
01:00:21,170 --> 01:00:19,140
first two astronauts make their way

913
01:00:24,890 --> 01:00:21,180

from the launch Tower

914

01:00:28,370 --> 01:00:24,900

across the crew access arm and begin to

915

01:00:29,809 --> 01:00:28,380

Ingress to the dragon spacecraft and and

916

01:00:30,950 --> 01:00:29,819

besides the fact they've done this twice

917

01:00:32,990 --> 01:00:30,960

the other reason things go a little

918

01:00:34,130 --> 01:00:33,000

quicker is all the little Traditions are

919

01:00:35,630 --> 01:00:34,140

kind of already done so they've already

920

01:00:36,890 --> 01:00:35,640

signed the patch in crew quarters

921

01:00:39,410 --> 01:00:36,900

they'll have already signed the meatball

922

01:00:40,609 --> 01:00:39,420

here so some of those things that take a

923

01:00:43,910 --> 01:00:40,619

little bit of time that are that are

924

01:00:45,470 --> 01:00:43,920

baked into the uh the timeline don't

925

01:00:46,910 --> 01:00:45,480

have to be redone so you can see Woody

926
01:00:49,549 --> 01:00:46,920
and Steve just starting to head out on

927
01:00:51,470 --> 01:00:49,559
the career access arm now

928
01:00:54,230 --> 01:00:51,480
and there they are coming through the

929
01:00:56,450 --> 01:00:54,240
crew access arm the commander and pilot

930
01:01:00,410 --> 01:00:56,460
Stephen and Woody

931
01:01:06,230 --> 01:01:00,420
making their way inside dragon

932
01:01:06,240 --> 01:01:12,109
they're hoping today is the day

933
01:01:15,109 --> 01:01:14,089
core on countdown crew are in the white

934
01:01:17,630 --> 01:01:15,119
room

935
01:01:19,849 --> 01:01:17,640
you see uh Arthur is the core at SpaceX

936
01:01:20,450 --> 01:01:19,859
so they keep the shifts the same so

937
01:01:21,829 --> 01:01:20,460
um

938
01:01:23,329 --> 01:01:21,839

again we kind of talked a little bit

939

01:01:24,890 --> 01:01:23,339

about last time but the importance of

940

01:01:26,750 --> 01:01:24,900

all the Sims leading up to this or the

941

01:01:28,730 --> 01:01:26,760

same voices so they'll you know through

942

01:01:30,530 --> 01:01:28,740

the slip and through the scrub re-timing

943

01:01:32,270 --> 01:01:30,540

all the shifts at SpaceX and Houston

944

01:01:34,549 --> 01:01:32,280

actually all stayed on the same timeline

945

01:01:36,829 --> 01:01:34,559

so they could be all the same people

946

01:01:39,890 --> 01:01:36,839

that's Arthur burial the

947

01:01:41,030 --> 01:01:39,900

crew operations resource engineer with

948

01:01:43,250 --> 01:01:41,040

SpaceX

949

01:01:45,049 --> 01:01:43,260

it's his voice coming over you can see

950

01:01:46,430 --> 01:01:45,059

the ninjas helping get there those are

951
01:01:50,870 --> 01:01:46,440
the shoe protects of the boot guards

952
01:01:54,289 --> 01:01:53,210
so protects for two things fod in the

953
01:01:55,609 --> 01:01:54,299
capsule is one thing but the other thing

954
01:01:57,770 --> 01:01:55,619
is there's slots in the bottom of those

955
01:01:59,329 --> 01:01:57,780
heels and that's what actually when you

956
01:02:00,770 --> 01:01:59,339
see them get in you'll see them put

957
01:02:02,750 --> 01:02:00,780
their foot up and then down almost like

958
01:02:04,549 --> 01:02:02,760
putting on a like a ski boot type thing

959
01:02:07,190 --> 01:02:04,559
where it locks in and that's what keeps

960
01:02:09,650 --> 01:02:07,200
your feet restrained under the launch

961
01:02:11,270 --> 01:02:09,660
loads and re-entry loads which is why

962
01:02:13,010 --> 01:02:11,280
you'll also see them sometimes if not

963
01:02:13,970 --> 01:02:13,020

during long before they are on the

964

01:02:16,370 --> 01:02:13,980

launch Escape system you'll see them

965

01:02:18,650 --> 01:02:16,380

lock them in but that also protects the

966

01:02:20,990 --> 01:02:18,660

channel from any Knicks or dings on the

967

01:02:23,450 --> 01:02:21,000

bottom side of that

968

01:02:25,910 --> 01:02:23,460

all right we've got a question that's

969

01:02:29,390 --> 01:02:25,920

coming in from social media as the

970

01:02:32,809 --> 01:02:29,400

astronauts Christmas started

971

01:02:36,289 --> 01:02:32,819

Arthur calling the Ingress has started

972

01:02:38,210 --> 01:02:36,299

which we can see on our screen so here's

973

01:02:43,730 --> 01:02:38,220

the question space Brandon on Twitter

974

01:02:50,089 --> 01:02:46,010

what is it like to take in this view

975

01:02:52,970 --> 01:02:50,099

loud and clear seat two help me

976

01:02:54,770 --> 01:02:52,980

uh C2 how's your loud and clear as well

977

01:02:56,630 --> 01:02:54,780

so I'll tell you it's a it's awesome the

978

01:02:58,430 --> 01:02:56,640

The View out the dragon window you don't

979

01:03:00,109 --> 01:02:58,440

really see getting in because you're as

980

01:03:02,569 --> 01:03:00,119

you saw as they crawl in their head is

981

01:03:04,370 --> 01:03:02,579

towards the seats and then when they we

982

01:03:05,930 --> 01:03:04,380

flip around you can see the white room

983

01:03:07,309 --> 01:03:05,940

and that crew access arm kind of blocks

984

01:03:09,049 --> 01:03:07,319

The View out the two windows there which

985

01:03:10,549 --> 01:03:09,059

you can see uh if you look at ninja 10

986

01:03:12,470 --> 01:03:10,559

to their right and left you can see the

987

01:03:13,970 --> 01:03:12,480

dragon windows The View you do have is

988

01:03:20,690 --> 01:03:13,980

before you walk across the crew access

989

01:03:25,609 --> 01:03:22,970

wait for Arthur loud and clear C3 help

990

01:03:29,210 --> 01:03:27,650

good evening Arthur I have you the same

991

01:03:30,470 --> 01:03:29,220

yeah so the view from where good evening

992

01:03:32,930 --> 01:03:30,480

Woody and Steve good to hear from you

993

01:03:34,490 --> 01:03:32,940

Sultan and Andre are standing is awesome

994

01:03:35,329 --> 01:03:34,500

and you got the water especially on a

995

01:03:36,829 --> 01:03:35,339

clear night

996

01:03:38,210 --> 01:03:36,839

um when you do this during dry dress you

997

01:03:39,470 --> 01:03:38,220

come up here and take in the view but

998

01:03:40,849 --> 01:03:39,480

seeing yeah I think he's talking about

999

01:03:43,010 --> 01:03:40,859

taking in the view right there so you

1000

01:03:44,809 --> 01:03:43,020

can go to the corner uh to the where

1001
01:03:47,809 --> 01:03:44,819
that kind of White Post is kind of where

1002
01:03:49,309 --> 01:03:47,819
ninja 14 is at and you can kind of hang

1003
01:03:52,910 --> 01:03:49,319
off the edge don't don't do it too far

1004
01:03:55,130 --> 01:03:52,920
but yeah it is it's pretty amazing and

1005
01:03:56,089 --> 01:03:55,140
the seeing the clouds in the water I

1006
01:03:58,309 --> 01:03:56,099
think is what's most distinctly

1007
01:04:00,170 --> 01:03:58,319
different so on Earth you can see the

1008
01:04:02,210 --> 01:04:00,180
actual individual waves and the clouds

1009
01:04:04,190 --> 01:04:02,220
moving in from space uh you definitely

1010
01:04:05,690 --> 01:04:04,200
can't see that level of detail um so

1011
01:04:06,829 --> 01:04:05,700
yeah try to take all that in I don't

1012
01:04:08,750 --> 01:04:06,839
think you really appreciate it until you

1013
01:04:11,630 --> 01:04:08,760

come back and see that same thing and we

1014

01:04:13,910 --> 01:04:11,640

can see Nick Hague now taking uh cell

1015

01:04:14,809 --> 01:04:13,920

phone shots of Sultan as he's on the

1016

01:04:18,710 --> 01:04:14,819

phone

1017

01:04:20,329 --> 01:04:18,720

it's a good fellow astronaut does

1018

01:04:21,710 --> 01:04:20,339

and you heard uh Woody and Steve

1019

01:04:24,349 --> 01:04:21,720

checking in with Arthur those are just

1020

01:04:25,670 --> 01:04:24,359

the initial Comm checks will do much

1021

01:04:26,809 --> 01:04:25,680

more intensive ones later but that's

1022

01:04:29,450 --> 01:04:26,819

just to make sure that when they connect

1023

01:04:30,890 --> 01:04:29,460

their umbilical that it's fully seated

1024

01:04:32,990 --> 01:04:30,900

and so if you get a good com check you

1025

01:04:34,250 --> 01:04:33,000

know the little pins that connect that

1026

01:04:37,069 --> 01:04:34,260

Loop are good

1027

01:04:40,730 --> 01:04:37,079

our mission specialist now getting ready

1028

01:04:44,630 --> 01:04:40,740

to board Dragon Sultan and Andre with a

1029

01:04:49,849 --> 01:04:47,270

beautiful shot from high above looking

1030

01:04:55,789 --> 01:04:49,859

into the crew access arm as they make

1031

01:05:00,530 --> 01:04:58,250

and while we're watching the mission

1032

01:05:03,710 --> 01:05:00,540

specialists in action let's take another

1033

01:05:05,329 --> 01:05:03,720

social question which is relevant and if

1034

01:05:08,870 --> 01:05:05,339

we showing off showing you know getting

1035

01:05:10,130 --> 01:05:08,880

the space Texas yeah so it is so they we

1036

01:05:12,349 --> 01:05:10,140

talked about last time they grabbed the

1037

01:05:13,970 --> 01:05:12,359

the ninjas name tags to take with them

1038

01:05:15,049 --> 01:05:13,980

and they distribute those amongst the

1039

01:05:17,030 --> 01:05:15,059

crew so they can fit them in their

1040

01:05:18,650 --> 01:05:17,040

pockets and satchels and the question

1041

01:05:20,270 --> 01:05:18,660

there looks like

1042

01:05:21,890 --> 01:05:20,280

what's the mobility like on the pressure

1043

01:05:23,870 --> 01:05:21,900

suit while walking around it's actually

1044

01:05:25,609 --> 01:05:23,880

fine it's just a little a little bit of

1045

01:05:27,950 --> 01:05:25,619

pressure on the top of your head pulling

1046

01:05:29,450 --> 01:05:27,960

down and as you saw that's kind of why

1047

01:05:31,490 --> 01:05:29,460

they arched their back to look up you

1048

01:05:33,410 --> 01:05:31,500

can't tilt your neck backwards and

1049

01:05:35,510 --> 01:05:33,420

obviously if you turn your head side to

1050

01:05:37,490 --> 01:05:35,520

side your head is kind of turning inside

1051
01:05:38,750 --> 01:05:37,500
the the helmet as opposed to the entire

1052
01:05:40,910 --> 01:05:38,760
helmet moving

1053
01:05:42,530 --> 01:05:40,920
um so it's just more a matter of not

1054
01:05:45,049 --> 01:05:42,540
straining your neck

1055
01:05:47,329 --> 01:05:45,059
it's like traction almost yeah it's just

1056
01:05:48,710 --> 01:05:47,339
a mild traction yeah and and it can get

1057
01:05:51,170 --> 01:05:48,720
hot so you don't do a whole lot of

1058
01:05:53,089 --> 01:05:51,180
action uh unless you have cooling

1059
01:05:54,289 --> 01:05:53,099
attached to you especially with the the

1060
01:05:55,970 --> 01:05:54,299
weather here

1061
01:05:58,549 --> 01:05:55,980
um but compared again this is a in

1062
01:06:01,190 --> 01:05:58,559
what's called an IV in vehicle suit Iva

1063
01:06:03,230 --> 01:06:01,200

suit not a EV or extra vehicular suit so

1064

01:06:05,150 --> 01:06:03,240

way different than if you were trying to

1065

01:06:06,770 --> 01:06:05,160

walk around in an emu which is what we

1066

01:06:08,450 --> 01:06:06,780

use for spacewalks that would be a way

1067

01:06:11,270 --> 01:06:08,460

different story and you probably would

1068

01:06:13,670 --> 01:06:11,280

not be able to walk uh in on Earth

1069

01:06:16,370 --> 01:06:13,680

gravity as it weighs upward of three 400

1070

01:06:18,410 --> 01:06:16,380

pounds whereas this one is is meant to

1071

01:06:19,970 --> 01:06:18,420

be able to move around when it is

1072

01:06:22,370 --> 01:06:19,980

inflated it's meant to be in the seat so

1073

01:06:24,529 --> 01:06:22,380

if if it was pressurized it's not meant

1074

01:06:26,150 --> 01:06:24,539

to be moving around in the cabin with it

1075

01:06:28,309 --> 01:06:26,160

because you can't you don't really have

1076

01:06:30,349 --> 01:06:28,319

a joint Mobility so it's meant to be

1077

01:06:32,870 --> 01:06:30,359

restrained by the straps and in the

1078

01:06:34,370 --> 01:06:32,880

seats to to be fully functional in a

1079

01:06:37,549 --> 01:06:34,380

deep rest scenario

1080

01:06:39,950 --> 01:06:37,559

there go R2 Mission Specialists with the

1081

01:06:42,049 --> 01:06:39,960

duck as they cross the hatch being very

1082

01:06:44,990 --> 01:06:42,059

careful not to

1083

01:06:47,390 --> 01:06:45,000

touch or hit the edges of that hatch

1084

01:06:50,029 --> 01:06:47,400

because that seal is so very important

1085

01:06:51,770 --> 01:06:50,039

to maintaining

1086

01:06:53,990 --> 01:06:51,780

a good seal

1087

01:06:59,150 --> 01:06:54,000

when they pressurize the cabin in space

1088

01:07:02,390 --> 01:07:00,650

or wait

1089

01:07:04,190 --> 01:07:02,400

so those are the those are the crew

1090

01:07:05,450 --> 01:07:04,200

satchels you saw those uh white bags

1091

01:07:07,549 --> 01:07:05,460

Woody and Steve's are already on their

1092

01:07:10,069 --> 01:07:07,559

leg there's a little Loop under there uh

1093

01:07:13,430 --> 01:07:10,079

that the ground techs help connect for

1094

01:07:17,329 --> 01:07:15,710

see Sultan and Andre hook it in there

1095

01:07:18,829 --> 01:07:17,339

umbilicals so expect shortly they'll do

1096

01:07:21,650 --> 01:07:18,839

their comp checks with Arthur and the

1097

01:07:26,150 --> 01:07:23,450

and it's worth noting

1098

01:07:28,190 --> 01:07:26,160

for those who follow very closely

1099

01:07:30,410 --> 01:07:28,200

that SpaceX is now doing some of their

1100

01:07:32,569 --> 01:07:30,420

checks and operations in parallel rather

1101

01:07:34,849 --> 01:07:32,579

than sequentially it could end up

1102

01:07:37,549 --> 01:07:34,859

sequentially but they're aiming for

1103

01:07:38,930 --> 01:07:37,559

parallel and that will reduce the total

1104

01:07:41,210 --> 01:07:38,940

time of

1105

01:07:44,260 --> 01:07:41,220

the operation starting right now by

1106

01:07:44,270 --> 01:07:48,589

[Music]

1107

01:07:52,549 --> 01:07:50,510

doing com checks even as they're getting

1108

01:07:54,890 --> 01:07:52,559

seated loud and clear from seat four how

1109

01:07:54,900 --> 01:07:58,569

years

1110

01:08:04,190 --> 01:08:02,210

ms-1 Comcheck

1111

01:08:06,289 --> 01:08:04,200

and loud and clear ms-1 from seat one

1112

01:08:09,410 --> 01:08:06,299

help me

1113

01:08:11,930 --> 01:08:09,420

I got a loud and clear

1114

01:08:14,150 --> 01:08:11,940

and a great view of Andre's Buckle there

1115

01:08:16,189 --> 01:08:14,160

so it's a five-point harness

1116

01:08:18,110 --> 01:08:16,199

um the crew can totally do it on their

1117

01:08:19,729 --> 01:08:18,120

own but just to save wear and tear on

1118

01:08:22,070 --> 01:08:19,739

the suits a lot of times the ground crew

1119

01:08:23,450 --> 01:08:22,080

will will help with doing that and that

1120

01:08:26,269 --> 01:08:23,460

way it makes sure it's really cinched

1121

01:08:28,189 --> 01:08:26,279

down so the way each on that circular

1122

01:08:29,990 --> 01:08:28,199

harness around his waist each of the

1123

01:08:31,430 --> 01:08:30,000

waist straps and then the leg and the

1124

01:08:33,169 --> 01:08:31,440

shoulders connected into a slot and then

1125

01:08:34,970 --> 01:08:33,179

to get out you rotate it

1126

01:08:36,349 --> 01:08:34,980

counterclockwise or clockwise and all

1127

01:08:39,829 --> 01:08:36,359

five pop out

1128

01:08:41,209 --> 01:08:39,839

similar to a harness in a Jet right it's

1129

01:08:43,849 --> 01:08:41,219

actually very similar to like an F-35

1130

01:08:45,890 --> 01:08:43,859

harness yep same kind of design

1131

01:08:49,269 --> 01:08:45,900

and there's of course you flew the F-35

1132

01:08:53,110 --> 01:08:49,279

and the F-16

1133

01:08:59,269 --> 01:08:56,990

15E and then F-35 F35 okay don't worry

1134

01:09:05,269 --> 01:08:59,279

it's okay for people who fly the F-16 I

1135

01:09:09,950 --> 01:09:07,789

well the F-35 certainly the tip of the

1136

01:09:11,390 --> 01:09:09,960

spear when it comes to the Air Force and

1137

01:09:13,430 --> 01:09:11,400

you were involved that program for a

1138

01:09:14,749 --> 01:09:13,440

while I was yep I think the only job I

1139

01:09:16,010 --> 01:09:14,759

would have left that job for was this

1140

01:09:18,050 --> 01:09:16,020

job

1141

01:09:20,209 --> 01:09:18,060

we're glad you're here

1142

01:09:21,349 --> 01:09:20,219

had an incredibly successful crew 3

1143

01:09:23,090 --> 01:09:21,359

mission

1144

01:09:26,030 --> 01:09:23,100

you were the commander of and you had

1145

01:09:28,669 --> 01:09:26,040

some great astronauts along with you

1146

01:09:30,590 --> 01:09:28,679

yeah so flew with a Tom marshburn uh was

1147

01:09:32,269 --> 01:09:30,600

our our pilot he had been on that he had

1148

01:09:34,070 --> 01:09:32,279

been on a shuttle on a soyuz so just a

1149

01:09:36,769 --> 01:09:34,080

great asset to have some some wide

1150

01:09:39,410 --> 01:09:36,779

breadth Kayla Baron classmate of mine uh

1151

01:09:42,169 --> 01:09:39,420

also yeah fellow Turtle uh submarine or

1152

01:09:44,390 --> 01:09:42,179

uh yeah and so following and Steve's

1153

01:09:47,150 --> 01:09:44,400

footsteps and uh and then Matthias

1154

01:09:49,130 --> 01:09:47,160

Maurer uh from Issa the German astronaut

1155

01:09:50,510 --> 01:09:49,140

his first space flight as well and just

1156

01:09:52,910 --> 01:09:50,520

awesome to get to work with all of them

1157

01:09:54,890 --> 01:09:52,920

it was uh yeah it was a time of our life

1158

01:09:57,169 --> 01:09:54,900

up there honestly

1159

01:09:59,689 --> 01:09:57,179

and for those who wonder about what you

1160

01:10:01,790 --> 01:09:59,699

mean when you talk about the turtles

1161

01:10:04,550 --> 01:10:01,800

it's a class of turtles right when you

1162

01:10:06,169 --> 01:10:04,560

graduated uh into being an astronaut

1163

01:10:07,689 --> 01:10:06,179

right so a bale of turtles is the

1164

01:10:10,430 --> 01:10:07,699

technical term

1165

01:10:11,930 --> 01:10:10,440

of turtles if you will yeah so the the

1166

01:10:14,150 --> 01:10:11,940

tradition in the astronaut office is the

1167

01:10:16,970 --> 01:10:14,160

previous class names the incoming class

1168

01:10:18,350 --> 01:10:16,980

so we were named the turtles by the 2013

1169

01:10:22,090 --> 01:10:18,360

class

1170

01:10:24,590 --> 01:10:22,100

um somewhat as a uh

1171

01:10:26,330 --> 01:10:24,600

I think slightly derogatory meant to be

1172

01:10:27,709 --> 01:10:26,340

slow but we took it it's quite the

1173

01:10:30,770 --> 01:10:27,719

compliment so when the the vice

1174

01:10:32,450 --> 01:10:30,780

president announced our class in 2017 he

1175

01:10:34,070 --> 01:10:32,460

made the analogy that when he grew up if

1176

01:10:36,050 --> 01:10:34,080

you saw a turtle on a fence post you

1177

01:10:38,090 --> 01:10:36,060

knew it didn't get there by itself so we

1178

01:10:39,709 --> 01:10:38,100

take it as a definite nod to all the

1179

01:10:41,090 --> 01:10:39,719

people that got us here was

1180

01:10:43,130 --> 01:10:41,100

um the reality is whether it's family

1181

01:10:45,950 --> 01:10:43,140

friends the trainers at the different

1182

01:10:47,270 --> 01:10:45,960

centers uh we are just the doers the

1183

01:10:48,770 --> 01:10:47,280

eyes and the ears for the mission

1184

01:10:51,229 --> 01:10:48,780

control the flight controllers the

1185

01:10:52,070 --> 01:10:51,239

scientists and our families to to do the

1186

01:10:53,450 --> 01:10:52,080

work

1187

01:10:55,550 --> 01:10:53,460

um so yeah we definitely did not get

1188

01:10:57,649 --> 01:10:55,560

here by ourselves and so we we love the

1189

01:10:59,810 --> 01:10:57,659

the turtle term and proud to be sending

1190

01:11:01,370 --> 01:10:59,820

Woody up there to continue the Kathy

1191

01:11:03,470 --> 01:11:01,380

mentioned a continuous U.S presence in

1192

01:11:04,729 --> 01:11:03,480

space since for 22 years we've had a

1193

01:11:07,010 --> 01:11:04,739

continuous Turtle presence in space

1194

01:11:09,229 --> 01:11:07,020

since 2021

1195

01:11:11,510 --> 01:11:09,239

which is of course worth mentioning

1196

01:11:14,390 --> 01:11:11,520

um but most the more important stack

1197

01:11:16,189 --> 01:11:14,400

and I had also heard that you know

1198

01:11:19,010 --> 01:11:16,199

poignantly

1199

01:11:22,370 --> 01:11:19,020

um Turtles was fitting because when you

1200

01:11:24,410 --> 01:11:22,380

uh graduated it was uh hurricane Harvey

1201

01:11:25,850 --> 01:11:24,420

that's right yeah when we showed up put

1202

01:11:28,189 --> 01:11:25,860

a lot of water down in the Houston area

1203

01:11:29,390 --> 01:11:28,199

that was also a big part of it yep you

1204

01:11:30,410 --> 01:11:29,400

can see they're doing zipper checks

1205

01:11:32,810 --> 01:11:30,420

right now

1206

01:11:34,850 --> 01:11:32,820

um so there's a each of the there's

1207

01:11:36,890 --> 01:11:34,860

three main zippers one that goes from

1208

01:11:39,350 --> 01:11:36,900

one leg to the other and then one on

1209

01:11:41,390 --> 01:11:39,360

each arm uh and on each of those there's

1210

01:11:42,590 --> 01:11:41,400

an inner bladder layer which is the

1211

01:11:44,030 --> 01:11:42,600

actual pressure garment and then the

1212

01:11:45,590 --> 01:11:44,040

outer layer is the restraint layer and

1213

01:11:48,950 --> 01:11:45,600

then down on the boots they actually

1214

01:11:50,990 --> 01:11:48,960

have a boot zipper on top of that but in

1215

01:11:52,130 --> 01:11:51,000

each case on the three main zippers

1216

01:11:53,209 --> 01:11:52,140

there's a white tooth that they're

1217

01:11:54,890 --> 01:11:53,219

looking for and you get a two-person

1218

01:11:56,689 --> 01:11:54,900

check so the person that does it looks

1219

01:11:58,669 --> 01:11:56,699

for it and then someone else visually

1220

01:12:00,350 --> 01:11:58,679

verifies that white tooth is visible

1221

01:12:03,229 --> 01:12:00,360

that which guarantees that the pressure

1222

01:12:06,649 --> 01:12:03,239

uh the pressure garment is sealed

1223

01:12:09,590 --> 01:12:06,659

get that good seal critical safety

1224

01:12:11,990 --> 01:12:09,600

component for these suits got another

1225

01:12:15,050 --> 01:12:12,000

social question Raja and this one is

1226

01:12:17,090 --> 01:12:15,060

about one of your fellow astronauts

1227

01:12:19,729 --> 01:12:17,100

at Ian Banecken

1228

01:12:22,729 --> 01:12:19,739

asks do you miss your German space

1229

01:12:24,530 --> 01:12:22,739

brother Astro Matias and did he teach

1230

01:12:26,570 --> 01:12:24,540

you something in German during your six

1231

01:12:28,070 --> 01:12:26,580

months in space Oh yeah we definitely

1232

01:12:30,830 --> 01:12:28,080

missed Matthias one of the weird things

1233

01:12:32,570 --> 01:12:30,840

when you come back is so uh we you spend

1234

01:12:34,310 --> 01:12:32,580

you know your work day together and your

1235

01:12:36,229 --> 01:12:34,320

down time together for six months and

1236

01:12:37,850 --> 01:12:36,239

then when we came back uh you take a

1237

01:12:40,490 --> 01:12:37,860

Gulf Stream back

1238

01:12:41,870 --> 01:12:40,500

um to JSC or to Ellington and then JSC

1239

01:12:43,189 --> 01:12:41,880

and then he gets whised away so after

1240

01:12:45,709 --> 01:12:43,199

seeing him for six months all of a

1241

01:12:47,570 --> 01:12:45,719

sudden he's gone uh so it was almost

1242

01:12:49,729 --> 01:12:47,580

like having someone in her family ripped

1243

01:12:50,870 --> 01:12:49,739

out of the house a very uh yeah we

1244

01:12:52,130 --> 01:12:50,880

definitely missed Matthias it's good

1245

01:12:54,050 --> 01:12:52,140

whenever he gets back to visit us in

1246

01:12:55,729 --> 01:12:54,060

terms of learning German I think there's

1247

01:12:57,410 --> 01:12:55,739

I think he had his birthday up there so

1248

01:12:58,970 --> 01:12:57,420

we definitely learned that and honestly

1249

01:13:00,229 --> 01:12:58,980

after happy birthday in Germany honestly

1250

01:13:01,250 --> 01:13:00,239

I forgot that

1251

01:13:02,630 --> 01:13:01,260

um I'm supposed to know how to speak

1252

01:13:06,169 --> 01:13:02,640

Russian as well because we learned that

1253

01:13:09,070 --> 01:13:06,179

as part of our training and I yeah it's

1254

01:13:11,810 --> 01:13:09,080

you were working on the Russian playlist

1255

01:13:13,669 --> 01:13:11,820

I was able to read the the songs that

1256

01:13:15,470 --> 01:13:13,679

Andre had on his list like I have a

1257

01:13:18,070 --> 01:13:15,480

little bit but by German his Escape me

1258

01:13:20,750 --> 01:13:18,080

oh well

1259

01:13:23,149 --> 01:13:20,760

don't use it but exactly yeah Matthias

1260

01:13:28,010 --> 01:13:23,159

would be disappointing but

1261

01:13:32,090 --> 01:13:30,169

so again way ahead of schedule here so

1262

01:13:35,090 --> 01:13:32,100

normally on the the timeline the crew is

1263

01:13:36,290 --> 01:13:35,100

using about about 235 prior launch would

1264

01:13:37,669 --> 01:13:36,300

be crew Ingress and you can see they're

1265

01:13:40,310 --> 01:13:37,679

already much pretty pretty much there

1266

01:13:44,810 --> 01:13:43,189

uh so kind of doing some more checks

1267

01:13:46,310 --> 01:13:44,820

here so they're basically having the

1268

01:13:48,830 --> 01:13:46,320

crew make sure that so you can see those

1269

01:13:50,390 --> 01:13:48,840

white loops on their straps they're

1270

01:13:52,010 --> 01:13:50,400

meant so that the crew can find those

1271

01:13:54,110 --> 01:13:52,020

and pull them tight so that gives them

1272

01:13:55,729 --> 01:13:54,120

leverage to pull down and tighten the

1273

01:13:57,229 --> 01:13:55,739

restraints and so there's four of them

1274

01:13:58,550 --> 01:13:57,239

two for their shoulders and you can see

1275

01:14:00,290 --> 01:13:58,560

like Woody you can see a little bit of

1276

01:14:01,910 --> 01:14:00,300

example about underneath his hands you

1277

01:14:03,410 --> 01:14:01,920

can see there's kind of a grouping of

1278

01:14:05,270 --> 01:14:03,420

four of them so two for his shoulders

1279

01:14:06,830 --> 01:14:05,280

two for the legs and there's also toe

1280

01:14:08,689 --> 01:14:06,840

Loops which you can kind of see on

1281

01:14:11,330 --> 01:14:08,699

Steve's you can see them up near like

1282

01:14:13,130 --> 01:14:11,340

where the uh like the top of his foot

1283

01:14:15,169 --> 01:14:13,140

and that and those we talked about

1284

01:14:16,669 --> 01:14:15,179

sliding your foot into that restraint

1285

01:14:18,470 --> 01:14:16,679

and then the loop goes over that that

1286

01:14:19,970 --> 01:14:18,480

you then tighten with those straps so

1287

01:14:21,649 --> 01:14:19,980

that's basically what they're doing now

1288

01:14:24,110 --> 01:14:21,659

is checking each one of those four on

1289

01:14:25,729 --> 01:14:24,120

all four crew and making sure that

1290

01:14:28,370 --> 01:14:25,739

they're not too tight especially for

1291

01:14:30,169 --> 01:14:28,380

their feet and completely restrained on

1292

01:14:33,050 --> 01:14:30,179

their shoulders that was a great shot we

1293

01:14:35,510 --> 01:14:33,060

just saw by the SpaceX camera team that

1294

01:14:38,450 --> 01:14:35,520

showed one of their closeout crew

1295

01:14:41,030 --> 01:14:38,460

members exiting the spacecraft you gotta

1296

01:14:46,910 --> 01:14:41,040

feel as he went through it just how

1297

01:14:50,390 --> 01:14:49,010

we've been following the launch teams as

1298

01:14:51,410 --> 01:14:50,400

they continue working through the

1299

01:14:54,169 --> 01:14:51,420

countdown

1300

01:14:56,990 --> 01:14:54,179

currently no issues are in work at the

1301

01:15:00,050 --> 01:14:57,000

moment earlier this evening around 7 PM

1302

01:15:03,050 --> 01:15:00,060

eastern time there was a hydraulic leak

1303

01:15:06,010 --> 01:15:03,060

detected out at the pad but it was a

1304

01:15:09,050 --> 01:15:06,020

minor one one they were able to get

1305

01:15:11,330 --> 01:15:09,060

repaired pretty quickly

1306

01:15:14,870 --> 01:15:11,340

and didn't disturb the count as we see

1307

01:15:17,450 --> 01:15:14,880

our crew waving goodbye

1308

01:15:19,970 --> 01:15:17,460

before the SpaceX cameraman

1309

01:15:22,070 --> 01:15:19,980

exits the capsule

1310

01:15:23,870 --> 01:15:22,080

you see over Woody's right shoulder the

1311

01:15:25,610 --> 01:15:23,880

three previous stickers of the crews

1312

01:15:27,169 --> 01:15:25,620

that have flown and Endeavor so once

1313

01:15:29,450 --> 01:15:27,179

they get on orbits I'm sure they've got

1314

01:15:32,090 --> 01:15:29,460

a sticker in one of their pockets to add

1315

01:15:34,310 --> 01:15:32,100

to that that bulkhead back there it's a

1316

01:15:38,450 --> 01:15:34,320

great uh observation there Raja because

1317

01:15:43,250 --> 01:15:40,790

the fourth flight for the dragon

1318

01:15:46,010 --> 01:15:43,260

Endeavor SpaceX copies stand by for

1319

01:15:49,130 --> 01:15:46,020

umbilical Comcheck

1320

01:15:51,890 --> 01:15:49,140

the first three were demo two Crew 2 and

1321

01:15:53,330 --> 01:15:51,900

Axiom one which was up at station when

1322

01:15:55,970 --> 01:15:53,340

you were there they were which the first

1323

01:15:57,470 --> 01:15:55,980

uh private mission to the U.S segments

1324

01:15:59,149 --> 01:15:57,480

uh first time we've launched private

1325

01:16:01,130 --> 01:15:59,159

astronauts from the US so yeah a pretty

1326

01:16:02,330 --> 01:16:01,140

historic Mission and and just the start

1327

01:16:03,590 --> 01:16:02,340

of things to come you heard Kathy

1328

01:16:05,390 --> 01:16:03,600

leaders mentioned Axiom 2 will be

1329

01:16:08,030 --> 01:16:05,400

launching in the near future so we're

1330

01:16:09,229 --> 01:16:08,040

definitely uh take incorporating the

1331

01:16:11,390 --> 01:16:09,239

lessons learned and then moving forward

1332

01:16:13,669 --> 01:16:11,400

yeah what was that like you've got you

1333

01:16:15,830 --> 01:16:13,679

know your NASA job to do up in space and

1334

01:16:17,689 --> 01:16:15,840

then you're also helping private

1335

01:16:19,729 --> 01:16:17,699

astronauts yeah we enjoyed it I think

1336

01:16:21,649 --> 01:16:19,739

that the key is partnering on the

1337

01:16:23,450 --> 01:16:21,659

science so they bring I think the

1338

01:16:24,610 --> 01:16:23,460

interesting thing is you've got uh

1339

01:16:38,750 --> 01:16:24,620

private

1340

01:16:45,050 --> 01:16:41,810

Commander loud and clear

1341

01:16:52,430 --> 01:16:47,930

pilot loud and clear

1342

01:16:52,440 --> 01:16:57,590

ms1 loud and clear

1343

01:17:04,490 --> 01:17:01,669

um MS2 got volunteer

1344

01:17:06,050 --> 01:17:04,500

MS2 loud and clear

1345

01:17:15,050 --> 01:17:06,060

umbilical com checks are complete report

1346

01:17:19,910 --> 01:17:17,149

as we get ready for the seat rotation

1347

01:17:22,310 --> 01:17:19,920

watching all four articulate upwards so

1348

01:17:24,050 --> 01:17:22,320

they can get into launch position

1349

01:17:26,209 --> 01:17:24,060

I want to make a correction it's a

1350

01:17:28,790 --> 01:17:26,219

camera woman with SpaceX who's getting

1351

01:17:31,610 --> 01:17:28,800

those fabulous shots

1352

01:17:34,310 --> 01:17:31,620

relying on her to give us SpaceX Dragon

1353

01:17:36,590 --> 01:17:34,320

the crew is ready for sleep rotation

1354

01:17:39,890 --> 01:17:36,600

these great views that we see

1355

01:17:41,689 --> 01:17:39,900

and this view right here in fact she's

1356

01:17:47,390 --> 01:17:41,699

shooting it right now

1357

01:17:51,950 --> 01:17:49,669

I'm sure it's a challenge to

1358

01:17:53,689 --> 01:17:51,960

not only maintain that steady shot in

1359

01:17:55,130 --> 01:17:53,699

that very small hatch but she also has

1360

01:17:56,630 --> 01:17:55,140

to maneuver around the team making sure

1361

01:17:59,090 --> 01:17:56,640

that she doesn't interfere with the

1362

01:18:00,410 --> 01:17:59,100

operations exactly yeah so there you can

1363

01:18:02,870 --> 01:18:00,420

see the seats moving so they're in

1364

01:18:04,550 --> 01:18:02,880

procedure 4.100 on the display so that's

1365

01:18:06,830 --> 01:18:04,560

what Woody was interacting with there a

1366

01:18:08,209 --> 01:18:06,840

second ago that Comcheck they did before

1367

01:18:10,010 --> 01:18:08,219

was just checking the Hardline

1368

01:18:11,689 --> 01:18:10,020

Communications so their umbilicals

1369

01:18:13,149 --> 01:18:11,699

through the spacecraft through the

1370

01:18:16,130 --> 01:18:13,159

umbilical to the ground

1371

01:18:17,870 --> 01:18:16,140

then they are now in 4.100 for seat

1372

01:18:19,189 --> 01:18:17,880

rotation so you saw him talking before

1373

01:18:21,709 --> 01:18:19,199

Steve said they're ready that was just

1374

01:18:23,689 --> 01:18:21,719

making sure they verified visually that

1375

01:18:25,490 --> 01:18:23,699

all their arms and everything was clear

1376

01:18:27,110 --> 01:18:25,500

of the translation path of the seats you

1377

01:18:28,970 --> 01:18:27,120

don't want anything getting pinched

1378

01:18:30,169 --> 01:18:28,980

and then what they're watching now on

1379

01:18:32,030 --> 01:18:30,179

the displays is What's called the attack

1380

01:18:34,250 --> 01:18:32,040

count which is the motor that's running

1381

01:18:35,270 --> 01:18:34,260

the seats to see if anything is out of

1382

01:18:36,890 --> 01:18:35,280

limits

1383

01:18:37,910 --> 01:18:36,900

looks like was a good rotation and

1384

01:18:41,090 --> 01:18:37,920

they'll probably report that here

1385

01:18:43,669 --> 01:18:41,100

shortly from the core

1386

01:18:45,050 --> 01:18:43,679

and you can see make a cool motor you

1387

01:18:48,050 --> 01:18:45,060

can't actually hear it you know you can

1388

01:18:51,470 --> 01:18:48,060

it's more like Dragon SpaceX seats in

1389

01:18:51,480 --> 01:18:55,430

SpaceX tracking copies

1390

01:18:58,430 --> 01:18:57,050

now you can see a great view underneath

1391

01:18:59,570 --> 01:18:58,440

their seats of what else they're taking

1392

01:19:01,910 --> 01:18:59,580

up to the space station with them so

1393

01:19:04,070 --> 01:19:01,920

those Central ones there those are cold

1394

01:19:06,410 --> 01:19:04,080

lockers so definitely some kind of

1395

01:19:07,729 --> 01:19:06,420

Science in there that that has to be

1396

01:19:11,149 --> 01:19:07,739

preserved at a particular temperature

1397

01:19:12,590 --> 01:19:11,159

the left side uh the F2 look like it's

1398

01:19:14,090 --> 01:19:12,600

some kind of cargo with a forward two

1399

01:19:16,130 --> 01:19:14,100

which we can't quite see it's Survival

1400

01:19:19,490 --> 01:19:16,140

equipment that'd be the red and then the

1401

01:19:21,350 --> 01:19:19,500

right side looks like uh the semi larger

1402

01:19:24,229 --> 01:19:21,360

piece of cargo we call all those things

1403

01:19:26,209 --> 01:19:24,239

ctbs uh those containers

1404

01:19:29,209 --> 01:19:26,219

um and they are referred to by the size

1405

01:19:40,010 --> 01:19:29,219

your gopher section two suit leak check

1406

01:19:44,570 --> 01:19:42,470

so that bag is red for a reason right so

1407

01:19:47,090 --> 01:19:44,580

the easy spot exactly

1408

01:19:48,770 --> 01:19:47,100

so uh spot that real quick the timeline

1409

01:19:49,669 --> 01:19:48,780

so they have two displays up well three

1410

01:19:51,770 --> 01:19:49,679

displays but the two they're probably

1411

01:19:54,350 --> 01:19:51,780

looking at uh there's one's called a a

1412

01:19:56,510 --> 01:19:54,360

timeline or event details we call it um

1413

01:19:58,490 --> 01:19:56,520

normally start be ready for suit leak

1414

01:20:00,709 --> 01:19:58,500

checks about 214 from launch so again

1415

01:20:02,510 --> 01:20:00,719

running ahead which is good uh you heard

1416

01:20:04,010 --> 01:20:02,520

Arthur ask him or the core asked him to

1417

01:20:05,330 --> 01:20:04,020

get ready for the suit League check so

1418

01:20:07,669 --> 01:20:05,340

you saw him just pull their visors down

1419

01:20:10,189 --> 01:20:07,679

uh Steve's talking to him right now

1420

01:20:12,050 --> 01:20:10,199

about the reminder and remains still

1421

01:20:13,729 --> 01:20:12,060

um there is a way for the crew to stop a

1422

01:20:14,990 --> 01:20:13,739

leak check and the reason you would do

1423

01:20:16,610 --> 01:20:15,000

that because as it's pressurizing let's

1424

01:20:18,110 --> 01:20:16,620

say you got a hot spot in the suit that

1425

01:20:20,270 --> 01:20:18,120

pressure bladder for you know there's

1426

01:20:21,649 --> 01:20:20,280

folds and that so as it inflates it

1427

01:20:23,330 --> 01:20:21,659

could poke into the back of your knee

1428

01:20:26,209 --> 01:20:23,340

elbow a joint and so there is the

1429

01:20:28,970 --> 01:20:26,219

ability for the the crew to stop that uh

1430

01:20:30,470 --> 01:20:28,980

to if someone's experiencing pain

1431

01:20:32,209 --> 01:20:30,480

come in there and make the adjustment

1432

01:20:34,550 --> 01:20:32,219

exactly yep

1433

01:20:36,590 --> 01:20:34,560

and so they'll leave the door open right

1434

01:20:39,470 --> 01:20:36,600

reason yep

1435

01:20:40,669 --> 01:20:39,480

yeah and also if they're the suit fails

1436

01:20:42,290 --> 01:20:40,679

the league check they've got some

1437

01:20:43,370 --> 01:20:42,300

components up in the white room there

1438

01:20:45,950 --> 01:20:43,380

where they could come try to fix

1439

01:20:47,570 --> 01:20:45,960

something but the reason they did SpaceX

1440

01:20:52,550 --> 01:20:47,580

dragons hair is complete and you're

1441

01:20:57,590 --> 01:20:54,890

SpaceX copies you are go for section

1442

01:20:59,810 --> 01:20:57,600

three suit League check

1443

01:21:01,430 --> 01:20:59,820

and we are go for section three suit

1444

01:21:02,810 --> 01:21:01,440

League checked that's in work

1445

01:21:04,729 --> 01:21:02,820

so the whole reason they do the leak

1446

01:21:07,189 --> 01:21:04,739

checks in the suit room is to find any

1447

01:21:08,570 --> 01:21:07,199

gross malfunction uh and know that the

1448

01:21:10,610 --> 01:21:08,580

suit is fine so if there were something

1449

01:21:12,110 --> 01:21:10,620

between the suit ribbon now you would

1450

01:21:13,729 --> 01:21:12,120

suspect it was probably a zipper just

1451
01:21:18,110 --> 01:21:13,739
not being fully sealed versus something

1452
01:21:22,010 --> 01:21:19,970
so right now we're seeing those suits

1453
01:21:23,209 --> 01:21:22,020
inflate uh not quite yet so we'll see

1454
01:21:24,410 --> 01:21:23,219
them yeah the way you'll know is you'll

1455
01:21:25,910 --> 01:21:24,420
see their arms kind of go out like

1456
01:21:27,290 --> 01:21:25,920
zombies eventually which they're just

1457
01:21:29,810 --> 01:21:27,300
kind of they're stretching out right now

1458
01:21:31,970 --> 01:21:29,820
they're looking at what's called a suit

1459
01:21:32,990 --> 01:21:31,980
transducer so they have they're wanting

1460
01:21:51,950 --> 01:21:33,000
to make sure it's in zero you'll hear

1461
01:21:56,149 --> 01:21:54,530
yep and now it looks like based on where

1462
01:21:58,130 --> 01:21:56,159
Andre's head is at in the helmet looks

1463
01:22:00,590 --> 01:21:58,140

like it is inflating now as you can see

1464

01:22:02,990 --> 01:22:00,600

here you can see that the neck ring kind

1465

01:22:05,149 --> 01:22:03,000

of expanding which is why on the ground

1466

01:22:06,709 --> 01:22:05,159

uh you see that helmet down on the top

1467

01:22:08,870 --> 01:22:06,719

of their head but now once inflated you

1468

01:22:10,130 --> 01:22:08,880

can see why the suit is built that way

1469

01:22:11,930 --> 01:22:10,140

in restrained as you can see now you can

1470

01:22:14,030 --> 01:22:11,940

see his nose before he can see his mouth

1471

01:22:15,770 --> 01:22:14,040

so it pushes the helmet up a little bit

1472

01:22:18,590 --> 01:22:15,780

right yep

1473

01:22:19,729 --> 01:22:18,600

and you can see Woody and Andre's hands

1474

01:22:28,430 --> 01:22:19,739

kind of you can see their knees look way

1475

01:22:32,750 --> 01:22:31,010

and so they have an indication of what

1476

01:22:34,970 --> 01:22:32,760

the suit pressure in each seat is at by

1477

01:22:38,149 --> 01:22:34,980

by individual and they're waiting to see

1478

01:22:39,950 --> 01:22:38,159

if it holds steady at full pressure

1479

01:22:41,270 --> 01:22:39,960

and you can see at this point the last

1480

01:22:42,649 --> 01:22:41,280

basically 30 seconds are kind of

1481

01:22:44,330 --> 01:22:42,659

critical you try not to move is if you

1482

01:22:45,470 --> 01:22:44,340

move that can actually throw off the

1483

01:22:47,270 --> 01:22:45,480

reading

1484

01:22:49,910 --> 01:22:47,280

and so at the same time that they're

1485

01:22:51,350 --> 01:22:49,920

performing these suit leak checks new

1486

01:22:54,770 --> 01:22:51,360

for this mission

1487

01:22:57,350 --> 01:22:54,780

SpaceX is also right now performing the

1488

01:23:00,050 --> 01:22:57,360

side hatch inspection this is part of

1489

01:23:02,390 --> 01:23:00,060

them doing those operations in parallel

1490

01:23:05,450 --> 01:23:02,400

that I mentioned earlier which will save

1491

01:23:07,070 --> 01:23:05,460

them time and build time into the margin

1492

01:23:08,870 --> 01:23:07,080

exactly just in case they need it yeah

1493

01:23:10,490 --> 01:23:08,880

wherever you can buy margin because

1494

01:23:12,649 --> 01:23:10,500

these are all instantaneous launch

1495

01:23:13,910 --> 01:23:12,659

Windows meaning if there are problems

1496

01:23:15,530 --> 01:23:13,920

you know unlike a shuttle launch where

1497

01:23:17,630 --> 01:23:15,540

there's built-in holes this one is a

1498

01:23:19,910 --> 01:23:17,640

continuously running clock so anytime

1499

01:23:22,310 --> 01:23:19,920

you can buy yourself margin for having

1500

01:23:34,729 --> 01:23:22,320

problems that that's great our t0

1501

01:23:39,890 --> 01:23:37,370

the range continues to report no issues

1502

01:23:42,470 --> 01:23:39,900

so we're looking good there also Raja

1503

01:23:45,229 --> 01:23:42,480

the weather forecast continues to be

1504

01:23:48,110 --> 01:23:45,239

acceptable take a look at this just like

1505

01:23:50,990 --> 01:23:48,120

on Sunday only a five percent chance of

1506

01:23:53,330 --> 01:23:51,000

violation for weather the only concern

1507

01:23:56,209 --> 01:23:53,340

would be a flight through precipitation

1508

01:23:59,570 --> 01:23:56,219

which would come in the form of a cloud

1509

01:24:01,370 --> 01:23:59,580

next dragon four nominal suits

1510

01:24:03,590 --> 01:24:01,380

well there you had the four good suit

1511

01:24:05,330 --> 01:24:03,600

League checks SpaceX copies and curse

1512

01:24:07,490 --> 01:24:05,340

closeout team will now perform final

1513

01:24:09,950 --> 01:24:07,500

closeout steps and exit the capsule

1514

01:24:11,870 --> 01:24:09,960

proceed to section four

1515

01:24:14,510 --> 01:24:11,880

side hatch close and Report when ready

1516

01:24:19,070 --> 01:24:14,520

to close the hatch additionally stand by

1517

01:24:24,169 --> 01:24:22,790

hopping for section four Assad hash

1518

01:24:26,270 --> 01:24:24,179

it's good to hear the good suits and

1519

01:24:29,270 --> 01:24:26,280

there we see them already well underway

1520

01:24:31,070 --> 01:24:29,280

with that side hatch inspection

1521

01:24:34,189 --> 01:24:31,080

if so I'd expect the crew will pop their

1522

01:24:36,530 --> 01:24:34,199

advisors back open here shortly

1523

01:24:37,850 --> 01:24:36,540

and then uh the core mentions you can

1524

01:24:39,229 --> 01:24:37,860

see I'm opening now and you can

1525

01:24:40,850 --> 01:24:39,239

definitely see it's a good example there

1526

01:24:42,229 --> 01:24:40,860

now you can see Andre with the way his

1527

01:24:43,490 --> 01:24:42,239

helmet sits when it's depressurized you

1528

01:24:45,110 --> 01:24:43,500

can see all the way down to his chins

1529

01:24:46,669 --> 01:24:45,120

you can see how that the suit expands

1530

01:24:48,770 --> 01:24:46,679

when it's inflated

1531

01:24:51,110 --> 01:24:48,780

want to wrap up the weather

1532

01:24:53,689 --> 01:24:51,120

before we get too far away from it only

1533

01:24:57,169 --> 01:24:53,699

a five percent chance of violation for

1534

01:25:01,130 --> 01:24:57,179

launch from here and SpaceX Dragon crew

1535

01:25:05,330 --> 01:25:02,990

so the crew's ready for the side hatch

1536

01:25:07,430 --> 01:25:05,340

to be closed but the closeout crew

1537

01:25:11,390 --> 01:25:07,440

continues to inspect and document SpaceX

1538

01:25:15,890 --> 01:25:13,550

the launch Team still monitoring the

1539

01:25:18,169 --> 01:25:15,900

weather in the ascent corridor

1540

01:25:22,370 --> 01:25:18,179

and I understand from our team at JSC

1541

01:25:27,410 --> 01:25:24,890

we're green to go at the moment but they

1542

01:25:29,630 --> 01:25:27,420

are monitoring that closely of course

1543

01:25:32,689 --> 01:25:29,640

this is the winds and the Sea States

1544

01:25:35,510 --> 01:25:32,699

along the ascent Corridor should

1545

01:25:37,550 --> 01:25:35,520

now for some reason Dragon need to abort

1546

01:25:40,430 --> 01:25:37,560

off the top of the Falcon 9 it would

1547

01:25:42,470 --> 01:25:40,440

need to splash down somewhere along the

1548

01:25:44,570 --> 01:25:42,480

Eastern Seaboard and you got to have

1549

01:25:46,550 --> 01:25:44,580

good weather conditions because those

1550

01:25:48,709 --> 01:25:46,560

astronauts will be landing in the ocean

1551
01:25:51,350 --> 01:25:48,719
in the case of emergency and they could

1552
01:25:53,750 --> 01:25:51,360
be there for an hour or two before they

1553
01:25:55,550 --> 01:25:53,760
are rescued from the capsule and you

1554
01:25:57,410 --> 01:25:55,560
want to have good sea States for any

1555
01:25:59,030 --> 01:25:57,420
kind of rescue to happen exactly yeah so

1556
01:26:01,010 --> 01:25:59,040
that's the key thing and they can

1557
01:26:03,470 --> 01:26:01,020
somewhat sometimes be frustrating if the

1558
01:26:05,149 --> 01:26:03,480
weather is beautiful here but uh bad

1559
01:26:06,649 --> 01:26:05,159
along the Eastern Seaboard and it's not

1560
01:26:08,870 --> 01:26:06,659
just unique to Dragon actually when I

1561
01:26:11,270 --> 01:26:08,880
was talking to Steve about this scrub he

1562
01:26:13,729 --> 01:26:11,280
so you mentioned he flew on sts-126 and

1563
01:26:15,290 --> 01:26:13,739

that's just yes 127 which is the

1564

01:26:17,390 --> 01:26:15,300

following shuttle flight he was the lead

1565

01:26:18,770 --> 01:26:17,400

astronaut closeout crew and they had six

1566

01:26:21,410 --> 01:26:18,780

scrubs and two of those where the

1567

01:26:23,990 --> 01:26:21,420

weather was beautiful here but not along

1568

01:26:25,729 --> 01:26:24,000

not along the ascent Corridor but yeah

1569

01:26:27,350 --> 01:26:25,739

it's a very it's important for both the

1570

01:26:29,450 --> 01:26:27,360

capsule and for the recovery teams as

1571

01:26:30,950 --> 01:26:29,460

well so if the the winds and waves are

1572

01:26:32,030 --> 01:26:30,960

out of limits that can be a problem for

1573

01:26:33,770 --> 01:26:32,040

the capsule Landing in the water

1574

01:26:36,169 --> 01:26:33,780

specifically the What's called the back

1575

01:26:37,310 --> 01:26:36,179

shell or the bottom of the capsule and

1576

01:26:39,770 --> 01:26:37,320

then the other problem is yeah actually

1577

01:26:41,090 --> 01:26:39,780

getting a recovery team to them if

1578

01:26:43,010 --> 01:26:41,100

you've got really bad weather conditions

1579

01:26:44,810 --> 01:26:43,020

it's dangerous for them as well so we

1580

01:26:46,970 --> 01:26:44,820

try to protect you need to protect for

1581

01:26:49,970 --> 01:26:46,980

that entire case and that whole Corridor

1582

01:26:52,430 --> 01:26:49,980

and we also protect for uh some

1583

01:26:54,229 --> 01:26:52,440

trajectory deviations if you will so

1584

01:26:56,209 --> 01:26:54,239

um you know usually things are pretty

1585

01:26:58,790 --> 01:26:56,219

much right down the middle but we also

1586

01:27:00,530 --> 01:26:58,800

build in errors to that trajectory so

1587

01:27:02,750 --> 01:27:00,540

you actually have to build out a Zone

1588

01:27:05,030 --> 01:27:02,760

along the ascent Corridor it's not just

1589

01:27:06,169 --> 01:27:05,040

a straight line and so that adds even

1590

01:27:08,510 --> 01:27:06,179

more surface area and when you're

1591

01:27:09,770 --> 01:27:08,520

talking the ocean there's a lot of a lot

1592

01:27:12,110 --> 01:27:09,780

of weather there's a lot of ocean out

1593

01:27:15,229 --> 01:27:12,120

there yeah it is a large area of weather

1594

01:27:17,629 --> 01:27:15,239

that you need to be good to go before

1595

01:27:19,430 --> 01:27:17,639

you launch which is much different than

1596

01:27:21,530 --> 01:27:19,440

uncrewed launches and you're not

1597

01:27:23,570 --> 01:27:21,540

launching people you don't have to

1598

01:27:25,790 --> 01:27:23,580

monitor the weather to the extent that

1599

01:27:28,610 --> 01:27:25,800

you do on a night like tonight anytime

1600

01:27:32,390 --> 01:27:28,620

you're launching astronauts so it is a

1601

01:27:34,310 --> 01:27:32,400

it is a tighter needle to thread

1602

01:27:36,290 --> 01:27:34,320

yeah it is an impressive array of

1603

01:27:38,990 --> 01:27:36,300

recovery forces that are pre-positioned

1604

01:27:41,450 --> 01:27:39,000

uh to support this and so there's Navy

1605

01:27:43,729 --> 01:27:41,460

ships there's Air Force assets uh pair

1606

01:27:45,169 --> 01:27:43,739

rescue Personnel basically not just

1607

01:27:46,970 --> 01:27:45,179

along the east coast but on the west

1608

01:27:49,310 --> 01:27:46,980

coast out of Hickam Air Force Base in

1609

01:27:51,410 --> 01:27:49,320

Hawaii there's C-17 so pretty much it's

1610

01:27:54,169 --> 01:27:51,420

a worldwide posture other nations

1611

01:27:56,689 --> 01:27:54,179

volunteer to help so uh when you when

1612

01:27:58,430 --> 01:27:56,699

you hear them talk about the abort calls

1613

01:28:00,530 --> 01:27:58,440

on the way up they'll call Shannon which

1614

01:28:03,830 --> 01:28:00,540

is actually in Ireland so we have help

1615

01:28:06,950 --> 01:28:03,840

even from European Partners so it is

1616

01:28:08,510 --> 01:28:06,960

quite the choreographed effort to make

1617

01:28:10,729 --> 01:28:08,520

sure that they're safe all along the

1618

01:28:13,189 --> 01:28:10,739

ascent trajectory Shannon's a good Irish

1619

01:28:17,629 --> 01:28:13,199

name right for uh well yeah so on crew

1620

01:28:22,910 --> 01:28:19,669

and there's the Good Ship Shannon as

1621

01:28:28,189 --> 01:28:24,770

so you can see uh they're taking a look

1622

01:28:29,390 --> 01:28:28,199

at the hatch seals on the hatch side so

1623

01:28:30,709 --> 01:28:29,400

they already looked at the spacecraft

1624

01:28:32,450 --> 01:28:30,719

side while they're getting in that's why

1625

01:28:33,709 --> 01:28:32,460

you see Ninja 35 kind of holding in

1626

01:28:35,390 --> 01:28:33,719

position and someone tucked behind there

1627

01:28:36,830 --> 01:28:35,400

they're looking at the hatch side seals

1628

01:28:38,330 --> 01:28:36,840

as part of the inspection before they

1629

01:28:40,610 --> 01:28:38,340

close it up

1630

01:28:41,570 --> 01:28:40,620

and while they take a look at that we

1631

01:28:44,390 --> 01:28:41,580

want to

1632

01:28:46,430 --> 01:28:44,400

talk a little bit about the beginning of

1633

01:28:48,770 --> 01:28:46,440

this program and the history that was

1634

01:28:51,290 --> 01:28:48,780

made as well as

1635

01:28:54,530 --> 01:28:51,300

quite the honor that was bestowed on

1636

01:28:56,030 --> 01:28:54,540

raja's fellow astronauts we're launching

1637

01:28:58,370 --> 01:28:56,040

of course American astronauts on

1638

01:29:00,890 --> 01:28:58,380

American Rockets from American soil and

1639

01:29:02,810 --> 01:29:00,900

it all began with those two Trailblazers

1640

01:29:05,510 --> 01:29:02,820

of the commercial crew program Bob and

1641

01:29:07,790 --> 01:29:05,520

Doug who recently received the highest

1642

01:29:10,430 --> 01:29:07,800

civilian honor and Astronaut Kennedy

1643

01:29:12,110 --> 01:29:10,440

Dragon SpaceX closeout team is taking

1644

01:29:14,209 --> 01:29:12,120

final steps in prep for side hatch

1645

01:29:17,030 --> 01:29:14,219

closure standby for transition to pad

1646

01:29:22,010 --> 01:29:17,040

hatch closed and please ensure that all

1647

01:29:26,030 --> 01:29:23,750

it's my great honor

1648

01:29:29,870 --> 01:29:26,040

to award you both the Congressional

1649

01:29:31,669 --> 01:29:29,880

space Medal of Honor in January vice

1650

01:29:33,950 --> 01:29:31,679

president Kamala Harris spoke to a

1651

01:29:35,990 --> 01:29:33,960

packed room at the White House about the

1652

01:29:39,229 --> 01:29:36,000

dedication of NASA astronauts Doug

1653

01:29:41,270 --> 01:29:39,239

Hurley and Bob binkin Bob and Doug

1654

01:29:43,669 --> 01:29:41,280

represent the best of our nation

1655

01:29:45,709 --> 01:29:43,679

there's no question about it NASA

1656

01:29:48,290 --> 01:29:45,719

selected both men to be astronauts for

1657

01:29:50,209 --> 01:29:48,300

the space shuttle program in 2000 but

1658

01:29:53,390 --> 01:29:50,219

when the shuttle program ended 11 years

1659

01:29:55,790 --> 01:29:53,400

later Doug and Bob's work did not

1660

01:29:58,070 --> 01:29:55,800

NASA collaborated with the private

1661

01:30:01,070 --> 01:29:58,080

sector to build the next generation of

1662

01:30:03,350 --> 01:30:01,080

spacecraft every part of the capsule

1663

01:30:07,070 --> 01:30:03,360

from flight controls and emergency

1664

01:30:10,669 --> 01:30:07,080

procedures to computer displays and

1665

01:30:14,030 --> 01:30:10,679

cockpit layout all of that shaped by Bob

1666

01:30:17,030 --> 01:30:14,040

and Doug's Decades of know-how

1667

01:30:19,610 --> 01:30:17,040

and in May of 2020 the SpaceX crew

1668

01:30:22,729 --> 01:30:19,620

Dragon was ready to soar

1669

01:30:24,590 --> 01:30:22,739

Bob and Doug returned to the Kennedy

1670

01:30:26,629 --> 01:30:24,600

Space Center

1671

01:30:29,689 --> 01:30:26,639

they suited up

1672

01:30:32,870 --> 01:30:29,699

they waved to their families

1673

01:30:34,669 --> 01:30:32,880

and they rode an elevator up nearly 20

1674

01:30:37,669 --> 01:30:34,679

stories

1675

01:30:40,970 --> 01:30:37,679

they strapped in to their seats and

1676
01:30:43,610 --> 01:30:40,980
waited as the tanks beneath them filled

1677
01:30:45,649 --> 01:30:43,620
with tens of thousands of gallons of

1678
01:30:46,729 --> 01:30:45,659
fuel and then

1679
01:30:51,890 --> 01:30:46,739
three

1680
01:30:55,360 --> 01:30:51,900
two one zero ignition liftoff of the

1681
01:30:59,570 --> 01:30:55,370
Falcon line and crew dragons dog

1682
01:31:04,610 --> 01:31:02,149
demo 2 was the first crude flight for

1683
01:31:08,090 --> 01:31:04,620
NASA's commercial crew program ushering

1684
01:31:10,970 --> 01:31:08,100
in a new era of human space flight

1685
01:31:13,550 --> 01:31:10,980
and now the names Doug Hurley and Bob

1686
01:31:16,070 --> 01:31:13,560
bikin have been added to an elite list

1687
01:31:18,169 --> 01:31:16,080
prior to the ceremony the Congressional

1688
01:31:20,629 --> 01:31:18,179

space Medal of Honor had only been given

1689

01:31:23,629 --> 01:31:20,639

to 28 people astronauts like Neil

1690

01:31:26,090 --> 01:31:23,639

Armstrong and John Glenn

1691

01:31:28,010 --> 01:31:26,100

we're following in their footsteps and

1692

01:31:30,470 --> 01:31:28,020

you know so it's just an incredible

1693

01:31:32,209 --> 01:31:30,480

incredible incredible honor it was

1694

01:31:34,250 --> 01:31:32,219

humbling to be a part of the mission you

1695

01:31:36,470 --> 01:31:34,260

know we got to be the smiling faces on

1696

01:31:39,410 --> 01:31:36,480

the pointy end of a rocket ship because

1697

01:31:41,510 --> 01:31:39,420

of their bravery missions like crew six

1698

01:31:44,450 --> 01:31:41,520

are happening today

1699

01:31:47,570 --> 01:31:44,460

Bob and Doug together

1700

01:31:49,669 --> 01:31:47,580

have written the first page

1701

01:31:51,290 --> 01:31:49,679

of a new chapter

1702

01:31:59,870 --> 01:31:51,300

in the history

1703

01:32:03,530 --> 01:32:02,330

well congratulations to both Bob and

1704

01:32:06,530 --> 01:32:03,540

Doug and

1705

01:32:09,290 --> 01:32:06,540

a well-deserved honor Doug Hurley

1706

01:32:11,090 --> 01:32:09,300

recently retiring from the astronaut

1707

01:32:13,490 --> 01:32:11,100

Corps Bob benkin

1708

01:32:16,129 --> 01:32:13,500

still cranking along in fact he came out

1709

01:32:19,490 --> 01:32:16,139

and was an astronaut co-host sitting in

1710

01:32:22,070 --> 01:32:19,500

your seat Raja for crew five

1711

01:32:23,990 --> 01:32:22,080

and it's a

1712

01:32:25,310 --> 01:32:24,000

it's a great contribution I like the

1713

01:32:27,169 --> 01:32:25,320

sound bite where he said you know the

1714

01:32:29,510 --> 01:32:27,179

smiling faces on the pointy end of a

1715

01:32:31,370 --> 01:32:29,520

rocket ship but they often you know gave

1716

01:32:35,030 --> 01:32:31,380

a lot of credit to

1717

01:32:37,090 --> 01:32:35,040

those around them who helped build

1718

01:32:40,010 --> 01:32:37,100

build the rocket build the spacecraft

1719

01:32:42,290 --> 01:32:40,020

train them get them

1720

01:32:45,110 --> 01:32:42,300

to where they needed to be in order to

1721

01:32:46,790 --> 01:32:45,120

have the confidence to ride a space

1722

01:32:48,649 --> 01:32:46,800

vehicle for the very first time and make

1723

01:32:50,090 --> 01:32:48,659

that historic flight yeah they were they

1724

01:32:53,209 --> 01:32:50,100

were really leaders of the team there's

1725

01:32:55,189 --> 01:32:53,219

no doubt about that and I I can't repeat

1726

01:32:57,050 --> 01:32:55,199

enough what the vice president said like

1727

01:32:58,970 --> 01:32:57,060

it literally is a new era of space

1728

01:33:00,830 --> 01:32:58,980

flight I mean you know Kathy leaders

1729

01:33:02,870 --> 01:33:00,840

mentioned like here we are on cruise six

1730

01:33:05,629 --> 01:33:02,880

who would have thought that then I mean

1731

01:33:07,430 --> 01:33:05,639

and just the way they designed that team

1732

01:33:09,770 --> 01:33:07,440

they're still things in training it's

1733

01:33:11,330 --> 01:33:09,780

very common to hear even as we talk

1734

01:33:12,830 --> 01:33:11,340

about Starship design stuff like that

1735

01:33:14,330 --> 01:33:12,840

for lunar lander with SpaceX but

1736

01:33:16,729 --> 01:33:14,340

definitely during dragon training flows

1737

01:33:17,870 --> 01:33:16,739

of like why is the display this way or

1738

01:33:19,250 --> 01:33:17,880

how you know this seems like a great

1739

01:33:23,030 --> 01:33:19,260

solution how do we come up with that

1740

01:33:25,610 --> 01:33:23,040

like oh Bob and Doug and they were uh so

1741

01:33:27,169 --> 01:33:25,620

inclusive on the in training as well I

1742

01:33:29,030 --> 01:33:27,179

distinctly remember getting to come out

1743

01:33:30,530 --> 01:33:29,040

on some trips and and Doug and Bob

1744

01:33:32,450 --> 01:33:30,540

having me sit in the capsule with them

1745

01:33:33,950 --> 01:33:32,460

and them taking the time not only

1746

01:33:35,870 --> 01:33:33,960

they're doing the sin but also showing

1747

01:33:37,370 --> 01:33:35,880

me like you know this is what this means

1748

01:33:39,470 --> 01:33:37,380

and this is why this display is doing

1749

01:33:42,050 --> 01:33:39,480

that so I mean they brought everyone one

1750

01:33:44,390 --> 01:33:42,060

along with them um and so I yeah it

1751

01:33:46,070 --> 01:33:44,400

wasn't there being very humble saying

1752

01:33:48,590 --> 01:33:46,080

yeah they they are riding the rocket but

1753

01:33:51,129 --> 01:33:48,600

they they brought that team along and um

1754

01:33:53,810 --> 01:33:51,139

they spent many many years before demo 2

1755

01:33:55,850 --> 01:33:53,820

developing the work working with SpaceX

1756

01:33:57,950 --> 01:33:55,860

working with the NASA teams I mean over

1757

01:34:00,530 --> 01:33:57,960

a decade of work to get to where they

1758

01:34:02,330 --> 01:34:00,540

were and so very well deserved and and

1759

01:34:04,430 --> 01:34:02,340

couldn't be prouder of them and they

1760

01:34:06,410 --> 01:34:04,440

have left a lasting mark on the

1761

01:34:08,870 --> 01:34:06,420

astronaut office on the agency and

1762

01:34:10,610 --> 01:34:08,880

really on the nation I mean we have now

1763

01:34:12,229 --> 01:34:10,620

an entire industry that that didn't

1764

01:34:15,050 --> 01:34:12,239

exist you know before this commercial

1765

01:34:17,450 --> 01:34:15,060

crew program I mean it's it's quite

1766

01:34:19,250 --> 01:34:17,460

amazing when you look at uh like going

1767

01:34:20,510 --> 01:34:19,260

to SpaceX going to Boeing going these

1768

01:34:22,310 --> 01:34:20,520

places they're doing these programs and

1769

01:34:24,290 --> 01:34:22,320

seeing all these Engineers that have a

1770

01:34:26,870 --> 01:34:24,300

place that they're proud to go to after

1771

01:34:29,030 --> 01:34:26,880

college and want to go to it's inspiring

1772

01:34:30,890 --> 01:34:29,040

um and yeah it's it is an exciting time

1773

01:34:32,629 --> 01:34:30,900

coming down here to the cape you just

1774

01:34:35,510 --> 01:34:32,639

see the buzz down here there's so much

1775

01:34:37,669 --> 01:34:35,520

going on and they kicked all this off it

1776

01:34:40,070 --> 01:34:37,679

there is a launch now every six days

1777

01:34:42,530 --> 01:34:40,080

here at America's Spaceport and you're

1778

01:34:43,850 --> 01:34:42,540

you're absolutely right Raja you know

1779

01:34:47,209 --> 01:34:43,860

it's a

1780

01:34:49,070 --> 01:34:47,219

we've had never been this busy yeah

1781

01:34:51,350 --> 01:34:49,080

um you know aiming for more than a

1782

01:34:53,990 --> 01:34:51,360

hundred launches this year just SpaceX

1783

01:34:56,750 --> 01:34:54,000

alone so

1784

01:34:59,149 --> 01:34:56,760

an incredible amount of activity I like

1785

01:35:00,649 --> 01:34:59,159

from the story that you just told that

1786

01:35:02,930 --> 01:35:00,659

they took the time with you the

1787

01:35:05,330 --> 01:35:02,940

commander for crew 3 even though your

1788

01:35:07,370 --> 01:35:05,340

mission was three missions away from

1789

01:35:08,570 --> 01:35:07,380

where there their theirs was right well

1790

01:35:11,090 --> 01:35:08,580

there might have been an ulterior motive

1791

01:35:12,590 --> 01:35:11,100

so so well I don't know Doug probably

1792

01:35:14,450 --> 01:35:12,600

doesn't want me to tell you this but so

1793

01:35:17,030 --> 01:35:14,460

I was I had by he's not here he's not

1794

01:35:20,030 --> 01:35:17,040

here so my phone fell out of my pocket

1795

01:35:22,129 --> 01:35:20,040

while I was in the capsule uh okay yeah

1796

01:35:23,570 --> 01:35:22,139

and so I then owed some adult beverages

1797

01:35:25,850 --> 01:35:23,580

to the crew that had to fish that thing

1798

01:35:27,470 --> 01:35:25,860

out but and so I got quite a bit of hard

1799

01:35:29,930 --> 01:35:27,480

time come to find out later that that

1800

01:35:32,030 --> 01:35:29,940

had happened to one Doug Hurley a little

1801

01:35:33,830 --> 01:35:32,040

while earlier so I think maybe he was

1802

01:35:35,770 --> 01:35:33,840

just trying to Swig that Spotlight to me

1803

01:35:37,910 --> 01:35:35,780

so hey that's my theory

1804

01:35:40,910 --> 01:35:37,920

he didn't give you an extra hard time

1805

01:35:43,129 --> 01:35:40,920

did he uh he might have oh

1806

01:35:44,629 --> 01:35:43,139

yeah but yeah it was awesome though I

1807

01:35:46,070 --> 01:35:44,639

mean it just it was uh and you're

1808

01:35:49,610 --> 01:35:46,080

exactly right that that kind of

1809

01:35:51,410 --> 01:35:49,620

mentorship is exactly uh what we lean on

1810

01:35:52,910 --> 01:35:51,420

in our office we have a term called IAS

1811

01:35:54,470 --> 01:35:52,920

which are instructor astronauts and and

1812

01:35:56,810 --> 01:35:54,480

those two epitomize that bringing

1813

01:35:59,330 --> 01:35:56,820

bringing the whole core along with them

1814

01:36:01,430 --> 01:35:59,340

and and they had the lessons from

1815

01:36:02,629 --> 01:36:01,440

shuttle and you know what worked what

1816

01:36:05,570 --> 01:36:02,639

didn't work

1817

01:36:07,010 --> 01:36:05,580

um they'd seen soyuz over the years so I

1818

01:36:09,229 --> 01:36:07,020

mean they had such a wide breadth of

1819

01:36:12,050 --> 01:36:09,239

experience to to pull into what SpaceX

1820

01:36:14,090 --> 01:36:12,060

and NASA designed and while we're

1821

01:36:16,189 --> 01:36:14,100

speaking about Honors that come out of

1822

01:36:17,570 --> 01:36:16,199

the White House Raja you were nominated

1823

01:36:19,790 --> 01:36:17,580

by the president of the United States

1824

01:36:22,129 --> 01:36:19,800

for the appointment to grade of Air

1825

01:36:24,169 --> 01:36:22,139

Force Brigadier General it's a

1826

01:36:26,330 --> 01:36:24,179

nomination so you're still waiting uh

1827

01:36:27,709 --> 01:36:26,340

you know Senate uh approval but uh

1828

01:36:29,629 --> 01:36:27,719

congratulations thanks very much yeah

1829

01:36:31,250 --> 01:36:29,639

we're very humbled and proud to get to

1830

01:36:33,050 --> 01:36:31,260

continue serving uh in that next grade

1831

01:36:35,689 --> 01:36:33,060

so yeah excited to get to do that here

1832

01:36:37,729 --> 01:36:35,699

at Nasa NASA's military astronauts we

1833

01:36:39,649 --> 01:36:37,739

have a number of them here you being one

1834

01:36:42,830 --> 01:36:39,659

of them

1835

01:36:45,890 --> 01:36:42,840

very proud to have you both serving our

1836

01:36:49,850 --> 01:36:45,900

country and helping us explore space and

1837

01:36:54,470 --> 01:36:51,890

and I can see why this is an exciting

1838

01:36:56,810 --> 01:36:54,480

time certainly we talked about that and

1839

01:36:59,750 --> 01:36:56,820

we're taking a long look at uh the hatch

1840

01:37:03,050 --> 01:36:59,760

at the moment probably making some final

1841

01:37:03,950 --> 01:37:03,060

uploads of the seal there and as we do

1842

01:37:06,110 --> 01:37:03,960

that

1843

01:37:08,450 --> 01:37:06,120

let's check back in with our Courtney

1844

01:37:12,890 --> 01:37:08,460

Beasley at the Johnson Space Center in

1845

01:37:17,270 --> 01:37:15,470

thanks Daryl as we said earlier the team

1846

01:37:18,830 --> 01:37:17,280

here in Mission Control Houston is

1847

01:37:21,229 --> 01:37:18,840

actively monitoring the International

1848

01:37:22,729 --> 01:37:21,239

Space Station as they await dragon's

1849

01:37:24,169 --> 01:37:22,739

arrival the crew aboard the

1850

01:37:25,970 --> 01:37:24,179

International Space Station is currently

1851
01:37:28,490 --> 01:37:25,980
in a sleep period and they are scheduled

1852
01:37:30,110 --> 01:37:28,500
to wake up at midnight central time they

1853
01:37:31,790 --> 01:37:30,120
have completed a number of tasks to

1854
01:37:33,530 --> 01:37:31,800
prepare the station for crew 6 like

1855
01:37:36,050 --> 01:37:33,540
setting up tools to monitor dragon's

1856
01:37:38,090 --> 01:37:36,060
arrival and prepping the Sleep stations

1857
01:37:39,770 --> 01:37:38,100
for the new residents many of their

1858
01:37:41,990 --> 01:37:39,780
clothes and other belongings launched on

1859
01:37:43,189 --> 01:37:42,000
a previous cargo resupply Mission and

1860
01:37:45,050 --> 01:37:43,199
then back here in Mission Control

1861
01:37:46,729 --> 01:37:45,060
Houston flight director Judd freeling

1862
01:37:48,410 --> 01:37:46,739
and his team are in constant

1863
01:37:50,810 --> 01:37:48,420

communication with the SpaceX Mission

1864

01:37:52,610 --> 01:37:50,820

director for crew 6's launch to the

1865

01:37:54,709 --> 01:37:52,620

space station once we get into

1866

01:37:56,390 --> 01:37:54,719

integrated operations the NASA flight

1867

01:37:58,610 --> 01:37:56,400

director will be conducting this series

1868

01:38:01,070 --> 01:37:58,620

of go no-go polls at the predetermined

1869

01:38:03,290 --> 01:38:01,080

checkpoints for dragon's approach we'll

1870

01:38:05,570 --> 01:38:03,300

continue to follow along from here in

1871

01:38:06,950 --> 01:38:05,580

Mission Control Houston and during our

1872

01:38:09,050 --> 01:38:06,960

launch coverage we like to highlight

1873

01:38:10,970 --> 01:38:09,060

employees in the commercial crew program

1874

01:38:12,890 --> 01:38:10,980

who are working behind the scenes to

1875

01:38:14,930 --> 01:38:12,900

make today's Mission possible earlier

1876

01:38:17,330 --> 01:38:14,940

this week Kennedy's Jasmine Hopkins

1877

01:38:20,030 --> 01:38:17,340

spoke to NASA's recovery director for

1878

01:38:22,910 --> 01:38:20,040

crew 5. let's take a look

1879

01:38:25,370 --> 01:38:22,920

joining us now is NASA recovery director

1880

01:38:27,410 --> 01:38:25,380

Brian Berry thanks for being here of

1881

01:38:28,850 --> 01:38:27,420

course thank you of course so Brian we

1882

01:38:30,770 --> 01:38:28,860

understand that you are the NASA

1883

01:38:32,750 --> 01:38:30,780

recovery director for crew 5 but you've

1884

01:38:34,010 --> 01:38:32,760

actually done a lot of things for human

1885

01:38:35,870 --> 01:38:34,020

space flight can you tell us more about

1886

01:38:37,729 --> 01:38:35,880

that sure yeah that's right so I started

1887

01:38:40,669 --> 01:38:37,739

my career as a flight controller for the

1888

01:38:42,709 --> 01:38:40,679

ISS program my team was responsible for

1889

01:38:44,750 --> 01:38:42,719

maintenance on the space station so I

1890

01:38:47,330 --> 01:38:44,760

had the opportunity to work directly

1891

01:38:49,490 --> 01:38:47,340

with the astronauts train them on tools

1892

01:38:51,169 --> 01:38:49,500

and repair procedures so that was a lot

1893

01:38:52,610 --> 01:38:51,179

of fun and something I never thought I

1894

01:38:56,330 --> 01:38:52,620

would do when I was studying to be an

1895

01:38:58,430 --> 01:38:56,340

engineer after that I moved over to the

1896

01:39:00,830 --> 01:38:58,440

safety team and I was our safety rep for

1897

01:39:03,590 --> 01:39:00,840

the commercial crew program safety panel

1898

01:39:05,570 --> 01:39:03,600

so that was my first exposure to CCP and

1899

01:39:08,629 --> 01:39:05,580

I would go review the hazard reports for

1900

01:39:09,709 --> 01:39:08,639

Dragon and Starliner

1901

01:39:11,330 --> 01:39:09,719

um that was a pretty neat experience

1902

01:39:13,729 --> 01:39:11,340

also because I was able to work with Bob

1903

01:39:15,110 --> 01:39:13,739

and Doug prior to demo 2 and just kind

1904

01:39:16,910 --> 01:39:15,120

of work with them on the hazard reports

1905

01:39:19,970 --> 01:39:16,920

and get their perspective on on the risk

1906

01:39:22,970 --> 01:39:19,980

and the mission overall after that in

1907

01:39:24,649 --> 01:39:22,980

2020 I came out to commercial crew and I

1908

01:39:25,970 --> 01:39:24,659

worked for them directly now and I've

1909

01:39:29,410 --> 01:39:25,980

been doing launch and Recovery

1910

01:39:32,629 --> 01:39:29,420

operations since then on the launch Team

1911

01:39:35,510 --> 01:39:32,639

my role is to lead the rescue effort if

1912

01:39:38,209 --> 01:39:35,520

we need to if there's a pad emergency

1913

01:39:39,770 --> 01:39:38,219

egress or a paddle board the launch

1914

01:39:41,629 --> 01:39:39,780

rescue director calls in the rescue

1915

01:39:44,270 --> 01:39:41,639

forces so that's what I did for crew 5

1916

01:39:46,550 --> 01:39:44,280

launch last year and then as the

1917

01:39:47,930 --> 01:39:46,560

recovery director I lead the NASA

1918

01:39:50,390 --> 01:39:47,940

portion of the team that goes out on the

1919

01:39:52,010 --> 01:39:50,400

ship with SpaceX we bring out our flight

1920

01:39:53,510 --> 01:39:52,020

surgeons and we check out the crew and

1921

01:39:57,709 --> 01:39:53,520

we load them up on the helicopter and

1922

01:40:01,070 --> 01:39:59,390

how did your work as a flight controller

1923

01:40:02,270 --> 01:40:01,080

in Houston prepare you to be a NASA

1924

01:40:04,850 --> 01:40:02,280

recovery director

1925

01:40:06,649 --> 01:40:04,860

well in Houston work in the ISS

1926

01:40:08,450 --> 01:40:06,659

operations you know you see day in and

1927

01:40:10,010 --> 01:40:08,460

day out in the control center you get

1928

01:40:12,169 --> 01:40:10,020

the full feel of the six-month Mission

1929

01:40:14,810 --> 01:40:12,179

so you understand what the crew is going

1930

01:40:16,070 --> 01:40:14,820

through for that long of a mission and I

1931

01:40:18,890 --> 01:40:16,080

think I just kind of bring that crew

1932

01:40:21,229 --> 01:40:18,900

perspective of the ISS side to the CCP

1933

01:40:23,689 --> 01:40:21,239

program and so when it's time to bring

1934

01:40:26,030 --> 01:40:23,699

the crew home you know we we know we owe

1935

01:40:27,830 --> 01:40:26,040

them a smooth and speedy recovery so

1936

01:40:29,629 --> 01:40:27,840

that's our priority and our objective

1937

01:40:30,890 --> 01:40:29,639

right right Brian it's great that you

1938

01:40:32,390 --> 01:40:30,900

have that personal relationship with

1939

01:40:33,770 --> 01:40:32,400

them what challenges do you and the

1940

01:40:36,169 --> 01:40:33,780

recovery team have to be prepared for

1941

01:40:38,330 --> 01:40:36,179

well the biggest challenge for recovery

1942

01:40:41,090 --> 01:40:38,340

for for Dragon is definitely the weather

1943

01:40:43,250 --> 01:40:41,100

we have to find a landing site where the

1944

01:40:46,010 --> 01:40:43,260

winds are low and the waves are low

1945

01:40:47,270 --> 01:40:46,020

um so SpaceX has several Landing sites

1946

01:40:49,669 --> 01:40:47,280

around the State of Florida that we can

1947

01:40:50,390 --> 01:40:49,679

look at and choose the best weather

1948

01:40:52,189 --> 01:40:50,400

um

1949

01:40:53,870 --> 01:40:52,199

beyond that you know we start looking at

1950

01:40:55,790 --> 01:40:53,880

things like contingencies if the crew is

1951

01:40:58,729 --> 01:40:55,800

injured and we've got helicopters on

1952

01:41:00,229 --> 01:40:58,739

standby for a Medevac if we need to

1953

01:41:02,330 --> 01:41:00,239

um and then you know there's also just

1954

01:41:04,729 --> 01:41:02,340

built-in redundancy on the ship and and

1955

01:41:05,689 --> 01:41:04,739

throughout the vehicle so but yeah

1956

01:41:09,770 --> 01:41:05,699

weather is definitely the biggest

1957

01:41:14,570 --> 01:41:12,590

after a crew five returns Brian you're

1958

01:41:16,430 --> 01:41:14,580

going to transition to a new role in the

1959

01:41:17,629 --> 01:41:16,440

commercial crew program Mission manager

1960

01:41:19,430 --> 01:41:17,639

for crew eight can you tell us how

1961

01:41:21,290 --> 01:41:19,440

you're preparing for that that role

1962

01:41:22,970 --> 01:41:21,300

begins 18 months out so for crew eight

1963

01:41:24,410 --> 01:41:22,980

which launches launches a year from now

1964

01:41:26,870 --> 01:41:24,420

we've already begun those meetings with

1965

01:41:28,689 --> 01:41:26,880

SpaceX and so it's pretty exciting to be

1966

01:41:31,910 --> 01:41:28,699

a part of that that early in the mission

1967

01:41:39,109 --> 01:41:31,920

and uh yeah I'm just honored and proud

1968

01:41:44,510 --> 01:41:41,870

will thank you Jasmine and

1969

01:41:46,729 --> 01:41:44,520

we are currently now two hours and seven

1970

01:41:49,790 --> 01:41:46,739

minutes and Counting as we watch the

1971

01:41:52,250 --> 01:41:49,800

SpaceX closeout crew close the hatch to

1972

01:41:55,729 --> 01:41:52,260

the Dragon capsule

1973

01:41:57,709 --> 01:41:55,739

Dragon Endeavor the flight leader in uh

1974

01:42:01,669 --> 01:41:57,719

spacex's Fleet

1975

01:42:04,370 --> 01:42:01,679

with flight number four today hopefully

1976

01:42:06,169 --> 01:42:04,380

get off the pad and Notch another flight

1977

01:42:08,030 --> 01:42:06,179

under its belt

1978

01:42:08,930 --> 01:42:08,040

countdown is proceeding nominally at

1979

01:42:11,149 --> 01:42:08,940

this point

1980

01:42:13,070 --> 01:42:11,159

on board Dragon spacecraft Endeavor

1981

01:42:15,109 --> 01:42:13,080

we've heard the communication checks

1982

01:42:17,570 --> 01:42:15,119

between the dragon team and the crew

1983

01:42:19,609 --> 01:42:17,580

the astronauts you can see them

1984

01:42:20,689 --> 01:42:19,619

seated they were rotated into flight

1985

01:42:23,330 --> 01:42:20,699

position

1986

01:42:28,250 --> 01:42:23,340

we had their suit leak checks

1987

01:42:32,390 --> 01:42:30,290

yep and you heard the call from the core

1988

01:42:33,649 --> 01:42:32,400

prior to the hatch closing about making

1989

01:42:34,850 --> 01:42:33,659

sure that all their loose items were

1990

01:42:36,050 --> 01:42:34,860

stowed that's kind of key because once

1991

01:42:38,830 --> 01:42:36,060

that hatch is closed if you drop

1992

01:42:40,910 --> 01:42:38,840

anything that's a that's a problem

1993

01:42:43,430 --> 01:42:40,920

so you can see right now they're

1994

01:42:44,870 --> 01:42:43,440

probably updating their notes uh the

1995

01:42:46,550 --> 01:42:44,880

hatch is closed you'll probably hear at

1996

01:42:48,290 --> 01:42:46,560

some point SpaceX confirmed the hatches

1997

01:42:49,669 --> 01:42:48,300

closed they're watching on the bottom of

1998

01:42:51,470 --> 01:42:49,679

each of their displays it always shows

1999

01:42:53,870 --> 01:42:51,480

the flight computer State and what that

2000

01:42:57,169 --> 01:42:53,880

state tells you is it's sort of major

2001

01:42:58,790 --> 01:42:57,179

phases of the vehicle is are is in and

2002

01:43:00,649 --> 01:42:58,800

then it's important to the crew there's

2003

01:43:03,050 --> 01:43:00,659

only certain commands are available in a

2004

01:43:04,550 --> 01:43:03,060

particular state so once hatch is closed

2005

01:43:05,689 --> 01:43:04,560

and that kicks off the next sequence of

2006

01:43:07,010 --> 01:43:05,699

events

2007

01:43:08,450 --> 01:43:07,020

I thought it was interesting you

2008

01:43:10,669 --> 01:43:08,460

mentioned this uh during our first

2009

01:43:12,649 --> 01:43:10,679

launch attempt there's a state that you

2010

01:43:15,350 --> 01:43:12,659

move into where

2011

01:43:19,550 --> 01:43:15,360

you have the emergency handles SpaceX

2012

01:43:23,510 --> 01:43:21,950

that's one of those States correct next

2013

01:43:26,209 --> 01:43:23,520

dragon have you loud and clear over the

2014

01:43:28,310 --> 01:43:26,219

ground station but it's not active in

2015

01:43:29,990 --> 01:43:28,320

all the states leading up so certainly a

2016

01:43:30,890 --> 01:43:30,000

very definitive Point score has you loud

2017

01:43:32,510 --> 01:43:30,900

and clear

2018

01:43:35,090 --> 01:43:32,520

ground station contract is complete

2019

01:43:40,430 --> 01:43:35,100

stand by for T dress contract

2020

01:43:44,510 --> 01:43:41,950

these are with the different uh

2021

01:43:46,609 --> 01:43:44,520

different paths so we object via the

2022

01:43:49,070 --> 01:43:46,619

Hardline communication now the hatch is

2023

01:43:50,450 --> 01:43:49,080

closed so it's a

2024

01:43:52,310 --> 01:43:50,460

the first one here was the ground out

2025

01:43:53,990 --> 01:43:52,320

through teachers which is the s-band

2026

01:43:56,270 --> 01:43:54,000

communication system

2027

01:43:57,530 --> 01:43:56,280

so basically through satellites

2028

01:44:00,290 --> 01:43:57,540

and that's important because once it

2029

01:44:01,189 --> 01:44:00,300

gets off the pad line of sight will work

2030

01:44:02,090 --> 01:44:01,199

for a certain amount of time but

2031

01:44:03,109 --> 01:44:02,100

eventually you're gonna have to rely on

2032

01:44:04,790 --> 01:44:03,119

satellite communication so they're

2033

01:44:07,490 --> 01:44:04,800

checking that out before they get to

2034

01:44:12,050 --> 01:44:09,950

afterwards the SpaceX closeout team will

2035

01:44:14,629 --> 01:44:12,060

be performing the final leaked check on

2036

01:44:24,890 --> 01:44:17,149

and then once that is finished

2037

01:44:33,109 --> 01:44:27,229

the team will begin steps to ready the

2038

01:44:39,109 --> 01:44:36,709

SpaceX dragon have you loud and clear

2039

01:44:41,390 --> 01:44:39,119

core loud and clear teachers come check

2040

01:44:47,629 --> 01:44:41,400

is complete stand by for comchecks with

2041

01:44:50,990 --> 01:44:49,189

and so what they're checking now the MD

2042

01:44:57,169 --> 01:44:51,000

is Mission director Id's launch director

2043

01:45:02,149 --> 01:44:58,970

this is not going to have you allowed to

2044

01:45:08,209 --> 01:45:04,970

DC loud and clear standby for comchecks

2045

01:45:12,530 --> 01:45:10,370

and while this is happening MD on

2046

01:45:14,629 --> 01:45:12,540

countdown one Comcheck the closeout team

2047

01:45:17,990 --> 01:45:14,639

will leave the pad at T minus one hour

2048

01:45:22,490 --> 01:45:19,250

they'll be with him for the next hour

2049

01:45:28,430 --> 01:45:22,500

and then leave stand by for Comcheck

2050

01:45:28,440 --> 01:45:33,890

Dragon MD on drag on the ground Comcheck

2051
01:45:38,990 --> 01:45:35,930
MD dragon have you live and clear over

2052
01:45:43,250 --> 01:45:41,390
MD loud and clear standby for com checks

2053
01:45:48,649 --> 01:45:43,260
with LD

2054
01:45:54,410 --> 01:45:52,129
LD dragon have you land clearance on one

2055
01:45:57,410 --> 01:45:54,420
LD loud and clear standby for comp check

2056
01:45:57,420 --> 01:46:02,629
Dragon LD on Dragon to ground Comcheck

2057
01:46:06,290 --> 01:46:04,609
oh the dragon have a lot of players were

2058
01:46:12,109 --> 01:46:06,300
dragging the ground

2059
01:46:18,470 --> 01:46:14,330
Dragon SpaceX launch configuration

2060
01:46:23,270 --> 01:46:21,169
SpaceX Dragon top

2061
01:46:25,669 --> 01:46:23,280
and so those two Nets you heard him talk

2062
01:46:27,830 --> 01:46:25,679
about uh as you can imagine in in both

2063
01:46:29,990 --> 01:46:27,840

mission control mccx which is in

2064

01:46:31,609 --> 01:46:30,000

Hawthorne and then MCC Houston uh each

2065

01:46:32,810 --> 01:46:31,619

of the flight controllers has a whole

2066

01:46:34,609 --> 01:46:32,820

bunch of different channels they can be

2067

01:46:36,770 --> 01:46:34,619

on so dragging to ground is what the

2068

01:46:38,750 --> 01:46:36,780

crew is typically talking on and there's

2069

01:46:40,129 --> 01:46:38,760

a whole lot of other comms going on the

2070

01:46:42,470 --> 01:46:40,139

crew doesn't need to hear but those key

2071

01:46:44,450 --> 01:46:42,480

people uh have a net that does talk

2072

01:46:45,709 --> 01:46:44,460

directly to the crew that's not dragging

2073

01:46:47,810 --> 01:46:45,719

the ground countdown one is what they're

2074

01:46:49,550 --> 01:46:47,820

talking on and so for the launch they

2075

01:46:51,770 --> 01:46:49,560

tie those two Nets together for the

2076

01:46:53,750 --> 01:46:51,780

period of launch itself specifically to

2077

01:46:55,609 --> 01:46:53,760

be able to tell the crew to initiate a

2078

01:46:56,930 --> 01:46:55,619

launch escape and to your point Daryl

2079

01:46:59,209 --> 01:46:56,940

you're exactly right the handle that's

2080

01:47:00,770 --> 01:46:59,219

between Woody and Steve that you can't

2081

01:47:02,510 --> 01:47:00,780

see in this view it's up by the displays

2082

01:47:04,250 --> 01:47:02,520

it's essentially like an ejection handle

2083

01:47:05,810 --> 01:47:04,260

so you can pull that and it'll initiate

2084

01:47:06,950 --> 01:47:05,820

a launch Escape but exactly like I said

2085

01:47:08,870 --> 01:47:06,960

it wouldn't do it right now you could

2086

01:47:11,030 --> 01:47:08,880

pull the handle nothing would happen so

2087

01:47:13,070 --> 01:47:11,040

it is only armed and that's we'll hear

2088

01:47:14,689 --> 01:47:13,080

that later in the in the account when

2089

01:47:16,609 --> 01:47:14,699

they say Les armed and that's why that's

2090

01:47:18,530 --> 01:47:16,619

such a key thing is that handle is hot

2091

01:47:20,270 --> 01:47:18,540

which is the manual initiation what that

2092

01:47:22,070 --> 01:47:20,280

also means is the automated system is

2093

01:47:23,930 --> 01:47:22,080

hot meaning if the vehicle detected

2094

01:47:27,290 --> 01:47:23,940

something it would also automatically

2095

01:47:29,450 --> 01:47:27,300

initiate a launch Escape

2096

01:47:32,270 --> 01:47:29,460

um but the reason they tie all those

2097

01:47:34,790 --> 01:47:32,280

people together uh is especially during

2098

01:47:36,530 --> 01:47:34,800

a sense you want the quickest words of

2099

01:47:38,390 --> 01:47:36,540

the crew if there's something that would

2100

01:47:39,890 --> 01:47:38,400

tell them they should manually initiate

2101
01:47:41,930 --> 01:47:39,900
escape and that's why they make sure

2102
01:47:43,250 --> 01:47:41,940
that those uh those Loops are properly

2103
01:47:44,689 --> 01:47:43,260
divided so it's on the ground that

2104
01:47:46,790 --> 01:47:44,699
they're doing that it's pretty much

2105
01:47:48,830 --> 01:47:46,800
basically commencing health check for

2106
01:47:50,930 --> 01:47:48,840
launch Escape system expect momentary

2107
01:47:52,609 --> 01:47:50,940
flight computer State change followed by

2108
01:47:54,350 --> 01:47:52,619
transition back to pad hatch closed

2109
01:47:56,390 --> 01:47:54,360
there's that state changer we were

2110
01:47:58,370 --> 01:47:56,400
talking about right

2111
01:48:00,709 --> 01:47:58,380
we'll be watching thank you

2112
01:48:01,669 --> 01:48:00,719
and so why that's so they're not arming

2113
01:48:03,229 --> 01:48:01,679

it yet but what they're doing is

2114

01:48:05,570 --> 01:48:03,239

checking the automated parameters so

2115

01:48:07,189 --> 01:48:05,580

they put it into a mode to look at the

2116

01:48:08,330 --> 01:48:07,199

automated triggers to make sure none of

2117

01:48:10,189 --> 01:48:08,340

them are showing out of limits because

2118

01:48:12,530 --> 01:48:10,199

right now sitting on the pad looks it

2119

01:48:14,570 --> 01:48:12,540

should be fine so if there was something

2120

01:48:17,030 --> 01:48:14,580

that's a bad sensor or bad Telemetry

2121

01:48:18,709 --> 01:48:17,040

you'd want to know that now before you

2122

01:48:20,270 --> 01:48:18,719

put into automated mode and then

2123

01:48:22,129 --> 01:48:20,280

inadvertently trigger an escape so

2124

01:48:23,990 --> 01:48:22,139

that's what they're checking

2125

01:48:25,790 --> 01:48:24,000

so just like we talked earlier in the

2126

01:48:27,950 --> 01:48:25,800

broadcast about the t-tab you know is it

2127

01:48:29,450 --> 01:48:27,960

a bad sensor is it actually a bad thing

2128

01:48:31,790 --> 01:48:29,460

that's what they're checking now just to

2129

01:48:33,050 --> 01:48:31,800

make sure there's no bad sensors in uh

2130

01:48:35,570 --> 01:48:33,060

the system that would initiate a launch

2131

01:48:37,790 --> 01:48:35,580

Escape curious in your training Raj what

2132

01:48:39,530 --> 01:48:37,800

what would constitute a moment where you

2133

01:48:44,030 --> 01:48:39,540

would pull that handle versus it going

2134

01:48:47,090 --> 01:48:44,040

off automatically uh B for like a

2135

01:48:49,609 --> 01:48:47,100

something where so there are there could

2136

01:48:51,470 --> 01:48:49,619

be some situations where the rate is low

2137

01:48:53,510 --> 01:48:51,480

enough that you they you know you know

2138

01:48:56,149 --> 01:48:53,520

something's wrong but it hasn't hit the

2139

01:48:58,129 --> 01:48:56,159

threshold yet to trigger it so waiting

2140

01:48:59,689 --> 01:48:58,139

for the automatic system is just taking

2141

01:49:01,370 --> 01:48:59,699

extra time so you might as well manually

2142

01:49:03,290 --> 01:49:01,380

initiate there could be some cases of

2143

01:49:05,629 --> 01:49:03,300

fires where you would do it where you

2144

01:49:06,770 --> 01:49:05,639

recognize it before so especially like a

2145

01:49:08,109 --> 01:49:06,780

fire that might not trigger the

2146

01:49:10,970 --> 01:49:08,119

automated system

2147

01:49:13,609 --> 01:49:10,980

or you can clearly exactly or if there's

2148

01:49:15,109 --> 01:49:13,619

a failure of the this the communications

2149

01:49:16,970 --> 01:49:15,119

not the communication like talking

2150

01:49:19,250 --> 01:49:16,980

system but basically the communication

2151

01:49:22,010 --> 01:49:19,260

path the interface between the vehicles

2152

01:49:23,390 --> 01:49:22,020

where essentially it eliminates the

2153

01:49:26,209 --> 01:49:23,400

Automation and then you would manually

2154

01:49:29,270 --> 01:49:26,219

do it so there's a few cases you would

2155

01:49:30,649 --> 01:49:29,280

be very hesitant to do it you'd want to

2156

01:49:34,870 --> 01:49:30,659

be very confident right because it's a

2157

01:49:38,209 --> 01:49:34,880

it is a uh a partially significant event

2158

01:49:40,609 --> 01:49:38,219

both from uh you know the it is um

2159

01:49:43,970 --> 01:49:40,619

physically physically yes yeah it is a

2160

01:49:47,570 --> 01:49:43,980

lot of G's very fast and

2161

01:49:48,590 --> 01:49:47,580

uh yeah so it's gonna rock and roll you

2162

01:49:50,689 --> 01:49:48,600

quite a bit

2163

01:49:52,970 --> 01:49:50,699

um so you don't want to do it uh if

2164

01:49:54,770 --> 01:49:52,980

you're not positive but uh you

2165

01:49:56,270 --> 01:49:54,780

definitely want to use it it's a great

2166

01:49:57,649 --> 01:49:56,280

feature to have

2167

01:50:00,470 --> 01:49:57,659

um and definitely one of the the lessons

2168

01:50:02,870 --> 01:50:00,480

we've learned is we've evolved our space

2169

01:50:05,990 --> 01:50:02,880

and launch vehicle Technologies you

2170

01:50:08,149 --> 01:50:06,000

mentioned speed 436 miles per hour that

2171

01:50:11,629 --> 01:50:08,159

system can get up and go take it two and

2172

01:50:13,310 --> 01:50:11,639

a half miles off the coast of uh you

2173

01:50:17,570 --> 01:50:13,320

know Florida here into the Atlantic

2174

01:50:20,030 --> 01:50:17,580

Ocean and uh it could be a lifesaver if

2175

01:50:21,470 --> 01:50:20,040

the situation were to arrive so this is

2176
01:50:23,629 --> 01:50:21,480
certainly not child's play we're talking

2177
01:50:26,209 --> 01:50:23,639
about here this is uh this is Big Time

2178
01:50:29,570 --> 01:50:26,219
stuff uh when it comes to space flight

2179
01:50:32,450 --> 01:50:29,580
but you know every Dragon astronaut crew

2180
01:50:34,270 --> 01:50:32,460
even though it's not child's play it

2181
01:50:38,770 --> 01:50:34,280
does bring a stuffed toy with them

2182
01:50:41,450 --> 01:50:38,780
making a tough transition here well done

2183
01:50:43,669 --> 01:50:41,460
the purpose of that stuff toy though it

2184
01:50:45,709 --> 01:50:43,679
it has a purpose when the toy starts

2185
01:50:47,870 --> 01:50:45,719
floating the strapped in crew has

2186
01:50:50,930 --> 01:50:47,880
confirmation that they've reached

2187
01:50:53,810 --> 01:50:50,940
microgravity and the name of it is a

2188
01:50:55,490 --> 01:50:53,820

zero g indicator there's been seven on

2189

01:50:57,830 --> 01:50:55,500

Dragon so far and let's take a look at

2190

01:51:00,229 --> 01:50:57,840

them all who can forget this one a

2191

01:51:02,270 --> 01:51:00,239

little guy plush Earth floating around

2192

01:51:05,510 --> 01:51:02,280

by himself on the first uncrewed flight

2193

01:51:07,850 --> 01:51:05,520

test in 2017 called demo one which four

2194

01:51:08,810 --> 01:51:07,860

years ago today Raja oh wow it was

2195

01:51:10,970 --> 01:51:08,820

launched

2196

01:51:13,189 --> 01:51:10,980

that was followed up by a sequin

2197

01:51:14,990 --> 01:51:13,199

bedazzled dinosaur named Tremor picked

2198

01:51:17,330 --> 01:51:15,000

out by Bob benkin's son Theo and

2199

01:51:19,370 --> 01:51:17,340

crewmate Doug Hurley's son jack we just

2200

01:51:21,290 --> 01:51:19,380

talked about Dragon SpaceX good side

2201
01:51:22,850 --> 01:51:21,300
hatch League check crew one took a toy

2202
01:51:25,970 --> 01:51:22,860
baby Yoda with them to the first

2203
01:51:29,450 --> 01:51:25,980
four-person crew

2204
01:51:32,330 --> 01:51:29,460
and then since then it's been all

2205
01:51:35,149 --> 01:51:32,340
stuffed animals a penguin for crew two a

2206
01:51:37,430 --> 01:51:35,159
turtle your turtle for crew three

2207
01:51:39,590 --> 01:51:37,440
and then for uh crew four it was a

2208
01:51:40,609 --> 01:51:39,600
turtle and a chimp double Turtle double

2209
01:51:42,530 --> 01:51:40,619
turtle

2210
01:51:45,649 --> 01:51:42,540
and then for the last mission

2211
01:51:50,570 --> 01:51:45,659
the first humanoid the little Albert

2212
01:51:53,810 --> 01:51:52,609
and so we didn't get to find out in our

2213
01:51:56,149 --> 01:51:53,820

first attempt

2214

01:52:00,470 --> 01:51:56,159

what crew six is doing

2215

01:52:02,510 --> 01:52:00,480

well I'll be honest I know but we're

2216

01:52:04,310 --> 01:52:02,520

saving it until they get up into space

2217

01:52:06,290 --> 01:52:04,320

and we should see it you know once they

2218

01:52:07,729 --> 01:52:06,300

get up exactly yeah and the history of

2219

01:52:09,050 --> 01:52:07,739

it is that as you notice in some of

2220

01:52:11,090 --> 01:52:09,060

those pictures the crew was already out

2221

01:52:12,770 --> 01:52:11,100

of their seats but in reality the when

2222

01:52:14,510 --> 01:52:12,780

you first see it deploy they're still

2223

01:52:16,490 --> 01:52:14,520

strapped in and so even though you and

2224

01:52:17,990 --> 01:52:16,500

your stomach have that feeling of being

2225

01:52:19,729 --> 01:52:18,000

in a roller coaster and you're falling

2226

01:52:21,709 --> 01:52:19,739

you aren't actually moving you're still

2227

01:52:23,930 --> 01:52:21,719

fully strapped in so the way you can

2228

01:52:26,510 --> 01:52:23,940

check your senses is your zero g

2229

01:52:29,149 --> 01:52:26,520

indicator starts to starts to float and

2230

01:52:30,950 --> 01:52:29,159

so our case uh our turtle was named foul

2231

01:52:33,950 --> 01:52:30,960

which was a nod to Matthias since that's

2232

01:52:35,689 --> 01:52:33,960

uh German uh it was also specifically a

2233

01:52:38,390 --> 01:52:35,699

peacock Turtle because Tom marshburn is

2234

01:52:41,209 --> 01:52:38,400

a class in the peacock so it was a a

2235

01:52:42,410 --> 01:52:41,219

conglomerate of effort to have a zero g

2236

01:52:44,270 --> 01:52:42,420

indicator that represented the whole

2237

01:52:45,830 --> 01:52:44,280

crew you heard Arthur call the side

2238

01:52:47,209 --> 01:52:45,840

hatch leak checks are good which is a

2239

01:52:49,609 --> 01:52:47,219

great sign

2240

01:52:50,870 --> 01:52:49,619

um and uh this it's going to take a

2241

01:52:52,550 --> 01:52:50,880

while now for the closeout crew to

2242

01:52:54,229 --> 01:52:52,560

actually clean out the white room

2243

01:52:55,250 --> 01:52:54,239

there's a whole bunch of work they're

2244

01:52:57,169 --> 01:52:55,260

doing

2245

01:52:59,270 --> 01:52:57,179

um as they start to to do that but it

2246

01:53:01,010 --> 01:52:59,280

looks like everything's on track

2247

01:53:03,169 --> 01:53:01,020

yeah we've had the com checks the seat

2248

01:53:05,270 --> 01:53:03,179

rotation suit League checks they're

2249

01:53:08,090 --> 01:53:05,280

complete and so now we're just

2250

01:53:10,010 --> 01:53:08,100

tightening up that hatch

2251
01:53:12,109 --> 01:53:10,020
and while we look at this shot we can

2252
01:53:13,850 --> 01:53:12,119
look to the right we see the NASA

2253
01:53:16,790 --> 01:53:13,860
meatball with all the signatures around

2254
01:53:19,490 --> 01:53:16,800
them along with the SpaceX logo

2255
01:53:22,010 --> 01:53:19,500
every human who goes into space

2256
01:53:23,930 --> 01:53:22,020
gets to put their signature on the wall

2257
01:53:26,390 --> 01:53:23,940
there and Raja of course yours is there

2258
01:53:27,890 --> 01:53:26,400
along with your crew three crewmates but

2259
01:53:30,830 --> 01:53:27,900
you know for the second attempt status

2260
01:53:34,729 --> 01:53:30,840
update they didn't have to do it

2261
01:53:37,250 --> 01:53:34,739
so that helped save as well go ahead

2262
01:53:39,649 --> 01:53:37,260
all right uh we are going to repeat the

2263
01:53:40,790 --> 01:53:39,659

ground station Comcheck just to do it

2264

01:53:43,010 --> 01:53:40,800

one more time on our end and make sure

2265

01:53:44,689 --> 01:53:43,020

that we're properly configured uh

2266

01:53:46,490 --> 01:53:44,699

following the ground station com check

2267

01:53:49,850 --> 01:53:46,500

I'll step into the post Ingress crew

2268

01:53:55,129 --> 01:53:49,860

briefing and after that we'll step into

2269

01:53:59,870 --> 01:53:57,350

okay thanks for talking copies I

2270

01:54:02,390 --> 01:53:59,880

understand it all thank you

2271

01:54:03,590 --> 01:54:02,400

gonna run the uh comp checks again yep

2272

01:54:05,149 --> 01:54:03,600

so probably maybe they had to

2273

01:54:07,669 --> 01:54:05,159

reconfigure something uh or maybe

2274

01:54:08,870 --> 01:54:07,679

someone wasn't on the or didn't hear it

2275

01:54:10,609 --> 01:54:08,880

maybe so they want to miss make sure

2276

01:54:12,229 --> 01:54:10,619

everyone's tied in and then you heard

2277

01:54:13,729 --> 01:54:12,239

the on operator contracts after

2278

01:54:14,570 --> 01:54:13,739

that which we haven't done and that will

2279

01:54:17,390 --> 01:54:14,580

be when you hear the different

2280

01:54:18,890 --> 01:54:17,400

subsystems for each of the Falcon 9 and

2281

01:54:20,510 --> 01:54:18,900

the main parts that they're monitoring

2282

01:54:22,550 --> 01:54:20,520

that could lead to a launch Escape

2283

01:54:23,570 --> 01:54:22,560

they'll all chime in and again so for

2284

01:54:25,609 --> 01:54:23,580

the same reason I described before

2285

01:54:28,010 --> 01:54:25,619

making sure normally those people

2286

01:54:30,890 --> 01:54:28,020

wouldn't talk directly to the crew but

2287

01:54:32,750 --> 01:54:30,900

if you had so you know one of those

2288

01:54:33,890 --> 01:54:32,760

systems that give that that was your

2289

01:54:35,689 --> 01:54:33,900

question like hey when would you do it

2290

01:54:37,310 --> 01:54:35,699

like well that would be a time like if

2291

01:54:40,490 --> 01:54:37,320

the GNC which is guidance navigation

2292

01:54:42,229 --> 01:54:40,500

controlled hat see something off

2293

01:54:43,430 --> 01:54:42,239

um that they think is dangerous they can

2294

01:54:44,990 --> 01:54:43,440

have the ability to call the crew

2295

01:54:47,590 --> 01:54:45,000

directly and tell them to initiate a

2296

01:54:49,669 --> 01:54:47,600

launch Escape okay

2297

01:54:50,750 --> 01:54:49,679

it'd be like a trend they're seeing you

2298

01:54:51,709 --> 01:54:50,760

know maybe it hasn't hit the automated

2299

01:54:53,270 --> 01:54:51,719

limit

2300

01:54:54,890 --> 01:54:53,280

um but they know it's going to and so if

2301

01:54:56,810 --> 01:54:54,900

it buys you a second or two then it's

2302

01:54:58,609 --> 01:54:56,820

worth worth it might be faster than the

2303

01:55:01,490 --> 01:54:58,619

automated system right

2304

01:55:04,250 --> 01:55:01,500

and that's why they're consolidating the

2305

01:55:07,850 --> 01:55:04,260

communications to the crew as Raja has

2306

01:55:16,070 --> 01:55:12,470

we have a an hour and 53 minutes

2307

01:55:18,530 --> 01:55:16,080

until liftoff at 12 34 a.m eastern time

2308

01:55:22,010 --> 01:55:18,540

here from the Kennedy Space Center in

2309

01:55:24,229 --> 01:55:22,020

Florida America's Spaceport

2310

01:55:27,709 --> 01:55:24,239

now as the pad team wraps up its final

2311

01:55:29,209 --> 01:55:27,719

checks and clears the white room

2312

01:55:31,310 --> 01:55:29,219

that's when the action will start to

2313

01:55:33,830 --> 01:55:31,320

pick up

2314

01:55:36,590 --> 01:55:33,840

we're looking forward a little bit crew

2315

01:55:39,050 --> 01:55:36,600

access arm we'll retract we'd have the

2316

01:55:41,870 --> 01:55:39,060

army of the launch Escape system and

2317

01:55:43,850 --> 01:55:41,880

then of course prop load

2318

01:55:45,950 --> 01:55:43,860

so we will keep this live view of the

2319

01:55:49,310 --> 01:55:45,960

crew here as they're sitting tight

2320

01:55:53,330 --> 01:55:52,010

rajachary doing a great job of keeping

2321

01:55:56,090 --> 01:55:53,340

us

2322

01:55:57,169 --> 01:55:56,100

informed about what's happening as we

2323

01:55:59,870 --> 01:55:57,179

watch it

2324

01:56:02,030 --> 01:55:59,880

and if you want to ask him a question

2325

01:56:03,830 --> 01:56:02,040

we're taking them just head on over to

2326

01:56:05,629 --> 01:56:03,840

social media

2327

01:56:07,790 --> 01:56:05,639

oh great question actually on there so

2328

01:56:09,470 --> 01:56:07,800

so actually the ones that one's not a

2329

01:56:12,470 --> 01:56:09,480

question was a shout out from Steve

2330

01:56:14,390 --> 01:56:12,480

Bowen's uh fellow submariners some

2331

01:56:15,470 --> 01:56:14,400

Mariners

2332

01:56:18,649 --> 01:56:15,480

um

2333

01:56:22,910 --> 01:56:18,659

looks like we've got one here that uh

2334

01:56:24,590 --> 01:56:22,920

from at Danny scarra okay what happens

2335

01:56:25,910 --> 01:56:24,600

after you're strapped in and waiting to

2336

01:56:28,070 --> 01:56:25,920

launch and you have to use the bathroom

2337

01:56:30,350 --> 01:56:28,080

so we get really good at using diapers

2338

01:56:32,149 --> 01:56:30,360

they're called mags what are they called

2339

01:56:33,830 --> 01:56:32,159

mags which is the acronym for maximum

2340

01:56:35,570 --> 01:56:33,840

absorbency garbant but it's basically a

2341

01:56:38,629 --> 01:56:35,580

diaper it's just that way you don't have

2342

01:56:41,030 --> 01:56:38,639

to say the word diaper wrist diaper

2343

01:56:42,470 --> 01:56:41,040

giving us some great insight there well

2344

01:56:43,729 --> 01:56:42,480

actually if you want the people at home

2345

01:56:44,990 --> 01:56:43,739

don't try this if you're watching The

2346

01:56:45,890 --> 01:56:45,000

Cosmic way because there's fire ants but

2347

01:56:47,750 --> 01:56:45,900

if you're at home and you want to know

2348

01:56:50,209 --> 01:56:47,760

it's like just get on your back put your

2349

01:56:52,010 --> 01:56:50,219

feet up on your couch and lay on your

2350

01:56:53,930 --> 01:56:52,020

back and watch this broadcast and do it

2351
01:56:55,910 --> 01:56:53,940
for the next two hours and even if you

2352
01:56:57,770 --> 01:56:55,920
haven't drank a lot of water sitting

2353
01:56:59,450 --> 01:56:57,780
like that it's hard to do it's no way

2354
01:57:01,609 --> 01:56:59,460
it's hard to do and it makes you have to

2355
01:57:04,070 --> 01:57:01,619
go to the bathroom oh so you definitely

2356
01:57:05,570 --> 01:57:04,080
uh that's one of the reasons that crew

2357
01:57:07,729 --> 01:57:05,580
we call it crew time on back is a big

2358
01:57:10,070 --> 01:57:07,739
deal in Trying to minimize that because

2359
01:57:12,830 --> 01:57:10,080
you can get cramps this is definitely

2360
01:57:15,410 --> 01:57:12,840
more roomy than uh like a soyuz where

2361
01:57:18,169 --> 01:57:15,420
your knees are in your chest but yeah it

2362
01:57:20,870 --> 01:57:18,179
is uh it is less than comfortable

2363
01:57:23,229 --> 01:57:20,880

um and so you have to overcome the

2364

01:57:25,609 --> 01:57:23,239

mental block of peeing your own pants

2365

01:57:28,189 --> 01:57:25,619

because it's actually harder than you

2366

01:57:29,930 --> 01:57:28,199

would think but we get uh we get

2367

01:57:32,089 --> 01:57:29,940

practice doing that in NBL run so busier

2368

01:57:33,589 --> 01:57:32,099

in the pool for like practice yeah well

2369

01:57:36,350 --> 01:57:33,599

you're when you're doing NBL runs you're

2370

01:57:38,149 --> 01:57:36,360

in that suit for like eight hours in a

2371

01:57:39,169 --> 01:57:38,159

MAG also so that's kind of where you

2372

01:57:41,629 --> 01:57:39,179

start and

2373

01:57:42,950 --> 01:57:41,639

then actually when you're in training uh

2374

01:57:44,450 --> 01:57:42,960

you'd be called like Day in the Life

2375

01:57:47,089 --> 01:57:44,460

Sims when you do like a whole day in the

2376

01:57:48,709 --> 01:57:47,099

dragon and so yeah you're you get used

2377

01:57:50,570 --> 01:57:48,719

to using it but that's exactly what you

2378

01:57:51,770 --> 01:57:50,580

do you saw the reason we cut away when

2379

01:57:53,810 --> 01:57:51,780

they pulled up to the pad is there's

2380

01:57:55,430 --> 01:57:53,820

actually a trailer behind the launch pad

2381

01:57:58,129 --> 01:57:55,440

where they can use the bathroom one more

2382

01:58:00,709 --> 01:57:58,139

time before they go up the elevator and

2383

01:58:03,649 --> 01:58:00,719

you try to never leave a bathroom or

2384

01:58:05,390 --> 01:58:03,659

Runway behind you uh if you're flying uh

2385

01:58:07,370 --> 01:58:05,400

never leave never pass up the chance to

2386

01:58:08,570 --> 01:58:07,380

use a bathroom but yeah so it's a fine

2387

01:58:10,070 --> 01:58:08,580

balance because you want to be hydrated

2388

01:58:11,810 --> 01:58:10,080

especially into space because you tend

2389

01:58:14,390 --> 01:58:11,820

to get dehydrated so you want a fluid

2390

01:58:15,589 --> 01:58:14,400

load but the downside is that especially

2391

01:58:18,350 --> 01:58:15,599

when you're on your back with your knees

2392

01:58:19,430 --> 01:58:18,360

in your chest it tends to give you the

2393

01:58:20,870 --> 01:58:19,440

Sensation that you have to go to the

2394

01:58:22,910 --> 01:58:20,880

bathroom

2395

01:58:24,830 --> 01:58:22,920

this is an incredible Insight here uh

2396

01:58:26,810 --> 01:58:24,840

Raj and I imagine you've created

2397

01:58:28,669 --> 01:58:26,820

probably a little bit of stir on social

2398

01:58:30,530 --> 01:58:28,679

media right now as people are abandoning

2399

01:58:32,209 --> 01:58:30,540

about the answers and the Insight that

2400

01:58:34,430 --> 01:58:32,219

you just gave but I will say this in my

2401

01:58:36,470 --> 01:58:34,440

time in being around astronauts the

2402

01:58:38,030 --> 01:58:36,480

whole bathroom and space uh combination

2403

01:58:39,649 --> 01:58:38,040

is one of the most consistently asked

2404

01:58:41,570 --> 01:58:39,659

questions yeah but it's actually a

2405

01:58:43,910 --> 01:58:41,580

pretty big deal it is I mean as we look

2406

01:58:45,890 --> 01:58:43,920

at Orion design and Artemis design I

2407

01:58:47,689 --> 01:58:45,900

mean if the toilet breaks I mean you're

2408

01:58:49,729 --> 01:58:47,699

coming home I mean you

2409

01:58:52,189 --> 01:58:49,739

um right if you get into orbit on the

2410

01:58:53,629 --> 01:58:52,199

Iran checkout and the toilets malfunc I

2411

01:58:55,490 --> 01:58:53,639

mean it's a big deal that's a big deal

2412

01:58:57,530 --> 01:58:55,500

yeah it is a big deal

2413

01:58:59,870 --> 01:58:57,540

um I mean it's if you look at on the

2414

01:59:01,129 --> 01:58:59,880

space station that's one of the you know

2415

01:59:02,990 --> 01:59:01,139

if the toilet goes down that is all

2416

01:59:04,729 --> 01:59:03,000

hands on deck to fix it because that is

2417

01:59:06,310 --> 01:59:04,739

a big deal I mean if you've got seven

2418

01:59:08,750 --> 01:59:06,320

people that can't go to the bathroom

2419

01:59:12,109 --> 01:59:08,760

things are you only have so many diapers

2420

01:59:15,290 --> 01:59:12,119

I Can Only Imagine

2421

01:59:17,510 --> 01:59:15,300

well with that let's head over now to

2422

01:59:19,609 --> 01:59:17,520

Houston for a closer look at what the

2423

01:59:21,589 --> 01:59:19,619

crew will be doing when they reach their

2424

01:59:26,149 --> 01:59:21,599

destination and that's where we turn to

2425

01:59:30,530 --> 01:59:29,089

thanks Daryl once crew 6 arrives at the

2426
01:59:32,810 --> 01:59:30,540
International Space Station they'll

2427
01:59:34,790 --> 01:59:32,820
officially become Expedition 68 flight

2428
01:59:36,410 --> 01:59:34,800
Engineers once on board they'll do

2429
01:59:38,629 --> 01:59:36,420
something known as a direct Handover

2430
01:59:40,070 --> 01:59:38,639
basically saying that crew 5 and crew 6

2431
01:59:43,189 --> 01:59:40,080
will be aboard the space station

2432
01:59:44,870 --> 01:59:43,199
altogether until crew 5 comes home crew

2433
01:59:46,550 --> 01:59:44,880
5 will be able to give crew 6 an

2434
01:59:48,950 --> 01:59:46,560
orientation and show them the ropes

2435
01:59:50,810 --> 01:59:48,960
which might be particularly helpful for

2436
01:59:53,330 --> 01:59:50,820
the three first-time space flyers on

2437
01:59:55,729 --> 01:59:53,340
this flight NASA's Woody hoberg UAE

2438
01:59:58,430 --> 01:59:55,739

astronaut Sultan alniadi and Rose Cosmos

2439

02:00:00,589 --> 01:59:58,440

Cosmonaut Andre fidelv a direct Handover

2440

02:00:03,229 --> 02:00:00,599

also helps ensure a continuous U.S

2441

02:00:05,149 --> 02:00:03,239

presence on the space station which is a

2442

02:00:07,550 --> 02:00:05,159

record we've held for more than 22 years

2443

02:00:09,530 --> 02:00:07,560

now and as the station is first and

2444

02:00:11,930 --> 02:00:09,540

foremost a laboratory the crew will jump

2445

02:00:13,970 --> 02:00:11,940

right into conducting experiments with

2446

02:00:16,370 --> 02:00:13,980

new research still to be delivered on

2447

02:00:18,410 --> 02:00:16,380

upcoming cargo flights but for now we'll

2448

02:00:20,030 --> 02:00:18,420

toss it back over to Jasmine Hopkins

2449

02:00:22,010 --> 02:00:20,040

who's with NASA administrator Bill

2450

02:00:23,930 --> 02:00:22,020

Nelson Jasmine

2451
02:00:25,729 --> 02:00:23,940
thank you so much Courtney yes we're

2452
02:00:27,770 --> 02:00:25,739
back here at Kennedy on the balcony of

2453
02:00:29,689 --> 02:00:27,780
osb2 and right now so honored to be

2454
02:00:31,729 --> 02:00:29,699
joined by administrator Bill Nelson

2455
02:00:33,109 --> 02:00:31,739
thank you for being here it's another

2456
02:00:35,030 --> 02:00:33,119
pleasure

2457
02:00:37,189 --> 02:00:35,040
of course we're always glad to have you

2458
02:00:38,390 --> 02:00:37,199
back at Kennedy and Bill right before we

2459
02:00:39,589 --> 02:00:38,400
were tossed to you actually just

2460
02:00:41,030 --> 02:00:39,599
mentioned that you have been in the

2461
02:00:42,709 --> 02:00:41,040
shoes of these astronauts before that

2462
02:00:44,689 --> 02:00:42,719
when you were flying on shuttle you

2463
02:00:46,790 --> 02:00:44,699

scrubbed it scrubbed four times so do

2464

02:00:48,169 --> 02:00:46,800

you have any words of wisdom any words

2465

02:00:49,609 --> 02:00:48,179

of encouragement for the astronauts

2466

02:00:50,290 --> 02:00:49,619

tonight well

2467

02:00:53,450 --> 02:00:50,300

um

2468

02:00:56,330 --> 02:00:53,460

words of encouragement enjoy yourself

2469

02:00:59,330 --> 02:00:56,340

while you're laying there strapped in on

2470

02:01:00,410 --> 02:00:59,340

your back trying to get off the face of

2471

02:01:03,470 --> 02:01:00,420

the Earth

2472

02:01:08,209 --> 02:01:03,480

but the serious words of encouragement

2473

02:01:10,970 --> 02:01:08,219

is we don't fly until we think it's safe

2474

02:01:12,609 --> 02:01:10,980

and that was what was important about

2475

02:01:16,609 --> 02:01:12,619

the first scrub

2476

02:01:20,530 --> 02:01:16,619

because it just didn't feel right and

2477

02:01:24,589 --> 02:01:20,540

NASA made the call it was the right call

2478

02:01:27,589 --> 02:01:24,599

everything's looking good uh the

2479

02:01:31,189 --> 02:01:27,599

supposed problems that they had before

2480

02:01:32,750 --> 02:01:31,199

have all been fixed and so I expect

2481

02:01:34,550 --> 02:01:32,760

we're going to see a launch tonight

2482

02:01:36,290 --> 02:01:34,560

right we're all looking forward to

2483

02:01:37,850 --> 02:01:36,300

seeing that launch tonight Bill and all

2484

02:01:39,530 --> 02:01:37,860

the work that we're doing in low earth

2485

02:01:41,810 --> 02:01:39,540

orbit on the space station is really

2486

02:01:43,550 --> 02:01:41,820

Paving the way for deep space so what is

2487

02:01:47,649 --> 02:01:43,560

next for Artemis

2488

02:01:50,510 --> 02:01:47,659

well we have just this unbelievable

2489

02:01:53,450 --> 02:01:50,520

opportunity now to go back to the moon

2490

02:01:55,550 --> 02:01:53,460

but this time it's different

2491

02:01:58,729 --> 02:01:55,560

first of all we're going to a different

2492

02:02:01,189 --> 02:01:58,739

place on the moon it's the South Pole

2493

02:02:05,570 --> 02:02:01,199

and that's where we think the water is

2494

02:02:07,370 --> 02:02:05,580

and if you get to harvest water all of a

2495

02:02:09,609 --> 02:02:07,380

sudden you have hydrogen and oxygen

2496

02:02:13,189 --> 02:02:09,619

you've got rocket fuel

2497

02:02:15,770 --> 02:02:13,199

uh we're also going back for a different

2498

02:02:19,070 --> 02:02:15,780

reason we're going to stay there we're

2499

02:02:22,790 --> 02:02:19,080

going to learn to live to work there

2500

02:02:25,490 --> 02:02:22,800

to invent to create all for the purpose

2501

02:02:28,609 --> 02:02:25,500

that we're going to Mars

2502

02:02:33,290 --> 02:02:28,619

and you know the moon's just a few days

2503

02:02:36,709 --> 02:02:33,300

away Mars is months and months away

2504

02:02:39,169 --> 02:02:36,719

and so that's why this is so important

2505

02:02:40,669 --> 02:02:39,179

for us to get back to the Moon it really

2506

02:02:43,250 --> 02:02:40,679

is important and right now we're also

2507

02:02:44,510 --> 02:02:43,260

focusing on going together and the

2508

02:02:45,770 --> 02:02:44,520

commercial crew program this is the

2509

02:02:47,930 --> 02:02:45,780

second time that we've partnered with

2510

02:02:50,390 --> 02:02:47,940

Ross Cosmos but the first time that we

2511

02:02:52,010 --> 02:02:50,400

have a UAE astronaut on board can you

2512

02:02:54,189 --> 02:02:52,020

talk about how these International

2513

02:02:57,410 --> 02:02:54,199

Partnerships really help NASA's Mission

2514

02:02:59,570 --> 02:02:57,420

uh it's a different Mission you pointed

2515

02:03:01,370 --> 02:02:59,580

it out not only by the way with our

2516

02:03:03,950 --> 02:03:01,380

International Partners but with our

2517

02:03:07,729 --> 02:03:03,960

commercial partners because when we go

2518

02:03:09,589 --> 02:03:07,739

to the Moon with the NASA rocket we're

2519

02:03:13,609 --> 02:03:09,599

going to go into lunar orbit and we're

2520

02:03:17,030 --> 02:03:13,619

going to join up with a SpaceX Lander

2521

02:03:19,070 --> 02:03:17,040

and then our crew will then go down to

2522

02:03:21,649 --> 02:03:19,080

the surface for six days

2523

02:03:24,470 --> 02:03:21,659

uh so it's it's a whole new kind of

2524

02:03:27,709 --> 02:03:24,480

program now internationally this has

2525

02:03:29,810 --> 02:03:27,719

become a big deal you just can't imagine

2526

02:03:32,149 --> 02:03:29,820

the enthusiasm

2527

02:03:35,450 --> 02:03:32,159

around this globe

2528

02:03:39,109 --> 02:03:35,460

with our foreign friends how popular

2529

02:03:41,870 --> 02:03:39,119

NASA is and they all want to be a part

2530

02:03:46,129 --> 02:03:41,880

of this program and most of them are

2531

02:03:47,930 --> 02:03:46,139

so tonight we have UAE and Russian

2532

02:03:50,450 --> 02:03:47,940

astronauts

2533

02:03:53,330 --> 02:03:50,460

but look up on the station right now

2534

02:03:56,109 --> 02:03:53,340

they're not only Russians but there are

2535

02:03:59,030 --> 02:03:56,119

is also a Japanese astronaut up there

2536

02:04:01,250 --> 02:03:59,040

and so it is a very international

2537

02:04:04,790 --> 02:04:01,260

program particularly on the space

2538

02:04:07,430 --> 02:04:04,800

station because there we've got 16

2539

02:04:09,169 --> 02:04:07,440

International Partners right it really

2540

02:04:10,669 --> 02:04:09,179

is important we go further when we go

2541

02:04:12,530 --> 02:04:10,679

together administrator Nelson thank you

2542

02:04:15,709 --> 02:04:12,540

so much for being here tonight thanks so

2543

02:04:17,930 --> 02:04:15,719

much of course Daryl back to you

2544

02:04:20,750 --> 02:04:17,940

thank you Jasmine and administrator

2545

02:04:23,930 --> 02:04:20,760

Nelson and we are now T-minus one hour

2546

02:04:26,810 --> 02:04:23,940

in 44 minutes from launch as we look at

2547

02:04:29,270 --> 02:04:26,820

the pad here dragon on top of a falcon 9

2548

02:04:31,189 --> 02:04:29,280

with a crew access arm

2549

02:04:34,250 --> 02:04:31,199

attached at the moment but getting ready

2550

02:04:37,850 --> 02:04:36,050

as we look at it now we want to also

2551
02:04:40,010 --> 02:04:37,860
take a closer look at some of the

2552
02:04:42,589 --> 02:04:40,020
life-changing science that astronauts

2553
02:04:46,750 --> 02:04:42,599
are performing aboard the destination

2554
02:04:51,470 --> 02:04:49,430
the International Space Station is a

2555
02:04:53,510 --> 02:04:51,480
state-of-the-art microgravity laboratory

2556
02:04:55,669 --> 02:04:53,520
that is unlocking discoveries not

2557
02:04:58,609 --> 02:04:55,679
possible on Earth and helping us push

2558
02:05:01,010 --> 02:04:58,619
farther into deep space every single day

2559
02:05:03,229 --> 02:05:01,020
we are answering big questions about

2560
02:05:04,609 --> 02:05:03,239
Earth and about space about where we

2561
02:05:06,410 --> 02:05:04,619
came from and about where we're going

2562
02:05:08,470 --> 02:05:06,420
but the other thing that we're doing is

2563
02:05:12,410 --> 02:05:08,480

we're learning more questions to ask

2564

02:05:14,750 --> 02:05:12,420

[Music]

2565

02:05:16,490 --> 02:05:14,760

microgravity turns almost everything we

2566

02:05:19,250 --> 02:05:16,500

know upside down

2567

02:05:22,129 --> 02:05:19,260

liquids behave completely differently

2568

02:05:24,709 --> 02:05:22,139

Fire Burns in new ways

2569

02:05:26,750 --> 02:05:24,719

biological systems reveal surprises

2570

02:05:28,669 --> 02:05:26,760

there's a few things that have made me

2571

02:05:30,709 --> 02:05:28,679

gasp out loud at bombard space station

2572

02:05:32,510 --> 02:05:30,719

watching heart cells actually beat has

2573

02:05:34,609 --> 02:05:32,520

been a pretty big one

2574

02:05:35,930 --> 02:05:34,619

we're studying ways to grow food in

2575

02:05:38,870 --> 02:05:35,940

microgravity

2576

02:05:41,330 --> 02:05:38,880

I got to tell you these

2577

02:05:44,390 --> 02:05:41,340

these are pretty amazing we're learning

2578

02:05:46,550 --> 02:05:44,400

how human bodies react to life in space

2579

02:05:49,430 --> 02:05:46,560

how to keep crew members safe and strong

2580

02:05:54,169 --> 02:05:49,440

on long duration exploration missions

2581

02:05:58,310 --> 02:05:56,270

we're testing technologies that will be

2582

02:06:01,250 --> 02:05:58,320

critical to our return to the moon and

2583

02:06:03,350 --> 02:06:01,260

great leap to Mars

2584

02:06:05,470 --> 02:06:03,360

our research has contributed to medical

2585

02:06:08,209 --> 02:06:05,480

and social benefits on our home planet

2586

02:06:10,550 --> 02:06:08,219

allowing us to find new ways to combat

2587

02:06:12,830 --> 02:06:10,560

disease back on Earth and develop

2588

02:06:16,790 --> 02:06:12,840

Technologies to deliver clean water to

2589

02:06:21,830 --> 02:06:19,129

spectacular vantage point of more than

2590

02:06:23,870 --> 02:06:21,840

200 miles above our planet supports our

2591

02:06:27,109 --> 02:06:23,880

monitoring of Earth's climate natural

2592

02:06:29,149 --> 02:06:27,119

disasters and plant life the orbital

2593

02:06:31,129 --> 02:06:29,159

perspective that we have here on the ISS

2594

02:06:33,350 --> 02:06:31,139

is just absolutely amazing earth is

2595

02:06:36,109 --> 02:06:33,360

gorgeous

2596

02:06:38,570 --> 02:06:36,119

the growing new space economy so vital

2597

02:06:42,229 --> 02:06:38,580

to our continued progress in space is

2598

02:06:47,030 --> 02:06:45,169

we're inspiring future Generations from

2599

02:06:51,109 --> 02:06:47,040

a platform that is one of the largest

2600

02:06:54,950 --> 02:06:51,119

International collaborations of our time

2601
02:06:55,729 --> 02:06:54,960
we're doing science at 17 500 miles per

2602
02:07:01,180 --> 02:06:55,739
hour

2603
02:07:01,190 --> 02:07:06,589
[Music]

2604
02:07:12,250 --> 02:07:09,470
love the shot of the cells there the

2605
02:07:14,990 --> 02:07:12,260
heart cells beating inside

2606
02:07:17,450 --> 02:07:15,000
microgravity it's a really impressive

2607
02:07:19,550 --> 02:07:17,460
and inside this dragon

2608
02:07:21,709 --> 02:07:19,560
three astronauts and one Cosmonaut going

2609
02:07:24,830 --> 02:07:21,719
up to the International Space Station to

2610
02:07:28,910 --> 02:07:24,840
continue that important work of science

2611
02:07:31,790 --> 02:07:28,920
on our orbiting Laboratory

2612
02:07:34,250 --> 02:07:31,800
well there are astronauts in place

2613
02:07:38,510 --> 02:07:34,260

and are Cosmonaut getting ready for

2614

02:07:40,910 --> 02:07:38,520

liftoff at 12 34 a.m Eastern Time crew

2615

02:07:44,990 --> 02:07:42,649

still got a ways to go we've got to arm

2616

02:07:46,070 --> 02:07:45,000

the launch Escape system gotta fuel up

2617

02:07:48,050 --> 02:07:46,080

the rocket

2618

02:07:49,609 --> 02:07:48,060

count it down and launch it into space

2619

02:07:51,770 --> 02:07:49,619

in the meantime

2620

02:07:53,570 --> 02:07:51,780

our next guest played a key supportive

2621

02:07:55,970 --> 02:07:53,580

role in the development of the Falcon 9

2622

02:07:57,530 --> 02:07:55,980

rocket and dragon spacecraft and we

2623

02:07:59,750 --> 02:07:57,540

visited with him on the first attempt

2624

02:08:01,729 --> 02:07:59,760

and he's back his name is John Posey and

2625

02:08:03,470 --> 02:08:01,739

he's NASA's crew Dragon lead engineer

2626

02:08:05,390 --> 02:08:03,480

appreciate you having you back thanks

2627

02:08:07,790 --> 02:08:05,400

for having me back John you were on the

2628

02:08:09,350 --> 02:08:07,800

console yesterday as we counted down or

2629

02:08:10,850 --> 02:08:09,360

I'm sorry not yesterday Sunday I should

2630

02:08:13,189 --> 02:08:10,860

say overnight during the first attempt

2631

02:08:15,350 --> 02:08:13,199

and we were just talking about you know

2632

02:08:17,629 --> 02:08:15,360

how NASA and SpaceX Works through

2633

02:08:19,729 --> 02:08:17,639

something like that just to recap there

2634

02:08:21,830 --> 02:08:19,739

was a clogged filter for the engine

2635

02:08:23,570 --> 02:08:21,840

ignition fluid

2636

02:08:25,370 --> 02:08:23,580

um that they saw the data but weren't

2637

02:08:26,930 --> 02:08:25,380

exactly sure at the moment what the

2638

02:08:29,209 --> 02:08:26,940

cause was found out later what it was

2639

02:08:31,490 --> 02:08:29,219

cleared it out fixed it and here we go

2640

02:08:32,629 --> 02:08:31,500

again how does NASA and SpaceX work

2641

02:08:35,089 --> 02:08:32,639

through something like that Dragon

2642

02:08:37,370 --> 02:08:35,099

SpaceX confirm when ready for comtrex

2643

02:08:39,649 --> 02:08:37,380

with Falcon 9 operators on the loops on

2644

02:08:41,629 --> 02:08:39,659

the net talking to each other on the

2645

02:08:44,149 --> 02:08:41,639

NASA side the the mission support team

2646

02:08:45,589 --> 02:08:44,159

that my team and I report up the up the

2647

02:08:48,290 --> 02:08:45,599

loop through the chief engineer to the

2648

02:08:50,990 --> 02:08:48,300

NASA ops manager the NASA ops manager is

2649

02:08:52,609 --> 02:08:51,000

in direct contact with space X launch

2650

02:08:54,350 --> 02:08:52,619

director throughout the whole counts you

2651
02:08:56,510 --> 02:08:54,360
know keeping a prize of issues that we

2652
02:08:58,669 --> 02:08:56,520
can evaluate it as a team make sure that

2653
02:09:00,229 --> 02:08:58,679
both SpaceX and the NASA side get

2654
02:09:02,750 --> 02:09:00,239
comfortable that we're good for crew

2655
02:09:04,910 --> 02:09:02,760
launch and so like as you said with the

2656
02:09:07,430 --> 02:09:04,920
igniter fluid the t-tab the pyrophoric

2657
02:09:10,370 --> 02:09:07,440
fluid that they load into the rocket to

2658
02:09:12,950 --> 02:09:10,380
ignite the Merlin engines on Falcon 9's

2659
02:09:14,990 --> 02:09:12,960
first stage they

2660
02:09:16,850 --> 02:09:15,000
provided the supply of the fluid and

2661
02:09:18,470 --> 02:09:16,860
they were expecting to see a good bleed

2662
02:09:20,510 --> 02:09:18,480
in and start see a response in the catch

2663
02:09:23,209 --> 02:09:20,520

tank and at first they weren't seeing a

2664

02:09:24,830 --> 02:09:23,219

response did some troubleshooting and

2665

02:09:27,470 --> 02:09:24,840

started to see a little bit of response

2666

02:09:30,530 --> 02:09:27,480

but it was abnormal so you know based on

2667

02:09:32,629 --> 02:09:30,540

the the response of the catch tank and

2668

02:09:34,669 --> 02:09:32,639

how that fluid fill was not really in

2669

02:09:36,530 --> 02:09:34,679

family you know the the team talked

2670

02:09:37,910 --> 02:09:36,540

through different scenarios you know

2671

02:09:40,129 --> 02:09:37,920

what could happen if we don't have a

2672

02:09:41,810 --> 02:09:40,139

full bleed in what is the the

2673

02:09:43,669 --> 02:09:41,820

appropriate course of action so in the

2674

02:09:46,430 --> 02:09:43,679

end I think the team made a really good

2675

02:09:48,109 --> 02:09:46,440

call to to stand down that attempt and

2676
02:09:50,870 --> 02:09:48,119
then of course since then they've gone

2677
02:09:52,310 --> 02:09:50,880
into the system did find you know like

2678
02:09:55,129 --> 02:09:52,320
you said a clock filter a little bit

2679
02:09:57,229 --> 02:09:55,139
more oxidation than typical and that's

2680
02:10:00,109 --> 02:09:57,239
kind of expected over the course of that

2681
02:10:01,669 --> 02:10:00,119
system's use and SpaceX does proactively

2682
02:10:04,010 --> 02:10:01,679
go in and change that filter very

2683
02:10:06,709 --> 02:10:04,020
frequently this one got clogged a little

2684
02:10:08,149 --> 02:10:06,719
sooner than normal so uh caught us a

2685
02:10:10,609 --> 02:10:08,159
little bit by surprise after you know

2686
02:10:13,850 --> 02:10:10,619
having a good performance on static fire

2687
02:10:16,430 --> 02:10:13,860
but uh you know sometimes things like

2688
02:10:19,070 --> 02:10:16,440

that happen there's so many systems so

2689

02:10:21,410 --> 02:10:19,080

many systems that have to be just right

2690

02:10:23,209 --> 02:10:21,420

in order for a rocket launch to go off

2691

02:10:24,350 --> 02:10:23,219

so it is impressive when they have

2692

02:10:26,030 --> 02:10:24,360

something like that and work quickly

2693

02:10:28,669 --> 02:10:26,040

through it yeah that's to turn it around

2694

02:10:30,530 --> 02:10:28,679

that quickly is is like Kathy and

2695

02:10:32,290 --> 02:10:30,540

multiple said in light of this it just

2696

02:10:35,149 --> 02:10:32,300

reminds us space flight is hard

2697

02:10:37,490 --> 02:10:35,159

absolutely and so John now that you're

2698

02:10:40,609 --> 02:10:37,500

returning for launch attempt number two

2699

02:10:43,129 --> 02:10:40,619

how does the team reset for the next

2700

02:10:45,890 --> 02:10:43,139

attempt yeah you know so the team has

2701

02:10:47,570 --> 02:10:45,900

had a couple days to rest and get uh

2702

02:10:49,669 --> 02:10:47,580

you know eyes on the data from the first

2703

02:10:50,990 --> 02:10:49,679

attempt you know very important so you

2704

02:10:53,330 --> 02:10:51,000

know we look through all the different

2705

02:10:55,010 --> 02:10:53,340

uh performance sensor blips anything

2706

02:10:57,410 --> 02:10:55,020

that there is to look at make sure that

2707

02:11:00,169 --> 02:10:57,420

we're good to go today so yeah the

2708

02:11:01,850 --> 02:11:00,179

team's on Console I talked I checked in

2709

02:11:03,830 --> 02:11:01,860

um with the folks on Console just uh

2710

02:11:05,390 --> 02:11:03,840

before coming on air and everything's

2711

02:11:07,490 --> 02:11:05,400

been going great so you know Dragon

2712

02:11:09,350 --> 02:11:07,500

looks like it's ready to go today and so

2713

02:11:10,910 --> 02:11:09,360

we'll keep monitoring right through the

2714

02:11:13,490 --> 02:11:10,920

the big phases like you said launch

2715

02:11:16,669 --> 02:11:13,500

Escape arm and then if the entire

2716

02:11:18,830 --> 02:11:16,679

vehicle is ready and and everyone's uh

2717

02:11:20,689 --> 02:11:18,840

go for flight we'll uh we'll go get this

2718

02:11:22,970 --> 02:11:20,699

off the ground today and that's great

2719

02:11:26,089 --> 02:11:22,980

news the you know everything been going

2720

02:11:28,010 --> 02:11:26,099

pretty smoothly so far our uh weather

2721

02:11:30,050 --> 02:11:28,020

and the ascent Corridor is the one thing

2722

02:11:32,510 --> 02:11:30,060

we're kind of keeping an eye on closely

2723

02:11:33,950 --> 02:11:32,520

keep an eye on a lot of things but that

2724

02:11:36,830 --> 02:11:33,960

one is the one that's kind of right on

2725

02:11:38,330 --> 02:11:36,840

the line there but so far looking like

2726
02:11:40,609 --> 02:11:38,340
we're going to go forward for an attempt

2727
02:11:43,310 --> 02:11:40,619
and that's great news we've got three

2728
02:11:46,010 --> 02:11:43,320
consecutive days right that we can do it

2729
02:11:47,870 --> 02:11:46,020
now so every 24 hours we have an

2730
02:11:50,390 --> 02:11:47,880
opportunity a little less than 24 hours

2731
02:11:52,609 --> 02:11:50,400
and why is that that we can go three

2732
02:11:54,169 --> 02:11:52,619
days in a row well you know it's how the

2733
02:11:55,850 --> 02:11:54,179
orbital mechanics work out right for

2734
02:11:57,589 --> 02:11:55,860
getting to the station you know and

2735
02:11:59,330 --> 02:11:57,599
looking at the phasing times the

2736
02:12:01,430 --> 02:11:59,340
duration is important you know some days

2737
02:12:02,810 --> 02:12:01,440
uh the phasing time to get to the

2738
02:12:04,910 --> 02:12:02,820

International Space Station would just

2739

02:12:06,410 --> 02:12:04,920

be too long for the crew to be you know

2740

02:12:07,370 --> 02:12:06,420

inside there for three four days so we

2741

02:12:09,350 --> 02:12:07,380

try to get you know shorter

2742

02:12:11,270 --> 02:12:09,360

opportunities uh of course you know

2743

02:12:14,270 --> 02:12:11,280

we're protecting for contingencies right

2744

02:12:16,850 --> 02:12:14,280

if the uh if we go on a very long

2745

02:12:19,250 --> 02:12:16,860

phasing and then had an issue docking

2746

02:12:21,109 --> 02:12:19,260

had to do rendezvous come back had bad

2747

02:12:23,209 --> 02:12:21,119

weather you know we protect for a lot of

2748

02:12:25,669 --> 02:12:23,219

extra days of capability in the cabin as

2749

02:12:27,109 --> 02:12:25,679

uh as Raja is well aware so you know

2750

02:12:28,790 --> 02:12:27,119

just protecting for those opportunities

2751

02:12:29,930 --> 02:12:28,800

and picking the the best times to get

2752

02:12:32,330 --> 02:12:29,940

the station

2753

02:12:33,709 --> 02:12:32,340

well we hope that this is the one the

2754

02:12:35,990 --> 02:12:33,719

second attempt and we won't have to

2755

02:12:38,629 --> 02:12:36,000

visit those other two opportunities John

2756

02:12:40,850 --> 02:12:38,639

Posey crew Dragon lead engineer thanks

2757

02:12:43,070 --> 02:12:40,860

for being here for NASA and we know

2758

02:12:45,890 --> 02:12:43,080

you're now headed on Console headed over

2759

02:12:47,149 --> 02:12:45,900

there to do your job yes sir all right

2760

02:12:48,530 --> 02:12:47,159

well good luck tonight and thank you

2761

02:12:50,569 --> 02:12:48,540

again for being here

2762

02:12:53,149 --> 02:12:50,579

and now we'll head out to our VIP

2763

02:12:56,209 --> 02:12:53,159

location where our Jasmine Hopkins is

2764

02:12:58,609 --> 02:12:56,219

with a pair of special guests Jasmine

2765

02:13:00,709 --> 02:12:58,619

thank you so much Daryl the energy is

2766

02:13:02,629 --> 02:13:00,719

picking up here at osb2 as we March

2767

02:13:04,669 --> 02:13:02,639

closer to launch right now I'm so glad

2768

02:13:06,589 --> 02:13:04,679

to be joined by Salim almari the

2769

02:13:08,870 --> 02:13:06,599

director general of the Muhammad bin

2770

02:13:11,270 --> 02:13:08,880

Rasheed Space Center as well as huzzah

2771

02:13:12,649 --> 02:13:11,280

al-mansori UAE astronaut thank you so

2772

02:13:14,390 --> 02:13:12,659

much for being here tonight thank you

2773

02:13:17,689 --> 02:13:14,400

Jasmine of course Lynn we'll start with

2774

02:13:19,550 --> 02:13:17,699

you uh Sultan is the first UAE astronaut

2775

02:13:21,350 --> 02:13:19,560

to go on a long duration mission to the

2776

02:13:23,030 --> 02:13:21,360

space station he'll be on a six-month

2777

02:13:24,950 --> 02:13:23,040

science Mission so what is the UAE

2778

02:13:26,510 --> 02:13:24,960

hoping to learn from him definitely

2779

02:13:28,189 --> 02:13:26,520

there's a lot we plan to do during this

2780

02:13:30,109 --> 02:13:28,199

Mission and learn from him and from this

2781

02:13:31,370 --> 02:13:30,119

six-month duration so there's a lot of

2782

02:13:33,530 --> 02:13:31,380

science we're going to be doing a lot of

2783

02:13:35,629 --> 02:13:33,540

human life sciences there are science

2784

02:13:36,950 --> 02:13:35,639

with over 20 different experiments with

2785

02:13:38,569 --> 02:13:36,960

UA universities and international

2786

02:13:40,609 --> 02:13:38,579

universities so that's something really

2787

02:13:43,129 --> 02:13:40,619

big for us but we also have a very

2788

02:13:44,930 --> 02:13:43,139

in-depth education program where we try

2789

02:13:46,970 --> 02:13:44,940

we will try and reach every school kid

2790

02:13:49,850 --> 02:13:46,980

in the UAE doing simple science

2791

02:13:51,589 --> 02:13:49,860

experiments simple YouTube videos and of

2792

02:13:53,330 --> 02:13:51,599

course other than that we'll do a lot of

2793

02:13:55,430 --> 02:13:53,340

Pao events where we have these live

2794

02:13:58,370 --> 02:13:55,440

chats with astronauts with the astronaut

2795

02:13:59,750 --> 02:13:58,380

from space with our kids and public so I

2796

02:14:01,729 --> 02:13:59,760

think there's we're quite excited for

2797

02:14:03,169 --> 02:14:01,739

this uh for this six-month duration

2798

02:14:08,209 --> 02:14:03,179

mission right a lot of excitement

2799

02:14:12,589 --> 02:14:10,250

you said uh Sunday or Monday's uh

2800

02:14:13,850 --> 02:14:12,599

morning attempt to now so how is he

2801

02:14:16,790 --> 02:14:13,860

feeling uh getting ready for launch

2802

02:14:18,410 --> 02:14:16,800

again uh Sultan he's super excited about

2803

02:14:21,410 --> 02:14:18,420

his lunch it's going to be his first

2804

02:14:23,689 --> 02:14:21,420

mission uh first mission for also Woody

2805

02:14:26,569 --> 02:14:23,699

and Andre Fu dive they are super excited

2806

02:14:28,669 --> 02:14:26,579

they can't wait to to experience the

2807

02:14:30,350 --> 02:14:28,679

weightlessness and to just to start

2808

02:14:32,030 --> 02:14:30,360

conducting science and to conduct

2809

02:14:34,310 --> 02:14:32,040

experiments onboard The Internship space

2810

02:14:35,870 --> 02:14:34,320

station it is a really beautiful night

2811

02:14:38,510 --> 02:14:35,880

for lunch so hopefully it's going to

2812

02:14:40,490 --> 02:14:38,520

happen today and we are looking forward

2813

02:14:42,530 --> 02:14:40,500

to see them floating within couple of

2814

02:14:43,970 --> 02:14:42,540

hours yeah we really are looking forward

2815

02:14:45,649 --> 02:14:43,980

to that it is a beautiful night for

2816

02:14:47,270 --> 02:14:45,659

launch so everybody's looking forward to

2817

02:14:48,830 --> 02:14:47,280

it thank you both so much for being here

2818

02:14:51,589 --> 02:14:48,840

tonight thank you thank you so much of

2819

02:14:53,629 --> 02:14:51,599

course Daryl back to you all right thank

2820

02:14:56,390 --> 02:14:53,639

you Jasmine and we are now T-minus one

2821

02:14:58,250 --> 02:14:56,400

hour and 33 minutes until liftoff of

2822

02:15:00,229 --> 02:14:58,260

crew six from the Kennedy Space Center

2823

02:15:04,450 --> 02:15:00,239

here in Florida you're watching live

2824

02:15:09,350 --> 02:15:07,250

monitoring the crew inside and we've had

2825

02:15:11,629 --> 02:15:09,360

some great great interviews but in the

2826

02:15:13,850 --> 02:15:11,639

interim during that time

2827

02:15:16,550 --> 02:15:13,860

we heard that we're working no issues

2828

02:15:18,709 --> 02:15:16,560

and the team is moving forward through

2829

02:15:20,390 --> 02:15:18,719

the countdown yep and we heard uh good

2830

02:15:22,430 --> 02:15:20,400

Comm checks you heard that earlier right

2831

02:15:23,689 --> 02:15:22,440

before we interviewed John that they

2832

02:15:25,010 --> 02:15:23,699

were going to redo the ground checks so

2833

02:15:29,810 --> 02:15:25,020

it sounds like those were done

2834

02:15:34,129 --> 02:15:32,330

and uh yeah as you saw it you mentioned

2835

02:15:35,750 --> 02:15:34,139

to that ISS video the science going on

2836

02:15:37,669 --> 02:15:35,760

there and you can see underneath Woody's

2837

02:15:40,790 --> 02:15:37,679

feet just some of the science

2838

02:15:42,830 --> 02:15:40,800

um so this on average each increment so

2839

02:15:44,870 --> 02:15:42,840

they'll be part of expedition 68 69 when

2840

02:15:46,430 --> 02:15:44,880

they get out there uh running about 300

2841

02:15:48,830 --> 02:15:46,440

experiments in increment which is just

2842

02:15:50,750 --> 02:15:48,840

incredible when you think about uh you

2843

02:15:52,910 --> 02:15:50,760

know what that National Lab is doing up

2844

02:15:54,890 --> 02:15:52,920

there and with having four people go up

2845

02:15:57,649 --> 02:15:54,900

at a time just allows so much more

2846

02:15:59,330 --> 02:15:57,659

bandwidth and Science and I mean I think

2847

02:16:01,450 --> 02:15:59,340

that's the reason I think most of us do

2848

02:16:03,470 --> 02:16:01,460

the job just some exciting

2849

02:16:05,390 --> 02:16:03,480

changing things I think my favorite

2850

02:16:07,609 --> 02:16:05,400

experiments we did up there I I call

2851
02:16:10,550 --> 02:16:07,619
them Dual Purpose things so uh some

2852
02:16:11,870 --> 02:16:10,560
water uh Reclamation and then carbon

2853
02:16:13,850 --> 02:16:11,880
dioxide scrubbing things and we were

2854
02:16:16,430 --> 02:16:13,860
doing those things uh because they help

2855
02:16:18,890 --> 02:16:16,440
us with exploration so if we can have 98

2856
02:16:20,870 --> 02:16:18,900
of our water reclaimed then we can meet

2857
02:16:23,569 --> 02:16:20,880
the mass margins to go to Mars and if we

2858
02:16:25,669 --> 02:16:23,579
can scrub CO2 again we can we can live

2859
02:16:27,109 --> 02:16:25,679
in on the moon and on Mars but the cool

2860
02:16:28,310 --> 02:16:27,119
thing about those Technologies is if you

2861
02:16:32,150 --> 02:16:28,320
scale them on Earth I mean think about

2862
02:16:34,009 --> 02:16:32,160
reclaiming 98 of our water and or are

2863
02:16:36,349 --> 02:16:34,019

solving our CO2 problems I mean these

2864

02:16:38,870 --> 02:16:36,359

are existential species changing

2865

02:16:40,009 --> 02:16:38,880

Technologies and just to the you know

2866

02:16:41,570 --> 02:16:40,019

that we're just starting to get in the

2867

02:16:43,370 --> 02:16:41,580

fundamentals of and if we can solve some

2868

02:16:45,589 --> 02:16:43,380

of those problems I mean the the impact

2869

02:16:47,209 --> 02:16:45,599

NASA can have just on on the world let

2870

02:16:49,250 --> 02:16:47,219

alone the solar system is is

2871

02:16:51,410 --> 02:16:49,260

mind-boggling so I think that's to me

2872

02:16:53,030 --> 02:16:51,420

why I love this job and why I think so

2873

02:16:55,129 --> 02:16:53,040

much of us love doing this and the

2874

02:16:57,469 --> 02:16:55,139

things you can discover in a micro in

2875

02:16:59,570 --> 02:16:57,479

gravity environment um even simple

2876

02:17:00,770 --> 02:16:59,580

things like we did a concrete hardening

2877

02:17:02,089 --> 02:17:00,780

experiment when I was up there I

2878

02:17:03,730 --> 02:17:02,099

remember which I thought thought at the

2879

02:17:05,990 --> 02:17:03,740

time was like

2880

02:17:07,669 --> 02:17:06,000

I'm sorry for whoever the four sides is

2881

02:17:09,650 --> 02:17:07,679

like how lame is this watch it literally

2882

02:17:11,690 --> 02:17:09,660

watching concrete Harden but Matthias

2883

02:17:13,549 --> 02:17:11,700

who's a brilliant materials scientist

2884

02:17:14,690 --> 02:17:13,559

explained to me so that the reason we

2885

02:17:16,490 --> 02:17:14,700

were doing it was to be able to use

2886

02:17:18,469 --> 02:17:16,500

regolith on the surface of the Moon to

2887

02:17:20,209 --> 02:17:18,479

build structures but the other cool

2888

02:17:22,429 --> 02:17:20,219

earth science part is apparently

2889

02:17:24,410 --> 02:17:22,439

concrete hardening releases CO2 and it's

2890

02:17:26,150 --> 02:17:24,420

a ridiculous amount of carbon we put in

2891

02:17:28,070 --> 02:17:26,160

the in the atmosphere on the earth just

2892

02:17:29,629 --> 02:17:28,080

from the process of it hardening so one

2893

02:17:31,549 --> 02:17:29,639

of the side benefits is this is figuring

2894

02:17:33,469 --> 02:17:31,559

out better ways for concrete to harden

2895

02:17:35,089 --> 02:17:33,479

and you think about all the developing

2896

02:17:36,709 --> 02:17:35,099

places in the world if we just gave them

2897

02:17:38,929 --> 02:17:36,719

a simpler concrete formulation that

2898

02:17:42,169 --> 02:17:38,939

didn't emit greenhouse gases again just

2899

02:17:44,089 --> 02:17:42,179

game changing stuff so really cool that

2900

02:17:45,469 --> 02:17:44,099

you know each increment is going to do

2901

02:17:46,969 --> 02:17:45,479

that and this National Lab is just

2902

02:17:48,410 --> 02:17:46,979

paying huge dividends besides teaching

2903

02:17:49,849 --> 02:17:48,420

us how to live and work in space and get

2904

02:17:51,950 --> 02:17:49,859

to the moon in Mars but also change in

2905

02:17:54,950 --> 02:17:51,960

our life every day there have been

2906

02:17:56,990 --> 02:17:54,960

spin-offs from space ever since you know

2907

02:17:59,509 --> 02:17:57,000

the Space Program came into existence

2908

02:18:02,750 --> 02:17:59,519

and it's amazing to hear just how many

2909

02:18:04,969 --> 02:18:02,760

continue to come and benefit not just us

2910

02:18:06,290 --> 02:18:04,979

but Humanity yeah and it's uh I mean

2911

02:18:07,190 --> 02:18:06,300

that's actually more data that we know

2912

02:18:08,750 --> 02:18:07,200

what to do with one of the common

2913

02:18:09,889 --> 02:18:08,760

problems or not problems with people are

2914

02:18:12,410 --> 02:18:09,899

like what's what's the most important

2915

02:18:14,690 --> 02:18:12,420

experiment you did like I it's hard to

2916

02:18:16,669 --> 02:18:14,700

say I mean every every day we're doing

2917

02:18:18,770 --> 02:18:16,679

someone's life's work some universities

2918

02:18:20,270 --> 02:18:18,780

you know years of research and we get to

2919

02:18:21,709 --> 02:18:20,280

be the ones that actually finish the

2920

02:18:23,990 --> 02:18:21,719

execution of it so it's just amazing

2921

02:18:25,669 --> 02:18:24,000

experience up there and what a privilege

2922

02:18:27,770 --> 02:18:25,679

to be able to do that

2923

02:18:29,690 --> 02:18:27,780

we are currently at T minus one hour and

2924

02:18:30,889 --> 02:18:29,700

30 minutes until dragon flies its next

2925

02:18:34,129 --> 02:18:30,899

four-person crew to the International

2926

02:18:36,349 --> 02:18:34,139

Space Station the astronauts as we can

2927

02:18:39,169 --> 02:18:36,359

see earlier and now as we look at the

2928

02:18:41,750 --> 02:18:39,179

spacecraft there they are

2929

02:18:44,270 --> 02:18:41,760

Commander Stephen Bowen pilot Woody

2930

02:18:47,990 --> 02:18:44,280

hoberg and Mission specialist Sultan

2931

02:18:50,870 --> 02:18:48,000

al-nayadi and Andre fedev

2932

02:18:54,770 --> 02:18:50,880

in their seats they're strapped in

2933

02:18:59,629 --> 02:18:57,049

and along our launch our launch timeline

2934

02:19:01,429 --> 02:18:59,639

at the moment

2935

02:19:03,770 --> 02:19:01,439

we're getting ready to have those launch

2936

02:19:06,709 --> 02:19:03,780

Escape system and communication checks

2937

02:19:08,990 --> 02:19:06,719

conducted by the Falcon launch Team

2938

02:19:10,549 --> 02:19:09,000

and we'll be listening in for that call

2939

02:19:14,690 --> 02:19:10,559

out

2940

02:19:17,629 --> 02:19:14,700

still working uh items there and we

2941

02:19:19,790 --> 02:19:17,639

expect around team Eisen hours when they

2942

02:19:21,410 --> 02:19:19,800

would probably start departing and then

2943

02:19:23,330 --> 02:19:21,420

that that gives them time to clear out

2944

02:19:26,509 --> 02:19:23,340

the uh what we call the hazard Zone

2945

02:19:28,370 --> 02:19:26,519

before they start working the the launch

2946

02:19:30,530 --> 02:19:28,380

Escape systems

2947

02:19:32,570 --> 02:19:30,540

each crew 6 astronaut is allowed to

2948

02:19:35,750 --> 02:19:32,580

bring a few personal items with them

2949

02:19:36,830 --> 02:19:35,760

inside the Dragon capsule there and they

2950

02:19:38,270 --> 02:19:36,840

do that

2951

02:19:41,089 --> 02:19:38,280

so they can have something for their

2952

02:19:43,070 --> 02:19:41,099

roughly six months in space you know

2953

02:19:45,349 --> 02:19:43,080

something from Earth to remind them of

2954

02:19:47,030 --> 02:19:45,359

family friends loved ones

2955

02:19:49,550 --> 02:19:47,040

something they love about planet Earth

2956

02:19:52,130 --> 02:19:49,560

and here's a few of the items that crew

2957

02:19:54,650 --> 02:19:52,140

six is taking up Sultan al-nayadi said

2958

02:19:56,450 --> 02:19:54,660

he's bringing a kimono he's he's going

2959

02:19:59,750 --> 02:19:56,460

to be throwing some moves up there some

2960

02:20:02,450 --> 02:19:59,760

Jiu Jitsu he's also bringing a small toy

2961

02:20:05,210 --> 02:20:02,460

rocket from the popular European comic

2962

02:20:07,610 --> 02:20:05,220

Tin Tin Andre fediev is taking a few

2963

02:20:09,650 --> 02:20:07,620

photos and some pins he plans on sharing

2964

02:20:11,510 --> 02:20:09,660

with his family when he gets back home

2965

02:20:13,429 --> 02:20:11,520

for NASA astronaut Woody hoberg he's

2966

02:20:18,530 --> 02:20:13,439

bringing one simple item a photograph

2967

02:20:22,790 --> 02:20:20,270

in terms of personal items mine's uh

2968

02:20:25,370 --> 02:20:22,800

simple unfortunately over the summer I I

2969

02:20:26,929 --> 02:20:25,380

lost my father and so I'm just bringing

2970

02:20:29,090 --> 02:20:26,939

a photo of him that means a lot to me

2971

02:20:32,570 --> 02:20:29,100

and I wish he could come along with me

2972

02:20:35,090 --> 02:20:32,580

but at least I'll I'll well I will be

2973

02:20:35,870 --> 02:20:35,100

bringing him along with me I'll talk

2974

02:20:40,070 --> 02:20:35,880

this

2975

02:20:42,349 --> 02:20:40,080

Raj what he says it's a picture of his

2976

02:20:44,030 --> 02:20:42,359

dad Jim hoberg finishing the Boston

2977

02:20:45,950 --> 02:20:44,040

Marathon and leaving it all in the

2978

02:20:48,230 --> 02:20:45,960

course Jim hoberg along with his wife

2979

02:20:50,750 --> 02:20:48,240

Peggy Rays Woody and his brother in

2980

02:20:53,090 --> 02:20:50,760

Pittsburgh PA he was an electrical

2981

02:20:55,010 --> 02:20:53,100

engineering professor at Carnegie Mellon

2982

02:20:57,290 --> 02:20:55,020

University where he was known for his

2983

02:21:00,889 --> 02:20:57,300

exceptional teaching when he was 75

2984

02:21:02,690 --> 02:21:00,899

years of age he passed away at 75 I

2985

02:21:06,110 --> 02:21:02,700

should say what he says he will remember

2986

02:21:08,929 --> 02:21:06,120

his father for always showing up and for

2987

02:21:10,790 --> 02:21:08,939

his Relentless Pursuit Of Truth when he

2988

02:21:13,130 --> 02:21:10,800

gets to space he's going to keep that

2989

02:21:14,870 --> 02:21:13,140

photo in his crew quarters a touching

2990

02:21:17,330 --> 02:21:14,880

tribute to his father

2991

02:21:19,370 --> 02:21:17,340

all the way up there in space yeah and I

2992

02:21:20,809 --> 02:21:19,380

think what a tribute and like we were

2993

02:21:23,570 --> 02:21:20,819

talking about before none of us got here

2994

02:21:25,550 --> 02:21:23,580

on our own someone got us here and you

2995

02:21:27,469 --> 02:21:25,560

know Woody's dad made Woody who he is

2996

02:21:30,110 --> 02:21:27,479

all of our parents made us who we are

2997

02:21:33,170 --> 02:21:30,120

the instructors at JSC the centers we

2998

02:21:35,870 --> 02:21:33,180

visit we are really just a reflection of

2999

02:21:38,030 --> 02:21:35,880

them so I uh I'm glad what he's able to

3000

02:21:40,250 --> 02:21:38,040

take his his father with him I think

3001

02:21:41,690 --> 02:21:40,260

most astronauts take things for mine

3002

02:21:43,969 --> 02:21:41,700

them with their family their loved ones

3003

02:21:46,429 --> 02:21:43,979

up with them because you are separated

3004

02:21:48,230 --> 02:21:46,439

from the from the Earth but it's right

3005

02:21:49,190 --> 02:21:48,240

there but she you can't go home at the

3006

02:21:50,870 --> 02:21:49,200

end of the night so having that to

3007

02:21:52,849 --> 02:21:50,880

remind you is very important

3008

02:21:55,309 --> 02:21:52,859

now here's what we talk about what you

3009

02:21:56,750 --> 02:21:55,319

brought up and we did this last time but

3010

02:21:59,270 --> 02:21:56,760

I changed I had to change my show and

3011

02:22:02,270 --> 02:21:59,280

tell yeah I love that you did that by

3012

02:22:04,190 --> 02:22:02,280

the way what do you have so uh last time

3013

02:22:06,530 --> 02:22:04,200

I had my Academy shirt I also had a high

3014

02:22:08,330 --> 02:22:06,540

school shirt so you brought two I had

3015

02:22:10,309 --> 02:22:08,340

two shirts yeah okay what do we have I'm

3016

02:22:12,110 --> 02:22:10,319

a sailor so from from Waterloo Iowa yeah

3017

02:22:14,210 --> 02:22:12,120

so I grew up Waterloo Iowa that's right

3018

02:22:16,969 --> 02:22:14,220

my high school shirt one thing so we

3019

02:22:19,610 --> 02:22:16,979

showed these last time yeah uh showed my

3020

02:22:21,230 --> 02:22:19,620

space for Taylor I was also not supposed

3021

02:22:23,270 --> 02:22:21,240

to bring back how can I forget

3022

02:22:24,830 --> 02:22:23,280

um so I did I showed last time we had uh

3023

02:22:26,330 --> 02:22:24,840

the rmo for our mission the other one I

3024

02:22:27,469 --> 02:22:26,340

brought up so my wife works for the

3025

02:22:29,030 --> 02:22:27,479

Department of Veterans Affairs and

3026

02:22:30,889 --> 02:22:29,040

that's obviously near and dear to my

3027

02:22:33,830 --> 02:22:30,899

heart the agency itself so I brought up

3028

02:22:35,630 --> 02:22:33,840

an rmo or a coin I'll say it out loud

3029

02:22:38,450 --> 02:22:35,640

but uh from from the Department of

3030

02:22:39,830 --> 02:22:38,460

Veterans Affairs uh the other thing we

3031

02:22:41,809 --> 02:22:39,840

bring up the last thing I saw what the

3032

02:22:43,670 --> 02:22:41,819

astronauts is a Mach 25 patch and

3033

02:22:45,170 --> 02:22:43,680

hundred day patches and then you fly

3034

02:22:47,210 --> 02:22:45,180

those and also things called Silver

3035

02:22:49,849 --> 02:22:47,220

snoopies which are pins that we give out

3036

02:22:50,870 --> 02:22:49,859

to a very small percentage of the NASA

3037

02:22:52,370 --> 02:22:50,880

Workforce so it's a really special

3038

02:22:54,170 --> 02:22:52,380

little to get one that's flown in space

3039

02:22:57,349 --> 02:22:54,180

and specifically from one that was flown

3040

02:22:59,630 --> 02:22:57,359

by an astronaut for you this is uh

3041

02:23:02,150 --> 02:22:59,640

similar not silver Snoopy but a pendant

3042

02:23:04,910 --> 02:23:02,160

with our patch on it and we flew these

3043

02:23:05,929 --> 02:23:04,920

for some of the key people so for some

3044

02:23:07,309 --> 02:23:05,939

of the folks that helped with our

3045

02:23:10,010 --> 02:23:07,319

mission planning and training so you can

3046

02:23:11,690 --> 02:23:10,020

see the three on there and so the ones

3047

02:23:13,429 --> 02:23:11,700

that are yeah ones that are flowing in

3048

02:23:19,630 --> 02:23:13,439

space are obviously highly sought offer

3049

02:23:25,130 --> 02:23:22,910

my wife is definitely my better half and

3050

02:23:26,750 --> 02:23:25,140

so I had all kinds of cards and notes

3051

02:23:28,730 --> 02:23:26,760

for my kids including look at this look

3052

02:23:31,370 --> 02:23:28,740

at what this one says right here can't

3053

02:23:33,349 --> 02:23:31,380

wait and a little Landing one in the

3054

02:23:35,630 --> 02:23:33,359

water this one's the planets complete

3055

02:23:37,250 --> 02:23:35,640

with the rings of Saturn yeah yeah well

3056

02:23:39,650 --> 02:23:37,260

you know she loves her daddy because

3057

02:23:42,590 --> 02:23:39,660

right here this is the capsule it says

3058

02:23:44,270 --> 02:23:42,600

crew three on it and to hear the kids at

3059

02:23:47,990 --> 02:23:44,280

the bottom and they have a little

3060

02:23:49,610 --> 02:23:48,000

they're saying it's Dad coming home oh

3061

02:23:50,929 --> 02:23:49,620

my gosh and then the interesting one we

3062

02:23:54,050 --> 02:23:50,939

didn't talk about we talked about what

3063

02:23:55,790 --> 02:23:54,060

Nick Hague ninja 12 is helping uh but so

3064

02:23:58,429 --> 02:23:55,800

a lot of us fly up with glasses I don't

3065

02:24:00,530 --> 02:23:58,439

wear glasses but um people have heard

3066

02:24:02,750 --> 02:24:00,540

the term sand so your eyes your vision

3067

02:24:05,150 --> 02:24:02,760

shifts in space and so what happens it

3068

02:24:06,469 --> 02:24:05,160

shifts so what happens is the fluid in

3069

02:24:08,929 --> 02:24:06,479

your body

3070

02:24:10,070 --> 02:24:08,939

pushes up and what can happen or this is

3071

02:24:12,050 --> 02:24:10,080

the leading theory so we're actually

3072

02:24:14,210 --> 02:24:12,060

still trying to figure out exactly what

3073

02:24:15,770 --> 02:24:14,220

what happens but the leading theory is

3074

02:24:17,270 --> 02:24:15,780

that that fluid pushes against the back

3075

02:24:19,370 --> 02:24:17,280

of your cornea it changes the shape of

3076

02:24:20,870 --> 02:24:19,380

your eye and so they fly us up so I

3077

02:24:24,110 --> 02:24:20,880

actually use the glasses I had with me

3078

02:24:26,330 --> 02:24:24,120

in the dragon uh in the event that my

3079

02:24:27,950 --> 02:24:26,340

vision shifted enough that I would have

3080

02:24:29,690 --> 02:24:27,960

a hard time reading the display real

3081

02:24:30,770 --> 02:24:29,700

quick and show us what that look is I

3082

02:24:32,450 --> 02:24:30,780

think we're just trying to humiliate me

3083

02:24:33,770 --> 02:24:32,460

now now I can't see the screen though

3084

02:24:35,570 --> 02:24:33,780

the teleprompter so I'm going to take

3085

02:24:37,429 --> 02:24:35,580

them back out I can see up close really

3086

02:24:39,830 --> 02:24:37,439

well that's what it's meant for us is up

3087

02:24:41,450 --> 02:24:39,840

close vision and and the strap of course

3088

02:24:44,090 --> 02:24:41,460

to hold it on your face exactly this is

3089

02:24:46,070 --> 02:24:44,100

the space the space strap exactly well

3090

02:24:48,710 --> 02:24:46,080

space modified glasses but did you have

3091

02:24:50,630 --> 02:24:48,720

to use them uh so actually I used my my

3092

02:24:51,950 --> 02:24:50,640

near Vision did get worse but not bad

3093

02:24:53,570 --> 02:24:51,960

enough I couldn't see Dragon displays

3094

02:24:55,429 --> 02:24:53,580

but it would stress it would fatigue my

3095

02:24:57,889 --> 02:24:55,439

eyes using the laptops on stations so

3096

02:24:59,150 --> 02:24:57,899

for about the first from like I think

3097

02:25:00,650 --> 02:24:59,160

their first month I'd wear them and then

3098

02:25:02,330 --> 02:25:00,660

my eyes adjusted and I stopped wearing

3099

02:25:04,730 --> 02:25:02,340

them but for about a month I would just

3100

02:25:06,230 --> 02:25:04,740

to avoid eye fatigue and then once I got

3101

02:25:08,809 --> 02:25:06,240

back they they generally go back to

3102

02:25:10,490 --> 02:25:08,819

normal and well that's good and uh we

3103

02:25:12,590 --> 02:25:10,500

continue to work on finding out what we

3104

02:25:14,090 --> 02:25:12,600

do yeah what exactly the cause is uh

3105

02:25:15,650 --> 02:25:14,100

especially because we know that well

3106

02:25:17,030 --> 02:25:15,660

they generally go back to normal but

3107

02:25:18,349 --> 02:25:17,040

that's why we need more long-term data

3108

02:25:20,450 --> 02:25:18,359

because we don't know on a two-year

3109

02:25:21,650 --> 02:25:20,460

Mission to Mars like would it would it

3110

02:25:23,330 --> 02:25:21,660

go back to normal are we are we

3111

02:25:25,550 --> 02:25:23,340

confident what would happen there well

3112

02:25:27,950 --> 02:25:25,560

exactly that's good stuff thank you for

3113

02:25:29,450 --> 02:25:27,960

sharing the problem hopefully we'll have

3114

02:25:30,650 --> 02:25:29,460

to get to the third before that we have

3115

02:25:32,990 --> 02:25:30,660

to dig up some more stuff but we

3116

02:25:35,630 --> 02:25:33,000

appreciate your wife giving us a fresh

3117

02:25:36,830 --> 02:25:35,640

supply of stuff you took to space thank

3118

02:25:38,210 --> 02:25:36,840

you very much

3119

02:25:40,130 --> 02:25:38,220

well when they aren't launching into

3120

02:25:42,830 --> 02:25:40,140

space or working hard to prepare to go

3121

02:25:44,570 --> 02:25:42,840

into space the NASA astronaut core well

3122

02:25:47,510 --> 02:25:44,580

they try to find time to watch their

3123

02:25:50,210 --> 02:25:47,520

friends go into space and you would know

3124

02:25:52,790 --> 02:25:50,220

that yeah so even so I'm here but uh you

3125

02:25:54,290 --> 02:25:52,800

know we saw nick uh Ninja 12 we saw Ike

3126

02:25:57,290 --> 02:25:54,300

Glover helping with the family sport we

3127

02:25:59,389 --> 02:25:57,300

saw Joe Akbar the chief Sharon uh we're

3128

02:26:00,950 --> 02:25:59,399

getting ready so the office is spread

3129

02:26:02,750 --> 02:26:00,960

out doing all kinds of things you have

3130

02:26:05,389 --> 02:26:02,760

uh you know last time Reed was up with

3131

02:26:06,590 --> 02:26:05,399

the administrator exactly so we are all

3132

02:26:08,570 --> 02:26:06,600

over the place but even if you're not

3133

02:26:10,429 --> 02:26:08,580

you're probably online or at home

3134

02:26:12,950 --> 02:26:10,439

watching and so I was going to try to

3135

02:26:14,690 --> 02:26:12,960

dial in so Woody as we talked about uh

3136

02:26:16,730 --> 02:26:14,700

is sitting in a seat that's been used

3137

02:26:18,410 --> 02:26:16,740

before so I was going to try to get you

3138

02:26:20,090 --> 02:26:18,420

got Colleen Woody are you I'm not well I

3139

02:26:22,570 --> 02:26:20,100

don't think I could try calling I don't

3140

02:26:27,110 --> 02:26:24,950

all right yeah okay so we got Megan

3141

02:26:28,790 --> 02:26:27,120

MacArthur on the line who flew on crew

3142

02:26:30,889 --> 02:26:28,800

two that I got to train with and so

3143

02:26:32,750 --> 02:26:30,899

Megan can you can you hear me okay

3144

02:26:33,889 --> 02:26:32,760

Hey Russ I got you loud and clear hey

3145

02:26:35,690 --> 02:26:33,899

awesome to talk to you thanks for

3146

02:26:37,849 --> 02:26:35,700

calling so Vegas at home and he said

3147

02:26:39,349 --> 02:26:37,859

watching the launch um and we're yeah

3148

02:26:40,910 --> 02:26:39,359

you might have better ideas about what

3149

02:26:42,469 --> 02:26:40,920

they're doing uh I think you guys came

3150

02:26:43,910 --> 02:26:42,479

up with a game to kill some time while

3151
02:26:44,809 --> 02:26:43,920
you're waiting for the closeout crew to

3152
02:26:46,550 --> 02:26:44,819
leave

3153
02:26:48,290 --> 02:26:46,560
yeah well it's been it's been enough

3154
02:26:49,849 --> 02:26:48,300
time that you know when you first get in

3155
02:26:51,650 --> 02:26:49,859
of course you're all business and you go

3156
02:26:54,469 --> 02:26:51,660
through your checklist and you review

3157
02:26:56,030 --> 02:26:54,479
the nominal timeline and you you uh of

3158
02:26:57,710 --> 02:26:56,040
course review the contingency actions

3159
02:26:59,750 --> 02:26:57,720
that you might have to take but uh but

3160
02:27:01,670 --> 02:26:59,760
now you're into just the weight you're

3161
02:27:04,429 --> 02:27:01,680
just and uh you know I was lucky enough

3162
02:27:06,889 --> 02:27:04,439
to fly with a really fun and fun loving

3163
02:27:10,010 --> 02:27:06,899

crew and so um we just we said about

3164

02:27:11,570 --> 02:27:10,020

entertaining each other no we had Tomas

3165

02:27:14,030 --> 02:27:11,580

kind of our Julie the cruise director

3166

02:27:15,469 --> 02:27:14,040

and he had us playing a variety of

3167

02:27:16,849 --> 02:27:15,479

different games that I'm not sure if he

3168

02:27:18,349 --> 02:27:16,859

made them up or these are French games

3169

02:27:19,670 --> 02:27:18,359

or what but he he kept us well

3170

02:27:21,710 --> 02:27:19,680

entertained it looked like the French

3171

02:27:23,750 --> 02:27:21,720

version of rock paper scissors I'm not

3172

02:27:25,309 --> 02:27:23,760

sure if that's what it was but yeah so

3173

02:27:27,290 --> 02:27:25,319

it's called the game of thumbs and I

3174

02:27:29,450 --> 02:27:27,300

won't I won't um strain anybody by

3175

02:27:31,250 --> 02:27:29,460

trying to say that also say but uh the

3176

02:27:33,590 --> 02:27:31,260

game of thumbs and so yeah it's a little

3177

02:27:35,690 --> 02:27:33,600

bit like rock paper scissors well Megan

3178

02:27:38,690 --> 02:27:35,700

you're watching us uh you know get ready

3179

02:27:40,969 --> 02:27:38,700

to launch crew six and uh of course you

3180

02:27:43,910 --> 02:27:40,979

know you were you were on crew two and

3181

02:27:45,830 --> 02:27:43,920

and what a mission that was and uh uh

3182

02:27:47,630 --> 02:27:45,840

what's it like to to be where you are

3183

02:27:50,030 --> 02:27:47,640

kind of relaxing uh getting ready to

3184

02:27:52,429 --> 02:27:50,040

watch the astronauts go up

3185

02:27:54,950 --> 02:27:52,439

it's it's so exciting it's so much fun

3186

02:27:56,570 --> 02:27:54,960

to see your friends go into space

3187

02:27:59,210 --> 02:27:56,580

um of course Steve is a classmate of

3188

02:28:01,490 --> 02:27:59,220

mine and Woody uh was my family escort

3189

02:28:03,110 --> 02:28:01,500

actually he was with my family when I

3190

02:28:05,210 --> 02:28:03,120

was getting to launch in that in that

3191

02:28:06,830 --> 02:28:05,220

very same seat and so my son in

3192

02:28:08,450 --> 02:28:06,840

particular is very excited to get to

3193

02:28:10,250 --> 02:28:08,460

watch Woody launch so he's made me

3194

02:28:12,050 --> 02:28:10,260

promise I had to peel him away from the

3195

02:28:13,250 --> 02:28:12,060

screen to get him to go to bed

3196

02:28:14,990 --> 02:28:13,260

um with the promise that I would wake

3197

02:28:16,969 --> 02:28:15,000

him up in time to watch the launch so

3198

02:28:18,469 --> 02:28:16,979

we're excited for all four of the crew

3199

02:28:20,450 --> 02:28:18,479

members of crew six and we and we can't

3200

02:28:22,490 --> 02:28:20,460

wait to see them get started on this

3201

02:28:25,010 --> 02:28:22,500

next phase of their Adventure

3202

02:28:27,650 --> 02:28:25,020

very cool that's awesome and you know

3203

02:28:30,050 --> 02:28:27,660

what uh we are counting down just one

3204

02:28:32,690 --> 02:28:30,060

hour and 20 minutes to go until uh

3205

02:28:35,570 --> 02:28:32,700

liftoff and uh you know I gotta ask you

3206

02:28:37,730 --> 02:28:35,580

Megan how's Raj doing so far because you

3207

02:28:39,469 --> 02:28:37,740

were one of our co-hosts sitting in this

3208

02:28:41,030 --> 02:28:39,479

seat so you wanna you wanna grade him

3209

02:28:48,650 --> 02:28:41,040

live on the air you could you could text

3210

02:28:52,190 --> 02:28:50,750

Raza he recognized you as the guy that

3211

02:28:54,110 --> 02:28:52,200

cut history oh that's right yes before

3212

02:28:56,770 --> 02:28:54,120

daddy came home his his uh quarantine

3213

02:28:59,510 --> 02:28:56,780

cut yeah I still don't pay for haircuts

3214

02:29:00,830 --> 02:28:59,520

yeah it was a test case yeah Megan was

3215

02:29:03,429 --> 02:29:00,840

nice enough to let me test out my hair

3216

02:29:06,070 --> 02:29:03,439

cutting skills on her son

3217

02:29:09,410 --> 02:29:06,080

he didn't tell me that

3218

02:29:11,510 --> 02:29:09,420

don't worry I I tried I I did on other

3219

02:29:12,950 --> 02:29:11,520

kids yeah what's the first

3220

02:29:13,849 --> 02:29:12,960

yeah you cut your hair in space remember

3221

02:29:14,929 --> 02:29:13,859

you

3222

02:29:16,190 --> 02:29:14,939

usually there's some kind of flowby

3223

02:29:17,870 --> 02:29:16,200

thing that you it's yeah it's basically

3224

02:29:19,910 --> 02:29:17,880

a floating yeah it's a very loud flobby

3225

02:29:23,030 --> 02:29:19,920

and Megan were you doing your hair in

3226
02:29:24,469 --> 02:29:23,040
space no oh no no no no I was just let

3227
02:29:26,030 --> 02:29:24,479
that grow up yeah just let it grow out

3228
02:29:28,070 --> 02:29:26,040
and I remember seeing the shot of you

3229
02:29:29,929 --> 02:29:28,080
just your hair just flowing freely and

3230
02:29:30,830 --> 02:29:29,939
uh it's a great shot of you floating

3231
02:29:32,809 --> 02:29:30,840
around

3232
02:29:34,670 --> 02:29:32,819
doing your business I also feel like my

3233
02:29:36,830 --> 02:29:34,680
hair deserves Its Own Credit you know in

3234
02:29:38,630 --> 02:29:36,840
the in the credit line like Megan and

3235
02:29:40,910 --> 02:29:38,640
Megan's hair because it's a whole entity

3236
02:29:42,170 --> 02:29:40,920
on its own got a lot of traction there

3237
02:29:44,809 --> 02:29:42,180
well Megan I just want to let you know

3238
02:29:46,969 --> 02:29:44,819

that I brought lots of snacks courtesy

3239

02:29:48,889 --> 02:29:46,979

of my wife Rachel she packed me up a big

3240

02:29:51,590 --> 02:29:48,899

bag here I know you took a shot at me

3241

02:29:53,750 --> 02:29:51,600

when your husband uh co-hosted so I want

3242

02:29:55,490 --> 02:29:53,760

you to know I'm in good hands

3243

02:29:58,490 --> 02:29:55,500

awesome we can't have you getting grumpy

3244

02:30:00,830 --> 02:29:58,500

no no ma'am thank you very much well

3245

02:30:02,809 --> 02:30:00,840

Megan we really appreciate you joining

3246

02:30:05,150 --> 02:30:02,819

us uh this evening watching the launch

3247

02:30:07,130 --> 02:30:05,160

from home uh thank you so much for being

3248

02:30:08,090 --> 02:30:07,140

on the broadcast with us thanks man I'll

3249

02:30:10,130 --> 02:30:08,100

see you back in Houston you're doing

3250

02:30:12,230 --> 02:30:10,140

awesome take care

3251

02:30:16,670 --> 02:30:12,240

all right Megan McArthur

3252

02:30:18,770 --> 02:30:16,680

crew two pilot uh and uh did a fantastic

3253

02:30:20,990 --> 02:30:18,780

job for us as a co-host

3254

02:30:23,870 --> 02:30:21,000

completed an amazing Mission she did a

3255

02:30:25,670 --> 02:30:23,880

ton of work working with kids uh

3256

02:30:28,490 --> 02:30:25,680

especially afterwards she's really

3257

02:30:31,490 --> 02:30:28,500

leading in effort in education

3258

02:30:32,750 --> 02:30:31,500

um great having her on the broadcast hey

3259

02:30:34,969 --> 02:30:32,760

take a look at the

3260

02:30:36,770 --> 02:30:34,979

look at the crew six's patch we want to

3261

02:30:39,590 --> 02:30:36,780

talk about how this came into existence

3262

02:30:43,309 --> 02:30:39,600

you know it's very unique each patch for

3263

02:30:45,710 --> 02:30:43,319

each Mission every flight has one and

3264

02:30:47,330 --> 02:30:45,720

it's designed by the crew so you can see

3265

02:30:48,650 --> 02:30:47,340

the one for crew six and what you'll

3266

02:30:50,450 --> 02:30:48,660

notice right away is the wooden dragon

3267

02:30:53,090 --> 02:30:50,460

ship with the dragon figurehead there

3268

02:30:55,010 --> 02:30:53,100

and that's because each crew six member

3269

02:30:56,690 --> 02:30:55,020

has an affinity for seafaring vessels

3270

02:30:58,309 --> 02:30:56,700

and then check out the anchor it's the

3271

02:31:00,830 --> 02:30:58,319

International Space Station

3272

02:31:02,570 --> 02:31:00,840

you see it there and then lastly the

3273

02:31:05,389 --> 02:31:02,580

sale represents the three planetary

3274

02:31:08,210 --> 02:31:05,399

bodies of Earth Moon and Mars the

3275

02:31:11,030 --> 02:31:08,220

ultimate destination of NASA's Artemis

3276

02:31:12,770 --> 02:31:11,040

program I like that call forward to

3277

02:31:14,990 --> 02:31:12,780

where we're going even though this is a

3278

02:31:16,309 --> 02:31:15,000

mission to low earth orbit yeah that's I

3279

02:31:17,570 --> 02:31:16,319

think that's a common theme in a lot of

3280

02:31:20,389 --> 02:31:17,580

the patches you'll see like a reference

3281

02:31:22,309 --> 02:31:20,399

to Moon Mars uh Orion some something

3282

02:31:24,349 --> 02:31:22,319

like that does businesses we definitely

3283

02:31:26,030 --> 02:31:24,359

see this as a stepping stone to to go

3284

02:31:27,410 --> 02:31:26,040

beyond low earth orbit I mean that's one

3285

02:31:28,969 --> 02:31:27,420

of the cool things about commercial crew

3286

02:31:30,770 --> 02:31:28,979

is we are putting Private Industry to

3287

02:31:32,389 --> 02:31:30,780

low earth orbit so that NASA can can

3288

02:31:34,130 --> 02:31:32,399

focus resources and people on

3289

02:31:36,410 --> 02:31:34,140

exploration and going Beyond low earth

3290

02:31:39,050 --> 02:31:36,420

orbit

3291

02:31:43,490 --> 02:31:39,060

that's right we're just one hour and 17

3292

02:31:45,410 --> 02:31:43,500

minutes until liftoff of crew six

3293

02:31:47,570 --> 02:31:45,420

hearing good things about the countdown

3294

02:31:49,550 --> 02:31:47,580

as we go along the way

3295

02:31:51,889 --> 02:31:49,560

the crew has ingressed helped by our

3296

02:31:53,630 --> 02:31:51,899

closeout team of course the umbilicals

3297

02:31:55,969 --> 02:31:53,640

are attached

3298

02:31:58,730 --> 02:31:55,979

they provide the breathing air and calms

3299

02:32:01,969 --> 02:31:58,740

to dragon and the astronauts

3300

02:32:04,190 --> 02:32:01,979

suit leak checks completed comms checks

3301
02:32:05,929 --> 02:32:04,200
completed with the core and the launch

3302
02:32:08,030 --> 02:32:05,939
director

3303
02:32:10,070 --> 02:32:08,040
after those suit League checks the

3304
02:32:11,330 --> 02:32:10,080
closeout team was able to close and seal

3305
02:32:14,150 --> 02:32:11,340
the hatch

3306
02:32:17,809 --> 02:32:14,160
which has its own leak Jack

3307
02:32:19,550 --> 02:32:17,819
they made sure to look for any fod that

3308
02:32:21,889 --> 02:32:19,560
might be there and fod stands for

3309
02:32:24,290 --> 02:32:21,899
foreign object debris

3310
02:32:26,210 --> 02:32:24,300
as we look in from the white room

3311
02:32:28,429 --> 02:32:26,220
the closeout team will wait another 15

3312
02:32:31,010 --> 02:32:28,439
minutes before they'll clear out of that

3313
02:32:35,090 --> 02:32:33,290

you saw those orange bags so there's no

3314

02:32:36,710 --> 02:32:35,100

the people are starting to move out of

3315

02:32:38,570 --> 02:32:36,720

there but you saw those orange packs in

3316

02:32:40,190 --> 02:32:38,580

that previous View just to the right on

3317

02:32:42,770 --> 02:32:40,200

that wall those are actually breathing

3318

02:32:44,750 --> 02:32:42,780

uh apparatus in case they have to

3319

02:32:46,250 --> 02:32:44,760

emergency egress that they can actually

3320

02:32:50,270 --> 02:32:46,260

hook into their suits and get breathing

3321

02:32:55,730 --> 02:32:52,010

so we understand that the closeout team

3322

02:32:57,469 --> 02:32:55,740

has actually Departed the pad

3323

02:32:59,929 --> 02:32:57,479

and now they're doing some final weather

3324

02:33:01,610 --> 02:32:59,939

checks

3325

02:33:04,790 --> 02:33:01,620

that'll be necessary before they give

3326

02:33:06,530 --> 02:33:04,800

that final go no go for launch

3327

02:33:08,030 --> 02:33:06,540

gonna put the balloons up into the air

3328

02:33:12,110 --> 02:33:08,040

the winds have picked up a little bit

3329

02:33:15,410 --> 02:33:14,270

yeah and a great example uh continuing

3330

02:33:17,210 --> 02:33:15,420

to run ahead of timeline and

3331

02:33:19,010 --> 02:33:17,220

specifically that closeout crew already

3332

02:33:20,870 --> 02:33:19,020

being done much earlier than last time

3333

02:33:22,370 --> 02:33:20,880

but again that's their you know you can

3334

02:33:23,750 --> 02:33:22,380

tell it's a well-oiled machine now they

3335

02:33:27,110 --> 02:33:23,760

have the practice from just doing this

3336

02:33:28,190 --> 02:33:27,120

uh two days ago and now uh doing it

3337

02:33:30,050 --> 02:33:28,200

again

3338

02:33:32,450 --> 02:33:30,060

um when I talked to Steve about you know

3339

02:33:33,770 --> 02:33:32,460

what they've been up to in between uh

3340

02:33:36,170 --> 02:33:33,780

talking about Commander Steve Commander

3341

02:33:36,950 --> 02:33:36,180

sivonia between uh now last attempt and

3342

02:33:38,510 --> 02:33:36,960

now

3343

02:33:40,910 --> 02:33:38,520

um his perspective is very similar what

3344

02:33:42,889 --> 02:33:40,920

we talked about uh the other night you

3345

02:33:44,809 --> 02:33:42,899

know basically another free training Sim

3346

02:33:46,550 --> 02:33:44,819

event and Steve

3347

02:33:49,070 --> 02:33:46,560

um actually like I mentioned before he

3348

02:33:52,429 --> 02:33:49,080

was the lead closeout person so he was

3349

02:33:55,730 --> 02:33:52,439

in that white room for sts-127 which had

3350

02:33:57,650 --> 02:33:55,740

six attempts uh and so he mentioned that

3351

02:33:59,630 --> 02:33:57,660

he act that the crew actually got sick

3352

02:34:01,670 --> 02:33:59,640

of seeing his face because he was always

3353

02:34:02,809 --> 02:34:01,680

the first person to open up the hatch on

3354

02:34:05,870 --> 02:34:02,819

the shuttle and they would see him

3355

02:34:07,730 --> 02:34:05,880

leading in but I think uh you know he

3356

02:34:10,070 --> 02:34:07,740

brought up uh similar what we talked

3357

02:34:12,770 --> 02:34:10,080

about I think everyone on the crew was

3358

02:34:15,050 --> 02:34:12,780

actually impressed by the fact that you

3359

02:34:16,370 --> 02:34:15,060

know no one had go fever no one down to

3360

02:34:17,389 --> 02:34:16,380

two minutes but no one was like oh we

3361

02:34:18,830 --> 02:34:17,399

should just go like like the

3362

02:34:20,270 --> 02:34:18,840

administrator said we go when we're

3363

02:34:23,090 --> 02:34:20,280

absolutely ready

3364

02:34:24,530 --> 02:34:23,100

um and uh you know we have an abort

3365

02:34:25,849 --> 02:34:24,540

system but you definitely launch Escape

3366

02:34:27,950 --> 02:34:25,859

system but you don't want to rely on

3367

02:34:30,110 --> 02:34:27,960

that uh you want to rely on making the

3368

02:34:32,030 --> 02:34:30,120

right engineering this decision

3369

02:34:33,830 --> 02:34:32,040

um and so he actually you know talked

3370

02:34:35,750 --> 02:34:33,840

about the fact that uh you know yes it's

3371

02:34:37,130 --> 02:34:35,760

the sixth operational career Mission but

3372

02:34:38,389 --> 02:34:37,140

every one of these missions is really a

3373

02:34:40,250 --> 02:34:38,399

test flight we're always learning new

3374

02:34:42,830 --> 02:34:40,260

things now we learned about uh you know

3375

02:34:44,510 --> 02:34:42,840

oxidation rates of t-tab right line

3376

02:34:46,610 --> 02:34:44,520

filters you know so you're always

3377

02:34:48,170 --> 02:34:46,620

learning something new we talked last

3378

02:34:49,550 --> 02:34:48,180

time about like even the the procedures

3379

02:34:52,250 --> 02:34:49,560

they're using so they're in a procedure

3380

02:34:53,690 --> 02:34:52,260

called 4.100 and just in the last launch

3381

02:34:55,090 --> 02:34:53,700

so now they've changed the section

3382

02:34:57,290 --> 02:34:55,100

numbers of that so we're always

3383

02:34:59,809 --> 02:34:57,300

iterating and improving and trying to

3384

02:35:00,950 --> 02:34:59,819

figure out ways to to do it better and

3385

02:35:02,570 --> 02:35:00,960

more efficiently like you mentioned

3386

02:35:05,270 --> 02:35:02,580

tonight we're doing things in parallel

3387

02:35:06,950 --> 02:35:05,280

which is why now we have some time so

3388

02:35:08,389 --> 02:35:06,960

um it seems like we're ahead but if we

3389

02:35:10,309 --> 02:35:08,399

had had a problem with the side hatch

3390

02:35:11,990 --> 02:35:10,319

closer or had had a problem with the

3391

02:35:14,510 --> 02:35:12,000

leak checks we this would all be time

3392

02:35:15,530 --> 02:35:14,520

that we could use now to to not be

3393

02:35:16,130 --> 02:35:15,540

rushed

3394

02:35:18,950 --> 02:35:16,140

um

3395

02:35:20,990 --> 02:35:18,960

so it's uh it's great to keep iterating

3396

02:35:22,730 --> 02:35:21,000

and practicing and learning

3397

02:35:25,670 --> 02:35:22,740

it's hard to imagine when you have a

3398

02:35:27,889 --> 02:35:25,680

launch scrubbed that so much can come

3399

02:35:31,070 --> 02:35:27,899

from it that's good talking about that

3400

02:35:32,929 --> 02:35:31,080

data we heard uh NASA's Dragon lead

3401

02:35:35,270 --> 02:35:32,939

engineer talk about how they've been

3402

02:35:37,730 --> 02:35:35,280

pouring over the data we've had a dry

3403

02:35:40,130 --> 02:35:37,740

dress essentially a wet dress in the

3404

02:35:42,349 --> 02:35:40,140

first launch attempt and uh as you

3405

02:35:43,910 --> 02:35:42,359

mentioned always iterating and always

3406

02:35:45,950 --> 02:35:43,920

learning

3407

02:35:47,990 --> 02:35:45,960

all right we want to check in now with

3408

02:35:50,210 --> 02:35:48,000

our friends in Houston Texas and the

3409

02:35:54,469 --> 02:35:50,220

Johnson Space Center Courtney Beasley is

3410

02:35:58,490 --> 02:35:56,570

thanks Daryl the team here in Mission

3411

02:36:00,469 --> 02:35:58,500

Control Houston has pulled that they are

3412

02:36:03,050 --> 02:36:00,479

go for launch the International Space

3413

02:36:05,150 --> 02:36:03,060

Station is ready for crew six astronauts

3414

02:36:07,130 --> 02:36:05,160

to lift off when Flight director Judd

3415

02:36:08,809 --> 02:36:07,140

frieling pulled his team he was asking

3416

02:36:10,910 --> 02:36:08,819

the flight controllers who work on all

3417

02:36:12,950 --> 02:36:10,920

of the Key Systems on board the station

3418

02:36:14,870 --> 02:36:12,960

if their focus areas were online and

3419

02:36:16,670 --> 02:36:14,880

working properly this includes life

3420

02:36:18,950 --> 02:36:16,680

support systems proper Communications

3421

02:36:21,469 --> 02:36:18,960

links computers that allow us to command

3422

02:36:23,450 --> 02:36:21,479

the station's onboard subsystems and our

3423

02:36:25,490 --> 02:36:23,460

ability to control and maneuver the

3424

02:36:28,070 --> 02:36:25,500

space station are all fully functional

3425

02:36:29,570 --> 02:36:28,080

the crew in orbit is currently in a

3426
02:36:32,030 --> 02:36:29,580
sleep period and they are scheduled to

3427
02:36:33,290 --> 02:36:32,040
wake up at midnight Central Time the

3428
02:36:35,630 --> 02:36:33,300
International Space Station flight

3429
02:36:37,429 --> 02:36:35,640
control team is ready for launch mission

3430
02:36:39,469 --> 02:36:37,439
control Houston will continue monitoring

3431
02:36:41,510 --> 02:36:39,479
the mission as we check off milestones

3432
02:36:43,370 --> 02:36:41,520
for today's flight in the meantime I'll

3433
02:36:46,670 --> 02:36:43,380
send it back out to the team at Kennedy

3434
02:36:51,710 --> 02:36:49,309
all right a beautiful shot from uh high

3435
02:36:54,530 --> 02:36:51,720
above the Kennedy Space Center going by

3436
02:36:57,290 --> 02:36:54,540
the VAB as we look out at launch complex

3437
02:36:59,450 --> 02:36:57,300
39a during the previous launch attempt

3438
02:37:01,370 --> 02:36:59,460

want to recall this Roger told us that

3439

02:37:03,530 --> 02:37:01,380

dragonflies during dry dress is a good

3440

02:37:06,170 --> 02:37:03,540

luck charm well after the scrub

3441

02:37:07,910 --> 02:37:06,180

I was watching the starlink launch what

3442

02:37:08,990 --> 02:37:07,920

do you see there looks like some looks

3443

02:37:11,090 --> 02:37:09,000

like an insects flying by maybe

3444

02:37:12,889 --> 02:37:11,100

dragonflies yeah I can't tell if there

3445

02:37:14,570 --> 02:37:12,899

are insects on the screen or there you

3446

02:37:16,010 --> 02:37:14,580

go there's a buzz boy they were they

3447

02:37:17,870 --> 02:37:16,020

were buzzing my phone I thought it'd be

3448

02:37:19,790 --> 02:37:17,880

a good idea to put some dragonflies in

3449

02:37:20,990 --> 02:37:19,800

the show Good Luck I like it yeah

3450

02:37:23,150 --> 02:37:21,000

is that going to bring us some good luck

3451

02:37:25,730 --> 02:37:23,160

I sure hope so

3452

02:37:27,830 --> 02:37:25,740

well let's hope so indeed one hour and

3453

02:37:30,290 --> 02:37:27,840

11 minutes uh counting until liftoff

3454

02:37:31,910 --> 02:37:30,300

let's check back in with Jasmine Hopkins

3455

02:37:34,250 --> 02:37:31,920

who has a special guest

3456

02:37:36,410 --> 02:37:34,260

thank you so much Daryl joining us now

3457

02:37:37,550 --> 02:37:36,420

is Kennedy's Space Center Director Janet

3458

02:37:39,410 --> 02:37:37,560

Petro thanks so much for being here

3459

02:37:41,510 --> 02:37:39,420

Janet thank you Jasmine for having me

3460

02:37:43,070 --> 02:37:41,520

we're always happy to have you and you

3461

02:37:44,990 --> 02:37:43,080

know right now we're preparing for take

3462

02:37:46,370 --> 02:37:45,000

two second launch attempt of cruise six

3463

02:37:48,290 --> 02:37:46,380

but this is something that the Kennedy

3464

02:37:49,969 --> 02:37:48,300

Workforce is built for really I mean

3465

02:37:53,210 --> 02:37:49,979

we're very agile can you speak to that

3466

02:37:54,410 --> 02:37:53,220

yeah sure so uh you know last year 60th

3467

02:37:57,290 --> 02:37:54,420

anniversary went through this with

3468

02:37:58,490 --> 02:37:57,300

Artemis not just uh uh two times but we

3469

02:38:00,590 --> 02:37:58,500

did it three times successfully

3470

02:38:03,290 --> 02:38:00,600

launching the third time on November I'm

3471

02:38:05,690 --> 02:38:03,300

16. so launch is hard the whole process

3472

02:38:07,309 --> 02:38:05,700

and we got to get it right you know they

3473

02:38:09,830 --> 02:38:07,319

say you know you'd rather fix a problem

3474

02:38:12,469 --> 02:38:09,840

on the ground than launch and then have

3475

02:38:14,450 --> 02:38:12,479

a problem in the air so the team you

3476

02:38:16,309 --> 02:38:14,460

know the NASA team along with the SpaceX

3477

02:38:18,889 --> 02:38:16,319

team has worked really hard we had our

3478

02:38:20,750 --> 02:38:18,899

Delta launch Readiness review late

3479

02:38:22,190 --> 02:38:20,760

yesterday evening work through the

3480

02:38:23,510 --> 02:38:22,200

issues that we experienced on the first

3481

02:38:25,190 --> 02:38:23,520

one and we're ready to go tonight

3482

02:38:26,270 --> 02:38:25,200

Jasmine that is what we want to hear

3483

02:38:28,010 --> 02:38:26,280

it's good to hear that we are looking

3484

02:38:29,990 --> 02:38:28,020

good for a launch tonight Jen and you

3485

02:38:32,270 --> 02:38:30,000

just mentioned that 60th anniversary was

3486

02:38:33,530 --> 02:38:32,280

our diamond anniversary last year year

3487

02:38:35,570 --> 02:38:33,540

to think that we've been here six

3488

02:38:38,030 --> 02:38:35,580

decades what is Kennedy doing to

3489

02:38:39,590 --> 02:38:38,040

continue growing and improving so the

3490

02:38:42,050 --> 02:38:39,600

first 60 years you know it started

3491

02:38:44,030 --> 02:38:42,060

Kennedy was with Apollo and then diamond

3492

02:38:45,650 --> 02:38:44,040

anniversary last year Artemis first

3493

02:38:47,870 --> 02:38:45,660

launch of Artemis going back to the moon

3494

02:38:50,110 --> 02:38:47,880

but you know as a Spaceport we really

3495

02:38:52,790 --> 02:38:50,120

have come into our own we've really

3496

02:38:56,929 --> 02:38:52,800

brought a lot of the commercial industry

3497

02:39:00,170 --> 02:38:56,939

here to launch 97 94 Launches on the

3498

02:39:01,790 --> 02:39:00,180

Manifest this year we had 57 last year

3499

02:39:03,950 --> 02:39:01,800

like you mentioned 31 the year before

3500

02:39:05,990 --> 02:39:03,960

that so we are growing we obviously are

3501

02:39:08,210 --> 02:39:06,000

a very popular place not just because of

3502

02:39:10,309 --> 02:39:08,220

the geography but the services that

3503

02:39:12,590 --> 02:39:10,319

we're providing at the center to our

3504

02:39:14,929 --> 02:39:12,600

commercial partners and customers we're

3505

02:39:16,550 --> 02:39:14,939

working very hard to make it easy for

3506

02:39:18,050 --> 02:39:16,560

them to launch and to provide them the

3507

02:39:20,510 --> 02:39:18,060

best services and I got to brag for a

3508

02:39:24,590 --> 02:39:20,520

moment we have a Spaceport integration

3509

02:39:27,410 --> 02:39:24,600

team they coordinate with the 45th sld

3510

02:39:30,050 --> 02:39:27,420

the space force side every single one of

3511

02:39:33,290 --> 02:39:30,060

those 90 plus launches will be supported

3512

02:39:34,849 --> 02:39:33,300

by our Kennedy um team as well as the

3513

02:39:37,010 --> 02:39:34,859

space force side we work jointly

3514

02:39:39,410 --> 02:39:37,020

together in Partnership to ensure that

3515

02:39:43,070 --> 02:39:39,420

all of those launches are successful and

3516

02:39:45,349 --> 02:39:43,080

of that 90 plus 70 79 are commercial so

3517

02:39:47,990 --> 02:39:45,359

a large large number percentage of that

3518

02:39:49,910 --> 02:39:48,000

is a commercial launches and so across

3519

02:39:51,770 --> 02:39:49,920

the board we have our NASA we have our

3520

02:39:53,570 --> 02:39:51,780

government we have our national space

3521

02:39:54,950 --> 02:39:53,580

security missions we support but we also

3522

02:39:56,750 --> 02:39:54,960

have the commercial that we have to take

3523

02:39:58,490 --> 02:39:56,760

care of also right Janet I mean those

3524

02:39:59,870 --> 02:39:58,500

numbers just really blew me away thank

3525

02:40:01,730 --> 02:39:59,880

you so much for being here tonight thank

3526

02:40:03,950 --> 02:40:01,740

you Jasmine of course always happy to

3527

02:40:06,770 --> 02:40:03,960

have you go Cruise six exactly Go Crew

3528

02:40:08,809 --> 02:40:06,780

fix Daryl back to you thank you Jasmine

3529

02:40:11,330 --> 02:40:08,819

and Janet throughout the show we've been

3530

02:40:13,910 --> 02:40:11,340

taking your hashtag ask NASA questions

3531

02:40:16,370 --> 02:40:13,920

from social media we have time for a few

3532

02:40:18,889 --> 02:40:16,380

more before Falcon 9 fueling begins at T

3533

02:40:21,710 --> 02:40:18,899

minus 35 minutes we're sitting now at

3534

02:40:23,389 --> 02:40:21,720

108 and Counting and Raja there's the

3535

02:40:24,770 --> 02:40:23,399

question it seems like astronauts work

3536

02:40:26,990 --> 02:40:24,780

on some really cool and interesting

3537

02:40:28,190 --> 02:40:27,000

things other than flying Roger can you

3538

02:40:30,590 --> 02:40:28,200

take a minute and talk about something

3539

02:40:32,690 --> 02:40:30,600

interesting that you're working on right

3540

02:40:34,750 --> 02:40:32,700

now you're not flying currently on a

3541

02:40:37,849 --> 02:40:34,760

mission obviously because you're here

3542

02:40:39,469 --> 02:40:37,859

yeah so I'd say most of our time is not

3543

02:40:41,030 --> 02:40:39,479

actually flying in space so we do

3544

02:40:43,490 --> 02:40:41,040

maintain the training for that whether

3545

02:40:45,950 --> 02:40:43,500

it's NBL which is the neutral buoyancy

3546

02:40:47,750 --> 02:40:45,960

lab and so doing uh practice space walks

3547

02:40:50,570 --> 02:40:47,760

in there uh whether it's working on the

3548

02:40:52,190 --> 02:40:50,580

ISS systems working on different

3549

02:40:54,469 --> 02:40:52,200

experiments getting smart on geology

3550

02:40:56,150 --> 02:40:54,479

biology but we also all work on

3551

02:40:57,710 --> 02:40:56,160

different projects in the office on the

3552

02:40:59,210 --> 02:40:57,720

engineering and development program so

3553

02:41:01,190 --> 02:40:59,220

specifically there's a whole lot of work

3554

02:41:02,510 --> 02:41:01,200

going on in Artemis right now the

3555

02:41:05,090 --> 02:41:02,520

administrator talked about Artemis that

3556

02:41:06,830 --> 02:41:05,100

is that is the goal of the agency to get

3557

02:41:09,050 --> 02:41:06,840

us back to the Moon to stay and go on to

3558

02:41:10,849 --> 02:41:09,060

Mars so there's the SLS which is the

3559

02:41:13,010 --> 02:41:10,859

rocket there's the Orion which is the

3560

02:41:14,750 --> 02:41:13,020

capsule there's the Gateway which is in

3561

02:41:16,670 --> 02:41:14,760

their space station and then there's the

3562

02:41:18,530 --> 02:41:16,680

his the human Landing system which is

3563

02:41:20,389 --> 02:41:18,540

the Lander so that's my particular job

3564

02:41:22,910 --> 02:41:20,399

right now is helping with lunar lander

3565

02:41:25,309 --> 02:41:22,920

development and testing and so I I love

3566

02:41:27,050 --> 02:41:25,319

my job I love I love to fly his face but

3567

02:41:29,150 --> 02:41:27,060

I also love my my day job and so that's

3568

02:41:30,950 --> 02:41:29,160

uh you know we're doing all different

3569

02:41:32,570 --> 02:41:30,960

kinds of things there's uh folks working

3570

02:41:34,309 --> 02:41:32,580

on the lunar exploration suits so those

3571

02:41:35,750 --> 02:41:34,319

are the spacesuits for the surface so we

3572

02:41:37,429 --> 02:41:35,760

we're not going to use you know we

3573

02:41:39,590 --> 02:41:37,439

talked about there's IV suits which are

3574

02:41:40,550 --> 02:41:39,600

for in the vehicle there's Eva suits

3575

02:41:42,530 --> 02:41:40,560

which is what we use on the stage

3576

02:41:44,330 --> 02:41:42,540

station and we are working on lunar

3577

02:41:46,250 --> 02:41:44,340

suits because those are that's different

3578

02:41:47,750 --> 02:41:46,260

than either of the ones we have and so

3579

02:41:49,670 --> 02:41:47,760

if we get to the moon we're going there

3580

02:41:51,050 --> 02:41:49,680

to do science and so we need to get out

3581

02:41:52,910 --> 02:41:51,060

there and go do the science so that's

3582

02:41:53,870 --> 02:41:52,920

another big project that people are

3583

02:41:56,270 --> 02:41:53,880

working on

3584

02:41:58,670 --> 02:41:56,280

um and yeah so it's uh we're spread all

3585

02:42:00,590 --> 02:41:58,680

over the place uh training and working

3586

02:42:03,110 --> 02:42:00,600

with all these development teams yeah

3587

02:42:05,330 --> 02:42:03,120

and it seems like there's a similarity

3588

02:42:06,710 --> 02:42:05,340

there to when you know Bob and Doug were

3589

02:42:08,690 --> 02:42:06,720

working in the commercial crew program

3590

02:42:11,389 --> 02:42:08,700

early on developing these vehicles

3591

02:42:14,210 --> 02:42:11,399

you're very early on in the hls system

3592

02:42:15,710 --> 02:42:14,220

so you know it's uh it's got to be kind

3593

02:42:16,790 --> 02:42:15,720

of exciting to be working on the next

3594

02:42:18,110 --> 02:42:16,800

thing that's going to land on the moon

3595

02:42:19,849 --> 02:42:18,120

yeah I think all of us enjoy that's why

3596

02:42:22,130 --> 02:42:19,859

it's fun to do these things you know and

3597

02:42:23,870 --> 02:42:22,140

our job is is in the office is to fly in

3598

02:42:25,370 --> 02:42:23,880

space but also to bring the crew's

3599

02:42:28,910 --> 02:42:25,380

perspective the operational perspective

3600

02:42:30,830 --> 02:42:28,920

to all these programs and to to these

3601
02:42:32,570 --> 02:42:30,840
efforts to make sure that we're you know

3602
02:42:34,550 --> 02:42:32,580
the the human is the important part of

3603
02:42:35,990 --> 02:42:34,560
human space flight and so keeping that

3604
02:42:37,370 --> 02:42:36,000
in mind and keeping that at the

3605
02:42:38,990 --> 02:42:37,380
Forefront is always really important and

3606
02:42:40,969 --> 02:42:39,000
that's why it's important to have us

3607
02:42:42,830 --> 02:42:40,979
tied into those programs and for those

3608
02:42:44,809 --> 02:42:42,840
of us uh for those of you who are

3609
02:42:47,450 --> 02:42:44,819
watching and for those of us who are

3610
02:42:49,849 --> 02:42:47,460
enjoying watching if you want in on the

3611
02:42:51,910 --> 02:42:49,859
social fund follow us on Twitter at Nasa

3612
02:42:55,610 --> 02:42:51,920
social or check us out on the web at

3613
02:42:58,790 --> 02:42:55,620

nasa.gov forward slash social forward

3614

02:43:00,410 --> 02:42:58,800

slash social

3615

02:43:04,190 --> 02:43:00,420

hey this is a really quick question a

3616

02:43:06,410 --> 02:43:04,200

really easy one at slow asks Raja what

3617

02:43:08,990 --> 02:43:06,420

inspires you what inspires me I think

3618

02:43:11,450 --> 02:43:09,000

the idea of exploring is what inspires

3619

02:43:13,010 --> 02:43:11,460

me the dived of new discoveries and I

3620

02:43:14,690 --> 02:43:13,020

think I kind of alluded to why I'm so

3621

02:43:16,370 --> 02:43:14,700

excited about science before solving

3622

02:43:18,770 --> 02:43:16,380

problems here on Earth so I'd I would

3623

02:43:20,630 --> 02:43:18,780

love to see Humanity go and explore like

3624

02:43:22,550 --> 02:43:20,640

live on the moon go to the next planet

3625

02:43:24,290 --> 02:43:22,560

but I also am inspired by the fact that

3626

02:43:25,730 --> 02:43:24,300

we're we're finding solutions for

3627

02:43:27,410 --> 02:43:25,740

problems here on Earth right now so

3628

02:43:29,690 --> 02:43:27,420

that's uh that's what inspires me to

3629

02:43:33,290 --> 02:43:29,700

work here and it must be rewarding as

3630

02:43:35,090 --> 02:43:33,300

well it's amazing yeah I so I think what

3631

02:43:37,130 --> 02:43:35,100

inspires me is inspiring others too so I

3632

02:43:39,650 --> 02:43:37,140

think one of the coolest parts of our

3633

02:43:41,750 --> 02:43:39,660

jobs it takes time and effort because

3634

02:43:44,090 --> 02:43:41,760

it's your traveling but going to talk to

3635

02:43:46,429 --> 02:43:44,100

like school kids that's

3636

02:43:49,190 --> 02:43:46,439

hands down one of my the most my most

3637

02:43:51,290 --> 02:43:49,200

favorite things to go do and just yeah

3638

02:43:51,889 --> 02:43:51,300

and seeing their excitement

3639

02:43:54,469 --> 02:43:51,899

um

3640

02:43:57,349 --> 02:43:54,479

just when an astronaut walks in the door

3641

02:43:59,210 --> 02:43:57,359

it's just so fun you know and um you

3642

02:44:01,670 --> 02:43:59,220

know whether it's Elementary answering

3643

02:44:02,650 --> 02:44:01,680

bathroom questions because I've heard

3644

02:44:04,969 --> 02:44:02,660

plenty

3645

02:44:07,010 --> 02:44:04,979

all the way to you know talking to

3646

02:44:08,389 --> 02:44:07,020

University students uh or who have

3647

02:44:10,190 --> 02:44:08,399

questions like you know how like where

3648

02:44:12,590 --> 02:44:10,200

do I go and like what kind of degrees

3649

02:44:13,670 --> 02:44:12,600

and you know so it's it is uh is really

3650

02:44:17,690 --> 02:44:13,680

cool

3651

02:44:19,610 --> 02:44:17,700

um and it inspires me to be even a

3652

02:44:22,490 --> 02:44:19,620

potential inspiration or to potentially

3653

02:44:23,570 --> 02:44:22,500

help or set a spark maybe in someone's

3654

02:44:26,510 --> 02:44:23,580

mind or give them the idea of what's

3655

02:44:28,490 --> 02:44:26,520

possible deep curiosity as well we are

3656

02:44:29,990 --> 02:44:28,500

one hour in four minutes and Counting

3657

02:44:32,270 --> 02:44:30,000

until liftoff

3658

02:44:34,429 --> 02:44:32,280

this day is the continuation of regular

3659

02:44:35,990 --> 02:44:34,439

flights to the space station from U.S

3660

02:44:38,690 --> 02:44:36,000

soil

3661

02:44:41,809 --> 02:44:38,700

crew six and the mission will be the

3662

02:44:44,090 --> 02:44:41,819

company's sixth crude space flight

3663

02:44:45,650 --> 02:44:44,100

this is for of course SpaceX

3664

02:44:47,690 --> 02:44:45,660
and NASA

3665

02:44:50,270 --> 02:44:47,700
following the crude test flight demo two

3666

02:44:52,730 --> 02:44:50,280
and four previous operational crude

3667

02:44:55,010 --> 02:44:52,740
missions to the space station

3668

02:44:57,710 --> 02:44:55,020
it will also be spacex's eighth crude

3669

02:45:00,710 --> 02:44:57,720
space flight overall including the

3670

02:45:03,349 --> 02:45:00,720
private orbital Mission inspiration 4.

3671

02:45:05,630 --> 02:45:03,359
today our crew is flying on board Dragon

3672

02:45:07,309 --> 02:45:05,640
Endeavor and this will be the fourth

3673

02:45:09,290 --> 02:45:07,319
flight for this capsule

3674

02:45:11,690 --> 02:45:09,300
it'll be taking a ride on a brand new

3675

02:45:13,849 --> 02:45:11,700
Falcon 9 rocket

3676

02:45:16,490 --> 02:45:13,859

the dragon is the flight this particular

3677

02:45:17,570 --> 02:45:16,500

Dragon Endeavors the flight leader in

3678

02:45:19,670 --> 02:45:17,580

the fleet

3679

02:45:24,349 --> 02:45:19,680

it's Fourth flight

3680

02:45:26,270 --> 02:45:24,359

which includes demo 2 Axiom one

3681

02:45:27,590 --> 02:45:26,280

it's been a great countdown so far one

3682

02:45:30,950 --> 02:45:27,600

hour and three minutes and Counting

3683

02:45:33,050 --> 02:45:30,960

weather is fantastic here at the Kennedy

3684

02:45:37,010 --> 02:45:33,060

Space Center only a five percent chance

3685

02:45:38,990 --> 02:45:37,020

of violation that means 95 percent go

3686

02:45:40,969 --> 02:45:39,000

doing some math here getting inspired by

3687

02:45:42,650 --> 02:45:40,979

my fellow astronaut here really advanced

3688

02:45:44,929 --> 02:45:42,660

stuff avoid math in public that's my

3689

02:45:46,610 --> 02:45:44,939

rule that's a good idea

3690

02:45:51,590 --> 02:45:46,620

excitement is picking up though as we

3691

02:45:55,250 --> 02:45:53,870

and so with roughly about an hour sorry

3692

02:45:58,130 --> 02:45:55,260

no go ahead

3693

02:46:00,110 --> 02:45:58,140

about an hour to go until liftoff things

3694

02:46:03,050 --> 02:46:00,120

are going to start picking up

3695

02:46:05,210 --> 02:46:03,060

we get close to the go no go Pole to arm

3696

02:46:06,889 --> 02:46:05,220

the launch Escape system and begin the

3697

02:46:08,990 --> 02:46:06,899

propellant loading

3698

02:46:11,750 --> 02:46:09,000

the crew Poll for Readiness that will

3699

02:46:14,150 --> 02:46:11,760

happen right at T minus 60 minutes and

3700

02:46:16,010 --> 02:46:14,160

then the dragon pole for prop load is at

3701

02:46:18,889 --> 02:46:16,020

T minus 55 minutes

3702

02:46:20,630 --> 02:46:18,899

from there at T minus 45 minutes there

3703

02:46:22,849 --> 02:46:20,640

will be an internal Mission Control

3704

02:46:24,830 --> 02:46:22,859

Hawthorne pole and then the launch

3705

02:46:26,090 --> 02:46:24,840

director's Poll for propellant loading

3706

02:46:28,010 --> 02:46:26,100

will follow

3707

02:46:30,830 --> 02:46:28,020

when we get to about T minus 40 minutes

3708

02:46:32,630 --> 02:46:30,840

the crew access arm will retract and the

3709

02:46:34,849 --> 02:46:32,640

crew will get the call to close their

3710

02:46:36,469 --> 02:46:34,859

visors and to arm the launch Escape

3711

02:46:37,610 --> 02:46:36,479

system we're going to walk you all the

3712

02:46:39,410 --> 02:46:37,620

way through it

3713

02:46:41,450 --> 02:46:39,420

this is the automated safety system

3714

02:46:43,910 --> 02:46:41,460

that's in place that can fire the eight

3715

02:46:45,410 --> 02:46:43,920

super Draco thrusters on Dragon to

3716

02:46:47,809 --> 02:46:45,420

quickly separate the crew from the

3717

02:46:50,570 --> 02:46:47,819

rocket either on the pad or during a

3718

02:46:52,429 --> 02:46:50,580

flight on the ride uphill and then once

3719

02:46:55,490 --> 02:46:52,439

we reach about T minus 35 minutes

3720

02:47:40,610 --> 02:46:55,500

propellant loading for the Falcon 9

3721

02:47:44,450 --> 02:47:42,650

thanks for tuning in you're watching

3722

02:47:47,270 --> 02:47:44,460

live launch coverage of NASA and

3723

02:47:49,670 --> 02:47:47,280

spacex's sixth rotational flight of

3724

02:47:51,410 --> 02:47:49,680

astronauts and one Cosmonaut to the

3725

02:47:54,110 --> 02:47:51,420

International Space Station we are

3726

02:47:56,570 --> 02:47:54,120

T-minus one hour and Counting until

3727

02:47:59,389 --> 02:47:56,580

liftoff and with us today is NASA

3728

02:48:00,830 --> 02:47:59,399

astronaut Raja Chari Raja thanks for

3729

02:48:03,349 --> 02:48:00,840

coming back yeah glad to be back hoping

3730

02:48:04,309 --> 02:48:03,359

to see my first launch indeed and if you

3731

02:48:06,469 --> 02:48:04,319

didn't know

3732

02:48:09,110 --> 02:48:06,479

Raja is getting ready to witness his

3733

02:48:10,670 --> 02:48:09,120

first launch he rode on a rocket as we

3734

02:48:13,130 --> 02:48:10,680

turn the corner from the Vehicle

3735

02:48:14,990 --> 02:48:13,140

Assembly Building to show off the launch

3736

02:48:15,830 --> 02:48:15,000

pad just beyond it oh this is a great

3737

02:48:17,870 --> 02:48:15,840

shot

3738

02:48:20,330 --> 02:48:17,880

with the big reveal look at that it

3739

02:48:24,290 --> 02:48:20,340

certainly is cool there it is the launch

3740

02:48:28,849 --> 02:48:24,300

complex 39a holding for a 12 34 a.m

3741

02:48:33,170 --> 02:48:30,889

and so right now the crew is uh going

3742

02:48:34,670 --> 02:48:33,180

through kind of mentally uh you know

3743

02:48:36,550 --> 02:48:34,680

probably looking at forward to the

3744

02:48:39,170 --> 02:48:36,560

proper timeline

3745

02:48:47,450 --> 02:48:39,180

isolation valves to equalize low flow

3746

02:48:51,110 --> 02:48:49,250

quickly explain what that is so give

3747

02:48:52,190 --> 02:48:51,120

them that call so uh a lot of times

3748

02:48:54,050 --> 02:48:52,200

whenever they're going to do something

3749

02:48:55,670 --> 02:48:54,060

with any prop loading or valves they'll

3750

02:48:57,590 --> 02:48:55,680

give the crew a heads up so if they hear

3751

02:48:59,270 --> 02:48:57,600

the sound or feel the vibration that

3752

02:49:00,889 --> 02:48:59,280

they know that that's planned so they

3753

02:49:01,849 --> 02:49:00,899

usually give them a call prior you

3754

02:49:03,530 --> 02:49:01,859

mentioned that it's about to get a lot

3755

02:49:05,570 --> 02:49:03,540

busier on the loops as they start going

3756

02:49:07,670 --> 02:49:05,580

through some go no-go polls and talking

3757

02:49:09,230 --> 02:49:07,680

to the crew and so they are looking

3758

02:49:10,730 --> 02:49:09,240

ahead in What's called the event details

3759

02:49:12,410 --> 02:49:10,740

and they have probably two displays up

3760

02:49:15,349 --> 02:49:12,420

one that's event details one that's in

3761

02:49:17,450 --> 02:49:15,359

procedure 4.100 they're sitting in 4.100

3762

02:49:19,130 --> 02:49:17,460

waiting for the poll to say that they

3763

02:49:20,929 --> 02:49:19,140

can arm the Les the launch Escape system

3764

02:49:23,030 --> 02:49:20,939

and on the timeline they're probably

3765

02:49:25,070 --> 02:49:23,040

looking at what the prop loading steps

3766

02:49:26,990 --> 02:49:25,080

are and just kind of anticipating what's

3767

02:49:28,610 --> 02:49:27,000

coming up next probably scrolling ahead

3768

02:49:29,990 --> 02:49:28,620

to kind of talk through the launch

3769

02:49:32,929 --> 02:49:30,000

sequence and using this time to

3770

02:49:36,290 --> 02:49:32,939

basically what we call chair fly uh talk

3771

02:49:42,050 --> 02:49:36,300

through SpaceX your go for Section Five

3772

02:49:50,809 --> 02:49:44,270

all right picking up sections five

3773

02:49:54,710 --> 02:49:52,130

all right

3774

02:49:56,570 --> 02:49:54,720

great insight into what's happening in

3775

02:49:59,090 --> 02:49:56,580

crew Dragon right now but we want to

3776

02:50:01,910 --> 02:49:59,100

recap the last three hours our crew of

3777

02:50:04,610 --> 02:50:01,920

Stephen Bowen Woody hoberg Sultan

3778

02:50:06,650 --> 02:50:04,620

olneyadi and Andre fediev have been

3779

02:50:09,410 --> 02:50:06,660

getting ready to launch into space after

3780

02:50:11,330 --> 02:50:09,420

waking up and having a meal SpaceX help

3781

02:50:13,730 --> 02:50:11,340

the astronauts into their suits and then

3782

02:50:16,610 --> 02:50:13,740

you see them here walking out the

3783

02:50:19,250 --> 02:50:16,620

historic crew quarters

3784

02:50:21,889 --> 02:50:19,260

walking the same path that every NASA

3785

02:50:23,630 --> 02:50:21,899

astronaut has done since Apollo 7 waving

3786

02:50:25,130 --> 02:50:23,640

to family and loved ones as well as to

3787

02:50:27,349 --> 02:50:25,140

the cameras there to document their

3788

02:50:30,170 --> 02:50:27,359

Journey then you see them here inside

3789

02:50:32,090 --> 02:50:30,180

their Teslas joined in a caravan as they

3790

02:50:34,010 --> 02:50:32,100

went down the road led by Center

3791

02:50:35,809 --> 02:50:34,020

security

3792

02:50:39,469 --> 02:50:35,819

until they arrive here at launch complex

3793

02:50:41,270 --> 02:50:39,479

39a they did the rocket recline went up

3794

02:50:44,210 --> 02:50:41,280

the tower and walked down the crew

3795

02:50:48,230 --> 02:50:44,220

access arm here Woody hoberg and Stephen

3796

02:50:51,050 --> 02:50:48,240

Bowen crawling into crew dragon

3797

02:50:53,870 --> 02:50:51,060

and then once inside

3798

02:50:56,690 --> 02:50:53,880

they got strapped in got their suits

3799

02:50:58,849 --> 02:50:56,700

checked com checks

3800

02:51:01,849 --> 02:50:58,859

and now we watch

3801
02:51:03,770 --> 02:51:01,859
as the dragon spacecraft sits on top of

3802
02:51:06,889 --> 02:51:03,780
the Falcon 9 rocket

3803
02:51:09,469 --> 02:51:06,899
getting ready for fueling and arming of

3804
02:51:11,210 --> 02:51:09,479
the launch Escape system

3805
02:51:12,410 --> 02:51:11,220
at this time we are expanding our

3806
02:51:15,170 --> 02:51:12,420
coverage and would like to welcome

3807
02:51:17,090 --> 02:51:15,180
SpaceX and NASA commentators who are

3808
02:51:20,210 --> 02:51:17,100
joining us live from Hawthorne

3809
02:51:22,670 --> 02:51:20,220
California welcome to you both

3810
02:51:24,770 --> 02:51:22,680
hey thank you so much Daryl and hello to

3811
02:51:26,210 --> 02:51:24,780
everybody watching around the world I'm

3812
02:51:28,610 --> 02:51:26,220
Gary Jordan with NASA's Communications

3813
02:51:31,250 --> 02:51:28,620

and I'm Jesse Anderson a production and

3814

02:51:33,530 --> 02:51:31,260

engineering manager here at

3815

02:51:35,090 --> 02:51:33,540

I are joining you today from our

3816

02:51:38,210 --> 02:51:35,100

headquarters in Hawthorne California

3817

02:51:39,889 --> 02:51:38,220

while Cruise 6 marks spacex's sixth

3818

02:51:41,510 --> 02:51:39,899

operational mission for NASA it's

3819

02:51:42,950 --> 02:51:41,520

actually our eighth human space flight

3820

02:51:45,590 --> 02:51:42,960

mission to the International Space

3821

02:51:47,750 --> 02:51:45,600

Station and overall 34th dragon mission

3822

02:51:49,309 --> 02:51:47,760

to the orbiting laboratory and the

3823

02:51:51,110 --> 02:51:49,319

dragon supporting tonight's Mission will

3824

02:51:53,330 --> 02:51:51,120

be making its fourth visit to the

3825

02:51:56,510 --> 02:51:53,340

station having previously supported demo

3826

02:51:58,490 --> 02:51:56,520

2 Crew 2 and Axiom mission one and

3827

02:52:01,070 --> 02:51:58,500

speaking of demo 2 the spacecraft was

3828

02:52:03,410 --> 02:52:01,080

named Dragon Endeavor by Bob and Doug

3829

02:52:05,870 --> 02:52:03,420

during its inaugural flight in May of

3830

02:52:08,269 --> 02:52:05,880

2020 and yet another fun fact tonight's

3831

02:52:10,550 --> 02:52:08,279

launch marks our four-year anniversary

3832

02:52:12,410 --> 02:52:10,560

of the demo One mission which launched

3833

02:52:14,809 --> 02:52:12,420

on the same day just a couple of hours

3834

02:52:16,670 --> 02:52:14,819

later than we're launching today which

3835

02:52:19,130 --> 02:52:16,680

served as an end-to-end test flight of

3836

02:52:21,530 --> 02:52:19,140

dragon's capabilities since crew won in

3837

02:52:23,389 --> 02:52:21,540

November of 2020 SpaceX has been

3838

02:52:25,130 --> 02:52:23,399

regularly flying commercial crew

3839

02:52:26,750 --> 02:52:25,140

missions for NASA to and from the

3840

02:52:28,190 --> 02:52:26,760

International Space Station add an

3841

02:52:29,630 --> 02:52:28,200

average Cadence of about one flight

3842

02:52:32,450 --> 02:52:29,640

every six months

3843

02:52:34,550 --> 02:52:32,460

it took a lot of love and dedication to

3844

02:52:37,010 --> 02:52:34,560

get here today and we are still learning

3845

02:52:38,510 --> 02:52:37,020

and innovating from every launch from

3846

02:52:40,670 --> 02:52:38,520

the beginning Dragon was designed to

3847

02:52:42,670 --> 02:52:40,680

eventually fly people to help further

3848

02:52:45,349 --> 02:52:42,680

our ultimate goal of making life

3849

02:52:46,969 --> 02:52:45,359

multi-planetary the dragon hanging from

3850

02:52:49,130 --> 02:52:46,979

the ceiling behind us was initially

3851
02:52:51,469 --> 02:52:49,140
flown to certify SpaceX for cargo

3852
02:52:54,290 --> 02:52:51,479
missions to the space station over 10

3853
02:52:56,269 --> 02:52:54,300
years ago it flew back in 2010 but it

3854
02:52:58,309 --> 02:52:56,279
included a window because the vehicle

3855
02:53:00,530 --> 02:52:58,319
had been designed from the beginning to

3856
02:53:02,570 --> 02:53:00,540
fly crew we always knew that this was

3857
02:53:04,550 --> 02:53:02,580
the direction that we wanted to go in

3858
02:53:06,349 --> 02:53:04,560
as we continue the countdown to liftoff

3859
02:53:09,170 --> 02:53:06,359
we'd like to welcome you

3860
02:53:10,910 --> 02:53:09,180
to SpaceX Mission Control in Hawthorne

3861
02:53:13,070 --> 02:53:10,920
this is where our teams are staffed

3862
02:53:15,230 --> 02:53:13,080
around the clock to monitor dragon and

3863
02:53:17,210 --> 02:53:15,240

the mission overall on Console or

3864

02:53:18,769 --> 02:53:17,220

headset in Mission Control are six key

3865

02:53:20,750 --> 02:53:18,779

positions

3866

02:53:22,250 --> 02:53:20,760

the mission director is in charge of the

3867

02:53:24,830 --> 02:53:22,260

room and tasked with making real-time

3868

02:53:26,809 --> 02:53:24,840

decisions to ensure Mission success the

3869

02:53:28,790 --> 02:53:26,819

person that you may hear talking to the

3870

02:53:30,889 --> 02:53:28,800

astronauts is the crew operations and

3871

02:53:32,630 --> 02:53:30,899

resources engineer who you'll hear us

3872

02:53:34,969 --> 02:53:32,640

refer to as the core throughout the

3873

02:53:37,070 --> 02:53:34,979

broadcast and the four additional team

3874

02:53:39,110 --> 02:53:37,080

members are focused on Vehicle Systems

3875

02:53:41,750 --> 02:53:39,120

including avionics navigation and

3876
02:53:43,370 --> 02:53:41,760
Control software propulsion life support

3877
02:53:44,510 --> 02:53:43,380
and communication with ground support

3878
02:53:47,030 --> 02:53:44,520
teams

3879
02:53:49,190 --> 02:53:47,040
apart from Mission Control our Falcon 9

3880
02:53:51,469 --> 02:53:49,200
team is currently located in firing room

3881
02:53:53,929 --> 02:53:51,479
4 in the launch control center at

3882
02:53:55,849 --> 02:53:53,939
Kennedy Space Center in Florida now with

3883
02:53:57,290 --> 02:53:55,859
less than an hour until launch they are

3884
02:53:59,510 --> 02:53:57,300
settling in for final checkouts

3885
02:54:01,309 --> 02:53:59,520
propellant loading and for launch and

3886
02:54:03,230 --> 02:54:01,319
then of course NASA has its own team

3887
02:54:05,269 --> 02:54:03,240
members at NASA's Mission Control Center

3888
02:54:07,309 --> 02:54:05,279

in Houston Texas who have been preparing

3889

02:54:09,110 --> 02:54:07,319

the space station for dragon's arrival

3890

02:54:11,150 --> 02:54:09,120

and they recently gave their go for

3891

02:54:13,910 --> 02:54:11,160

launch saying that the station is ready

3892

02:54:15,710 --> 02:54:13,920

to receive the new crew upon liftoff

3893

02:54:18,110 --> 02:54:15,720

today's ride to the space station will

3894

02:54:20,330 --> 02:54:18,120

take about 24 and a half hours with

3895

02:54:22,490 --> 02:54:20,340

dragon flying autonomously the entire

3896

02:54:24,290 --> 02:54:22,500

way and just like autopilot on a

3897

02:54:26,210 --> 02:54:24,300

commercial aircraft the crew always has

3898

02:54:28,370 --> 02:54:26,220

the ability to take manual control of

3899

02:54:31,910 --> 02:54:28,380

the spacecraft if needed

3900

02:54:34,070 --> 02:54:31,920

now at under T minus 55 minutes we are

3901

02:54:36,290 --> 02:54:34,080

looking good for an on-time liftoff and

3902

02:54:37,670 --> 02:54:36,300

our very own incredible Kate Tice has

3903

02:54:39,769 --> 02:54:37,680

been monitoring the progress of the

3904

02:54:42,530 --> 02:54:39,779

countdown how's it going so far Kate

3905

02:54:44,269 --> 02:54:42,540

thanks Jesse I'm Kate Tice SpaceX

3906

02:54:46,309 --> 02:54:44,279

quality systems engineering manager

3907

02:54:48,110 --> 02:54:46,319

bringing you vehicle status updates this

3908

02:54:50,929 --> 02:54:48,120

evening it's been a pretty smooth

3909

02:54:53,330 --> 02:54:50,939

countdown so far the crew six astronauts

3910

02:54:56,150 --> 02:54:53,340

wrapped up in Grass at 2 minus two hours

3911

02:54:58,370 --> 02:54:56,160

and 34 minutes since then the teams

3912

02:55:01,070 --> 02:54:58,380

completed the required com checks suit

3913

02:55:03,769 --> 02:55:01,080

leak checks and side hatch closure as

3914

02:55:06,230 --> 02:55:03,779

well as side hatch leak check the

3915

02:55:09,349 --> 02:55:06,240

closeout team has Departed the BDA and

3916

02:55:11,330 --> 02:55:09,359

the pad is clear now as for Falcon 9 our

3917

02:55:13,130 --> 02:55:11,340

two-stage reusable rocket that you see

3918

02:55:14,990 --> 02:55:13,140

there on your screen final propulsion

3919

02:55:17,150 --> 02:55:15,000

checkout of first and second stages

3920

02:55:19,370 --> 02:55:17,160

begin a few minutes ago in preparation

3921

02:55:21,170 --> 02:55:19,380

for propellant loading this involves

3922

02:55:23,510 --> 02:55:21,180

testing Valves and engine pneumatic

3923

02:55:26,030 --> 02:55:23,520

pressurization now as you might be able

3924

02:55:28,130 --> 02:55:26,040

to guess from the lack of re-entry soot

3925

02:55:30,110 --> 02:55:28,140

on Falcon 9's first stage which is the

3926

02:55:32,210 --> 02:55:30,120

low or two-thirds of the vehicle there

3927

02:55:35,150 --> 02:55:32,220

that booster will be flying for the

3928

02:55:36,889 --> 02:55:35,160

first time tonight now at time is 45

3929

02:55:38,870 --> 02:55:36,899

minutes less than 10 minutes from now

3930

02:55:41,630 --> 02:55:38,880

the team will report their Readiness for

3931

02:55:44,150 --> 02:55:41,640

prop load with a final electronic go

3932

02:55:46,309 --> 02:55:44,160

no-go poll before we can begin

3933

02:55:49,070 --> 02:55:46,319

propellant loading on Falcon 9 we still

3934

02:55:51,410 --> 02:55:49,080

have a couple tasks to perform first the

3935

02:55:53,269 --> 02:55:51,420

crew access arm will be moved out of its

3936

02:55:55,190 --> 02:55:53,279

service position as you see it in now

3937

02:55:57,170 --> 02:55:55,200

and it will rotate away from the Dragon

3938

02:56:00,590 --> 02:55:57,180

capsule and over to its launch position

3939

02:56:02,870 --> 02:56:00,600

that will happen between T minus 44 and

3940

02:56:05,030 --> 02:56:02,880

42 minutes almost immediately after the

3941

02:56:06,349 --> 02:56:05,040

T minus 45 minute launch director's

3942

02:56:08,150 --> 02:56:06,359

briefing

3943

02:56:10,490 --> 02:56:08,160

access arm out of the way the launch

3944

02:56:12,050 --> 02:56:10,500

Escape system will then be armed once

3945

02:56:13,969 --> 02:56:12,060

those two events are complete Dragon

3946

02:56:16,550 --> 02:56:13,979

will be ready for Falcon propellant

3947

02:56:18,590 --> 02:56:16,560

loading as for weather we will also

3948

02:56:20,570 --> 02:56:18,600

verify with the launch weather officer

3949

02:56:22,610 --> 02:56:20,580

that all of the weather conditions meet

3950

02:56:25,250 --> 02:56:22,620

are launch constraints those include

3951
02:56:27,410 --> 02:56:25,260
items such as wind speed lightning and

3952
02:56:31,370 --> 02:56:27,420
precipitation in the area surrounding

3953
02:56:33,110 --> 02:56:31,380
Pad 39a but tonight we're expecting uh

3954
02:56:34,969 --> 02:56:33,120
acceptable weather conditions for launch

3955
02:56:38,690 --> 02:56:34,979
both at surface level and upper

3956
02:56:40,429 --> 02:56:38,700
altitudes once again our probability of

3957
02:56:42,590 --> 02:56:40,439
violation of those conditions is only

3958
02:56:44,450 --> 02:56:42,600
five percent so looking good

3959
02:56:46,670 --> 02:56:44,460
the range is currently clear for launch

3960
02:56:48,769 --> 02:56:46,680
a worldwide network of ground stations

3961
02:56:51,349 --> 02:56:48,779
and tracking and data relay satellites

3962
02:56:53,210 --> 02:56:51,359
or tdris are ready to support and those

3963
02:56:55,309 --> 02:56:53,220

are what help us get live views and data

3964

02:56:57,290 --> 02:56:55,319

as dragon heads into orbit

3965

02:57:00,710 --> 02:56:57,300

today we have an instantaneous launch

3966

02:57:02,750 --> 02:57:00,720

window at 12 34 a.m Eastern as I've said

3967

02:57:05,150 --> 02:57:02,760

before once we begin propellant load

3968

02:57:07,550 --> 02:57:05,160

there is no opportunity to change the t0

3969

02:57:09,290 --> 02:57:07,560

the timing for Dragon to Rendezvous with

3970

02:57:11,809 --> 02:57:09,300

the International Space Station is down

3971

02:57:14,690 --> 02:57:11,819

to the exact second so today we only get

3972

02:57:17,990 --> 02:57:14,700

one chance but the good news at T minus

3973

02:57:21,950 --> 02:57:18,000

51 minutes and 32 seconds a Wii and

3974

02:57:24,769 --> 02:57:21,960

Counting uh we are go for launch

3975

02:57:27,230 --> 02:57:24,779

great news thanks Kate today's launch

3976

02:57:29,330 --> 02:57:27,240

marks the sixth time a rotational crew

3977

02:57:30,769 --> 02:57:29,340

will fly on a commercial spacecraft and

3978

02:57:32,870 --> 02:57:30,779

much like our previous Cruise today's

3979

02:57:34,490 --> 02:57:32,880

crew has been training with our teams at

3980

02:57:35,870 --> 02:57:34,500

SpaceX for the last several months

3981

02:57:37,849 --> 02:57:35,880

running nominal and emergency

3982

02:57:39,710 --> 02:57:37,859

simulations of what the full mission

3983

02:57:42,230 --> 02:57:39,720

will look like while seated inside of

3984

02:57:44,809 --> 02:57:42,240

dragon and as with every Mission each

3985

02:57:46,490 --> 02:57:44,819

one of our crew members brings a diverse

3986

02:57:48,290 --> 02:57:46,500

set of experience to today's flight

3987

02:57:50,870 --> 02:57:48,300

that's right and let's start with the

3988

02:57:53,269 --> 02:57:50,880

missions Commander Steve Bowen was born

3989

02:57:54,830 --> 02:57:53,279

in Cohasset Massachusetts he holds a

3990

02:57:56,269 --> 02:57:54,840

bachelor's degree in electrical

3991

02:57:58,790 --> 02:57:56,279

engineering from the U.S Naval Academy

3992

02:58:00,469 --> 02:57:58,800

and a masters in Ocean engineering from

3993

02:58:03,410 --> 02:58:00,479

The Joint program and applied ocean

3994

02:58:05,809 --> 02:58:03,420

science and engineering at MIT and Woods

3995

02:58:08,330 --> 02:58:05,819

Hole oceanographic institution in July

3996

02:58:10,429 --> 02:58:08,340

2000 Boeing became the first submarine

3997

02:58:12,410 --> 02:58:10,439

officer selected as an astronaut by NASA

3998

02:58:14,570 --> 02:58:12,420

this will be Bowen's fourth trip into

3999

02:58:18,710 --> 02:58:14,580

space as a veteran of three space

4000

02:58:23,030 --> 02:58:18,720

shuttle missions sts-126 in 2008 sts-132

4001
02:58:24,830 --> 02:58:23,040
in 2010 and sts-133 in 2011. Bowen has

4002
02:58:28,190 --> 02:58:24,840
locked more than 40 days in space

4003
02:58:30,710 --> 02:58:28,200
including 47 hours 18 minutes during

4004
02:58:32,389 --> 02:58:30,720
seven spacewalks as Mission Commander

4005
02:58:34,070 --> 02:58:32,399
he'll be responsible for All Phases of

4006
02:58:36,530 --> 02:58:34,080
flight aboard dragon from launch to

4007
02:58:41,389 --> 02:58:38,870
Warren Woody hoberg is from Pittsburgh

4008
02:58:43,309 --> 02:58:41,399
Pennsylvania he earned a bachelor's

4009
02:58:45,349 --> 02:58:43,319
degree in Aeronautics and astronautics

4010
02:58:47,269 --> 02:58:45,359
from MIT and a doctorate in electrical

4011
02:58:49,910 --> 02:58:47,279
engineering and computer science from

4012
02:58:51,590 --> 02:58:49,920
the University of California Berkeley he

4013
02:58:53,030 --> 02:58:51,600

is also a commercial pilot with

4014

02:58:55,070 --> 02:58:53,040

instrument single engine and

4015

02:58:56,870 --> 02:58:55,080

multi-engine ratings the mission will be

4016

02:58:59,510 --> 02:58:56,880

hoberg's first flight since his

4017

02:59:01,250 --> 02:58:59,520

selection as an astronaut in 2017. as

4018

02:59:03,469 --> 02:59:01,260

pilot he will be responsible for

4019

02:59:04,429 --> 02:59:03,479

spacecraft systems and performance on

4020

02:59:07,070 --> 02:59:04,439

Dragon

4021

02:59:09,110 --> 02:59:07,080

Sultan almiati will be making his first

4022

02:59:10,910 --> 02:59:09,120

trip to space representing the Muhammad

4023

02:59:13,490 --> 02:59:10,920

bin Rasheed space center of the United

4024

02:59:15,290 --> 02:59:13,500

Arab Emirates aboard Dragon he'll serve

4025

02:59:16,730 --> 02:59:15,300

as a mission specialist working to

4026
02:59:18,950 --> 02:59:16,740
monitor the spacecraft during the

4027
02:59:20,990 --> 02:59:18,960
dynamic launch and re-entry phases of

4028
02:59:22,849 --> 02:59:21,000
flight he spent time in the UAE military

4029
02:59:25,550 --> 02:59:22,859
prior to becoming one of the first two

4030
02:59:27,349 --> 02:59:25,560
individuals selected by his country when

4031
02:59:29,990 --> 02:59:27,359
they started their space program just a

4032
02:59:32,690 --> 02:59:30,000
few years ago in 2017. on the Audi will

4033
02:59:34,550 --> 02:59:32,700
be the first UAE astronaut to fly on a

4034
02:59:37,610 --> 02:59:34,560
commercial spacecraft

4035
02:59:40,429 --> 02:59:37,620
Andre fed yayev will be making his first

4036
02:59:42,050 --> 02:59:40,439
trip to space and will also serve as a

4037
02:59:43,849 --> 02:59:42,060
mission specialist monitoring the

4038
02:59:45,950 --> 02:59:43,859

spacecraft during the dynamic launch and

4039

02:59:48,349 --> 02:59:45,960

re-entry phases of flight he was

4040

02:59:50,510 --> 02:59:48,359

selected as a cosmonaut in 2012 and will

4041

02:59:53,030 --> 02:59:50,520

be the second Cosmonaut to fly aboard a

4042

02:59:55,490 --> 02:59:53,040

SpaceX Dragon each of these crew members

4043

02:59:57,050 --> 02:59:55,500

will be a part of expedition 68 upon

4044

02:59:58,370 --> 02:59:57,060

their arrival to the International Space

4045

03:00:00,170 --> 02:59:58,380

Station

4046

03:00:02,090 --> 03:00:00,180

now let's head over to Kate's Heist for

4047

03:00:03,889 --> 03:00:02,100

another status update on the countdown

4048

03:00:06,889 --> 03:00:03,899

how's it going Kate

4049

03:00:09,170 --> 03:00:06,899

thanks Jesse we're coming up to T-minus

4050

03:00:11,030 --> 03:00:09,180

48 minutes and 40 seconds the SpaceX

4051
03:00:13,250 --> 03:00:11,040
launch teams are finishing final review

4052
03:00:15,650 --> 03:00:13,260
of data from all the checkouts of Falcon

4053
03:00:17,090 --> 03:00:15,660
9 over the last hour the launch director

4054
03:00:18,769 --> 03:00:17,100
has confirmed with the launch weather

4055
03:00:20,809 --> 03:00:18,779
officer that weather meets propellant

4056
03:00:23,330 --> 03:00:20,819
loading constraints so up next will be

4057
03:00:26,210 --> 03:00:23,340
to pull the team for Readiness both to

4058
03:00:29,210 --> 03:00:26,220
load propellant and to launch that will

4059
03:00:31,550 --> 03:00:29,220
be the final poll prior to liftoff the

4060
03:00:34,130 --> 03:00:31,560
seven SpaceX responsible Engineers often

4061
03:00:36,530 --> 03:00:34,140
called res indicate that they are a go

4062
03:00:38,870 --> 03:00:36,540
by electronically voting on the online

4063
03:00:41,809 --> 03:00:38,880

countdown procedure the launch director

4064

03:00:45,050 --> 03:00:41,819

or LD also checks with the dragon

4065

03:00:48,290 --> 03:00:45,060

mission director MD and the NASA launch

4066

03:00:50,210 --> 03:00:48,300

manager to make sure they are ready

4067

03:00:53,030 --> 03:00:50,220

earlier you saw the Vehicle Assembly

4068

03:00:55,969 --> 03:00:53,040

Building called the VAB the Falcon and

4069

03:00:57,590 --> 03:00:55,979

Dragon launch team as well as key NASA

4070

03:01:00,170 --> 03:00:57,600

launch members are in the launch control

4071

03:01:01,910 --> 03:01:00,180

center adjacent to the VAB you can

4072

03:01:03,469 --> 03:01:01,920

actually see where they are right now on

4073

03:01:05,750 --> 03:01:03,479

the right hand side of your screen they

4074

03:01:08,090 --> 03:01:05,760

have a view straight towards pad 39a

4075

03:01:10,429 --> 03:01:08,100

through those large Windows of firing

4076

03:01:12,469 --> 03:01:10,439

room four

4077

03:01:14,750 --> 03:01:12,479

on your screen you see there the Dragon

4078

03:01:17,330 --> 03:01:14,760

capsule with the crew access arms still

4079

03:01:18,650 --> 03:01:17,340

in the service position the crew is on

4080

03:01:20,389 --> 03:01:18,660

board Dragon waiting for the next

4081

03:01:22,910 --> 03:01:20,399

instructions which will be to Stow the

4082

03:01:25,190 --> 03:01:22,920

crew on for launch and to arm the launch

4083

03:01:26,929 --> 03:01:25,200

Escape system once they launch director

4084

03:01:29,269 --> 03:01:26,939

gives the final instructions to the

4085

03:01:31,969 --> 03:01:29,279

launch Team in that T-minus 45 minute

4086

03:01:34,070 --> 03:01:31,979

briefing immediately afterward the crew

4087

03:01:35,750 --> 03:01:34,080

armed sequence uh excuse me the crew

4088

03:01:37,969 --> 03:01:35,760

access arm sequence will be armed and

4089

03:01:39,889 --> 03:01:37,979

initiated we should get a good view of

4090

03:01:41,570 --> 03:01:39,899

that access arm as it swings away from

4091

03:01:43,790 --> 03:01:41,580

the capsule that will take about two

4092

03:01:45,230 --> 03:01:43,800

minutes to complete its rotation to move

4093

03:01:47,870 --> 03:01:45,240

out of the way

4094

03:01:50,570 --> 03:01:47,880

the range continues to be go for launch

4095

03:01:52,730 --> 03:01:50,580

they continue to monitor the clearance

4096

03:01:54,889 --> 03:01:52,740

area around the launch pad as well as

4097

03:01:59,330 --> 03:01:54,899

the air and sea space around that

4098

03:02:02,269 --> 03:01:59,340

downward upstream or the flight Corridor

4099

03:02:03,650 --> 03:02:02,279

Downstream from a launch pad as we

4100

03:02:05,990 --> 03:02:03,660

mentioned before we have to make sure

4101
03:02:09,170 --> 03:02:06,000
that all areas are secure and the

4102
03:02:10,910 --> 03:02:09,180
unlikely event of a an abort

4103
03:02:12,530 --> 03:02:10,920
there at Kennedy Space Center the

4104
03:02:16,070 --> 03:02:12,540
conditions are predicted to be

4105
03:02:17,929 --> 03:02:16,080
acceptable for launch but you can if we

4106
03:02:20,870 --> 03:02:17,939
had daylight you'd be able to see that

4107
03:02:22,550 --> 03:02:20,880
conditions are pretty calm there's a 13

4108
03:02:26,750 --> 03:02:22,560
mile per hour winds from the South

4109
03:02:28,429 --> 03:02:26,760
Southwest so pretty mild all in all

4110
03:02:31,849 --> 03:02:28,439
The downrange Landing zones as I

4111
03:02:34,969 --> 03:02:31,859
mentioned before are also within the

4112
03:02:37,190 --> 03:02:34,979
conditions as needed if needed for an

4113
03:02:39,469 --> 03:02:37,200

escape so everything also looking go

4114

03:02:42,710 --> 03:02:39,479

down range

4115

03:02:46,130 --> 03:02:42,720

now in about a minute we will hear the

4116

03:02:49,309 --> 03:02:46,140

uh briefing from the launch director

4117

03:02:54,349 --> 03:02:49,319

as I mentioned before the Readiness poll

4118

03:02:57,769 --> 03:02:54,359

that is underway is the final go for

4119

03:02:59,990 --> 03:02:57,779

propellant load and for launch

4120

03:03:02,809 --> 03:03:00,000

they're on screen you can see the four

4121

03:03:06,170 --> 03:03:02,819

crew members of crew six waiting

4122

03:03:11,090 --> 03:03:08,210

not much for them to do at this moment

4123

03:03:21,830 --> 03:03:11,100

but wait for that LD briefing which will

4124

03:03:28,969 --> 03:03:25,070

as I mentioned before the team in

4125

03:03:31,910 --> 03:03:28,979

mission control as well as the teams in

4126
03:03:34,849 --> 03:03:31,920
firing room four they are basically

4127
03:03:37,070 --> 03:03:34,859
collectively both with NASA launch Team

4128
03:03:39,290 --> 03:03:37,080
and the Dragon launch Team and the

4129
03:03:41,330 --> 03:03:39,300
Falcon is complete and the team is ready

4130
03:03:43,250 --> 03:03:41,340
for crew access arm retract propelled

4131
03:03:45,170 --> 03:03:43,260
load and launch

4132
03:03:47,450 --> 03:03:45,180
both control arms are going to lockdown

4133
03:03:49,010 --> 03:03:47,460
at T minus 45 minutes and remain in that

4134
03:03:51,349 --> 03:03:49,020
state until the launch Escape system is

4135
03:03:52,730 --> 03:03:51,359
disarmed all operators are remain at

4136
03:03:54,650 --> 03:03:52,740
their console and maintain a sterile

4137
03:03:56,870 --> 03:03:54,660
cockpit until MD confirms successful

4138
03:03:59,030 --> 03:03:56,880

disarming the launch Escape system

4139

03:04:00,830 --> 03:03:59,040

following orbit insertion or propellant

4140

03:04:03,050 --> 03:04:00,840

offload in the event of a scrub

4141

03:04:04,849 --> 03:04:03,060

for non-urgent no-go conditions brief

4142

03:04:06,050 --> 03:04:04,859

the CE or LD and they'll approve a

4143

03:04:07,790 --> 03:04:06,060

boarding the countdown

4144

03:04:09,590 --> 03:04:07,800

for Urgent issues affecting the safety

4145

03:04:11,750 --> 03:04:09,600

of the operation operator shall call

4146

03:04:13,730 --> 03:04:11,760

hold hold hold hold hold on the

4147

03:04:15,650 --> 03:04:13,740

countdown net launch control will board

4148

03:04:17,809 --> 03:04:15,660

the launch Auto sequence immediately and

4149

03:04:19,730 --> 03:04:17,819

proceed into the launch alert sequence

4150

03:04:21,769 --> 03:04:19,740

at T minus 10 seconds launch control

4151
03:04:23,030 --> 03:04:21,779
will be hands off relying on automated

4152
03:04:24,110 --> 03:04:23,040
board criteria for their remainder of

4153
03:04:25,670 --> 03:04:24,120
the count

4154
03:04:33,410 --> 03:04:25,680
launch control you may proceed with

4155
03:04:40,730 --> 03:04:36,170
there we heard that final go for launch

4156
03:04:42,309 --> 03:04:40,740
and prop load from launch director

4157
03:04:44,389 --> 03:04:42,319
started

4158
03:04:47,150 --> 03:04:44,399
and there we just heard the call out

4159
03:04:49,670 --> 03:04:47,160
that the crew access arm retraction is

4160
03:04:52,730 --> 03:04:49,680
underway so let's head back to Daryl

4161
03:04:57,110 --> 03:04:52,740
over at Kennedy as they have a live view

4162
03:04:59,530 --> 03:04:57,120
of that retraction as it happens and uh

4163
03:05:02,150 --> 03:04:59,540

will be the major final physical

4164

03:05:05,450 --> 03:05:02,160

reconfiguration of the pad prior to

4165

03:05:07,490 --> 03:05:05,460

launch Daryl how's it going great Kate

4166

03:05:09,830 --> 03:05:07,500

and thank you very much as we watch the

4167

03:05:12,830 --> 03:05:09,840

crew access arm move quickly at first

4168

03:05:15,170 --> 03:05:12,840

and then rotate away from the dragon

4169

03:05:17,389 --> 03:05:15,180

spacecraft there's the view from inside

4170

03:05:20,389 --> 03:05:17,399

the crew access arm the white room at

4171

03:05:23,990 --> 03:05:20,399

the very end of it as we can see the

4172

03:05:28,730 --> 03:05:26,450

hitting another Milestone here Raja on

4173

03:05:30,950 --> 03:05:28,740

our way to liftoff

4174

03:05:34,070 --> 03:05:30,960

yep in the crew is definitely tracking

4175

03:05:37,190 --> 03:05:34,080

through all this on a timeline so

4176
03:05:39,110 --> 03:05:37,200
they're procedurally in 4.100 following

4177
03:05:41,450 --> 03:05:39,120
that SpaceX is retracting the crew arm

4178
03:05:42,530 --> 03:05:41,460
and then starting to prepare for the

4179
03:05:44,090 --> 03:05:42,540
next big step they'll be taking is

4180
03:05:45,769 --> 03:05:44,100
launching or sorry arming the launch

4181
03:05:48,110 --> 03:05:45,779
Escape system

4182
03:05:49,969 --> 03:05:48,120
and then looking forward on the timeline

4183
03:05:51,290 --> 03:05:49,979
to basically go through the steps for

4184
03:05:52,490 --> 03:05:51,300
the prop loading

4185
03:05:54,230 --> 03:05:52,500
so we talked a little bit about the

4186
03:05:56,450 --> 03:05:54,240
first uh the first broadcast but it's

4187
03:05:58,550 --> 03:05:56,460
kind of a key mental note here as well

4188
03:06:00,349 --> 03:05:58,560

if there was an emergency pad address

4189

03:06:01,370 --> 03:06:00,359

they probably have some crew

4190

03:06:02,750 --> 03:06:01,380

coordination of who's going to get to

4191

03:06:04,070 --> 03:06:02,760

the hatch first but you definitely want

4192

03:06:05,389 --> 03:06:04,080

to make sure the crew armor is back in

4193

03:06:07,370 --> 03:06:05,399

place so there's this period of time

4194

03:06:09,769 --> 03:06:07,380

well the crew access arm is not there

4195

03:06:12,290 --> 03:06:09,779

the launch Escape system is not armed so

4196

03:06:13,910 --> 03:06:12,300

access arm retraction complete you need

4197

03:06:15,349 --> 03:06:13,920

the arm to swing back to the capsule

4198

03:06:16,670 --> 03:06:15,359

before you can actually egress you need

4199

03:06:18,650 --> 03:06:16,680

to make sure that's there before you you

4200

03:06:20,630 --> 03:06:18,660

step out

4201
03:06:22,429 --> 03:06:20,640
critically important and we've got some

4202
03:06:25,429 --> 03:06:22,439
beautiful views from our flight

4203
03:06:28,429 --> 03:06:25,439
operations team which is not only making

4204
03:06:31,429 --> 03:06:28,439
sure that the area around the rocket is

4205
03:06:34,790 --> 03:06:31,439
safe but also giving us some spectacular

4206
03:06:37,010 --> 03:06:34,800
views of that crew access arm uh as it

4207
03:06:39,110 --> 03:06:37,020
retracted away from the rocket and there

4208
03:06:40,849 --> 03:06:39,120
it is again right there

4209
03:06:42,530 --> 03:06:40,859
yeah it's a great view where you can see

4210
03:06:44,870 --> 03:06:42,540
the the both the strong back which is

4211
03:06:47,330 --> 03:06:44,880
the structural piece uh holding the

4212
03:06:49,910 --> 03:06:47,340
rocket up there now and then the crew

4213
03:06:55,190 --> 03:06:49,920

access arm swung back

4214

03:07:00,849 --> 03:06:58,429

hopefully no dragonflies that far up and

4215

03:07:04,130 --> 03:07:00,859

we had our own dragonflies earlier

4216

03:07:06,290 --> 03:07:04,140

again we we have successfully had good

4217

03:07:07,730 --> 03:07:06,300

luck here at the launch broadcast we've

4218

03:07:09,349 --> 03:07:07,740

done our part It's feeling good we're

4219

03:07:11,389 --> 03:07:09,359

doing it exactly doing what we can

4220

03:07:12,769 --> 03:07:11,399

there's a great view too of the trunk so

4221

03:07:14,450 --> 03:07:12,779

you can see the side which is the part

4222

03:07:16,730 --> 03:07:14,460

just below the capsule that's got the

4223

03:07:18,590 --> 03:07:16,740

the avionics radiators for cooling uh

4224

03:07:20,030 --> 03:07:18,600

and then the left side that looks black

4225

03:07:21,830 --> 03:07:20,040

in the picture here is actually the

4226
03:07:24,290 --> 03:07:21,840
solar panels that generates the power

4227
03:07:26,150 --> 03:07:24,300
for the uh the capsule on orbit curious

4228
03:07:27,830 --> 03:07:26,160
it looks like we saw a Plane off there

4229
03:07:29,690 --> 03:07:27,840
in the distance and it could be pretty

4230
03:07:30,889 --> 03:07:29,700
well off given it's dark and night that

4231
03:07:33,170 --> 03:07:30,899
might have been the Helo out there

4232
03:07:35,450 --> 03:07:33,180
potentially oh very good good call

4233
03:07:38,330 --> 03:07:35,460
the countdown T minus 41 minutes and

4234
03:07:40,429 --> 03:07:38,340
Counting and uh

4235
03:07:44,269 --> 03:07:40,439
we're heading down to a launch time of

4236
03:07:47,090 --> 03:07:44,279
12 34 a.m We saw the retraction that's

4237
03:07:49,969 --> 03:07:47,100
the last major visual Milestone as we

4238
03:07:51,710 --> 03:07:49,979

prepare for liftoff shortly thereafter

4239

03:07:54,170 --> 03:07:51,720

we should hear the call out that the

4240

03:07:56,809 --> 03:07:54,180

launch Escape system is armed and then

4241

03:08:00,110 --> 03:07:56,819

from there Raja we will hear that F9

4242

03:08:01,910 --> 03:08:00,120

prop load has started

4243

03:08:04,490 --> 03:08:01,920

yep and now timeline wise I'd expect

4244

03:08:06,349 --> 03:08:04,500

probably about another minute and a half

4245

03:08:08,570 --> 03:08:06,359

or two they'll uh they'll tell the crew

4246

03:08:10,309 --> 03:08:08,580

to uh they'll tell them to go and step

4247

03:08:11,750 --> 03:08:10,319

into the arming um you'll see them

4248

03:08:13,309 --> 03:08:11,760

putting advisors down you'll probably

4249

03:08:15,349 --> 03:08:13,319

see them tugging at the restraint straps

4250

03:08:17,030 --> 03:08:15,359

just making sure everything is extra

4251
03:08:19,190 --> 03:08:17,040
tight making sure you saw like Andre

4252
03:08:20,929 --> 03:08:19,200
before was using his uh stylus to

4253
03:08:22,849 --> 03:08:20,939
probably edit some of the weather data

4254
03:08:23,990 --> 03:08:22,859
they had on their iPad they'll Stow all

4255
03:08:25,910 --> 03:08:24,000
those things and basically put

4256
03:08:27,230 --> 03:08:25,920
themselves in a posture uh where you

4257
03:08:29,570 --> 03:08:27,240
could you see them still in it right now

4258
03:08:31,370 --> 03:08:29,580
where you could be in a posture where if

4259
03:08:32,929 --> 03:08:31,380
the capsule were to initiate a launch

4260
03:08:35,389 --> 03:08:32,939
Escape you'd be prepared for that so

4261
03:08:38,630 --> 03:08:35,399
from the time that is hot you are pretty

4262
03:08:40,910 --> 03:08:38,640
much sitting on a a live set of super

4263
03:08:42,889 --> 03:08:40,920

draco's that could go off automatically

4264

03:08:44,630 --> 03:08:42,899

if the vehicle senses a malfunction once

4265

03:08:45,830 --> 03:08:44,640

the prop loading starts or it could be

4266

03:08:47,630 --> 03:08:45,840

manual issued so you always want to be

4267

03:08:49,730 --> 03:08:47,640

ready once that system's hot

4268

03:08:52,010 --> 03:08:49,740

well Roger you say it and then we see it

4269

03:08:53,990 --> 03:08:52,020

calling it out remember well from your

4270

03:08:56,990 --> 03:08:54,000

time as the commander

4271

03:08:58,730 --> 03:08:57,000

of crew 3

4272

03:09:01,190 --> 03:08:58,740

it's worth noting you just came back

4273

03:09:04,010 --> 03:09:01,200

from space it was what May of last year

4274

03:09:06,170 --> 03:09:04,020

yep yeah yeah it's good good to be back

4275

03:09:08,269 --> 03:09:06,180

I I'd go back into heartbeat but it's

4276

03:09:09,830 --> 03:09:08,279

also good to be back home but oh you're

4277

03:09:11,990 --> 03:09:09,840

watching your friends go up yeah this is

4278

03:09:13,610 --> 03:09:12,000

uh it's really surreal to have uh you

4279

03:09:15,590 --> 03:09:13,620

know friends and colleagues on the end

4280

03:09:17,389 --> 03:09:15,600

of that rocket and I think uh you know

4281

03:09:19,429 --> 03:09:17,399

just reinforces the importance you asked

4282

03:09:20,690 --> 03:09:19,439

earlier and the the question was like

4283

03:09:22,969 --> 03:09:20,700

what do we do on our normal job there's

4284

03:09:24,349 --> 03:09:22,979

also people in our office uh so Joe

4285

03:09:26,389 --> 03:09:24,359

who's the chief of the office goes to

4286

03:09:27,830 --> 03:09:26,399

the the lawn trainers reviews and you

4287

03:09:29,090 --> 03:09:27,840

know you are signing up your friends to

4288

03:09:38,410 --> 03:09:29,100

go riding this thing so we take it

4289

03:09:43,070 --> 03:09:41,929

you can see just by Andre's left leg the

4290

03:09:43,969 --> 03:09:43,080

red of that bag we were talking about

4291

03:09:46,849 --> 03:09:43,979

that earlier which you couldn't say

4292

03:09:51,050 --> 03:09:46,859

again SpaceX go for Section six close

4293

03:09:55,309 --> 03:09:52,730

all right we're picking up a second

4294

03:09:57,889 --> 03:09:55,319

click on closing the buses

4295

03:09:59,330 --> 03:09:57,899

and arming the launch the state system

4296

03:10:00,710 --> 03:09:59,340

all right so you see them reaching up to

4297

03:10:02,210 --> 03:10:00,720

the displays they're stepping to that

4298

03:10:04,250 --> 03:10:02,220

section of the procedure

4299

03:10:05,750 --> 03:10:04,260

all verbalizing now with the visors down

4300

03:10:06,889 --> 03:10:05,760

that the Vox settings are correct so

4301
03:10:48,250 --> 03:10:06,899
they can hear each other the next dragon

4302
03:10:53,630 --> 03:10:51,349
in the event of a launch Escape

4303
03:10:54,889 --> 03:10:53,640
can you hear the prompt flow as well uh

4304
03:10:57,590 --> 03:10:54,899
well hopefully you never hear that sound

4305
03:10:59,809 --> 03:10:57,600
oh no okay so it doesn't bleed in the

4306
03:11:02,510 --> 03:10:59,819
system no okay it just opens the valve

4307
03:11:04,610 --> 03:11:02,520
Escape system is verified armed

4308
03:11:08,929 --> 03:11:04,620
there's a verification of our mean of

4309
03:11:13,130 --> 03:11:11,330
right on time with our Milestones as we

4310
03:11:15,469 --> 03:11:13,140
count down and so for the crew they're

4311
03:11:17,230 --> 03:11:15,479
now closing out 4.100 which is their

4312
03:11:20,030 --> 03:11:17,240
launch preparation

4313
03:11:22,130 --> 03:11:20,040

procedure and they're now stepping ahead

4314

03:11:24,050 --> 03:11:22,140

to what's the the prop loading timeline

4315

03:11:26,630 --> 03:11:24,060

on their displays which is going to give

4316

03:11:27,889 --> 03:11:26,640

them times of what is the different

4317

03:11:29,990 --> 03:11:27,899

tanks are pressurizing and loading

4318

03:11:32,330 --> 03:11:30,000

there's no Telemetry in the dragon that

4319

03:11:34,010 --> 03:11:32,340

tells you what the F9 tanks have in them

4320

03:11:36,050 --> 03:11:34,020

in terms of amount of fuel you can see

4321

03:11:37,730 --> 03:11:36,060

what's in the dragon but not the F9 and

4322

03:11:40,130 --> 03:11:37,740

so you rely on this timeline on the

4323

03:11:42,170 --> 03:11:40,140

calls from the team to know the status

4324

03:11:43,429 --> 03:11:42,180

and that gives you an indication based

4325

03:11:46,550 --> 03:11:43,439

on the timeline you have if things are

4326

03:11:47,929 --> 03:11:46,560

behind or ahead or on timeline the team

4327

03:11:49,130 --> 03:11:47,939

on the ground can certainly yes

4328

03:12:00,170 --> 03:11:49,140

absolutely yeah the ground team can see

4329

03:12:00,180 --> 03:12:03,650

I'll start venting

4330

03:12:08,870 --> 03:12:06,110

these would be the tanks on the ground

4331

03:12:10,610 --> 03:12:08,880

right so that as they start to they have

4332

03:12:11,870 --> 03:12:10,620

what's called these giant accumulators

4333

03:12:13,670 --> 03:12:11,880

that are full of the fuel that then

4334

03:12:16,130 --> 03:12:13,680

they'll pump into the into the direct

4335

03:12:18,290 --> 03:12:16,140

into the F9 and the the two things I

4336

03:12:19,550 --> 03:12:18,300

learned on our first broadcast attempt

4337

03:12:21,290 --> 03:12:19,560

one is that the license plate changes

4338

03:12:22,790 --> 03:12:21,300

every time this is the second that I

4339

03:12:25,250 --> 03:12:22,800

also learned from you is that you can

4340

03:12:26,570 --> 03:12:25,260

tell out here how full the rocket is by

4341

03:12:28,070 --> 03:12:26,580

looking at the level that the

4342

03:12:30,349 --> 03:12:28,080

condensation comes off the outside of

4343

03:12:32,210 --> 03:12:30,359

the rocket which you uh yeah you can't

4344

03:12:33,469 --> 03:12:32,220

see that on the inside but that's a good

4345

03:12:35,030 --> 03:12:33,479

technique for if you're watching on the

4346

03:12:36,710 --> 03:12:35,040

outside and don't have the benefit of

4347

03:12:38,210 --> 03:12:36,720

having the displays the crew has or the

4348

03:12:39,590 --> 03:12:38,220

Telemetry the ground has to just get a

4349

03:12:42,050 --> 03:12:39,600

look at binoculars if you're standing

4350

03:12:43,429 --> 03:12:42,060

the causeway or on TV and know how full

4351

03:12:46,429 --> 03:12:43,439

the tank is

4352

03:12:47,750 --> 03:12:46,439

outdoor fuel gauge yeah only if you

4353

03:12:48,830 --> 03:12:47,760

launch in the humidity of Florida I

4354

03:12:51,170 --> 03:12:48,840

don't know if they'd work in the desert

4355

03:12:52,670 --> 03:12:51,180

as well well we get to one we get to see

4356

03:12:54,410 --> 03:12:52,680

launches out at Vandenberg California

4357

03:12:56,210 --> 03:12:54,420

and uh

4358

03:12:58,490 --> 03:12:56,220

it's a little drier out there it still

4359

03:13:01,309 --> 03:12:58,500

is on the coast so we have some humidity

4360

03:13:03,170 --> 03:13:01,319

but uh it is quite a sight

4361

03:13:06,290 --> 03:13:03,180

it's definite Pro tip I didn't know that

4362

03:13:07,730 --> 03:13:06,300

that oh well office for five years no no

4363

03:13:10,370 --> 03:13:07,740

one taught me that told an astronaut

4364

03:13:12,530 --> 03:13:10,380

something you know I'm feeling proud

4365

03:13:14,269 --> 03:13:12,540

but I tell you what you haven't learned

4366

03:13:17,389 --> 03:13:14,279

nearly as much as I've learned at my

4367

03:13:18,530 --> 03:13:17,399

time being in these two launch attempts

4368

03:13:24,170 --> 03:13:18,540

and

4369

03:13:26,450 --> 03:13:24,180

count this down we know our

4370

03:13:29,389 --> 03:13:26,460

astronauts all around the country are

4371

03:13:31,550 --> 03:13:29,399

watching checked in with Megan MacArthur

4372

03:13:34,190 --> 03:13:31,560

earlier had a nice little chat with her

4373

03:13:36,650 --> 03:13:34,200

she's watching

4374

03:13:38,630 --> 03:13:36,660

other astronauts from the core the

4375

03:13:40,610 --> 03:13:38,640

astronaut core is roughly about 42

4376

03:13:42,530 --> 03:13:40,620

astronauts

4377

03:13:44,389 --> 03:13:42,540

and then a new class called they're

4378

03:13:46,250 --> 03:13:44,399

named the Flies the 2021 the Flies

4379

03:13:48,050 --> 03:13:46,260

that's halfway through their training

4380

03:13:50,269 --> 03:13:48,060

yep I'm looking forward to they're

4381

03:13:51,889 --> 03:13:50,279

crushing it as you and Smith started

4382

03:13:58,849 --> 03:13:51,899

there's the call from the core yeah here

4383

03:14:03,050 --> 03:14:00,889

so at this point yeah all the closeout

4384

03:14:04,790 --> 03:14:03,060

crew is not only off the tower but

4385

03:14:06,349 --> 03:14:04,800

outside what's called the exclusion zone

4386

03:14:08,809 --> 03:14:06,359

or the hazard area or the different

4387

03:14:11,150 --> 03:14:08,819

words for basically the the radius away

4388

03:14:14,630 --> 03:14:11,160

from the launch pad since there's now

4389

03:14:19,190 --> 03:14:16,910

well T minus 34 minutes and Counting

4390

03:14:20,750 --> 03:14:19,200

until liftoff today will begin the next

4391

03:14:22,849 --> 03:14:20,760

six month rotation mission to the

4392

03:14:25,010 --> 03:14:22,859

International Space Station

4393

03:14:27,650 --> 03:14:25,020

as we've been documenting we heard the

4394

03:14:30,170 --> 03:14:27,660

launch Escape system armed

4395

03:14:31,929 --> 03:14:30,180

happened just before that propellant

4396

03:14:33,590 --> 03:14:31,939

load began

4397

03:14:35,210 --> 03:14:33,600

capsule

4398

03:14:36,710 --> 03:14:35,220

it was loaded with its propellants about

4399

03:14:38,809 --> 03:14:36,720

a week and a half ago just a few miles

4400

03:14:40,849 --> 03:14:38,819

down the road

4401
03:14:43,490 --> 03:14:40,859
in order to fly Dragon needs a fuel and

4402
03:14:45,650 --> 03:14:43,500
an oxidizer for the fuel SpaceX uses

4403
03:14:48,710 --> 03:14:45,660
monomethyl hydrazine or what they call

4404
03:14:50,870 --> 03:14:48,720
mmh and nitrogen tetroxide or nto for

4405
03:14:52,849 --> 03:14:50,880
oxidizer and together these propellants

4406
03:14:55,429 --> 03:14:52,859
feed those Draco engines that will

4407
03:14:57,889 --> 03:14:55,439
maneuver dragon on orbit

4408
03:14:59,870 --> 03:14:57,899
it also feeds those eight super Draco

4409
03:15:01,490 --> 03:14:59,880
inches you were talking about that would

4410
03:15:05,269 --> 03:15:01,500
power the launch Escape system in an

4411
03:15:09,110 --> 03:15:07,250
and so with that fueling

4412
03:15:10,790 --> 03:15:09,120
having begun

4413
03:15:13,910 --> 03:15:10,800

that means those eight super Draco

4414

03:15:14,809 --> 03:15:13,920

engines inside crew Dragon are ready we

4415

03:15:17,690 --> 03:15:14,819

heard

4416

03:15:21,170 --> 03:15:17,700

or rather Raja relayed that the

4417

03:15:24,290 --> 03:15:21,180

astronauts can hear those valves turning

4418

03:15:25,929 --> 03:15:24,300

getting that system ready to go should

4419

03:15:29,389 --> 03:15:25,939

there be any kind of emergency

4420

03:15:31,309 --> 03:15:29,399

associated with the rocket or the pad

4421

03:15:33,230 --> 03:15:31,319

of course in essence SpaceX teams they

4422

03:15:34,849 --> 03:15:33,240

train extensively for exactly that type

4423

03:15:36,650 --> 03:15:34,859

of contingency

4424

03:15:38,269 --> 03:15:36,660

and so with T-minus 33 minutes and

4425

03:15:40,670 --> 03:15:38,279

Counting let's head back over to SpaceX

4426
03:15:45,410 --> 03:15:40,680
headquarters in Hawthorne California for

4427
03:15:50,090 --> 03:15:47,750
thanks Dario Daryl I continue to follow

4428
03:15:52,429 --> 03:15:50,100
along with the final minutes of the

4429
03:15:55,510 --> 03:15:52,439
launch countdown heading for on-time

4430
03:15:57,230 --> 03:15:55,520
launch just under 33 minutes from now

4431
03:15:59,450 --> 03:15:57,240
everything's still looking good for

4432
03:16:02,330 --> 03:15:59,460
Dragon and Falcon 9. no major issues

4433
03:16:03,530 --> 03:16:02,340
reported by the teams at this time as we

4434
03:16:05,750 --> 03:16:03,540
heard on the loops the launch Escape

4435
03:16:08,690 --> 03:16:05,760
system is now armed and Falcon 9

4436
03:16:10,070 --> 03:16:08,700
propellant loading began at T minus 35

4437
03:16:11,990 --> 03:16:10,080
minutes

4438
03:16:13,610 --> 03:16:12,000

the first and second stages of Falcon 9

4439

03:16:15,830 --> 03:16:13,620
are each loaded with two liquid

4440

03:16:18,410 --> 03:16:15,840
propellants one is oxidizer loaded into

4441

03:16:20,870 --> 03:16:18,420
a tank at the top of each stage the

4442

03:16:22,910 --> 03:16:20,880
other a fuel loaded into a tank at the

4443

03:16:25,730 --> 03:16:22,920
bottom of each stage the fuel that we

4444

03:16:28,849 --> 03:16:25,740
use to power the Merlin engines is rp1

4445

03:16:32,210 --> 03:16:28,859
which is a refined kerosene the oxidizer

4446

03:16:35,510 --> 03:16:32,220
loaded on each stage is densified liquid

4447

03:16:37,790 --> 03:16:35,520
oxygen or locks densified means it is

4448

03:16:40,130 --> 03:16:37,800
kept much colder than typical for launch

4449

03:16:42,349 --> 03:16:40,140
vehicles and takes up less volume which

4450

03:16:44,929 --> 03:16:42,359
allows for more oxidizer to be loaded

4451

03:16:47,570 --> 03:16:44,939

into the first and second stages and as

4452

03:16:49,969 --> 03:16:47,580

Raja mentioned minutes ago you can tell

4453

03:16:52,070 --> 03:16:49,979

how full the tanks are based on how high

4454

03:16:54,830 --> 03:16:52,080

the condensation appears on the outside

4455

03:16:57,290 --> 03:16:54,840

of the vehicle to ignite the fuel and

4456

03:16:59,389 --> 03:16:57,300

oxidizer in the Merlin rocket engine we

4457

03:17:01,730 --> 03:16:59,399

use the ignition fluids of triethyl

4458

03:17:04,670 --> 03:17:01,740

aluminum and triethyl Boron also called

4459

03:17:06,889 --> 03:17:04,680

t-tep when t-tep comes into contact with

4460

03:17:09,290 --> 03:17:06,899

oxygen it burns and produces a green

4461

03:17:11,750 --> 03:17:09,300

colored flame once we have the flame

4462

03:17:13,670 --> 03:17:11,760

going we add the kerosene fuel into the

4463

03:17:15,650 --> 03:17:13,680

Merlin chamber and the engine ramps up

4464

03:17:17,570 --> 03:17:15,660

to full power you might see the Green

4465

03:17:19,969 --> 03:17:17,580

Flash just as the second stage engine

4466

03:17:22,910 --> 03:17:19,979

ignites following stage separation 2

4467

03:17:25,130 --> 03:17:22,920

minutes and 48 seconds into flight

4468

03:17:26,809 --> 03:17:25,140

now for those of you who have been

4469

03:17:28,429 --> 03:17:26,819

following along you'll know that we

4470

03:17:31,610 --> 03:17:28,439

stood down from our initial launch

4471

03:17:34,190 --> 03:17:31,620

attempt of crew 6 on February 26th due

4472

03:17:36,650 --> 03:17:34,200

to a t-tep ground system issue it was

4473

03:17:38,690 --> 03:17:36,660

determined to be the result of a clogged

4474

03:17:41,570 --> 03:17:38,700

ground system filter that was impeding

4475

03:17:43,550 --> 03:17:41,580

the flow of t-tep SpaceX teams replaced

4476
03:17:45,950 --> 03:17:43,560
the filter Purge the t-tub lined with

4477
03:17:48,769 --> 03:17:45,960
nitrogen and verify the lines are ready

4478
03:17:51,530 --> 03:17:48,779
for launch

4479
03:17:53,630 --> 03:17:51,540
lastly we're topping helium we're

4480
03:17:56,230 --> 03:17:53,640
topping off helium into pressure vessels

4481
03:17:58,910 --> 03:17:56,240
on both the both stages

4482
03:18:01,010 --> 03:17:58,920
that is actually used to pressurize the

4483
03:18:03,230 --> 03:18:01,020
tanks in Flight as the propellant is

4484
03:18:06,230 --> 03:18:03,240
pulled out and consumed by the Merlin

4485
03:18:08,510 --> 03:18:06,240
engines it's very similar to when you're

4486
03:18:10,730 --> 03:18:08,520
drinking from a plastic helium loading

4487
03:18:12,410 --> 03:18:10,740
has started and there's that call up for

4488
03:18:13,309 --> 03:18:12,420

the cryo helium load I was just talking

4489

03:18:14,750 --> 03:18:13,319

about

4490

03:18:16,190 --> 03:18:14,760

um it's similar to drinking a plastic

4491

03:18:17,750 --> 03:18:16,200

water bottle you got to let some air

4492

03:18:18,830 --> 03:18:17,760

back into the bottle to keep it from

4493

03:18:20,450 --> 03:18:18,840

crumpling

4494

03:18:22,010 --> 03:18:20,460

now on board the spacecraft the

4495

03:18:23,630 --> 03:18:22,020

astronauts are monitoring the systems

4496

03:18:25,849 --> 03:18:23,640

while propellants are loaded into the

4497

03:18:27,530 --> 03:18:25,859

Falcon 9 below them as you can see on

4498

03:18:29,389 --> 03:18:27,540

the right hand side of your screen

4499

03:18:31,730 --> 03:18:29,399

the cruise training in the simulator

4500

03:18:33,830 --> 03:18:31,740

here at SpaceX headquarters in Hawthorne

4501
03:18:35,870 --> 03:18:33,840
California actually included playback of

4502
03:18:38,570 --> 03:18:35,880
sounds recorded in Dragon capsules

4503
03:18:41,330 --> 03:18:38,580
during recent flights so all of the

4504
03:18:43,070 --> 03:18:41,340
sounds that they're hearing now not only

4505
03:18:44,990 --> 03:18:43,080
did they hear before in our previous

4506
03:18:47,330 --> 03:18:45,000
launch attempt but they heard it during

4507
03:18:49,429 --> 03:18:47,340
the training simulations as well

4508
03:18:51,830 --> 03:18:49,439
as for the range they continue to report

4509
03:18:55,730 --> 03:18:51,840
no problems and they are go to support

4510
03:18:57,410 --> 03:18:55,740
launch weather also looks great as I

4511
03:18:59,630 --> 03:18:57,420
mentioned before our probability of

4512
03:19:02,090 --> 03:18:59,640
violation for the launcher constraints

4513
03:19:03,050 --> 03:19:02,100

is only five percent so really good on

4514

03:19:04,910 --> 03:19:03,060

that front

4515

03:19:07,370 --> 03:19:04,920

as a reminder today we have an

4516

03:19:09,590 --> 03:19:07,380

instantaneous launch time so at this

4517

03:19:11,750 --> 03:19:09,600

point if we hear a hold for any reason

4518

03:19:13,969 --> 03:19:11,760

we will have to stand down and Target

4519

03:19:16,490 --> 03:19:13,979

our backup launch opportunity tomorrow

4520

03:19:19,490 --> 03:19:16,500

just under 24 hours from tonight's

4521

03:19:23,150 --> 03:19:19,500

planned launch at this point in time at

4522

03:19:25,309 --> 03:19:23,160

just under T minus 29 and a half minutes

4523

03:19:27,650 --> 03:19:25,319

I'll turn it back over to Jesse and Gary

4524

03:19:29,630 --> 03:19:27,660

for an overview of events that we'll see

4525

03:19:32,450 --> 03:19:29,640

after liftoff

4526
03:19:34,010 --> 03:19:32,460
awesome thanks Kate for cruise six the

4527
03:19:36,769 --> 03:19:34,020
astronauts flight to station will take

4528
03:19:38,690 --> 03:19:36,779
about 24 and a half hours and as we wait

4529
03:19:40,429 --> 03:19:38,700
for that t-0 Mark coming up in just

4530
03:19:42,710 --> 03:19:40,439
about 29 minutes the ground operations

4531
03:19:44,389 --> 03:19:42,720
teams are doing a system series of

4532
03:19:46,550 --> 03:19:44,399
system checks to make sure that both the

4533
03:19:48,530 --> 03:19:46,560
dragon and the Falcon 9 are ready for

4534
03:19:50,450 --> 03:19:48,540
launch you're going to be looking at a

4535
03:19:52,849 --> 03:19:50,460
live view of our teams at the cape as

4536
03:19:54,769 --> 03:19:52,859
they prepare for liftoff now as we wait

4537
03:19:56,690 --> 03:19:54,779
for that launch clock to hit zero we

4538
03:19:58,490 --> 03:19:56,700

wanted to give you an overview of what

4539

03:20:00,349 --> 03:19:58,500

the ascent portion of that mission is

4540

03:20:03,170 --> 03:20:00,359

going to look like

4541

03:20:05,510 --> 03:20:03,180

once we hit t0 and a successful launch

4542

03:20:08,450 --> 03:20:05,520

occurs we will watch Falcon 9 and dragon

4543

03:20:10,730 --> 03:20:08,460

lift off from historic launch pad 39a

4544

03:20:13,370 --> 03:20:10,740

and make their ascent

4545

03:20:16,190 --> 03:20:13,380

at about 50 seconds into flight Falcon 9

4546

03:20:18,290 --> 03:20:16,200

engines will throttle down to help pass

4547

03:20:20,330 --> 03:20:18,300

through the period of Maximum Dynamic

4548

03:20:23,690 --> 03:20:20,340

pressure on the rocket or we typically

4549

03:20:25,670 --> 03:20:23,700

refer to as Max Q it's worth noting that

4550

03:20:28,130 --> 03:20:25,680

once we hit that Max cue point the

4551
03:20:29,870 --> 03:20:28,140
vehicle will be going supersonic

4552
03:20:31,790 --> 03:20:29,880
once we are through the period of

4553
03:20:34,250 --> 03:20:31,800
Maximum Dynamic pressure we can throttle

4554
03:20:35,570 --> 03:20:34,260
up our nine Merlin engines again from

4555
03:20:37,429 --> 03:20:35,580
there at about two and a half minutes

4556
03:20:38,750 --> 03:20:37,439
into flight we have a series of three

4557
03:20:40,070 --> 03:20:38,760
events that will happen in Rapid

4558
03:20:42,830 --> 03:20:40,080
succession

4559
03:20:45,530 --> 03:20:42,840
first is Mikko or main engine cutoff

4560
03:20:48,110 --> 03:20:45,540
this is where all nine Merlin 1D engines

4561
03:20:50,389 --> 03:20:48,120
shut off in preparation for stage

4562
03:20:52,670 --> 03:20:50,399
separation which is our second event

4563
03:20:54,230 --> 03:20:52,680

this is where the first stage detaches

4564

03:20:56,389 --> 03:20:54,240

from the second stage with the first

4565

03:20:59,030 --> 03:20:56,399

stage making its way back to Earth from

4566

03:21:02,090 --> 03:20:59,040

Landing as the second stage continues on

4567

03:21:04,610 --> 03:21:02,100

its Journey with the third event s ES1

4568

03:21:07,190 --> 03:21:04,620

or second stage engine start number one

4569

03:21:09,349 --> 03:21:07,200

where the mvac engine lights up and

4570

03:21:12,230 --> 03:21:09,359

Propel propels the second stage along

4571

03:21:14,929 --> 03:21:12,240

with our crew 6 astronauts into orbit

4572

03:21:17,090 --> 03:21:14,939

as stage two heads towards its targeted

4573

03:21:18,769 --> 03:21:17,100

drop-off orbit stage one will execute

4574

03:21:21,110 --> 03:21:18,779

two Burns in order to make its way back

4575

03:21:23,570 --> 03:21:21,120

down home on Earth the first is the

4576
03:21:25,250 --> 03:21:23,580
entry burn that's where three of the m1d

4577
03:21:27,469 --> 03:21:25,260
engines will reignite and then shut down

4578
03:21:29,510 --> 03:21:27,479
again now this helps to slow the stage

4579
03:21:31,490 --> 03:21:29,520
down in preparation for entry back into

4580
03:21:33,650 --> 03:21:31,500
the Earth's atmosphere and while the

4581
03:21:35,870 --> 03:21:33,660
first stage is heading back to Earth the

4582
03:21:37,429 --> 03:21:35,880
second stage will cut off its one Merlin

4583
03:21:39,769 --> 03:21:37,439
engine that was ignited right after

4584
03:21:41,510 --> 03:21:39,779
stage separation once this happens we'll

4585
03:21:43,250 --> 03:21:41,520
wait for a confirmation of a good

4586
03:21:45,469 --> 03:21:43,260
orbital insertion

4587
03:21:47,929 --> 03:21:45,479
about 90 seconds after Dragon gets into

4588
03:21:49,849 --> 03:21:47,939

orbit Falcon 9 will land back on Earth

4589

03:21:51,650 --> 03:21:49,859

The Landing bird is just a single engine

4590

03:21:54,170 --> 03:21:51,660

burn but it's powerful enough to bring

4591

03:21:56,389 --> 03:21:54,180

the vehicle speed down rapidly in order

4592

03:21:58,309 --> 03:21:56,399

to land on our drone ship at about nine

4593

03:21:59,690 --> 03:21:58,319

and a half minutes into the mission and

4594

03:22:02,090 --> 03:21:59,700

while the Falcon 9 first stage is

4595

03:22:04,190 --> 03:22:02,100

landing dragon is preparing to separate

4596

03:22:06,230 --> 03:22:04,200

from the second stage at about three

4597

03:22:08,389 --> 03:22:06,240

minutes after the second stage gets into

4598

03:22:10,190 --> 03:22:08,399

orbit we should have a great view of

4599

03:22:12,889 --> 03:22:10,200

dragon with his four-person crew

4600

03:22:14,870 --> 03:22:12,899

drifting away from the second stage once

4601
03:22:17,150 --> 03:22:14,880
dragon is a short distance away it'll

4602
03:22:19,490 --> 03:22:17,160
begin checking out its Draco maneuvering

4603
03:22:21,830 --> 03:22:19,500
thrusters to make sure Dragon continues

4604
03:22:23,570 --> 03:22:21,840
to increase separation distance from the

4605
03:22:25,309 --> 03:22:23,580
second stage it's worth noting that

4606
03:22:26,870 --> 03:22:25,319
these are not the Super Draco engines

4607
03:22:28,070 --> 03:22:26,880
that would be used during an abort

4608
03:22:29,990 --> 03:22:28,080
scenario

4609
03:22:32,210 --> 03:22:30,000
about 40 seconds after separation

4610
03:22:34,490 --> 03:22:32,220
dragon's nose cone deploy sequence will

4611
03:22:36,290 --> 03:22:34,500
begin it will take roughly four minutes

4612
03:22:38,450 --> 03:22:36,300
for the nose cone hooks to unlatch and

4613
03:22:40,130 --> 03:22:38,460

open exposing its guidance navigation

4614

03:22:42,050 --> 03:22:40,140

controls that will help dragon

4615

03:22:44,690 --> 03:22:42,060

autonomously fly to the space station

4616

03:22:46,670 --> 03:22:44,700

and lastly once the nose code is

4617

03:22:48,590 --> 03:22:46,680

deployed the remaining Draco thrusters

4618

03:22:51,050 --> 03:22:48,600

on the forward bulkhead will be checked

4619

03:22:53,269 --> 03:22:51,060

from there over the next 24-ish hours

4620

03:22:56,150 --> 03:22:53,279

Dragon will be in its Rendezvous and

4621

03:22:58,190 --> 03:22:56,160

approach phases undergoing a number of

4622

03:23:00,230 --> 03:22:58,200

phasing Burns as it makes its way to

4623

03:23:02,150 --> 03:23:00,240

station all that will be coming up soon

4624

03:23:03,830 --> 03:23:02,160

but for now let's check back in with

4625

03:23:07,010 --> 03:23:03,840

Courtney in Mission Control Houston

4626
03:23:10,910 --> 03:23:09,050
thanks Gary the flight controllers here

4627
03:23:12,830 --> 03:23:10,920
in Mission Control Houston are laser

4628
03:23:14,929 --> 03:23:12,840
focused on the onboard systems of the

4629
03:23:18,469 --> 03:23:14,939
space station ensuring it is ready to

4630
03:23:22,309 --> 03:23:20,030
they're also making sure communication

4631
03:23:24,290 --> 03:23:22,319
links between the station dragon and the

4632
03:23:25,849 --> 03:23:24,300
ground are working properly and the

4633
03:23:27,530 --> 03:23:25,859
consistency to this point is that

4634
03:23:29,570 --> 03:23:27,540
everything is proceeding right on track

4635
03:23:31,490 --> 03:23:29,580
teams here in Mission Control Houston

4636
03:23:32,990 --> 03:23:31,500
the team in Hawthorne and the astronauts

4637
03:23:34,490 --> 03:23:33,000
aboard the space station will monitor

4638
03:23:37,070 --> 03:23:34,500

the autonomous docking of the Dragon

4639

03:23:38,630 --> 03:23:37,080

spacecraft on Friday they'll perform a

4640

03:23:40,790 --> 03:23:38,640

series of leaked checks then work to

4641

03:23:42,710 --> 03:23:40,800

open the hatches on both the dragon side

4642

03:23:45,110 --> 03:23:42,720

and inside the station's pressurized

4643

03:23:46,550 --> 03:23:45,120

mating adapter we expect hatch opening

4644

03:23:48,710 --> 03:23:46,560

to take place about an hour and a half

4645

03:23:50,330 --> 03:23:48,720

after docking once on board the

4646

03:23:52,190 --> 03:23:50,340

astronauts will be greeted by the space

4647

03:23:53,929 --> 03:23:52,200

station crew and will then join in for

4648

03:23:55,849 --> 03:23:53,939

welcoming remarks for the new crew

4649

03:23:57,950 --> 03:23:55,859

members from there on out they will no

4650

03:23:59,570 --> 03:23:57,960

longer be referred to as Cruise 6 but

4651

03:24:01,130 --> 03:23:59,580

rather as flight Engineers of the

4652

03:24:03,229 --> 03:24:01,140

International Space Station until

4653

03:24:04,729 --> 03:24:03,239

they're returned back to Earth here in

4654

03:24:07,070 --> 03:24:04,739

Mission Control Houston flight director

4655

03:24:09,349 --> 03:24:07,080

Judd freeling is on Console overseeing

4656

03:24:11,150 --> 03:24:09,359

the team for launch and that's it from

4657

03:24:12,769 --> 03:24:11,160

here in Mission Control Houston so I'll

4658

03:24:15,290 --> 03:24:12,779

toss it back to the team in Florida

4659

03:24:16,969 --> 03:24:15,300

Daryl how's it looking we're looking

4660

03:24:19,309 --> 03:24:16,979

great out here Courtney and thank you

4661

03:24:21,349 --> 03:24:19,319

very much as we Cruise around the set

4662

03:24:22,370 --> 03:24:21,359

here our production team doing a great

4663

03:24:24,710 --> 03:24:22,380

job

4664

03:24:28,370 --> 03:24:24,720

showing us all the sights and the sounds

4665

03:24:31,309 --> 03:24:28,380

of the countdown of crew six liftoff is

4666

03:24:33,950 --> 03:24:31,319

at 12 34 a.m eastern time and if you're

4667

03:24:36,410 --> 03:24:33,960

just joining us well we're doing well

4668

03:24:38,929 --> 03:24:36,420

having a great countdown 24 minutes to

4669

03:24:40,550 --> 03:24:38,939

go for the sixth astronaut rotation

4670

03:24:43,070 --> 03:24:40,560

mission to the International Space

4671

03:24:46,190 --> 03:24:43,080

Station under NASA's commercial crew

4672

03:24:48,349 --> 03:24:46,200

program Commander Stephen Bowen pilot

4673

03:24:51,469 --> 03:24:48,359

Woody hoberg and Mission specialist

4674

03:24:53,389 --> 03:24:51,479

Sultan al-niadi and Andre fediev are

4675

03:24:56,929 --> 03:24:53,399

strapped into the seats as you can see

4676
03:25:00,290 --> 03:24:56,939
them here inside Dragon endeavor

4677
03:25:02,090 --> 03:25:00,300
a Falcon 9 rocket fueling operation well

4678
03:25:06,469 --> 03:25:02,100
underway

4679
03:25:08,389 --> 03:25:06,479
the launch Escape system is armed

4680
03:25:11,210 --> 03:25:08,399
that means dragon is prepared to launch

4681
03:25:16,610 --> 03:25:11,220
itself away from the Falcon 9 in case of

4682
03:25:22,250 --> 03:25:19,309
so far operations looking and sounding

4683
03:25:28,010 --> 03:25:25,309
and you can see on the rocket

4684
03:25:30,969 --> 03:25:28,020
we're filling her up

4685
03:25:34,130 --> 03:25:30,979
the condensation of the

4686
03:25:35,690 --> 03:25:34,140
warm humid Florida air down there shows

4687
03:25:39,229 --> 03:25:35,700
you that uh

4688
03:25:41,450 --> 03:25:39,239

well my guess would be about a third but

4689

03:25:43,670 --> 03:25:41,460

I have no actual

4690

03:25:45,530 --> 03:25:43,680

uh Telemetry to tell me that just going

4691

03:25:48,110 --> 03:25:45,540

by uh the condensation coming off the

4692

03:25:49,610 --> 03:25:48,120

rocket it really super chills the skin

4693

03:25:52,429 --> 03:25:49,620

on the outside of the rocket and then

4694

03:25:54,170 --> 03:25:52,439

that uh that uh you know condenses the

4695

03:25:55,309 --> 03:25:54,180

air in the atmosphere the water that's

4696

03:25:56,870 --> 03:25:55,319

in the air

4697

03:25:58,729 --> 03:25:56,880

and it really is something to look at

4698

03:26:00,050 --> 03:25:58,739

once it's ready to go all the way up and

4699

03:26:02,389 --> 03:26:00,060

down the rocket

4700

03:26:04,670 --> 03:26:02,399

and and the reason we make it they make

4701
03:26:05,990 --> 03:26:04,680
it super cold is uh you know if there's

4702
03:26:07,070 --> 03:26:06,000
probably let's see third or fourth

4703
03:26:08,210 --> 03:26:07,080
graders out there I know that's what my

4704
03:26:10,250 --> 03:26:08,220
kids are learning about it's like when

4705
03:26:11,389 --> 03:26:10,260
something's really cold it gets dense so

4706
03:26:13,370 --> 03:26:11,399
you can get more of it in there so

4707
03:26:14,929 --> 03:26:13,380
that's why it's important you every drop

4708
03:26:17,030 --> 03:26:14,939
of gas matters when you're trying to get

4709
03:26:19,370 --> 03:26:17,040
to orbit every you want as much margin

4710
03:26:21,769 --> 03:26:19,380
John was talking to them before about uh

4711
03:26:23,090 --> 03:26:21,779
why we build the timelines we do and you

4712
03:26:25,490 --> 03:26:23,100
know we always hope everything goes

4713
03:26:27,349 --> 03:26:25,500

nominally but we train for all kinds of

4714

03:26:28,309 --> 03:26:27,359

contingencies and so

4715

03:26:30,410 --> 03:26:28,319

um you know we've been talking about

4716

03:26:31,969 --> 03:26:30,420

launcher launch escapes but the the next

4717

03:26:33,950 --> 03:26:31,979

phase is Rhonda with the space station

4718

03:26:35,330 --> 03:26:33,960

so we protect for you know a problem

4719

03:26:37,309 --> 03:26:35,340

with either the station or the capsule

4720

03:26:39,769 --> 03:26:37,319

and having to you know back away and

4721

03:26:42,469 --> 03:26:39,779

come back again in 24 hours and so all

4722

03:26:44,750 --> 03:26:42,479

that requires prop and gas and the

4723

03:26:46,849 --> 03:26:44,760

further and the higher the F9 can get

4724

03:26:48,889 --> 03:26:46,859

the dragon the more options we have so

4725

03:26:50,990 --> 03:26:48,899

that's why that's why they chill the gas

4726
03:26:52,910 --> 03:26:51,000
you heard calls earlier about the cryo

4727
03:26:55,729 --> 03:26:52,920
helium um and like they talked about it

4728
03:26:58,550 --> 03:26:55,739
out at Hawthorne that means that that we

4729
03:27:00,590 --> 03:26:58,560
have enough gas to pressurize the tanks

4730
03:27:02,450 --> 03:27:00,600
and then next you'll start to here and

4731
03:27:04,969 --> 03:27:02,460
probably in about another minute they'll

4732
03:27:07,130 --> 03:27:04,979
start talking about stage two fuel being

4733
03:27:08,630 --> 03:27:07,140
loaded and so you'll hear calls you'll

4734
03:27:10,190 --> 03:27:08,640
talk hear them talk about stage two and

4735
03:27:12,170 --> 03:27:10,200
stage one this is two stage rocket so

4736
03:27:14,269 --> 03:27:12,180
there's Fuel and oxidizer for both the

4737
03:27:15,710 --> 03:27:14,279
stages the first stage like they

4738
03:27:17,269 --> 03:27:15,720

described having the nine engines and

4739

03:27:19,070 --> 03:27:17,279

the second stage having one but both of

4740

03:27:21,110 --> 03:27:19,080

those require have separate tanks for

4741

03:27:22,370 --> 03:27:21,120

the fuel and oxidizer and they'll you'll

4742

03:27:25,130 --> 03:27:22,380

hear them calling those out because

4743

03:27:26,570 --> 03:27:25,140

again the crew probably can't as much

4744

03:27:28,849 --> 03:27:26,580

hear it like the same way they hear the

4745

03:27:31,429 --> 03:27:28,859

super Draco valves but you can hear uh

4746

03:27:32,929 --> 03:27:31,439

sort of some creaking and some noises uh

4747

03:27:35,150 --> 03:27:32,939

some definitely some vibrations so

4748

03:27:36,830 --> 03:27:35,160

getting a call before that happens just

4749

03:27:38,750 --> 03:27:36,840

kind of reassures them that that sound

4750

03:27:40,309 --> 03:27:38,760

is expected and gives them a reference

4751
03:27:42,229 --> 03:27:40,319
point on the time that they're following

4752
03:27:46,610 --> 03:27:42,239
we're about 37 seconds away from

4753
03:27:48,410 --> 03:27:46,620
completing stage two rp1 load

4754
03:27:49,250 --> 03:27:48,420
in the meantime let's tell you about the

4755
03:27:53,990 --> 03:27:49,260
crew

4756
03:27:55,969 --> 03:27:54,000
Stephen G Bowen he hails from Cohasset

4757
03:27:58,429 --> 03:27:55,979
Massachusetts married with three

4758
03:28:00,889 --> 03:27:58,439
children holds the title of first U.S

4759
03:28:02,990 --> 03:28:00,899
Navy submarine officer to be selected as

4760
03:28:05,150 --> 03:28:03,000
a mission specialist by NASA Captain

4761
03:28:06,530 --> 03:28:05,160
Bowen is also a veteran of NASA space

4762
03:28:11,389 --> 03:28:06,540
flights including the space shuttle

4763
03:28:13,550 --> 03:28:11,399

flights on sts-126 132 and 133 the only

4764

03:28:16,190 --> 03:28:13,560

astronaut to ever go consecutive

4765

03:28:18,469 --> 03:28:16,200

back-to-back shuttles sitting next to

4766

03:28:21,050 --> 03:28:18,479

Stephen is pilot Warren Woody hoberg the

4767

03:28:22,910 --> 03:28:21,060

37 year old from Pittsburgh

4768

03:28:25,130 --> 03:28:22,920

he studied Aeronautics and astronautics

4769

03:28:26,630 --> 03:28:25,140

from MIT before getting a doctorate in

4770

03:28:28,910 --> 03:28:26,640

electrical engineering and a computer

4771

03:28:31,190 --> 03:28:28,920

science degree from the University of

4772

03:28:33,170 --> 03:28:31,200

California Berkeley during grad school

4773

03:28:36,110 --> 03:28:33,180

Holberg worked as an EMT with the

4774

03:28:38,630 --> 03:28:36,120

Yosemite search and rescue crew six will

4775

03:28:41,269 --> 03:28:38,640

be rp1 load complete and there's that

4776
03:28:43,610 --> 03:28:41,279
load complete stage two is in the books

4777
03:28:48,410 --> 03:28:43,620
we'll load it up and now you can see the

4778
03:28:53,210 --> 03:28:50,389
talking about hoberg

4779
03:28:55,250 --> 03:28:53,220
this flight will be his first flight

4780
03:28:57,410 --> 03:28:55,260
since NASA selected him to be an

4781
03:29:00,410 --> 03:28:57,420
astronaut along with rajachary's class

4782
03:29:02,150 --> 03:29:00,420
in 2017 the turtles

4783
03:29:04,429 --> 03:29:02,160
in the role of mission specialist is

4784
03:29:06,050 --> 03:29:04,439
astronaut sultan al-niadi

4785
03:29:07,790 --> 03:29:06,060
he was chosen by the Muhammad bin

4786
03:29:09,849 --> 03:29:07,800
Rasheed space center of the United Arab

4787
03:29:12,889 --> 03:29:09,859
Emirates to be a part of expedition's

4788
03:29:15,590 --> 03:29:12,899

6869 father of five spent most of his

4789

03:29:18,050 --> 03:29:15,600

life in Alain in Abu Dhabi but in 2020

4790

03:29:20,210 --> 03:29:18,060

traded that in for Astronaut training in

4791

03:29:23,210 --> 03:29:20,220

Houston at NASA's Johnson Space Center

4792

03:29:24,410 --> 03:29:23,220

this will be his first trip to space to

4793

03:29:26,389 --> 03:29:24,420

space

4794

03:29:29,450 --> 03:29:26,399

and it's also the first trip

4795

03:29:32,510 --> 03:29:29,460

for second mission specialist Ross

4796

03:29:34,190 --> 03:29:32,520

Cosmos Cosmonaut Andre fediev he will be

4797

03:29:36,110 --> 03:29:34,200

working to monitor the spacecraft during

4798

03:29:37,190 --> 03:29:36,120

the dynamic launch and re-entry phases

4799

03:29:39,410 --> 03:29:37,200

of flight

4800

03:29:42,650 --> 03:29:39,420

he will be a flight engineer

4801
03:29:46,010 --> 03:29:42,660
for expedition 68.

4802
03:29:48,290 --> 03:29:46,020
just turned 42 years of age each of

4803
03:29:50,269 --> 03:29:48,300
these four crew members will be part of

4804
03:29:51,950 --> 03:29:50,279
expedition 68 once they arrive at the

4805
03:29:56,990 --> 03:29:51,960
International Space Station

4806
03:29:57,000 --> 03:30:03,710
we had strong back chill that began

4807
03:30:03,720 --> 03:30:07,250
and coming up in just a few minutes

4808
03:30:15,530 --> 03:30:10,070
we'll start loading liquid oxygen onto

4809
03:30:19,429 --> 03:30:17,870
and I think a great Testament to the

4810
03:30:21,469 --> 03:30:19,439
international Partnerships of this

4811
03:30:24,410 --> 03:30:21,479
program half the crew is you know

4812
03:30:26,990 --> 03:30:24,420
International Sultan being the first uh

4813
03:30:28,610 --> 03:30:27,000

UAE astronaut to launch on a U.S vehicle

4814

03:30:30,050 --> 03:30:28,620

from the U.S to have trained at Johnson

4815

03:30:32,690 --> 03:30:30,060

Space Center

4816

03:30:33,950 --> 03:30:32,700

um an amazing uh you know completion of

4817

03:30:35,929 --> 03:30:33,960

the partnership that started several

4818

03:30:38,269 --> 03:30:35,939

years ago then taking that now all the

4819

03:30:41,389 --> 03:30:38,279

way to completion and just great to see

4820

03:30:43,849 --> 03:30:41,399

you know NASA and space exploration

4821

03:30:45,769 --> 03:30:43,859

being just this great unifier for the

4822

03:30:46,969 --> 03:30:45,779

world especially is you know there's low

4823

03:30:49,210 --> 03:30:46,979

earth orbit but then we look beyond that

4824

03:30:51,530 --> 03:30:49,220

to Artemis and Mars and just the

4825

03:30:53,150 --> 03:30:51,540

collaboration and the work to do such

4826
03:30:55,250 --> 03:30:53,160
hard things and really pulling together

4827
03:30:57,410 --> 03:30:55,260
the best of of all our all the nations

4828
03:31:00,229 --> 03:30:57,420
and the partnership of those Nations

4829
03:31:01,370 --> 03:31:00,239
rises above all else and that's uh it's

4830
03:31:03,769 --> 03:31:01,380
impressive

4831
03:31:06,290 --> 03:31:03,779
the camaraderie of the crews in space

4832
03:31:07,670 --> 03:31:06,300
with their International backgrounds

4833
03:31:09,110 --> 03:31:07,680
so that venting so we talked about

4834
03:31:11,330 --> 03:31:09,120
there's two things happening there it's

4835
03:31:12,950 --> 03:31:11,340
Basics F9 is proceeding with prop load

4836
03:31:17,750 --> 03:31:12,960
and we're tracking no issues with dragon

4837
03:31:21,170 --> 03:31:18,530
foreign

4838
03:31:22,849 --> 03:31:21,180

copies

4839

03:31:24,469 --> 03:31:22,859

so update from the core that's on track

4840

03:31:26,090 --> 03:31:24,479

so we talked about the condensation a

4841

03:31:28,070 --> 03:31:26,100

few times there's also the venting so

4842

03:31:31,610 --> 03:31:28,080

two different processes the condensation

4843

03:31:33,170 --> 03:31:31,620

is the super chilled fuel cooling these

4844

03:31:35,870 --> 03:31:33,180

the metal and the skin around it the

4845

03:31:37,610 --> 03:31:35,880

venting is because it's super cold as it

4846

03:31:39,950 --> 03:31:37,620

heats up on the inside just from the air

4847

03:31:41,750 --> 03:31:39,960

temperature you know essentially working

4848

03:31:43,910 --> 03:31:41,760

its way in there it Vents and so that's

4849

03:31:46,010 --> 03:31:43,920

just like a pot boiling and just like

4850

03:31:47,809 --> 03:31:46,020

you would you know lift the lid off a

4851
03:31:48,769 --> 03:31:47,819
tea kettle to let the pressure out uh

4852
03:31:49,849 --> 03:31:48,779
this is the same thing you're seeing

4853
03:31:50,809 --> 03:31:49,859
happen there so that's what's happening

4854
03:31:53,450 --> 03:31:50,819
kind of from the middle of the screen

4855
03:31:55,370 --> 03:31:53,460
yeah and on a calm night like tonight

4856
03:31:57,650 --> 03:31:55,380
the winds have totally died down you can

4857
03:32:00,170 --> 03:31:57,660
see it as it Cascades down like a

4858
03:32:02,269 --> 03:32:00,180
waterfall coming off the middle of uh

4859
03:32:04,729 --> 03:32:02,279
the strong back there I want to make a

4860
03:32:07,610 --> 03:32:04,739
quick note about the the radio

4861
03:32:09,769 --> 03:32:07,620
and how you can hear if you're on a

4862
03:32:11,830 --> 03:32:09,779
local amateur radio on the VHF radio

4863
03:32:14,690 --> 03:32:11,840

frequency turn into

4864

03:32:16,510 --> 03:32:14,700

146.940 megahertz and UHF radio

4865

03:32:18,950 --> 03:32:16,520

frequency

4866

03:32:24,349 --> 03:32:18,960

444.925 megahertz on the FM mode you can

4867

03:32:24,359 --> 03:32:28,969

and there goes our stage two locks load

4868

03:32:36,710 --> 03:32:31,309

on a beautiful night

4869

03:32:40,309 --> 03:32:38,510

for stage one

4870

03:32:41,809 --> 03:32:40,319

that's going to continue to load and

4871

03:32:44,150 --> 03:32:41,819

we'll see that go all the way down to T

4872

03:32:47,690 --> 03:32:44,160

minus six minutes

4873

03:32:51,469 --> 03:32:49,790

the rp1 load

4874

03:32:53,750 --> 03:32:51,479

in terms of locks that will continue

4875

03:32:56,630 --> 03:32:53,760

until about T minus three to two minutes

4876

03:33:01,969 --> 03:32:56,640

on the liquid oxygen side a lot more

4877

03:33:05,510 --> 03:33:04,010

hey let's throw up a quick social media

4878

03:33:09,590 --> 03:33:05,520

question what do you say Raj sounds good

4879

03:33:12,349 --> 03:33:09,600

what do we got here at jse Garen asks oh

4880

03:33:15,170 --> 03:33:12,359

I am nine years old and wants to know if

4881

03:33:16,969 --> 03:33:15,180

you can see airplanes on the ISS I have

4882

03:33:19,190 --> 03:33:16,979

never heard that question so actually uh

4883

03:33:20,450 --> 03:33:19,200

Megan MacArthur had a cool post where

4884

03:33:21,830 --> 03:33:20,460

she took a picture of the ground and you

4885

03:33:24,530 --> 03:33:21,840

can see the contrails of a plane so you

4886

03:33:26,450 --> 03:33:24,540

can't see a plane if it's not what we

4887

03:33:28,309 --> 03:33:26,460

call conning meaning contrails you can

4888

03:33:30,110 --> 03:33:28,319

if you can find the contrails and you

4889

03:33:31,670 --> 03:33:30,120

can follow it back to find the plane but

4890

03:33:35,030 --> 03:33:31,680

it's super hard to find an actual

4891

03:33:36,229 --> 03:33:35,040

airplane that's not in the contrails we

4892

03:33:37,429 --> 03:33:36,239

also spent some time on crew three

4893

03:33:39,590 --> 03:33:37,439

trying to see who could one-up each

4894

03:33:41,450 --> 03:33:39,600

other to find ships so you can cheat and

4895

03:33:42,769 --> 03:33:41,460

look around the Panama Canal to see if

4896

03:33:44,150 --> 03:33:42,779

you could find ships there but you need

4897

03:33:45,710 --> 03:33:44,160

binoculars to help yourself but if you

4898

03:33:47,150 --> 03:33:45,720

know where to look uh or along the

4899

03:33:48,650 --> 03:33:47,160

shipping lanes you can usually find some

4900

03:33:50,750 --> 03:33:48,660

from ships and then airplanes if you

4901
03:33:52,190 --> 03:33:50,760
look around uh like the places like over

4902
03:33:53,750 --> 03:33:52,200
the Atlantic where you can look for

4903
03:33:55,070 --> 03:33:53,760
contrails and find planes but absolutely

4904
03:33:57,050 --> 03:33:55,080
you can see them what a great answer

4905
03:34:01,309 --> 03:33:57,060
didn't know that thank you Raj let's

4906
03:34:05,570 --> 03:34:03,469
thanks Daryl everything's still looking

4907
03:34:08,269 --> 03:34:05,580
good for launch of Falcon 9 and dragon

4908
03:34:10,729 --> 03:34:08,279
Endeavor just under 15 minutes from now

4909
03:34:12,769 --> 03:34:10,739
now for those just tuning in Falcon 9

4910
03:34:15,590 --> 03:34:12,779
began propellant load at T minus 35

4911
03:34:18,530 --> 03:34:15,600
minutes around T minus 20 minutes Falcon

4912
03:34:21,349 --> 03:34:18,540
9 completed loading of rp1 fuel on the

4913
03:34:23,769 --> 03:34:21,359

second stage fuel loading on the first

4914

03:34:28,490 --> 03:34:23,779

stage remains underway

4915

03:34:30,670 --> 03:34:28,500

and it is approximately uh

4916

03:34:33,769 --> 03:34:30,680

80 percent full

4917

03:34:36,650 --> 03:34:33,779

it will finish around T minus six

4918

03:34:39,469 --> 03:34:36,660

minutes Falcon 9 is also underway with

4919

03:34:41,450 --> 03:34:39,479

loading of densified liquid oxygen and

4920

03:34:44,030 --> 03:34:41,460

that will wrap up at T minus three

4921

03:34:46,790 --> 03:34:44,040

minutes for the first stage and T minus

4922

03:34:48,650 --> 03:34:46,800

two minutes for the second stage coming

4923

03:34:50,870 --> 03:34:48,660

up we'll perform checkouts of the thrust

4924

03:34:53,990 --> 03:34:50,880

Vector controllers a procedure called

4925

03:34:55,910 --> 03:34:54,000

TVC Wiggles well command Falcon 9 to

4926
03:34:57,830 --> 03:34:55,920
activate those thrust Vector controllers

4927
03:35:00,170 --> 03:34:57,840
and actually wiggle the engines a couple

4928
03:35:02,210 --> 03:35:00,180
degrees this verifies that those engines

4929
03:35:04,309 --> 03:35:02,220
will be able to move while in Flight

4930
03:35:06,170 --> 03:35:04,319
which is how Falcon 9 steers itself

4931
03:35:07,910 --> 03:35:06,180
during the ascent phase

4932
03:35:10,010 --> 03:35:07,920
dragon mission director and team

4933
03:35:11,929 --> 03:35:10,020
reporting no issues communication

4934
03:35:14,330 --> 03:35:11,939
checkouts are complete the crew access

4935
03:35:16,729 --> 03:35:14,340
arm is retracted and the launchescape

4936
03:35:18,650 --> 03:35:16,739
system is armed and as you can see there

4937
03:35:20,870 --> 03:35:18,660
on the right hand side of your screen

4938
03:35:24,170 --> 03:35:20,880

the crew is strapped in and ready to go

4939

03:35:26,870 --> 03:35:24,180

to space everybody looks pretty calm and

4940

03:35:30,410 --> 03:35:26,880

chill uh you know given that they are

4941

03:35:32,450 --> 03:35:30,420

going to space in uh 13 minutes

4942

03:35:34,550 --> 03:35:32,460

final instructions to the crew will come

4943

03:35:36,229 --> 03:35:34,560

at T minus 10 minutes the crew displays

4944

03:35:38,630 --> 03:35:36,239

will be configured for launch which give

4945

03:35:40,610 --> 03:35:38,640

the crew insight into how the launch is

4946

03:35:42,050 --> 03:35:40,620

proceeding and provides constant updates

4947

03:35:44,630 --> 03:35:42,060

on Vehicle Health

4948

03:35:46,670 --> 03:35:44,640

at T minus five minutes will then be in

4949

03:35:49,190 --> 03:35:46,680

terminal count and dragon will

4950

03:35:50,990 --> 03:35:49,200

transition to internal power we'll hear

4951
03:35:53,030 --> 03:35:51,000
continued status call outs from SpaceX

4952
03:35:54,170 --> 03:35:53,040
mission control as we get closer to

4953
03:35:56,750 --> 03:35:54,180
liftoff

4954
03:35:59,450 --> 03:35:56,760
the ranges go all secured air and sea

4955
03:36:02,690 --> 03:35:59,460
space remain clear and as you can see

4956
03:36:05,570 --> 03:36:02,700
weather remains gorgeous and everything

4957
03:36:08,570 --> 03:36:05,580
Still Remains inbound for the launch

4958
03:36:11,330 --> 03:36:08,580
criteria so all in all Falcon 9 and

4959
03:36:14,150 --> 03:36:11,340
dragon Endeavor all systems remain go

4960
03:36:18,889 --> 03:36:14,160
for launch in just 12 minutes and 34

4961
03:36:22,370 --> 03:36:20,630
all right thank you very much Kate and

4962
03:36:24,590 --> 03:36:22,380
take a look at this picture before their

4963
03:36:25,969 --> 03:36:24,600

flight crew six got a picture with what

4964

03:36:27,769 --> 03:36:25,979

was supposed to be their booster

4965

03:36:29,990 --> 03:36:27,779

actually got swapped out for a brand new

4966

03:36:32,330 --> 03:36:30,000

booster but anytime you get that close

4967

03:36:35,269 --> 03:36:32,340

to the hardware it's a cool thing brand

4968

03:36:37,370 --> 03:36:35,279

new booster launching tonight

4969

03:36:39,710 --> 03:36:37,380

and at the time Falcon 9 and dragon

4970

03:36:41,510 --> 03:36:39,720

launches

4971

03:36:42,889 --> 03:36:41,520

the International Space Station which is

4972

03:36:43,969 --> 03:36:42,899

being tracked right here by Mission

4973

03:36:47,330 --> 03:36:43,979

Control

4974

03:36:50,090 --> 03:36:47,340

will be 260 statute miles over the

4975

03:36:53,929 --> 03:36:50,100

Bristol Channel Southwest of Cardiff

4976
03:36:58,790 --> 03:36:56,030
crew six once they get off the ground

4977
03:37:02,990 --> 03:36:58,800
we'll spend the next 25 hours chasing

4978
03:37:07,729 --> 03:37:06,050
for rendezvous at 1 11 A.M eastern time

4979
03:37:10,250 --> 03:37:07,739
tomorrow

4980
03:37:12,229 --> 03:37:10,260
be Friday

4981
03:37:14,090 --> 03:37:12,239
and we'll have live coverage on NASA TV

4982
03:37:17,750 --> 03:37:14,100
of docking and the crew 6 welcome

4983
03:37:20,090 --> 03:37:17,760
ceremony at 11 PM Eastern Time

4984
03:37:21,830 --> 03:37:20,100
tonight

4985
03:37:23,150 --> 03:37:21,840
final thoughts Raja the episode get

4986
03:37:24,650 --> 03:37:23,160
ready to lift off yeah so right here

4987
03:37:26,630 --> 03:37:24,660
they're uh 10 minutes they'll probably

4988
03:37:28,790 --> 03:37:26,640

say some thank yous to the ground a lot

4989

03:37:30,229 --> 03:37:28,800

of people got them here uh they're gonna

4990

03:37:31,849 --> 03:37:30,239

see them messing with the displays so

4991

03:37:33,170 --> 03:37:31,859

Woody and Steve will be putting up

4992

03:37:34,550 --> 03:37:33,180

what's called Ford views on the outside

4993

03:37:35,809 --> 03:37:34,560

displays for the mission Specialists can

4994

03:37:37,969 --> 03:37:35,819

monitor the parameters that's how they

4995

03:37:38,929 --> 03:37:37,979

monitor anything that would uh the

4996

03:37:40,070 --> 03:37:38,939

performance is doing in the center

4997

03:37:42,110 --> 03:37:40,080

display they'll bring up the event

4998

03:37:43,969 --> 03:37:42,120

details that show the launch and you'll

4999

03:37:45,410 --> 03:37:43,979

see them put their hands down once they

5000

03:37:46,910 --> 03:37:45,420

get closer launch and they'll have this

5001
03:37:48,229 --> 03:37:46,920
display up so they can basically watch

5002
03:37:49,370 --> 03:37:48,239
they'll have everything configured and

5003
03:37:50,389 --> 03:37:49,380
that's what they talk about configuring

5004
03:37:51,769 --> 03:37:50,399
for launch so that you don't have to

5005
03:37:53,870 --> 03:37:51,779
touch it during the launch itself

5006
03:37:55,610 --> 03:37:53,880
Colonel Charlie putting us in the seat

5007
03:37:56,990 --> 03:37:55,620
of the astronauts with exactly what

5008
03:37:58,490 --> 03:37:57,000
they're doing thank you so much

5009
03:38:00,110 --> 03:37:58,500
appreciate it and one more thing I want

5010
03:38:01,729 --> 03:38:00,120
to say I don't know Raja I have a

5011
03:38:03,530 --> 03:38:01,739
feeling there's love in the air not

5012
03:38:05,030 --> 03:38:03,540
going to give it away but this just

5013
03:38:06,110 --> 03:38:05,040

feels like there's love in there you got

5014

03:38:07,490 --> 03:38:06,120

to stay tuned to find out more about

5015

03:38:10,429 --> 03:38:07,500

that for now we'll turn it over to Gary

5016

03:38:12,229 --> 03:38:10,439

and Kate at SpaceX headquarters in

5017

03:38:17,110 --> 03:38:12,239

Hawthorne California take us through the

5018

03:38:22,130 --> 03:38:19,490

thanks Daryl that's right we're exactly

5019

03:38:25,670 --> 03:38:22,140

T minus 10 and a half minutes until

5020

03:38:28,550 --> 03:38:25,680

liftoff of crew six uh as you can see

5021

03:38:30,590 --> 03:38:28,560

there on your screen Falcon 9 is

5022

03:38:32,929 --> 03:38:30,600

underway with propellant loading as

5023

03:38:35,809 --> 03:38:32,939

indicated uh by those white clouds

5024

03:38:38,269 --> 03:38:35,819

forming around the vehicle the fuel

5025

03:38:40,969 --> 03:38:38,279

loading is complete on the second stage

5026
03:38:43,910 --> 03:38:40,979
locks load remains underway it's about

5027
03:38:46,429 --> 03:38:43,920
40 percent full on the second stage

5028
03:38:48,290 --> 03:38:46,439
locks load also underway SpaceX

5029
03:38:53,030 --> 03:38:48,300
confirmed crew displays configured for

5030
03:38:58,370 --> 03:38:55,190
SpaceX Dragon crew to slaves are

5031
03:39:02,750 --> 03:39:01,010
copy that Steve and once again on behalf

5032
03:39:04,849 --> 03:39:02,760
of the entire SpaceX team we're honored

5033
03:39:06,410 --> 03:39:04,859
to have you aboard Dragon capsule

5034
03:39:08,330 --> 03:39:06,420
Endeavor on its next trip to the

5035
03:39:10,849 --> 03:39:08,340
International Space Station we wish you

5036
03:39:16,130 --> 03:39:10,859
a great Mission good luck godspeed and

5037
03:39:19,309 --> 03:39:17,510
everyone outside

5038
03:39:24,530 --> 03:39:19,319

the

5039

03:39:26,690 --> 03:39:24,540

ready for launch

5040

03:39:28,610 --> 03:39:26,700

really want to thank everyone and

5041

03:39:30,469 --> 03:39:28,620

appreciate the great call much

5042

03:39:32,950 --> 03:39:30,479

appreciated call for the scrub the other

5043

03:39:35,090 --> 03:39:32,960

night it was a great

5044

03:39:36,590 --> 03:39:35,100

learning opportunity for the crew and I

5045

03:39:38,450 --> 03:39:36,600

think for the teams

5046

03:39:40,190 --> 03:39:38,460

and so

5047

03:39:50,510 --> 03:39:40,200

once more to the preach dear friends

5048

03:39:55,130 --> 03:39:52,849

some nice words there between the crew

5049

03:39:58,429 --> 03:39:55,140

as you see there on your screen and

5050

03:40:01,250 --> 03:39:58,439

SpaceX core located here at SpaceX

5051
03:40:03,530 --> 03:40:01,260
mission control which a live view there

5052
03:40:05,990 --> 03:40:03,540
on your screen as you can tell by

5053
03:40:08,630 --> 03:40:06,000
perhaps the the ambient noise around me

5054
03:40:11,090 --> 03:40:08,640
the energy is starting to grow in

5055
03:40:13,670 --> 03:40:11,100
anticipation for launch coming up about

5056
03:40:15,530 --> 03:40:13,680
eight and a half minutes from now

5057
03:40:18,710 --> 03:40:15,540
that's right the energy is high here

5058
03:40:21,050 --> 03:40:18,720
Kate not that T-minus 10 minute Mark we

5059
03:40:22,370 --> 03:40:21,060
heard the good luck in godspeed on the

5060
03:40:24,950 --> 03:40:22,380
teams here in Mission Control in

5061
03:40:27,830 --> 03:40:24,960
Hawthorne where that crowd is gathering

5062
03:40:29,570 --> 03:40:27,840
Meanwhile we're tracking the loading of

5063
03:40:31,670 --> 03:40:29,580

fuel and oxidizer on the first and

5064

03:40:33,290 --> 03:40:31,680

second stage second stage filled with

5065

03:40:35,510 --> 03:40:33,300

fuel right now

5066

03:40:37,790 --> 03:40:35,520

continuing to fill with oxidizer it'll

5067

03:40:40,190 --> 03:40:37,800

be the last of the tanks to fill stage

5068

03:40:41,870 --> 03:40:40,200

one continuing to be underway at the 10

5069

03:40:45,050 --> 03:40:41,880

minute Mark you heard that call for

5070

03:40:47,269 --> 03:40:45,060

configuring the uh crew displays for

5071

03:40:49,490 --> 03:40:47,279

launch that was confirmed

5072

03:40:51,170 --> 03:40:49,500

at the T-minus 10 Minute Market also is

5073

03:40:54,110 --> 03:40:51,180

a point where Falcon 9 launched commit

5074

03:40:56,150 --> 03:40:54,120

criteria gets checked by the computers

5075

03:40:57,889 --> 03:40:56,160

past that milestone

5076

03:40:59,929 --> 03:40:57,899

now we're counting down to the next

5077

03:41:02,150 --> 03:40:59,939

Milestone at T minus seven minutes which

5078

03:41:03,469 --> 03:41:02,160

is setting up for engine chill

5079

03:41:05,990 --> 03:41:03,479

that's right we should hear that call

5080

03:41:08,210 --> 03:41:06,000

out in about 44 seconds

5081

03:41:12,590 --> 03:41:08,220

P minus seven minutes we will actually

5082

03:41:14,389 --> 03:41:12,600

open up the pre-valves to the m1d

5083

03:41:17,389 --> 03:41:14,399

engines those nine engines at the base

5084

03:41:18,889 --> 03:41:17,399

of the first stage that will allow a

5085

03:41:21,950 --> 03:41:18,899

little bit of that super chilled

5086

03:41:24,769 --> 03:41:21,960

densified liquid oxygen to flow into the

5087

03:41:27,170 --> 03:41:24,779

hardware that those turbo pumps and that

5088

03:41:29,450 --> 03:41:27,180

basically helps prepare the hardware

5089

03:41:31,969 --> 03:41:29,460

from a thermal standpoint or a

5090

03:41:35,269 --> 03:41:31,979

temperature standpoint for that full

5091

03:41:38,389 --> 03:41:35,279

flow of super chilled liquid oxygen so

5092

03:41:41,450 --> 03:41:38,399

we basically open up the pre-valves and

5093

03:41:43,790 --> 03:41:41,460

a little bit of that locks Flows In

5094

03:41:45,710 --> 03:41:43,800

and helps cool the hardware down in

5095

03:41:49,910 --> 03:41:45,720

preparation for a full flow of liquid

5096

03:41:49,920 --> 03:41:54,410

oxygen engine chill has started

5097

03:41:58,130 --> 03:41:56,330

as expected there's that call out for

5098

03:42:00,530 --> 03:41:58,140

that engine chill indicating the

5099

03:42:04,670 --> 03:42:00,540

pre-valves are open and the engines are

5100

03:42:09,050 --> 03:42:07,849

now under six minutes 45 seconds from

5101
03:42:11,990 --> 03:42:09,060
launch

5102
03:42:14,630 --> 03:42:12,000
again we're continuing to fuel the

5103
03:42:16,490 --> 03:42:14,640
Falcon 9 rocket stage two filled with

5104
03:42:17,990 --> 03:42:16,500
the rp1

5105
03:42:19,969 --> 03:42:18,000
kerosene

5106
03:42:22,429 --> 03:42:19,979
at the T-minus six minute Mark we should

5107
03:42:24,290 --> 03:42:22,439
hear a call out that the stage one RP

5108
03:42:26,750 --> 03:42:24,300
load is complete they're just topping

5109
03:42:29,210 --> 03:42:26,760
that off liquid oxygen on both the first

5110
03:42:31,910 --> 03:42:29,220
and second stages come next

5111
03:42:33,590 --> 03:42:31,920
and there's that confirmation

5112
03:42:36,590 --> 03:42:33,600
we're counting down to T minus five

5113
03:42:38,269 --> 03:42:36,600

minutes at this point at T minus

5114

03:42:41,630 --> 03:42:38,279

T minus five

5115

03:42:43,910 --> 03:42:41,640

the dragon continue is configured for

5116

03:42:48,229 --> 03:42:43,920

terminal count

5117

03:42:50,090 --> 03:42:48,239

dragon is switched to internal power

5118

03:42:55,610 --> 03:42:50,100

right now receiving power from umbilical

5119

03:43:01,250 --> 03:42:58,130

also at uh just under five minutes we'll

5120

03:43:03,050 --> 03:43:01,260

be waiting for strong back retract

5121

03:43:05,570 --> 03:43:03,060

the arm that's currently propping the

5122

03:43:07,969 --> 03:43:05,580

Falcon 9 and dragon up we'll see the

5123

03:43:09,950 --> 03:43:07,979

clamp arms start to open and the strong

5124

03:43:12,170 --> 03:43:09,960

back itself will tilt about two degrees

5125

03:43:13,550 --> 03:43:12,180

off from where it is now at a 90 degree

5126

03:43:16,429 --> 03:43:13,560

position

5127

03:43:22,130 --> 03:43:16,439

just a little off and then it'll get out

5128

03:43:26,090 --> 03:43:24,650

then of course comes the uh after the

5129

03:43:28,969 --> 03:43:26,100

strong back retracts comes the

5130

03:43:30,889 --> 03:43:28,979

completion of liquid oxygen uh

5131

03:43:32,150 --> 03:43:30,899

loading on both the first and second

5132

03:43:36,229 --> 03:43:32,160

stage

5133

03:43:37,910 --> 03:43:36,239

for now T minus five minutes 15 seconds

5134

03:43:40,670 --> 03:43:37,920

we're gonna stand by for that call of

5135

03:43:43,490 --> 03:43:40,680

configuring for terminal count

5136

03:43:48,170 --> 03:43:43,500

six in their seated positions and ready

5137

03:43:53,150 --> 03:43:50,330

dragon is in configure for a terminal

5138

03:43:53,160 --> 03:43:58,969

s are pressurizing for strong baby Trek

5139

03:44:02,330 --> 03:44:00,290

all right and we heard both of those

5140

03:44:04,910 --> 03:44:02,340

calls Dragon onboard computers are going

5141

03:44:07,130 --> 03:44:04,920

to take control of the vehicle

5142

03:44:08,510 --> 03:44:07,140

should be seeing the clamp arm at the

5143

03:44:10,309 --> 03:44:08,520

very top

5144

03:44:12,110 --> 03:44:10,319

of the second stage right underneath

5145

03:44:14,690 --> 03:44:12,120

where you see the unpressurized trunk of

5146

03:44:16,849 --> 03:44:14,700

dragon which is indicated by the half

5147

03:44:18,290 --> 03:44:16,859

black and half white indicators the

5148

03:44:21,710 --> 03:44:18,300

black being the solar panels that

5149

03:44:22,910 --> 03:44:21,720

provide power to the traffic on its

5150

03:44:26,330 --> 03:44:22,920

Transit

5151
03:44:28,010 --> 03:44:26,340
to the International Space Station

5152
03:44:29,630 --> 03:44:28,020
got that confirmation of strong back

5153
03:44:31,130 --> 03:44:29,640
retract we should be able to visually

5154
03:44:34,910 --> 03:44:31,140
see

5155
03:44:42,110 --> 03:44:36,889
strong back will retract about two

5156
03:44:49,190 --> 03:44:45,590
then at lift off the strong back will

5157
03:44:51,170 --> 03:44:49,200
actually go back to 45 degrees

5158
03:44:54,349 --> 03:44:51,180
that strong back is part of the

5159
03:44:57,349 --> 03:44:54,359
transporter erector which provides the

5160
03:45:04,550 --> 03:44:57,359
liquids and gases and electrical

5161
03:45:10,190 --> 03:45:06,889
as Gary pointed out those clamp arms

5162
03:45:13,309 --> 03:45:10,200
opened up underneath the trunk just

5163
03:45:16,250 --> 03:45:13,319

above the first stage

5164

03:45:18,170 --> 03:45:16,260

see that action happening now as that

5165

03:45:25,550 --> 03:45:18,180

initial retraction just a couple degrees

5166

03:45:30,349 --> 03:45:28,070

at this point in time fueling remains

5167

03:45:34,429 --> 03:45:30,359

underway to the propellant lobe remains

5168

03:45:38,389 --> 03:45:34,439

underway all fuels are loaded that rp1

5169

03:45:39,950 --> 03:45:38,399

liquid oxygen explodes complete here we

5170

03:45:42,290 --> 03:45:39,960

just heard that call out that that is

5171

03:45:44,750 --> 03:45:42,300

all done

5172

03:45:47,090 --> 03:45:44,760

second stage locks load still underway

5173

03:45:51,229 --> 03:45:47,100

that will wrap up at about T minus two

5174

03:45:57,650 --> 03:45:53,469

now that that first stage liquid oxygen

5175

03:46:00,650 --> 03:45:57,660

load is complete we'll see some more of

5176
03:46:04,130 --> 03:46:00,660
that white gaseous Cloud forming around

5177
03:46:09,950 --> 03:46:04,140
the vehicle due to those lines dragon is

5178
03:46:15,349 --> 03:46:11,690
all right good call out there indicating

5179
03:46:17,990 --> 03:46:15,359
that dragon is running on its own power

5180
03:46:24,349 --> 03:46:18,000
we are in the terminal count now at T

5181
03:46:30,349 --> 03:46:26,690
. the crew remains comfortable there on

5182
03:46:57,410 --> 03:46:33,110
about 15 seconds remaining in stage two

5183
03:46:57,420 --> 03:47:02,510
stage two lock foot complete

5184
03:47:08,750 --> 03:47:06,050
dragon is an auto Idol

5185
03:47:12,170 --> 03:47:08,760
you heard those calls the Falcon 9 fully

5186
03:47:14,030 --> 03:47:12,180
fueled with rp1 rocket fuel as well as

5187
03:47:15,950 --> 03:47:14,040
the liquid oxygen

5188
03:47:20,330 --> 03:47:15,960

that call of dragon is an auto Idol

5189

03:47:23,929 --> 03:47:22,429

does the gas close out purging the lines

5190

03:47:26,210 --> 03:47:23,939

of the fuel that have supplied the

5191

03:47:32,150 --> 03:47:26,220

Falcon 9

5192

03:47:37,670 --> 03:47:33,950

also wait for a call of the arming of

5193

03:47:41,870 --> 03:47:39,710

dragonfly computers are configured for

5194

03:47:44,690 --> 03:47:41,880

launch flight termination system will

5195

03:47:47,389 --> 03:47:44,700

allow Falcon 9 to talk to dragon

5196

03:47:50,510 --> 03:47:47,399

on the ride uphill

5197

03:47:54,590 --> 03:47:52,610

dragon is in countdown

5198

03:47:56,389 --> 03:47:54,600

T-minus one minute and Counting dragon

5199

03:48:08,330 --> 03:47:56,399

is in countdown

5200

03:48:08,340 --> 03:48:14,030

Dragon SpaceX go for launch

5201
03:48:18,170 --> 03:48:16,429
it's like strong and copy go for lunch

5202
03:48:20,210 --> 03:48:18,180
you might have 30 seconds

5203
03:48:31,429 --> 03:48:20,220
you minus 30 seconds and counting all

5204
03:48:31,439 --> 03:48:34,790
15 seconds

5205
03:48:37,849 --> 03:48:36,469
ready for an on-time launch for the

5206
03:48:45,769 --> 03:48:37,859
Instagram

5207
03:48:46,929 --> 03:48:45,779
nine eight seven six five four three two

5208
03:48:50,450 --> 03:48:46,939
one

5209
03:48:53,780 --> 03:48:50,460
engines full power and lift off a three

5210
03:49:05,290 --> 03:48:53,790
pick go dragon Go falcon

5211
03:49:21,349 --> 03:49:08,150
on the first stage hearing good calls

5212
03:49:26,510 --> 03:49:24,410
t plus 34 seconds into the sixth

5213
03:49:32,269 --> 03:49:26,520

rotational crew mission onboard dragon

5214

03:49:36,710 --> 03:49:34,670

stage one title down

5215

03:49:38,330 --> 03:49:36,720

we all heard the call indicating that

5216

03:49:40,309 --> 03:49:38,340

the first stage engines will begin to

5217

03:49:42,769 --> 03:49:40,319

Throttle Down in preparation for Max

5218

03:49:45,290 --> 03:49:42,779

Cube which is the moment of Maximum

5219

03:49:49,250 --> 03:49:45,300

aerodynamic pressure that the vehicle

5220

03:49:54,950 --> 03:49:52,729

vehicle is supersonic

5221

03:50:03,410 --> 03:49:54,960

call up there indicating the vehicles

5222

03:50:07,790 --> 03:50:05,929

all right now that we're past Max Q what

5223

03:50:14,389 --> 03:50:07,800

Bravo

5224

03:50:16,790 --> 03:50:14,399

abort modes that are called that allow

5225

03:50:19,550 --> 03:50:16,800

the ground teams and the crew

5226

03:50:20,870 --> 03:50:19,560

to track about the position of the

5227

03:50:24,170 --> 03:50:20,880

Falcon 9 and the dragon as they make

5228

03:50:25,910 --> 03:50:24,180

their way up the Eastern seaboard

5229

03:50:27,769 --> 03:50:25,920

in the event of an abort these different

5230

03:50:30,530 --> 03:50:27,779

abort modes would indicate about the

5231

03:50:32,929 --> 03:50:30,540

position where dragons

5232

03:50:35,450 --> 03:50:32,939

as well as indicate what series of

5233

03:50:37,070 --> 03:50:35,460

Maneuvers Dragon would indicate but so

5234

03:50:38,809 --> 03:50:37,080

far we're hearing good calls on the

5235

03:50:42,050 --> 03:50:38,819

performance of the Falcon 9

5236

03:50:50,750 --> 03:50:42,060

on his ride uphill one minute 53 seconds

5237

03:50:54,650 --> 03:50:52,969

we're about 30 seconds away from Main

5238

03:50:57,290 --> 03:50:54,660

engine cutoff

5239

03:51:00,650 --> 03:50:57,300

which will be followed quickly by stage

5240

03:51:02,510 --> 03:51:00,660

separation and second engine start

5241

03:51:11,269 --> 03:51:02,520

which is the ignition of that and back

5242

03:51:27,410 --> 03:51:13,969

now about 10 seconds away from Main

5243

03:51:27,420 --> 03:51:32,510

confirmed

5244

03:51:37,910 --> 03:51:34,190

there you can see on your screen

5245

03:51:45,950 --> 03:51:37,920

confirmation of stage separation as well

5246

03:51:50,990 --> 03:51:48,410

second stage is now carrying the crew

5247

03:51:52,610 --> 03:51:51,000

six astronauts to orbit

5248

03:51:54,170 --> 03:51:52,620

beautiful view there on the left hand

5249

03:51:55,790 --> 03:51:54,180

side of your screen coming from the

5250

03:51:57,830 --> 03:51:55,800

first stage

5251
03:51:59,929 --> 03:51:57,840
which as you can see is still gaining an

5252
03:52:02,389 --> 03:51:59,939
altitude it has not yet reached its

5253
03:52:08,690 --> 03:52:02,399
apogee a beautiful view of these Florida

5254
03:52:13,190 --> 03:52:09,950
Meanwhile we're tracking good

5255
03:52:14,990 --> 03:52:13,200
performance on that mvac engine

5256
03:52:17,030 --> 03:52:15,000
on the screen to your right we'll be

5257
03:52:20,030 --> 03:52:17,040
hearing periodic performance calls about

5258
03:52:22,190 --> 03:52:20,040
once every minute of the status of the

5259
03:52:24,950 --> 03:52:22,200
trajectory of the second stage in the

5260
03:52:26,150 --> 03:52:24,960
crew six astronauts that are inside crew

5261
03:52:28,729 --> 03:52:26,160
Dragon endeavor

5262
03:52:30,530 --> 03:52:28,739
we'll also be here

5263
03:52:32,389 --> 03:52:30,540

just like you heard just there as we

5264

03:52:37,309 --> 03:52:32,399

pass over the various ground stations

5265

03:52:37,319 --> 03:52:41,690

Dragon SpaceX nominal trajectory

5266

03:52:49,849 --> 03:52:44,210

there's that performance call out I can

5267

03:52:54,170 --> 03:52:51,590

as for the first stage there on the

5268

03:52:56,530 --> 03:52:54,180

left-hand side of your screen that first

5269

03:53:01,190 --> 03:52:56,540

stage still gaining an altitude although

5270

03:53:02,750 --> 03:53:01,200

that gain is slowing down it will be

5271

03:53:04,450 --> 03:53:02,760

making its way back down to earth

5272

03:53:07,010 --> 03:53:04,460

Landing

5273

03:53:09,110 --> 03:53:07,020

attempting a landing on our drone ship

5274

03:53:12,710 --> 03:53:09,120

just read the instructions which is

5275

03:53:21,769 --> 03:53:12,720

located off the Florida coast by a

5276
03:53:25,670 --> 03:53:24,349
the mvac engine on stage two Burns for

5277
03:53:28,250 --> 03:53:25,680
six minutes

5278
03:53:30,229 --> 03:53:28,260
after second stage ignition

5279
03:53:32,809 --> 03:53:30,239
will continue to see

5280
03:53:34,250 --> 03:53:32,819
this engine burn until about eight and a

5281
03:53:37,370 --> 03:53:34,260
half minutes

5282
03:53:42,349 --> 03:53:37,380
into today's flight

5283
03:53:42,359 --> 03:53:47,870
trajectory

5284
03:53:51,590 --> 03:53:49,429
again these performance calls happen

5285
03:53:53,929 --> 03:53:51,600
once a minute

5286
03:53:56,929 --> 03:53:53,939
flight teams continuing to track

5287
03:53:58,670 --> 03:53:56,939
falcon 9. and it's ascent

5288
03:54:00,710 --> 03:53:58,680

everything's looking good so far you'll

5289

03:54:06,229 --> 03:54:00,720

also continue to hear those check-ins of

5290

03:54:10,729 --> 03:54:08,330

at this point in time we're roughly two

5291

03:54:13,250 --> 03:54:10,739

minutes away from the next major event

5292

03:54:15,410 --> 03:54:13,260

which will be the entry burn for the

5293

03:54:19,070 --> 03:54:15,420

first stage

5294

03:54:22,250 --> 03:54:19,080

we will relight three engines uh three

5295

03:54:25,370 --> 03:54:22,260

m1d engines on that first stage to help

5296

03:54:30,889 --> 03:54:25,380

slow the vehicle down as it re-enters

5297

03:54:37,490 --> 03:54:32,929

we're approaching 200 kilometers in

5298

03:54:39,710 --> 03:54:37,500

altitude it's about 124 miles

5299

03:54:42,769 --> 03:54:39,720

meanwhile velocity SpaceX nominal

5300

03:54:45,230 --> 03:54:42,779

trajectory good trajectory calls about

5301
03:54:47,870 --> 03:54:45,240
to pass 12 000 kilometers per hour

5302
03:55:05,520 --> 03:54:47,880
[Music]

5303
03:55:09,290 --> 03:55:07,309
[Applause]

5304
03:55:11,870 --> 03:55:09,300
everything looking nominal for both

5305
03:55:14,630 --> 03:55:11,880
first and second stages

5306
03:55:21,650 --> 03:55:14,640
now coming up to t plus six and a half

5307
03:55:25,610 --> 03:55:23,090
mostly what we're hearing now are the

5308
03:55:28,969 --> 03:55:25,620
performance calls in the second stage

5309
03:55:30,710 --> 03:55:28,979
in about a minute is when we'll see uh a

5310
03:55:33,229 --> 03:55:30,720
series of events in Rapid succession

5311
03:55:34,969 --> 03:55:33,239
it's been a pretty good Pace since

5312
03:55:37,309 --> 03:55:34,979
second stage ignition

5313
03:55:39,650 --> 03:55:37,319

about uh less than a minute from now

5314

03:55:51,530 --> 03:55:39,660

we'll start to see more action nominal

5315

03:55:55,969 --> 03:55:53,030

as Gary mentioned those call outs

5316

03:55:58,969 --> 03:55:55,979

occurring about once every minute

5317

03:56:01,550 --> 03:55:58,979

now we're about 20 seconds away from the

5318

03:56:04,550 --> 03:56:01,560

first stage entry burn

5319

03:56:06,349 --> 03:56:04,560

that burn will last about 30 seconds and

5320

03:56:08,330 --> 03:56:06,359

help slow the vehicle down as it

5321

03:56:10,610 --> 03:56:08,340

re-enters back into the Earth's

5322

03:56:12,769 --> 03:56:10,620

atmosphere

5323

03:56:16,189 --> 03:56:12,779

page one entry run startup

5324

03:56:18,410 --> 03:56:16,199

and there you can see FTS has saved on

5325

03:56:19,790 --> 03:56:18,420

your screen that first stage entry burn

5326

03:56:22,070 --> 03:56:19,800

has begun

5327

03:56:24,229 --> 03:56:22,080

that booster sees High drag which

5328

03:56:26,090 --> 03:56:24,239

actually scrubs roughly 70 percent of

5329

03:56:30,889 --> 03:56:26,100

the Velocity by the time that the

5330

03:56:36,229 --> 03:56:32,929

so about another 10 seconds of this

5331

03:56:42,830 --> 03:56:39,590

again three engines relit the center and

5332

03:56:42,840 --> 03:56:49,370

and conclusion of that entry burn

5333

03:56:53,330 --> 03:56:51,050

meanwhile good performance on the second

5334

03:56:55,370 --> 03:56:53,340

stage since second stage ignition we've

5335

03:56:56,870 --> 03:56:55,380

been in a two alpha abort mode the next

5336

03:57:00,110 --> 03:56:56,880

abort modes will happen in Rapid

5337

03:57:02,570 --> 03:57:00,120

succession to Bravo to charlie delta

5338

03:57:04,250 --> 03:57:02,580

guidance

5339

03:57:06,229 --> 03:57:04,260

each indicating different series of

5340

03:57:07,729 --> 03:57:06,239

Maneuvers in the event of an abort

5341

03:57:09,110 --> 03:57:07,739

scenario but as you've been hearing

5342

03:57:10,790 --> 03:57:09,120

through the periodic checks we're seeing

5343

03:57:14,809 --> 03:57:10,800

good trajectory good performance on the

5344

03:57:21,229 --> 03:57:17,389

Seco second stage engine cutoff would be

5345

03:57:26,269 --> 03:57:21,239

coming at eight minutes 48 seconds

5346

03:57:32,630 --> 03:57:27,309

yeah

5347

03:57:32,640 --> 03:57:40,969

standing by for Seco

5348

03:57:40,979 --> 03:57:45,110

mvac shutdown

5349

03:57:49,250 --> 03:57:47,870

page one letting burn

5350

03:57:51,590 --> 03:57:49,260

and there we heard the call out

5351
03:57:55,490 --> 03:57:51,600
indicating that Landing Burns Dragon

5352
03:57:58,070 --> 03:57:55,500
SpaceX we have a nominal orbit insertion

5353
03:57:59,929 --> 03:57:58,080
great news there for just like striking

5354
03:58:02,750 --> 03:57:59,939
coffee is not an order balloon insertion

5355
03:58:05,450 --> 03:58:02,760
Great Escape system disarmed

5356
03:58:08,389 --> 03:58:05,460
for Dragon Endeavor age one landingly

5357
03:58:13,280 --> 03:58:10,490
attempting to land on our drone ship

5358
03:58:23,990 --> 03:58:13,290
just read the instructions

5359
03:58:27,650 --> 03:58:24,000
[Applause]

5360
03:58:30,469 --> 03:58:27,660
successful Landing of this booster it's

5361
03:58:33,530 --> 03:58:30,479
first trip to space and therefore it's

5362
03:58:38,330 --> 03:58:35,750
an eruption of Applause here at SpaceX

5363
03:58:40,550 --> 03:58:38,340

mission control and of course after a

5364

03:58:42,830 --> 03:58:40,560

second stage engine cut off you heard

5365

03:58:46,010 --> 03:58:42,840

that call that the crew is in Orbit

5366

03:58:47,630 --> 03:58:46,020

they're now in a coast phase the second

5367

03:58:50,450 --> 03:58:47,640

stage remains idle

5368

03:58:52,070 --> 03:58:50,460

for about three minutes before Dragon

5369

03:58:53,929 --> 03:58:52,080

separates from the second stage

5370

03:58:56,689 --> 03:58:53,939

meanwhile you can see that first stage

5371

03:58:59,150 --> 03:58:56,699

in the legs right on target

5372

03:59:01,130 --> 03:58:59,160

we're now getting views from the second

5373

03:59:03,530 --> 03:59:01,140

stage you can see this is one of the

5374

03:59:05,809 --> 03:59:03,540

cameras that's pointing up into the

5375

03:59:07,969 --> 03:59:05,819

trunk of dragon

5376
03:59:10,189 --> 03:59:07,979
of course we're continuing to get views

5377
03:59:14,809 --> 03:59:10,199
of the expansion nozzle at the end of

5378
03:59:20,090 --> 03:59:17,630
crew is in Orbit Falcon 9 has almost

5379
03:59:23,030 --> 03:59:20,100
done its job

5380
03:59:24,469 --> 03:59:23,040
it completed its job with propelling the

5381
03:59:26,210 --> 03:59:24,479
astronauts through the six minutes of

5382
03:59:27,710 --> 03:59:26,220
the second stage and of course the more

5383
03:59:29,510 --> 03:59:27,720
than two and a half minutes of the first

5384
03:59:32,870 --> 03:59:29,520
stage

5385
03:59:35,030 --> 03:59:32,880
continuing in this Coast period

5386
03:59:39,050 --> 03:59:35,040
we're heading to about the 12 minute

5387
03:59:41,210 --> 03:59:39,060
Mark after launch so we're approaching

5388
03:59:44,570 --> 03:59:41,220

11 minutes right now

5389

03:59:46,790 --> 03:59:44,580

but it's great to see the crew in orbit

5390

03:59:49,070 --> 03:59:46,800

of course we are waiting for that step

5391

03:59:51,050 --> 03:59:49,080

separation you can see this view right

5392

03:59:52,670 --> 03:59:51,060

here of the mvac engine the second stage

5393

03:59:54,469 --> 03:59:52,680

really in just an idle position really

5394

03:59:57,110 --> 03:59:54,479

just coasting not many commands being

5395

03:59:58,849 --> 03:59:57,120

issued from the Falcon 9 but of course

5396

04:00:00,650 --> 03:59:58,859

at the very end we'll actually issue the

5397

04:00:03,170 --> 04:00:00,660

command for separating the dragon from

5398

04:00:04,790 --> 04:00:03,180

the Falcon 9. you'll see a series you

5399

04:00:06,950 --> 04:00:04,800

may see a series of burns the Draco

5400

04:00:09,830 --> 04:00:06,960

engines on the service section of the

5401
04:00:11,630 --> 04:00:09,840
Draco will fire and increase uh

5402
04:00:20,210 --> 04:00:11,640
separation distance from the second

5403
04:00:24,170 --> 04:00:21,950
trunk which of course is the

5404
04:00:27,650 --> 04:00:24,180
unpressurized section

5405
04:00:30,290 --> 04:00:27,660
that goes along with the Dragon capsule

5406
04:00:33,370 --> 04:00:30,300
to the International Space Station

5407
04:00:36,650 --> 04:00:33,380
that's where we are able to store

5408
04:00:39,710 --> 04:00:36,660
basically cargo that is able to be

5409
04:00:41,990 --> 04:00:39,720
exposed to the vacuum of space

5410
04:00:44,269 --> 04:00:42,000
so a great view there looking up into

5411
04:00:46,550 --> 04:00:44,279
the trunk that will be hopefully the

5412
04:00:48,590 --> 04:00:46,560
first views that we get of that

5413
04:00:55,370 --> 04:00:48,600

separation event which we're expecting

5414

04:01:00,349 --> 04:00:57,070

there you can see on your screen

5415

04:01:06,349 --> 04:01:00,359

confirmation Dragon separation confirmed

5416

04:01:13,910 --> 04:01:10,010

Dragon Endeavor is now floating free in

5417

04:01:19,130 --> 04:01:16,490

that's right the Falcon 9 the E here

5418

04:01:21,530 --> 04:01:19,140

welcome to orbit congratulations your

5419

04:01:23,630 --> 04:01:21,540

flight is exactly four years after the

5420

04:01:25,849 --> 04:01:23,640

Flight of the demo One mission like

5421

04:01:27,469 --> 04:01:25,859

Andre said all the best things take two

5422

04:01:29,750 --> 04:01:27,479

tries happy that we could get you off

5423

04:01:31,849 --> 04:01:29,760

tonight if you enjoyed your ride please

5424

04:01:34,370 --> 04:01:31,859

don't forget to give us five stars over

5425

04:01:36,530 --> 04:01:34,380

to LD for some words

5426

04:01:39,889 --> 04:01:36,540

also a friendly reminder to put your

5427

04:01:41,510 --> 04:01:39,899

sushi orders in for CRS 27. have a safe

5428

04:01:43,010 --> 04:01:41,520

ride to the space station and we look

5429

04:01:47,389 --> 04:01:43,020

forward to seeing you when you get home

5430

04:01:52,189 --> 04:01:50,150

expected losses you know Bermuda and

5431

04:01:58,250 --> 04:01:52,199

SpaceX dragging copies oh that was

5432

04:02:06,469 --> 04:02:00,830

recruit the crew six astronauts of

5433

04:02:12,650 --> 04:02:09,769

and SpaceX Dragon we'd like to really

5434

04:02:14,809 --> 04:02:12,660

for the great ride to orbit today is

5435

04:02:16,729 --> 04:02:14,819

greatly appreciated may have taken two

5436

04:02:19,490 --> 04:02:16,739

ride but a few times but it was worth

5437

04:02:23,570 --> 04:02:19,500

the trip and uh I guess we'll pass it

5438

04:02:27,710 --> 04:02:25,910

yeah SpaceX Dragon just want to say as a

5439

04:02:31,250 --> 04:02:27,720

rookie flyer that was one heck of a ride

5440

04:02:32,990 --> 04:02:31,260

thank you I would say put it there's an

5441

04:02:34,729 --> 04:02:33,000

absolute Miracle of engineering and I

5442

04:02:36,710 --> 04:02:34,739

just feel so lucky that I get to fly on

5443

04:02:38,750 --> 04:02:36,720

this amazing machine thanks to SpaceX

5444

04:02:41,630 --> 04:02:38,760

thanks to NASA commercial crew program

5445

04:02:43,370 --> 04:02:41,640

and our International Partners a lot of

5446

04:02:45,349 --> 04:02:43,380

innovation went into this tireless work

5447

04:02:47,630 --> 04:02:45,359

out there and a lot of pain painstaking

5448

04:02:49,250 --> 04:02:47,640

attention to detail and focus on testing

5449

04:02:50,929 --> 04:02:49,260

I think that's what makes it all

5450

04:02:54,830 --> 04:02:50,939

possible to fly humans in States thank

5451
04:02:54,840 --> 04:03:04,080
foreign

5452
04:03:35,689 --> 04:03:09,880
[Music]

5453
04:03:35,699 --> 04:03:42,229
deeply

5454
04:03:48,889 --> 04:03:46,010
and for me a huge honor to be part of

5455
04:03:51,769 --> 04:03:48,899
such a big and friendly family in the

5456
04:03:56,510 --> 04:03:51,779
greatest international team of the IFS

5457
04:04:05,389 --> 04:03:56,520
working together for all mankind

5458
04:04:10,309 --> 04:04:08,269
well said everybody allow me to say a

5459
04:04:14,390 --> 04:04:10,319
few words in Arabic first

5460
04:04:38,630 --> 04:04:23,190
[Music]

5461
04:04:38,640 --> 04:04:42,889
foreign

5462
04:04:47,830 --> 04:04:44,689
I would like to say thank you to for

5463
04:04:51,110 --> 04:04:47,840

everybody thanks to my parents my family

5464

04:04:54,229 --> 04:04:51,120

thanks to our leadership the Muhammad

5465

04:04:56,870 --> 04:04:54,239

Space Center for the trust thank you for

5466

04:04:58,370 --> 04:04:56,880

everybody who trained Us and got us

5467

04:05:00,710 --> 04:04:58,380

ready for this Mission this is

5468

04:05:04,370 --> 04:05:00,720

incredible launched with Incredible

5469

04:05:06,650 --> 04:05:04,380

amazing thank you so much and last but

5470

04:05:10,250 --> 04:05:06,660

not least thank you NASA thank you

5471

04:05:12,530 --> 04:05:10,260

SpaceX for flying us to space the dragon

5472

04:05:16,010 --> 04:05:12,540

Go SpaceX

5473

04:05:19,309 --> 04:05:16,020

and allow me to introduce our fifth crew

5474

04:05:22,969 --> 04:05:19,319

member his name is suhail and suhail is

5475

04:05:25,309 --> 04:05:22,979

the Arabic name for the star knobos and

5476

04:05:28,130 --> 04:05:25,319

in the Middle East we anticipate the

5477

04:05:30,889 --> 04:05:28,140

appearance of cannabis because it marks

5478

04:05:33,290 --> 04:05:30,899

the end of Summer and the beginning of

5479

04:05:36,050 --> 04:05:33,300

cool time

5480

04:05:39,229 --> 04:05:36,060

and canopies is actually the second

5481

04:05:41,689 --> 04:05:39,239

brightest star in the night sky

5482

04:05:45,370 --> 04:05:41,699

and this is the second flight for uh

5483

04:05:48,410 --> 04:05:45,380

suhail because it's flew with uh

5484

04:05:51,410 --> 04:05:48,420

in 2019.

5485

04:05:54,830 --> 04:05:51,420

and many people think Sohail is an alien

5486

04:06:01,010 --> 04:05:57,349

in a space suit but with high Ambitions

5487

04:06:08,870 --> 04:06:01,020

thank you once again and talk to you

5488

04:06:14,809 --> 04:06:11,630

Dragon SpaceX we copy all those words

5489

04:06:17,630 --> 04:06:14,819

uh at this time I can provide you an

5490

04:06:18,889 --> 04:06:17,640

update that we had nominal dehumidifier

5491

04:06:21,769 --> 04:06:18,899

activation

5492

04:06:24,950 --> 04:06:21,779

and service section Draco checkouts for

5493

04:06:28,070 --> 04:06:24,960

your awareness uh on hard capture hook

5494

04:06:31,189 --> 04:06:28,080

five we did swap two backup Motors so

5495

04:06:33,290 --> 04:06:31,199

you'll see that the nose cone opening

5496

04:06:34,729 --> 04:06:33,300

did swap to backup however all hooks did

5497

04:06:42,189 --> 04:06:34,739

indicate that they were traveling and

5498

04:06:42,199 --> 04:06:50,809

we see that

5499

04:06:50,819 --> 04:06:59,030

foreign

5500

04:07:04,130 --> 04:07:01,010

very Dynamic time

5501
04:07:06,170 --> 04:07:04,140
um of course the Falcon 9 delivering the

5502
04:07:08,330 --> 04:07:06,180
crew 6 astronauts into orbit after the

5503
04:07:10,010 --> 04:07:08,340
nine minute Ascent we heard those great

5504
04:07:12,650 --> 04:07:10,020
congratulatory awards from each and

5505
04:07:15,170 --> 04:07:12,660
every member of crew six who of course

5506
04:07:18,290 --> 04:07:15,180
had a strong bond with the teams here in

5507
04:07:20,150 --> 04:07:18,300
Mission Control in SpaceX that call you

5508
04:07:22,910 --> 04:07:20,160
did here to the crew was about the nose

5509
04:07:24,710 --> 04:07:22,920
cone uh the nose cone is deploying now

5510
04:07:26,150 --> 04:07:24,720
they were troubleshooting an issue with

5511
04:07:28,189 --> 04:07:26,160
one of the hooks but switched to backup

5512
04:07:31,309 --> 04:07:28,199
Motors and we're seeing that nose cone

5513
04:07:32,809 --> 04:07:31,319

deploy now but Cruise six is now on its

5514

04:07:34,429 --> 04:07:32,819

way to the International Space Station

5515

04:07:36,229 --> 04:07:34,439

it's going to take about 24 and a half

5516

04:07:38,210 --> 04:07:36,239

hours so they'll go through a series of

5517

04:07:40,070 --> 04:07:38,220

checks a series of initial Burns and

5518

04:07:41,870 --> 04:07:40,080

then eventually have a sleep period

5519

04:07:44,330 --> 04:07:41,880

before waking up and really getting into

5520

04:07:46,010 --> 04:07:44,340

the action uh with a lot of the burns

5521

04:07:48,050 --> 04:07:46,020

that bring it closer and closer to the

5522

04:07:49,849 --> 04:07:48,060

International Space Station it'll be

5523

04:07:50,990 --> 04:07:49,859

docking to the Zenith Port we're now

5524

04:07:52,670 --> 04:07:51,000

getting

5525

04:07:55,610 --> 04:07:52,680

views

5526
04:07:58,429 --> 04:07:55,620
from the dragon and that's the nose cone

5527
04:08:04,370 --> 04:07:58,439
deploying that you're seeing right now

5528
04:08:09,530 --> 04:08:07,849
and Kate this really sets the uh crew up

5529
04:08:11,450 --> 04:08:09,540
for

5530
04:08:14,510 --> 04:08:11,460
some of the major Burns here that nose

5531
04:08:16,610 --> 04:08:14,520
cone deploying reveals the four forward

5532
04:08:18,650 --> 04:08:16,620
bulkhead dracos that do a lot of the

5533
04:08:21,710 --> 04:08:18,660
heavy lifting a lot of those significant

5534
04:08:23,750 --> 04:08:21,720
Burns that bring the crew closer to the

5535
04:08:26,570 --> 04:08:23,760
International Space Station

5536
04:08:29,929 --> 04:08:26,580
that's right the nose cone is basically

5537
04:08:32,030 --> 04:08:29,939
the pointy end at the top of dragon so

5538
04:08:35,030 --> 04:08:32,040

now with that being exposed those

5539

04:08:38,689 --> 04:08:35,040

forward bulkhead thrusters will be able

5540

04:08:40,070 --> 04:08:38,699

to do their job as Dragon Endeavor makes

5541

04:08:40,929 --> 04:08:40,080

its way to the International Space

5542

04:08:43,370 --> 04:08:40,939

Station

5543

04:08:46,490 --> 04:08:43,380

just prior to losing the ground station

5544

04:08:49,969 --> 04:08:46,500

coverage we were able to catch a quick

5545

04:08:53,570 --> 04:08:49,979

glimpse of the zero g indicator I always

5546

04:08:55,189 --> 04:08:53,580

love seeing that be revealed as it's

5547

04:08:57,410 --> 04:08:55,199

always different for each crew and it's

5548

04:08:58,670 --> 04:08:57,420

always special to the crew members so I

5549

04:09:01,070 --> 04:08:58,680

love the words that were shared around

5550

04:09:03,170 --> 04:09:01,080

that and I personally have a strong

5551

04:09:05,809 --> 04:09:03,180

connection to this capsule this was the

5552

04:09:08,150 --> 04:09:05,819

demo 2 capsule The Crew 2 capsule the

5553

04:09:11,469 --> 04:09:08,160

Axiom one capsule and now the crew six

5554

04:09:14,090 --> 04:09:11,479

capsule and so it always brings a lot of

5555

04:09:16,729 --> 04:09:14,100

pride and joy to see this particular

5556

04:09:19,070 --> 04:09:16,739

capsule fly in space safely once again

5557

04:09:22,250 --> 04:09:19,080

so with all that being said let's head

5558

04:09:25,550 --> 04:09:22,260

back over to Daryl and Raja who saw all

5559

04:09:27,710 --> 04:09:25,560

of the the liftoff action live you guys

5560

04:09:29,389 --> 04:09:27,720

I bet it was incredible having seen it

5561

04:09:31,729 --> 04:09:29,399

from the Press site myself a couple of

5562

04:09:34,090 --> 04:09:31,739

times I know you can feel it tell us how

5563

04:09:36,830 --> 04:09:34,100

it was to see This Crew lift off

5564

04:09:38,210 --> 04:09:36,840

absolutely Kate and uh thank you for the

5565

04:09:40,550 --> 04:09:38,220

toss back here to the Kennedy Space

5566

04:09:43,370 --> 04:09:40,560

Center and on that point we got to get

5567

04:09:45,590 --> 04:09:43,380

raja's reaction first because it was his

5568

04:09:47,630 --> 04:09:45,600

first launch he's been on a rocket he's

5569

04:09:49,790 --> 04:09:47,640

been to space first time watching

5570

04:09:51,590 --> 04:09:49,800

alongside that was awesome Daryl uh it

5571

04:09:54,950 --> 04:09:51,600

was better than I expected so I think

5572

04:09:57,290 --> 04:09:54,960

much a much more throaty rumbling sound

5573

04:09:59,269 --> 04:09:57,300

once it started to pitch over uh and a

5574

04:10:00,710 --> 04:09:59,279

beautiful night here so we could see the

5575

04:10:02,990 --> 04:10:00,720

second stage light we could actually see

5576
04:10:05,870 --> 04:10:03,000
the throttle down for uh from stage one

5577
04:10:07,309 --> 04:10:05,880
to Stage B which was really cool I saw

5578
04:10:08,809 --> 04:10:07,319
the separation saw the light go out when

5579
04:10:11,570 --> 04:10:08,819
the first stage separated saw the second

5580
04:10:14,030 --> 04:10:11,580
stage light and got this watch it uh

5581
04:10:15,610 --> 04:10:14,040
pretty much all the way to Bravo it was

5582
04:10:17,510 --> 04:10:15,620
it was pretty impressive

5583
04:10:19,910 --> 04:10:17,520
sorry those are those are different

5584
04:10:21,469 --> 04:10:19,920
launch Escape phases so yeah it was it

5585
04:10:23,210 --> 04:10:21,479
was awesome seeing it from the ground

5586
04:10:25,670 --> 04:10:23,220
and just kind of thinking through what

5587
04:10:28,189 --> 04:10:25,680
that ride was like a while ago but I'd

5588
04:10:29,510 --> 04:10:28,199

rather be on the inside the outside but

5589

04:10:31,370 --> 04:10:29,520

it's pretty I'm here with us but it's

5590

04:10:33,229 --> 04:10:31,380

pretty it's pretty impressive for both

5591

04:10:35,030 --> 04:10:33,239

views yeah well we're so glad to see

5592

04:10:36,229 --> 04:10:35,040

them and exciting yeah excited that

5593

04:10:37,910 --> 04:10:36,239

they're on the way to space station I'm

5594

04:10:40,610 --> 04:10:37,920

so happy for him no doubt

5595

04:10:42,349 --> 04:10:40,620

congratulations to not only the crew

5596

04:10:45,110 --> 04:10:42,359

that is getting up into space but also

5597

04:10:46,790 --> 04:10:45,120

everyone who helped make it possible it

5598

04:10:49,610 --> 04:10:46,800

takes an a tremendous number of people

5599

04:10:51,950 --> 04:10:49,620

in order to pull that off and that Roar

5600

04:10:54,469 --> 04:10:51,960

right when did you feel it in your chest

5601
04:10:56,450 --> 04:10:54,479
yeah so on the the day of the you can

5602
04:10:58,250 --> 04:10:56,460
yeah here you can feel it there and you

5603
04:11:00,769 --> 04:10:58,260
can feel it here you'd actually feel the

5604
04:11:03,110 --> 04:11:00,779
vibration that actually bodily you know

5605
04:11:04,490 --> 04:11:03,120
it's actually vibrating your body the

5606
04:11:05,750 --> 04:11:04,500
ground around you and I think just the

5607
04:11:07,550 --> 04:11:05,760
coolness of it almost it's almost

5608
04:11:09,830 --> 04:11:07,560
daytime around the launch pad when it

5609
04:11:11,150 --> 04:11:09,840
first lit just with the humidity uh the

5610
04:11:12,830 --> 04:11:11,160
temperature dew point spread right now

5611
04:11:14,269 --> 04:11:12,840
there's a lot of moisture in the air so

5612
04:11:15,590 --> 04:11:14,279
just the reflection of the light you

5613
04:11:17,630 --> 04:11:15,600

actually couldn't even see the top of

5614

04:11:20,330 --> 04:11:17,640

the rocket it was the flame the the

5615

04:11:21,950 --> 04:11:20,340

plume lit up the whole Horizon so

5616

04:11:23,389 --> 04:11:21,960

basically as far as you can see 180

5617

04:11:25,610 --> 04:11:23,399

degrees here just look like daylight for

5618

04:11:27,050 --> 04:11:25,620

the for about 20 seconds so it was

5619

04:11:29,090 --> 04:11:27,060

really really cool well your first

5620

04:11:31,130 --> 04:11:29,100

launch watching yep I'll be back again

5621

04:11:34,490 --> 04:11:31,140

yeah we're ready to see another one we

5622

04:11:37,010 --> 04:11:34,500

love it fantastic all right um as I

5623

04:11:38,929 --> 04:11:37,020

mentioned before we got to the you know

5624

04:11:40,189 --> 04:11:38,939

terminal count and Ascent I said there

5625

04:11:43,670 --> 04:11:40,199

was a little bit of love in the air

5626
04:11:46,729 --> 04:11:43,680
right well why is that well a gentleman

5627
04:11:49,010 --> 04:11:46,739
by the name of Sabi Farouk brought his

5628
04:11:50,710 --> 04:11:49,020
girlfriend to the banana Creek launch

5629
04:11:54,490 --> 04:11:50,720
viewing location

5630
04:11:57,229 --> 04:11:54,500
and proposed to her write it liftoff

5631
04:12:00,290 --> 04:11:57,239
they're both from Denver we have a

5632
04:12:03,849 --> 04:12:00,300
picture and there it is there's Sabi and

5633
04:12:06,349 --> 04:12:03,859
his girlfriend and now fiancée

5634
04:12:09,650 --> 04:12:06,359
tamori and she's sporting the ring

5635
04:12:12,170 --> 04:12:09,660
congratulations to them what a what a

5636
04:12:15,590 --> 04:12:12,180
special thing to do he had planned out

5637
04:12:18,650 --> 04:12:15,600
this because during their uh when they

5638
04:12:20,150 --> 04:12:18,660

first met they had their first kiss at a

5639

04:12:22,309 --> 04:12:20,160

rocket launch and so he wanted to bring

5640

04:12:23,689 --> 04:12:22,319

her back to propose and it happened

5641

04:12:26,210 --> 04:12:23,699

right here at the NASA Kennedy Space

5642

04:12:28,429 --> 04:12:26,220

Center what a neat Love Story yeah it

5643

04:12:30,950 --> 04:12:28,439

was a great story yeah congratulations

5644

04:12:33,050 --> 04:12:30,960

to both of them and so now let's turn it

5645

04:12:34,130 --> 04:12:33,060

over to Jasmine who is with a special

5646

04:12:36,830 --> 04:12:34,140

guest

5647

04:12:39,110 --> 04:12:36,840

with some post-launch reaction Jasmine

5648

04:12:40,969 --> 04:12:39,120

thank you so much Daryl here on the

5649

04:12:42,469 --> 04:12:40,979

balcony of osb2 we had a great view of

5650

04:12:44,389 --> 04:12:42,479

launch and the crowd around us just

5651

04:12:46,550 --> 04:12:44,399

erupted in cheers it lit up the night

5652

04:12:48,590 --> 04:12:46,560

sky joining us now is Kennedy Space

5653

04:12:49,910 --> 04:12:48,600

Center Deputy Center Director Kelvin

5654

04:12:52,130 --> 04:12:49,920

Manning thank you so much for being here

5655

04:12:53,990 --> 04:12:52,140

oh it's great to be here Jasmine we are

5656

04:12:55,610 --> 04:12:54,000

so glad to have you and Kelvin first

5657

04:12:58,910 --> 04:12:55,620

question is easy what did you think of

5658

04:13:01,070 --> 04:12:58,920

launch it was spectacular and anytime

5659

04:13:04,130 --> 04:13:01,080

we're putting people in a rocket makes

5660

04:13:05,750 --> 04:13:04,140

it even more special so we launched

5661

04:13:08,630 --> 04:13:05,760

satellites we launched all kinds of

5662

04:13:11,929 --> 04:13:08,640

things but tonight it was Steve Woody

5663

04:13:14,689 --> 04:13:11,939

Sultan and Andre

5664

04:13:17,150 --> 04:13:14,699

um watching them walk out saying goodbye

5665

04:13:18,889 --> 04:13:17,160

to their families and uh for us to get

5666

04:13:20,870 --> 04:13:18,899

them off safely onto the International

5667

04:13:22,790 --> 04:13:20,880

Space Station that's a huge

5668

04:13:24,650 --> 04:13:22,800

accomplishment it really is a huge

5669

04:13:25,910 --> 04:13:24,660

accomplishment Daryl just mentioned love

5670

04:13:27,769 --> 04:13:25,920

in the air and we saw that great

5671

04:13:29,269 --> 04:13:27,779

proposal at a banana Creek and

5672

04:13:30,950 --> 04:13:29,279

Commercial crew is really the perfect

5673

04:13:32,269 --> 04:13:30,960

marriage of our commercial and our

5674

04:13:35,809 --> 04:13:32,279

International Partners isn't that right

5675

04:13:38,630 --> 04:13:35,819

Kelvin absolutely so government industry

5676
04:13:42,650 --> 04:13:38,640
and and international Partners it's kind

5677
04:13:44,269 --> 04:13:42,660
of like a modern day we strive to have

5678
04:13:47,030 --> 04:13:44,279
like Star Trek you have all these people

5679
04:13:48,769 --> 04:13:47,040
from different planets and uh we're just

5680
04:13:50,990 --> 04:13:48,779
getting started here so maybe one day

5681
04:13:53,340 --> 04:13:51,000
we'll have people from other planets as

5682
04:13:58,370 --> 04:13:56,389
[Music]

5683
04:14:00,710 --> 04:13:58,380
on today's Mission and the you've

5684
04:14:02,030 --> 04:14:00,720
actually been on the selection panel for

5685
04:14:04,130 --> 04:14:02,040
a few of the astronaut classes before

5686
04:14:06,290 --> 04:14:04,140
one of those was the turtles so pretty

5687
04:14:10,130 --> 04:14:06,300
exciting for you to get to see a woody

5688
04:14:13,010 --> 04:14:10,140

fly today right oh absolutely a special

5689

04:14:15,050 --> 04:14:13,020

guy and I'm really looking forward to

5690

04:14:16,910 --> 04:14:15,060

seeing them on orbit and then getting

5691

04:14:18,710 --> 04:14:16,920

them back home and and hearing his

5692

04:14:20,689 --> 04:14:18,720

stories yeah we're looking forward to

5693

04:14:22,610 --> 04:14:20,699

having him back as well as the rest of

5694

04:14:25,250 --> 04:14:22,620

cruise six and this was really a great

5695

04:14:26,809 --> 04:14:25,260

way to kick off the launches of 2023 we

5696

04:14:29,090 --> 04:14:26,819

mentioned earlier with Janet Petro that

5697

04:14:30,769 --> 04:14:29,100

we are looking at over 90 launches this

5698

04:14:33,110 --> 04:14:30,779

year so what else is going to station in

5699

04:14:37,370 --> 04:14:33,120

the next few months okay we got a cargo

5700

04:14:40,729 --> 04:14:37,380

resupply Mission CRS 27 we have Boeing's

5701

04:14:43,729 --> 04:14:40,739

inaugural Flight of the crew flight test

5702

04:14:47,450 --> 04:14:43,739

looking for sunny and Butch to sometime

5703

04:14:50,450 --> 04:14:47,460

this spring to fly the cst-100 Starliner

5704

04:14:53,210 --> 04:14:50,460

to station that's a huge deal and we got

5705

04:14:55,910 --> 04:14:53,220

uh another commercial Axia Mission

5706

04:14:58,490 --> 04:14:55,920

that'll go to the the space station and

5707

04:15:00,229 --> 04:14:58,500

then we'll look at crucif and to follow

5708

04:15:02,570 --> 04:15:00,239

these guys in another six months or so

5709

04:15:04,490 --> 04:15:02,580

wow a lot of work going on here at the

5710

04:15:05,870 --> 04:15:04,500

Kennedy Space Center at Kelvin any final

5711

04:15:07,309 --> 04:15:05,880

words of thanks that you want to give to

5712

04:15:09,410 --> 04:15:07,319

the workforce here

5713

04:15:11,090 --> 04:15:09,420

yeah it's all about the team and this is

5714

04:15:13,550 --> 04:15:11,100

America's Space Program you talked about

5715

04:15:14,809 --> 04:15:13,560

our industry Partners our other

5716

04:15:16,790 --> 04:15:14,819

government partners and our

5717

04:15:19,309 --> 04:15:16,800

International Partners we have a lot to

5718

04:15:21,469 --> 04:15:19,319

be proud of and like we said we're just

5719

04:15:22,790 --> 04:15:21,479

getting started so thank you Jasmine of

5720

04:15:24,110 --> 04:15:22,800

course and this really is the Dream Team

5721

04:15:25,670 --> 04:15:24,120

we appreciate you being here tonight

5722

04:15:27,769 --> 04:15:25,680

Kelvin

5723

04:15:29,870 --> 04:15:27,779

all right thank you Daryl back to you

5724

04:15:31,250 --> 04:15:29,880

thank you so much Jasmine and you see

5725

04:15:34,670 --> 04:15:31,260

her working the love in there with the

5726

04:15:35,809 --> 04:15:34,680

CCP well done thank you very much well

5727

04:15:37,689 --> 04:15:35,819

the crew is on the way to the

5728

04:15:40,790 --> 04:15:37,699

International Space Station we did hear

5729

04:15:43,010 --> 04:15:40,800

uh from the SpaceX team that the nose

5730

04:15:45,110 --> 04:15:43,020

cone hooks at the top of the spacecraft

5731

04:15:47,090 --> 04:15:45,120

right the dragon

5732

04:15:49,429 --> 04:15:47,100

um they went to the backup Motors in

5733

04:15:50,990 --> 04:15:49,439

order to release that nose cone that's

5734

04:15:52,969 --> 04:15:51,000

pretty critical to make sure you get

5735

04:15:54,950 --> 04:15:52,979

that up great redundancy with the system

5736

04:15:56,870 --> 04:15:54,960

there but why is that so important that

5737

04:15:58,130 --> 04:15:56,880

that nose cone comes off yeah so we you

5738

04:16:00,590 --> 04:15:58,140

can't talk to the space station without

5739

04:16:01,910 --> 04:16:00,600

the nose cone so the as we saw just

5740

04:16:04,250 --> 04:16:01,920

looking at the views of the capsule

5741

04:16:05,929 --> 04:16:04,260

before uh liftoff it's closed for

5742

04:16:08,030 --> 04:16:05,939

aerodynamics because you don't want a

5743

04:16:09,590 --> 04:16:08,040

door wide open while you while you're

5744

04:16:11,210 --> 04:16:09,600

flying through the air once you're in

5745

04:16:14,870 --> 04:16:11,220

space of course there's no drag so then

5746

04:16:16,370 --> 04:16:14,880

you can open that up and that exposes

5747

04:16:17,750 --> 04:16:16,380

the camera and the sensors that allow

5748

04:16:19,309 --> 04:16:17,760

the dragon to dock with the

5749

04:16:21,110 --> 04:16:19,319

International Space Station there's a

5750

04:16:22,729 --> 04:16:21,120

whole lot of stuff going on so the crew

5751

04:16:24,110 --> 04:16:22,739

was working the comms back down to the

5752

04:16:26,570 --> 04:16:24,120

ground and monitoring a whole bunch of

5753

04:16:27,889 --> 04:16:26,580

systems so we saw the separation uh they

5754

04:16:30,349 --> 04:16:27,899

have Telemetry that gives them

5755

04:16:32,150 --> 04:16:30,359

information about that and then the next

5756

04:16:33,469 --> 04:16:32,160

step is the nose cone deploy and as you

5757

04:16:36,710 --> 04:16:33,479

heard the core mentioned all of those

5758

04:16:38,510 --> 04:16:36,720

hooks uh there's a dozen hooks uh six of

5759

04:16:40,370 --> 04:16:38,520

them are holding the nose cone there's

5760

04:16:42,410 --> 04:16:40,380

and then basically each of those hooks

5761

04:16:44,150 --> 04:16:42,420

has backup and primary motor so what you

5762

04:16:45,830 --> 04:16:44,160

heard them describe is one of those went

5763

04:16:47,990 --> 04:16:45,840

out of the backup motor to open the hook

5764

04:16:49,550 --> 04:16:48,000

which is why we have backup Motors uh

5765

04:16:51,290 --> 04:16:49,560

now with the nose cone open they should

5766

04:16:53,330 --> 04:16:51,300

be good to continue to the uh the space

5767

04:16:54,950 --> 04:16:53,340

station and next thing they'll be

5768

04:16:56,570 --> 04:16:54,960

talking about this is phasing burn so we

5769

04:16:58,370 --> 04:16:56,580

you know how they have to catch up I'm

5770

04:17:00,530 --> 04:16:58,380

sure there'll be teams looking at the

5771

04:17:01,429 --> 04:17:00,540

data from that to see if it was kind of

5772

04:17:02,689 --> 04:17:01,439

like we talked about earlier broadcast

5773

04:17:04,309 --> 04:17:02,699

was it actually a problem with the

5774

04:17:06,650 --> 04:17:04,319

primary motor or was it just a bad

5775

04:17:08,870 --> 04:17:06,660

Telemetry so the ground has some ability

5776

04:17:10,610 --> 04:17:08,880

to suss that out with some extra data

5777

04:17:12,650 --> 04:17:10,620

they have they can try resetting things

5778

04:17:14,809 --> 04:17:12,660

so my guess is when they go to actual

5779

04:17:16,070 --> 04:17:14,819

docking they may retry that primary

5780

04:17:17,570 --> 04:17:16,080

motor just to see if it's working and

5781

04:17:18,830 --> 04:17:17,580

then they have the backup motor still as

5782

04:17:20,450 --> 04:17:18,840

an option

5783

04:17:22,490 --> 04:17:20,460

um so they still have the redundancy but

5784

04:17:24,290 --> 04:17:22,500

they'll sort through maybe

5785

04:17:26,510 --> 04:17:24,300

troubleshooting that some more but I

5786

04:17:28,429 --> 04:17:26,520

don't think it should affect the hooks

5787

04:17:30,229 --> 04:17:28,439

are used when they dock right the same

5788

04:17:31,969 --> 04:17:30,239

yeah the same hooks there's a soft

5789

04:17:33,710 --> 04:17:31,979

capture and a hard capture a hard hook

5790

04:17:35,210 --> 04:17:33,720

system that attaches under the space

5791

04:17:37,550 --> 04:17:35,220

station but again as long as hard

5792

04:17:39,229 --> 04:17:37,560

capture a hard hook system that attaches

5793

04:17:40,610 --> 04:17:39,239

under the space station but again as

5794

04:17:41,809 --> 04:17:40,620

long as the backup Motors working it

5795

04:17:43,610 --> 04:17:41,819

should be fine should we get it up yeah

5796

04:17:45,590 --> 04:17:43,620

all right well we will track it all

5797

04:17:47,809 --> 04:17:45,600

along the way and we know we saw a

5798

04:17:49,189 --> 04:17:47,819

visual confirmation of the nose cone

5799

04:17:51,110 --> 04:17:49,199

coming off saw that right on the video

5800

04:17:54,889 --> 04:17:51,120

with the cameras that SpaceX has and so

5801
04:17:56,450 --> 04:17:54,899
now Stephen Woody Sultan and Andre are

5802
04:17:59,389 --> 04:17:56,460
on course to arrive at the International

5803
04:18:02,389 --> 04:17:59,399
Space Station around 1 17 a.m eastern

5804
04:18:04,610 --> 04:18:02,399
time tomorrow and of course NASA TV will

5805
04:18:07,370 --> 04:18:04,620
be wrapping up our coverage but you can

5806
04:18:09,769 --> 04:18:07,380
follow along with crew six's entire ride

5807
04:18:12,229 --> 04:18:09,779
to the station and hear real-time audio

5808
04:18:14,750 --> 04:18:12,239
from space to ground on our mission

5809
04:18:16,790 --> 04:18:14,760
audio stream on YouTube just look for

5810
04:18:18,590 --> 04:18:16,800
the link on NASA social media accounts

5811
04:18:21,170 --> 04:18:18,600
and in the description of the NASA

5812
04:18:22,969 --> 04:18:21,180
YouTube launch broadcast and though our

5813
04:18:25,309 --> 04:18:22,979

coverage here at Kennedy Space Center is

5814

04:18:27,889 --> 04:18:25,319

concluding Cruise six's Mission has only

5815

04:18:28,910 --> 04:18:27,899

just begun and you know it well Raja

5816

04:18:30,170 --> 04:18:28,920

when you go up into the International

5817

04:18:32,510 --> 04:18:30,180

Space Station

5818

04:18:34,250 --> 04:18:32,520

you really enjoyed the ride getting

5819

04:18:36,050 --> 04:18:34,260

there because that's when the work

5820

04:18:37,910 --> 04:18:36,060

starts exactly yeah so it's actually a

5821

04:18:40,309 --> 04:18:37,920

really nice period of time here you got

5822

04:18:41,990 --> 04:18:40,319

some time to look out the window uh

5823

04:18:43,969 --> 04:18:42,000

enjoy your time you spend a lot of time

5824

04:18:46,010 --> 04:18:43,979

in the Sim the dragon Sim whether it's

5825

04:18:48,710 --> 04:18:46,020

out at Hawthorne or the the ones out in

5826

04:18:51,170 --> 04:18:48,720

Houston but it's nice to actually you

5827

04:18:53,389 --> 04:18:51,180

know now enjoy the ride and take it all

5828

04:18:55,670 --> 04:18:53,399

in especially for the the three rookies

5829

04:18:58,130 --> 04:18:55,680

get used to some space adaptation moving

5830

04:18:59,330 --> 04:18:58,140

around in microgravity before you get on

5831

04:19:01,070 --> 04:18:59,340

the space station because as soon as you

5832

04:19:03,889 --> 04:19:01,080

show up in the space station man it is

5833

04:19:06,050 --> 04:19:03,899

busy it is fun but it is busy

5834

04:19:08,210 --> 04:19:06,060

time to get to work next up is our post

5835

04:19:10,790 --> 04:19:08,220

launch news conference scheduled for 2

5836

04:19:14,030 --> 04:19:10,800

30 a.m Eastern Time on NASA TV we'll

5837

04:19:16,130 --> 04:19:14,040

have a live joint docking coverage of

5838

04:19:18,910 --> 04:19:16,140

crew six we'll have the welcome ceremony

5839

04:19:22,189 --> 04:19:18,920

starting at 11 PM eastern time tonight

5840

04:19:25,309 --> 04:19:22,199

this is this will be on Thursday on NASA

5841

04:19:27,950 --> 04:19:25,319

TV as well as spacex's YouTube channel

5842

04:19:31,130 --> 04:19:27,960

and you can find Mission updates on

5843

04:19:34,610 --> 04:19:31,140

Twitter at Nasa at SpaceX and on the web

5844

04:19:36,950 --> 04:19:34,620

at nasa.gov including that link we'll

5845

04:19:38,630 --> 04:19:36,960

have it in there in the description of

5846

04:19:40,610 --> 04:19:38,640

the mission audio stream if you want to

5847

04:19:43,250 --> 04:19:40,620

stick with cruise 6 during their entire

5848

04:19:45,229 --> 04:19:43,260

Journey to the space station well before

5849

04:19:47,210 --> 04:19:45,239

we want to sign off here at Kennedy I

5850

04:19:48,469 --> 04:19:47,220

want to thank rajachary for being on the

5851

04:19:51,050 --> 04:19:48,479

launch broadcast and sharing your

5852

04:19:52,670 --> 04:19:51,060

incredible experiences I learned such an

5853

04:19:55,189 --> 04:19:52,680

incredible amount I hope our audience

5854

04:19:58,130 --> 04:19:55,199

did too you answered all their questions

5855

04:19:59,330 --> 04:19:58,140

and it was fascinating just to listen to

5856

04:20:01,130 --> 04:19:59,340

all the things that happen really

5857

04:20:02,750 --> 04:20:01,140

appreciate you thanks I'm glad I got a

5858

04:20:04,490 --> 04:20:02,760

chance to see a rocket launch and so

5859

04:20:06,170 --> 04:20:04,500

yeah I highly wrap back and man coming

5860

04:20:07,490 --> 04:20:06,180

here to do this you can get a great view

5861

04:20:09,469 --> 04:20:07,500

of a rocket launch it's the way to go

5862

04:20:11,570 --> 04:20:09,479

great plug for the Kennedy Space Center

5863

04:20:13,370 --> 04:20:11,580

there Roger we appreciate that and good

5864

04:20:15,410 --> 04:20:13,380

luck to you on your work with the hls

5865

04:20:17,090 --> 04:20:15,420

you're doing a lot of work there with

5866

04:20:18,950 --> 04:20:17,100

the human Landing system for the Artemis

5867

04:20:20,929 --> 04:20:18,960

program and people are really excited

5868

04:20:22,490 --> 04:20:20,939

about that yeah they should be it's it's

5869

04:20:23,630 --> 04:20:22,500

an amazing time we've we're seeing what

5870

04:20:25,490 --> 04:20:23,640

we're doing in low earth orbit and that

5871

04:20:27,410 --> 04:20:25,500

is just the first step man we are going

5872

04:20:29,349 --> 04:20:27,420

back to the Moon to stay and onto Mars

5873

04:20:31,490 --> 04:20:29,359

and it is a great time to be in space

5874

04:20:33,830 --> 04:20:31,500

congratulations on watching your first

5875

04:20:36,229 --> 04:20:33,840

launch and congratulations to the space

5876
04:20:38,450 --> 04:20:36,239
lovebirds out there at the Kennedy Space

5877
04:20:41,150 --> 04:20:38,460
Center who tied well at least had the

5878
04:20:42,590 --> 04:20:41,160
proposal and got a big yes and then of

5879
04:20:44,809 --> 04:20:42,600
course thanks to all of our guests for

5880
04:20:47,929 --> 04:20:44,819
joining us today we really appreciate

5881
04:20:50,630 --> 04:20:47,939
you watching you is you are why we do

5882
04:20:53,090 --> 04:20:50,640
this right so here now are some

5883
04:20:55,849 --> 04:20:53,100
highlights from the journey to orbit off

5884
04:20:58,130 --> 04:20:55,859
the Earth for the Earth for rajachary

5885
04:21:00,110 --> 04:20:58,140
and everyone here at the NASA Kennedy

5886
04:21:04,309 --> 04:21:00,120
Space Center I'm Daryl nail have a great

5887
04:21:09,769 --> 04:21:07,490
crew six on the Move inside astronaut

5888
04:21:11,210 --> 04:21:09,779

crew quarters

5889

04:21:13,189 --> 04:21:11,220

crew six

5890

04:21:15,229 --> 04:21:13,199

walking outside of astronaut crew

5891

04:21:19,010 --> 04:21:15,239

quarters for the second time Andre

5892

04:21:21,710 --> 04:21:19,020

fajayev Woody hoberg Stephen Bowen and

5893

04:21:24,170 --> 04:21:21,720

Sultan all neoni

5894

04:21:26,809 --> 04:21:24,180

the crew departing the Neil Armstrong

5895

04:21:29,809 --> 04:21:26,819

operations and checkout building

5896

04:21:35,269 --> 04:21:29,819

full security escort across NASA's

5897

04:21:41,870 --> 04:21:37,429

the commander and pilot Stephen and

5898

04:21:44,269 --> 04:21:41,880

Woody making their way inside dragon

5899

04:21:47,330 --> 04:21:44,279

there go our two Mission Specialists as

5900

04:21:49,729 --> 04:21:47,340

they cross the hatch be very careful

5901
04:21:51,170 --> 04:21:49,739
five-point harness just to save wear and

5902
04:21:54,410 --> 04:21:51,180
tear on the suits a lot of times the

5903
04:21:57,170 --> 04:21:54,420
ground crew will help with doing that

5904
04:21:59,860 --> 04:21:57,180
as we watch the SpaceX closeout crew

5905
04:22:01,630 --> 04:21:59,870
close the hatch to the Dragon capsule

5906
04:22:11,260 --> 04:22:01,640
[Music]

5907
04:22:22,330 --> 04:22:12,870
[Applause]

5908
04:22:26,750 --> 04:22:24,469
with the edges in the first stage