



1
00:00:03,620 --> 00:00:01,250
[Music]

2
00:00:52,029 --> 00:00:03,630
foreign

3
00:01:27,850 --> 00:00:54,270
thank you

4
00:01:27,860 --> 00:01:33,010
[Music]

5
00:01:57,200 --> 00:01:36,590
I feel the liftoff

6
00:02:29,510 --> 00:02:02,840
[Music]

7
00:02:29,520 --> 00:02:31,750
foreign

8
00:02:31,760 --> 00:02:35,710
[Music]

9
00:02:41,030 --> 00:02:38,750
live at the crew Dragon spacecraft on

10
00:02:43,430 --> 00:02:41,040
top of a Falcon 9 rocket set to launch

11
00:02:45,410 --> 00:02:43,440
three astronauts and one Cosmonaut to

12
00:02:49,369 --> 00:02:45,420
the International Space Station in a

13
00:02:53,330 --> 00:02:51,229

and welcome to the Kennedy Space Center

14

00:02:55,910 --> 00:02:53,340

in Florida for live coverage of NASA and

15

00:02:58,729 --> 00:02:55,920

spacex's launch of cruise six now

16

00:03:01,430 --> 00:02:58,739

streaming in 4K resolution I'm NASA's

17

00:03:03,710 --> 00:03:01,440

Daryl nail and with me is NASA astronaut

18

00:03:05,690 --> 00:03:03,720

rajachari great to have you here Colonel

19

00:03:07,190 --> 00:03:05,700

super happy to be here Daryl and what a

20

00:03:08,509 --> 00:03:07,200

beautiful night for a launch other than

21

00:03:10,910 --> 00:03:08,519

some mosquitoes you know something

22

00:03:12,470 --> 00:03:10,920

interesting about Raja being here

23

00:03:14,690 --> 00:03:12,480

besides the mosquitoes which are a

24

00:03:17,750 --> 00:03:14,700

little bit of a bother is he is actually

25

00:03:19,490 --> 00:03:17,760

never witnessed a launch firsthand yeah

26

00:03:21,710 --> 00:03:19,500

so Kayla and I are our first launch was

27

00:03:23,089 --> 00:03:21,720

being on the rocket and so Kayla got to

28

00:03:24,710 --> 00:03:23,099

see one now I get to see one live myself

29

00:03:27,110 --> 00:03:24,720

so looking forward to seeing it from the

30

00:03:28,729 --> 00:03:27,120

outside we enjoy we are going to enjoy

31

00:03:30,770 --> 00:03:28,739

seeing seeing and hearing it through

32

00:03:32,149 --> 00:03:30,780

your perspective as you watch it for the

33

00:03:33,710 --> 00:03:32,159

first time but you were you were in the

34

00:03:35,630 --> 00:03:33,720

rockets and that's why you're here to

35

00:03:37,210 --> 00:03:35,640

give us all of that uh I don't get a

36

00:03:40,009 --> 00:03:37,220

whole lot of pity when I tell people

37

00:03:42,229 --> 00:03:40,019

no not at all well let's talk about

38

00:03:44,149 --> 00:03:42,239

Cruise six they are already getting

39

00:03:46,009 --> 00:03:44,159

suited up and we've got a little bit of

40

00:03:48,710 --> 00:03:46,019

video that was recorded earlier less

41

00:03:51,770 --> 00:03:48,720

than an hour ago of crew six in that

42

00:03:53,690 --> 00:03:51,780

historic astronaut crew quarters suit up

43

00:03:56,690 --> 00:03:53,700

room and there you see the commander

44

00:04:00,050 --> 00:03:56,700

Stephen Bowen in his seat it is exactly

45

00:04:02,210 --> 00:04:00,060

as the seats are inside the dragon

46

00:04:04,070 --> 00:04:02,220

there's Woody hoberg the pilot for today

47

00:04:05,210 --> 00:04:04,080

yep that's exactly how the foam the

48

00:04:06,589 --> 00:04:05,220

fittings and everything like that are

49

00:04:08,270 --> 00:04:06,599

exactly there's Sultan one of the

50

00:04:10,250 --> 00:04:08,280

mission Specialists and so what they do

51
00:04:12,170 --> 00:04:10,260
is two by two they pressurize them up

52
00:04:13,130 --> 00:04:12,180
check the Comm system uh and basically

53
00:04:14,750 --> 00:04:13,140
are checking to make sure there's no

54
00:04:16,430 --> 00:04:14,760
malfunctions in the suit because you'd

55
00:04:17,330 --> 00:04:16,440
rather fix that there than out on the

56
00:04:20,150 --> 00:04:17,340
pad

57
00:04:22,310 --> 00:04:20,160
absolutely and so they're also connected

58
00:04:23,930 --> 00:04:22,320
up there right with those umbilicals

59
00:04:25,249 --> 00:04:23,940
they are just like they are in the

60
00:04:26,870 --> 00:04:25,259
spacecraft so they're checking out the

61
00:04:28,010 --> 00:04:26,880
the suit side umbilical connection make

62
00:04:29,570 --> 00:04:28,020
sure the cooling is working make sure

63
00:04:30,890 --> 00:04:29,580

the comms working

64

00:04:32,030 --> 00:04:30,900

um they take them up to pressure just

65

00:04:33,770 --> 00:04:32,040

like they would in the suit pressure

66

00:04:35,030 --> 00:04:33,780

checks and make sure that they there's

67

00:04:36,290 --> 00:04:35,040

two layers of the suit there's a

68

00:04:37,490 --> 00:04:36,300

pressure garment and then restraint

69

00:04:39,170 --> 00:04:37,500

garment so they're making sure all the

70

00:04:40,670 --> 00:04:39,180

zippers for both those layers are

71

00:04:42,170 --> 00:04:40,680

holding correctly before they go out to

72

00:04:44,150 --> 00:04:42,180

the pad good to get them all zipped up

73

00:04:45,950 --> 00:04:44,160

before they go out there to the pad now

74

00:04:47,990 --> 00:04:45,960

throughout the broadcast you will hear

75

00:04:50,810 --> 00:04:48,000

pre-launch communication audio between

76

00:04:53,390 --> 00:04:50,820

the core and the astronauts the core is

77

00:04:56,270 --> 00:04:53,400

the crew operations resource engineer

78

00:04:58,430 --> 00:04:56,280

with SpaceX we will try to pause to hear

79

00:05:00,110 --> 00:04:58,440

what that person is saying and so you

80

00:05:01,490 --> 00:05:00,120

can hear what the court is saying you

81

00:05:03,170 --> 00:05:01,500

will also hear others from the launch

82

00:05:05,990 --> 00:05:03,180

Team too including the launch director

83

00:05:07,610 --> 00:05:06,000

the mission director and others in Raja

84

00:05:09,890 --> 00:05:07,620

you remember the back and forth with

85

00:05:11,390 --> 00:05:09,900

those individuals and it's really

86

00:05:13,010 --> 00:05:11,400

critical to be able to communicate with

87

00:05:14,450 --> 00:05:13,020

the ground team yeah so you're you we've

88

00:05:15,830 --> 00:05:14,460

simmed with these people so by the time

89

00:05:16,969 --> 00:05:15,840

the crew is in here there's the same

90

00:05:18,950 --> 00:05:16,979

voices they've heard the last few weeks

91

00:05:20,210 --> 00:05:18,960

of the San items and so it's kind of

92

00:05:21,530 --> 00:05:20,220

reassuring to hear them again but yeah

93

00:05:23,810 --> 00:05:21,540

there's a whole bunch of ground Loops

94

00:05:25,610 --> 00:05:23,820

that you don't hear in the dragon and

95

00:05:26,870 --> 00:05:25,620

they're tying certain people and certain

96

00:05:28,070 --> 00:05:26,880

control loops onto the ones that the

97

00:05:29,390 --> 00:05:28,080

crew can hear and so you're checking all

98

00:05:30,950 --> 00:05:29,400

those complaints and you'll hear that

99

00:05:32,029 --> 00:05:30,960

once they get strapped in you'll hear

100

00:05:33,650 --> 00:05:32,039

them going through all those different

101
00:05:35,330 --> 00:05:33,660
systems and that's right before feeling

102
00:05:36,770 --> 00:05:35,340
right to get everybody on the same com

103
00:05:38,450 --> 00:05:36,780
Channel exactly just make sure everyone

104
00:05:39,529 --> 00:05:38,460
has a direct calm link to the crew and

105
00:05:41,570 --> 00:05:39,539
the crew has a direct com link to

106
00:05:42,770 --> 00:05:41,580
everyone else and there's various relays

107
00:05:44,510 --> 00:05:42,780
whether it's through satellites or

108
00:05:45,529 --> 00:05:44,520
ground stations or ground connections

109
00:05:47,270 --> 00:05:45,539
and you're checking all of those

110
00:05:49,010 --> 00:05:47,280
different links all right very good now

111
00:05:51,830 --> 00:05:49,020
I'm not going to be the only one asking

112
00:05:53,330 --> 00:05:51,840
you questions Raja though I am love it

113
00:05:54,950 --> 00:05:53,340

yeah I love that I get to be able to sit

114

00:05:56,749 --> 00:05:54,960

next to an astronaut and find out all

115

00:05:58,790 --> 00:05:56,759

this fascinating stuff we want to invite

116

00:06:00,830 --> 00:05:58,800

our viewers out there who are watching

117

00:06:02,510 --> 00:06:00,840

to participate so if you would like to

118

00:06:04,730 --> 00:06:02,520

ask Raja a question over the next three

119

00:06:08,210 --> 00:06:04,740

hours jump on our Twitter Facebook

120

00:06:10,850 --> 00:06:08,220

YouTube or twitch channels and send your

121

00:06:12,050 --> 00:06:10,860

question with the hashtag asknasa you

122

00:06:14,450 --> 00:06:12,060

can see it at the bottom of your screen

123

00:06:17,390 --> 00:06:14,460

we look forward to hearing from you and

124

00:06:19,730 --> 00:06:17,400

answering your questions tonight

125

00:06:21,529 --> 00:06:19,740

and now we're looking at the doors to

126

00:06:23,870 --> 00:06:21,539

the astronaut crew Quarters here at the

127

00:06:26,150 --> 00:06:23,880

Kennedy Space Center the doors where the

128

00:06:29,450 --> 00:06:26,160

astronauts will take their last steps

129

00:06:31,249 --> 00:06:29,460

before they go out on a ride to the

130

00:06:32,570 --> 00:06:31,259

launch pad and the cool thing about that

131

00:06:33,830 --> 00:06:32,580

door if you look around the frame of it

132

00:06:35,029 --> 00:06:33,840

you'll see this the mission Patch

133

00:06:36,050 --> 00:06:35,039

stickers of all the other Crews that

134

00:06:38,689 --> 00:06:36,060

have walked through that door so it's

135

00:06:41,029 --> 00:06:38,699

got a long history and proud tradition

136

00:06:43,249 --> 00:06:41,039

of doing that so most likely yesterday

137

00:06:45,469 --> 00:06:43,259

sometime Cruise six slapped their patch

138

00:06:47,150 --> 00:06:45,479

up there somewhere and then every time

139

00:06:49,430 --> 00:06:47,160

you come back into those doors it's a

140

00:06:51,590 --> 00:06:49,440

good reminder of the memories and the

141

00:06:53,150 --> 00:06:51,600

mission and that's a long-standing

142

00:06:55,550 --> 00:06:53,160

tradition I think that went back to

143

00:06:57,590 --> 00:06:55,560

shuttle no I think they had to redo the

144

00:06:58,730 --> 00:06:57,600

door so some of those you're exactly

145

00:07:00,409 --> 00:06:58,740

right Daryl so they had to basically

146

00:07:02,090 --> 00:07:00,419

when they redesigned that inside thing

147

00:07:03,890 --> 00:07:02,100

the inside Corridor but they do still

148

00:07:05,689 --> 00:07:03,900

have most of those patches actually are

149

00:07:07,430 --> 00:07:05,699

shuttle patches and there's some

150

00:07:08,870 --> 00:07:07,440

traditions as well so inside crew

151

00:07:10,790 --> 00:07:08,880

quarters as they come out of the suit

152

00:07:12,469 --> 00:07:10,800

room more than likely there's a cruise

153

00:07:14,570 --> 00:07:12,479

six patch and they would have all signed

154

00:07:16,070 --> 00:07:14,580

that and then around that there's also

155

00:07:17,150 --> 00:07:16,080

the previous Mission patches with a

156

00:07:19,730 --> 00:07:17,160

sticker and they would have signed their

157

00:07:22,370 --> 00:07:19,740

name around the sticker and now we

158

00:07:25,189 --> 00:07:22,380

expand our view at the operations and

159

00:07:27,529 --> 00:07:25,199

control center here at Kennedy and those

160

00:07:29,870 --> 00:07:27,539

are the Teslas that the astronauts will

161

00:07:32,390 --> 00:07:29,880

be traveling to the launch pad in

162

00:07:34,010 --> 00:07:32,400

you might notice these are black and the

163

00:07:35,510 --> 00:07:34,020

previous ones were white talk about that

164

00:07:36,529 --> 00:07:35,520

in a second and here they come yep and

165

00:07:37,969 --> 00:07:36,539

there they are heading out and just so

166

00:07:39,409 --> 00:07:37,979

just to Steve's left is where they would

167

00:07:40,909 --> 00:07:39,419

have signed the patch already probably

168

00:07:42,650 --> 00:07:40,919

did that this morning you can see uh the

169

00:07:45,409 --> 00:07:42,660

chief of the astronaut office Joe acaba

170

00:07:47,270 --> 00:07:45,419

uh just behind them yeah there's a Woody

171

00:07:49,309 --> 00:07:47,280

and Stephen and then Behind The Mandrell

172

00:07:53,930 --> 00:07:49,319

Sultan right and then Norm knights in

173

00:07:58,249 --> 00:07:55,610

about to step into crew walkout we

174

00:08:01,730 --> 00:07:59,809

so you can see that poster behind them

175

00:08:02,870 --> 00:08:01,740

has been signed by tons of people on the

176
00:08:04,189 --> 00:08:02,880
launch Team so you can see the picture

177
00:08:06,110 --> 00:08:04,199
but then all around it is signatures

178
00:08:07,730 --> 00:08:06,120
which was a kind of a cool surprise uh

179
00:08:09,050 --> 00:08:07,740
to see they don't see that until that

180
00:08:10,610 --> 00:08:09,060
moment when they get in the elevator and

181
00:08:11,809 --> 00:08:10,620
then see all those signatures and when

182
00:08:13,309 --> 00:08:11,819
you walked in there you saw those

183
00:08:15,170 --> 00:08:13,319
signatures you knew these were people

184
00:08:17,089 --> 00:08:15,180
that worked on your mission to get it

185
00:08:20,290 --> 00:08:17,099
ready exactly so it's people from JSC

186
00:08:25,550 --> 00:08:20,300
KSC the course recruit program

187
00:08:29,330 --> 00:08:27,350
no waving with the doors are closing

188
00:08:33,050 --> 00:08:29,340

yeah that's right oh they got plenty of

189

00:08:35,810 --> 00:08:33,060

margins so I think they'll be all right

190

00:08:37,550 --> 00:08:35,820

so we have lots for you as we wait for

191

00:08:39,709 --> 00:08:37,560

the astronauts to walk out that front

192

00:08:41,329 --> 00:08:39,719

door in the cosmonaut in addition to

193

00:08:43,550 --> 00:08:41,339

raja's analysis coming up we'll have

194

00:08:45,769 --> 00:08:43,560

live updates from Mission Control in

195

00:08:47,630 --> 00:08:45,779

Houston hello Houston and live

196

00:08:51,410 --> 00:08:47,640

interviews from our VIP viewing location

197

00:08:53,810 --> 00:08:51,420

here at Kennedy and as well we will

198

00:08:56,750 --> 00:08:53,820

welcome in SpaceX live from Hawthorne

199

00:08:58,790 --> 00:08:56,760

California at T minus one hour but right

200

00:09:01,910 --> 00:08:58,800

now we're focused back on those front

201
00:09:04,009 --> 00:09:01,920
door doors and well that's the license

202
00:09:06,290 --> 00:09:04,019
plate to the Teslas that are headed out

203
00:09:10,009 --> 00:09:06,300
to the pad and you'll see that it is a

204
00:09:13,009 --> 00:09:10,019
nod to crew dragon and crew six notice

205
00:09:15,230 --> 00:09:13,019
the G is actually the number six

206
00:09:16,610 --> 00:09:15,240
that's very cool yeah I didn't uh I've

207
00:09:18,769 --> 00:09:16,620
seen our video of walk out multiple

208
00:09:20,210 --> 00:09:18,779
times and it's ours was send it with the

209
00:09:22,009 --> 00:09:20,220
three as an as an e and I thought

210
00:09:23,990 --> 00:09:22,019
everyone had said it I didn't realize

211
00:09:24,949 --> 00:09:24,000
that it was uh it was Christmas yeah I

212
00:09:26,449 --> 00:09:24,959
thought it was I thought everyone got a

213
00:09:28,850 --> 00:09:26,459

three

214

00:09:31,370 --> 00:09:28,860

it's a nice touch that SpaceX adds to

215

00:09:32,389 --> 00:09:31,380

the ride out and allows the crew as you

216

00:09:33,769 --> 00:09:32,399

know

217

00:09:36,050 --> 00:09:33,779

um to select what they're going to have

218

00:09:37,730 --> 00:09:36,060

in addition to designing that mission

219

00:09:40,009 --> 00:09:37,740

patch and we're going to talk more about

220

00:09:41,570 --> 00:09:40,019

that uh Raja I know you had a lot of

221

00:09:43,370 --> 00:09:41,580

involvement with the design of your

222

00:09:44,870 --> 00:09:43,380

patch and we'll get into that a little

223

00:09:47,150 --> 00:09:44,880

bit later in the show but we want to be

224

00:09:49,190 --> 00:09:47,160

focused here you can see the crowd that

225

00:09:51,230 --> 00:09:49,200

has gathered

226

00:09:54,350 --> 00:09:51,240

yep and so right now you've seen a mix

227

00:09:56,090 --> 00:09:54,360

of family friends loved ones uh and then

228

00:09:57,350 --> 00:09:56,100

there's some folks that are in

229

00:09:58,970 --> 00:09:57,360

quarantine not in quarantine so they

230

00:10:00,230 --> 00:09:58,980

basically got set up differently uh but

231

00:10:02,329 --> 00:10:00,240

that's a chance for the crew to see

232

00:10:04,490 --> 00:10:02,339

family and friends uh right before they

233

00:10:06,170 --> 00:10:04,500

head out to the pad in the Tesla and I

234

00:10:07,550 --> 00:10:06,180

spy an astronaut peeking out the window

235

00:10:10,430 --> 00:10:07,560

yeah

236

00:10:12,050 --> 00:10:10,440

I thought that good eyes it's all as you

237

00:10:13,670 --> 00:10:12,060

can imagine very choreographed time-wise

238

00:10:15,350 --> 00:10:13,680

because everything's at a very tight

239

00:10:17,509 --> 00:10:15,360

timeline

240

00:10:18,889 --> 00:10:17,519

so when they get the signal they'll cut

241

00:10:20,570 --> 00:10:18,899

on out you can see the bigger view there

242

00:10:22,250 --> 00:10:20,580

of sort of the that's the What's called

243

00:10:23,990 --> 00:10:22,260

the onc building

244

00:10:25,250 --> 00:10:24,000

um and the the third floor of that

245

00:10:26,269 --> 00:10:25,260

building is where crew quarters are at

246

00:10:28,070 --> 00:10:26,279

but the rest of the building is actually

247

00:10:29,509 --> 00:10:28,080

an office and a work building and

248

00:10:31,190 --> 00:10:29,519

there's there's actually engineering

249

00:10:33,530 --> 00:10:31,200

like actual manufacturing going on that

250

00:10:34,910 --> 00:10:33,540

building some some floors or offices and

251
00:10:36,470 --> 00:10:34,920
this happens at one of the floors is the

252
00:10:37,610 --> 00:10:36,480
crew quarters where they go into

253
00:10:39,590 --> 00:10:37,620
quarantine and that's where the suit up

254
00:10:42,949 --> 00:10:39,600
room is at as well that's a sprawling

255
00:10:45,290 --> 00:10:42,959
crew quarters 26 000 feet features 23

256
00:10:46,310 --> 00:10:45,300
bedrooms access of course restricted

257
00:10:47,750 --> 00:10:46,320
when the astronauts are there because

258
00:10:49,490 --> 00:10:47,760
you're under quarantine yep it's kind of

259
00:10:51,889 --> 00:10:49,500
like a little mini Hotel basically like

260
00:10:53,930 --> 00:10:51,899
the wing of a hotel a hotel or dorm room

261
00:10:55,790 --> 00:10:53,940
uh more of a dorm yeah I would say not a

262
00:10:59,630 --> 00:10:55,800
yeah definitely don't have any visions

263
00:11:17,329 --> 00:11:01,670

so we expect them to walk out any moment

264

00:11:32,829 --> 00:11:18,829

foreign

265

00:11:38,630 --> 00:11:36,410

and here they come crew six taking their

266

00:11:43,250 --> 00:11:38,640

first steps outside before their journey

267

00:11:48,230 --> 00:11:46,550

from left to right we have Andre fed yev

268

00:11:49,910 --> 00:11:48,240

Woody hoberg

269

00:11:54,250 --> 00:11:49,920

Stephen Bowen

270

00:12:00,050 --> 00:11:56,930

and now they'll stand in front of their

271

00:12:03,829 --> 00:12:01,550

and have some

272

00:12:05,990 --> 00:12:03,839

Exchange

273

00:12:07,550 --> 00:12:06,000

you remember this moment I do so we've

274

00:12:08,750 --> 00:12:07,560

had some time with the the families and

275

00:12:10,370 --> 00:12:08,760

friends prior

276

00:12:11,449 --> 00:12:10,380

um where you actually especially for the

277

00:12:13,190 --> 00:12:11,459

folks who are in quarantine kind of give

278

00:12:15,590 --> 00:12:13,200

blast hugs and stuff like that but this

279

00:12:18,170 --> 00:12:15,600

is sort of a one last chance to say uh

280

00:12:19,670 --> 00:12:18,180

say bye uh you know maybe some some long

281

00:12:21,350 --> 00:12:19,680

distance hugs

282

00:12:23,269 --> 00:12:21,360

um and then sometimes we'll also be some

283

00:12:25,250 --> 00:12:23,279

NASA headquarters officials down there

284

00:12:26,690 --> 00:12:25,260

as well so basically a chance just to

285

00:12:27,889 --> 00:12:26,700

everyone get eyes on the cruise up to

286

00:12:29,030 --> 00:12:27,899

this point you've been in quarantine the

287

00:12:30,889 --> 00:12:29,040

whole time

288

00:12:33,050 --> 00:12:30,899

um and and even with the families here

289

00:12:34,790 --> 00:12:33,060

on a very tight schedule so it's just a

290

00:12:36,290 --> 00:12:34,800

little bit of a break before you have to

291

00:13:02,449 --> 00:12:36,300

get in the car

292

00:13:07,129 --> 00:13:04,970

see astronaut Shannon Walker to the far

293

00:13:08,930 --> 00:13:07,139

far left of the screen she's the vehicle

294

00:13:10,370 --> 00:13:08,940

integration and test office lead for

295

00:13:11,990 --> 00:13:10,380

crew six

296

00:13:17,930 --> 00:13:12,000

also

297

00:13:21,710 --> 00:13:19,850

yep and then Shannon and Joe have been

298

00:13:23,629 --> 00:13:21,720

have done this drill more than a few

299

00:13:25,730 --> 00:13:23,639

times so they're uh they've got this

300

00:13:28,670 --> 00:13:25,740

down to a science

301
00:13:32,569 --> 00:13:28,680
Shannon was our first dragonflyer to be

302
00:13:32,579 --> 00:13:36,290
review

303
00:13:41,329 --> 00:13:37,850
and uh

304
00:13:43,730 --> 00:13:41,339
that's a United area yep

305
00:13:45,590 --> 00:13:43,740
yep and so yeah you got to zaw standing

306
00:13:47,750 --> 00:13:45,600
there who I believe was also escorting

307
00:13:49,030 --> 00:13:47,760
Sultan's family and friends

308
00:13:51,949 --> 00:13:49,040
um

309
00:13:54,110 --> 00:13:51,959
and so he flew he was the first UAE

310
00:13:56,449 --> 00:13:54,120
astronaut actually

311
00:13:58,790 --> 00:13:56,459
this is NASA's first partnership with

312
00:14:00,290 --> 00:13:58,800
the UAE on the flight yeah that's a

313
00:14:02,569 --> 00:14:00,300

really important Point yeah

314

00:14:04,190 --> 00:14:02,579

first time we've had a UAE astronaut on

315

00:14:06,530 --> 00:14:04,200

a dragon and first time we've had them

316

00:14:11,269 --> 00:14:06,540

fly to the the USI the the space station

317

00:14:15,290 --> 00:14:13,430

now in the first Tesla which is off

318

00:14:17,810 --> 00:14:15,300

screen that that will have the closeout

319

00:14:19,550 --> 00:14:17,820

lead and two suit technicians the second

320

00:14:20,389 --> 00:14:19,560

one which is the one on the right senior

321

00:14:24,470 --> 00:14:20,399

screen

322

00:14:26,930 --> 00:14:24,480

that'll have the commander and the pilot

323

00:14:28,850 --> 00:14:26,940

of course is Stephen Bowen Woody hoberg

324

00:14:31,610 --> 00:14:28,860

they'll also have a flight surgeon with

325

00:14:33,889 --> 00:14:31,620

them and then the third which is the one

326

00:14:37,129 --> 00:14:33,899

on the left

327

00:14:38,690 --> 00:14:37,139

that'll have the two Mission specialists

328

00:14:40,329 --> 00:14:38,700

and the closeout lead the second

329

00:14:43,069 --> 00:14:40,339

closeout lead and of course that's

330

00:14:45,350 --> 00:14:43,079

Sultan and Andre

331

00:14:47,329 --> 00:14:45,360

so ninja number 19 there Sarah

332

00:14:49,310 --> 00:14:47,339

Stringfellow she's one of the the key

333

00:14:51,290 --> 00:14:49,320

SpaceX folks that helps integrate all

334

00:14:52,670 --> 00:14:51,300

this and so you'll see the we call them

335

00:14:54,170 --> 00:14:52,680

the ninjas in the black outfits

336

00:14:56,090 --> 00:14:54,180

throughout the night the ninja number 12

337

00:14:57,769 --> 00:14:56,100

is actually Nick Hague of the astronaut

338

00:14:59,930 --> 00:14:57,779

office but that's all the various

339

00:15:01,850 --> 00:14:59,940

members of the closeout team uh that

340

00:15:03,590 --> 00:15:01,860

will help when they get to the into the

341

00:15:05,329 --> 00:15:03,600

white room and the crew access arm and

342

00:15:07,550 --> 00:15:05,339

around the vehicle itself

343

00:15:09,590 --> 00:15:07,560

getting a round of applause now as they

344

00:15:12,889 --> 00:15:09,600

get into their vehicles you mentioned

345

00:15:15,290 --> 00:15:12,899

Nick Hague wearing number 12. he's

346

00:15:20,990 --> 00:15:15,300

currently in the position of astronaut

347

00:15:24,110 --> 00:15:22,850

yeah and the reason uh so yeah we always

348

00:15:26,329 --> 00:15:24,120

have an astronaut support person as part

349

00:15:28,490 --> 00:15:26,339

of the close art crew just to help with

350

00:15:29,810 --> 00:15:28,500

uh any little things that pop up and

351

00:15:31,850 --> 00:15:29,820

it's kind of nice to have someone who's

352

00:15:32,509 --> 00:15:31,860

gone through this before

353

00:15:36,530 --> 00:15:32,519

um

354

00:15:38,569 --> 00:15:36,540

just a any last minute ads or asks you

355

00:15:40,069 --> 00:15:38,579

mentioned there's a flight dock in each

356

00:15:42,290 --> 00:15:40,079

of these cars so when they get in

357

00:15:44,629 --> 00:15:42,300

they're actually hooking them up to

358

00:15:46,009 --> 00:15:44,639

cooling so they've got a cooling box to

359

00:15:47,750 --> 00:15:46,019

keep the suit cool because it does get

360

00:15:53,449 --> 00:15:47,760

pretty hot especially on a warm humid

361

00:15:56,689 --> 00:15:55,310

and what uh

362

00:15:59,090 --> 00:15:56,699

well if you're gonna have an astronaut

363

00:16:03,889 --> 00:15:59,100

be a astronaut support person Nick Hague

364

00:16:09,470 --> 00:16:07,129

the launch aboard in 2018 you know this

365

00:16:10,910 --> 00:16:09,480

is a guy who's he's seen yeah he's seen

366

00:16:13,069 --> 00:16:10,920

some stuff yeah

367

00:16:14,509 --> 00:16:13,079

you heard the the core there call that

368

00:16:15,650 --> 00:16:14,519

launch displays like those plays are

369

00:16:17,870 --> 00:16:15,660

configured for launch which basically is

370

00:16:19,430 --> 00:16:17,880

telling the control team that the the

371

00:16:21,170 --> 00:16:19,440

displays are powered up inside the

372

00:16:22,970 --> 00:16:21,180

Endeavor Dragon vehicle and ready for

373

00:16:24,050 --> 00:16:22,980

the should be ready for when the crew

374

00:16:25,009 --> 00:16:24,060

gets in there

375

00:16:32,569 --> 00:16:25,019

um

376

00:16:36,410 --> 00:16:34,370

so this point kind of a last chance uh

377

00:16:38,150 --> 00:16:36,420

the family is friends loved ones coming

378

00:16:40,249 --> 00:16:38,160

up to the windows to kind of be able to

379

00:16:42,710 --> 00:16:40,259

talk their their astronaut before they

380

00:16:44,629 --> 00:16:42,720

head off off to the pad

381

00:16:47,150 --> 00:16:44,639

now the family has been in quarantine as

382

00:16:49,249 --> 00:16:47,160

well right exactly yep uh and so it

383

00:16:50,689 --> 00:16:49,259

depends on uh there's different levels

384

00:16:53,389 --> 00:16:50,699

of quarantine depending on you know if

385

00:16:55,069 --> 00:16:53,399

uh when people travel but yes there's uh

386

00:16:57,230 --> 00:16:55,079

full quarantine and that's a high five

387

00:16:58,850 --> 00:16:57,240

and then you see another uaesar out

388

00:17:00,710 --> 00:16:58,860

there uh one of the astronaut candidates

389

00:17:08,569 --> 00:17:00,720

Nora on the other side standing next to

390

00:17:13,189 --> 00:17:10,689

oh

391

00:17:15,230 --> 00:17:13,199

and then you can see uh administrator

392

00:17:17,210 --> 00:17:15,240

Nelson is there uh his back's towards us

393

00:17:19,250 --> 00:17:17,220

in the suit you can see Victor Glover is

394

00:17:21,049 --> 00:17:19,260

the astronaut talking to Steve Bowen and

395

00:17:23,870 --> 00:17:21,059

then just over Victor's right shoulder

396

00:17:25,850 --> 00:17:23,880

Corner ready for crew rival and then

397

00:17:28,610 --> 00:17:25,860

Pamela pen melroy the deputy NASA

398

00:17:30,950 --> 00:17:28,620

Minister yeah right next to him

399

00:17:33,409 --> 00:17:30,960

so good eye on all those Raja and we

400

00:17:36,409 --> 00:17:33,419

also saw some family

401

00:17:38,150 --> 00:17:36,419

comforting each other yep

402

00:17:40,430 --> 00:17:38,160

you never know what kind of emotion

403

00:17:42,590 --> 00:17:40,440

might come out yeah it's exciting you

404

00:17:44,330 --> 00:17:42,600

know exciting and I think surreal you

405

00:17:45,830 --> 00:17:44,340

know having uh knowing the people who

406

00:17:48,409 --> 00:17:45,840

are going on the rocket knowing them

407

00:17:52,010 --> 00:17:48,419

loving them it's a it's obviously a a

408

00:17:53,150 --> 00:17:52,020

awesome time you're so proud that we've

409

00:17:55,490 --> 00:17:53,160

got to this point and they've gotten to

410

00:17:57,650 --> 00:17:55,500

this point but also you know all as with

411

00:17:59,450 --> 00:17:57,660

everything also just concern but I think

412

00:18:01,370 --> 00:17:59,460

just uh you know one of the things that

413

00:18:03,590 --> 00:18:01,380

I think my family really appreciated was

414

00:18:05,450 --> 00:18:03,600

just how much support they got from the

415

00:18:07,190 --> 00:18:05,460

team around them and it made them feel

416

00:18:18,770 --> 00:18:07,200

really confident that we the same

417

00:18:22,789 --> 00:18:20,150

there we go pulling out of the

418

00:18:26,450 --> 00:18:22,799

operations in control

419

00:18:26,460 --> 00:18:32,390

three Teslas on the way to the pad

420

00:18:36,590 --> 00:18:34,130

and we've got a camera

421

00:18:40,010 --> 00:18:36,600

on the lead test level this is an

422

00:18:44,450 --> 00:18:42,350

we enjoy seeing that view we also have a

423

00:18:48,650 --> 00:18:44,460

helicopter high above that will be

424

00:18:52,970 --> 00:18:50,990

this is a night launch so a lot of

425

00:18:54,289 --> 00:18:52,980

things will be in the dark but one of

426

00:18:57,049 --> 00:18:54,299

the things about the night launch is

427

00:18:58,310 --> 00:18:57,059

that uh you get to see that Lit Up crew

428

00:19:00,770 --> 00:18:58,320

access arm and you can see the

429

00:19:02,570 --> 00:19:00,780

astronauts as they go across come out on

430

00:19:03,950 --> 00:19:02,580

the launch Tower it's it's neat to see

431

00:19:05,090 --> 00:19:03,960

yep there's a view of the helicopter you

432

00:19:07,190 --> 00:19:05,100

can see going left right at the top of

433

00:19:09,049 --> 00:19:07,200

the screen as it flies over more than

434

00:19:11,930 --> 00:19:09,059

likely on the the wet dress a few days

435

00:19:15,590 --> 00:19:13,669

and you know

436

00:19:17,690 --> 00:19:15,600

really quick about the Teslas you notice

437

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

they were black and SpaceX basically

438

00:19:23,150 --> 00:19:19,919

saying they're expanding their Fleet to

439

00:19:25,909 --> 00:19:23,160

Vehicles more launches we've got private

440

00:19:27,770 --> 00:19:25,919

uh you know launches as well and uh so

441

00:19:29,690 --> 00:19:27,780

they said that they expanded and added

442

00:19:30,650 --> 00:19:29,700

some cars to the fleet and they're black

443

00:19:34,850 --> 00:19:30,660

ones

444

00:19:37,070 --> 00:19:34,860

demo 2 all the way up to crew five we're

445

00:19:38,570 --> 00:19:37,080

white that's a good point yeah so a new

446

00:19:40,730 --> 00:19:38,580

set of new set of windshields to brand

447

00:19:42,710 --> 00:19:40,740

with with new stickers that's right

448

00:19:44,090 --> 00:19:42,720

and so let's introduce you now to

449

00:19:45,590 --> 00:19:44,100

today's crew now that they're safely

450

00:19:46,490 --> 00:19:45,600

inside the vehicles and headed to the

451
00:19:49,250 --> 00:19:46,500
launch pad

452
00:19:51,529 --> 00:19:49,260
Captain Stephen Bowen he hails from

453
00:19:53,630 --> 00:19:51,539
Cohasset Massachusetts and is married

454
00:19:56,029 --> 00:19:53,640
with three children he holds the title

455
00:19:58,010 --> 00:19:56,039
of first U.S Navy submarine officer to

456
00:20:00,890 --> 00:19:58,020
be selected as a mission specialist by

457
00:20:02,930 --> 00:20:00,900
NASA Captain Bowen is also a veteran of

458
00:20:07,190 --> 00:20:02,940
NASA's space flights including space

459
00:20:09,470 --> 00:20:07,200
shuttle flights on sts-126 132 and 133

460
00:20:11,150 --> 00:20:09,480
during those missions he and his crew

461
00:20:12,950 --> 00:20:11,160
expanded the living quarters on the

462
00:20:14,870 --> 00:20:12,960
International Space Station they've

463
00:20:17,750 --> 00:20:14,880

delivered an integrated Cargo Carrier

464

00:20:19,730 --> 00:20:17,760

and a Russian mini research module he

465

00:20:23,150 --> 00:20:19,740

has logged more than 40 days in space

466

00:20:26,270 --> 00:20:23,160

including 47 hours and 18 minutes in

467

00:20:28,190 --> 00:20:26,280

seven spacewalks and today Raja he is

468

00:20:31,130 --> 00:20:28,200

the position that you held during crew 3

469

00:20:32,510 --> 00:20:31,140

he's the commander it is yeah and Steve

470

00:20:34,549 --> 00:20:32,520

is a great guy for it like you mentioned

471

00:20:36,650 --> 00:20:34,559

he's the the first submarine officer but

472

00:20:38,029 --> 00:20:36,660

not the last in the astronaut Corps

473

00:20:39,590 --> 00:20:38,039

um he is uh definitely got some

474

00:20:42,289 --> 00:20:39,600

experience and as you mentioned a lot of

475

00:20:43,669 --> 00:20:42,299

Eva experience and then Steve also

476

00:20:46,190 --> 00:20:43,679

helped with the the commercial crew

477

00:20:48,529 --> 00:20:46,200

program uh before demo 2 actually so he

478

00:20:49,669 --> 00:20:48,539

has some experience with dragon and with

479

00:20:51,470 --> 00:20:49,679

the Boeing star liner which hopefully

480

00:20:53,330 --> 00:20:51,480

will be launching this spring so he's

481

00:20:56,450 --> 00:20:53,340

got some got some experience on wide

482

00:20:58,250 --> 00:20:56,460

Vehicles also did some soyuz training as

483

00:20:59,810 --> 00:20:58,260

a backup flow and so he's very familiar

484

00:21:02,150 --> 00:20:59,820

with the Russian side the Russian

485

00:21:03,409 --> 00:21:02,160

Vehicles so yeah all around it's just a

486

00:21:04,789 --> 00:21:03,419

great person to be in that Commander

487

00:21:06,289 --> 00:21:04,799

role which is really kind of like the

488

00:21:08,029 --> 00:21:06,299

coach of the team really how about that

489

00:21:10,430 --> 00:21:08,039

and a lot of that's experience is

490

00:21:13,490 --> 00:21:10,440

amazing also I read this so and it's uh

491

00:21:14,870 --> 00:21:13,500

a good thing and a Bad Thing uh you're

492

00:21:16,669 --> 00:21:14,880

definitely that's definitely exciting

493

00:21:18,169 --> 00:21:16,679

but also a pretty rushed training flow

494

00:21:20,210 --> 00:21:18,179

and you have to be really on your game

495

00:21:23,450 --> 00:21:20,220

to do that sitting next to Steven is

496

00:21:26,270 --> 00:21:23,460

pilot Warren Woody hoberg the 37 year

497

00:21:28,070 --> 00:21:26,280

old is from Pittsburgh Pennsylvania he

498

00:21:30,289 --> 00:21:28,080

studied Aeronautics and astronautics

499

00:21:31,909 --> 00:21:30,299

from MIT before getting a doctorate in

500

00:21:34,190 --> 00:21:31,919

electrical engineering and computer

501
00:21:36,830 --> 00:21:34,200
science from the University of Cal

502
00:21:38,870 --> 00:21:36,840
Berkeley during grad school hoberg

503
00:21:41,210 --> 00:21:38,880
worked as an EMT with the Yosemite

504
00:21:43,190 --> 00:21:41,220
search and rescue crew 6 will be

505
00:21:45,770 --> 00:21:43,200
hoberg's first flight since NASA

506
00:21:48,230 --> 00:21:45,780
selected him to be an astronaut in 2017

507
00:21:50,390 --> 00:21:48,240
attorney Turtle which we have another

508
00:21:52,669 --> 00:21:50,400
turtle here he is also a commercial

509
00:21:55,190 --> 00:21:52,679
pilot with instrument single engine and

510
00:21:56,810 --> 00:21:55,200
multi-engine multi-engine ratings as

511
00:21:59,210 --> 00:21:56,820
pilot for cruise six he will be

512
00:22:01,549 --> 00:21:59,220
responsible for spacecraft systems and

513
00:22:04,789 --> 00:22:01,559

performance aboard the station he will

514

00:22:07,070 --> 00:22:04,799

serve as an expedition 68 and 69 flight

515

00:22:08,870 --> 00:22:07,080

engineer you know him well as a fellow

516

00:22:10,310 --> 00:22:08,880

Turtle I do yeah and proud to keep the

517

00:22:12,529 --> 00:22:10,320

turtle tradition in space alive

518

00:22:13,970 --> 00:22:12,539

obviously I'm super excited all of crew

519

00:22:15,350 --> 00:22:13,980

sticks but I'm especially excited with

520

00:22:17,390 --> 00:22:15,360

uh what are you going up as a classmate

521

00:22:19,970 --> 00:22:17,400

of mine so I've come to know and respect

522

00:22:21,649 --> 00:22:19,980

him well the the academic backgrounds

523

00:22:23,210 --> 00:22:21,659

don't really do it justice I would say

524

00:22:24,710 --> 00:22:23,220

he's probably like two or three orders

525

00:22:26,330 --> 00:22:24,720

of magnitude smarter than any of the

526

00:22:27,710 --> 00:22:26,340

rest of us at breakfast but she would

527

00:22:29,930 --> 00:22:27,720

never know it the way he carries himself

528

00:22:32,330 --> 00:22:29,940

he's totally humble just an amazing

529

00:22:34,190 --> 00:22:32,340

human and can't wait to watch what he

530

00:22:36,350 --> 00:22:34,200

launches space with crew six today and

531

00:22:37,610 --> 00:22:36,360

you mentioned he was also teaching it he

532

00:22:39,649 --> 00:22:37,620

was yeah that and that didn't just go

533

00:22:41,510 --> 00:22:39,659

there actually taught yeah it's amazing

534

00:22:44,990 --> 00:22:41,520

well in the role of mission specialist

535

00:22:47,750 --> 00:22:45,000

part of expeditions 6869 the father of

536

00:22:50,750 --> 00:22:47,760

five spent most of his life in Alain and

537

00:22:52,970 --> 00:22:50,760

Abu Dhabi but in 2020 he traded that in

538

00:22:55,549 --> 00:22:52,980

for Astronaut training in Houston at

539

00:22:57,830 --> 00:22:55,559

NASA's Johnson Space Center this will be

540

00:23:00,110 --> 00:22:57,840

his first trip to space and our first

541

00:23:02,470 --> 00:23:00,120

partnership with the UAE yeah Daryl and

542

00:23:05,149 --> 00:23:02,480

we are super excited about this so it is

543

00:23:07,010 --> 00:23:05,159

both trained in Russia for a while and

544

00:23:08,630 --> 00:23:07,020

then came over to the U.S Unfortunately

545

00:23:10,970 --> 00:23:08,640

they showed up right as the pandemic was

546

00:23:13,549 --> 00:23:10,980

starting so they had a they had to deal

547

00:23:15,590 --> 00:23:13,559

with being the first UAE astronauts to

548

00:23:17,930 --> 00:23:15,600

train oh by the way in the midst of of

549

00:23:19,310 --> 00:23:17,940

covid uh and so the fact that they

550

00:23:20,930 --> 00:23:19,320

persevered and through all that

551
00:23:22,549 --> 00:23:20,940
challenge I'm so excited to see Sultan

552
00:23:24,590 --> 00:23:22,559
going up there today and like you said

553
00:23:26,029 --> 00:23:24,600
just starting the the just the

554
00:23:28,310 --> 00:23:26,039
beginnings of a new partnership with the

555
00:23:29,810 --> 00:23:28,320
OE at UAE and now in the new class we

556
00:23:31,669 --> 00:23:29,820
have two additional UAE astronauts

557
00:23:33,289 --> 00:23:31,679
training with us fully integrated uh

558
00:23:35,570 --> 00:23:33,299
with us at Johnson Space Center so this

559
00:23:38,090 --> 00:23:35,580
is the the start of a huge relationship

560
00:23:40,010 --> 00:23:38,100
and many launches to come in that

561
00:23:41,810 --> 00:23:40,020
partnership it's also the first trip to

562
00:23:44,690 --> 00:23:41,820
space for the second mission specialist

563
00:23:47,270 --> 00:23:44,700

Ross Cosmos Cosmonaut Andre fedjiev

564

00:23:49,850 --> 00:23:47,280

Andre was selected as a Cosmonaut back

565

00:23:51,590 --> 00:23:49,860

in 2012 he will be working to monitor

566

00:23:53,810 --> 00:23:51,600

the spacecraft during the dynamic launch

567

00:23:55,130 --> 00:23:53,820

and re-entry phases of flight and wants

568

00:23:58,850 --> 00:23:55,140

aboard station he will be a flight

569

00:24:01,549 --> 00:23:58,860

engineer for expeditions 68 and 69. yeah

570

00:24:04,190 --> 00:24:01,559

and Andre uh great to see another first

571

00:24:05,870 --> 00:24:04,200

time flyer so much like our mission uh

572

00:24:07,250 --> 00:24:05,880

one Commander with experience someone

573

00:24:08,990 --> 00:24:07,260

with experience and then three rookies

574

00:24:11,510 --> 00:24:09,000

so very much a testament to the training

575

00:24:13,730 --> 00:24:11,520

on both the Ross Cosmos and JSC side and

576
00:24:15,770 --> 00:24:13,740
the NASA side of of being able to send

577
00:24:17,510 --> 00:24:15,780
that many rookies on one flight just uh

578
00:24:19,669 --> 00:24:17,520
the confidence and Trust we have in our

579
00:24:22,250 --> 00:24:19,679
training teams and our our systems and

580
00:24:24,529 --> 00:24:22,260
oh by the way today is Andre's 42nd

581
00:24:26,390 --> 00:24:24,539
birthday happy birthday he's quite the

582
00:24:27,890 --> 00:24:26,400
candle yes for his day

583
00:24:29,570 --> 00:24:27,900
the best birthday present you could get

584
00:24:31,130 --> 00:24:29,580
no doubt

585
00:24:32,510 --> 00:24:31,140
that they must be getting close because

586
00:24:35,570 --> 00:24:32,520
the helicopters coming by the Preston

587
00:24:37,370 --> 00:24:35,580
that's right you can hear it overhead

588
00:24:39,710 --> 00:24:37,380

that's where we are just across from the

589

00:24:42,230 --> 00:24:39,720

Vehicle Assembly Building as you look at

590

00:24:43,970 --> 00:24:42,240

the Caravan coming our way

591

00:24:46,010 --> 00:24:43,980

getting ready to pass in front of the

592

00:24:49,610 --> 00:24:46,020

historic VAB where

593

00:24:52,310 --> 00:24:49,620

just last year in November we rolled out

594

00:24:54,250 --> 00:24:52,320

the Artemis One mission

595

00:24:56,690 --> 00:24:54,260

the space launch system and Orion

596

00:24:59,270 --> 00:24:56,700

spacecraft drive that building right

597

00:25:01,909 --> 00:24:59,280

there for a successful launch around the

598

00:25:04,789 --> 00:25:01,919

moon and your fellow Turtle Kayla Baron

599

00:25:06,890 --> 00:25:04,799

was here as well no I was not I watched

600

00:25:08,930 --> 00:25:06,900

I watched uh TV and then that building

601
00:25:10,669 --> 00:25:08,940
just to the right of the VAB the the

602
00:25:13,010 --> 00:25:10,679
bore horizontal looking one is the fire

603
00:25:14,810 --> 00:25:13,020
the firing room so that's actually where

604
00:25:22,430 --> 00:25:14,820
the KSC Personnel are watching and

605
00:25:25,430 --> 00:25:23,990
what you can see as they're passing

606
00:25:27,590 --> 00:25:25,440
there there's some uh

607
00:25:31,070 --> 00:25:27,600
folks waving and wishing them good luck

608
00:25:34,610 --> 00:25:32,930
you mentioned the launch control center

609
00:25:36,710 --> 00:25:34,620
that's where firing room four is and

610
00:25:39,110 --> 00:25:36,720
SpaceX has got their launch Team but

611
00:25:41,750 --> 00:25:39,120
just to the right of this Caravan here

612
00:25:43,310 --> 00:25:41,760
is the turn basin

613
00:25:45,049 --> 00:25:43,320

can't see the water but it's a large

614

00:25:46,970 --> 00:25:45,059

body of water that's where we bring in

615

00:25:49,789 --> 00:25:46,980

big Hardware

616

00:25:52,490 --> 00:25:49,799

like the core stage for SLS

617

00:25:54,890 --> 00:25:52,500

and it's also where several weeks ago

618

00:25:57,529 --> 00:25:54,900

Raja NASA's recovery team was in the

619

00:25:59,870 --> 00:25:57,539

water training to return NASA astronauts

620

00:26:02,450 --> 00:25:59,880

after a flight back from the Moon

621

00:26:05,930 --> 00:26:02,460

let's take a look now at more in our

622

00:26:11,029 --> 00:26:08,149

right now NASA scientists and Engineers

623

00:26:12,830 --> 00:26:11,039

are preparing for Artemis 2. the mission

624

00:26:15,710 --> 00:26:12,840

will send four astronauts on a trip

625

00:26:18,110 --> 00:26:15,720

around the moon in 2024 but before that

626
00:26:19,970 --> 00:26:18,120
happens test crews are practicing how to

627
00:26:22,310 --> 00:26:19,980
recover astronauts from the Orion

628
00:26:23,810 --> 00:26:22,320
spacecraft after splashing down in the

629
00:26:26,390 --> 00:26:23,820
Pacific Ocean

630
00:26:29,029 --> 00:26:26,400
this black full-scale replica capsule

631
00:26:31,909 --> 00:26:29,039
named Vader stands for vehicle advance

632
00:26:33,470 --> 00:26:31,919
demonstrator for emergency rescue it

633
00:26:35,029 --> 00:26:33,480
spent the last couple of weeks in the

634
00:26:38,690 --> 00:26:35,039
turn Basin here at the Kennedy Space

635
00:26:41,330 --> 00:26:38,700
Center where it was floated on the water

636
00:26:43,789 --> 00:26:41,340
and tested

637
00:26:46,430 --> 00:26:43,799
Crews practice opening the hatch and

638
00:26:47,990 --> 00:26:46,440

installing an inflatable porch an

639

00:26:50,149 --> 00:26:48,000

important piece of equipment to make

640

00:26:53,390 --> 00:26:50,159

sure astronauts can be recovered safely

641

00:26:55,070 --> 00:26:53,400

if needed adjustments will be made and

642

00:26:57,350 --> 00:26:55,080

then it will be shipped to San Diego

643

00:27:04,789 --> 00:26:57,360

where NASA and the Navy can perform

644

00:27:09,950 --> 00:27:07,490

some key technology there Raja you want

645

00:27:13,190 --> 00:27:09,960

to be able to get out of that Orion

646

00:27:14,870 --> 00:27:13,200

spacecraft and not fall in the water

647

00:27:16,370 --> 00:27:14,880

exactly yeah so especially when you're

648

00:27:18,769 --> 00:27:16,380

coming back from space and being

649

00:27:21,230 --> 00:27:18,779

deconditioned uh your balance is off

650

00:27:23,210 --> 00:27:21,240

your muscles aren't quite this work the

651
00:27:24,769 --> 00:27:23,220
same so we spend you know it's not quite

652
00:27:26,330 --> 00:27:24,779
as easy as getting out of a boat when

653
00:27:27,529 --> 00:27:26,340
you're in good shape so we have to spend

654
00:27:29,630 --> 00:27:27,539
a lot of time trying to figure out and

655
00:27:31,970 --> 00:27:29,640
how do you simulate that how do you make

656
00:27:33,350 --> 00:27:31,980
the right you know restraints and tools

657
00:27:36,169 --> 00:27:33,360
for the crew to get out quickly if they

658
00:27:37,490 --> 00:27:36,179
have to and to do it safely it'd be even

659
00:27:39,649 --> 00:27:37,500
worse if you know someone Falls and

660
00:27:41,630 --> 00:27:39,659
slips and now a bad situation has gotten

661
00:27:43,310 --> 00:27:41,640
gotten even worse and so we do a very

662
00:27:45,169 --> 00:27:43,320
similar thing for the dragon training

663
00:27:46,850 --> 00:27:45,179

the combination of training at the NBL

664

00:27:48,470 --> 00:27:46,860

which is the neutral buoyancy Lab at

665

00:27:50,330 --> 00:27:48,480

Johnson Space Center and then also out

666

00:27:51,590 --> 00:27:50,340

here at Kennedy in that Basin great

667

00:27:53,269 --> 00:27:51,600

point about the condition of the

668

00:27:56,029 --> 00:27:53,279

astronauts especially since being on

669

00:27:57,890 --> 00:27:56,039

Orion that's tight quarters going around

670

00:28:00,110 --> 00:27:57,900

the moon I want to mention really

671

00:28:01,789 --> 00:28:00,120

quickly if you want to see more Artemis

672

00:28:04,130 --> 00:28:01,799

updates and track them as we go along

673

00:28:06,529 --> 00:28:04,140

the way please see the QR code right now

674

00:28:08,330 --> 00:28:06,539

to the right of your screen you can scan

675

00:28:10,549 --> 00:28:08,340

that that'll take you to our Artemis

676
00:28:15,710 --> 00:28:10,559
blog where you can catch up with all the

677
00:28:20,330 --> 00:28:18,110
and now we resume our focus on crew six

678
00:28:24,289 --> 00:28:20,340
and the Caravan that's taking them out

679
00:28:28,250 --> 00:28:24,299
to launch complex 39a

680
00:28:30,890 --> 00:28:28,260
one quick note I do want to mention Raja

681
00:28:32,090 --> 00:28:30,900
before we totally rap artists in a few

682
00:28:34,730 --> 00:28:32,100
months

683
00:28:37,370 --> 00:28:34,740
we're going to have the announcement

684
00:28:38,570 --> 00:28:37,380
for the crew of Artemis 2. yeah so it's

685
00:28:40,430 --> 00:28:38,580
going to be a pretty uh everyone's

686
00:28:41,930 --> 00:28:40,440
pretty excited to hear that I think one

687
00:28:44,090 --> 00:28:41,940
of the cool things about being in our

688
00:28:45,590 --> 00:28:44,100

office I think most of us the reason we

689

00:28:47,330 --> 00:28:45,600

like working at our office is just the

690

00:28:48,830 --> 00:28:47,340

people and so we're all excited to see

691

00:28:50,149 --> 00:28:48,840

who's going to be doing artist two and

692

00:28:52,310 --> 00:28:50,159

all ready to jump in and support them

693

00:28:54,529 --> 00:28:52,320

it's going to be amazing as they suss

694

00:28:56,149 --> 00:28:54,539

out and figure out the training flow uh

695

00:28:58,010 --> 00:28:56,159

as you like you mentioned we just had a

696

00:28:59,510 --> 00:28:58,020

greatly successful Artemis one and now

697

00:29:00,950 --> 00:28:59,520

the next step is to put people on board

698

00:29:02,750 --> 00:29:00,960

check out the what we call the eclipse

699

00:29:04,490 --> 00:29:02,760

or the I can the life control system on

700

00:29:05,990 --> 00:29:04,500

that spacecraft go around the moon go

701
00:29:07,909 --> 00:29:06,000
further than we've ever gone as humans

702
00:29:09,409 --> 00:29:07,919
before and then come back and and check

703
00:29:11,390 --> 00:29:09,419
out the splashed out and check out all

704
00:29:12,710 --> 00:29:11,400
those systems Before The Next Step of

705
00:29:14,870 --> 00:29:12,720
actually going to land on the moon so

706
00:29:16,669 --> 00:29:14,880
it's a very exciting time and can't wait

707
00:29:18,289 --> 00:29:16,679
to support the folks who are doing that

708
00:29:19,370 --> 00:29:18,299
we all we already do support that and

709
00:29:21,049 --> 00:29:19,380
the fact that most of us are working on

710
00:29:22,430 --> 00:29:21,059
armist programs that's really our job in

711
00:29:24,110 --> 00:29:22,440
the office is you know whether it's the

712
00:29:27,350 --> 00:29:24,120
lunar lander the Orion capsule the

713
00:29:28,909 --> 00:29:27,360

Gateway habitat the SLS so actually

714

00:29:30,970 --> 00:29:28,919

having crew assign and working will be

715

00:29:35,409 --> 00:29:30,980

great are those are your fingers crossed

716

00:29:39,289 --> 00:29:37,970

yeah I'd love to be part of that but uh

717

00:29:42,230 --> 00:29:39,299

just the fact that we're all working on

718

00:29:44,090 --> 00:29:42,240

it is so rewarding absolutely well let's

719

00:29:45,169 --> 00:29:44,100

check in now for the first time head

720

00:29:47,389 --> 00:29:45,179

back to

721

00:29:49,310 --> 00:29:47,399

where you live the Johnson Space Center

722

00:29:51,350 --> 00:29:49,320

in Houston Texas and that's where we

723

00:29:52,850 --> 00:29:51,360

find our Courtney Beasley with an update

724

00:29:55,549 --> 00:29:52,860

from Mission Control good evening

725

00:29:59,029 --> 00:29:57,529

good evening and welcome to the

726
00:30:01,310 --> 00:29:59,039
International Space Station flight

727
00:30:03,649 --> 00:30:01,320
control room at NASA's Johnson Space

728
00:30:05,450 --> 00:30:03,659
Center in Houston Texas Mission Control

729
00:30:07,250 --> 00:30:05,460
Houston is essentially the nerve center

730
00:30:09,590 --> 00:30:07,260
for operating the International Space

731
00:30:11,389 --> 00:30:09,600
Station working in tandem with our

732
00:30:13,430 --> 00:30:11,399
partner agencies and providers around

733
00:30:15,529 --> 00:30:13,440
the globe together we've ensured the

734
00:30:17,570 --> 00:30:15,539
station is ready to welcome crew six

735
00:30:20,029 --> 00:30:17,580
leading the team inside the room right

736
00:30:21,529 --> 00:30:20,039
now is flight director Mike Lammers and

737
00:30:23,389 --> 00:30:21,539
about an hour before launch flight

738
00:30:25,190 --> 00:30:23,399

director Chris Dobbins will be in the

739

00:30:26,870 --> 00:30:25,200

flight director's seat the flight

740

00:30:29,930 --> 00:30:26,880

director here in Mission Control will

741

00:30:31,310 --> 00:30:29,940

lead the NASA SpaceX go no-go polls once

742

00:30:33,350 --> 00:30:31,320

we're in integrated operations with

743

00:30:35,750 --> 00:30:33,360

Mission controls here in Houston and at

744

00:30:37,730 --> 00:30:35,760

SpaceX in Hawthorne working together to

745

00:30:39,950 --> 00:30:37,740

bring crew Dragon to its new home in

746

00:30:41,570 --> 00:30:39,960

space when we check back in later we'll

747

00:30:43,190 --> 00:30:41,580

talk a little bit more about what the

748

00:30:45,409 --> 00:30:43,200

crew on the International Space Station

749

00:30:47,149 --> 00:30:45,419

has been doing to prepare for cruise six

750

00:30:49,610 --> 00:30:47,159

but for now we'll send it back to the

751
00:30:52,310 --> 00:30:49,620
team at Kennedy Daryl thank you Courtney

752
00:30:55,010 --> 00:30:52,320
and as we look back to the crew with

753
00:30:57,110 --> 00:30:55,020
that live camera on the Tesla that was

754
00:30:59,450 --> 00:30:57,120
really neat to see that shot driving up

755
00:31:01,070 --> 00:30:59,460
and seeing a rocket dead yeah that is a

756
00:31:02,450 --> 00:31:01,080
cool yeah that's an awesome dude we'll

757
00:31:04,430 --> 00:31:02,460
see what they're seeing and the crew got

758
00:31:06,230 --> 00:31:04,440
to go do this uh usually a day prior to

759
00:31:08,450 --> 00:31:06,240
go do a pad tour but now seeing it with

760
00:31:09,710 --> 00:31:08,460
the lights on uh with the you know

761
00:31:13,250 --> 00:31:09,720
getting ready to start loading prop here

762
00:31:17,690 --> 00:31:15,710
and depending on how the the you

763
00:31:19,850 --> 00:31:17,700

mentioned there's a flight surgeon and

764

00:31:21,230 --> 00:31:19,860

uh closeout crew with them in the

765

00:31:23,510 --> 00:31:21,240

vehicle the other thing they're doing is

766

00:31:24,950 --> 00:31:23,520

uh monitoring their playlist so if ever

767

00:31:26,510 --> 00:31:24,960

if everything is nominal and

768

00:31:28,549 --> 00:31:26,520

everything's fine with the suit and

769

00:31:30,950 --> 00:31:28,559

things like that their other job is to

770

00:31:33,409 --> 00:31:30,960

to curate the the playlist for the crew

771

00:31:35,269 --> 00:31:33,419

to try to time it such that their uh

772

00:31:36,669 --> 00:31:35,279

their playlist is working out what the

773

00:31:39,289 --> 00:31:36,679

time they pull up it's it's finishing

774

00:31:40,549 --> 00:31:39,299

and some good effort and fun goes into

775

00:31:41,870 --> 00:31:40,559

picking the songs they listen to on the

776

00:31:43,789 --> 00:31:41,880

drive out Yeah you mentioned that the

777

00:31:46,190 --> 00:31:43,799

playlist we got them from Dan Hewitt

778

00:31:47,750 --> 00:31:46,200

over at uh Johnson he mentioned that uh

779

00:31:50,750 --> 00:31:47,760

Stephen Woody let's talk a little bit

780

00:31:52,970 --> 00:31:50,760

about their playlist right so theirs was

781

00:31:55,850 --> 00:31:52,980

uh they had some really good songs in

782

00:31:58,669 --> 00:31:55,860

there traveling Band by CCR Credence

783

00:32:00,649 --> 00:31:58,679

Clearwater Revival may we all

784

00:32:03,470 --> 00:32:00,659

by the Florida Georgia Line with Tim

785

00:32:05,690 --> 00:32:03,480

McGraw the space Travelers Lullaby by

786

00:32:08,210 --> 00:32:05,700

kamasi Washington he's an American Jazz

787

00:32:11,630 --> 00:32:08,220

saxophonist sing me to sleep by Alan

788

00:32:13,430 --> 00:32:11,640

Walker Spaceman by Harry Nilsson that's

789

00:32:15,409 --> 00:32:13,440

an American singer popular during the

790

00:32:17,149 --> 00:32:15,419

70s you might remember everybody's

791

00:32:19,909 --> 00:32:17,159

talking at me I kind of think Bowen

792

00:32:20,930 --> 00:32:19,919

picked that one pad we remain on

793

00:32:22,610 --> 00:32:20,940

schedule

794

00:32:25,130 --> 00:32:22,620

all right there's your announcement that

795

00:32:29,810 --> 00:32:25,140

the corps uh just put out that the crew

796

00:32:33,769 --> 00:32:31,070

yeah and you mentioned so when they

797

00:32:35,630 --> 00:32:33,779

drove out they're in two vehicles uh so

798

00:32:37,750 --> 00:32:35,640

what we'll eventually see is they'll be

799

00:32:39,950 --> 00:32:37,760

in two groups because they go two by two

800

00:32:41,149 --> 00:32:39,960

crossed into crew access arm and through

801
00:32:43,549 --> 00:32:41,159
this whole process so basically we'll

802
00:32:44,750 --> 00:32:43,559
see uh Woody and Steve do something and

803
00:32:46,789 --> 00:32:44,760
then a few minutes later we'll see

804
00:32:49,730 --> 00:32:46,799
Sultan and Andre do the exact same thing

805
00:32:51,710 --> 00:32:49,740
so they'll be sort of broken up in pairs

806
00:32:53,870 --> 00:32:51,720
and so they continue to rock out real

807
00:32:55,850 --> 00:32:53,880
quick with Sultan and Andre's playlist A

808
00:32:57,950 --> 00:32:55,860
Sky Full of Stars by Coldplay Don't Stop

809
00:33:00,049 --> 00:32:57,960
Believing by Journey and push it to the

810
00:33:02,630 --> 00:33:00,059
Limit by Paul engaman which came from

811
00:33:04,190 --> 00:33:02,640
the Scarface Scarface soundtrack and boy

812
00:33:07,730 --> 00:33:04,200
that was that's some pure 80s right

813
00:33:11,510 --> 00:33:07,740

there that's my kind of my kindness

814

00:33:13,490 --> 00:33:11,520

crew six is NASA and spacex's six uh

815

00:33:16,250 --> 00:33:13,500

sixth crew rotation to the International

816

00:33:17,810 --> 00:33:16,260

Space Station since 2020. this

817

00:33:19,430 --> 00:33:17,820

successful NASA program is called

818

00:33:21,409 --> 00:33:19,440

commercial crew and it's based right

819

00:33:23,210 --> 00:33:21,419

here at the Kennedy Space Center so now

820

00:33:25,310 --> 00:33:23,220

we want to turn over to Jasmine Hopkins

821

00:33:27,409 --> 00:33:25,320

who is joining us live now with one of

822

00:33:29,870 --> 00:33:27,419

the leaders of this program Jasmine

823

00:33:31,310 --> 00:33:29,880

thanks so much Daryl we are here on the

824

00:33:33,649 --> 00:33:31,320

balcony of the operation support

825

00:33:35,210 --> 00:33:33,659

building number two at Kennedy it feels

826

00:33:37,310 --> 00:33:35,220

great tonight and right now I'm happy to

827

00:33:39,289 --> 00:33:37,320

be joined by Ken Bowersox he is the

828

00:33:41,450 --> 00:33:39,299

Deputy associate administrator for

829

00:33:43,549 --> 00:33:41,460

NASA's space operations Mission director

830

00:33:45,169 --> 00:33:43,559

at good evening Ken hi Jasmine it's

831

00:33:46,669 --> 00:33:45,179

great to be out here tonight yeah we're

832

00:33:48,950 --> 00:33:46,679

so glad to have you here as we just

833

00:33:51,110 --> 00:33:48,960

heard Daryl say this is the sixth crew

834

00:33:53,210 --> 00:33:51,120

rotation flight from NASA and SpaceX to

835

00:33:54,169 --> 00:33:53,220

the space station since 2020. what do

836

00:33:55,789 --> 00:33:54,179

you think of that Cadence that

837

00:33:57,350 --> 00:33:55,799

commercial crew has achieved I think

838

00:33:59,750 --> 00:33:57,360

it's awesome you know we're launching

839

00:34:03,049 --> 00:33:59,760

every six months that was the plan going

840

00:34:04,730 --> 00:34:03,059

in it's been our plan for a long time I

841

00:34:07,070 --> 00:34:04,740

think folks may not appreciate how hard

842

00:34:09,710 --> 00:34:07,080

it is but the team has been very

843

00:34:11,030 --> 00:34:09,720

successful keep open up that Cadence but

844

00:34:12,349 --> 00:34:11,040

I look back you know in the early days

845

00:34:14,270 --> 00:34:12,359

of space station we thought three months

846

00:34:16,250 --> 00:34:14,280

would be a long Mission and now six

847

00:34:19,129 --> 00:34:16,260

months is just normal one year is longer

848

00:34:20,930 --> 00:34:19,139

you know when we go to Mars two three

849

00:34:22,609 --> 00:34:20,940

years it's going to be normal and and

850

00:34:24,169 --> 00:34:22,619

this is all part of getting there right

851
00:34:25,669 --> 00:34:24,179
exactly and every six months you know

852
00:34:27,950 --> 00:34:25,679
commercial crew is really keeping us

853
00:34:29,810 --> 00:34:27,960
busy right now uh what can you say about

854
00:34:33,589 --> 00:34:29,820
the continuous presence of the United

855
00:34:36,050 --> 00:34:33,599
States on the space station well um it's

856
00:34:37,790 --> 00:34:36,060
great to be up there doing science every

857
00:34:39,530 --> 00:34:37,800
day the team is doing some sort of

858
00:34:41,990 --> 00:34:39,540
science keeping the space station flying

859
00:34:44,810 --> 00:34:42,000
but it's given us the experience we need

860
00:34:47,329 --> 00:34:44,820
again to go to Mars the longer we're in

861
00:34:49,669 --> 00:34:47,339
Space the more we learn and that

862
00:34:51,889 --> 00:34:49,679
prepares us for that eventual trip away

863
00:34:54,230 --> 00:34:51,899

from Earth and and on out into the solar

864

00:34:56,149 --> 00:34:54,240

system right and we're going deeper than

865

00:34:57,589 --> 00:34:56,159

we have before right now I mean NASA is

866

00:34:59,450 --> 00:34:57,599

no longer the only player we have a lot

867

00:35:01,490 --> 00:34:59,460

of our partners working with us so what

868

00:35:03,290 --> 00:35:01,500

are we doing to support the industry in

869

00:35:04,790 --> 00:35:03,300

low earth orbit well we've got

870

00:35:06,890 --> 00:35:04,800

International partners and we've got

871

00:35:08,390 --> 00:35:06,900

commercial partners and it's great to

872

00:35:10,910 --> 00:35:08,400

see how our commercial partners are

873

00:35:13,609 --> 00:35:10,920

stepping up and taking on more and more

874

00:35:16,609 --> 00:35:13,619

of the things that NASA used to do and

875

00:35:19,250 --> 00:35:16,619

that frees up capacity for NASA to do

876

00:35:21,410 --> 00:35:19,260

new things right so we're not afraid of

877

00:35:23,810 --> 00:35:21,420

them coming in and doing work we welcome

878

00:35:25,790 --> 00:35:23,820

it and we're trying to actually develop

879

00:35:27,310 --> 00:35:25,800

the capability for commercial Partners

880

00:35:30,950 --> 00:35:27,320

to do more

881

00:35:32,510 --> 00:35:30,960

we want them to be able to launch their

882

00:35:35,810 --> 00:35:32,520

own Crews to their own space station

883

00:35:37,370 --> 00:35:35,820

someday and and that's what we think

884

00:35:40,310 --> 00:35:37,380

will follow the International Space

885

00:35:43,550 --> 00:35:40,320

Station our private space stations but

886

00:35:45,589 --> 00:35:43,560

it's it's all about moving NASA further

887

00:35:47,089 --> 00:35:45,599

out into the solar system right we're

888

00:35:49,250 --> 00:35:47,099

all working together to get further than

889

00:35:50,690 --> 00:35:49,260

we have before Ken you know there's a

890

00:35:52,310 --> 00:35:50,700

lot going on with commercial crew right

891

00:35:53,750 --> 00:35:52,320

now so what other Milestones are you

892

00:35:55,970 --> 00:35:53,760

guys looking to check off this year 2010

893

00:35:57,829 --> 00:35:55,980

23. well we've got another crew rotation

894

00:35:59,329 --> 00:35:57,839

later in the year I mean that's every

895

00:36:00,710 --> 00:35:59,339

six months we got to keep the crews

896

00:36:02,630 --> 00:36:00,720

moving to the International Space

897

00:36:04,550 --> 00:36:02,640

Station but then we've got the Starliner

898

00:36:05,990 --> 00:36:04,560

flight coming up here soon so we'll have

899

00:36:08,569 --> 00:36:06,000

a second provider which is really

900

00:36:10,370 --> 00:36:08,579

exciting we'll have two commercial

901
00:36:12,410 --> 00:36:10,380
vehicles that will be able to take us

902
00:36:14,450 --> 00:36:12,420
into low earth orbit operating out of

903
00:36:16,849 --> 00:36:14,460
the United States so we're all eager to

904
00:36:19,069 --> 00:36:16,859
see that commercial flight test mission

905
00:36:20,690 --> 00:36:19,079
or that crude flight test mission

906
00:36:21,710 --> 00:36:20,700
happened this spring right we're all

907
00:36:23,089 --> 00:36:21,720
looking forward to that it's a great

908
00:36:25,250 --> 00:36:23,099
time for commercial crew thank you so

909
00:36:27,470 --> 00:36:25,260
much Ken hey thanks for being here of

910
00:36:30,050 --> 00:36:27,480
course Daryl back to you

911
00:36:31,970 --> 00:36:30,060
thank you Jasmine and Ken and if you're

912
00:36:34,250 --> 00:36:31,980
just joining us you're watching live

913
00:36:36,710 --> 00:36:34,260

coverage of NASA's SpaceX Mission known

914

00:36:38,390 --> 00:36:36,720

as crew six good evening and welcome to

915

00:36:40,849 --> 00:36:38,400

the Kennedy Space Center in Florida I'm

916

00:36:44,050 --> 00:36:40,859

Daryl nail along with a recent flyer on

917

00:36:46,010 --> 00:36:44,060

a SpaceX SpaceX Dragon NASA astronaut

918

00:36:47,630 --> 00:36:46,020

rajatari thanks Daryl good to have you

919

00:36:49,310 --> 00:36:47,640

here thanks yeah it was cool shot there

920

00:36:50,690 --> 00:36:49,320

you got to see if the crew arm at night

921

00:36:52,370 --> 00:36:50,700

that's a really cool view with it all

922

00:36:55,609 --> 00:36:52,380

lit up on the inside that's the their

923

00:36:57,770 --> 00:36:55,619

path from from the tower uh elevator

924

00:36:59,990 --> 00:36:57,780

over into their vehicle and Endeavor so

925

00:37:02,329 --> 00:37:00,000

and it's a beautiful night out we've got

926
00:37:05,569 --> 00:37:02,339
a nice Cool Breeze temperatures are in

927
00:37:08,990 --> 00:37:05,579
the upper 60s and launch weather is

928
00:37:11,089 --> 00:37:09,000
cooperating wonderfully we have only a

929
00:37:13,609 --> 00:37:11,099
five percent chance that there would be

930
00:37:16,609 --> 00:37:13,619
a violation of the weather criteria for

931
00:37:18,410 --> 00:37:16,619
launch and the corridor the ascent

932
00:37:20,630 --> 00:37:18,420
Corridor we're looking pretty good there

933
00:37:22,010 --> 00:37:20,640
too so two areas that need to be good in

934
00:37:23,810 --> 00:37:22,020
order to get exactly this rocket off

935
00:37:25,310 --> 00:37:23,820
yeah a lot of people don't always think

936
00:37:26,390 --> 00:37:25,320
about that it's really easy for

937
00:37:27,410 --> 00:37:26,400
especially the folks that come out to

938
00:37:29,089 --> 00:37:27,420

watch the launch it's really obvious

939

00:37:30,710 --> 00:37:29,099

what the local weather is like but like

940

00:37:32,810 --> 00:37:30,720

you mentioned the the bigger concern

941

00:37:34,790 --> 00:37:32,820

often is the ascent Corridor so we need

942

00:37:36,650 --> 00:37:34,800

to protect uh in the event of having to

943

00:37:39,109 --> 00:37:36,660

abort so the dragon has the ability to

944

00:37:41,810 --> 00:37:39,119

save itself off the rocket if there's a

945

00:37:43,790 --> 00:37:41,820

problem with F9 it can basically fire

946

00:37:45,470 --> 00:37:43,800

off the top and then land in the water

947

00:37:46,910 --> 00:37:45,480

and so that entire area for the first

948

00:37:48,650 --> 00:37:46,920

stage and second stage we look at the

949

00:37:50,329 --> 00:37:48,660

weather look at the winds and the waves

950

00:37:52,430 --> 00:37:50,339

and figure out if that would be safe to

951

00:37:53,810 --> 00:37:52,440

do and have to just make a decision

952

00:37:55,730 --> 00:37:53,820

about that so today like you mentioned

953

00:37:56,690 --> 00:37:55,740

it's looking great but that is trying to

954

00:37:59,390 --> 00:37:56,700

look at the weather for the entire

955

00:38:02,150 --> 00:37:59,400

Atlantic Ocean is a Big Challenge and it

956

00:38:02,990 --> 00:38:02,160

could also yeah so that is not always a

957

00:38:05,930 --> 00:38:03,000

given

958

00:38:08,270 --> 00:38:05,940

and here come our first two astronauts

959

00:38:09,349 --> 00:38:08,280

Stephen and Woody yeah and you can see

960

00:38:10,370 --> 00:38:09,359

there so they're coming around there's

961

00:38:11,630 --> 00:38:10,380

like we mentioned before they're going

962

00:38:12,950 --> 00:38:11,640

to go in groups of two and like you can

963

00:38:15,470 --> 00:38:12,960

see in the far background you can see

964

00:38:17,150 --> 00:38:15,480

Sultan and Andre still back there uh and

965

00:38:18,829 --> 00:38:17,160

then this isn't always an awkward thing

966

00:38:20,870 --> 00:38:18,839

because the suit kind of restrains your

967

00:38:22,550 --> 00:38:20,880

head so I think ever since Bob and Doug

968

00:38:24,530 --> 00:38:22,560

all of us have tried to foolishly look

969

00:38:26,150 --> 00:38:24,540

upwards and you strain your neck but it

970

00:38:27,530 --> 00:38:26,160

looks kind of goofy but yeah but it's

971

00:38:28,670 --> 00:38:27,540

hard not to Waddle look but of course

972

00:38:30,349 --> 00:38:28,680

you want to look up for the rocket but

973

00:38:33,410 --> 00:38:30,359

the uh the suit for a good reason is

974

00:38:34,609 --> 00:38:33,420

meant to restrain you uh so it's uh it

975

00:38:36,770 --> 00:38:34,619

seems like try to create the other ago

976

00:38:38,150 --> 00:38:36,780

we call it the rocket recline back here

977

00:38:39,170 --> 00:38:38,160

at the broadcast maybe we should we

978

00:38:41,450 --> 00:38:39,180

should build chairs out there or

979

00:38:44,990 --> 00:38:41,460

something so you can sit in and lean

980

00:38:46,790 --> 00:38:45,000

back and so that's a rigid area from the

981

00:38:47,690 --> 00:38:46,800

helmet all the way down right and the

982

00:38:49,430 --> 00:38:47,700

reason is because if it was to

983

00:38:52,250 --> 00:38:49,440

pressurize you wouldn't want the helmet

984

00:38:54,109 --> 00:38:52,260

to get so far up that you can't see out

985

00:38:56,270 --> 00:38:54,119

of it anymore so it has to be sewn very

986

00:38:58,250 --> 00:38:56,280

tightly to restrain it when it's under

987

00:38:59,510 --> 00:38:58,260

full pressure but when it's not under

988

00:39:00,770 --> 00:38:59,520

when it's not under full pressure then

989

00:39:02,510 --> 00:39:00,780

it can be hard to lean backwards you can

990

00:39:03,890 --> 00:39:02,520

say Nick keg number ninja number 12

991

00:39:10,430 --> 00:39:03,900

there he'll be going up with the

992

00:39:13,730 --> 00:39:12,589

and I I saw a picture online I don't

993

00:39:14,870 --> 00:39:13,740

know if it was a meme or if it's

994

00:39:16,790 --> 00:39:14,880

actually if they've actually changed the

995

00:39:18,170 --> 00:39:16,800

elevator panel to change the top button

996

00:39:19,490 --> 00:39:18,180

to say space I'm not sure if that I

997

00:39:20,569 --> 00:39:19,500

don't remember it says what do you

998

00:39:22,670 --> 00:39:20,579

recall when you guys I don't think it

999

00:39:24,410 --> 00:39:22,680

said space well when I what I recall was

1000

00:39:26,450 --> 00:39:24,420

it's the num the numbers are the feet of

1001

00:39:29,390 --> 00:39:26,460

the launch pad yeah and we know that the

1002

00:39:30,650 --> 00:39:29,400

255 is the top exactly but maybe someone

1003

00:39:32,990 --> 00:39:30,660

changes to say space that'd be pretty

1004

00:39:34,550 --> 00:39:33,000

cool that would be and I think the one

1005

00:39:37,370 --> 00:39:34,560

on the bottom said Earth I saw that

1006

00:39:40,730 --> 00:39:39,170

so at this point they're off the

1007

00:39:43,069 --> 00:39:40,740

umbilicals off the cooling they uh you

1008

00:39:46,130 --> 00:39:43,079

can see the I think ninja 10 there might

1009

00:39:47,810 --> 00:39:46,140

have the cooling boxes but at this point

1010

00:39:50,630 --> 00:39:47,820

um they've got the visors up so it's not

1011

00:39:55,730 --> 00:39:54,170

and there is where the 255 foot level

1012

00:39:59,450 --> 00:39:55,740

you can see the sign on the door right

1013

00:40:00,950 --> 00:39:59,460

next to the elevator so yep and you can

1014

00:40:02,510 --> 00:40:00,960

see when five stories up and you go up

1015

00:40:04,130 --> 00:40:02,520

pretty quick it does it is a fast ride

1016

00:40:05,690 --> 00:40:04,140

you can see the grading in the floor

1017

00:40:07,190 --> 00:40:05,700

there the reason it's not solid and

1018

00:40:09,410 --> 00:40:07,200

we'll probably get more views of this

1019

00:40:11,030 --> 00:40:09,420

laters uh if there was an emergency

1020

00:40:12,290 --> 00:40:11,040

egress and there's water up there you

1021

00:40:14,569 --> 00:40:12,300

want the water to flow out so that's why

1022

00:40:16,370 --> 00:40:14,579

there's there's holes in the floor and

1023

00:40:19,430 --> 00:40:16,380

our two Mission Specialists now doing

1024

00:40:20,870 --> 00:40:19,440

this we need a chair

1025

00:40:22,370 --> 00:40:20,880

you just need one chair you just switch

1026

00:40:23,690 --> 00:40:22,380

places yeah all right so there's a

1027

00:40:29,329 --> 00:40:23,700

Stephen Woody coming off of the top of

1028

00:40:33,170 --> 00:40:31,430

so we'll split the screen now and on the

1029

00:40:36,290 --> 00:40:33,180

right hand side we have our mission

1030

00:40:39,050 --> 00:40:36,300

Specialists given a fist bump Sultan and

1031

00:40:41,210 --> 00:40:39,060

Andre as they head to the elevator and

1032

00:40:44,089 --> 00:40:41,220

Woody and Stephen commander and pilot

1033

00:40:46,010 --> 00:40:44,099

now going against the Chevrons which are

1034

00:40:47,630 --> 00:40:46,020

there for a purpose exactly so those

1035

00:40:49,849 --> 00:40:47,640

Chevrons are the direction you would go

1036

00:40:51,410 --> 00:40:49,859

if there was an emergency egress so if

1037

00:40:54,290 --> 00:40:51,420

there's any kind of problem on the pad

1038

00:40:56,510 --> 00:40:54,300

the crew is well trained to basically be

1039

00:40:57,710 --> 00:40:56,520

able to egress on their own if if the

1040

00:41:00,290 --> 00:40:57,720

closeout crew is already left and those

1041

00:41:01,550 --> 00:41:00,300

Chevrons are a visual way to see exactly

1042

00:41:03,589 --> 00:41:01,560

where you would go and they take you

1043

00:41:06,530 --> 00:41:03,599

eventually to slide wires which are

1044

00:41:07,910 --> 00:41:06,540

basically some high up zip lines with a

1045

00:41:09,470 --> 00:41:07,920

basket that you get into and then ride

1046

00:41:11,569 --> 00:41:09,480

down to the ground you can see now

1047

00:41:13,250 --> 00:41:11,579

they're standing uh in front of the NASA

1048

00:41:15,109 --> 00:41:13,260

the red NASA worm there the crew arms

1049

00:41:16,550 --> 00:41:15,119

off to the right and then Sultan and

1050

00:41:19,730 --> 00:41:16,560

Andre are just getting the elevator head

1051

00:41:22,430 --> 00:41:19,740

on up those slide wires are on the left

1052

00:41:24,410 --> 00:41:22,440

hand side of your screen in the Box on

1053

00:41:26,089 --> 00:41:24,420

the left and just to the far left of

1054

00:41:27,829 --> 00:41:26,099

that you can start to see a little bit

1055

00:41:33,490 --> 00:41:27,839

of that structure yeah and just see it

1056

00:41:37,250 --> 00:41:35,990

we get to test it at the top getting in

1057

00:41:39,950 --> 00:41:37,260

and then we test it at the bottom

1058

00:41:41,810 --> 00:41:39,960

getting out but just because the first

1059

00:41:43,310 --> 00:41:41,820

time we see it is about a week prior to

1060

00:41:46,550 --> 00:41:43,320

launch the last thing they want to do is

1061

00:41:49,849 --> 00:41:46,560

have us fall out of a slide wire box or

1062

00:41:52,609 --> 00:41:49,859

break a leg a week before we launch

1063

00:41:53,930 --> 00:41:52,619

the sultan and uh Andre getting off the

1064

00:41:56,569 --> 00:41:53,940

elevator and they'll come upstairs and

1065

00:41:58,490 --> 00:41:56,579

join so right now uh Woody and Steve are

1066

00:42:00,770 --> 00:41:58,500

standing at there's a phone up there

1067

00:42:01,970 --> 00:42:00,780

um at the launch pad this is the these

1068

00:42:03,829 --> 00:42:01,980

are the two astronauts in the upper

1069

00:42:05,450 --> 00:42:03,839

right hand correct yep so they're

1070

00:42:07,970 --> 00:42:05,460

they're more than likely calling uh

1071

00:42:09,530 --> 00:42:07,980

family or loved one just to kind of give

1072

00:42:11,329 --> 00:42:09,540

the you know the last I love you before

1073

00:42:12,109 --> 00:42:11,339

uh you have to do it over the rodeo the

1074

00:42:14,810 --> 00:42:12,119

radio

1075

00:42:16,910 --> 00:42:14,820

who'd you call I called my wife uh but a

1076

00:42:17,990 --> 00:42:16,920

a key uh life hack is that you need to

1077

00:42:19,370 --> 00:42:18,000

make sure that the person you're gonna

1078

00:42:21,890 --> 00:42:19,380

call has the phone number up there which

1079

00:42:23,390 --> 00:42:21,900

is for obvious reason guarded um but the

1080

00:42:24,530 --> 00:42:23,400

last thing I want my wife to do is not

1081

00:42:27,050 --> 00:42:24,540

answer the phone because she thought it

1082

00:42:29,329 --> 00:42:27,060

was a Spam call all right

1083

00:42:30,950 --> 00:42:29,339

so get that number in yeah exactly looks

1084

00:42:33,890 --> 00:42:30,960

like we've got a little backup in the

1085

00:42:37,370 --> 00:42:35,870

so the mission specialist will stand by

1086

00:42:39,290 --> 00:42:37,380

and you see they're handing the phone

1087

00:42:40,430 --> 00:42:39,300

over the other uh thing that's going on

1088

00:42:42,109 --> 00:42:40,440

is because they've got their gloves on

1089

00:42:43,910 --> 00:42:42,119

it's hard to actually control the phone

1090

00:42:47,030 --> 00:42:43,920

so one of uh Nick Hague's job is to dial

1091

00:42:51,530 --> 00:42:49,250

well that's helpful yep

1092

00:42:54,050 --> 00:42:51,540

by the way crew 6 is the first of three

1093

00:42:57,109 --> 00:42:54,060

SpaceX Launches on Monday it's going to

1094

00:43:00,170 --> 00:42:57,119

be a busy Monday we got starlink uh off

1095

00:43:01,550 --> 00:43:00,180

the pad 40 on Monday afternoon followed

1096

00:43:04,550 --> 00:43:01,560

by another starlink launch out of

1097

00:43:06,710 --> 00:43:04,560

Vandenberg the pace here at the um Space

1098

00:43:09,829 --> 00:43:06,720

Center has really picked up and that's

1099

00:43:12,710 --> 00:43:09,839

just a testament to how much this place

1100

00:43:15,589 --> 00:43:12,720

has transformed to become a commercial

1101

00:43:17,690 --> 00:43:15,599

Spaceport yeah it is a very neat just

1102

00:43:19,849 --> 00:43:17,700

driving around the candy like just

1103

00:43:21,950 --> 00:43:19,859

construction everywhere you know you see

1104

00:43:23,870 --> 00:43:21,960

trucks with parts of rockets moving

1105

00:43:25,370 --> 00:43:23,880

around just the other day there was a

1106

00:43:27,530 --> 00:43:25,380

booster stage getting carted around so

1107

00:43:30,050 --> 00:43:27,540

there's always something and like you

1108

00:43:31,849 --> 00:43:30,060

said just a it is a exciting time in the

1109

00:43:34,069 --> 00:43:31,859

industry whether it's Artemis you know

1110

00:43:35,750 --> 00:43:34,079

like you said Starliner about to fly a

1111

00:43:38,809 --> 00:43:35,760

crew six launch there's just so much

1112

00:43:46,069 --> 00:43:42,170

tonight though we count down to 1 45 a.m

1113

00:43:47,809 --> 00:43:46,079

and uh I believe three seconds

1114

00:43:50,089 --> 00:43:47,819

if you want to know exactly the second

1115

00:43:51,050 --> 00:43:50,099

it's supposed to lift off 145 in three

1116

00:43:52,970 --> 00:43:51,060

seconds

1117

00:43:54,050 --> 00:43:52,980

in the morning tomorrow start to see

1118

00:43:56,210 --> 00:43:54,060

Stephen what are you going across the

1119

00:43:58,910 --> 00:43:56,220

crew access arm there

1120

00:44:00,589 --> 00:43:58,920

and that's a neat shot courtesy of our

1121

00:44:02,329 --> 00:44:00,599

crew

1122

00:44:04,430 --> 00:44:02,339

in the helicopter

1123

00:44:06,950 --> 00:44:04,440

and here comes Woody and Steve down the

1124

00:44:10,490 --> 00:44:06,960

crew access arm ready to get inside the

1125

00:44:13,370 --> 00:44:11,990

and so you'll see there's a NASA

1126

00:44:14,030 --> 00:44:13,380

meatball there

1127

00:44:15,710 --> 00:44:14,040

um

1128

00:44:17,390 --> 00:44:15,720

with the signatures of all the previous

1129

00:44:19,670 --> 00:44:17,400

crew dragons

1130

00:44:21,530 --> 00:44:19,680

your signature's there it is yep and

1131

00:44:23,750 --> 00:44:21,540

then the uh the SpaceX for the the

1132

00:44:25,010 --> 00:44:23,760

private Mission so they basically uh

1133

00:44:27,109 --> 00:44:25,020

kind of and you'll see I think they're

1134

00:44:28,849 --> 00:44:27,119

about to hand them a Sharpie they are

1135

00:44:29,750 --> 00:44:28,859

this is on the crew checklist now you

1136

00:44:31,190 --> 00:44:29,760

gotta decide if you want to take your

1137

00:44:32,750 --> 00:44:31,200

hands out of the gloves or keep them in

1138

00:44:34,250 --> 00:44:32,760

the glove so it's

1139

00:44:36,109 --> 00:44:34,260

different people prefer different things

1140

00:44:37,609 --> 00:44:36,119

you can you can take your hands in and

1141

00:44:39,170 --> 00:44:37,619

out without breaking the the

1142

00:44:41,450 --> 00:44:39,180

availability of the leaf check but if

1143

00:44:43,430 --> 00:44:41,460

you undo any of the other zippers

1144

00:44:44,630 --> 00:44:43,440

um then you do have to redo the leak

1145

00:44:46,670 --> 00:44:44,640

Jack what you're going to do anyways in

1146

00:44:47,690 --> 00:44:46,680

the vehicle but uh taking your hands in

1147

00:44:49,190 --> 00:44:47,700

and out can just be a little more

1148

00:44:50,690 --> 00:44:49,200

comfortable a little more cooling that

1149

00:44:51,829 --> 00:44:50,700

looks like what Woody's doing exactly

1150

00:44:53,390 --> 00:44:51,839

he's got gloves obviously he's got

1151
00:44:55,550 --> 00:44:53,400
Comfort gloves on there which are

1152
00:44:56,930 --> 00:44:55,560
basically uh just to help with your your

1153
00:44:59,150 --> 00:44:56,940
to absorb some of the sweat and

1154
00:45:00,890 --> 00:44:59,160
perspiration

1155
00:45:05,809 --> 00:45:00,900
you want to make sure you assign this

1156
00:45:09,770 --> 00:45:07,550
there's always no shortage of

1157
00:45:11,089 --> 00:45:09,780
dragonflies as well uh out here in

1158
00:45:13,130 --> 00:45:11,099
Florida and so that's always one of the

1159
00:45:14,870 --> 00:45:13,140
other good luck Omens that the closeout

1160
00:45:16,550 --> 00:45:14,880
here we'll talk about is is having the

1161
00:45:18,349 --> 00:45:16,560
seen a dragonfly come around near the

1162
00:45:20,930 --> 00:45:18,359
white room oh really

1163
00:45:23,630 --> 00:45:20,940

that space is open there there's a

1164

00:45:25,730 --> 00:45:23,640

little bit of a the the the black part

1165

00:45:28,250 --> 00:45:25,740

is kind of like seals up against it but

1166

00:45:29,630 --> 00:45:28,260

there is open air inside the the crew

1167

00:45:31,069 --> 00:45:29,640

access arm

1168

00:45:32,510 --> 00:45:31,079

and you can see they're getting glasses

1169

00:45:33,950 --> 00:45:32,520

positioned so the other thing that the

1170

00:45:35,150 --> 00:45:33,960

closeout crew is helping along they've

1171

00:45:37,370 --> 00:45:35,160

got some crew personal items like

1172

00:45:38,329 --> 00:45:37,380

glasses uh watches if they've got the

1173

00:45:39,710 --> 00:45:38,339

watches they're gonna wear on the

1174

00:45:41,030 --> 00:45:39,720

outside of the the suit this is the kind

1175

00:45:42,650 --> 00:45:41,040

of time would start donning that kind of

1176

00:45:43,730 --> 00:45:42,660

stuff uh if they'd have like wrist

1177

00:45:45,410 --> 00:45:43,740

mirrors and anything like that they'll

1178

00:45:47,930 --> 00:45:45,420

start getting that on now and as well as

1179

00:45:50,270 --> 00:45:47,940

once they're inside the capsule

1180

00:45:52,370 --> 00:45:50,280

a white room is a term first used during

1181

00:45:54,349 --> 00:45:52,380

the Gemini era

1182

00:45:56,210 --> 00:45:54,359

literally for the description of the

1183

00:45:57,589 --> 00:45:56,220

color of the room but it's not really

1184

00:45:59,030 --> 00:45:57,599

much of a room right it's pretty tight

1185

00:45:59,930 --> 00:45:59,040

yeah it's more of just the Rev exactly

1186

00:46:01,849 --> 00:45:59,940

it's more of a cleaner when you see

1187

00:46:03,349 --> 00:46:01,859

they're grabbing name tags there

1188

00:46:05,270 --> 00:46:03,359

um so they'll basically kind of a

1189

00:46:06,950 --> 00:46:05,280

tradition that uh started with the first

1190

00:46:08,510 --> 00:46:06,960

Dragon launch of grabbing the some of

1191

00:46:10,609 --> 00:46:08,520

the closeout Crews name tags post

1192

00:46:11,870 --> 00:46:10,619

persons people who haven't either worked

1193

00:46:13,730 --> 00:46:11,880

on the closeout crew before or haven't

1194

00:46:15,170 --> 00:46:13,740

had their name tag floating space and

1195

00:46:16,849 --> 00:46:15,180

then they'll fly it and Endeavor with

1196

00:46:17,930 --> 00:46:16,859

them and bring it on back so they have

1197

00:46:19,849 --> 00:46:17,940

something to remember the flight by

1198

00:46:22,730 --> 00:46:19,859

that's really neat for the SpaceX team

1199

00:46:23,930 --> 00:46:22,740

yep yeah it is a cool tradition and uh

1200

00:46:25,970 --> 00:46:23,940

the hardest thing is from everybody

1201
00:46:27,710 --> 00:46:25,980
where you put them all after six months

1202
00:46:28,550 --> 00:46:27,720
of space and a moment of panic when we

1203
00:46:30,650 --> 00:46:28,560
came back like what do we do with the

1204
00:46:33,770 --> 00:46:30,660
name tags

1205
00:46:36,530 --> 00:46:33,780
did we leave them in space

1206
00:46:38,210 --> 00:46:36,540
our mission specialist now having a

1207
00:46:39,950 --> 00:46:38,220
telephone conversation with their family

1208
00:46:42,109 --> 00:46:39,960
or loved ones

1209
00:46:45,170 --> 00:46:42,119
standing by getting ready to make their

1210
00:46:46,730 --> 00:46:45,180
walk down the crew access arm the other

1211
00:46:48,890 --> 00:46:46,740
key thing Nick Hague has to know how to

1212
00:46:49,790 --> 00:46:48,900
do is dial uh internationally on that

1213
00:46:52,790 --> 00:46:49,800

phone

1214

00:46:55,550 --> 00:46:52,800

especially with uh yeah oh right if it's

1215

00:46:57,170 --> 00:46:55,560

a government phone it's not always easy

1216

00:46:59,089 --> 00:46:57,180

we had to practice

1217

00:47:01,130 --> 00:46:59,099

core on countdown and there was a good

1218

00:47:03,650 --> 00:47:01,140

address rehearsal

1219

00:47:05,450 --> 00:47:03,660

we remain on schedule

1220

00:47:06,650 --> 00:47:05,460

to hear the call from the corps that

1221

00:47:09,230 --> 00:47:06,660

they're on schedule

1222

00:47:11,530 --> 00:47:09,240

so normally uh so the with the crew

1223

00:47:13,970 --> 00:47:11,540

timeline like what we train too is about

1224

00:47:15,530 --> 00:47:13,980

235 prior to launches when the crew

1225

00:47:18,710 --> 00:47:15,540

should be ingressing so you can see

1226

00:47:20,030 --> 00:47:18,720

we're we're right right on timeline and

1227

00:47:22,550 --> 00:47:20,040

they always build in extra time of

1228

00:47:24,349 --> 00:47:22,560

course for you know the closer you get

1229

00:47:27,170 --> 00:47:24,359

to launch the less extra time you have

1230

00:47:30,650 --> 00:47:27,180

but they try to build in uh time to you

1231

00:47:40,490 --> 00:47:32,510

so the commander and pilot take their

1232

00:47:44,990 --> 00:47:43,609

on Deck are the mission specialists

1233

00:47:46,190 --> 00:47:45,000

yeah you can see they're just starting

1234

00:47:54,770 --> 00:47:46,200

to come across the correct access arm

1235

00:48:00,109 --> 00:47:57,410

and here comes Sultan and Andre Dragon

1236

00:48:03,109 --> 00:48:00,119

SpaceX we're gonna be triggering an

1237

00:48:05,150 --> 00:48:03,119

onboard manual alert uh you'll see this

1238

00:48:08,569 --> 00:48:05,160

temporarily no Corrections required so

1239

00:48:10,010 --> 00:48:08,579

you can hear the core talking to Steve

1240

00:48:11,510 --> 00:48:10,020

so when they first get in this is doing

1241

00:48:12,589 --> 00:48:11,520

an initial check just to tell them in

1242

00:48:14,150 --> 00:48:12,599

the seat there'll be more formal

1243

00:48:15,109 --> 00:48:14,160

contracts later and once you hear the

1244

00:48:17,150 --> 00:48:15,119

core tell them that they're gonna

1245

00:48:18,650 --> 00:48:17,160

they're gonna see an enunciation of an

1246

00:48:20,750 --> 00:48:18,660

alert but there's nothing required so

1247

00:48:21,950 --> 00:48:20,760

they're just giving a heads up so that

1248

00:48:24,290 --> 00:48:21,960

the crew is not surprised when they see

1249

00:48:29,630 --> 00:48:26,770

Sultan was pretty pumped as it came down

1250

00:48:32,569 --> 00:48:29,640

he was moving pumping his fists you know

1251
00:48:34,069 --> 00:48:32,579
waving and uh gave his flag on his uh

1252
00:48:39,109 --> 00:48:34,079
shoulder or tap

1253
00:48:43,910 --> 00:48:41,930
he's going to go with the gloves

1254
00:48:45,770 --> 00:48:43,920
kind of signs don't get any Sharpie on

1255
00:48:47,390 --> 00:48:45,780
the outside

1256
00:48:49,069 --> 00:48:47,400
in Dragon SpaceX we were actually able

1257
00:48:51,530 --> 00:48:49,079
to complete that test without triggering

1258
00:48:55,130 --> 00:48:51,540
the onboard alert so uh you can ignore

1259
00:48:55,140 --> 00:49:03,890
thanks for that

1260
00:49:07,609 --> 00:49:05,630
so what the the ninjas are doing there

1261
00:49:10,370 --> 00:49:07,619
is making sure that the the suit that's

1262
00:49:12,589 --> 00:49:10,380
that that white outer Dragon C3 contract

1263
00:49:13,670 --> 00:49:12,599

that's what are you checking in

1264

00:49:15,650 --> 00:49:13,680

I got you loud and clear what do you

1265

00:49:18,470 --> 00:49:15,660

help me

1266

00:49:20,510 --> 00:49:18,480

I have it the same good morning Arthur

1267

00:49:24,710 --> 00:49:20,520

good morning and uh for your awareness

1268

00:49:30,170 --> 00:49:28,069

I love it that makes us so happy

1269

00:49:31,430 --> 00:49:30,180

so Arthur one of the cores of SpaceX and

1270

00:49:32,690 --> 00:49:31,440

uh usually the crews have pretty good

1271

00:49:34,010 --> 00:49:32,700

relationships with all the cores and the

1272

00:49:34,849 --> 00:49:34,020

MDS because we've worked with them so

1273

00:49:36,950 --> 00:49:34,859

much

1274

00:49:38,390 --> 00:49:36,960

um so obviously Arthur has either lost

1275

00:49:41,089 --> 00:49:38,400

some kind of vet or made some kind of

1276

00:49:42,410 --> 00:49:41,099

bet to have to wear some kind of shirt

1277

00:49:44,809 --> 00:49:42,420

um

1278

00:49:46,370 --> 00:49:44,819

maybe would we see mccx later we'll get

1279

00:49:47,870 --> 00:49:46,380

a peek at what he's got odd

1280

00:49:49,910 --> 00:49:47,880

you can see Sultan's grabbing some name

1281

00:49:51,710 --> 00:49:49,920

tags there as well

1282

00:49:53,270 --> 00:49:51,720

the Practical side of that is uh it

1283

00:49:54,470 --> 00:49:53,280

would be great if one person grabbed all

1284

00:49:56,270 --> 00:49:54,480

the name tags but they don't fit those

1285

00:49:59,089 --> 00:49:56,280

those packs you have on your leg are so

1286

00:50:01,730 --> 00:49:59,099

tightly packed with checklist Pages uh

1287

00:50:03,589 --> 00:50:01,740

some emergency meds if you need those uh

1288

00:50:04,970 --> 00:50:03,599

things like that that you really you

1289

00:50:06,109 --> 00:50:04,980

actually distribute those name tags

1290

00:50:08,089 --> 00:50:06,119

amongst a few different people in the

1291

00:50:10,370 --> 00:50:08,099

crew so you don't bust the zipper on the

1292

00:50:11,809 --> 00:50:10,380

on the pack I see and that's what uh so

1293

00:50:13,490 --> 00:50:11,819

you can see the kids exactly yeah

1294

00:50:14,210 --> 00:50:13,500

exactly there's a little interior pocket

1295

00:50:15,650 --> 00:50:14,220

there

1296

00:50:17,030 --> 00:50:15,660

um so like a wall like a watch or

1297

00:50:18,290 --> 00:50:17,040

glasses case or anything like things

1298

00:50:19,370 --> 00:50:18,300

like that or what would be going in

1299

00:50:21,050 --> 00:50:19,380

there at this point well there's some

1300

00:50:22,069 --> 00:50:21,060

motivation by the SpaceX crew to make

1301

00:50:25,309 --> 00:50:22,079

sure it gets in the right place right

1302

00:50:27,050 --> 00:50:25,319

exactly nice and tight

1303

00:50:28,670 --> 00:50:27,060

you may have noticed something folks

1304

00:50:31,069 --> 00:50:28,680

that's a little different than even when

1305

00:50:32,390 --> 00:50:31,079

you flew Raja and that is that SpaceX is

1306

00:50:35,329 --> 00:50:32,400

now doing some of the checks and

1307

00:50:37,970 --> 00:50:35,339

operations in parallel we heard the

1308

00:50:40,069 --> 00:50:37,980

communication checks that's going to

1309

00:50:42,170 --> 00:50:40,079

reduce the total time by about 27

1310

00:50:44,510 --> 00:50:42,180

minutes but it will still be included in

1311

00:50:47,390 --> 00:50:44,520

the nominal timeline for troubleshooting

1312

00:50:49,670 --> 00:50:47,400

so for example when they perform the

1313

00:50:52,010 --> 00:50:49,680

seat rotation the core Comm check the

1314

00:50:54,470 --> 00:50:52,020

suit lead checks they'll also perform

1315

00:50:56,690 --> 00:50:54,480

the side hatch inspection and then we

1316

00:50:59,150 --> 00:50:56,700

started hearing those Comm checks as

1317

00:51:01,250 --> 00:50:59,160

even the mission Specialists are

1318

00:51:03,470 --> 00:51:01,260

starting to Ingress exactly yeah so I

1319

00:51:05,870 --> 00:51:03,480

think at you know every time we do a

1320

00:51:07,370 --> 00:51:05,880

launch we learn from it so as as much as

1321

00:51:09,170 --> 00:51:07,380

we like to think things are routine

1322

00:51:11,690 --> 00:51:09,180

we're always learning and trying to

1323

00:51:13,069 --> 00:51:11,700

improve from those and in this case

1324

00:51:14,530 --> 00:51:13,079

trying to be a little more efficient you

1325

00:51:17,210 --> 00:51:14,540

know looking for places where we can

1326
00:51:19,430 --> 00:51:17,220
combine efforts at the same time do some

1327
00:51:20,870 --> 00:51:19,440
operations in parallel and save some

1328
00:51:22,790 --> 00:51:20,880
time because you never know you might

1329
00:51:24,470 --> 00:51:22,800
get some fod on the seal and you might

1330
00:51:26,089 --> 00:51:24,480
need some extra time it's always nice to

1331
00:51:28,730 --> 00:51:26,099
nice to be ahead of the timeline versus

1332
00:51:29,930 --> 00:51:28,740
Russian to catch up especially uh you

1333
00:51:31,430 --> 00:51:29,940
know when you've got an instantaneous

1334
00:51:34,370 --> 00:51:31,440
launch window you want to preserve as

1335
00:51:36,530 --> 00:51:34,380
much margin as you can

1336
00:51:41,089 --> 00:51:36,540
so you can see Sultan and Andre getting

1337
00:51:45,710 --> 00:51:42,770
well the real danger is bumping your

1338
00:51:47,510 --> 00:51:45,720

helmet visor as you uh it's you can see

1339

00:51:49,250 --> 00:51:47,520

it's easier for the the ninjas to get in

1340

00:51:50,510 --> 00:51:49,260

there um but wearing that suit and again

1341

00:51:52,970 --> 00:51:50,520

with the kind of like limited head

1342

00:51:55,609 --> 00:51:52,980

Mobility it's easy to forget that you've

1343

00:51:57,049 --> 00:51:55,619

got a giant ball of attack to your top

1344

00:51:58,370 --> 00:51:57,059

of your head and then bump that visor

1345

00:52:00,530 --> 00:51:58,380

into something

1346

00:52:04,190 --> 00:52:00,540

I like that shot that SpaceX showed us

1347

00:52:06,109 --> 00:52:04,200

going into dragon with the the closeout

1348

00:52:08,270 --> 00:52:06,119

team following right behind the

1349

00:52:10,430 --> 00:52:08,280

astronauts yeah pretty good view of

1350

00:52:12,230 --> 00:52:10,440

Andre's uh armrest there and you can see

1351
00:52:14,630 --> 00:52:12,240
the buttons on there and so you can see

1352
00:52:16,910 --> 00:52:14,640
that one at the bottom center your

1353
00:52:18,290 --> 00:52:16,920
screen with the little white dot so

1354
00:52:20,270 --> 00:52:18,300
that's actually a little velcro button

1355
00:52:21,589 --> 00:52:20,280
and so the reason we do that is all

1356
00:52:22,849 --> 00:52:21,599
those buttons would normally feel the

1357
00:52:24,890 --> 00:52:22,859
same so you put a little piece of Velcro

1358
00:52:26,569 --> 00:52:24,900
on that one and that way even through

1359
00:52:28,069 --> 00:52:26,579
the suit you can have the tactile feel

1360
00:52:29,930 --> 00:52:28,079
to know that's the push to talk button

1361
00:52:31,250 --> 00:52:29,940
in case you're like just like if you

1362
00:52:32,690 --> 00:52:31,260
were typing on the keyboard once you

1363
00:52:33,829 --> 00:52:32,700

find the space bar and you can Orient

1364

00:52:35,870 --> 00:52:33,839

your fingers that's the same thing for

1365

00:52:37,069 --> 00:52:35,880

that once you find that button then you

1366

00:52:38,390 --> 00:52:37,079

know where the other buttons are without

1367

00:52:41,089 --> 00:52:38,400

having to look down to see them but

1368

00:52:42,589 --> 00:52:41,099

you've got a volume a Vox which is the

1369

00:52:45,049 --> 00:52:42,599

sensitivity of your mic and then the

1370

00:52:47,329 --> 00:52:45,059

push to talk

1371

00:52:49,849 --> 00:52:47,339

when the crew climbs aboard Dragon it is

1372

00:52:51,650 --> 00:52:49,859

referred to as crew Ingress

1373

00:52:53,569 --> 00:52:51,660

the term Ingress is used when crew

1374

00:52:55,910 --> 00:52:53,579

members are getting into a spacecraft or

1375

00:52:57,650 --> 00:52:55,920

airlock while egress means just the

1376

00:52:59,510 --> 00:52:57,660

opposite they're exiting

1377

00:53:01,370 --> 00:52:59,520

prior to getting on board the crew

1378

00:53:02,870 --> 00:53:01,380

completed a foreign object debris check

1379

00:53:05,150 --> 00:53:02,880

or fog check

1380

00:53:06,770 --> 00:53:05,160

that means they basically had to be

1381

00:53:08,870 --> 00:53:06,780

inspected and this is what you know the

1382

00:53:10,790 --> 00:53:08,880

closeout crew was doing checking them

1383

00:53:12,410 --> 00:53:10,800

for substance or debris that isn't

1384

00:53:14,750 --> 00:53:12,420

supposed to be on them or their suits

1385

00:53:16,910 --> 00:53:14,760

which could potentially cause damage to

1386

00:53:18,650 --> 00:53:16,920

dragon and that's also why the crew

1387

00:53:19,910 --> 00:53:18,660

wears covers on their boots we didn't

1388

00:53:22,670 --> 00:53:19,920

see it because the shot was kind of high

1389

00:53:24,410 --> 00:53:22,680

but they had them on they also have uh

1390

00:53:27,109 --> 00:53:24,420

you know their umbilical port on their

1391

00:53:28,609 --> 00:53:27,119

suits those covers get removed they have

1392

00:53:31,130 --> 00:53:28,619

covers on top of them before they enter

1393

00:53:33,290 --> 00:53:31,140

the spacecraft and you can see them

1394

00:53:34,790 --> 00:53:33,300

right there where they even you go in

1395

00:53:37,190 --> 00:53:34,800

and just plug right you're right into

1396

00:53:38,930 --> 00:53:37,200

your armrest right yep exactly so that

1397

00:53:40,970 --> 00:53:38,940

umbilical on their right thigh

1398

00:53:42,770 --> 00:53:40,980

essentially is is that is that umbilical

1399

00:53:44,329 --> 00:53:42,780

and you mentioned that the boot covers

1400

00:53:46,190 --> 00:53:44,339

all that is a precaution you can see

1401
00:53:47,690 --> 00:53:46,200
they're wearing gloves the closeout crew

1402
00:53:49,250 --> 00:53:47,700
as it is essentially a clean room like

1403
00:53:50,569 --> 00:53:49,260
this the man the capsules built in a

1404
00:53:52,130 --> 00:53:50,579
clean room refurbished in a clean room

1405
00:53:53,569 --> 00:53:52,140
and even though it's out on the launch

1406
00:53:55,190 --> 00:53:53,579
pad we still have to maintain the

1407
00:53:57,349 --> 00:53:55,200
Integrity of that it's the last thing

1408
00:53:59,450 --> 00:53:57,359
you want to do is have something

1409
00:54:01,190 --> 00:53:59,460
floating around the the capsule

1410
00:54:03,589 --> 00:54:01,200
especially once in microgravity that can

1411
00:54:05,270 --> 00:54:03,599
either get ingested in hail cause an eye

1412
00:54:07,490 --> 00:54:05,280
injury or damage something

1413
00:54:09,950 --> 00:54:07,500

and the foreign object debris Raja

1414

00:54:11,510 --> 00:54:09,960

actually the prevention of it begins all

1415

00:54:13,250 --> 00:54:11,520

the way back in Hawthorne before the

1416

00:54:14,990 --> 00:54:13,260

spacecraft leaves SpaceX headquarters

1417

00:54:17,870 --> 00:54:15,000

it's carefully controlled all the way

1418

00:54:20,089 --> 00:54:17,880

through launch day and then until we

1419

00:54:22,730 --> 00:54:20,099

will see in just a few the hatch is

1420

00:54:25,069 --> 00:54:22,740

closed exactly yeah it's uh the last

1421

00:54:27,230 --> 00:54:25,079

thing you want is anything loose in a

1422

00:54:28,849 --> 00:54:27,240

spacecraft and so it is from the exactly

1423

00:54:30,290 --> 00:54:28,859

from the time they build the components

1424

00:54:32,630 --> 00:54:30,300

everything is very very tightly

1425

00:54:34,730 --> 00:54:32,640

controlled and accounted for well the

1426

00:54:36,530 --> 00:54:34,740

closeout crew is collecting them in

1427

00:54:38,630 --> 00:54:36,540

Comcheck

1428

00:54:42,230 --> 00:54:38,640

you see the next com check there

1429

00:54:49,790 --> 00:54:42,240

loud and clear C1 how me

1430

00:54:55,190 --> 00:54:52,910

the sutex are there inside the

1431

00:54:56,750 --> 00:54:55,200

spacecraft with the astronauts just in

1432

00:54:59,150 --> 00:54:56,760

case they need a hand and that's exactly

1433

00:55:01,910 --> 00:54:59,160

what we see happening right now exactly

1434

00:55:03,349 --> 00:55:01,920

yep and uh so yeah it's a mix of Crews

1435

00:55:05,150 --> 00:55:03,359

strapping themselves in but then

1436

00:55:07,010 --> 00:55:05,160

generally the closeout crew is going to

1437

00:55:09,770 --> 00:55:07,020

cinch down the shoulder straps and just

1438

00:55:11,990 --> 00:55:09,780

make sure you're really really secure

1439

00:55:13,490 --> 00:55:12,000

it's

1440

00:55:15,230 --> 00:55:13,500

you know when you see them moving in the

1441

00:55:16,670 --> 00:55:15,240

space you'll see uh during launch like

1442

00:55:18,170 --> 00:55:16,680

it doesn't look like they're moving

1443

00:55:19,370 --> 00:55:18,180

because they are so tightly strapped in

1444

00:55:23,150 --> 00:55:19,380

but there's a whole lot happening to the

1445

00:55:25,190 --> 00:55:23,160

vehicle right the vibration exactly

1446

00:55:27,530 --> 00:55:25,200

the umbilicals allow the crew to have

1447

00:55:30,170 --> 00:55:27,540

comms through the suit air to help keep

1448

00:55:32,690 --> 00:55:30,180

them cool as well as nitrox for suit

1449

00:55:35,690 --> 00:55:32,700

pressurization which is similar to what

1450

00:55:37,970 --> 00:55:35,700

scuba divers use yep

1451
00:55:39,589 --> 00:55:37,980
and you can see uh on Woodies you can

1452
00:55:40,970 --> 00:55:39,599
see now on his left knee is that Satchel

1453
00:55:43,309 --> 00:55:40,980
I was talking about so that's like a

1454
00:55:46,670 --> 00:55:43,319
little it's a kind of kneeboard card on

1455
00:55:48,170 --> 00:55:46,680
it but inside that is where the iPads

1456
00:55:50,150 --> 00:55:48,180
like so they have iPads that have backup

1457
00:55:52,490 --> 00:55:50,160
procedures on them you also have some

1458
00:55:54,290 --> 00:55:52,500
cards you can write on procedures on the

1459
00:55:58,069 --> 00:55:54,300
inside and kind of just a mix of

1460
00:56:00,230 --> 00:55:58,079
different Olympic suits

1461
00:56:05,049 --> 00:56:00,240
it's Andres Comcheck it sounds like yep

1462
00:56:05,059 --> 00:56:08,990
thank you

1463
00:56:13,490 --> 00:56:10,670

there's a little delay between the audio

1464

00:56:15,470 --> 00:56:13,500

coming from the astronauts yeah yeah you

1465

00:56:16,790 --> 00:56:15,480

can see what he's zipping in so the

1466

00:56:17,750 --> 00:56:16,800

those two layers I was talking about the

1467

00:56:19,309 --> 00:56:17,760

seat before you can see there's an

1468

00:56:20,510 --> 00:56:19,319

orange colored zipper and a white zipper

1469

00:56:22,010 --> 00:56:20,520

and that's the the Orange is the

1470

00:56:23,510 --> 00:56:22,020

pressure garment zipper and the white is

1471

00:56:25,490 --> 00:56:23,520

the restraint zipper that's why there's

1472

00:56:26,930 --> 00:56:25,500

two colors and so what he's doing is

1473

00:56:28,490 --> 00:56:26,940

looking to make sure and he's showing

1474

00:56:30,230 --> 00:56:28,500

the closeout crew that he's getting a

1475

00:56:32,329 --> 00:56:30,240

visual inspection there's a white tooth

1476

00:56:33,710 --> 00:56:32,339

on the last piece of the zipper and

1477

00:56:35,210 --> 00:56:33,720

that's what he's visually verifying is

1478

00:56:36,230 --> 00:56:35,220

he can see that white tooth and that

1479

00:56:37,910 --> 00:56:36,240

makes you have a good seal so that's

1480

00:56:39,410 --> 00:56:37,920

what they're doing right now is uh

1481

00:56:40,670 --> 00:56:39,420

basically it's a two-person check so

1482

00:56:42,109 --> 00:56:40,680

everything's a checklist and anything

1483

00:56:44,210 --> 00:56:42,119

critical you always want to get two sets

1484

00:56:46,370 --> 00:56:44,220

of eyes on and the suit's primary

1485

00:56:48,349 --> 00:56:46,380

function is to protect the crew in the

1486

00:56:50,089 --> 00:56:48,359

event of a cabin depressurization right

1487

00:56:52,010 --> 00:56:50,099

exactly the pressure and like you

1488

00:56:53,150 --> 00:56:52,020

mentioned the nitrox uh flows to it to

1489

00:56:54,650 --> 00:56:53,160

pressurize the suit in the event that

1490

00:56:55,790 --> 00:56:54,660

happens so there's there's a cool shot

1491

00:56:57,890 --> 00:56:55,800

from the outside yeah how about that

1492

00:56:59,270 --> 00:56:57,900

that's beautiful coming from our Kennedy

1493

00:57:00,650 --> 00:56:59,280

helicopter

1494

00:57:02,630 --> 00:57:00,660

yeah so you can see the black part of

1495

00:57:04,069 --> 00:57:02,640

the trunk which is the section below the

1496

00:57:06,470 --> 00:57:04,079

capsule that's the solar panels which

1497

00:57:08,150 --> 00:57:06,480

you which is kind of cool to see

1498

00:57:09,530 --> 00:57:08,160

uh most of the time in manufacturing

1499

00:57:10,849 --> 00:57:09,540

that's covered up with these protective

1500

00:57:11,990 --> 00:57:10,859

panels so it's not really until it gets

1501
00:57:13,970 --> 00:57:12,000
out here to the pad that you get to see

1502
00:57:17,450 --> 00:57:13,980
it like that you can see the guy wires

1503
00:57:19,910 --> 00:57:17,460
that lead up to the top of the tower

1504
00:57:22,849 --> 00:57:19,920
our helicopters are up there

1505
00:57:25,309 --> 00:57:22,859
performing a important role and that is

1506
00:57:28,490 --> 00:57:25,319
security flying all around the area and

1507
00:57:30,290 --> 00:57:28,500
making sure that nothing bad would

1508
00:57:31,430 --> 00:57:30,300
happen from anybody who would want to

1509
00:57:33,589 --> 00:57:31,440
harm

1510
00:57:35,630 --> 00:57:33,599
or interfere in any way with this launch

1511
00:57:37,370 --> 00:57:35,640
and so we have also have assets out in

1512
00:57:39,170 --> 00:57:37,380
the ocean as well

1513
00:57:40,549 --> 00:57:39,180

you can see over in between Woody and

1514

00:57:42,770 --> 00:57:40,559

Andre you can see the stickers of

1515

00:57:43,970 --> 00:57:42,780

previous Crews so important to note that

1516

00:57:46,069 --> 00:57:43,980

one of the the cool things about

1517

00:57:47,870 --> 00:57:46,079

commercial crew and the the both the

1518

00:57:49,790 --> 00:57:47,880

dragon and the Starliner that the

1519

00:57:51,230 --> 00:57:49,800

capsules get reused and so you can see

1520

00:57:53,510 --> 00:57:51,240

that Crews have flown before have left

1521

00:57:55,609 --> 00:57:53,520

their their sticker behind so ours is up

1522

00:57:57,290 --> 00:57:55,619

on endurance up in space right now and

1523

00:58:01,250 --> 00:57:57,300

the three crews that have been in

1524

00:58:05,270 --> 00:58:03,230

and there are four seats as we see there

1525

00:58:07,609 --> 00:58:05,280

and they are numbered one to four from

1526

00:58:09,710 --> 00:58:07,619

right to left when looking at the seats

1527

00:58:12,410 --> 00:58:09,720

from the hatch so all the way in the far

1528

00:58:13,430 --> 00:58:12,420

right will be Andre fettyev he's in seat

1529

00:58:15,770 --> 00:58:13,440

one

1530

00:58:17,870 --> 00:58:15,780

sorry in the far left correction he's

1531

00:58:20,510 --> 00:58:17,880

the one motioning with his hand right

1532

00:58:23,089 --> 00:58:20,520

now in seat two

1533

00:58:25,609 --> 00:58:23,099

moving across to the right

1534

00:58:27,770 --> 00:58:25,619

that's Woody hoberg in the pilot seat

1535

00:58:29,990 --> 00:58:27,780

and just to

1536

00:58:32,270 --> 00:58:30,000

the next astronaut to the right that's

1537

00:58:34,730 --> 00:58:32,280

Stephen Boeing the Commander in seat

1538

00:58:48,890 --> 00:58:34,740

three and then at the far right is

1539

00:58:51,829 --> 00:58:50,030

all right kind of giving some last

1540

00:58:53,329 --> 00:58:51,839

minute handshakes here closeout crew

1541

00:58:55,250 --> 00:58:53,339

doing some fist bumps

1542

00:58:57,589 --> 00:58:55,260

at some point they'll probably uh get a

1543

00:58:59,630 --> 00:58:57,599

photo as my guess

1544

00:59:00,950 --> 00:58:59,640

you become close with the crew you do

1545

00:59:03,109 --> 00:59:00,960

yeah like I said you know these people

1546

00:59:04,069 --> 00:59:03,119

like it it's actually really cool by the

1547

00:59:05,870 --> 00:59:04,079

time you're at the end of The Sim

1548

00:59:07,849 --> 00:59:05,880

campaign you you can tell just by the

1549

00:59:09,289 --> 00:59:07,859

tone of someone's voice uh you know

1550

00:59:10,730 --> 00:59:09,299

before you even hear what the problem is

1551
00:59:13,309 --> 00:59:10,740
or what the thing isn't a Sam you know

1552
00:59:16,609 --> 00:59:13,319
okay this is good or bad by the way they

1553
00:59:20,569 --> 00:59:18,470
well we're ready for some social

1554
00:59:22,430 --> 00:59:20,579
questions we mentioned at the top of the

1555
00:59:24,170 --> 00:59:22,440
show that we want to take your questions

1556
00:59:26,089 --> 00:59:24,180
throughout this show and while we've got

1557
00:59:28,670 --> 00:59:26,099
a little moment here while the

1558
00:59:31,250 --> 00:59:28,680
astronauts and Cosmonaut are settled

1559
00:59:33,890 --> 00:59:31,260
into their seats inside the Dragon

1560
00:59:36,950 --> 00:59:33,900
uh we want to check in and uh take a

1561
00:59:40,130 --> 00:59:36,960
question this comes from sotex rangerman

1562
00:59:43,730 --> 00:59:40,140
what time does the crew wake up for this

1563
00:59:45,349 --> 00:59:43,740

late night launch so actually they uh to

1564

00:59:46,670 --> 00:59:45,359

them it seems like the day even though

1565

00:59:49,309 --> 00:59:46,680

it's dark out because we do a thing

1566

00:59:51,349 --> 00:59:49,319

called Sleep shifting so once they set

1567

00:59:53,450 --> 00:59:51,359

the launch time then the entire schedule

1568

00:59:54,710 --> 00:59:53,460

even as far back as when they're in

1569

00:59:56,089 --> 00:59:54,720

quarantine when they're Johnson Space

1570

00:59:58,250 --> 00:59:56,099

Center they start to change the schedule

1571

00:59:59,690 --> 00:59:58,260

of the crew to shift their circadian

1572

01:00:01,309 --> 00:59:59,700

rhythm and it's a blend of the launch

1573

01:00:02,569 --> 01:00:01,319

time but the other thing is we don't

1574

01:00:03,470 --> 01:00:02,579

completely shift it because they also

1575

01:00:06,230 --> 01:00:03,480

need to when they get to the space

1576

01:00:09,589 --> 01:00:06,240

station we run on GMT or Zulu time and

1577

01:00:11,150 --> 01:00:09,599

so the there's the flight docks we've

1578

01:00:12,950 --> 01:00:11,160

got a long history of working with folks

1579

01:00:14,510 --> 01:00:12,960

who understand sleep patterns to finding

1580

01:00:16,789 --> 01:00:14,520

out basically what is the optimum blend

1581

01:00:17,870 --> 01:00:16,799

between launch time and when you show up

1582

01:00:20,390 --> 01:00:17,880

to the space station you don't want to

1583

01:00:21,829 --> 01:00:20,400

have to then shift your body again so we

1584

01:00:24,109 --> 01:00:21,839

kind of pick something in between so it

1585

01:00:25,430 --> 01:00:24,119

varies depending on that is I guess they

1586

01:00:27,230 --> 01:00:25,440

answer that question so it could be

1587

01:00:30,230 --> 01:00:27,240

maybe five six hours prior eight hours

1588

01:00:32,450 --> 01:00:30,240

prior and it has to do with making that

1589

01:00:34,309 --> 01:00:32,460

right compromise of crew awake time

1590

01:00:35,510 --> 01:00:34,319

versus trying to get their body clocks

1591

01:00:37,250 --> 01:00:35,520

on the right thing but even in crew

1592

01:00:38,990 --> 01:00:37,260

quarters for example we have all the the

1593

01:00:40,970 --> 01:00:39,000

rooms have different switches for banks

1594

01:00:43,250 --> 01:00:40,980

of light and so you can have like low

1595

01:00:46,609 --> 01:00:43,260

light or like full bright light and sort

1596

01:00:48,170 --> 01:00:46,619

of try to sync your body to that but my

1597

01:00:50,150 --> 01:00:48,180

guess is today probably like sixish

1598

01:00:52,670 --> 01:00:50,160

hours prior they were up I think most

1599

01:00:54,770 --> 01:00:52,680

people that were supporting uh including

1600

01:00:57,230 --> 01:00:54,780

us took a nap this afternoon so I think

1601
01:00:59,329 --> 01:00:57,240
the crew did the same and then woke up

1602
01:01:00,829 --> 01:00:59,339
probably about six hours prior to start

1603
01:01:02,930 --> 01:01:00,839
start the prep

1604
01:01:04,250 --> 01:01:02,940
and your flight doctors help with this

1605
01:01:05,930 --> 01:01:04,260
right because this is something that's

1606
01:01:08,390 --> 01:01:05,940
very calculated exactly in terms of

1607
01:01:10,010 --> 01:01:08,400
Shifting and they absolutely do yep and

1608
01:01:11,569 --> 01:01:10,020
so they actually build a hole that's

1609
01:01:13,490 --> 01:01:11,579
built into the whole plan and so even

1610
01:01:15,230 --> 01:01:13,500
like at the wet dress and the the lead

1611
01:01:16,190 --> 01:01:15,240
up to this it's that I was all accounted

1612
01:01:19,190 --> 01:01:16,200
for

1613
01:01:20,809 --> 01:01:19,200

um and yeah every as you're doing

1614

01:01:22,670 --> 01:01:20,819

training events still you're getting

1615

01:01:24,589 --> 01:01:22,680

briefs on the weather on the vehicle

1616

01:01:26,270 --> 01:01:24,599

status and all that is time to make sure

1617

01:01:33,349 --> 01:01:26,280

it is synced with whatever the Sleep

1618

01:01:38,870 --> 01:01:35,630

SpaceX copies standby for umbilical comp

1619

01:01:41,990 --> 01:01:40,849

all right so they're running a little

1620

01:01:44,569 --> 01:01:42,000

head it looks like

1621

01:01:46,789 --> 01:01:44,579

um so the crews got to display to give

1622

01:01:48,230 --> 01:01:46,799

us some waves

1623

01:01:50,750 --> 01:01:48,240

there's a procedure that they are

1624

01:01:52,549 --> 01:01:50,760

running called so SpaceX procedures are

1625

01:01:54,349 --> 01:01:52,559

a number with a DOT and something so

1626
01:01:57,349 --> 01:01:54,359
this would be 4.100 and the displays are

1627
01:01:58,849 --> 01:01:57,359
the procedures are on their displays and

1628
01:02:00,289 --> 01:01:58,859
so usually they'll have one display

1629
01:02:01,549 --> 01:02:00,299
that's showing the timeline and then

1630
01:02:02,809 --> 01:02:01,559
another display with this procedure up

1631
01:02:04,670 --> 01:02:02,819
so they just talked about the fact that

1632
01:02:07,190 --> 01:02:04,680
ready to do com checks and so there's

1633
01:02:08,510 --> 01:02:07,200
going to be a series of checks here we

1634
01:02:10,370 --> 01:02:08,520
talked earlier Daryl about how there's

1635
01:02:11,870 --> 01:02:10,380
different relays ones to the umbilical

1636
01:02:14,750 --> 01:02:11,880
which is the physical connection between

1637
01:02:16,730 --> 01:02:14,760
the dragon the launch pad and the ground

1638
01:02:17,809 --> 01:02:16,740

there's a t-dress connection you'll hear

1639

01:02:19,069 --> 01:02:17,819

I'm talking about which is a satellite

1640

01:02:21,109 --> 01:02:19,079

connection and then you'll hear

1641

01:02:23,270 --> 01:02:21,119

different people talking in them the MD

1642

01:02:32,690 --> 01:02:23,280

is a mission director Commander pilot

1643

01:02:32,700 --> 01:02:36,530

contact

1644

01:02:39,589 --> 01:02:37,910

Chuck Commander have you loud and clear

1645

01:02:40,809 --> 01:02:39,599

and that's Arthur the core you're

1646

01:02:43,430 --> 01:02:40,819

talking to him

1647

01:02:45,470 --> 01:02:43,440

clear as well

1648

01:02:48,049 --> 01:02:45,480

as well the crew operation pilot we

1649

01:02:52,150 --> 01:02:48,059

hadn't clear resource engineer pilot

1650

01:03:00,829 --> 01:02:56,809

SX ms-1 come check

1651

01:03:06,770 --> 01:03:04,430

uh statistics this is MS2 I'll be with

1652

01:03:10,789 --> 01:03:09,410

MS2 loud and clear

1653

01:03:15,770 --> 01:03:10,799

umbilical comp check complete report

1654

01:03:19,130 --> 01:03:17,270

so there you heard the call for the seat

1655

01:03:21,170 --> 01:03:19,140

rotation so we're seeing the astronauts

1656

01:03:23,150 --> 01:03:21,180

and the Cosmonaut for the last time with

1657

01:03:25,430 --> 01:03:23,160

that camera inside the spacecraft before

1658

01:03:27,650 --> 01:03:25,440

that camera has to pull out

1659

01:03:30,470 --> 01:03:27,660

yeah SpaceX Dragon crew is ready for

1660

01:03:33,109 --> 01:03:30,480

seat rotation and those seats articulate

1661

01:03:35,450 --> 01:03:33,119

up so they can look at that display that

1662

01:03:38,210 --> 01:03:35,460

is at the top of the screen exactly yeah

1663

01:03:40,549 --> 01:03:38,220

you'll see uh it's the seats rotate for

1664

01:03:42,650 --> 01:03:40,559

both launch and Landings

1665

01:03:48,349 --> 01:03:42,660

so SpaceX copies Dragon we'll report

1666

01:03:52,010 --> 01:03:50,450

yeah so that's it it's like this to make

1667

01:03:54,289 --> 01:03:52,020

it easier to get in a shading seat

1668

01:03:55,789 --> 01:03:54,299

rotation you'll start shooting move to

1669

01:03:57,230 --> 01:03:55,799

start to make it easier to get in and

1670

01:03:58,730 --> 01:03:57,240

out for both the people in the cargo but

1671

01:04:00,710 --> 01:03:58,740

then you rotate the seats for launched

1672

01:04:04,910 --> 01:04:00,720

Landings The g-forces are more through

1673

01:04:06,650 --> 01:04:04,920

your chest and not in like a more odd uh

1674

01:04:08,150 --> 01:04:06,660

you don't want to be like in a uh

1675

01:04:10,069 --> 01:04:08,160

pulling it down from here yeah exactly

1676

01:04:11,630 --> 01:04:10,079

it makes it exactly so this makes it

1677

01:04:13,069 --> 01:04:11,640

much more easy to sustain the G's when

1678

01:04:14,270 --> 01:04:13,079

it's pushing through your chest kind of

1679

01:04:16,190 --> 01:04:14,280

like someone sitting on your chest as

1680

01:04:17,690 --> 01:04:16,200

opposed to pulling it down uh towards

1681

01:04:20,930 --> 01:04:17,700

your feet and you can see the cargo

1682

01:04:24,109 --> 01:04:20,940

underneath there there they go

1683

01:04:26,150 --> 01:04:24,119

rotating articulating I should say

1684

01:04:28,190 --> 01:04:26,160

up into that flight position

1685

01:04:32,150 --> 01:04:28,200

they'll be able to look at their screen

1686

01:04:33,650 --> 01:04:32,160

and monitor the systems as dragon is

1687

01:04:35,329 --> 01:04:33,660

prepared for flight along with the

1688

01:04:37,309 --> 01:04:35,339

falcon 9.

1689

01:04:38,329 --> 01:04:37,319

need shot there yep so you can see it's

1690

01:04:39,890 --> 01:04:38,339

not just people going up the space

1691

01:04:40,849 --> 01:04:39,900

station a whole bunch of stuff getting

1692

01:04:42,829 --> 01:04:40,859

hailed up there as well that's right

1693

01:04:45,049 --> 01:04:42,839

Dragon SpaceX see through the launch

1694

01:04:58,789 --> 01:04:45,059

position

1695

01:05:04,069 --> 01:05:01,010

so the umbilical com checks were all the

1696

01:05:08,329 --> 01:05:06,289

yep the next I think next big thing for

1697

01:05:10,910 --> 01:05:08,339

the crew

1698

01:05:12,470 --> 01:05:10,920

will likely be suit leak checks but

1699

01:05:13,849 --> 01:05:12,480

that's probably a little ways off in the

1700

01:05:15,230 --> 01:05:13,859

meantime what they're probably doing in

1701
01:05:16,849 --> 01:05:15,240
between themselves is adjusting those

1702
01:05:18,890 --> 01:05:16,859
Vox settings and like and that's the

1703
01:05:20,990 --> 01:05:18,900
sensitivity of the mic uh and so you're

1704
01:05:22,250 --> 01:05:21,000
you're kind of tuning it so that you're

1705
01:05:23,510 --> 01:05:22,260
not hearing background noise but that

1706
01:05:26,210 --> 01:05:23,520
you can hear each other Talking Dragon

1707
01:05:28,849 --> 01:05:26,220
SpaceX your go for section two suit leak

1708
01:05:34,490 --> 01:05:30,710
and we've got section two excuse me

1709
01:05:37,250 --> 01:05:36,289
and so Steve mentioned section two that

1710
01:05:38,809 --> 01:05:37,260
was the procedure I was talking about

1711
01:05:40,490 --> 01:05:38,819
before so they're doing on the screens

1712
01:05:42,710 --> 01:05:40,500
you'll see them running through the

1713
01:05:43,849 --> 01:05:42,720

steps there uh Steve's probably telling

1714

01:05:46,130 --> 01:05:43,859

them to lower their visors which is why

1715

01:05:48,589 --> 01:05:46,140

they just did that he's reviewing the

1716

01:05:50,030 --> 01:05:48,599

the steps that are in the procedure

1717

01:05:52,190 --> 01:05:50,040

um essentially when they're doing this

1718

01:05:53,990 --> 01:05:52,200

they're going to kind of stay still and

1719

01:05:55,309 --> 01:05:54,000

let the suit the Nitro start to flow

1720

01:05:56,630 --> 01:05:55,319

it's going to pressurize the suit you'll

1721

01:05:58,370 --> 01:05:56,640

probably see them tuck their arms in

1722

01:06:00,170 --> 01:05:58,380

you'll see the suit inflate a bit you'll

1723

01:06:01,789 --> 01:06:00,180

probably see that helmet move up again

1724

01:06:03,410 --> 01:06:01,799

move up and that's why I mentioned

1725

01:06:05,270 --> 01:06:03,420

before why it's why it has to be tight

1726

01:06:07,250 --> 01:06:05,280

so that they can still see out of it got

1727

01:06:08,390 --> 01:06:07,260

the visors closed as well Yep they're

1728

01:06:09,349 --> 01:06:08,400

tightening the straps down and then

1729

01:06:10,970 --> 01:06:09,359

they're going to be looking at so

1730

01:06:12,170 --> 01:06:10,980

Stephen Woody and actually all of them

1731

01:06:13,370 --> 01:06:12,180

but there's displays right in front of

1732

01:06:14,750 --> 01:06:13,380

them they're going to show them the the

1733

01:06:17,150 --> 01:06:14,760

suit Delta pressure and they're making

1734

01:06:19,309 --> 01:06:17,160

sure that the suit can hold the pressure

1735

01:06:21,349 --> 01:06:19,319

that there's no leaks Andre's got his

1736

01:06:22,970 --> 01:06:21,359

hands in position now that you mentioned

1737

01:06:25,069 --> 01:06:22,980

was coming up

1738

01:06:26,210 --> 01:06:25,079

and you'll see after this after this

1739

01:06:28,069 --> 01:06:26,220

leak check you'll see they will never

1740

01:06:29,870 --> 01:06:28,079

touch their zippers again the only thing

1741

01:06:31,370 --> 01:06:29,880

they'll do is open and close visors but

1742

01:06:32,630 --> 01:06:31,380

after this leak check that's the last

1743

01:06:33,890 --> 01:06:32,640

time they'll mess Within These zippers

1744

01:06:36,250 --> 01:06:33,900

once you know they're good to go leave

1745

01:06:38,569 --> 01:06:36,260

them alone exactly yep

1746

01:06:45,349 --> 01:06:38,579

Dragon terrorist complete we are ready

1747

01:06:50,569 --> 01:06:47,510

T minus two hours and 24 minutes until

1748

01:06:53,990 --> 01:06:50,579

liftoff SpaceX copies your go for

1749

01:06:56,029 --> 01:06:54,000

section three suit League Tech

1750

01:06:57,529 --> 01:06:56,039

and we got section three see if we check

1751

01:06:59,150 --> 01:06:57,539

in work

1752

01:07:00,650 --> 01:06:59,160

so you heard Steve first mentioned that

1753

01:07:01,970 --> 01:07:00,660

the tear was complete so just like if

1754

01:07:04,370 --> 01:07:01,980

you're away in food when you're cooking

1755

01:07:06,589 --> 01:07:04,380

it you tear it like with the dish they

1756

01:07:08,150 --> 01:07:06,599

tear the suits um to zero wise it and

1757

01:07:09,770 --> 01:07:08,160

then they start the leak check so that

1758

01:07:11,210 --> 01:07:09,780

way uh you've basically taken out any

1759

01:07:13,370 --> 01:07:11,220

bias in the in the soup pressure

1760

01:07:14,569 --> 01:07:13,380

meetings and now he's they're just going

1761

01:07:15,950 --> 01:07:14,579

through it uh you'll know they're about

1762

01:07:17,270 --> 01:07:15,960

to do it when you see Woody and Steve's

1763

01:07:24,890 --> 01:07:17,280

hands come down and get still and then

1764

01:07:28,910 --> 01:07:26,750

if you're the commander

1765

01:07:33,049 --> 01:07:28,920

for crew three

1766

01:07:34,789 --> 01:07:33,059

what's your role in this moment so my

1767

01:07:37,130 --> 01:07:34,799

analogy that I like to use is kind of

1768

01:07:38,990 --> 01:07:37,140

like a professional coach of a team

1769

01:07:41,029 --> 01:07:39,000

where you're not really you know if

1770

01:07:42,109 --> 01:07:41,039

you're an NBA coach or NFL or major

1771

01:07:43,910 --> 01:07:42,119

league baseball coach you're not

1772

01:07:45,770 --> 01:07:43,920

teaching people how to play you're just

1773

01:07:47,270 --> 01:07:45,780

trying to get them to work together in

1774

01:07:49,309 --> 01:07:47,280

the most efficient way and that's the

1775

01:07:50,870 --> 01:07:49,319

same thing all of everyone in our office

1776

01:07:53,270 --> 01:07:50,880

is highly trained I don't need to tell

1777

01:07:54,589 --> 01:07:53,280

anyone how to do their job but more it's

1778

01:07:56,990 --> 01:07:54,599

a matter of like okay for this emergency

1779

01:07:59,270 --> 01:07:57,000

you know Steve might say okay in the

1780

01:08:00,710 --> 01:07:59,280

case of uh a depressed then Woody you're

1781

01:08:02,390 --> 01:08:00,720

doing this Sultan you're doing this

1782

01:08:04,010 --> 01:08:02,400

Andre you're doing that sort of and then

1783

01:08:05,510 --> 01:08:04,020

and the important thing is iterating on

1784

01:08:07,190 --> 01:08:05,520

that so you have a SIM you see how that

1785

01:08:09,109 --> 01:08:07,200

goes and even if it went great maybe

1786

01:08:10,970 --> 01:08:09,119

change it the next time to see like oh

1787

01:08:12,650 --> 01:08:10,980

that either went better or it validates

1788

01:08:14,089 --> 01:08:12,660

that we have the right approach so it's

1789

01:08:16,849 --> 01:08:14,099

kind of working with the training team

1790

01:08:18,229 --> 01:08:16,859

to to figure out the best we call it CRM

1791

01:08:21,289 --> 01:08:18,239

or career Resource Management what is

1792

01:08:24,349 --> 01:08:21,299

the optimum way to use the crew skills

1793

01:08:26,749 --> 01:08:24,359

in a very a variety of environments and

1794

01:08:28,309 --> 01:08:26,759

and sometimes maybe having the same

1795

01:08:30,430 --> 01:08:28,319

approach so having like a buddy system

1796

01:08:32,809 --> 01:08:30,440

Maybe works but maybe

1797

01:08:33,950 --> 01:08:32,819

you know there's a balance of like do

1798

01:08:35,990 --> 01:08:33,960

you want to keep it simple or maybe

1799

01:08:38,870 --> 01:08:36,000

there's a certain reason to do something

1800

01:08:40,249 --> 01:08:38,880

like for example depending on how good

1801

01:08:43,729 --> 01:08:40,259

like my Russian wasn't really great

1802

01:08:45,349 --> 01:08:43,739

right so so if we had had a Russian crew

1803

01:08:46,729 --> 01:08:45,359

member we had you know Tom probably

1804

01:08:48,110 --> 01:08:46,739

would have sat next to that person we

1805

01:08:49,910 --> 01:08:48,120

would have figured that out or figured

1806

01:08:51,289 --> 01:08:49,920

out certain emergency so

1807

01:08:52,669 --> 01:08:51,299

um you know Woody's a lot smarter than

1808

01:08:54,349 --> 01:08:52,679

me and Steve's been speaking Russian a

1809

01:08:55,370 --> 01:08:54,359

lot longer so I'm sure they didn't have

1810

01:08:57,769 --> 01:08:55,380

that I'm sure they didn't have that

1811

01:08:59,630 --> 01:08:57,779

concern but things like that uh so it's

1812

01:09:04,209 --> 01:08:59,640

uh just trying to figure out how to best

1813

01:09:08,689 --> 01:09:06,289

yeah you can see that's why Woody's

1814

01:09:10,130 --> 01:09:08,699

hands look like uh a mummy there to

1815

01:09:12,289 --> 01:09:10,140

sticking out yeah you can see the their

1816

01:09:14,450 --> 01:09:12,299

knees have gotten much puffier you can

1817

01:09:16,130 --> 01:09:14,460

see Andre's head like the helmet now is

1818

01:09:18,050 --> 01:09:16,140

you know he could still see his nose in

1819

01:09:19,970 --> 01:09:18,060

his eyes but it's it's risen up you can

1820

01:09:21,829 --> 01:09:19,980

see how it's extended there in his neck

1821

01:09:23,870 --> 01:09:21,839

and that's why it's so important to be

1822

01:09:25,669 --> 01:09:23,880

fully strapped in because if you weren't

1823

01:09:27,530 --> 01:09:25,679

fully strapped in in the suit you would

1824

01:09:28,970 --> 01:09:27,540

turn in like you'd basically just puff

1825

01:09:31,070 --> 01:09:28,980

up and wouldn't be able to move your

1826

01:09:33,229 --> 01:09:31,080

arms or legs so these are not like what

1827

01:09:35,269 --> 01:09:33,239

we call the emu's these are not meant to

1828

01:09:37,070 --> 01:09:35,279

go Eva or do spacewalks these kind of

1829

01:09:38,450 --> 01:09:37,080

Suits these are called IV suits meant

1830

01:09:39,890 --> 01:09:38,460

for in the vehicle

1831

01:09:42,590 --> 01:09:39,900

um and as you mentioned to protect you

1832

01:09:46,010 --> 01:09:42,600

from a fire or a depress but not to go

1833

01:09:48,470 --> 01:09:46,020

outside and actually move around

1834

01:09:50,870 --> 01:09:48,480

and we just heard from Johnson Space

1835

01:09:53,990 --> 01:09:50,880

Center that we have

1836

01:09:55,189 --> 01:09:54,000

four passing leak checks excellent you

1837

01:09:56,930 --> 01:09:55,199

can see they're deflating you can see

1838

01:09:59,870 --> 01:09:56,940

actually the suit getting smaller on

1839

01:10:03,050 --> 01:09:59,880

them yeah see it depressing SpaceX

1840

01:10:05,930 --> 01:10:03,060

Dragon we have nominal checks for all

1841

01:10:09,410 --> 01:10:07,729

next you'll see there pop their visors

1842

01:10:11,450 --> 01:10:09,420

up shortly

1843

01:10:12,410 --> 01:10:11,460

SpaceX copies and concurs could suit the

1844

01:10:14,030 --> 01:10:12,420

checks

1845

01:10:16,850 --> 01:10:14,040

closeout team will now perform final

1846

01:10:19,850 --> 01:10:16,860

closeout steps and exit capsule proceed

1847

01:10:21,470 --> 01:10:19,860

to section four for site hatch closure

1848

01:10:22,490 --> 01:10:21,480

and Report when ready to close side

1849

01:10:24,470 --> 01:10:22,500

hatch

1850

01:10:28,910 --> 01:10:24,480

also stand by for ground station com

1851
01:10:35,149 --> 01:10:30,890
for side hatch closure and we'll report

1852
01:10:38,870 --> 01:10:37,250
we've been taking social questions and

1853
01:10:39,590 --> 01:10:38,880
uh we appreciate you bringing them in

1854
01:10:41,630 --> 01:10:39,600
and

1855
01:10:43,250 --> 01:10:41,640
rosh has been giving us some excellent

1856
01:10:45,649 --> 01:10:43,260
insights I want to take another question

1857
01:10:48,050 --> 01:10:45,659
while the closeout crew inspects the

1858
01:10:50,330 --> 01:10:48,060
seal around the hatch

1859
01:10:53,030 --> 01:10:50,340
jump on Facebook Twitter Youtube and

1860
01:10:55,010 --> 01:10:53,040
twitch at hashtag asknasa to get your

1861
01:10:57,350 --> 01:10:55,020
question in our question comes from

1862
01:10:59,570 --> 01:10:57,360
Professor Marvel and the crew is ready

1863
01:11:02,510 --> 01:10:59,580

for side hatch closure

1864

01:11:04,910 --> 01:11:02,520

so cool to hear about the dragonflies as

1865

01:11:07,490 --> 01:11:04,920

a good sign Raja mentioned that a little

1866

01:11:10,610 --> 01:11:07,500

bit earlier that a dragonfly when seen

1867

01:11:12,770 --> 01:11:10,620

inside this room was a good luck sign

1868

01:11:14,450 --> 01:11:12,780

one of the things are regarded as good

1869

01:11:15,709 --> 01:11:14,460

luck yeah and I should caveat that's on

1870

01:11:17,930 --> 01:11:15,719

on dry dress because as you mentioned

1871

01:11:19,850 --> 01:11:17,940

it's a it's a clean room now yes so see

1872

01:11:22,370 --> 01:11:19,860

you again see you again dragonfly that

1873

01:11:23,870 --> 01:11:22,380

would be bad because that means yeah

1874

01:11:25,610 --> 01:11:23,880

that means there's bugs inside the yeah

1875

01:11:27,410 --> 01:11:25,620

so I should have made that more clear

1876

01:11:29,270 --> 01:11:27,420

before yes during transportal yes uh

1877

01:11:32,030 --> 01:11:29,280

let's see other things

1878

01:11:35,090 --> 01:11:32,040

um let me think about that uh I think so

1879

01:11:37,070 --> 01:11:35,100

slapping if you so Steve probably had an

1880

01:11:39,290 --> 01:11:37,080

STS shuttle patch on the outside of

1881

01:11:43,070 --> 01:11:39,300

thing so slapping your patch on the way

1882

01:11:46,310 --> 01:11:43,080

into the aqf facility is like a that's a

1883

01:11:47,930 --> 01:11:46,320

thing right yep so Sultan give his yep

1884

01:11:49,490 --> 01:11:47,940

yeah that's a that's uh I'm trying to

1885

01:11:51,770 --> 01:11:49,500

think of other ones

1886

01:11:53,570 --> 01:11:51,780

um oh on the way out of crew quarters

1887

01:11:55,130 --> 01:11:53,580

the chin typically the chief of the ass

1888

01:11:59,330 --> 01:11:55,140

around office there'll be some kind of

1889

01:12:00,770 --> 01:11:59,340

uh card game some some uh it changes

1890

01:12:01,970 --> 01:12:00,780

recruiter crew but there's some

1891

01:12:03,110 --> 01:12:01,980

something they'll do with the chief of

1892

01:12:07,010 --> 01:12:03,120

the astronaut office right before they

1893

01:12:08,030 --> 01:12:07,020

leave the the suit room and honestly no

1894

01:12:10,970 --> 01:12:08,040

one remembers if you're supposed to win

1895

01:12:12,290 --> 01:12:10,980

or lose I think you played it I did yes

1896

01:12:13,850 --> 01:12:12,300

well there's this debate like are you

1897

01:12:15,890 --> 01:12:13,860

supposed to so one argument is you're

1898

01:12:17,390 --> 01:12:15,900

supposed to lose because then you've

1899

01:12:19,250 --> 01:12:17,400

gotten rid of all your bad luck leave

1900

01:12:20,390 --> 01:12:19,260

the bad luck exactly the other one is

1901

01:12:21,590 --> 01:12:20,400

you're supposed to win because that you

1902

01:12:23,689 --> 01:12:21,600

feel good it's like here so I don't know

1903

01:12:27,290 --> 01:12:23,699

what the right answer is uh we actually

1904

01:12:29,450 --> 01:12:27,300

played uh uh a little mini game of

1905

01:12:30,770 --> 01:12:29,460

shuffleboard uh we kind of shuffled

1906

01:12:33,050 --> 01:12:30,780

based on our yeah we had a little

1907

01:12:35,570 --> 01:12:33,060

tradition when we were in training uh of

1908

01:12:36,890 --> 01:12:35,580

playing little mini shuffleboard with uh

1909

01:12:38,810 --> 01:12:36,900

not the shuffleboard like the huge

1910

01:12:40,189 --> 01:12:38,820

sticks that's a little little one yeah

1911

01:12:42,410 --> 01:12:40,199

okay um so that was what actually

1912

01:12:44,570 --> 01:12:42,420

elected to do and then we did pick a do

1913

01:12:46,189 --> 01:12:44,580

a game of war in terms of like picking

1914

01:12:47,570 --> 01:12:46,199

who had the high card but I honestly

1915

01:12:49,490 --> 01:12:47,580

can't remember I won or lost because we

1916

01:12:51,050 --> 01:12:49,500

decided we weren't sure which it was

1917

01:12:52,669 --> 01:12:51,060

supposed to be so I'm not sure what uh

1918

01:12:54,169 --> 01:12:52,679

Joe elected to do

1919

01:12:55,490 --> 01:12:54,179

um well whatever it was it worked out

1920

01:12:56,930 --> 01:12:55,500

great exactly

1921

01:12:57,830 --> 01:12:56,940

yeah we should have written that down I

1922

01:13:00,110 --> 01:12:57,840

guess

1923

01:13:01,250 --> 01:13:00,120

well thank you Professor marbles who by

1924

01:13:03,290 --> 01:13:01,260

the way is one of our social

1925

01:13:05,930 --> 01:13:03,300

participants here at the Kennedy Space

1926

01:13:08,209 --> 01:13:05,940

Center with a number of NASA social

1927

01:13:10,550 --> 01:13:08,219

participants being hosted by the Kennedy

1928

01:13:12,229 --> 01:13:10,560

Space Center uh we reach out and uh

1929

01:13:12,770 --> 01:13:12,239

invite

1930

01:13:14,990 --> 01:13:12,780

um

1931

01:13:17,390 --> 01:13:15,000

folks who are leaders in the social

1932

01:13:19,490 --> 01:13:17,400

space to come out and visit the Kennedy

1933

01:13:22,010 --> 01:13:19,500

Space Center for a launch they're all

1934

01:13:24,050 --> 01:13:22,020

here ready to watch their launch many of

1935

01:13:26,630 --> 01:13:24,060

them for the first time like you yeah

1936

01:13:28,490 --> 01:13:26,640

exactly right SpaceX closeout team is

1937

01:13:30,350 --> 01:13:28,500

taking final steps in preparation just

1938

01:13:32,870 --> 01:13:30,360

close the side hatch standby for

1939

01:13:35,090 --> 01:13:32,880

transition to pad hatch closed ensure

1940

01:13:37,550 --> 01:13:35,100

all items remain secure from now through

1941

01:13:43,490 --> 01:13:40,430

SpaceX Dragon thoughts

1942

01:13:45,050 --> 01:13:43,500

and now we're at hatch close

1943

01:13:46,669 --> 01:13:45,060

yep I see you heard that call from the

1944

01:13:49,070 --> 01:13:46,679

core so there's nothing the crew is

1945

01:13:50,390 --> 01:13:49,080

actually doing in terms of the actual

1946

01:13:52,130 --> 01:13:50,400

hatch closing you can see they have

1947

01:13:53,930 --> 01:13:52,140

those more powerful lights out they're

1948

01:13:56,390 --> 01:13:53,940

monitoring the key thing he told him was

1949

01:13:57,470 --> 01:13:56,400

not bit so basically up to this point

1950

01:13:59,270 --> 01:13:57,480

they could be moving things out of their

1951

01:14:00,770 --> 01:13:59,280

satchels maybe moving their iPads around

1952

01:14:01,850 --> 01:14:00,780

but from this point out you don't want

1953

01:14:04,430 --> 01:14:01,860

to do that because if something falls

1954

01:14:06,470 --> 01:14:04,440

off your leg you lose a pen now you've

1955

01:14:08,570 --> 01:14:06,480

got a piece of fod in the in the capsule

1956

01:14:10,370 --> 01:14:08,580

so basically they're no longer going to

1957

01:14:13,310 --> 01:14:10,380

mess with anything other than the

1958

01:14:15,110 --> 01:14:13,320

displays and their their arm rests

1959

01:14:17,090 --> 01:14:15,120

nothing you know no taking pencils out

1960

01:14:18,590 --> 01:14:17,100

or doing like that so they are probably

1961

01:14:20,510 --> 01:14:18,600

doing the last bit of configuration you

1962

01:14:21,770 --> 01:14:20,520

saw those like kneeboard cards that they

1963

01:14:23,689 --> 01:14:21,780

had on their legs like making sure those

1964

01:14:24,770 --> 01:14:23,699

are Belgard on but they have access to

1965

01:14:27,169 --> 01:14:24,780

the pen or pencil they want to be able

1966

01:14:28,669 --> 01:14:27,179

to write down notes with and getting all

1967

01:14:31,010 --> 01:14:28,679

that done

1968

01:14:33,770 --> 01:14:31,020

so as we watch this we're going to split

1969

01:14:37,370 --> 01:14:33,780

the screen so we can maintain our visual

1970

01:14:39,050 --> 01:14:37,380

of the closeout crew inspecting the

1971

01:14:40,910 --> 01:14:39,060

hatch before they close it but we also

1972

01:14:43,850 --> 01:14:40,920

want to look back to a little history

1973

01:14:46,010 --> 01:14:43,860

and a recent honor that happened for a

1974

01:14:47,810 --> 01:14:46,020

couple of our astronauts today we are

1975

01:14:50,630 --> 01:14:47,820

launching American astronauts on

1976

01:14:52,910 --> 01:14:50,640

American Rockets from American soil but

1977

01:14:55,189 --> 01:14:52,920

it all began with two Trailblazers of

1978

01:14:58,370 --> 01:14:55,199

the commercial crew program who recently

1979

01:15:01,130 --> 01:14:58,380

received the highest civilian honor and

1980

01:15:04,729 --> 01:15:01,140

Astronaut can achieve

1981

01:15:08,090 --> 01:15:04,739

it is my great honor to award you both

1982

01:15:10,729 --> 01:15:08,100

the Congressional space Medal of Honor

1983

01:15:12,590 --> 01:15:10,739

in January vice president Kamala Harris

1984

01:15:15,050 --> 01:15:12,600

spoke to a packed room at the White

1985

01:15:17,990 --> 01:15:15,060

House about the dedication of NASA

1986

01:15:20,330 --> 01:15:18,000

astronauts Doug Hurley and Bob binkin

1987

01:15:21,110 --> 01:15:20,340

Bob and Doug represent the best of our

1988

01:15:23,510 --> 01:15:21,120

nation

1989

01:15:25,490 --> 01:15:23,520

there's no question about it NASA

1990

01:15:28,070 --> 01:15:25,500

selected both men to be astronauts for

1991

01:15:29,990 --> 01:15:28,080

the space shuttle program in 2000 but

1992

01:15:33,229 --> 01:15:30,000

when the shuttle program ended 11 years

1993

01:15:35,570 --> 01:15:33,239

later Doug and Bob's work did not

1994

01:15:37,850 --> 01:15:35,580

NASA collaborated with the private

1995

01:15:40,630 --> 01:15:37,860

sector to build the next generation of

1996

01:15:43,130 --> 01:15:40,640

spacecraft every part of the capsule

1997

01:15:46,850 --> 01:15:43,140

from flight controls and emergency

1998

01:15:50,450 --> 01:15:46,860

procedures to computer displays and

1999

01:15:53,810 --> 01:15:50,460

cockpit layout all of that shaped by Bob

2000

01:15:56,930 --> 01:15:53,820

and Doug's Decades of know-how

2001
01:15:59,450 --> 01:15:56,940
and in May of 2020 the SpaceX crew

2002
01:16:02,689 --> 01:15:59,460
Dragon was ready to soar

2003
01:16:04,430 --> 01:16:02,699
Bob and Doug returned to the Kennedy

2004
01:16:06,470 --> 01:16:04,440
Space Center

2005
01:16:09,530 --> 01:16:06,480
they suited up

2006
01:16:12,649 --> 01:16:09,540
they waved to their families

2007
01:16:14,510 --> 01:16:12,659
and they rode an elevator up nearly 20

2008
01:16:17,630 --> 01:16:14,520
stories

2009
01:16:20,870 --> 01:16:17,640
they strapped in to their seats and

2010
01:16:23,570 --> 01:16:20,880
waited as the tanks beneath them filled

2011
01:16:25,490 --> 01:16:23,580
with tens of thousands of gallons of

2012
01:16:30,130 --> 01:16:25,500
fuel and then

2013
01:16:33,169 --> 01:16:30,140

three two one zero ignition

2014

01:16:37,010 --> 01:16:33,179

liftoff of the Falcon 9 and crew dragon

2015

01:16:39,410 --> 01:16:37,020

Go NASA go space Ducks got speed bottom

2016

01:16:44,390 --> 01:16:41,930

demo 2 was the first crude flight for

2017

01:16:47,870 --> 01:16:44,400

NASA's commercial crew program ushering

2018

01:16:50,870 --> 01:16:47,880

in a new era of human space flight

2019

01:16:53,390 --> 01:16:50,880

and now the names Doug Hurley and Bob

2020

01:16:55,970 --> 01:16:53,400

binkin have been added to an elite list

2021

01:16:58,010 --> 01:16:55,980

prior to the ceremony the Congressional

2022

01:17:00,470 --> 01:16:58,020

space Medal of Honor had only been given

2023

01:17:03,410 --> 01:17:00,480

to 28 people astronauts like Neil

2024

01:17:05,810 --> 01:17:03,420

Armstrong and John Glenn

2025

01:17:07,729 --> 01:17:05,820

we're following in their footsteps and

2026

01:17:10,189 --> 01:17:07,739

you know so it's just an incredible

2027

01:17:11,990 --> 01:17:10,199

incredible incredible honor it was

2028

01:17:14,030 --> 01:17:12,000

humbling to be a part of the mission you

2029

01:17:16,310 --> 01:17:14,040

know we got to be the smiling faces on

2030

01:17:19,250 --> 01:17:16,320

the pointy end of a rocket ship because

2031

01:17:21,290 --> 01:17:19,260

of their bravery missions like crew 6

2032

01:17:24,229 --> 01:17:21,300

are happening today

2033

01:17:27,350 --> 01:17:24,239

Bob and Doug together

2034

01:17:29,510 --> 01:17:27,360

have written the first page

2035

01:17:31,130 --> 01:17:29,520

of a new chapter

2036

01:17:37,010 --> 01:17:31,140

in the history

2037

01:17:42,470 --> 01:17:39,470

Bob and Doug dedicated their careers to

2038

01:17:44,450 --> 01:17:42,480

space flight what an honor Raja yeah it

2039

01:17:46,610 --> 01:17:44,460

was uh it was so cool I got to actually

2040

01:17:48,770 --> 01:17:46,620

the honor to work with them uh as we

2041

01:17:49,850 --> 01:17:48,780

approached demo 2 and the you know the

2042

01:17:51,590 --> 01:17:49,860

vice president could have said it better

2043

01:17:53,930 --> 01:17:51,600

they have set the stage for a whole new

2044

01:17:56,570 --> 01:17:53,940

era of space flight and we are seeing it

2045

01:17:58,490 --> 01:17:56,580

you know that we uh whether it's uh the

2046

01:18:00,649 --> 01:17:58,500

dragon the Starliner they were in on the

2047

01:18:03,229 --> 01:18:00,659

ground floor doing all that and exactly

2048

01:18:05,149 --> 01:18:03,239

like she said their influences all over

2049

01:18:07,250 --> 01:18:05,159

this vehicle and they're you know the

2050

01:18:09,410 --> 01:18:07,260

way they worked with SpaceX to help

2051

01:18:11,149 --> 01:18:09,420

design it we are all benefiting that we

2052

01:18:12,590 --> 01:18:11,159

continue to benefit from it today and so

2053

01:18:14,030 --> 01:18:12,600

actually more more than a few times in

2054

01:18:15,530 --> 01:18:14,040

trade like why why is it like this like

2055

01:18:18,169 --> 01:18:15,540

oh Bob and Doug yeah that makes sense

2056

01:18:21,169 --> 01:18:18,179

all right yeah so it was uh it was very

2057

01:18:23,930 --> 01:18:21,179

cool um and very well deserved and uh

2058

01:18:25,370 --> 01:18:23,940

yeah the the office uh NASA the country

2059

01:18:27,770 --> 01:18:25,380

is in such a better place because of the

2060

01:18:30,470 --> 01:18:27,780

work they did well said Raja

2061

01:18:32,390 --> 01:18:30,480

and while we're talking about honors and

2062

01:18:35,450 --> 01:18:32,400

uh the Office of the President

2063

01:18:37,130 --> 01:18:35,460

I want to mention that Raja was

2064

01:18:39,110 --> 01:18:37,140

nominated by the president of the United

2065

01:18:42,050 --> 01:18:39,120

States for the appointment to the grade

2066

01:18:43,490 --> 01:18:42,060

of Air Force Brigadier General still

2067

01:18:46,250 --> 01:18:43,500

needs to be confirmed by the Senate

2068

01:18:47,810 --> 01:18:46,260

right but uh the Senate of course

2069

01:18:49,010 --> 01:18:47,820

approves all senior civilian and

2070

01:18:51,050 --> 01:18:49,020

Military appointments but

2071

01:18:52,790 --> 01:18:51,060

congratulations thanks for watching on

2072

01:18:54,290 --> 01:18:52,800

getting that nomination my wife and I

2073

01:18:55,610 --> 01:18:54,300

are super honored and humbled to be able

2074

01:18:58,490 --> 01:18:55,620

to continue serving in the next grades

2075

01:18:59,750 --> 01:18:58,500

but yeah we're uh yeah very very honored

2076

01:19:01,130 --> 01:18:59,760

and special to be able to do that here

2077

01:19:02,750 --> 01:19:01,140

at Nasa oh very good I don't have to

2078

01:19:05,510 --> 01:19:02,760

call you General yes definitely yeah

2079

01:19:08,630 --> 01:19:05,520

please don't yeah okay colonel not even

2080

01:19:10,430 --> 01:19:08,640

that how much is Raja okay will do let's

2081

01:19:11,930 --> 01:19:10,440

check in now with Courtney Beasley at

2082

01:19:15,950 --> 01:19:11,940

the Johnson Space Center for an update

2083

01:19:20,810 --> 01:19:18,890

hey Daryl thanks as we said earlier the

2084

01:19:22,250 --> 01:19:20,820

team here in Mission Control Houston is

2085

01:19:24,830 --> 01:19:22,260

actively monitoring the International

2086

01:19:26,870 --> 01:19:24,840

Space Station as they await dragon's

2087

01:19:28,729 --> 01:19:26,880

arrival the crew aboard this station is

2088

01:19:30,350 --> 01:19:28,739

currently in a sleep period and they are

2089

01:19:32,270 --> 01:19:30,360

scheduled to wake up at midnight central

2090

01:19:34,250 --> 01:19:32,280

time they have completed a number of

2091

01:19:36,229 --> 01:19:34,260

tasks to prepare the station for crew

2092

01:19:38,030 --> 01:19:36,239

six like setting up tools to monitor

2093

01:19:40,490 --> 01:19:38,040

dragon's arrival and prepping the Sleep

2094

01:19:42,229 --> 01:19:40,500

stations for new residents many of their

2095

01:19:44,689 --> 01:19:42,239

clothes and other belongings launched on

2096

01:19:46,130 --> 01:19:44,699

a previous cargo resupply Mission back

2097

01:19:48,050 --> 01:19:46,140

here in Houston flight director Mike

2098

01:19:50,030 --> 01:19:48,060

Lammers and his team are in constant

2099

01:19:52,310 --> 01:19:50,040

communication with the SpaceX Mission

2100

01:19:54,229 --> 01:19:52,320

director for crew 6's launch to the

2101
01:19:56,390 --> 01:19:54,239
space station once we get to integrated

2102
01:19:58,850 --> 01:19:56,400
operations the NASA flight director will

2103
01:20:00,770 --> 01:19:58,860
be conducting a series of go no-go polls

2104
01:20:02,810 --> 01:20:00,780
at the predetermined checkpoints for

2105
01:20:04,370 --> 01:20:02,820
dragon's approach for now we'll continue

2106
01:20:06,590 --> 01:20:04,380
to follow along from here in Mission

2107
01:20:08,630 --> 01:20:06,600
Control Houston and I'll send it back to

2108
01:20:09,830 --> 01:20:08,640
the team over at Kennedy over to you

2109
01:20:12,169 --> 01:20:09,840
Jasmine

2110
01:20:14,689 --> 01:20:12,179
thanks so much Courtney back at Kennedy

2111
01:20:16,610 --> 01:20:14,699
here joining us now is NASA recovery

2112
01:20:18,950 --> 01:20:16,620
director Brian Berry thanks for being

2113
01:20:20,689 --> 01:20:18,960

here of course thank you of course so

2114

01:20:22,729 --> 01:20:20,699

Brian we understand that you are the

2115

01:20:24,709 --> 01:20:22,739

NASA recovery director for crew 5 but

2116

01:20:26,030 --> 01:20:24,719

you've actually done a lot of things for

2117

01:20:27,770 --> 01:20:26,040

human space flight can you tell us more

2118

01:20:29,689 --> 01:20:27,780

about that sure yeah that's right so I

2119

01:20:32,030 --> 01:20:29,699

started my career as a flight controller

2120

01:20:33,709 --> 01:20:32,040

for the ISS program my team was

2121

01:20:36,649 --> 01:20:33,719

responsible for maintenance on the space

2122

01:20:38,209 --> 01:20:36,659

station so I had the opportunity to work

2123

01:20:41,390 --> 01:20:38,219

directly with the astronauts train them

2124

01:20:42,950 --> 01:20:41,400

on tools and repair procedures so that

2125

01:20:44,450 --> 01:20:42,960

was a lot of fun and something I never

2126
01:20:47,030 --> 01:20:44,460
thought I would do when I was studying

2127
01:20:49,790 --> 01:20:47,040
to be an engineer after that I moved

2128
01:20:52,070 --> 01:20:49,800
over to the safety team and I was our

2129
01:20:53,930 --> 01:20:52,080
safety rep for the commercial crew

2130
01:20:56,149 --> 01:20:53,940
program safety panel so that was my

2131
01:20:58,970 --> 01:20:56,159
first exposure to CCP and I would go

2132
01:21:00,830 --> 01:20:58,980
review the hazard reports for Dragon and

2133
01:21:01,850 --> 01:21:00,840
Starliner

2134
01:21:03,470 --> 01:21:01,860
um that was a pretty neat experience

2135
01:21:05,870 --> 01:21:03,480
also because I was able to work with Bob

2136
01:21:07,250 --> 01:21:05,880
and Doug prior to demo 2 and just kind

2137
01:21:09,050 --> 01:21:07,260
of work with them on the hazard reports

2138
01:21:12,110 --> 01:21:09,060

and get their perspective on on the risk

2139

01:21:15,110 --> 01:21:12,120

and the mission overall after that in

2140

01:21:16,790 --> 01:21:15,120

2020 I came out to commercial crew and I

2141

01:21:18,110 --> 01:21:16,800

worked for them directly now and I've

2142

01:21:21,550 --> 01:21:18,120

been doing launch and Recovery

2143

01:21:24,770 --> 01:21:21,560

operations since then on the launch Team

2144

01:21:27,649 --> 01:21:24,780

my role is to lead the rescue effort if

2145

01:21:30,350 --> 01:21:27,659

we need to if there's a pad emergency

2146

01:21:31,910 --> 01:21:30,360

egress or a paddle board the launch

2147

01:21:33,770 --> 01:21:31,920

rescue director calls in the rescue

2148

01:21:36,410 --> 01:21:33,780

forces so that's what I did for crew 5

2149

01:21:38,689 --> 01:21:36,420

launch last year and then as the

2150

01:21:40,070 --> 01:21:38,699

recovery director I lead the NASA

2151
01:21:42,530 --> 01:21:40,080
portion of the team that goes out on the

2152
01:21:44,149 --> 01:21:42,540
ship with SpaceX we bring out our flight

2153
01:21:45,649 --> 01:21:44,159
surgeons and we check out the crew and

2154
01:21:47,689 --> 01:21:45,659
we load them up on the helicopter and

2155
01:21:49,850 --> 01:21:47,699
get them back home right so you've won a

2156
01:21:52,669 --> 01:21:51,110
what did your work as a flight

2157
01:21:54,470 --> 01:21:52,679
controller in Houston prepare you to be

2158
01:21:56,990 --> 01:21:54,480
a NASA recovery director

2159
01:21:58,790 --> 01:21:57,000
well in Houston work in the ISS

2160
01:22:00,590 --> 01:21:58,800
operations you know you see day in and

2161
01:22:02,209 --> 01:22:00,600
day out in the control center you get

2162
01:22:04,370 --> 01:22:02,219
the full feel of the six-month Mission

2163
01:22:06,950 --> 01:22:04,380

so you understand what the crew is going

2164

01:22:08,209 --> 01:22:06,960

through for that long of a mission and I

2165

01:22:11,030 --> 01:22:08,219

think I just kind of bring that crew

2166

01:22:13,370 --> 01:22:11,040

perspective of the ISS side to the CCP

2167

01:22:15,830 --> 01:22:13,380

program and so when it's time to bring

2168

01:22:18,229 --> 01:22:15,840

the crew home you know we we know we owe

2169

01:22:20,030 --> 01:22:18,239

them a smooth and speedy recovery so

2170

01:22:21,950 --> 01:22:20,040

that's our priority and our objective

2171

01:22:23,270 --> 01:22:21,960

right Brian it's great that you have

2172

01:22:24,890 --> 01:22:23,280

that personal relationship with them

2173

01:22:27,229 --> 01:22:24,900

what challenges do you and the recovery

2174

01:22:29,090 --> 01:22:27,239

team have to be prepared for well the

2175

01:22:31,430 --> 01:22:29,100

biggest challenge for Recovery uh for

2176
01:22:33,229 --> 01:22:31,440
for Dragon is definitely the weather we

2177
01:22:35,390 --> 01:22:33,239
have to find a landing site where the

2178
01:22:38,209 --> 01:22:35,400
winds are low and the waves are low

2179
01:22:39,470 --> 01:22:38,219
um so SpaceX has several Landing sites

2180
01:22:42,530 --> 01:22:39,480
around the State of Florida that we can

2181
01:22:44,390 --> 01:22:42,540
look at and choose the best weather

2182
01:22:46,070 --> 01:22:44,400
beyond that you know we start looking at

2183
01:22:47,990 --> 01:22:46,080
things like contingencies if the crew is

2184
01:22:50,930 --> 01:22:48,000
injured and we've got helicopters on

2185
01:22:52,370 --> 01:22:50,940
standby for a Medevac if we need to

2186
01:22:54,590 --> 01:22:52,380
um and then you know there's also just

2187
01:22:56,870 --> 01:22:54,600
built-in redundancy on the ship and and

2188
01:22:57,890 --> 01:22:56,880

throughout the vehicle so but yeah

2189

01:22:59,570 --> 01:22:57,900

weather is definitely the biggest

2190

01:23:01,910 --> 01:22:59,580

challenge for landing right now weather

2191

01:23:04,669 --> 01:23:01,920

is a huge

2192

01:23:06,709 --> 01:23:04,679

after a crew 5 returns Brian you're

2193

01:23:08,510 --> 01:23:06,719

going to transition to a new role in the

2194

01:23:09,770 --> 01:23:08,520

commercial crew program Mission manager

2195

01:23:11,870 --> 01:23:09,780

for crew eight can you tell us how

2196

01:23:13,330 --> 01:23:11,880

you're preparing for that sure so as a

2197

01:23:16,729 --> 01:23:13,340

mission manager

2198

01:23:19,850 --> 01:23:16,739

just an update next job for the entire

2199

01:23:22,189 --> 01:23:19,860

Mission Not Just Launch or landing and

2200

01:23:23,810 --> 01:23:22,199

that role begins 18 months out so for

2201

01:23:25,189 --> 01:23:23,820

crew eight which launches launches a

2202

01:23:27,530 --> 01:23:25,199

year from now we've already begun those

2203

01:23:29,330 --> 01:23:27,540

meetings with SpaceX and so it's pretty

2204

01:23:32,090 --> 01:23:29,340

exciting to be a part of that that early

2205

01:23:33,890 --> 01:23:32,100

in the mission and uh yeah I'm just

2206

01:23:35,570 --> 01:23:33,900

honored and proud to do that for the

2207

01:23:36,950 --> 01:23:35,580

program of course we congratulations

2208

01:23:40,130 --> 01:23:36,960

Brian it's a lot to have you here

2209

01:23:41,810 --> 01:23:40,140

tonight thanks Jasmine Daryl back to you

2210

01:23:43,490 --> 01:23:41,820

all right thank you very much Jasmine

2211

01:23:45,350 --> 01:23:43,500

and if you're just joining us we are

2212

01:23:48,890 --> 01:23:45,360

currently two hours and seven minutes

2213

01:23:50,810 --> 01:23:48,900

until liftoff of cruise six launching as

2214

01:23:53,570 --> 01:23:50,820

part of NASA's commercial crew program

2215

01:23:56,510 --> 01:23:53,580

as we just heard so well Commander

2216

01:23:59,570 --> 01:23:56,520

Stephen Bowen pilot Woody hoberg and

2217

01:24:01,910 --> 01:23:59,580

Mission specialist Sultan al-nayadi and

2218

01:24:04,189 --> 01:24:01,920

Andre fediev are strapped into the

2219

01:24:07,130 --> 01:24:04,199

receipts behind that capsule right there

2220

01:24:08,930 --> 01:24:07,140

inside Dragon endeavor

2221

01:24:11,930 --> 01:24:08,940

and here's an interesting note about

2222

01:24:14,030 --> 01:24:11,940

Endeavor the SpaceX Fleet leader in

2223

01:24:18,410 --> 01:24:14,040

number of flights to and from the

2224

01:24:22,610 --> 01:24:21,110

well yes why watch yeah I got to watch

2225

01:24:25,070 --> 01:24:22,620

Bob and Doug go and that's right yeah

2226

01:24:26,750 --> 01:24:25,080

and then yeah and yeah it's been it's

2227

01:24:27,950 --> 01:24:26,760

cool that we have we are proving out

2228

01:24:29,810 --> 01:24:27,960

that you get to reuse these vehicles

2229

01:24:30,770 --> 01:24:29,820

it's not just a dream we're actually

2230

01:24:32,870 --> 01:24:30,780

doing it

2231

01:24:35,390 --> 01:24:32,880

and they're certified now for five

2232

01:24:37,130 --> 01:24:35,400

flights which was a human certification

2233

01:24:39,290 --> 01:24:37,140

that is done in partnership with the

2234

01:24:42,290 --> 01:24:39,300

commercial crew program the three

2235

01:24:43,729 --> 01:24:42,300

previous flights for this Dragon was uh

2236

01:24:47,390 --> 01:24:43,739

as you mentioned the historic First

2237

01:24:50,270 --> 01:24:47,400

Flight called demo 2 then Crew 2 and

2238

01:24:53,090 --> 01:24:50,280

then Axiom mission one which you were on

2239

01:24:54,169 --> 01:24:53,100

station right we were in actionable

2240

01:24:56,209 --> 01:24:54,179

doctor though it's called the Zenith

2241

01:24:57,590 --> 01:24:56,219

Port so yeah we are there for which is

2242

01:25:00,470 --> 01:24:57,600

prehistoric to have the first private

2243

01:25:02,870 --> 01:25:00,480

astronauts uh from U.S soil come up to

2244

01:25:05,450 --> 01:25:02,880

the space station it was awesome and

2245

01:25:09,530 --> 01:25:05,460

these astronauts today Raja that could

2246

01:25:12,050 --> 01:25:09,540

happen for them as well if uh if Axiom 2

2247

01:25:14,270 --> 01:25:12,060

goes up within their increment right

2248

01:25:15,050 --> 01:25:14,280

exactly yep and so uh that's exactly the

2249

01:25:17,510 --> 01:25:15,060

plan

2250

01:25:19,189 --> 01:25:17,520

um and Axiom 2's in training I think

2251
01:25:21,590 --> 01:25:19,199
they publicly released the names not too

2252
01:25:24,290 --> 01:25:21,600
long ago you can see that online but

2253
01:25:26,570 --> 01:25:24,300
yeah so we do they do some training at

2254
01:25:28,850 --> 01:25:26,580
Johnson Space Center and because exactly

2255
01:25:38,689 --> 01:25:28,860
that if they're on Orbit on time they'd

2256
01:25:42,830 --> 01:25:40,910
and uh we're also going to take some

2257
01:25:45,169 --> 01:25:42,840
social media questions and we've been

2258
01:25:47,450 --> 01:25:45,179
taking them along the way Raj has been

2259
01:25:49,850 --> 01:25:47,460
doing a great job answering those

2260
01:25:51,649 --> 01:25:49,860
so let's uh let's take a question now as

2261
01:25:53,890 --> 01:25:51,659
the closeout crew

2262
01:25:56,810 --> 01:25:53,900
gets that hatch closed

2263
01:26:00,350 --> 01:25:56,820

Seth milborn 99

2264

01:26:02,390 --> 01:26:00,360

asks how does the docking process work

2265

01:26:04,430 --> 01:26:02,400

all right well Seth first off I like the

2266

01:26:05,930 --> 01:26:04,440

99 because I'm a class of 99 grads in

2267

01:26:08,450 --> 01:26:05,940

the academy so I was going to throw out

2268

01:26:10,910 --> 01:26:08,460

to shout to the 99ers out there but so

2269

01:26:12,229 --> 01:26:10,920

how does the docking process work uh so

2270

01:26:13,669 --> 01:26:12,239

we have what's called an instantaneous

2271

01:26:16,129 --> 01:26:13,679

launch window and the reason is because

2272

01:26:17,990 --> 01:26:16,139

the you're trying to align the orbit

2273

01:26:20,689 --> 01:26:18,000

that we're going to put the dragon into

2274

01:26:22,370 --> 01:26:20,699

with the orbit of the space station and

2275

01:26:24,590 --> 01:26:22,380

there's different Windows every day but

2276

01:26:26,810 --> 01:26:24,600

we choose that so that we're trying to

2277

01:26:28,430 --> 01:26:26,820

it's a it's a combination of optimizing

2278

01:26:31,250 --> 01:26:28,440

the prop you need to use the propellant

2279

01:26:32,990 --> 01:26:31,260

and the timing so you could go faster to

2280

01:26:34,490 --> 01:26:33,000

the space station you could go slower it

2281

01:26:39,189 --> 01:26:34,500

depends on the propellant but we have to

2282

01:26:42,350 --> 01:26:41,149

overground station

2283

01:26:43,250 --> 01:26:42,360

I'll pause for just a second for the

2284

01:26:48,890 --> 01:26:43,260

comp checks and I'll come back to your

2285

01:26:53,390 --> 01:26:50,930

core loud and clear ground station com

2286

01:26:58,370 --> 01:26:53,400

check complete standby for tdrs calm

2287

01:27:00,950 --> 01:26:59,870

and this is what we talked about earlier

2288

01:27:02,149 --> 01:27:00,960

Daryl that there's going to be a series

2289

01:27:05,209 --> 01:27:02,159

of contracts checking the different

2290

01:27:10,370 --> 01:27:08,990

oh a ground station Comcheck is complete

2291

01:27:13,250 --> 01:27:10,380

now

2292

01:27:15,110 --> 01:27:13,260

next week next will be tedris uh in the

2293

01:27:17,270 --> 01:27:15,120

meantime to I'll keep talking until they

2294

01:27:19,490 --> 01:27:17,280

talk again uh so once you're in orbit

2295

01:27:20,810 --> 01:27:19,500

then you first you you start in a lower

2296

01:27:23,390 --> 01:27:20,820

orbit than the space station and when

2297

01:27:25,370 --> 01:27:23,400

you're in a lower orbit uh generally for

2298

01:27:27,590 --> 01:27:25,380

mostly circular orbits you're moving

2299

01:27:28,790 --> 01:27:27,600

faster relative to the station so you

2300

01:27:32,090 --> 01:27:28,800

actually start to catch up to the space

2301

01:27:35,510 --> 01:27:33,709

and then you do a series of what's

2302

01:27:38,450 --> 01:27:35,520

called phasing Burns to slowly boost

2303

01:27:39,950 --> 01:27:38,460

yourself very close to the space station

2304

01:27:41,810 --> 01:27:39,960

and once you get inside What's called

2305

01:27:46,450 --> 01:27:41,820

the keep out sphere that's when uh

2306

01:27:51,350 --> 01:27:49,189

the head SpaceX dragon have you loud and

2307

01:27:56,870 --> 01:27:51,360

clear

2308

01:28:03,290 --> 01:27:56,880

complete standby for comchecks with DC

2309

01:28:03,300 --> 01:28:08,870

Dragon DC on countdown one comp check

2310

01:28:12,950 --> 01:28:10,910

ing dragon have you allowed player on

2311

01:28:15,470 --> 01:28:12,960

countdown one

2312

01:28:20,390 --> 01:28:15,480

DC loud and clear standby for comchecks

2313

01:28:20,400 --> 01:28:31,910

Dragon MD on countdown 1 Comcheck

2314

01:28:40,490 --> 01:28:34,189

MD loud and clear standby for Comcheck

2315

01:28:40,500 --> 01:28:47,570

Dragon MD on Dragon to ground Comcheck

2316

01:28:47,580 --> 01:28:51,890

is

2317

01:28:56,090 --> 01:28:54,110

MD loud and clear standby for com checks

2318

01:29:04,729 --> 01:28:56,100

with LD

2319

01:29:10,610 --> 01:29:07,250

LD loud clear standby for Comcheck over

2320

01:29:10,620 --> 01:29:16,729

Dragon LD on Dragon the ground Comcheck

2321

01:29:20,270 --> 01:29:18,950

LG dragon that belong clear over Dragon

2322

01:29:27,590 --> 01:29:20,280

the ground

2323

01:29:30,590 --> 01:29:29,149

Dragon SpaceX with that launch

2324

01:29:33,830 --> 01:29:30,600

configuration comp checks are now

2325

01:29:39,169 --> 01:29:37,310

basic tracking copies

2326

01:29:40,310 --> 01:29:39,179

and so Those comp checks like we talked

2327

01:29:41,930 --> 01:29:40,320

about Daryl were different people

2328

01:29:44,450 --> 01:29:41,940

different loops and just making sure

2329

01:29:45,950 --> 01:29:44,460

that all the the key folks can get in

2330

01:29:47,330 --> 01:29:45,960

contact with the crew if they need to

2331

01:29:49,490 --> 01:29:47,340

since there's a bunch of if you can

2332

01:29:50,930 --> 01:29:49,500

imagine lots and lots of different Comm

2333

01:29:52,310 --> 01:29:50,940

loops on the ground with different

2334

01:29:53,930 --> 01:29:52,320

people talking on different ones so you

2335

01:29:56,330 --> 01:29:53,940

want to make sure that that uh they're

2336

01:29:58,250 --> 01:29:56,340

connected to Basics we are going to

2337

01:30:00,050 --> 01:29:58,260

commence checks for the landscape system

2338

01:30:01,850 --> 01:30:00,060

expect momentary flight computer State

2339

01:30:05,270 --> 01:30:01,860

change followed by a transition back to

2340

01:30:09,229 --> 01:30:06,830

all right so that flight State change

2341

01:30:10,669 --> 01:30:09,239

next dragon we'll be watching thanks yep

2342

01:30:11,930 --> 01:30:10,679

so the flight computer State he detained

2343

01:30:13,610 --> 01:30:11,940

he's talking about it's on the displays

2344

01:30:15,110 --> 01:30:13,620

in the bottom center the displays you

2345

01:30:17,050 --> 01:30:15,120

tells you what state the flight computer

2346

01:30:19,310 --> 01:30:17,060

is in so right now it says hatch open

2347

01:30:21,290 --> 01:30:19,320

and the way that they know for sure

2348

01:30:22,610 --> 01:30:21,300

that's closed isn't just the door being

2349

01:30:23,750 --> 01:30:22,620

closed it's actually the flight computer

2350

01:30:25,790 --> 01:30:23,760

state

2351

01:30:27,770 --> 01:30:25,800

doing that and that then initiates

2352

01:30:29,689 --> 01:30:27,780

allows them to initiate further commands

2353

01:30:31,129 --> 01:30:29,699

and then cleaning up your your answer on

2354

01:30:32,510 --> 01:30:31,139

the docking so we talked about it's

2355

01:30:33,950 --> 01:30:32,520

catching up to the space station and

2356

01:30:36,290 --> 01:30:33,960

then you do what's called phasing Burns

2357

01:30:37,790 --> 01:30:36,300

to get closer to the space station uh

2358

01:30:40,070 --> 01:30:37,800

once you get in basically what we call

2359

01:30:41,510 --> 01:30:40,080

the keepout sphere uh either along the

2360

01:30:43,430 --> 01:30:41,520

velocity Vector from below it depending

2361

01:30:44,750 --> 01:30:43,440

on docking axis you're on then you join

2362

01:30:46,310 --> 01:30:44,760

up with the space station and you'll see

2363

01:30:48,050 --> 01:30:46,320

that tomorrow actually when if you tune

2364

01:30:50,270 --> 01:30:48,060

back in back on NASA TV they'll show the

2365

01:30:52,850 --> 01:30:50,280

docking indeed we will right around 3

2366

01:30:54,950 --> 01:30:52,860

A.M eastern time tomorrow

2367

01:31:00,830 --> 01:30:54,960

they've got about a 24

2368

01:31:02,810 --> 01:31:00,840

to 25 hour Transit from launch to dock

2369

01:31:04,729 --> 01:31:02,820

we want to take a pause now and we'll

2370

01:31:07,189 --> 01:31:04,739

keep monitoring the progress inside

2371

01:31:09,350 --> 01:31:07,199

dragon with the three astronauts and one

2372

01:31:10,970 --> 01:31:09,360

Cosmonaut but in the meantime

2373

01:31:12,169 --> 01:31:10,980

we also want to check in with a special

2374

01:31:14,870 --> 01:31:12,179

guest

2375

01:31:16,790 --> 01:31:14,880

Jasmine Hopkins take it away thanks so

2376

01:31:20,330 --> 01:31:16,800

much Daryl joining us now on the balcony

2377

01:31:22,490 --> 01:31:20,340

of osb2 is Kurt Costello the ISS Chief

2378

01:31:24,649 --> 01:31:22,500

scientist good evening Kurt good evening

2379

01:31:26,570 --> 01:31:24,659

Jasmine we are so glad to have you here

2380

01:31:29,030 --> 01:31:26,580

tonight after Cruise six launches

2381

01:31:30,709 --> 01:31:29,040

they'll become part of the Expedition 69

2382

01:31:32,930 --> 01:31:30,719

crew and their time will be packed with

2383

01:31:35,149 --> 01:31:32,940

space walks a lot of science so can you

2384

01:31:37,490 --> 01:31:35,159

unpack some of that for us yeah they'll

2385

01:31:39,709 --> 01:31:37,500

be there during a really Dynamic portion

2386

01:31:43,310 --> 01:31:39,719

of our year we're going to have the

2387

01:31:45,050 --> 01:31:43,320

cargo Mission SpaceX 27 launch the ng-19

2388

01:31:47,930 --> 01:31:45,060

mission launch and then crude missions

2389

01:31:50,810 --> 01:31:47,940

with the Boeing CFT Mission and then

2390

01:31:52,910 --> 01:31:50,820

Acts 2 later in their increment so there

2391

01:31:54,350 --> 01:31:52,920

is a ton of research going on a lot of

2392

01:31:56,510 --> 01:31:54,360

it's going to be dedicated to human

2393

01:31:59,090 --> 01:31:56,520

research and one of those investigations

2394

01:32:01,250 --> 01:31:59,100

comes from Issa and it's on our immunity

2395

01:32:03,709 --> 01:32:01,260

assay investigation where we're trying

2396

01:32:06,410 --> 01:32:03,719

to find out how space flight impacts the

2397

01:32:07,729 --> 01:32:06,420

immune system of the crew members right

2398

01:32:10,010 --> 01:32:07,739

Kurt as you said I mean this time is

2399

01:32:12,169 --> 01:32:10,020

going to be packed with a lot of science a

2400

01:32:13,310 --> 01:32:12,179

six-month science mission for them one

2401

01:32:15,590 --> 01:32:13,320

of the experiments that's been

2402

01:32:17,390 --> 01:32:15,600

long-standing is called tissue chips can

2403

01:32:19,010 --> 01:32:17,400

you tell us more about that first

2404

01:32:21,649 --> 01:32:19,020

initiative with the National Institutes

2405

01:32:24,890 --> 01:32:21,659

of Health yeah this is actually the

2406

01:32:27,790 --> 01:32:24,900

second in a series of the NIH ncats

2407

01:32:31,189 --> 01:32:27,800

which stands for National Center for uh

2408

01:32:33,169 --> 01:32:31,199

advancing translational science and what

2409

01:32:34,790 --> 01:32:33,179

we're looking at are tissue chips which

2410

01:32:41,450 --> 01:32:34,800

are uh

2411

01:32:46,310 --> 01:32:41,460

sets of cells and tissues that go into

2412

01:32:49,010 --> 01:32:46,320

the the ISS and are grown out and this

2413

01:32:52,250 --> 01:32:49,020

set of experiments from the ISS National

2414

01:32:54,229 --> 01:32:52,260

Lab is really set to look at treatments

2415

01:32:56,270 --> 01:32:54,239

for those tissues so we'll be having two

2416

01:33:00,050 --> 01:32:56,280

investigations go on board the first is

2417

01:33:02,330 --> 01:33:00,060

called uh Cardinal heart 2.0 and they'll

2418

01:33:05,990 --> 01:33:02,340

be looking at treatments that could help

2419

01:33:07,550 --> 01:33:06,000

deal with cardiac stressors on orbit and

2420

01:33:10,490 --> 01:33:07,560

the other one is called engineered heart

2421

01:33:12,590 --> 01:33:10,500

tissues 2.0 and this one is is really

2422

01:33:14,870 --> 01:33:12,600

interesting they've got those same heart

2423

01:33:16,910 --> 01:33:14,880

tissues growing but this time they're

2424

01:33:19,129 --> 01:33:16,920

attached to a magnet and the magnet

2425

01:33:21,649 --> 01:33:19,139

tells us how hard that heart tissue

2426

01:33:23,149 --> 01:33:21,659

beats and contracts on orbit so these

2427

01:33:25,189 --> 01:33:23,159

living heart cells are going to be able

2428

01:33:27,169 --> 01:33:25,199

to tell us one how hard they're working

2429

01:33:29,990 --> 01:33:27,179

in the presence of the space flight

2430

01:33:31,490 --> 01:33:30,000

environment and then treatments are

2431

01:33:33,410 --> 01:33:31,500

going to be applied to them so we can

2432

01:33:35,209 --> 01:33:33,420

understand if that can help with those

2433

01:33:36,410 --> 01:33:35,219

stressors wow it's nice to hear that you

2434

01:33:38,629 --> 01:33:36,420

know some of the research we're doing on

2435

01:33:41,450 --> 01:33:38,639

station could benefit our health here on

2436

01:33:43,669 --> 01:33:41,460

Earth as well there's also a combustion

2437

01:33:45,950 --> 01:33:43,679

experiment called Sophie Mist can you

2438

01:33:48,709 --> 01:33:45,960

tell us about that as well sure Sophie

2439

01:33:51,129 --> 01:33:48,719

mist is a combustion experiment for

2440

01:33:54,350 --> 01:33:51,139

solids Sophie stands for

2441

01:33:57,530 --> 01:33:54,360

solids in

2442

01:34:00,110 --> 01:33:57,540

in-flight Extinction so ignition and

2443

01:34:02,030 --> 01:34:00,120

Extinction and what we're looking at are

2444

01:34:04,310 --> 01:34:02,040

how solid materials burn under different

2445

01:34:07,610 --> 01:34:04,320

atmospheric pressures and different

2446

01:34:09,770 --> 01:34:07,620

concentrations of oxygen the reason for

2447

01:34:11,390 --> 01:34:09,780

this is our exploration vehicles have

2448

01:34:14,390 --> 01:34:11,400

different atmospheres and we want to

2449

01:34:16,189 --> 01:34:14,400

understand how solids burn in space and

2450

01:34:17,990 --> 01:34:16,199

how they can be extinguished efficiently

2451

01:34:20,090 --> 01:34:18,000

so we want to be able to put out any

2452

01:34:21,830 --> 01:34:20,100

fires that ever occur in a cabin right

2453

01:34:23,330 --> 01:34:21,840

that's very important ISS Chief

2454

01:34:24,590 --> 01:34:23,340

scientist Kurt Costello thanks so much

2455

01:34:27,110 --> 01:34:24,600

for joining us tonight thank you very

2456

01:34:28,910 --> 01:34:27,120

much of course Daryl back to you thank

2457

01:34:30,169 --> 01:34:28,920

you Jasmine and Kurt and I thought it

2458

01:34:32,750 --> 01:34:30,179

was interesting he was talking about

2459

01:34:35,930 --> 01:34:32,760

that Sophie experiment and burning

2460

01:34:37,490 --> 01:34:35,940

materials in space you worked on some

2461

01:34:39,110 --> 01:34:37,500

experiments yourself in which you burn

2462

01:34:40,669 --> 01:34:39,120

things yeah so what are the things in

2463

01:34:43,070 --> 01:34:40,679

space yeah well you got to be really

2464

01:34:44,629 --> 01:34:43,080

careful yeah clearly yeah so when you're

2465

01:34:46,669 --> 01:34:44,639

up there's part of expedition 66 we did

2466

01:34:49,550 --> 01:34:46,679

several experiments with the combustion

2467

01:34:51,290 --> 01:34:49,560

chamber and it is a it is a piece of

2468

01:34:53,810 --> 01:34:51,300

engineering so getting to work on it

2469

01:34:55,250 --> 01:34:53,820

install new install new materials but

2470

01:34:56,390 --> 01:34:55,260

the really cool thing thing so Kirk

2471

01:34:57,709 --> 01:34:56,400

mentioned part of it like there's the

2472

01:34:59,149 --> 01:34:57,719

one piece is making sure there's not

2473

01:35:01,010 --> 01:34:59,159

fires the other thing we're really

2474

01:35:02,629 --> 01:35:01,020

interested in is uh there's some work

2475

01:35:04,430 --> 01:35:02,639

going on on like cold flames and so

2476

01:35:06,649 --> 01:35:04,440

flames on the earth because of the

2477

01:35:08,030 --> 01:35:06,659

gravity field you know you have the hot

2478

01:35:09,470 --> 01:35:08,040

part and then you see it actually go up

2479

01:35:10,669 --> 01:35:09,480

and Jenny siding our class is a

2480

01:35:12,110 --> 01:35:10,679

combustion engineer so there's there's

2481

01:35:14,629 --> 01:35:12,120

some really fascinating things but in

2482

01:35:16,430 --> 01:35:14,639

microgravity it's a ball of flame and so

2483

01:35:18,830 --> 01:35:16,440

some really interesting research is you

2484

01:35:19,910 --> 01:35:18,840

know some cold combustion engine type

2485

01:35:22,010 --> 01:35:19,920

technology where you could reduce

2486

01:35:23,510 --> 01:35:22,020

greenhouse gas emissions because of the

2487

01:35:24,830 --> 01:35:23,520

way the flame Burns so that's that is

2488

01:35:26,810 --> 01:35:24,840

the kind of fundamental science we're

2489

01:35:28,490 --> 01:35:26,820

doing combustion research up there just

2490

01:35:30,290 --> 01:35:28,500

because it's more of an efficient burn

2491

01:35:32,629 --> 01:35:30,300

well it burns different exactly you can

2492

01:35:34,850 --> 01:35:32,639

have a cooler flame as it burns out

2493

01:35:36,890 --> 01:35:34,860

instead of having this sort of wasted uh

2494

01:35:40,070 --> 01:35:36,900

stuff in the as it goes in early so yeah

2495

01:35:41,750 --> 01:35:40,080

some just amazing things that good side

2496

01:35:43,729 --> 01:35:41,760

hatch leak check that fall out of

2497

01:35:47,450 --> 01:35:43,739

research we've never expected

2498

01:35:51,410 --> 01:35:48,770

you just heard the core talk about the

2499

01:35:53,510 --> 01:35:51,420

the leak check or that Steve and uh we

2500

01:35:57,590 --> 01:35:53,520

also have a post Ingress briefing when

2501
01:36:02,629 --> 01:35:59,450
yeah that's great news we are ready to

2502
01:36:07,250 --> 01:36:05,270
all right we have no updates on weather

2503
01:36:09,770 --> 01:36:07,260
from the previous briefing and drought

2504
01:36:11,870 --> 01:36:09,780
dragon and Falcon are tracking no issues

2505
01:36:14,270 --> 01:36:11,880
for launch we're looking good here

2506
01:36:16,370 --> 01:36:14,280
at the NASA team for your awareness is

2507
01:36:19,129 --> 01:36:16,380
tracking a possible conjunction for ISS

2508
01:36:22,010 --> 01:36:19,139
in about 22 hours and is considering

2509
01:36:24,470 --> 01:36:22,020
performing a p Dam if required we are

2510
01:36:26,990 --> 01:36:24,480
still go for launch regardless of if the

2511
01:36:29,930 --> 01:36:27,000
P Dam will be required

2512
01:36:31,490 --> 01:36:29,940
if we do take that avoidance maneuver or

2513
01:36:34,070 --> 01:36:31,500

if ISS takes that avoidance maneuver

2514

01:36:36,770 --> 01:36:34,080

they may attempt to perform it prior to

2515

01:36:38,510 --> 01:36:36,780

the dragon boost burn which helps to

2516

01:36:39,649 --> 01:36:38,520

minimize impacts to our Rendezvous

2517

01:36:41,810 --> 01:36:39,659

timeline

2518

01:36:44,030 --> 01:36:41,820

we will come back after launch with more

2519

01:36:46,310 --> 01:36:44,040

information as the joint teams evaluate

2520

01:36:47,450 --> 01:36:46,320

if the pdam is required as well as if

2521

01:36:52,450 --> 01:36:47,460

there are any updates to your mission

2522

01:36:56,689 --> 01:36:54,830

copy all thank you for the heads up on

2523

01:36:59,870 --> 01:36:56,699

the PDM and we'll be bringing those

2524

01:37:02,090 --> 01:36:59,880

words after we get to order

2525

01:37:04,189 --> 01:37:02,100

so a possible conjunction right

2526

01:37:06,890 --> 01:37:04,199

conjunction is a fancy term for hitting

2527

01:37:08,750 --> 01:37:06,900

something running into it so for the

2528

01:37:10,370 --> 01:37:08,760

space station right not the dragon so as

2529

01:37:12,290 --> 01:37:10,380

you heard there's still go for launch

2530

01:37:13,490 --> 01:37:12,300

and kind of ties into this question we

2531

01:37:15,709 --> 01:37:13,500

had from social media before about

2532

01:37:17,390 --> 01:37:15,719

docking I mentioned there's a timeline

2533

01:37:19,910 --> 01:37:17,400

and you heard that it's a good read back

2534

01:37:21,890 --> 01:37:19,920

dragon and at this time we'll step into

2535

01:37:26,169 --> 01:37:21,900

context with the Falcon 9 operators

2536

01:37:31,430 --> 01:37:28,550

all right SpaceX Dragon we're ready for

2537

01:37:33,290 --> 01:37:31,440

comptac with the Falcon 9 operators

2538

01:37:35,990 --> 01:37:33,300

so before they did the contracts with

2539

01:37:37,370 --> 01:37:36,000

the the SpaceX the dragon team now this

2540

01:37:40,490 --> 01:37:37,380

is the rocket lan countdown one

2541

01:37:42,530 --> 01:37:40,500

initiating recom checks GNC is first

2542

01:37:51,050 --> 01:37:42,540

so this is the launch Dragon GNC on

2543

01:37:57,530 --> 01:37:53,629

GNC loud and clear standby for Comcheck

2544

01:37:57,540 --> 01:38:07,070

Dragon prop on countdown one comp check

2545

01:38:12,229 --> 01:38:09,590

prop loud and clear standby for Comcheck

2546

01:38:14,270 --> 01:38:12,239

with the avionics engineer

2547

01:38:18,110 --> 01:38:14,280

Dragon avionics on countdown one

2548

01:38:22,250 --> 01:38:19,910

avionics dragon have you loud and clear

2549

01:38:24,410 --> 01:38:22,260

on countdown one

2550

01:38:28,430 --> 01:38:24,420

avionics slide and clear standby for

2551
01:38:33,910 --> 01:38:30,350
dragon ground segment on countdown one

2552
01:38:40,430 --> 01:38:38,149
ing have you gone clear on one

2553
01:38:43,970 --> 01:38:40,440
ground segment modern clear standby for

2554
01:38:49,430 --> 01:38:45,950
Dragon launch control on countdown one

2555
01:38:54,290 --> 01:38:51,350
launch control Dragon that'd be loud and

2556
01:38:56,570 --> 01:38:54,300
clear and countdown one

2557
01:38:59,750 --> 01:38:56,580
should call loud and clear standby for

2558
01:39:05,930 --> 01:38:59,760
Comcheck by the chief engineer

2559
01:39:10,070 --> 01:39:08,629
Y dragon happy Zone clear on countdown

2560
01:39:12,890 --> 01:39:10,080
one

2561
01:39:24,169 --> 01:39:12,900
t e loud and clear this completes the F9

2562
01:39:27,830 --> 01:39:25,729
if there was any kind of problem with

2563
01:39:28,790 --> 01:39:27,840

the rocket it's a subsystem the rocket

2564

01:39:30,169 --> 01:39:28,800

you'd want that person to be able to

2565

01:39:31,970 --> 01:39:30,179

talk directly to the crew so they're

2566

01:39:33,649 --> 01:39:31,980

just making sure that com channel is

2567

01:39:35,750 --> 01:39:33,659

there going back to the P Dam you

2568

01:39:37,729 --> 01:39:35,760

mentioned that stands for debris

2569

01:39:39,290 --> 01:39:37,739

avoidance maneuver and so space force is

2570

01:39:41,810 --> 01:39:39,300

actually constantly watching all the

2571

01:39:43,250 --> 01:39:41,820

things uh in orbit and then if there is

2572

01:39:45,530 --> 01:39:43,260

any chance that we think someone will

2573

01:39:47,270 --> 01:39:45,540

get close to the ISS they notify uh

2574

01:39:49,010 --> 01:39:47,280

Houston uh we have a thing called the

2575

01:39:50,870 --> 01:39:49,020

Topo which is the position that they

2576

01:39:53,330 --> 01:39:50,880

analyze orbital directories and there's

2577

01:39:55,189 --> 01:39:53,340

uh different levels of risk so they

2578

01:39:56,570 --> 01:39:55,199

always want to make sure that we are

2579

01:39:57,950 --> 01:39:56,580

very conservative with the crew safety

2580

01:39:58,970 --> 01:39:57,960

and the vehicle safety and so as you

2581

01:40:00,410 --> 01:39:58,980

heard them talking about it's not going

2582

01:40:02,629 --> 01:40:00,420

to affect the launch decision what it

2583

01:40:03,830 --> 01:40:02,639

will affect is how they do the burns to

2584

01:40:05,810 --> 01:40:03,840

get to the space station because if the

2585

01:40:07,610 --> 01:40:05,820

space station doesn't burn to maneuver

2586

01:40:09,830 --> 01:40:07,620

then that will mean the Target that the

2587

01:40:11,510 --> 01:40:09,840

dragon is was going towards Will shift

2588

01:40:13,129 --> 01:40:11,520

and so they'll work that out over the

2589

01:40:14,810 --> 01:40:13,139

next uh over the next 20 hours you

2590

01:40:18,169 --> 01:40:14,820

mentioned the Topo that's the trajectory

2591

01:40:20,810 --> 01:40:18,179

operations officer and uh here from uh

2592

01:40:22,250 --> 01:40:20,820

our colleagues at Johnson Space Center

2593

01:40:24,110 --> 01:40:22,260

that they're trending in the right

2594

01:40:26,270 --> 01:40:24,120

direction so things are are looking good

2595

01:40:28,189 --> 01:40:26,280

good in terms of that possible

2596

01:40:29,629 --> 01:40:28,199

conjunction in 22 hours for the

2597

01:40:31,310 --> 01:40:29,639

International Space Station I'd say it's

2598

01:40:32,450 --> 01:40:31,320

pretty normal at least once a week we

2599

01:40:34,189 --> 01:40:32,460

hear about one when you're on the

2600

01:40:35,510 --> 01:40:34,199

station most of them resolve themselves

2601

01:40:37,189 --> 01:40:35,520

very rarely do you actually have to

2602

01:40:38,870 --> 01:40:37,199

maneuver the station but like I said you

2603

01:40:40,850 --> 01:40:38,880

always we have this huge protective

2604

01:40:42,590 --> 01:40:40,860

bubble around the space station and

2605

01:40:44,990 --> 01:40:42,600

anything that possibly could go in there

2606

01:40:45,890 --> 01:40:45,000

we always want to investigate so this is

2607

01:40:47,450 --> 01:40:45,900

probably just the beginning of that

2608

01:40:49,430 --> 01:40:47,460

investigation and then as we learn more

2609

01:40:51,050 --> 01:40:49,440

about it it's probably not going to be a

2610

01:40:52,250 --> 01:40:51,060

problem but we always are wanting to

2611

01:40:54,050 --> 01:40:52,260

make sure we're very conservative with

2612

01:40:56,450 --> 01:40:54,060

the make sure you're ready in case

2613

01:40:58,250 --> 01:40:56,460

exactly all right very good well now we

2614

01:41:01,610 --> 01:40:58,260

want to throw it over to Jasmine who is

2615

01:41:03,169 --> 01:41:01,620

with NASA administrator Bill Nelson

2616

01:41:04,790 --> 01:41:03,179

very much Daryl yes right now we're

2617

01:41:07,129 --> 01:41:04,800

honored to be joined by NASA

2618

01:41:09,110 --> 01:41:07,139

administrator Bill Nelson as well as

2619

01:41:10,850 --> 01:41:09,120

astronaut Reid Wiseman thank you both

2620

01:41:13,430 --> 01:41:10,860

for being here tonight well

2621

01:41:15,410 --> 01:41:13,440

well it's always a treat when we start

2622

01:41:17,149 --> 01:41:15,420

launching and going into the heavens

2623

01:41:19,129 --> 01:41:17,159

exactly we're always happy to have you

2624

01:41:20,629 --> 01:41:19,139

back here administrator Nelson so first

2625

01:41:22,790 --> 01:41:20,639

question for you International

2626

01:41:25,010 --> 01:41:22,800

partnership is the lifeblood of the

2627

01:41:26,870 --> 01:41:25,020

commercial crew program we have the

2628

01:41:28,550 --> 01:41:26,880

second time we have a Ross Cosmos

2629

01:41:30,890 --> 01:41:28,560

Cosmonaut on board but this is the first

2630

01:41:32,209 --> 01:41:30,900

time we have a UAE astronaut on board

2631

01:41:33,709 --> 01:41:32,219

can you talk about those International

2632

01:41:36,770 --> 01:41:33,719

Partnerships

2633

01:41:39,229 --> 01:41:36,780

you know as we go back to the Moon after

2634

01:41:41,810 --> 01:41:39,239

50 years it's not just the U.S

2635

01:41:43,370 --> 01:41:41,820

government it's now an international

2636

01:41:46,010 --> 01:41:43,380

mission

2637

01:41:49,070 --> 01:41:46,020

uh and it's a public-private partnership

2638

01:41:50,090 --> 01:41:49,080

as we go back to the moon and then on to

2639

01:41:53,990 --> 01:41:50,100

Mars

2640

01:41:55,729 --> 01:41:54,000

in this particular case uh going to

2641

01:41:58,430 --> 01:41:55,739

commercial crew to the International

2642

01:42:00,709 --> 01:41:58,440

Space Station it's very much both of

2643

01:42:04,250 --> 01:42:00,719

those as well

2644

01:42:08,270 --> 01:42:04,260

public private partnership with SpaceX

2645

01:42:09,550 --> 01:42:08,280

and then International crew so much so

2646

01:42:13,310 --> 01:42:09,560

that

2647

01:42:16,070 --> 01:42:13,320

you've got our partners ever since we

2648

01:42:18,830 --> 01:42:16,080

built the Space Station the Russians

2649

01:42:21,410 --> 01:42:18,840

we're now sending an American astronaut

2650

01:42:25,010 --> 01:42:21,420

on the soyuz and they are sending a

2651

01:42:28,970 --> 01:42:25,020

Russian cosmonaut on Dragon

2652

01:42:32,750 --> 01:42:28,980

and and we will have many other

2653

01:42:34,970 --> 01:42:32,760

nationalities going as well right we go

2654

01:42:37,490 --> 01:42:34,980

farther if we go together read question

2655

01:42:39,109 --> 01:42:37,500

for you we right now are in low earth

2656

01:42:41,090 --> 01:42:39,119

orbit on the International Space Station

2657

01:42:43,310 --> 01:42:41,100

that that is Paving the way for deep

2658

01:42:45,109 --> 01:42:43,320

space can you tell us about that I think

2659

01:42:46,910 --> 01:42:45,119

the International Space Station we've

2660

01:42:49,010 --> 01:42:46,920

been we've had crew on there since the

2661

01:42:51,109 --> 01:42:49,020

year 2000. we don't even think about it

2662

01:42:52,310 --> 01:42:51,119

anymore right there so we have seven

2663

01:42:53,930 --> 01:42:52,320

Folks up there right now and they've

2664

01:42:55,370 --> 01:42:53,940

been orbiting the Earth they just flew

2665

01:42:56,270 --> 01:42:55,380

over us here about a half an hour ago

2666

01:42:58,430 --> 01:42:56,280

and they're going to come back around

2667

01:42:59,990 --> 01:42:58,440

but the thing that really blows your

2668

01:43:01,370 --> 01:43:00,000

mind up there is all of the

2669

01:43:03,350 --> 01:43:01,380

environmental control life support

2670

01:43:05,209 --> 01:43:03,360

systems that we have how much we're

2671

01:43:07,310 --> 01:43:05,219

recycling water all the science that

2672

01:43:09,410 --> 01:43:07,320

we're conducting and we really have

2673

01:43:12,470 --> 01:43:09,420

learned how to operate off of our planet

2674

01:43:14,750 --> 01:43:12,480

so we can do that now 250 miles up so

2675

01:43:16,850 --> 01:43:14,760

it's time to start doing that 250 000

2676
01:43:18,830 --> 01:43:16,860
miles away at the moon and then heading

2677
01:43:20,990 --> 01:43:18,840
on to Mars right we're very exciting

2678
01:43:22,850 --> 01:43:21,000
great time to be at Nasa we actually

2679
01:43:24,649 --> 01:43:22,860
pulled the NASA Workforce and they want

2680
01:43:26,930 --> 01:43:24,659
to know from both of you what missions

2681
01:43:29,709 --> 01:43:26,940
are you most looking forward to in 2023

2682
01:43:33,169 --> 01:43:29,719
a very exciting time for us all of them

2683
01:43:35,510 --> 01:43:33,179
good answer answer and by the way it's

2684
01:43:39,490 --> 01:43:35,520
not just space so we're going to fly the

2685
01:43:44,570 --> 01:43:39,500
x-57 all electric airplane the x-59

2686
01:43:46,729 --> 01:43:44,580
supersonic low Sonic Boom airplane and

2687
01:43:49,250 --> 01:43:46,739
then our climate

2688
01:43:51,530 --> 01:43:49,260

we are putting up all kinds of

2689

01:43:53,870 --> 01:43:51,540

instruments up there that are measuring

2690

01:43:55,790 --> 01:43:53,880

very specifically what's happening to

2691

01:43:56,930 --> 01:43:55,800

the Earth

2692

01:43:58,010 --> 01:43:56,940

important rest to know what's going on

2693

01:43:59,810 --> 01:43:58,020

you're

2694

01:44:01,070 --> 01:43:59,820

would you like to add anything I have to

2695

01:44:03,109 --> 01:44:01,080

add that we're standing here at Cape

2696

01:44:05,030 --> 01:44:03,119

Canaveral we got four of our friends

2697

01:44:07,910 --> 01:44:05,040

behind us so I'm rooting for crew six

2698

01:44:10,010 --> 01:44:07,920

today absolutely go Chris sex thank you

2699

01:44:12,709 --> 01:44:10,020

both for being here tonight Daryl back

2700

01:44:15,470 --> 01:44:12,719

to you thank you very much Jasmine and

2701

01:44:18,250 --> 01:44:15,480

although going into space is not child's

2702

01:44:20,750 --> 01:44:18,260

play every Dragon astronaut crew brings

2703

01:44:24,050 --> 01:44:20,760

uh every Dragon astronaut should say

2704

01:44:26,570 --> 01:44:24,060

they bring a stuffed toy with them and

2705

01:44:28,850 --> 01:44:26,580

its purpose when the toy starts floating

2706

01:44:31,310 --> 01:44:28,860

the strapped in crew has confirmation

2707

01:44:33,709 --> 01:44:31,320

they've reached microgravity and what is

2708

01:44:35,870 --> 01:44:33,719

this called This is called a zero g

2709

01:44:38,629 --> 01:44:35,880

indicator it's a long-standing tradition

2710

01:44:40,490 --> 01:44:38,639

and there's been seven on Dragon so far

2711

01:44:43,370 --> 01:44:40,500

there's one in this dragon as well

2712

01:44:45,830 --> 01:44:43,380

starting with this guy it all began with

2713

01:44:47,570 --> 01:44:45,840

plush Earth who can forget him floating

2714

01:44:50,689 --> 01:44:47,580

around by himself in the first uncrewed

2715

01:44:52,609 --> 01:44:50,699

flight in 2017 called demo one that was

2716

01:44:55,010 --> 01:44:52,619

followed up by a sequin bedazzle

2717

01:44:57,350 --> 01:44:55,020

dinosaur named Tremor picked out by Bob

2718

01:45:00,530 --> 01:44:57,360

binkin's son Theo and crewmate Doug

2719

01:45:03,109 --> 01:45:00,540

Hurley's son jack crew one took a toy

2720

01:45:05,149 --> 01:45:03,119

baby Yoda with them and to show the

2721

01:45:07,729 --> 01:45:05,159

first four-person crew when they reach

2722

01:45:11,689 --> 01:45:07,739

space but since then and it's been all

2723

01:45:14,750 --> 01:45:11,699

stuffed animals a penguin for crew two

2724

01:45:15,709 --> 01:45:14,760

and then of course raja's flight a

2725

01:45:17,270 --> 01:45:15,719

turtle

2726

01:45:20,330 --> 01:45:17,280

for crew 3

2727

01:45:23,149 --> 01:45:20,340

there's Kayla Baron yeah and then a

2728

01:45:25,669 --> 01:45:23,159

turtle and a chimp for crew four for the

2729

01:45:28,250 --> 01:45:25,679

last mission though on crew 5 they

2730

01:45:30,830 --> 01:45:28,260

unveiled the first humanoid the Albert

2731

01:45:33,530 --> 01:45:30,840

Einstein Little thinker plush doll

2732

01:45:37,490 --> 01:45:33,540

and so that begs the question what is

2733

01:45:39,169 --> 01:45:37,500

crew six's zero g we'll find out later

2734

01:45:40,609 --> 01:45:39,179

but you had the turtle and there's a

2735

01:45:42,470 --> 01:45:40,619

special reason for that what it is yeah

2736

01:45:44,510 --> 01:45:42,480

so our class of 2017 we're called The

2737

01:45:46,189 --> 01:45:44,520

Turtles which uh so the the previous

2738

01:45:47,629 --> 01:45:46,199

class always names the next class and I

2739

01:45:48,890 --> 01:45:47,639

think a lot of people thought Turtles

2740

01:45:50,689 --> 01:45:48,900

Was supposed to be an insult because

2741

01:45:52,550 --> 01:45:50,699

it's slow but that's actually quite the

2742

01:45:53,930 --> 01:45:52,560

opposite uh the reason is when the vice

2743

01:45:55,910 --> 01:45:53,940

president announced her classique said

2744

01:45:57,169 --> 01:45:55,920

that if you ever see a turtle on a fence

2745

01:45:59,209 --> 01:45:57,179

post you know the turtle didn't get

2746

01:46:00,890 --> 01:45:59,219

there by itself and so we take it as

2747

01:46:02,810 --> 01:46:00,900

quite a nod to the people that got us to

2748

01:46:03,890 --> 01:46:02,820

where we're at which is very true that

2749

01:46:05,629 --> 01:46:03,900

none of us would be where we're at

2750

01:46:07,129 --> 01:46:05,639

without our families the the flight

2751

01:46:08,570 --> 01:46:07,139

controllers the trainers that got us

2752

01:46:10,189 --> 01:46:08,580

there so we actually love the term

2753

01:46:12,530 --> 01:46:10,199

turtle and don't take it as an insult at

2754

01:46:13,910 --> 01:46:12,540

all but yeah we had every crew takes a

2755

01:46:15,649 --> 01:46:13,920

while to develop theirs with ours

2756

01:46:18,050 --> 01:46:15,659

actually our turtle was named foul which

2757

01:46:21,109 --> 01:46:18,060

is German for turtle since Matthias was

2758

01:46:23,270 --> 01:46:21,119

our German uh our German crewmate and it

2759

01:46:25,070 --> 01:46:23,280

was actually a rainbow Turtle uh a

2760

01:46:27,169 --> 01:46:25,080

peacock Turtle which is uh because Tom

2761

01:46:28,850 --> 01:46:27,179

was a class of the peacock so it was it

2762

01:46:31,010 --> 01:46:28,860

was a nod to everyone on the crew you

2763

01:46:33,109 --> 01:46:31,020

merged that in yeah that was nice all

2764

01:46:34,790 --> 01:46:33,119

right as they seal up uh get the final

2765

01:46:36,470 --> 01:46:34,800

they've sealed the hatch but now they're

2766

01:46:38,149 --> 01:46:36,480

doing some final checks there with the

2767

01:46:40,550 --> 01:46:38,159

crew we want to check in back with

2768

01:46:43,910 --> 01:46:40,560

Mission Control in Houston and our own

2769

01:46:48,229 --> 01:46:46,550

thanks Daryl when crusix arrives at the

2770

01:46:50,629 --> 01:46:48,239

space station tomorrow morning they will

2771

01:46:52,850 --> 01:46:50,639

officially become Expedition 68 flight

2772

01:46:54,830 --> 01:46:52,860

Engineers once on board they'll do

2773

01:46:57,109 --> 01:46:54,840

something known as a direct Handover

2774

01:46:59,330 --> 01:46:57,119

basically saying that crew 5 and crew 6

2775

01:47:02,090 --> 01:46:59,340

will be aboard the space station all

2776

01:47:03,709 --> 01:47:02,100

together until crew 5 comes home crew 5

2777

01:47:05,510 --> 01:47:03,719

will be able to give crew 6 an

2778

01:47:08,149 --> 01:47:05,520

orientation and show them the ropes

2779

01:47:10,669 --> 01:47:08,159

which might be particularly helpful for

2780

01:47:13,370 --> 01:47:10,679

the first time space flyers on this

2781

01:47:15,830 --> 01:47:13,380

flight NASA's Woody hoberg UAE astronaut

2782

01:47:18,350 --> 01:47:15,840

Sultan on the ADI and Rose Cosmos

2783

01:47:20,450 --> 01:47:18,360

Cosmonaut Andre fedayev a direct

2784

01:47:22,310 --> 01:47:20,460

Handover also helps ensure a continuous

2785

01:47:25,310 --> 01:47:22,320

presence on the space station a record

2786

01:47:27,350 --> 01:47:25,320

we've held for more than 22 years as the

2787

01:47:29,390 --> 01:47:27,360

station is first and foremost a

2788

01:47:31,790 --> 01:47:29,400

laboratory the crew will jump right into

2789

01:47:34,250 --> 01:47:31,800

conducting experiments with new research

2790

01:47:35,510 --> 01:47:34,260

still to be delivered on upcoming cargo

2791

01:47:37,370 --> 01:47:35,520

flights

2792

01:47:40,250 --> 01:47:37,380

and now we'll go ahead and toss it back

2793

01:47:42,830 --> 01:47:40,260

to the team out at Kennedy Daryl

2794

01:47:45,229 --> 01:47:42,840

all right thank you very much Courtney

2795

01:47:46,970 --> 01:47:45,239

and as you can see on the screen there

2796

01:47:49,070 --> 01:47:46,980

the closeout crew

2797

01:47:52,129 --> 01:47:49,080

they are tethered because they're up so

2798

01:47:53,510 --> 01:47:52,139

high that's a 255 foot level which is a

2799

01:47:55,189 --> 01:47:53,520

safety measure and they're basically

2800

01:47:57,229 --> 01:47:55,199

taking some close-out photographs to

2801

01:47:59,450 --> 01:47:57,239

document the hatch closure we heard them

2802

01:48:01,970 --> 01:47:59,460

talk about earlier that the uh the hatch

2803

01:48:04,070 --> 01:48:01,980

closed State remember that's the Q to

2804

01:48:05,570 --> 01:48:04,080

the Q the crew that's happening and

2805

01:48:08,450 --> 01:48:05,580

after they get some closeout photos they

2806

01:48:10,669 --> 01:48:08,460

can start uh backing away and closing

2807

01:48:13,010 --> 01:48:10,679

out uh hence the name of the crew yeah

2808

01:48:14,930 --> 01:48:13,020

closing out the white room and while we

2809

01:48:17,090 --> 01:48:14,940

do that we've got a special guest here

2810

01:48:19,669 --> 01:48:17,100

that we want to talk to out here at the

2811

01:48:21,709 --> 01:48:19,679

host desk our next guest played a key

2812

01:48:23,450 --> 01:48:21,719

supportive role in the development of

2813

01:48:25,609 --> 01:48:23,460

the Falcon 9 rocket and that Dragon

2814

01:48:27,050 --> 01:48:25,619

spacecraft that we've been watching and

2815

01:48:29,390 --> 01:48:27,060

we'll eventually launch here in an hour

2816

01:48:31,970 --> 01:48:29,400

and 42 minutes his name is John Posey

2817

01:48:33,590 --> 01:48:31,980

and he is NASA's crew Dragon lead

2818

01:48:36,590 --> 01:48:33,600

engineer thank you so much for being

2819

01:48:38,030 --> 01:48:36,600

here John glad to be here so tell me we

2820

01:48:39,950 --> 01:48:38,040

want to first of all make something

2821

01:48:42,530 --> 01:48:39,960

clear about spacex's Dragon right they

2822

01:48:44,750 --> 01:48:42,540

designed it they built Dragon they fly

2823

01:48:46,570 --> 01:48:44,760

it for us and our astronauts go in it

2824

01:48:49,729 --> 01:48:46,580

but since the beginning there's been

2825

01:48:51,649 --> 01:48:49,739

NASA expertise supporting supporting

2826
01:48:54,109 --> 01:48:51,659
them so what would you say is some of

2827
01:48:55,729 --> 01:48:54,119
the best expertise that NASA has

2828
01:48:57,770 --> 01:48:55,739
provided in this regard oh yeah

2829
01:48:59,149 --> 01:48:57,780
excellent question so with the uh you

2830
01:49:00,709 --> 01:48:59,159
know commercial crew program you know

2831
01:49:02,450 --> 01:49:00,719
it's kind of different from past crew

2832
01:49:04,609 --> 01:49:02,460
space flight programs right we have a

2833
01:49:06,649 --> 01:49:04,619
smaller team like for the spacecraft

2834
01:49:08,810 --> 01:49:06,659
there's around only about 100 NASA

2835
01:49:10,729 --> 01:49:08,820
Engineers on our team that are getting

2836
01:49:12,590 --> 01:49:10,739
all the work done and you know NASA

2837
01:49:15,050 --> 01:49:12,600
brings a lot of you know very special

2838
01:49:17,090 --> 01:49:15,060

expertise to the table uh to try to help

2839

01:49:20,209 --> 01:49:17,100

SpaceX and our other commercial Partners

2840

01:49:21,950 --> 01:49:20,219

you know prepare for uh this day right

2841

01:49:23,750 --> 01:49:21,960

getting everything ready we especially

2842

01:49:25,850 --> 01:49:23,760

brought some great expertise and things

2843

01:49:28,070 --> 01:49:25,860

like life support systems of course

2844

01:49:31,250 --> 01:49:28,080

spacesuits thermal Protection Systems

2845

01:49:32,750 --> 01:49:31,260

and perform a lot of analysis you know

2846

01:49:34,370 --> 01:49:32,760

in a lot of cases double checking the

2847

01:49:35,810 --> 01:49:34,380

great analysis performed by SpaceX

2848

01:49:38,149 --> 01:49:35,820

running the numbers making sure

2849

01:49:40,430 --> 01:49:38,159

everything matches up so that you know

2850

01:49:43,310 --> 01:49:40,440

we're assured of crew safety on launch

2851

01:49:45,229 --> 01:49:43,320

day absolutely well that is important

2852

01:49:47,330 --> 01:49:45,239

and you were telling me that you know

2853

01:49:50,090 --> 01:49:47,340

speaking of safety requirements that

2854

01:49:51,830 --> 01:49:50,100

there was a NASA safety requirement in

2855

01:49:54,649 --> 01:49:51,840

the case of extreme fire emergency that

2856

01:49:56,450 --> 01:49:54,659

combined with a dragon design will make

2857

01:49:58,370 --> 01:49:56,460

it so that astronauts will be able to do

2858

01:50:01,490 --> 01:49:58,380

something that's never been done before

2859

01:50:03,590 --> 01:50:01,500

what is that oh yeah so um you know as

2860

01:50:05,030 --> 01:50:03,600

as you mentioned right NASA set some

2861

01:50:07,370 --> 01:50:05,040

some really great safety requirements

2862

01:50:10,250 --> 01:50:07,380

for our crew the crew dragon has a lot

2863

01:50:11,870 --> 01:50:10,260

of oxygen and nitrox systems on board

2864

01:50:14,870 --> 01:50:11,880

for those really deep emergency

2865

01:50:16,490 --> 01:50:14,880

contingency cases you know for instance

2866

01:50:18,290 --> 01:50:16,500

feed the leak if we were to have a

2867

01:50:20,209 --> 01:50:18,300

quarter inch size hole in the cabin we

2868

01:50:22,790 --> 01:50:20,219

could provide breathable nitrox air to

2869

01:50:25,129 --> 01:50:22,800

the crew all the way to Landing uh also

2870

01:50:27,229 --> 01:50:25,139

in like a fire scenario if our if our

2871

01:50:29,450 --> 01:50:27,239

air scribe systems couldn't scrub it

2872

01:50:31,310 --> 01:50:29,460

out or Lucian Purge wasn't enough we had

2873

01:50:33,410 --> 01:50:31,320

the ability to vent the cabin completely

2874

01:50:35,629 --> 01:50:33,420

to vacuum while the crew is safely

2875

01:50:37,609 --> 01:50:35,639

pressurized in their spacesuits and

2876
01:50:39,770 --> 01:50:37,619
press it back up with a clean atmosphere

2877
01:50:41,810 --> 01:50:39,780
and so you know that's where you know

2878
01:50:43,550 --> 01:50:41,820
the commercial aspect of this is really

2879
01:50:45,229 --> 01:50:43,560
exciting for us you know you saw SpaceX

2880
01:50:46,669 --> 01:50:45,239
announced for Polaris Dawn right yeah

2881
01:50:49,609 --> 01:50:46,679
they're going to perform uh their first

2882
01:50:52,490 --> 01:50:49,619
dragon extra vehicular activity Eva

2883
01:50:53,930 --> 01:50:52,500
right actually do that similar type of a

2884
01:50:57,050 --> 01:50:53,940
thing where they can vent down the cabin

2885
01:50:58,970 --> 01:50:57,060
uh create uh like a impromptu airlock

2886
01:51:01,010 --> 01:50:58,980
and then repressurize it how about that

2887
01:51:02,750 --> 01:51:01,020
and we've got Raja here astronaut

2888
01:51:04,910 --> 01:51:02,760

depressed the captain you were ready for

2889

01:51:06,950 --> 01:51:04,920

it as an emergency scenario but for

2890

01:51:08,209 --> 01:51:06,960

Polaris Don gonna depress the cabin and

2891

01:51:09,830 --> 01:51:08,219

they float right out the door that's

2892

01:51:11,090 --> 01:51:09,840

super exciting to see the progress going

2893

01:51:12,229 --> 01:51:11,100

on in low earth orbit and

2894

01:51:13,850 --> 01:51:12,239

commercialization I mean that's that's

2895

01:51:14,810 --> 01:51:13,860

exactly the NASA dream and you heard the

2896

01:51:17,390 --> 01:51:14,820

administrator talk about that's what we

2897

01:51:18,830 --> 01:51:17,400

want to do is enable industry to do

2898

01:51:20,870 --> 01:51:18,840

things in low earth orbit and then let

2899

01:51:22,910 --> 01:51:20,880

NASA work on exploration in the moon and

2900

01:51:24,649 --> 01:51:22,920

Mars so this is yeah it's amazing to see

2901
01:51:26,270 --> 01:51:24,659
it happening and NASA is right there by

2902
01:51:28,189 --> 01:51:26,280
the side let's talk a little bit now

2903
01:51:30,590 --> 01:51:28,199
about the Falcon 9. you know

2904
01:51:33,890 --> 01:51:30,600
coincidentally you were also involved at

2905
01:51:36,410 --> 01:51:33,900
the beginning of that vehicle with NASA

2906
01:51:38,510 --> 01:51:36,420
What contributions were made to the

2907
01:51:40,729 --> 01:51:38,520
Falcon 9 and getting it going yeah so

2908
01:51:42,229 --> 01:51:40,739
you know I I remember being back when I

2909
01:51:43,850 --> 01:51:42,239
was a space shuttle propulsion engineer

2910
01:51:47,209 --> 01:51:43,860
you know watching those early Falcon one

2911
01:51:50,450 --> 01:51:47,219
live streams uh getting the first uh

2912
01:51:52,490 --> 01:51:50,460
privately funded rocket to orbit

2913
01:51:54,649 --> 01:51:52,500

um with uh with the liquid propelled

2914

01:51:57,229 --> 01:51:54,659

vehicle uh really exciting so when

2915

01:51:59,030 --> 01:51:57,239

Falcon 9 was coming along on the you

2916

01:52:01,850 --> 01:51:59,040

know commercial orbital transportation

2917

01:52:03,950 --> 01:52:01,860

services cots contracts

2918

01:52:06,590 --> 01:52:03,960

um they they were getting that Dragon

2919

01:52:08,330 --> 01:52:06,600

one ready Falcon 9 ready and I remember

2920

01:52:09,770 --> 01:52:08,340

you know that program was edited by

2921

01:52:11,390 --> 01:52:09,780

Kathy leaders who later became

2922

01:52:13,669 --> 01:52:11,400

commercial crew program manager analysis

2923

01:52:17,149 --> 01:52:13,679

the administrator but they tasked the

2924

01:52:19,430 --> 01:52:17,159

long Services team with reviewing the

2925

01:52:21,830 --> 01:52:19,440

safety of the Falcon 9 for CRS

2926

01:52:23,330 --> 01:52:21,840

Commercial resupply Services and at the

2927

01:52:25,970 --> 01:52:23,340

time show program was winding down I was

2928

01:52:27,770 --> 01:52:25,980

on detail to launch services so I asked

2929

01:52:29,570 --> 01:52:27,780

if I could join that team to help assess

2930

01:52:31,129 --> 01:52:29,580

it and you know before I knew it we were

2931

01:52:33,290 --> 01:52:31,139

working day to day with the SpaceX

2932

01:52:34,790 --> 01:52:33,300

propulsion engineers and you know that

2933

01:52:37,250 --> 01:52:34,800

was really an eye-opening experience

2934

01:52:39,770 --> 01:52:37,260

right right SpaceX was moving at a high

2935

01:52:41,149 --> 01:52:39,780

Pace rapid pace of innovation getting a

2936

01:52:43,310 --> 01:52:41,159

lot of Hardware built getting out there

2937

01:52:44,689 --> 01:52:43,320

testing it and so we were trying to

2938

01:52:46,850 --> 01:52:44,699

share the Lessons Learned we had from

2939

01:52:48,050 --> 01:52:46,860

shuttle and other NASA programs but at

2940

01:52:49,970 --> 01:52:48,060

the same time we were learning from them

2941

01:52:52,310 --> 01:52:49,980

and seeing new approaches and ways of

2942

01:52:54,350 --> 01:52:52,320

doing things so we you know tried to

2943

01:52:56,810 --> 01:52:54,360

pull together a lot of that expertise

2944

01:52:58,070 --> 01:52:56,820

try to share the you know the pitfalls

2945

01:53:01,189 --> 01:52:58,080

that they might come across along the

2946

01:53:03,890 --> 01:53:01,199

way but yeah I was able to sit in the

2947

01:53:05,990 --> 01:53:03,900

launch control center actually we're at

2948

01:53:07,189 --> 01:53:06,000

a hangar AE across for the first

2949

01:53:09,770 --> 01:53:07,199

falconheim flight that was just an

2950

01:53:11,330 --> 01:53:09,780

amazing day yeah and now you are working

2951

01:53:12,709 --> 01:53:11,340

I think you were telling me like as a

2952

01:53:14,450 --> 01:53:12,719

kid you drew a picture when you were 10

2953

01:53:16,250 --> 01:53:14,460

years old of a space shuttle and now you

2954

01:53:17,629 --> 01:53:16,260

got to hang it up on your desk you have

2955

01:53:19,609 --> 01:53:17,639

been working in space and thinking about

2956

01:53:21,530 --> 01:53:19,619

it for a long time oh yeah yeah when I

2957

01:53:23,209 --> 01:53:21,540

was a kid as a big fan of you know NASA

2958

01:53:25,010 --> 01:53:23,219

space shuttle was on TV pop culture

2959

01:53:27,250 --> 01:53:25,020

everywhere yeah I was a big Star Trek

2960

01:53:30,109 --> 01:53:27,260

buff so but it really was solidified

2961

01:53:32,330 --> 01:53:30,119

when my family went to the Johnson

2962

01:53:33,950 --> 01:53:32,340

Visitor Center when I was 10. you know

2963

01:53:36,109 --> 01:53:33,960

seeing real space flight Hardware just

2964

01:53:37,430 --> 01:53:36,119

thinking you know these these folks are

2965

01:53:40,010 --> 01:53:37,440

bringing you know the best things of

2966

01:53:42,350 --> 01:53:40,020

Star Trek to reality right solving all

2967

01:53:43,729 --> 01:53:42,360

your problems learning more about Earth

2968

01:53:46,609 --> 01:53:43,739

and space fostering International

2969

01:53:49,430 --> 01:53:46,619

cooperation so it's something I set my

2970

01:53:50,689 --> 01:53:49,440

sights on and and went into aerospace

2971

01:53:52,250 --> 01:53:50,699

engineering to go work on the space

2972

01:53:54,229 --> 01:53:52,260

program and here you are and you're

2973

01:53:56,330 --> 01:53:54,239

actually headed right now to firing room

2974

01:53:57,229 --> 01:53:56,340

four real quickly what you're what are

2975

01:53:59,510 --> 01:53:57,239

you going to be doing for this launch

2976

01:54:01,669 --> 01:53:59,520

yeah so I'm going to be hopping on

2977

01:54:03,290 --> 01:54:01,679

console for the uh on orbit shift as

2978

01:54:05,209 --> 01:54:03,300

spacecraft chief engineer with the

2979

01:54:06,770 --> 01:54:05,219

spacecraft engineering team so I'll go

2980

01:54:09,050 --> 01:54:06,780

over there my Deputy Brian remarks about

2981

01:54:10,970 --> 01:54:09,060

to pull for SpaceX for go to launch for

2982

01:54:12,350 --> 01:54:10,980

the launch Team and then we'll make sure

2983

01:54:13,910 --> 01:54:12,360

everything's good to go for our exciting

2984

01:54:16,430 --> 01:54:13,920

crew six Mission today all right

2985

01:54:17,990 --> 01:54:16,440

fantastic John Posey NASA screwdragon

2986

01:54:19,250 --> 01:54:18,000

lead engineer thank you so much for

2987

01:54:21,410 --> 01:54:19,260

being here thanks John glad to be here

2988

01:54:22,669 --> 01:54:21,420

and good luck tonight thank you all

2989

01:54:24,590 --> 01:54:22,679

right now let's head out to our VIP

2990

01:54:26,229 --> 01:54:24,600

location where our Jasmine Hopkins is

2991

01:54:28,970 --> 01:54:26,239

with a pair of special guests Jasmine

2992

01:54:30,890 --> 01:54:28,980

thank you so much Daryl the energy here

2993

01:54:32,450 --> 01:54:30,900

on the balcony of osb2 is really picking

2994

01:54:34,310 --> 01:54:32,460

up as we're getting closer to launch and

2995

01:54:36,890 --> 01:54:34,320

right now I'm honored to be joined by

2996

01:54:39,410 --> 01:54:36,900

Salim almari the director general of the

2997

01:54:42,649 --> 01:54:39,420

Muhammad bin Rasheed Space Center as

2998

01:54:43,850 --> 01:54:42,659

well as haza al-mansori UAE astronaut

2999

01:54:45,890 --> 01:54:43,860

thank you both for being here tonight

3000

01:54:47,689 --> 01:54:45,900

thank you Jasmine for having us of

3001
01:54:49,189 --> 01:54:47,699
course we're so honored to have you here

3002
01:54:51,410 --> 01:54:49,199
and so on the first question for you

3003
01:54:53,030 --> 01:54:51,420
this is a really significant first the

3004
01:54:55,189 --> 01:54:53,040
first time that we have a commercial

3005
01:54:56,810 --> 01:54:55,199
crew astronaut from the UAE what does

3006
01:54:58,550 --> 01:54:56,820
that mean to you I mean that means a lot

3007
01:55:01,430 --> 01:54:58,560
I mean it's a big responsibility for us

3008
01:55:04,189 --> 01:55:01,440
and I think from day one when we kicked

3009
01:55:06,350 --> 01:55:04,199
this kicked off this program in 2017 we

3010
01:55:08,090 --> 01:55:06,360
wanted to have a long-term program a

3011
01:55:10,070 --> 01:55:08,100
sustainable program and a program that

3012
01:55:12,169 --> 01:55:10,080
has a positive impact on human space

3013
01:55:13,609 --> 01:55:12,179

flight so we selected our astronauts we

3014

01:55:15,530 --> 01:55:13,619

made sure they're training with NASA

3015

01:55:17,330 --> 01:55:15,540

they're training with Roscosmos they

3016

01:55:18,950 --> 01:55:17,340

get the full set of trainings so that

3017

01:55:21,229 --> 01:55:18,960

they can be astronauts that can

3018

01:55:23,330 --> 01:55:21,239

contribute to the advancement of human

3019

01:55:25,310 --> 01:55:23,340

space flight so this Mission really is a

3020

01:55:26,629 --> 01:55:25,320

fulfillment of that Vision today when we

3021

01:55:29,090 --> 01:55:26,639

get an astronaut from the UAE you're

3022

01:55:31,129 --> 01:55:29,100

going on a six-month increment and doing

3023

01:55:33,169 --> 01:55:31,139

the same things that NASA astronauts and

3024

01:55:34,850 --> 01:55:33,179

the US astronauts will be doing I

3025

01:55:35,810 --> 01:55:34,860

think that really means a lot to the UAE

3026

01:55:37,910 --> 01:55:35,820

really

3027

01:55:39,830 --> 01:55:37,920

as you just mentioned training with NASA

3028

01:55:41,689 --> 01:55:39,840

Hazel you were the first emirati in

3029

01:55:43,609 --> 01:55:41,699

space you and Sultan actually train

3030

01:55:45,649 --> 01:55:43,619

together can you talk about that that

3031

01:55:48,410 --> 01:55:45,659

was really great privilege I mean like

3032

01:55:49,970 --> 01:55:48,420

sunshine hot like in back in UAE that to

3033

01:55:52,129 --> 01:55:49,980

dream to good space that was a little

3034

01:55:54,109 --> 01:55:52,139

bit critical and even just to say that

3035

01:55:55,669 --> 01:55:54,119

in schools back home to say that I want

3036

01:55:58,490 --> 01:55:55,679

to be an astronaut that was something

3037

01:56:01,669 --> 01:55:58,500

that not an option for us but when they

3038

01:56:04,790 --> 01:56:01,679

did the announcement back in 2017 and we

3039

01:56:06,649 --> 01:56:04,800

saw that opportunity we applied Sultan

3040

01:56:09,470 --> 01:56:06,659

and myself and four thousand applicants

3041

01:56:11,689 --> 01:56:09,480

from UAE just to apply it to be your

3042

01:56:13,729 --> 01:56:11,699

astronauts so we had that privilege we

3043

01:56:16,250 --> 01:56:13,739

have been selected for the first patch

3044

01:56:18,790 --> 01:56:16,260

in UAE we went to Russia to train and I

3045

01:56:21,229 --> 01:56:18,800

went to space I flew space in 2019.

3046

01:56:24,109 --> 01:56:21,239

Sultan he was my backup in that mission

3047

01:56:26,450 --> 01:56:24,119

and I I am now as his backup in this

3048

01:56:28,970 --> 01:56:26,460

mission that was an amazing journey for

3049

01:56:30,770 --> 01:56:28,980

both of both of us I mean like we

3050

01:56:34,330 --> 01:56:30,780

trained back in Russia and we came here

3051

01:56:38,270 --> 01:56:34,340

we did the hall like Afghan training

3052

01:56:40,850 --> 01:56:38,280

the amount of support we we we saw in

3053

01:56:43,490 --> 01:56:40,860

the whole all Community here in at Nasa

3054

01:56:45,370 --> 01:56:43,500

that was really huge just to make this

3055

01:56:47,810 --> 01:56:45,380

Mission happen for UAE

3056

01:56:50,330 --> 01:56:47,820

it's big and huge and we are really

3057

01:56:53,090 --> 01:56:50,340

excited I am super excited to see my

3058

01:56:54,770 --> 01:56:53,100

colleague Sultan and Woody Steve and

3059

01:56:57,530 --> 01:56:54,780

Andrea vidaif launched the space it's

3060

01:57:00,490 --> 01:56:57,540

gonna be an amazing mission for them six

3061

01:57:03,229 --> 01:57:00,500

months onboard the station doing science

3062

01:57:05,209 --> 01:57:03,239

exploring and conducting different

3063

01:57:08,209 --> 01:57:05,219

sessions with different schools and kids

3064

01:57:09,890 --> 01:57:08,219

that's for me is a big thing it really

3065

01:57:11,149 --> 01:57:09,900

is it's a big thing we're so glad to

3066

01:57:13,609 --> 01:57:11,159

have both of you tonight thank you so

3067

01:57:16,129 --> 01:57:13,619

much thank you thank you of course Daryl

3068

01:57:18,589 --> 01:57:16,139

back to you thank you Jasmine and now we

3069

01:57:21,470 --> 01:57:18,599

are T-minus one hour and 33 minutes from

3070

01:57:23,510 --> 01:57:21,480

launch as we uh get ready for crew six

3071

01:57:25,910 --> 01:57:23,520

to take off from the Kennedy Space

3072

01:57:27,950 --> 01:57:25,920

Center now here's a closer look at some

3073

01:57:29,330 --> 01:57:27,960

of the life-changing science astronauts

3074

01:57:32,510 --> 01:57:29,340

are performing aboard the International

3075

01:57:36,770 --> 01:57:34,729

the International Space Station is a

3076
01:57:38,750 --> 01:57:36,780
state-of-the-art microgravity laboratory

3077
01:57:40,970 --> 01:57:38,760
that is unlocking discoveries not

3078
01:57:43,790 --> 01:57:40,980
possible on Earth and helping us push

3079
01:57:46,189 --> 01:57:43,800
farther into deep space every single day

3080
01:57:48,410 --> 01:57:46,199
we are answering big questions about

3081
01:57:49,790 --> 01:57:48,420
Earth and about space about where we

3082
01:57:51,649 --> 01:57:49,800
came from and about where we're going

3083
01:57:53,680 --> 01:57:51,659
but the other thing that we're doing is

3084
01:57:57,589 --> 01:57:53,690
we're learning more questions to ask

3085
01:57:59,990 --> 01:57:57,599
[Music]

3086
01:58:01,790 --> 01:58:00,000
microgravity turns almost everything we

3087
01:58:04,430 --> 01:58:01,800
know upside down

3088
01:58:07,310 --> 01:58:04,440

liquids behave completely differently

3089

01:58:09,890 --> 01:58:07,320

Fire Burns in new ways

3090

01:58:11,750 --> 01:58:09,900

biological systems reveal surprises

3091

01:58:13,850 --> 01:58:11,760

there's a few things that may have made

3092

01:58:15,890 --> 01:58:13,860

me gasp out loud a bombard space station

3093

01:58:17,689 --> 01:58:15,900

watching heart cells actually beat has

3094

01:58:19,790 --> 01:58:17,699

been a pretty big one

3095

01:58:21,109 --> 01:58:19,800

we're studying ways to grow food in

3096

01:58:24,169 --> 01:58:21,119

microgravity

3097

01:58:26,570 --> 01:58:24,179

I got to tell you these uh

3098

01:58:29,629 --> 01:58:26,580

these are pretty amazing we're learning

3099

01:58:31,669 --> 01:58:29,639

how human bodies react to life in space

3100

01:58:34,550 --> 01:58:31,679

how to keep crew members safe and strong

3101

01:58:36,649 --> 01:58:34,560

on long duration exploration missions

3102

01:58:39,350 --> 01:58:36,659

deadlifts are awesome on Earth they're

3103

01:58:41,450 --> 01:58:39,360

also awesome in zero gravity

3104

01:58:43,490 --> 01:58:41,460

we're testing technologies that will be

3105

01:58:46,490 --> 01:58:43,500

critical to our return to the moon and

3106

01:58:48,649 --> 01:58:46,500

great leap to Mars

3107

01:58:50,709 --> 01:58:48,659

our research has contributed to medical

3108

01:58:53,510 --> 01:58:50,719

and social benefits on our home planet

3109

01:58:55,790 --> 01:58:53,520

allowing us to find new ways to combat

3110

01:58:58,070 --> 01:58:55,800

disease back on Earth and develop

3111

01:59:01,850 --> 01:58:58,080

Technologies to deliver clean water to

3112

01:59:06,830 --> 01:59:04,250

the spectacular vantage point of more

3113

01:59:08,510 --> 01:59:06,840

than 200 miles above our planet supports

3114

01:59:11,990 --> 01:59:08,520

our monitoring of Earth's climate

3115

01:59:13,790 --> 01:59:12,000

natural disasters and plant life the

3116

01:59:16,070 --> 01:59:13,800

orbital perspective that we have here on

3117

01:59:18,530 --> 01:59:16,080

the ISS is just absolutely amazing earth

3118

01:59:21,410 --> 01:59:18,540

is gorgeous

3119

01:59:23,870 --> 01:59:21,420

the growing new space economy so vital

3120

01:59:27,410 --> 01:59:23,880

to our continued progress in space is

3121

01:59:32,209 --> 01:59:30,410

we're inspiring future Generations from

3122

01:59:36,290 --> 01:59:32,219

a platform that is one of the largest

3123

01:59:40,129 --> 01:59:36,300

International collaborations of our time

3124

01:59:40,970 --> 01:59:40,139

we are doing science at 17 500 miles per

3125

01:59:46,390 --> 01:59:40,980

hour

3126
01:59:51,770 --> 01:59:49,850

[Music]

3127
01:59:53,990 --> 01:59:51,780

that's where our three astronauts and

3128
01:59:55,550 --> 01:59:54,000

one Cosmonaut are headed

3129
01:59:58,729 --> 01:59:55,560

but first

3130
02:00:01,609 --> 01:59:58,739

got some pre-launch configuration to do

3131
02:00:05,030 --> 02:00:01,619

gotta fuel up the rocket

3132
02:00:06,950 --> 02:00:05,040

and then of course light it and launch

3133
02:00:08,570 --> 02:00:06,960

we're coming up on one hour and 30

3134
02:00:11,390 --> 02:00:08,580

minutes

3135
02:00:12,950 --> 02:00:11,400

before we launch crew six to the

3136
02:00:15,770 --> 02:00:12,960

International Space Station the crew of

3137
02:00:18,709 --> 02:00:15,780

four are in the capsule as you just saw

3138
02:00:21,830 --> 02:00:18,719

the hatch is closed and we successfully

3139

02:00:24,530 --> 02:00:21,840

completed a leak check on the hatch as

3140

02:00:29,209 --> 02:00:26,750

launch Engineers are located in firing

3141

02:00:31,490 --> 02:00:29,219

room four at the NASA launch control

3142

02:00:33,169 --> 02:00:31,500

center at Kennedy Space Center they have

3143

02:00:35,450 --> 02:00:33,179

a view through their large window of pad

3144

02:00:37,850 --> 02:00:35,460

39a and this is what they're looking at

3145

02:00:39,649 --> 02:00:37,860

you can see the launch control center

3146

02:00:43,010 --> 02:00:39,659

it's uh the building

3147

02:00:46,490 --> 02:00:43,020

just to the right of the large VAB

3148

02:00:48,530 --> 02:00:46,500

just below that NASA logo

3149

02:00:50,629 --> 02:00:48,540

the Falcon 9 team is

3150

02:00:53,629 --> 02:00:50,639

loading helium and nitrogen gas into

3151
02:00:55,790 --> 02:00:53,639
storage bottles on the launch vehicle

3152
02:00:57,530 --> 02:00:55,800
they completed the RF checkouts the

3153
02:00:59,270 --> 02:00:57,540
radio frequency

3154
02:01:01,729 --> 02:00:59,280
did a final review of the vehicle

3155
02:01:03,589 --> 02:01:01,739
testing performed earlier today

3156
02:01:06,050 --> 02:01:03,599
and the SpaceX chief engineer for this

3157
02:01:07,850 --> 02:01:06,060
Mission he's Dan Alex and he will check

3158
02:01:10,550 --> 02:01:07,860
with the team at T-minus 80 minutes to

3159
02:01:13,070 --> 02:01:10,560
verify that we are good to continue the

3160
02:01:15,589 --> 02:01:13,080
countdown now the the next major

3161
02:01:17,390 --> 02:01:15,599
activity is Flowing a small amount of

3162
02:01:19,970 --> 02:01:17,400
fuel into the first stage to Prime the

3163
02:01:22,250 --> 02:01:19,980

Merlin 1D engines for ignition

3164

02:01:25,310 --> 02:01:22,260

the team is also monitoring Fuel and

3165

02:01:26,990 --> 02:01:25,320

liquid oxygen loading preparations to

3166

02:01:29,390 --> 02:01:27,000

make sure the propellants in the ground

3167

02:01:31,430 --> 02:01:29,400

tanks are correctly chilled prior to

3168

02:01:35,570 --> 02:01:31,440

loading them on the Falcon and that will

3169

02:01:37,790 --> 02:01:35,580

happen at T minus 35 minutes I'm with

3170

02:01:39,290 --> 02:01:37,800

NASA astronaut rajachary

3171

02:01:41,990 --> 02:01:39,300

and let's take a look at the weather

3172

02:01:44,870 --> 02:01:42,000

really quick weather is looking great we

3173

02:01:47,330 --> 02:01:44,880

are only a five percent probability of

3174

02:01:49,729 --> 02:01:47,340

violation and that's only for the

3175

02:01:52,669 --> 02:01:49,739

possibility a very slight possibility

3176

02:01:55,189 --> 02:01:52,679

that a cumulus cloud goes over the

3177

02:01:57,770 --> 02:01:55,199

launch pad right now we're looking clear

3178

02:01:59,530 --> 02:01:57,780

we are green on weather winds are 7 to

3179

02:02:04,370 --> 02:01:59,540

12 miles per hour out of the Southwest

3180

02:02:06,649 --> 02:02:04,380

temperature is a comfortable 72 degrees

3181

02:02:09,709 --> 02:02:06,659

and the weather and the ascent Corridor

3182

02:02:10,609 --> 02:02:09,719

is also good to go in case there were

3183

02:02:12,649 --> 02:02:10,619

abort

3184

02:02:14,450 --> 02:02:12,659

can't ask for better weather conditions

3185

02:02:16,370 --> 02:02:14,460

than this Raja yeah this is a great

3186

02:02:18,770 --> 02:02:16,380

night for a launch and let's hope the

3187

02:02:20,870 --> 02:02:18,780

vehicle stays on progress like you

3188

02:02:23,089 --> 02:02:20,880

mentioned right now the next big thing

3189

02:02:25,850 --> 02:02:23,099

will be when they arm the Les but before

3190

02:02:27,890 --> 02:02:25,860

they do that they have to clear out the

3191

02:02:30,109 --> 02:02:27,900

crew arm so we saw like you mentioned

3192

02:02:31,189 --> 02:02:30,119

the hatch seal has been checked and now

3193

02:02:33,770 --> 02:02:31,199

they're closing out the white room

3194

02:02:35,390 --> 02:02:33,780

they'll Evacuate the closeout crew and

3195

02:02:36,830 --> 02:02:35,400

then that will be when they let the crew

3196

02:02:38,390 --> 02:02:36,840

know that they're ready to actually to

3197

02:02:39,589 --> 02:02:38,400

arm the Les before they can start prop

3198

02:02:42,350 --> 02:02:39,599

loading

3199

02:02:44,990 --> 02:02:42,360

um you mentioned uh the uh the Falcon

3200

02:02:46,370 --> 02:02:45,000

Engineers so like the F9 team is really

3201

02:02:48,649 --> 02:02:46,380

kind of taking the prime role right now

3202

02:02:49,729 --> 02:02:48,659

monitoring the systems getting ready to

3203

02:02:51,890 --> 02:02:49,739

make sure it's right to actually start

3204

02:02:53,750 --> 02:02:51,900

to load the prop on the vehicle the

3205

02:02:56,510 --> 02:02:53,760

reason they do it on the vehicle uh it's

3206

02:02:58,669 --> 02:02:56,520

because Rockets Rockets are hard as it

3207

02:03:01,490 --> 02:02:58,679

turns out again these places hard and so

3208

02:03:02,750 --> 02:03:01,500

your your mass margins the weight is so

3209

02:03:04,370 --> 02:03:02,760

critical so you really want to wait

3210

02:03:06,290 --> 02:03:04,380

until the latest you possibly can to put

3211

02:03:07,970 --> 02:03:06,300

the gas on the vehicle because one it's

3212

02:03:10,070 --> 02:03:07,980

cryogenically cool I mean it's super

3213

02:03:12,290 --> 02:03:10,080

cold and so it starts to boil off and so

3214

02:03:14,390 --> 02:03:12,300

the less amount of time it's on the

3215

02:03:16,010 --> 02:03:14,400

rocket the more gas you have and so you

3216

02:03:17,270 --> 02:03:16,020

want to wait until as late as you can

3217

02:03:19,790 --> 02:03:17,280

but also have enough time obviously to

3218

02:03:21,649 --> 02:03:19,800

do it and get to space so the longer you

3219

02:03:23,209 --> 02:03:21,659

wait and it's a balance of wait as long

3220

02:03:24,290 --> 02:03:23,219

as you can but still still have enough

3221

02:03:26,089 --> 02:03:24,300

to get it all on board and that gives

3222

02:03:28,070 --> 02:03:26,099

you the most gas to use to get into

3223

02:03:30,470 --> 02:03:28,080

orbit and then have gas to get to the

3224

02:03:33,770 --> 02:03:30,480

space station and SpaceX using super

3225

02:03:36,350 --> 02:03:33,780

chilled highly densified liquid oxygen

3226

02:03:39,169 --> 02:03:36,360

that as you say you get more performance

3227

02:03:41,030 --> 02:03:39,179

at it out of it the later they load

3228

02:03:43,189 --> 02:03:41,040

currently we're at one hour and 27

3229

02:03:46,490 --> 02:03:43,199

minutes and Counting looking at launch

3230

02:03:48,290 --> 02:03:46,500

complex 39a and the Falcon 9 rocket a

3231

02:03:51,109 --> 02:03:48,300

new booster

3232

02:03:52,970 --> 02:03:51,119

on this one

3233

02:03:55,850 --> 02:03:52,980

along with the

3234

02:03:58,189 --> 02:03:55,860

Dragon endeavor

3235

02:04:02,330 --> 02:03:58,199

the booster

3236

02:04:06,109 --> 02:04:04,430

no soot on this one so it didn't return

3237

02:04:07,910 --> 02:04:06,119

from a flight they're gonna fly it for

3238

02:04:08,990 --> 02:04:07,920

the first time for cruise six it's in

3239

02:04:11,089 --> 02:04:09,000

good shape

3240

02:04:13,129 --> 02:04:11,099

and ready to go

3241

02:04:14,810 --> 02:04:13,139

Dragon will fly its next four-person

3242

02:04:17,689 --> 02:04:14,820

crew to the International Space Station

3243

02:04:21,350 --> 02:04:17,699

the astronauts that are inside

3244

02:04:23,570 --> 02:04:21,360

our commander Stephen Bowen

3245

02:04:26,530 --> 02:04:23,580

he's in seat number three pilot Woody

3246

02:04:29,450 --> 02:04:26,540

hoberg and Mission specialist Sultan

3247

02:04:30,709 --> 02:04:29,460

al-niadi and Andre fedyav

3248

02:04:31,910 --> 02:04:30,719

and you can see they've got their

3249

02:04:33,470 --> 02:04:31,920

advisors up we talked before about

3250

02:04:35,510 --> 02:04:33,480

they'll they'll leave their advisors up

3251

02:04:37,910 --> 02:04:35,520

until they arm the Las or the launch

3252

02:04:39,109 --> 02:04:37,920

Escape system just to just be a little

3253

02:04:40,370 --> 02:04:39,119

more comfortable

3254

02:04:42,229 --> 02:04:40,380

um and you did mention we had actually

3255

02:04:44,330 --> 02:04:42,239

the opposite configuration for for crew

3256

02:04:47,270 --> 02:04:44,340

three we had a new capsule endurance and

3257

02:04:48,770 --> 02:04:47,280

then a reused booster but today uh like

3258

02:04:51,050 --> 02:04:48,780

you said the fleet leading Endeavor

3259

02:04:52,129 --> 02:04:51,060

capsule and a new booster new first

3260

02:04:54,410 --> 02:04:52,139

stage

3261

02:04:56,510 --> 02:04:54,420

and uh one of the cool things we get to

3262

02:04:58,490 --> 02:04:56,520

see uh you know while the launch

3263

02:05:00,649 --> 02:04:58,500

coverage the folks here are actually KSC

3264

02:05:01,609 --> 02:05:00,659

the the launch covers is on the capsule

3265

02:05:02,990 --> 02:05:01,619

but the other thing that happens with

3266

02:05:04,790 --> 02:05:03,000

the SpaceX launch is that first stage

3267

02:05:05,750 --> 02:05:04,800

coming back which is also a cool thing

3268

02:05:06,830 --> 02:05:05,760

to see which I haven't seen before

3269

02:05:08,390 --> 02:05:06,840

because I haven't seen a launch but I'm

3270

02:05:09,770 --> 02:05:08,400

looking for looking forward to looking

3271

02:05:11,450 --> 02:05:09,780

for that today

3272

02:05:12,890 --> 02:05:11,460

um so I got to enjoy the ride in the

3273

02:05:14,450 --> 02:05:12,900

Falcon 9 but never actually saw what

3274

02:05:17,450 --> 02:05:14,460

happened the first stage on my launch

3275

02:05:19,490 --> 02:05:17,460

well just read the instructions is the

3276

02:05:22,370 --> 02:05:19,500

uh that's the the ship the autonomous

3277

02:05:24,530 --> 02:05:22,380

drone ship it is a landing platform that

3278

02:05:27,229 --> 02:05:24,540

is out in the Atlantic Ocean right now

3279

02:05:28,910 --> 02:05:27,239

several hundred miles offshore and it

3280

02:05:31,070 --> 02:05:28,920

will be receiving as you mentioned that

3281

02:05:33,649 --> 02:05:31,080

first stage booster and we'll see that

3282

02:05:35,990 --> 02:05:33,659

in our coverage as it comes back down to

3283

02:05:38,030 --> 02:05:36,000

earth and of course SpaceX has had great

3284

02:05:40,430 --> 02:05:38,040

success lately with Landing that first

3285

02:05:42,770 --> 02:05:40,440

stage booster and then they'll put it

3286

02:05:45,709 --> 02:05:42,780

right back in and get it refurbished and

3287

02:05:46,729 --> 02:05:45,719

put it into the cycle of boosters for

3288

02:05:49,729 --> 02:05:46,739

flight

3289

02:05:51,709 --> 02:05:49,739

yeah it's impressive uh the the Cadence

3290

02:05:53,270 --> 02:05:51,719

that that we've seen them develop with

3291

02:05:55,790 --> 02:05:53,280

how quickly we can recycle the boosters

3292

02:05:57,709 --> 02:05:55,800

uh and actually it's funny the capsules

3293

02:05:59,810 --> 02:05:57,719

takes a lot along as the as long to

3294

02:06:02,030 --> 02:05:59,820

recycle as it does for us to rehab so my

3295

02:06:03,290 --> 02:06:02,040

post flight rehab was about six-ish

3296

02:06:04,550 --> 02:06:03,300

months to kind of feel back to normal

3297

02:06:05,990 --> 02:06:04,560

that's about the same time endurance

3298

02:06:07,790 --> 02:06:06,000

launched again under the space station

3299

02:06:09,950 --> 02:06:07,800

with crew five so it's up there now so

3300

02:06:11,629 --> 02:06:09,960

about the time I had my bone density and

3301

02:06:13,430 --> 02:06:11,639

muscle all back was the same time that

3302

02:06:15,709 --> 02:06:13,440

the capsule I rode in was ready to go

3303

02:06:17,810 --> 02:06:15,719

new heat shield layers and and ready to

3304

02:06:19,790 --> 02:06:17,820

blast off so uh it's kind of cool the

3305

02:06:22,430 --> 02:06:19,800

the person in the machine are both

3306

02:06:23,750 --> 02:06:22,440

refurbished

3307

02:06:26,209 --> 02:06:23,760

yeah you were mentioning when you came

3308

02:06:28,490 --> 02:06:26,219

back from space you you know you had to

3309

02:06:30,109 --> 02:06:28,500

get acclimated and and there was an

3310

02:06:31,850 --> 02:06:30,119

adjustment period yeah absolutely and

3311

02:06:33,709 --> 02:06:31,860

it's kind of different phases um when

3312

02:06:35,510 --> 02:06:33,719

you'll see like when crew 5 comes back

3313

02:06:36,950 --> 02:06:35,520

here in a few weeks you'll see them take

3314

02:06:38,990 --> 02:06:36,960

them out of the capsule on gurneys

3315

02:06:41,629 --> 02:06:39,000

that's just it's difficult uh to walk

3316

02:06:43,669 --> 02:06:41,639

and maintain your balance you can but it

3317

02:06:44,750 --> 02:06:43,679

is easy to tip over and so it takes a

3318

02:06:47,390 --> 02:06:44,760

few days for your kind of your

3319

02:06:49,550 --> 02:06:47,400

vestibular system to reset uh of about a

3320

02:06:50,990 --> 02:06:49,560

week for kind of your more your balance

3321

02:06:52,189 --> 02:06:51,000

of stability and then potentially a few

3322

02:06:54,229 --> 02:06:52,199

months for some of your your full

3323

02:06:55,970 --> 02:06:54,239

strength to come back when you're in

3324

02:06:58,310 --> 02:06:55,980

space you get to

3325

02:07:00,050 --> 02:06:58,320

bring some personal items with you to

3326

02:07:02,510 --> 02:07:00,060

kind of remind you of home right each

3327

02:07:04,550 --> 02:07:02,520

crew six astronaut is allowed to bring a

3328

02:07:06,589 --> 02:07:04,560

few personal items for the roughly

3329

02:07:08,810 --> 02:07:06,599

six-month stay in space

3330

02:07:11,810 --> 02:07:08,820

and so here are a few of the items that

3331

02:07:14,450 --> 02:07:11,820

they are taking up for crew six Sultan

3332

02:07:16,129 --> 02:07:14,460

al-niadi said he's bringing a kimono the

3333

02:07:19,430 --> 02:07:16,139

traditional training attire of the

3334

02:07:22,310 --> 02:07:19,440

martial art jiu jitsu he's on the all

3335

02:07:24,410 --> 02:07:22,320

the way far right of the screen

3336

02:07:26,330 --> 02:07:24,420

he's also bringing some small toy

3337

02:07:27,530 --> 02:07:26,340

rockets from the popular European comic

3338

02:07:30,109 --> 02:07:27,540

Tin Tin

3339

02:07:31,970 --> 02:07:30,119

Andre fediev is taking his uh family

3340

02:07:33,229 --> 02:07:31,980

photos and some pins he plans on

3341

02:07:34,850 --> 02:07:33,239

bringing back and sharing with his

3342

02:07:37,250 --> 02:07:34,860

family

3343

02:07:39,229 --> 02:07:37,260

but for the astronaut right there the

3344

02:07:41,030 --> 02:07:39,239

second from the left

3345

02:07:43,250 --> 02:07:41,040

Woody hoberg

3346

02:07:45,709 --> 02:07:43,260

he's bringing one simple item and that's

3347

02:07:48,410 --> 02:07:45,719

a photograph with deep personal meaning

3348

02:07:52,609 --> 02:07:50,089

in terms of personal items mine's uh

3349

02:07:55,189 --> 02:07:52,619

simple unfortunately over the summer I I

3350

02:07:56,810 --> 02:07:55,199

lost my father and so I'm just bringing

3351

02:07:58,970 --> 02:07:56,820

a photo of him that means a lot to me

3352

02:08:01,070 --> 02:07:58,980

and I wish he could come along with me

3353

02:08:02,990 --> 02:08:01,080

but at least I'll

3354

02:08:04,669 --> 02:08:03,000

I'll well I will be bringing him along

3355

02:08:06,709 --> 02:08:04,679

with me

3356

02:08:09,530 --> 02:08:06,719

and here is the photo that he's bringing

3357

02:08:12,229 --> 02:08:09,540

Woody says it's a picture of his dad Jim

3358

02:08:14,149 --> 02:08:12,239

hoberg finishing the Boston Marathon and

3359

02:08:16,310 --> 02:08:14,159

leaving it all on the course

3360

02:08:17,930 --> 02:08:16,320

Jim hoberg along with his wife Peggy

3361

02:08:19,970 --> 02:08:17,940

Rays Woody and his brother in Pittsburgh

3362

02:08:22,310 --> 02:08:19,980

Pennsylvania he was an electrical

3363

02:08:24,470 --> 02:08:22,320

engineering professor at Carnegie Mellon

3364

02:08:27,050 --> 02:08:24,480

University where he was known for his

3365

02:08:29,450 --> 02:08:27,060

exceptional teaching he was 75 years of

3366

02:08:31,729 --> 02:08:29,460

age when he passed away last year what

3367

02:08:34,430 --> 02:08:31,739

he says he will remember his father for

3368

02:08:35,870 --> 02:08:34,440

always showing up and for his Relentless

3369

02:08:38,330 --> 02:08:35,880

Pursuit Of Truth

3370

02:08:40,910 --> 02:08:38,340

he says when he gets to space he plans

3371

02:08:44,270 --> 02:08:40,920

to keep the photo in his crew quarters

3372

02:08:46,010 --> 02:08:44,280

that's a touching thing to do yeah for

3373

02:08:47,390 --> 02:08:46,020

his father and I think just all the more

3374

02:08:50,149 --> 02:08:47,400

reason we're proud of the turtle's name

3375

02:08:51,770 --> 02:08:50,159

is Woody's dad is is why Woody is Woody

3376

02:08:54,830 --> 02:08:51,780

right so that's that's just like all of

3377

02:08:56,450 --> 02:08:54,840

us and uh yeah it was uh sad for that to

3378

02:08:57,890 --> 02:08:56,460

happen while he was in training um and

3379

02:09:00,830 --> 02:08:57,900

I'm glad he's able to take him with him

3380

02:09:02,450 --> 02:09:00,840

to orbit now you mentioned that you

3381

02:09:04,490 --> 02:09:02,460

actually brought some items on board and

3382

02:09:06,109 --> 02:09:04,500

we actually have some of them some of

3383

02:09:08,390 --> 02:09:06,119

the things from your flight kits we want

3384

02:09:10,189 --> 02:09:08,400

to take a look at that so basically uh

3385

02:09:12,050 --> 02:09:10,199

in the dragon you have about a shoebox

3386

02:09:13,189 --> 02:09:12,060

size of stuff that you can bring so

3387

02:09:15,950 --> 02:09:13,199

those crew can bring things so I brought

3388

02:09:17,629 --> 02:09:15,960

some show and tell so uh so I also

3389

02:09:20,209 --> 02:09:17,639

brought some pictures along my kids so

3390

02:09:22,729 --> 02:09:20,219

we've got some some cards I had children

3391

02:09:24,050 --> 02:09:22,739

made for me uh so all in all just like

3392

02:09:25,490 --> 02:09:24,060

Woody all these things wound up in my

3393

02:09:26,990 --> 02:09:25,500

crew quarters on the space station went

3394

02:09:29,930 --> 02:09:27,000

to space of this all went to space this

3395

02:09:31,490 --> 02:09:29,940

is my uh my PT gear from the academy the

3396

02:09:34,010 --> 02:09:31,500

Air Force Academy

3397

02:09:35,570 --> 02:09:34,020

um so and people accuse me of of buying

3398

02:09:37,550 --> 02:09:35,580

one but it's legit because it's still

3399

02:09:39,470 --> 02:09:37,560

got the stamp with like oh there it is

3400

02:09:41,270 --> 02:09:39,480

yeah so that's the real deal that's uh

3401

02:09:42,649 --> 02:09:41,280

it doesn't fit I think maybe the shirt

3402

02:09:44,930 --> 02:09:42,659

trunk over the years I think is what

3403

02:09:47,209 --> 02:09:44,940

happened that's what I tell myself

3404

02:09:49,250 --> 02:09:47,219

um my wife's gonna kill me but uh I'm

3405

02:09:51,050 --> 02:09:49,260

not supposed to show this oh this is my

3406

02:09:53,450 --> 02:09:51,060

my space retainer

3407

02:09:55,010 --> 02:09:53,460

um because so I had braces when I was a

3408

02:09:56,930 --> 02:09:55,020

kid and now that I'm a dad having to get

3409

02:09:58,430 --> 02:09:56,940

Think About Braces my kids I know how

3410

02:09:59,930 --> 02:09:58,440

expensive it is and I didn't want to

3411

02:10:01,250 --> 02:09:59,940

have to get braces again so I took it

3412

02:10:02,990 --> 02:10:01,260

it's possibly yeah this is my space

3413

02:10:05,810 --> 02:10:03,000

retainer yeah you don't want to have to

3414

02:10:08,290 --> 02:10:05,820

redo braces no so but so those things

3415

02:10:11,930 --> 02:10:08,300

floated right yeah

3416

02:10:13,490 --> 02:10:11,940

a turtle patch of course so that's

3417

02:10:16,070 --> 02:10:13,500

pretty typical for praying to bring uh

3418

02:10:18,109 --> 02:10:16,080

patches things like that my wife made me

3419

02:10:19,910 --> 02:10:18,119

uh I had several cards for different

3420

02:10:22,729 --> 02:10:19,920

days of the week so care package style

3421

02:10:24,649 --> 02:10:22,739

cards really for every not not every day

3422

02:10:27,649 --> 02:10:24,659

okay but this was this was like uh any

3423

02:10:29,629 --> 02:10:27,659

Thursday card oh that's sweet so like

3424

02:10:32,330 --> 02:10:29,639

like most things in my life she's better

3425

02:10:34,550 --> 02:10:32,340

than me so she thought of that this is a

3426

02:10:35,990 --> 02:10:34,560

pair of dice so this is uh in my first

3427

02:10:37,430 --> 02:10:36,000

Fighter Squadron in the Air Force was

3428

02:10:39,350 --> 02:10:37,440

the 90th Fighter Squadron which is the

3429

02:10:42,290 --> 02:10:39,360

paradise and if you notice any direction

3430

02:10:43,970 --> 02:10:42,300

is always seven Lucky Seven and so you

3431

02:10:46,010 --> 02:10:43,980

get your first one you basically get

3432

02:10:47,750 --> 02:10:46,020

these pair after your combat qualified

3433

02:10:50,149 --> 02:10:47,760

in the 90th Fighter Squadron and then

3434

02:10:52,129 --> 02:10:50,159

you you wear them on your pocket and

3435

02:10:54,649 --> 02:10:52,139

then an rmo which stands for round metal

3436

02:10:55,970 --> 02:10:54,659

object we avoid saying the word coin in

3437

02:10:57,709 --> 02:10:55,980

the air force of tradition is when you

3438

02:10:59,089 --> 02:10:57,719

say the word that's a challenge to

3439

02:11:00,950 --> 02:10:59,099

someone that they have to have it so we

3440

02:11:03,530 --> 02:11:00,960

use the word we use the acronym rmo but

3441

02:11:06,950 --> 02:11:03,540

so this is our crew three one our crew

3442

02:11:08,030 --> 02:11:06,960

three patch Expedition 66 patch hold

3443

02:11:10,189 --> 02:11:08,040

that for a second that was really neat

3444

02:11:12,310 --> 02:11:10,199

you helped in the design of this with

3445

02:11:15,290 --> 02:11:12,320

the fire coming out of the door

3446

02:11:17,089 --> 02:11:15,300

yeah so the the crew 3 patch has yeah

3447

02:11:19,010 --> 02:11:17,099

the three and then the dragon like the

3448

02:11:20,930 --> 02:11:19,020

head of a dragon in the the flame and

3449

02:11:23,510 --> 02:11:20,940

people do point out this is you wouldn't

3450

02:11:24,410 --> 02:11:23,520

want to actually see flame though that

3451

02:11:26,629 --> 02:11:24,420

would be a bad thing that would be the

3452

02:11:28,729 --> 02:11:26,639

abort engine but uh but it's a cool it's

3453

02:11:30,470 --> 02:11:28,739

a cool visual graphic oh very good very

3454

02:11:31,910 --> 02:11:30,480

good and all that stuff went to space it

3455

02:11:33,470 --> 02:11:31,920

did yep so thank you for sharing that

3456

02:11:35,209 --> 02:11:33,480

with us that was really neat to walk

3457

02:11:36,709 --> 02:11:35,219

through everything that you took up and

3458

02:11:38,689 --> 02:11:36,719

all of that fit into a shoebox all if

3459

02:11:40,430 --> 02:11:38,699

it's in a shoe box yeah exactly all

3460

02:11:41,810 --> 02:11:40,440

right well thanks in space it floats out

3461

02:11:43,970 --> 02:11:41,820

so you got to be really careful to keep

3462

02:11:46,729 --> 02:11:43,980

track of it all right you mentioned you

3463

02:11:49,310 --> 02:11:46,739

know the crew patch and so uh on that

3464

02:11:51,169 --> 02:11:49,320

note every NASA space flight going to

3465

02:11:53,330 --> 02:11:51,179

station has a mission patch designed by

3466

02:11:55,129 --> 02:11:53,340

the crew and this is crew six's Mission

3467

02:11:57,890 --> 02:11:55,139

patch and what you'll notice right away

3468

02:12:00,169 --> 02:11:57,900

is the wooden dragon ship with a dragon

3469

02:12:02,810 --> 02:12:00,179

figure head that's because each crew 6

3470

02:12:05,270 --> 02:12:02,820

member has an affinity for seafaring

3471

02:12:07,189 --> 02:12:05,280

vessels huh how about that and check out

3472

02:12:08,709 --> 02:12:07,199

the anchor it's the International Space

3473

02:12:12,410 --> 02:12:08,719

Station sitting right there on the ship

3474

02:12:14,810 --> 02:12:12,420

uh lastly the sale crew 6 says

3475

02:12:16,970 --> 02:12:14,820

represents the three planetary bodies of

3476

02:12:18,350 --> 02:12:16,980

the Earth Moon and Mars and you can see

3477

02:12:20,689 --> 02:12:18,360

the Earthen blue

3478

02:12:22,669 --> 02:12:20,699

the moon in gray and white with the

3479

02:12:24,709 --> 02:12:22,679

number six and then the ultimate

3480

02:12:26,990 --> 02:12:24,719

destination of NASA's Artemis program

3481

02:12:28,669 --> 02:12:27,000

the red planet

3482

02:12:30,109 --> 02:12:28,679

that's a pretty cool design very cool

3483

02:12:31,430 --> 02:12:30,119

yeah that's the cool thing about patches

3484

02:12:33,890 --> 02:12:31,440

there's always so much hidden meaning

3485

02:12:35,990 --> 02:12:33,900

and it's uh all the subtlies and the

3486

02:12:37,790 --> 02:12:36,000

themes um even down to the colors and

3487

02:12:39,410 --> 02:12:37,800

the number of stars all that is it goes

3488

02:12:41,629 --> 02:12:39,420

into it so it's always a fun thing to

3489

02:12:43,010 --> 02:12:41,639

design a patch uh and kind of pull in a

3490

02:12:45,109 --> 02:12:43,020

little bit of each person and the crew

3491

02:12:46,850 --> 02:12:45,119

into it and you work very closely with

3492

02:12:49,010 --> 02:12:46,860

the artists that designed your patch and

3493

02:12:51,890 --> 02:12:49,020

every astronaut does right we do yep

3494

02:12:54,290 --> 02:12:51,900

yeah so the JSC helps we we had a a

3495

02:12:55,669 --> 02:12:54,300

known artist uh I'm not sure if I'm

3496

02:12:57,290 --> 02:12:55,679

supposed to say his name but basically

3497

02:12:59,510 --> 02:12:57,300

did a pro bono for us that helped out

3498

02:13:01,550 --> 02:12:59,520

which was which was super uh super

3499

02:13:02,810 --> 02:13:01,560

grateful for that and but you're exactly

3500

02:13:05,030 --> 02:13:02,820

right but you would kind of have some

3501

02:13:06,589 --> 02:13:05,040

ideas of like some some themes uh then

3502

02:13:08,089 --> 02:13:06,599

you kind of iterate uh on that with them

3503

02:13:09,950 --> 02:13:08,099

and the same thing so there's the crew

3504

02:13:10,970 --> 02:13:09,960

patch and then uh I think Courtney

3505

02:13:11,930 --> 02:13:10,980

mentioned earlier when they get to the

3506

02:13:14,689 --> 02:13:11,940

space station they'll be part of

3507

02:13:15,950 --> 02:13:14,699

expedition 68 which also has uh a patch

3508

02:13:18,830 --> 02:13:15,960

and then they will also be up there for

3509

02:13:20,510 --> 02:13:18,840

Expedition 69 so they'll have uh usually

3510

02:13:23,270 --> 02:13:20,520

have a vehicle patch and then a

3511

02:13:25,609 --> 02:13:23,280

Expedition patch Raja full of so much

3512

02:13:28,129 --> 02:13:25,619

exciting information here and insight

3513

02:13:30,050 --> 02:13:28,139

into what it's like to be a NASA

3514

02:13:32,030 --> 02:13:30,060

astronaut and to fly This Crew dragon go

3515

02:13:34,490 --> 02:13:32,040

up to the International Space Station so

3516

02:13:36,950 --> 02:13:34,500

we want to ask another social question

3517

02:13:39,589 --> 02:13:36,960

send them all in Facebook Twitter twitch

3518

02:13:41,450 --> 02:13:39,599

and YouTube and here's a question from

3519

02:13:43,550 --> 02:13:41,460

at 11b

3520

02:13:45,830 --> 02:13:43,560

does the two plus hours in the seats

3521

02:13:48,770 --> 02:13:45,840

prior to launch go slowly or is the

3522

02:13:50,270 --> 02:13:48,780

level of activity such that time passes

3523

02:13:52,669 --> 02:13:50,280

quickly

3524

02:13:54,530 --> 02:13:52,679

it's a good question so I would say uh

3525

02:13:56,089 --> 02:13:54,540

it actually goes pretty quick because

3526

02:13:57,350 --> 02:13:56,099

what they're actually doing you can see

3527

02:13:59,209 --> 02:13:57,360

actually all of them are tapping away at

3528

02:14:00,530 --> 02:13:59,219

screens there even though the crew's not

3529

02:14:03,290 --> 02:14:00,540

right now they're waiting for the

3530

02:14:04,790 --> 02:14:03,300

closeout crew to finish up and the F9

3531

02:14:06,950 --> 02:14:04,800

team is doing most of the work what they

3532

02:14:09,290 --> 02:14:06,960

are doing is kind of walking through all

3533

02:14:11,390 --> 02:14:09,300

the displays and cut we call it chair

3534

02:14:12,589 --> 02:14:11,400

flying going through the sequences and

3535

02:14:14,330 --> 02:14:12,599

actually kind of talking through some

3536

02:14:15,890 --> 02:14:14,340

off-nominal events as well and so

3537

02:14:18,350 --> 02:14:15,900

they're using all this as rehearsal time

3538

02:14:19,609 --> 02:14:18,360

because now that's the actual day of

3539

02:14:20,990 --> 02:14:19,619

there's different things that will be

3540

02:14:23,390 --> 02:14:21,000

specific to the weather in terms of what

3541

02:14:24,350 --> 02:14:23,400

egress set you might go to and we

3542

02:14:25,669 --> 02:14:24,360

mentioned before like what's the

3543

02:14:27,290 --> 02:14:25,679

Commander's job is kind of like the

3544

02:14:28,729 --> 02:14:27,300

coach and talking about like okay if

3545

02:14:29,870 --> 02:14:28,739

this happens remember and I don't know

3546

02:14:32,089 --> 02:14:29,880

what their sequence is but like okay

3547

02:14:33,109 --> 02:14:32,099

Sultan you're doing this Andre you're

3548

02:14:35,629 --> 02:14:33,119

doing this and you're kind of just

3549

02:14:37,609 --> 02:14:35,639

walking through those and mentally uh

3550

02:14:39,109 --> 02:14:37,619

talking through all of them and then

3551

02:14:41,270 --> 02:14:39,119

what Woody and Steve are probably doing

3552

02:14:42,830 --> 02:14:41,280

on their iPads is going through the

3553

02:14:44,209 --> 02:14:42,840

displays they're going to see for the

3554

02:14:45,470 --> 02:14:44,219

different phases of the launch the

3555

02:14:48,169 --> 02:14:45,480

different stages so they have a

3556

02:14:50,450 --> 02:14:48,179

basically a preview mode on there and

3557

02:14:52,430 --> 02:14:50,460

they can talk through okay at you know

3558

02:14:53,689 --> 02:14:52,440

stage 1A this is I'm going to make that

3559

02:14:55,010 --> 02:14:53,699

call this is what we're looking for

3560

02:14:56,569 --> 02:14:55,020

remember we're looking at the altitude

3561

02:14:58,490 --> 02:14:56,579

tape so they're basically mentally

3562

02:15:00,550 --> 02:14:58,500

walking through all the phases because

3563

02:15:02,629 --> 02:15:00,560

once it happens once the rocket lights

3564

02:15:04,370 --> 02:15:02,639

exactly from the time it lights to

3565

02:15:06,350 --> 02:15:04,380

orbits like eight to nine minutes so you

3566

02:15:08,390 --> 02:15:06,360

can't it's not it's too late to talk

3567

02:15:10,729 --> 02:15:08,400

about it then so you're using all this

3568

02:15:13,250 --> 02:15:10,739

time to go through all those sequences

3569

02:15:15,470 --> 02:15:13,260

and talk about okay what if we have to

3570

02:15:16,910 --> 02:15:15,480

you know what up the cage of a stage 2D

3571

02:15:18,229 --> 02:15:16,920

abort and what are we going to do and

3572

02:15:19,910 --> 02:15:18,239

all the different what ifs because

3573

02:15:21,109 --> 02:15:19,920

there's different decision paths in each

3574

02:15:22,310 --> 02:15:21,119

of those procedures and you're sort of

3575

02:15:24,050 --> 02:15:22,320

walking through like okay if we go down

3576

02:15:25,550 --> 02:15:24,060

this path uh remember you know here's

3577

02:15:27,530 --> 02:15:25,560

the things to remember so it's just a

3578

02:15:29,689 --> 02:15:27,540

one last training session if you will

3579

02:15:31,250 --> 02:15:29,699

seems like a lot doing these mental reps

3580

02:15:33,050 --> 02:15:31,260

and going through but that that really

3581

02:15:35,569 --> 02:15:33,060

greases you exactly and that's why then

3582

02:15:36,890 --> 02:15:35,579

it becomes just uh you know kind of

3583

02:15:39,950 --> 02:15:36,900

muscle memory when you're actually in

3584

02:15:46,370 --> 02:15:42,589

all right we have another question

3585

02:15:49,069 --> 02:15:46,380

joab MSM asks what does an astronaut do

3586

02:15:50,450 --> 02:15:49,079

for NASA while they are not in space I'm

3587

02:15:52,129 --> 02:15:50,460

glad you asked that because that's one

3588

02:15:53,689 --> 02:15:52,139

of my but one of the things I try to

3589

02:15:55,609 --> 02:15:53,699

harp on the most when I do public

3590

02:15:57,169 --> 02:15:55,619

affairs events is most of our job is not

3591

02:15:59,569 --> 02:15:57,179

flying in space of course we all love to

3592

02:16:01,729 --> 02:15:59,579

fly in space but for example Tom

3593

02:16:03,890 --> 02:16:01,739

marshburn who is my pilot on crew 3 he

3594

02:16:04,970 --> 02:16:03,900

was in the office for 28 years and spent

3595

02:16:07,609 --> 02:16:04,980

you know about a year and a half in

3596

02:16:09,410 --> 02:16:07,619

space but that's not much time compared

3597

02:16:11,390 --> 02:16:09,420

to the 28 years in the office so most of

3598

02:16:13,069 --> 02:16:11,400

our job is all the development and

3599

02:16:14,270 --> 02:16:13,079

engineering and science work for all the

3600

02:16:17,209 --> 02:16:14,280

programs that are going on so right now

3601
02:16:18,770 --> 02:16:17,219
Artemis is what we're all working on so

3602
02:16:21,589 --> 02:16:18,780
there's the SLS rocket there's the

3603
02:16:22,970 --> 02:16:21,599
Gateway lunar habitat there's the hls

3604
02:16:24,410 --> 02:16:22,980
which is the human Landing system that's

3605
02:16:26,569 --> 02:16:24,420
the lunar lander that's what you're

3606
02:16:28,729 --> 02:16:26,579
that's what I'm working on there's the

3607
02:16:30,589 --> 02:16:28,739
Orion capsule so all of us are working

3608
02:16:32,450 --> 02:16:30,599
on these different programs helping with

3609
02:16:34,129 --> 02:16:32,460
the the development of them and then we

3610
02:16:36,230 --> 02:16:34,139
also have all kinds of other jobs just

3611
02:16:37,849 --> 02:16:36,240
to keep the office going so we have uh

3612
02:16:39,349 --> 02:16:37,859
you met you saw a reed who was the

3613
02:16:41,750 --> 02:16:39,359

former Chief of the office Joe is now

3614

02:16:43,730 --> 02:16:41,760

the chief so that's that's a job you've

3615

02:16:45,230 --> 02:16:43,740

got Branch Chiefs who are are running

3616

02:16:46,790 --> 02:16:45,240

all the different Personnel in the

3617

02:16:48,530 --> 02:16:46,800

office so these are all you know all

3618

02:16:50,270 --> 02:16:48,540

those jobs are what we do when we're not

3619

02:16:52,009 --> 02:16:50,280

flying in space but we still maintain a

3620

02:16:53,870 --> 02:16:52,019

currency so you're doing a job but

3621

02:16:56,150 --> 02:16:53,880

you're still flying the 238 you're still

3622

02:16:57,290 --> 02:16:56,160

doing NBL runs the neutral buoyancy

3623

02:16:59,209 --> 02:16:57,300

which is where we practice our space

3624

02:17:01,250 --> 02:16:59,219

walks you're still doing biology

3625

02:17:03,349 --> 02:17:01,260

training geology training you're doing

3626

02:17:04,669 --> 02:17:03,359

all these things ISS training at a

3627

02:17:06,589 --> 02:17:04,679

currency level and then once you're

3628

02:17:09,349 --> 02:17:06,599

assigned you stop doing your technical

3629

02:17:10,730 --> 02:17:09,359

job and worked solely on preparing for

3630

02:17:13,549 --> 02:17:10,740

the launch vehicle on that particular

3631

02:17:15,410 --> 02:17:13,559

Expedition on the space station

3632

02:17:17,209 --> 02:17:15,420

and I know you've been busy too because

3633

02:17:19,250 --> 02:17:17,219

even in your time helping us with the

3634

02:17:20,629 --> 02:17:19,260

broadcast we're greatly appreciative of

3635

02:17:22,610 --> 02:17:20,639

you being here you've been busy like

3636

02:17:24,410 --> 02:17:22,620

you're on your laptop you know finishing

3637

02:17:26,690 --> 02:17:24,420

up some work and stuff so we really

3638

02:17:28,129 --> 02:17:26,700

appreciate you taking the time I think

3639

02:17:30,530 --> 02:17:28,139

that's why we all we all love our jobs

3640

02:17:32,870 --> 02:17:30,540

yes it's fun all right let's check in

3641

02:17:34,250 --> 02:17:32,880

now go back to Houston Texas with uh

3642

02:17:37,490 --> 02:17:34,260

Courtney Beasley what's happening in

3643

02:17:41,629 --> 02:17:39,770

thanks Daryl the flight controllers here

3644

02:17:44,089 --> 02:17:41,639

in Mission Control Houston are laser

3645

02:17:45,950 --> 02:17:44,099

focused on the onboard systems of the

3646

02:17:48,169 --> 02:17:45,960

space station ensuring it is ready to

3647

02:17:50,270 --> 02:17:48,179

receive crew Dragon they're also making

3648

02:17:52,490 --> 02:17:50,280

sure all communication links between the

3649

02:17:54,770 --> 02:17:52,500

station dragon and the ground are

3650

02:17:56,629 --> 02:17:54,780

working properly the consensus to this

3651
02:17:58,849 --> 02:17:56,639
point is that everything is proceeding

3652
02:18:00,830 --> 02:17:58,859
right on track teams here in Mission

3653
02:18:02,450 --> 02:18:00,840
Control Houston the team in Hawthorne

3654
02:18:03,950 --> 02:18:02,460
and the astronauts aboard the space

3655
02:18:05,709 --> 02:18:03,960
station will monitor the autonomous

3656
02:18:08,209 --> 02:18:05,719
docking of the spacecraft tomorrow

3657
02:18:10,370 --> 02:18:08,219
they'll perform a series of leak checks

3658
02:18:12,589 --> 02:18:10,380
then work to open the hatches on the

3659
02:18:14,690 --> 02:18:12,599
dragon side and inside the station's

3660
02:18:16,849 --> 02:18:14,700
pressurized mating adapter we expect

3661
02:18:19,190 --> 02:18:16,859
hatch opening to take place about an

3662
02:18:20,690 --> 02:18:19,200
hour and a half after docking once on

3663
02:18:22,370 --> 02:18:20,700

board the astronauts will be greeted by

3664

02:18:24,469 --> 02:18:22,380

the space station crew and will then

3665

02:18:26,929 --> 02:18:24,479

join in for welcoming remarks for the

3666

02:18:29,089 --> 02:18:26,939

new crew members from there on out they

3667

02:18:31,370 --> 02:18:29,099

will no longer be referred to as Cruise

3668

02:18:33,349 --> 02:18:31,380

6 but rather as flight Engineers of the

3669

02:18:35,509 --> 02:18:33,359

International Space Station until their

3670

02:18:38,209 --> 02:18:35,519

return back to Earth here in Mission

3671

02:18:40,669 --> 02:18:38,219

Control Houston flight director Chris is

3672

02:18:42,709 --> 02:18:40,679

now on Console overseeing the team for

3673

02:18:44,870 --> 02:18:42,719

launch and that's it for Mission Control

3674

02:18:49,910 --> 02:18:44,880

Houston for now so I'll toss it back to

3675

02:18:54,889 --> 02:18:52,549

these commercial crew program it was

3676

02:18:57,169 --> 02:18:54,899

created in 2011 and has been flying

3677

02:18:58,790 --> 02:18:57,179

astronauts from American soil to the

3678

02:19:01,669 --> 02:18:58,800

International Space Station for the last

3679

02:19:03,709 --> 02:19:01,679

two years let's bring in NASA's Jasmine

3680

02:19:06,349 --> 02:19:03,719

Hopkins again who's with Kennedy's

3681

02:19:08,209 --> 02:19:06,359

Center Director Janet petro and deputy

3682

02:19:10,849 --> 02:19:08,219

director Kelvin Manning

3683

02:19:12,410 --> 02:19:10,859

thank you so much Daryl Janet Petro

3684

02:19:13,610 --> 02:19:12,420

Kelvin Manning always a pleasure to have

3685

02:19:16,429 --> 02:19:13,620

you guys here thanks for being here

3686

02:19:18,110 --> 02:19:16,439

tonight thank you Jasmine of course so

3687

02:19:20,150 --> 02:19:18,120

Janet I know that you're one of your

3688

02:19:22,190 --> 02:19:20,160

catchphrases is embrace the challenge so

3689

02:19:24,049 --> 02:19:22,200

talk to us about how the workforce has

3690

02:19:25,549 --> 02:19:24,059

done that here at Kennedy to return to

3691

02:19:28,129 --> 02:19:25,559

human space flight in just the past few

3692

02:19:29,990 --> 02:19:28,139

years yeah you're exactly right I do

3693

02:19:32,270 --> 02:19:30,000

like to say Embrace a challenge and I

3694

02:19:33,650 --> 02:19:32,280

would tell you the Kennedy Workforce has

3695

02:19:35,990 --> 02:19:33,660

really embraced the challenge you know

3696

02:19:38,450 --> 02:19:36,000

if I start with last year we are

3697

02:19:40,549 --> 02:19:38,460

celebrating our 60th anniversary we

3698

02:19:43,610 --> 02:19:40,559

ended the year with that very historic

3699

02:19:45,950 --> 02:19:43,620

uh Artemis One mission and we were

3700

02:19:47,629 --> 02:19:45,960

established 60 years ago all for all

3701
02:19:49,250 --> 02:19:47,639
about the Apollo missions and going back

3702
02:19:51,469 --> 02:19:49,260
to the moon so Artemis we're going back

3703
02:19:54,170 --> 02:19:51,479
to the Moon more sustainable way and

3704
02:19:56,690 --> 02:19:54,180
here we are and we are going to be with

3705
02:19:59,630 --> 02:19:56,700
our six SpaceX operational Mission crew

3706
02:20:01,550 --> 02:19:59,640
six tonight so the whole transformation

3707
02:20:04,010 --> 02:20:01,560
of the center from that just government

3708
02:20:07,190 --> 02:20:04,020
only focus Center to what we are today

3709
02:20:09,889 --> 02:20:07,200
we have a very vibrant space ecosystem

3710
02:20:11,510 --> 02:20:09,899
out here more multitude of commercial

3711
02:20:14,510 --> 02:20:11,520
companies as well as our government

3712
02:20:17,690 --> 02:20:14,520
programs working so we have embraced a

3713
02:20:20,389 --> 02:20:17,700

challenge of transforming to be the 21st

3714

02:20:22,429 --> 02:20:20,399

century Spaceport exactly and Janet I'm

3715

02:20:24,230 --> 02:20:22,439

glad you used that word Spaceport Kelvin

3716

02:20:25,849 --> 02:20:24,240

question for you it's no longer just

3717

02:20:27,410 --> 02:20:25,859

NASA out here we're working with a lot

3718

02:20:29,270 --> 02:20:27,420

of our industry Partners so how is

3719

02:20:31,130 --> 02:20:29,280

Kennedy supporting them

3720

02:20:33,830 --> 02:20:31,140

well we're supporting them in many ways

3721

02:20:40,330 --> 02:20:33,840

Jasmine it's interesting because we have

3722

02:20:46,790 --> 02:20:43,429

discover Discovery for all and the

3723

02:20:50,750 --> 02:20:46,800

mission is to provide continuous access

3724

02:20:53,330 --> 02:20:50,760

to space from Earth's Premier Spaceport

3725

02:20:55,969 --> 02:20:53,340

right here through creativity and

3726
02:20:58,849 --> 02:20:55,979
Innovation so you see all that come into

3727
02:21:02,570 --> 02:20:58,859
fruition here through our vision and

3728
02:21:04,550 --> 02:21:02,580
it's the government industry as well as

3729
02:21:05,990 --> 02:21:04,560
our International partners that is

3730
02:21:08,030 --> 02:21:06,000
Kelvin thank you so much for sharing

3731
02:21:09,950 --> 02:21:08,040
that vision and right now crucif was

3732
02:21:11,270 --> 02:21:09,960
launching at the end of Black History

3733
02:21:12,770 --> 02:21:11,280
Month we know that Kennedy has been

3734
02:21:14,389 --> 02:21:12,780
doing a lot to celebrate that as well as

3735
02:21:17,830 --> 02:21:14,399
the agency can you both tell us about

3736
02:21:20,570 --> 02:21:17,840
that yeah so we've had a number of

3737
02:21:22,910 --> 02:21:20,580
events around we are one of our employee

3738
02:21:25,250 --> 02:21:22,920

resource groups is the um black

3739

02:21:28,070 --> 02:21:25,260

engineering strategy team best that's

3740

02:21:30,830 --> 02:21:28,080

our African but really all of our ergs

3741

02:21:33,349 --> 02:21:30,840

here really promote our core value of

3742

02:21:36,469 --> 02:21:33,359

inclusion that we have here at Nasa

3743

02:21:38,690 --> 02:21:36,479

we're so proud of all the ergs numerous

3744

02:21:40,429 --> 02:21:38,700

events throughout this throughout the

3745

02:21:44,150 --> 02:21:40,439

month of February celebrating that

3746

02:21:45,950 --> 02:21:44,160

exactly to add anything oh sure so by

3747

02:21:48,950 --> 02:21:45,960

the way Calvin's our champion for best

3748

02:21:51,830 --> 02:21:48,960

oh executive executive Champion

3749

02:21:54,469 --> 02:21:51,840

um that's correct and um through

3750

02:21:56,090 --> 02:21:54,479

diversity diversity gives us Innovation

3751

02:21:57,950 --> 02:21:56,100

you know people with different

3752

02:22:00,230 --> 02:21:57,960

backgrounds different thoughts we want

3753

02:22:02,809 --> 02:22:00,240

to be inclusive like Janet said and

3754

02:22:04,849 --> 02:22:02,819

through diversity we get that Innovation

3755

02:22:07,190 --> 02:22:04,859

that helps us solve the agency's

3756

02:22:09,290 --> 02:22:07,200

challenges and we've got a lot in front

3757

02:22:11,630 --> 02:22:09,300

of us to return to the moon and on to

3758

02:22:14,510 --> 02:22:11,640

Mars exactly and one last question at

3759

02:22:16,610 --> 02:22:14,520

last year we had 57 launches from Cape

3760

02:22:18,590 --> 02:22:16,620

Canaveral this year we're slated to have

3761

02:22:21,170 --> 02:22:18,600

over 90. what do you think of that Fury

3762

02:22:22,849 --> 02:22:21,180

of launches coming for us Janet it

3763

02:22:26,450 --> 02:22:22,859

really is amazing you know the year

3764

02:22:28,210 --> 02:22:26,460

before last it was 31 57 94. we're going

3765

02:22:33,110 --> 02:22:28,220

to be well over 100 in a couple years

3766

02:22:34,490 --> 02:22:33,120

and all of uh across the center requires

3767

02:22:36,170 --> 02:22:34,500

the support for every single launch

3768

02:22:37,990 --> 02:22:36,180

whether it's on our property or if it's

3769

02:22:40,070 --> 02:22:38,000

on the space force property together

3770

02:22:42,050 --> 02:22:40,080

Kelvin talked a little bit about those

3771

02:22:43,730 --> 02:22:42,060

Partnerships we work together to make

3772

02:22:45,830 --> 02:22:43,740

all the those launch is successful

3773

02:22:47,270 --> 02:22:45,840

whether it's commercial whether it's a

3774

02:22:49,670 --> 02:22:47,280

government launch a national security

3775

02:22:51,530 --> 02:22:49,680

Mission we all work together for that so

3776

02:22:54,290 --> 02:22:51,540

we're busy busy busy you know I thought

3777

02:22:56,210 --> 02:22:54,300

we were really busy for Artemis at the

3778

02:22:59,469 --> 02:22:56,220

end and 57 launches this year we're even

3779

02:23:02,090 --> 02:22:59,479

going to be more busy if you will

3780

02:23:03,830 --> 02:23:02,100

supporting all those launches but we are

3781

02:23:06,170 --> 02:23:03,840

we are incredibly proud of what we have

3782

02:23:07,910 --> 02:23:06,180

accomplished at the Spaceport couldn't

3783

02:23:11,270 --> 02:23:07,920

have imagined it 10 years ago that we

3784

02:23:13,309 --> 02:23:11,280

would be at a nearly 100 launches in the

3785

02:23:15,290 --> 02:23:13,319

decade from the last shuttle launch so

3786

02:23:17,450 --> 02:23:15,300

incredibly proud of the entire Kennedy

3787

02:23:19,490 --> 02:23:17,460

Workforce exactly busy is the right word

3788

02:23:21,050 --> 02:23:19,500

Kelvin anything last to add sure and the

3789

02:23:23,270 --> 02:23:21,060

cool part is we have commercial Partners

3790

02:23:25,010 --> 02:23:23,280

out here that haven't launched yet so we

3791

02:23:27,410 --> 02:23:25,020

tell people we're just getting started

3792

02:23:28,550 --> 02:23:27,420

so it's very exciting right now that is

3793

02:23:30,290 --> 02:23:28,560

perfect we really are just getting

3794

02:23:31,790 --> 02:23:30,300

started here at Kennedy always great to

3795

02:23:34,010 --> 02:23:31,800

have both of you here tonight thank you

3796

02:23:36,230 --> 02:23:34,020

Jasmine of course thank you Daryl back

3797

02:23:37,730 --> 02:23:36,240

to you thank you Jasmine and if you're

3798

02:23:39,469 --> 02:23:37,740

just joining us now welcome to the

3799

02:23:41,929 --> 02:23:39,479

Kennedy Space Center in Florida and

3800

02:23:43,610 --> 02:23:41,939

NASA's live coverage of the crew 6

3801
02:23:45,410 --> 02:23:43,620
launch to the International Space

3802
02:23:47,510 --> 02:23:45,420
Station I'm Daryl nail I'm joined by

3803
02:23:50,150 --> 02:23:47,520
rajachary a recent recent flyer on

3804
02:23:51,590 --> 02:23:50,160
Dragon crew 3 the commander glad to have

3805
02:23:53,389 --> 02:23:51,600
you here thanks Ed it's happy to be glad

3806
02:23:55,429 --> 02:23:53,399
to be here and that's uh getting close

3807
02:23:57,650 --> 02:23:55,439
to the Rockets looking good out there it

3808
02:24:00,050 --> 02:23:57,660
sure is we've run down through a few

3809
02:24:02,389 --> 02:24:00,060
Milestones already we've gotten to a

3810
02:24:04,490 --> 02:24:02,399
critical part where we are waiting now

3811
02:24:06,250 --> 02:24:04,500
the launch Escape system to be armed as

3812
02:24:08,809 --> 02:24:06,260
well as the fueling of the rocket

3813
02:24:10,730 --> 02:24:08,819

leading up until that point we've had

3814

02:24:12,530 --> 02:24:10,740

the crew go into the spacecraft that you

3815

02:24:14,570 --> 02:24:12,540

see right there they were helped by our

3816

02:24:17,389 --> 02:24:14,580

closeout team the umbilicals were

3817

02:24:19,730 --> 02:24:17,399

attached which provide breathing air and

3818

02:24:22,130 --> 02:24:19,740

Communications to the astronauts they

3819

02:24:24,830 --> 02:24:22,140

did their suit leak checks we saw them

3820

02:24:27,710 --> 02:24:24,840

pressurized and then depressed and then

3821

02:24:29,870 --> 02:24:27,720

the comms checks were completed with the

3822

02:24:31,790 --> 02:24:29,880

core the crew operations resource

3823

02:24:34,250 --> 02:24:31,800

engineer with SpaceX and the launch

3824

02:24:35,990 --> 02:24:34,260

director and now we are standing by for

3825

02:24:38,090 --> 02:24:36,000

those next big milestones and in the

3826
02:24:41,510 --> 02:24:38,100
meantime we've been taking your

3827
02:24:43,610 --> 02:24:41,520
questions from ask NASA

3828
02:24:47,809 --> 02:24:43,620
all of them from social media YouTube

3829
02:24:50,990 --> 02:24:47,819
twitch Twitter and uh Facebook

3830
02:24:53,150 --> 02:24:51,000
and we've got a question

3831
02:24:57,349 --> 02:24:53,160
coming up for us right now on the screen

3832
02:25:00,110 --> 02:24:57,359
for Raja and from twitch asks how long

3833
02:25:02,150 --> 02:25:00,120
will the crew stay on Space Station well

3834
02:25:04,070 --> 02:25:02,160
it varies but generally the Expeditions

3835
02:25:06,170 --> 02:25:04,080
are about four to six months it can

3836
02:25:07,849 --> 02:25:06,180
change a little bit uh depending on the

3837
02:25:09,349 --> 02:25:07,859
the traffic flow the the space station

3838
02:25:11,570 --> 02:25:09,359

is sort of like a giant bus terminal on

3839

02:25:13,670 --> 02:25:11,580

the sky with vehicles coming and going

3840

02:25:15,830 --> 02:25:13,680

um so yeah crew six planned about about

3841

02:25:17,389 --> 02:25:15,840

a six month stay when I was up there

3842

02:25:19,010 --> 02:25:17,399

mark Vande Hyde did a year-long mission

3843

02:25:20,809 --> 02:25:19,020

then Frank Rubio who's up there now will

3844

02:25:21,590 --> 02:25:20,819

also be about be about a year-long

3845

02:25:23,510 --> 02:25:21,600

mission

3846

02:25:25,130 --> 02:25:23,520

um so but and you know the reason we're

3847

02:25:27,650 --> 02:25:25,140

trying to go longer and learn out more

3848

02:25:29,210 --> 02:25:27,660

and learn more is as we go to the moon

3849

02:25:30,889 --> 02:25:29,220

and Mars to stay we really want to make

3850

02:25:33,349 --> 02:25:30,899

sure that we understand the effects of

3851
02:25:37,730 --> 02:25:33,359
the human body uh on long duration space

3852
02:25:41,030 --> 02:25:39,410
very good

3853
02:25:43,550 --> 02:25:41,040
another question

3854
02:25:45,590 --> 02:25:43,560
Mr Beast from YouTube asks

3855
02:25:48,530 --> 02:25:45,600
what will they be working on during

3856
02:25:50,210 --> 02:25:48,540
their six-month stay on the ISS also why

3857
02:25:52,790 --> 02:25:50,220
will NASA's coverage of the mission

3858
02:25:57,830 --> 02:25:52,800
switch to an audio only feed after

3859
02:26:00,349 --> 02:25:57,840
Ascent well I can help out with the um

3860
02:26:01,969 --> 02:26:00,359
with the audio only feed but you want to

3861
02:26:03,770 --> 02:26:01,979
answer about the what they're going to

3862
02:26:06,230 --> 02:26:03,780
be working on sure so uh the the big

3863
02:26:08,809 --> 02:26:06,240

answer is science and so the the ISS is

3864

02:26:10,730 --> 02:26:08,819

a National Laboratory in the sky

3865

02:26:13,130 --> 02:26:10,740

um and it's specifically we do research

3866

02:26:14,809 --> 02:26:13,140

that can only be done in microgravity

3867

02:26:15,650 --> 02:26:14,819

um you heard Kurt uh Dr Kurt talk a

3868

02:26:17,750 --> 02:26:15,660

little bit earlier about some of the

3869

02:26:21,050 --> 02:26:17,760

some things specific to their their

3870

02:26:22,790 --> 02:26:21,060

increment have to do with some tissue uh

3871

02:26:24,410 --> 02:26:22,800

chip research they're going to do some

3872

02:26:25,370 --> 02:26:24,420

swabs on the outside of the space

3873

02:26:28,250 --> 02:26:25,380

station which is the first time we're

3874

02:26:30,469 --> 02:26:28,260

gonna have done that to see if microbes

3875

02:26:32,270 --> 02:26:30,479

from our human body so we bring along as

3876

02:26:34,670 --> 02:26:32,280

humans this whole you know all this

3877

02:26:36,710 --> 02:26:34,680

stuff that comes off of us and we're one

3878

02:26:38,570 --> 02:26:36,720

curiosity is from a planetary protection

3879

02:26:40,130 --> 02:26:38,580

standpoint is whether we would be

3880

02:26:41,990 --> 02:26:40,140

contaminating the outside of the space

3881

02:26:43,849 --> 02:26:42,000

station and what implications that has

3882

02:26:45,770 --> 02:26:43,859

for the moon and Mars they're going to

3883

02:26:48,050 --> 02:26:45,780

be doing some more plant research so I

3884

02:26:50,150 --> 02:26:48,060

would say you know we are we understand

3885

02:26:52,010 --> 02:26:50,160

how to grow plants in place but it takes

3886

02:26:53,870 --> 02:26:52,020

a lot of crew time to do it so kind of

3887

02:26:55,309 --> 02:26:53,880

the next step is how to do that

3888

02:26:56,990 --> 02:26:55,319

um with better what we call regolith

3889

02:26:58,370 --> 02:26:57,000

stimulants which is like basically dirt

3890

02:27:00,050 --> 02:26:58,380

because you just can't have normal dirt

3891

02:27:02,450 --> 02:27:00,060

and space it floats away so you need to

3892

02:27:04,610 --> 02:27:02,460

figure out some way to have a root

3893

02:27:06,170 --> 02:27:04,620

system uh and and so that's where kind

3894

02:27:07,010 --> 02:27:06,180

of the research for plant technology is

3895

02:27:08,809 --> 02:27:07,020

at right now so they're going to be

3896

02:27:10,730 --> 02:27:08,819

involved in all that but but all told in

3897

02:27:12,349 --> 02:27:10,740

a normal you know six month increment

3898

02:27:14,210 --> 02:27:12,359

they're probably going to do upwards of

3899

02:27:17,030 --> 02:27:14,220

300 different science experiments which

3900

02:27:19,610 --> 02:27:17,040

is just an incredible number over two a

3901
02:27:21,710 --> 02:27:19,620
day and then all the the work to to

3902
02:27:23,870 --> 02:27:21,720
support those science experiments that's

3903
02:27:26,270 --> 02:27:23,880
an incredible amount of science that's

3904
02:27:27,770 --> 02:27:26,280
going to be done now with regards to the

3905
02:27:30,290 --> 02:27:27,780
second part of that question why will

3906
02:27:32,450 --> 02:27:30,300
NASA's coverage of the mission switch to

3907
02:27:34,250 --> 02:27:32,460
an audio only feed after a cent now

3908
02:27:37,130 --> 02:27:34,260
traditionally we've done video the

3909
02:27:40,190 --> 02:27:37,140
entire time but uh that is correct we're

3910
02:27:41,809 --> 02:27:40,200
going to switch to audio only after the

3911
02:27:44,210 --> 02:27:41,819
ascent portion of the flight and that's

3912
02:27:47,929 --> 02:27:44,220
because the length of the cruise transit

3913
02:27:50,090 --> 02:27:47,939

to the station which is 24.8 hours we

3914

02:27:52,010 --> 02:27:50,100

elected to maintain commentary on

3915

02:27:54,469 --> 02:27:52,020

Mission audio circuits during the

3916

02:27:57,230 --> 02:27:54,479

lengthy period of non-activity and while

3917

02:28:00,050 --> 02:27:57,240

the dragon crew is asleep so we are

3918

02:28:02,630 --> 02:28:00,060

continuing coverage Non-Stop and will

3919

02:28:04,849 --> 02:28:02,640

resume NASA TV coverage on Monday night

3920

02:28:07,670 --> 02:28:04,859

prior to the start of critical

3921

02:28:10,010 --> 02:28:07,680

Rendezvous operations but in the time in

3922

02:28:11,630 --> 02:28:10,020

between we're going to allow you to hear

3923

02:28:14,330 --> 02:28:11,640

the mission audio that critical

3924

02:28:16,370 --> 02:28:14,340

communication between the ground and

3925

02:28:18,290 --> 02:28:16,380

dragon if there is any we'll keep that

3926

02:28:24,410 --> 02:28:18,300

up live but we won't have a commentator

3927

02:28:27,770 --> 02:28:26,389

and now we are getting close to one hour

3928

02:28:30,290 --> 02:28:27,780

until liftoff

3929

02:28:32,450 --> 02:28:30,300

this day is the continuation of regular

3930

02:28:35,210 --> 02:28:32,460

crew flights to the space station from

3931

02:28:37,429 --> 02:28:35,220

U.S soil T-minus one hour and two

3932

02:28:39,830 --> 02:28:37,439

minutes and Counting

3933

02:28:42,889 --> 02:28:39,840

until spacex's crew 6 Mission which will

3934

02:28:45,230 --> 02:28:42,899

be the company's six crude space flight

3935

02:28:47,990 --> 02:28:45,240

for NASA following the crude test flight

3936

02:28:50,570 --> 02:28:48,000

of demo 2 and four previous operational

3937

02:28:52,849 --> 02:28:50,580

crude missions to the space station it

3938

02:28:55,429 --> 02:28:52,859

will also be spacex's eighth crude space

3939

02:28:58,730 --> 02:28:55,439

flight overall and that includes the

3940

02:28:59,929 --> 02:28:58,740

private missions inspiration 4 and Axiom

3941

02:29:02,389 --> 02:28:59,939

one

3942

02:29:05,150 --> 02:29:02,399

which visited Raja while he was on board

3943

02:29:07,610 --> 02:29:05,160

station today our crew is flying on

3944

02:29:09,770 --> 02:29:07,620

board Dragon Endeavor and it will be the

3945

02:29:11,450 --> 02:29:09,780

fourth flight for this capsule and it

3946

02:29:13,849 --> 02:29:11,460

will be taking a ride

3947

02:29:15,830 --> 02:29:13,859

on a brand new Falcon 9 rocket that you

3948

02:29:18,830 --> 02:29:15,840

see below it

3949

02:29:20,870 --> 02:29:18,840

we've had a great countdown so far we

3950

02:29:24,410 --> 02:29:20,880

just got a report on the weather

3951

02:29:27,110 --> 02:29:24,420

and it's just spectacular out there both

3952

02:29:28,910 --> 02:29:27,120

at the pad and then the corridor weather

3953

02:29:32,090 --> 02:29:28,920

also looks great according to our

3954

02:29:37,309 --> 02:29:34,309

so they're doing some final pad wind

3955

02:29:39,230 --> 02:29:37,319

evaluations and it's all coming together

3956

02:29:42,469 --> 02:29:39,240

releasing some balloons getting those

3957

02:29:44,389 --> 02:29:42,479

final wind data in the upper parts of

3958

02:29:45,530 --> 02:29:44,399

the atmosphere and uh so far

3959

02:29:47,469 --> 02:29:45,540

everything's looking good we're getting

3960

02:29:50,210 --> 02:29:47,479

a little bit of a breeze now

3961

02:29:59,150 --> 02:29:50,220

keeping the bugs isolation valves to

3962

02:30:01,610 --> 02:30:00,710

and so the reason they tell them so

3963

02:30:03,050 --> 02:30:01,620

there's nothing the crew's actually

3964

02:30:04,849 --> 02:30:03,060

doing for that particular call but they

3965

02:30:06,050 --> 02:30:04,859

let the crew know a lot of those valve

3966

02:30:07,550 --> 02:30:06,060

openings and closings but you can

3967

02:30:10,070 --> 02:30:07,560

actually hear it and feel it inside the

3968

02:30:11,690 --> 02:30:10,080

vehicle you can hear the funk or the

3969

02:30:13,070 --> 02:30:11,700

clunk and so it's good to know that's

3970

02:30:14,330 --> 02:30:13,080

about to happen so you don't just hear

3971

02:30:16,849 --> 02:30:14,340

something happening in your vehicle

3972

02:30:19,190 --> 02:30:16,859

without uh otherwise a bit discomfoting

3973

02:30:20,389 --> 02:30:19,200

to hear a big metal clunk without

3974

02:30:22,429 --> 02:30:20,399

knowing if that's supposed to happen or

3975

02:30:26,389 --> 02:30:22,439

not it's a good heads up by SpaceX let

3976

02:30:30,530 --> 02:30:28,429

so with about an hour to go until

3977

02:30:32,389 --> 02:30:30,540

liftoff things are really going to start

3978

02:30:35,750 --> 02:30:32,399

picking up as you've already noticed

3979

02:30:37,910 --> 02:30:35,760

we'll get close to the go no-go poll to

3980

02:30:40,370 --> 02:30:37,920

arm the launch Escape system and then of

3981

02:30:42,710 --> 02:30:40,380

course begin the propellant loading

3982

02:30:44,389 --> 02:30:42,720

the crew Poll for Readiness happens at T

3983

02:30:47,090 --> 02:30:44,399

minus 60 Minutes in just a few seconds

3984

02:30:50,690 --> 02:30:47,100

and then the dragon pole for prop load

3985

02:30:52,490 --> 02:30:50,700

is at T minus 55 minutes from there at T

3986

02:30:54,590 --> 02:30:52,500

minus 45 minutes there will be an

3987

02:30:56,929 --> 02:30:54,600

internal Mission Control Hawthorne pole

3988

02:30:59,270 --> 02:30:56,939

and then the launch director's Poll for

3989

02:31:01,630 --> 02:30:59,280

propellant loading and then we get to

3990

02:31:04,429 --> 02:31:01,640

about T minus 40 minutes

3991

02:31:09,050 --> 02:31:04,439

go for Section Five of four decimal 100

3992

02:31:12,889 --> 02:31:11,150

and there's the T minus six okay we copy

3993

02:31:15,110 --> 02:31:12,899

we're picking me up in five decibel one

3994

02:31:16,429 --> 02:31:15,120

of four decimal 100.

3995

02:31:17,990 --> 02:31:16,439

so that's that four decimal 100

3996

02:31:19,670 --> 02:31:18,000

procedure we were talking about earlier

3997

02:31:20,750 --> 02:31:19,680

so they're still in that and then

3998

02:31:22,730 --> 02:31:20,760

there's different sections like we

3999

02:31:24,950 --> 02:31:22,740

described so this particular section is

4000

02:31:26,809 --> 02:31:24,960

preparation for Les arming or the launch

4001
02:31:28,550 --> 02:31:26,819
Escape system arming and so what they're

4002
02:31:30,170 --> 02:31:28,560
doing inside the capsule now is one one

4003
02:31:32,630 --> 02:31:30,180
last check making sure they're fully

4004
02:31:33,889 --> 02:31:32,640
restrained there's new no loose items

4005
02:31:35,929 --> 02:31:33,899
um they may have had their feet out of

4006
02:31:37,550 --> 02:31:35,939
the feet the boot restraints uh just to

4007
02:31:38,389 --> 02:31:37,560
relax and stretch out their legs but at

4008
02:31:40,490 --> 02:31:38,399
this point they're going to be putting

4009
02:31:42,230 --> 02:31:40,500
them all in and the reason is uh once

4010
02:31:44,090 --> 02:31:42,240
the launch Escape system is is hot it's

4011
02:31:45,950 --> 02:31:44,100
just like an ejection seat the the whole

4012
02:31:47,929 --> 02:31:45,960
thing can fire and so you want to be

4013
02:31:51,530 --> 02:31:47,939

fully restrained fully in a position

4014

02:31:53,330 --> 02:31:51,540

where if it did uh uh basically pop the

4015

02:31:55,730 --> 02:31:53,340

capsule off that you're not going to get

4016

02:31:56,990 --> 02:31:55,740

injured doing that and it's armed prior

4017

02:31:58,490 --> 02:31:57,000

to launch because as soon as we start

4018

02:32:00,830 --> 02:31:58,500

putting propellant in the dragon you

4019

02:32:03,290 --> 02:32:00,840

want the ability to basically

4020

02:32:05,210 --> 02:32:03,300

um have that system active and when we

4021

02:32:07,309 --> 02:32:05,220

get to about T minus 40 minutes the crew

4022

02:32:08,450 --> 02:32:07,319

access arm will retract and the crew

4023

02:32:10,070 --> 02:32:08,460

will get the call to close their

4024

02:32:11,090 --> 02:32:10,080

advisors and to arm the launch Escape

4025

02:32:14,990 --> 02:32:11,100

system

4026

02:32:17,150 --> 02:32:15,000

place that can fire the eight super

4027

02:32:19,730 --> 02:32:17,160

Draco thrusters on Dragon to quickly

4028

02:32:22,070 --> 02:32:19,740

separate the crew from the rocket either

4029

02:32:23,990 --> 02:32:22,080

on the pad or during flight on the ride

4030

02:32:26,330 --> 02:32:24,000

uphill and then once we reach about T

4031

02:32:37,370 --> 02:32:26,340

minus 35 minutes propellant loading for

4032

02:32:44,150 --> 02:32:40,610

and SpaceX Dragon uh we are go for

4033

02:32:44,160 --> 02:32:50,330

SpaceX copies Crews go

4034

02:32:54,650 --> 02:32:52,550

there you heard the go and thanks for

4035

02:32:57,469 --> 02:32:54,660

tuning in if you're watching live launch

4036

02:33:00,230 --> 02:32:57,479

coverage of NASA and spacex's six

4037

02:33:02,270 --> 02:33:00,240

rotational flight of astronauts and one

4038

02:33:05,090 --> 02:33:02,280

Cosmonaut to the International Space

4039

02:33:07,550 --> 02:33:05,100

Station we are T-minus 58 minutes and

4040

02:33:10,490 --> 02:33:07,560

Counting until liftoff and with us today

4041

02:33:12,230 --> 02:33:10,500

is NASA astronaut rajachary the

4042

02:33:13,610 --> 02:33:12,240

commander from crew 3. thanks so much

4043

02:33:15,230 --> 02:33:13,620

for being here Bob Darrell and you just

4044

02:33:16,490 --> 02:33:15,240

heard Steve Bowen say their go for

4045

02:33:17,750 --> 02:33:16,500

launch which is a kind of a cool time

4046

02:33:19,910 --> 02:33:17,760

for definitely some fist bumps inside

4047

02:33:21,469 --> 02:33:19,920

the capsule at that point that's the

4048

02:33:23,690 --> 02:33:21,479

crew saying we are go for the next few

4049

02:33:26,030 --> 02:33:23,700

steps of go for propellant loading Les

4050

02:33:27,950 --> 02:33:26,040

arming and go for launch and so that's

4051
02:33:29,750 --> 02:33:27,960
uh that is their vote and you heard them

4052
02:33:32,210 --> 02:33:29,760
say they're ready good stuff inside the

4053
02:33:36,349 --> 02:33:32,220
capsule liftoff time is still holding

4054
02:33:38,750 --> 02:33:36,359
for 145 and three seconds a.m eastern

4055
02:33:40,910 --> 02:33:38,760
time and we're tracking no issues with

4056
02:33:42,950 --> 02:33:40,920
the Falcon 9 or dragon as Rosa just

4057
02:33:44,870 --> 02:33:42,960
mentioned got that beautiful shot from

4058
02:33:46,250 --> 02:33:44,880
the helicopter around the Vehicle

4059
02:33:48,730 --> 02:33:46,260
Assembly Building

4060
02:33:52,070 --> 02:33:48,740
no issues with the Falcon 9 or Dragon

4061
02:33:54,349 --> 02:33:52,080
the range is green and weather both here

4062
02:33:58,309 --> 02:33:54,359
at the pad and in the launch Corridor

4063
02:34:01,010 --> 02:33:58,319

the ascent Corridor is cooperating

4064

02:34:03,830 --> 02:34:01,020

now to take you back over the last three

4065

02:34:07,070 --> 02:34:03,840

hours our crew of Stephen Bowen Woody

4066

02:34:09,050 --> 02:34:07,080

hoberg Sultan onlyati and Andre fediev

4067

02:34:10,790 --> 02:34:09,060

have been getting ready to launch into

4068

02:34:12,710 --> 02:34:10,800

space and this is going back to cruise

4069

02:34:14,090 --> 02:34:12,720

suit up here they are in astronaut crew

4070

02:34:16,250 --> 02:34:14,100

quarters

4071

02:34:18,410 --> 02:34:16,260

after waking up and having a meal SpaceX

4072

02:34:22,130 --> 02:34:18,420

helped astronauts into their suits at

4073

02:34:24,230 --> 02:34:22,140

that historic crew quarter Suit Up Room

4074

02:34:26,389 --> 02:34:24,240

then the crew walked out on the same

4075

02:34:29,150 --> 02:34:26,399

path that every NASA astronaut has done

4076
02:34:31,910 --> 02:34:29,160
since Apollo 7 waving to family and

4077
02:34:33,710 --> 02:34:31,920
friends and loved ones

4078
02:34:35,870 --> 02:34:33,720
as well as the cameras that were there

4079
02:34:38,270 --> 02:34:35,880
to document their Journey after getting

4080
02:34:40,370 --> 02:34:38,280
inside their Teslas new ones colored

4081
02:34:42,290 --> 02:34:40,380
black they joined a caravan led by

4082
02:34:45,170 --> 02:34:42,300
Center Security on a 20-minute ride to

4083
02:34:46,490 --> 02:34:45,180
the launch complex 39a and following

4084
02:34:48,590 --> 02:34:46,500
their arrival to the pad you see them

4085
02:34:50,150 --> 02:34:48,600
doing the rocket recline looking up at

4086
02:34:52,070 --> 02:34:50,160
the rocket and then they went up the

4087
02:34:54,590 --> 02:34:52,080
tower and walked across this crew access

4088
02:34:57,770 --> 02:34:54,600

arm leading them to their spacecraft

4089

02:35:00,950 --> 02:34:57,780

making the Duck getting in the hatch and

4090

02:35:02,690 --> 02:35:00,960

climbing inside Dragon endeavor

4091

02:35:04,790 --> 02:35:02,700

then they got strapped in with the help

4092

02:35:08,150 --> 02:35:04,800

from the closeout crew

4093

02:35:10,190 --> 02:35:08,160

and now we are watching them live while

4094

02:35:11,570 --> 02:35:10,200

they await liftoff and we're here at the

4095

02:35:14,270 --> 02:35:11,580

host desk at the Kennedy Space Center

4096

02:35:15,889 --> 02:35:14,280

Raj and I have been counting it down as

4097

02:35:18,950 --> 02:35:15,899

we went along and he's been giving us

4098

02:35:20,870 --> 02:35:18,960

great insight into the whole process of

4099

02:35:22,309 --> 02:35:20,880

getting ready to launch on a mission

4100

02:35:23,929 --> 02:35:22,319

it's been really good it's been very

4101
02:35:25,130 --> 02:35:23,939
exciting to be here and to get to see a

4102
02:35:27,110 --> 02:35:25,140
rocket launch from the outside so

4103
02:35:28,670 --> 02:35:27,120
looking forward to it your first time as

4104
02:35:30,889 --> 02:35:28,680
a matter of fact and so we're interested

4105
02:35:32,630 --> 02:35:30,899
on hearing your reaction after that but

4106
02:35:34,429 --> 02:35:32,640
at this time we are expanding our

4107
02:35:37,130 --> 02:35:34,439
coverage and would like to welcome in

4108
02:35:39,590 --> 02:35:37,140
SpaceX and NASA commentators joining us

4109
02:35:42,590 --> 02:35:39,600
live from Hawthorne California welcome

4110
02:35:46,550 --> 02:35:44,690
all right thank you Daryl and hello to

4111
02:35:47,990 --> 02:35:46,560
all of our viewers I'm Gary Jordan with

4112
02:35:49,730 --> 02:35:48,000
NASA Communications

4113
02:35:52,670 --> 02:35:49,740

and I'm Jesse Anderson a production

4114

02:35:54,650 --> 02:35:52,680

engineering manager here at SpaceX Gary

4115

02:35:56,870 --> 02:35:54,660

and I are joining you today from our

4116

02:35:59,030 --> 02:35:56,880

headquarters in Hawthorne California and

4117

02:36:01,550 --> 02:35:59,040

it's definitely been a very busy evening

4118

02:36:03,349 --> 02:36:01,560

so far as we continue the countdown to

4119

02:36:06,469 --> 02:36:03,359

liftoff we'd like to welcome you to

4120

02:36:07,790 --> 02:36:06,479

SpaceX Mission Control in Hawthorne this

4121

02:36:09,410 --> 02:36:07,800

is where our teams are staffed around

4122

02:36:11,990 --> 02:36:09,420

the clock to monitor dragon and the

4123

02:36:14,150 --> 02:36:12,000

mission overall on Console or headset in

4124

02:36:16,309 --> 02:36:14,160

Mission Control are six key positions

4125

02:36:17,809 --> 02:36:16,319

the mission director is in charge of the

4126
02:36:20,389 --> 02:36:17,819
room and tasked with making real-time

4127
02:36:22,849 --> 02:36:20,399
decisions to ensure Mission success

4128
02:36:25,969 --> 02:36:22,859
the person that you may hear may have

4129
02:36:28,070 --> 02:36:25,979
heard talking to the astronauts is the

4130
02:36:30,050 --> 02:36:28,080
crew operations and resources engineer

4131
02:36:32,809 --> 02:36:30,060
who you'll hear us refer to as the core

4132
02:36:34,550 --> 02:36:32,819
threat broadcast and the four additional

4133
02:36:36,830 --> 02:36:34,560
team members are focused on Vehicle

4134
02:36:39,410 --> 02:36:36,840
Systems including avionics navigation

4135
02:36:41,210 --> 02:36:39,420
and Control software propulsion life

4136
02:36:43,429 --> 02:36:41,220
support and communication with ground

4137
02:36:45,410 --> 02:36:43,439
support teams now apart from Mission

4138
02:36:47,389 --> 02:36:45,420

Control our Falcon 9 team is currently

4139

02:36:49,670 --> 02:36:47,399

located in firing room

4140

02:36:51,650 --> 02:36:49,680

four in the launch control center at

4141

02:36:54,050 --> 02:36:51,660

Kennedy Space Center in Florida

4142

02:36:55,969 --> 02:36:54,060

with less than an hour until launch they

4143

02:36:58,550 --> 02:36:55,979

are settling in for final checkouts

4144

02:37:00,830 --> 02:36:58,560

propellant loading and for launch that's

4145

02:37:02,929 --> 02:37:00,840

right and NASA has its own team members

4146

02:37:04,790 --> 02:37:02,939

in Mission Control in Houston Texas

4147

02:37:07,070 --> 02:37:04,800

where they've been preparing the space

4148

02:37:09,110 --> 02:37:07,080

station for dragon's arrival and

4149

02:37:11,210 --> 02:37:09,120

recently gave their go for launch saying

4150

02:37:13,370 --> 02:37:11,220

that the station itself is ready to

4151
02:37:15,170 --> 02:37:13,380
receive the new crew upon liftoff

4152
02:37:17,570 --> 02:37:15,180
today's ride to the space station will

4153
02:37:19,730 --> 02:37:17,580
take about 25 hours with dragon flying

4154
02:37:21,230 --> 02:37:19,740
autonomously the entire way and just

4155
02:37:23,330 --> 02:37:21,240
like an autopilot on a commercial

4156
02:37:25,070 --> 02:37:23,340
aircraft the crew always has the ability

4157
02:37:26,870 --> 02:37:25,080
to take manual control of the spacecraft

4158
02:37:31,790 --> 02:37:26,880
if necessary

4159
02:37:34,429 --> 02:37:31,800
now at T minus 53 minutes and 38 seconds

4160
02:37:37,490 --> 02:37:34,439
to go we are looking good for an on-time

4161
02:37:39,290 --> 02:37:37,500
liftoff and our very own incredible Kate

4162
02:37:42,590 --> 02:37:39,300
size has been monitoring the progress of

4163
02:37:44,990 --> 02:37:42,600

the countdown how's it going Kate

4164

02:37:47,270 --> 02:37:45,000

thanks Jesse I'm Kate Tice SpaceX

4165

02:37:49,130 --> 02:37:47,280

quality systems engineering manager and

4166

02:37:51,710 --> 02:37:49,140

for those that have just recently tuned

4167

02:37:53,929 --> 02:37:51,720

in we had a smooth countdown so far

4168

02:37:56,630 --> 02:37:53,939

today the crew six astronauts completed

4169

02:37:59,030 --> 02:37:56,640

Ingress at T minus two hours and 23

4170

02:38:01,250 --> 02:37:59,040

minutes and since then the teams have

4171

02:38:03,469 --> 02:38:01,260

completed the required com checks suit

4172

02:38:05,929 --> 02:38:03,479

leak checks and side hatch closer

4173

02:38:09,050 --> 02:38:05,939

closure as well as its Associated leap

4174

02:38:11,450 --> 02:38:09,060

check as for Falcon 9 our two-stage

4175

02:38:13,670 --> 02:38:11,460

reusable rocket final propulsion

4176
02:38:16,130 --> 02:38:13,680
checkouts of first and second stages of

4177
02:38:18,650 --> 02:38:16,140
the engine began a few minutes ago in

4178
02:38:20,570 --> 02:38:18,660
preparation for propellant loading now

4179
02:38:22,190 --> 02:38:20,580
that involves testing and cycling the

4180
02:38:25,429 --> 02:38:22,200
valves and engine pneumatics for

4181
02:38:27,770 --> 02:38:25,439
pressurization at T minus 45 minutes the

4182
02:38:30,469 --> 02:38:27,780
team will report their Readiness or prop

4183
02:38:32,690 --> 02:38:30,479
load with a final electronic go no-go

4184
02:38:35,210 --> 02:38:32,700
poll but before we can start loading

4185
02:38:37,730 --> 02:38:35,220
propellant on the Falcon 9 we have a few

4186
02:38:39,950 --> 02:38:37,740
tasks to perform first we need to

4187
02:38:41,929 --> 02:38:39,960
retract the crew access arm away from

4188
02:38:44,450 --> 02:38:41,939

the Dragon capsule to its launch

4189

02:38:47,150 --> 02:38:44,460

position that will happen between T

4190

02:38:49,550 --> 02:38:47,160

minus 44 minutes and T-minus 42 minutes

4191

02:38:52,070 --> 02:38:49,560

then with that crew arm out of the way

4192

02:38:54,410 --> 02:38:52,080

the launch Escape system will be armed

4193

02:38:56,270 --> 02:38:54,420

once those two events are complete

4194

02:38:58,910 --> 02:38:56,280

Dragon will be ready for Falcon

4195

02:39:00,950 --> 02:38:58,920

propellant loading now we'll also verify

4196

02:39:02,690 --> 02:39:00,960

with the launch weather officer that all

4197

02:39:04,910 --> 02:39:02,700

the weather meets all the constraints

4198

02:39:07,330 --> 02:39:04,920

that includes items such as wind speed

4199

02:39:10,010 --> 02:39:07,340

as well as lightning and precipitation

4200

02:39:11,929 --> 02:39:10,020

however for tonight we expect acceptable

4201
02:39:14,690 --> 02:39:11,939
weather conditions for launch both at

4202
02:39:17,570 --> 02:39:14,700
surface level surface level and upper

4203
02:39:19,849 --> 02:39:17,580
altitudes as we reported earlier the

4204
02:39:21,950 --> 02:39:19,859
possibility of violation for all of

4205
02:39:23,929 --> 02:39:21,960
those criteria is only five percent so

4206
02:39:24,950 --> 02:39:23,939
pretty good for Cape Canaveral looking

4207
02:39:27,530 --> 02:39:24,960
good there

4208
02:39:30,950 --> 02:39:27,540
as for the range currently clear for

4209
02:39:33,170 --> 02:39:30,960
launch from historic pad 39a worldwide

4210
02:39:35,510 --> 02:39:33,180
network of ground stations and the

4211
02:39:37,190 --> 02:39:35,520
tracking and data relay satellites or

4212
02:39:39,110 --> 02:39:37,200
tdras as you hear it called out on the

4213
02:39:41,990 --> 02:39:39,120

Nets those are ready to support dragon

4214

02:39:44,929 --> 02:39:42,000

as it heads into orbit today we have an

4215

02:39:47,330 --> 02:39:44,939

instantaneous launch window at 1 45 a.m

4216

02:39:49,309 --> 02:39:47,340

Eastern once we begin propellant loading

4217

02:39:51,830 --> 02:39:49,319

there is no opportunity to change that

4218

02:39:54,410 --> 02:39:51,840

t0 the timing for Dragon to Rendezvous

4219

02:39:57,230 --> 02:39:54,420

with the ISS is incredibly precise down

4220

02:39:59,450 --> 02:39:57,240

to the exact second so therefore we only

4221

02:40:02,510 --> 02:39:59,460

get one chance to go to space today but

4222

02:40:05,389 --> 02:40:02,520

at good news at T minus 51 minutes and

4223

02:40:07,730 --> 02:40:05,399

five seconds we are good for launch good

4224

02:40:13,429 --> 02:40:10,969

great to hear Kate today's launch marks

4225

02:40:15,770 --> 02:40:13,439

the sixth time a rotational crew will

4226
02:40:18,290 --> 02:40:15,780
fly on a commercial spacecraft and much

4227
02:40:20,030 --> 02:40:18,300
like our previous Crews today's crew has

4228
02:40:21,469 --> 02:40:20,040
been training with our teams at SpaceX

4229
02:40:24,170 --> 02:40:21,479
for the last several months running

4230
02:40:25,910 --> 02:40:24,180
nominal and emergency simulations of

4231
02:40:28,309 --> 02:40:25,920
what the full mission will look like

4232
02:40:30,530 --> 02:40:28,319
while seated inside of dragon

4233
02:40:32,929 --> 02:40:30,540
and as with every Mission each one of

4234
02:40:34,730 --> 02:40:32,939
our crew members brings a diverse set of

4235
02:40:36,050 --> 02:40:34,740
experiences to today's flight that's

4236
02:40:38,570 --> 02:40:36,060
right and we'll start with the missions

4237
02:40:40,969 --> 02:40:38,580
Commander Steve Bowen was born in

4238
02:40:42,889 --> 02:40:40,979

Cohasset Massachusetts he holds a

4239

02:40:44,510 --> 02:40:42,899

bachelor's degree in electrical

4240

02:40:46,849 --> 02:40:44,520

engineering from the U.S Naval Academy

4241

02:40:48,590 --> 02:40:46,859

and a masters in Ocean engineering from

4242

02:40:51,710 --> 02:40:48,600

The Joint program and applied ocean

4243

02:40:53,929 --> 02:40:51,720

science and engineering at MIT and Woods

4244

02:40:56,510 --> 02:40:53,939

Hole oceanographic institution in July

4245

02:40:58,670 --> 02:40:56,520

2000 Bowen became the first submarine

4246

02:41:01,370 --> 02:40:58,680

officer selected as an astronaut by NASA

4247

02:41:03,290 --> 02:41:01,380

those will be Bowen's fourth trip into

4248

02:41:06,969 --> 02:41:03,300

space as a veteran of three space

4249

02:41:11,990 --> 02:41:06,979

shuttle missions sts-126 in 2008

4250

02:41:14,809 --> 02:41:12,000

sts-132 in 2010 and sts-133 in 2011.

4251
02:41:17,510 --> 02:41:14,819
Bowen has logged more than 40 days in

4252
02:41:20,150 --> 02:41:17,520
space including 47 hours 18 minutes

4253
02:41:22,010 --> 02:41:20,160
during seven spacewalks as the mission

4254
02:41:23,990 --> 02:41:22,020
Commander he'll be responsible for All

4255
02:41:26,809 --> 02:41:24,000
Phases of flight aboard dragon from

4256
02:41:29,389 --> 02:41:26,819
launch to re-entry

4257
02:41:31,849 --> 02:41:29,399
Warren Woody hoberg is from Pittsburgh

4258
02:41:33,950 --> 02:41:31,859
Pennsylvania he earned a bachelor's

4259
02:41:36,110 --> 02:41:33,960
degree in Aeronautics and astronautics

4260
02:41:37,790 --> 02:41:36,120
from MIT and a doctorate in electrical

4261
02:41:40,309 --> 02:41:37,800
engineering and computer science from

4262
02:41:41,929 --> 02:41:40,319
the University of California Berkeley he

4263
02:41:43,550 --> 02:41:41,939

is also a commercial pilot with

4264

02:41:45,770 --> 02:41:43,560

instrument single engine and

4265

02:41:47,929 --> 02:41:45,780

multi-engine ratings the mission will be

4266

02:41:51,770 --> 02:41:47,939

hoberg's first flight since his

4267

02:41:53,570 --> 02:41:51,780

selection as an astronaut in 2017. as

4268

02:41:55,670 --> 02:41:53,580

pilot he will be responsible for

4269

02:41:56,809 --> 02:41:55,680

spacecraft systems and performance on

4270

02:41:59,510 --> 02:41:56,819

Dragon

4271

02:42:01,670 --> 02:41:59,520

Sultan al-niadi will be making his first

4272

02:42:04,010 --> 02:42:01,680

trip into space representing the

4273

02:42:06,410 --> 02:42:04,020

Muhammad bin Rasheed space center of the

4274

02:42:08,330 --> 02:42:06,420

United Arab Emirates aboard Dragon he'll

4275

02:42:10,190 --> 02:42:08,340

serve as a mission specialist working to

4276

02:42:12,290 --> 02:42:10,200

monitor the spacecraft during the

4277

02:42:14,630 --> 02:42:12,300

dynamic launch and re-entry phases of

4278

02:42:16,610 --> 02:42:14,640

flight he spent time in the UAE military

4279

02:42:19,250 --> 02:42:16,620

prior to becoming one of the first two

4280

02:42:21,050 --> 02:42:19,260

individuals selected by his country when

4281

02:42:24,110 --> 02:42:21,060

they started their space program just a

4282

02:42:26,330 --> 02:42:24,120

few short years ago in 2017. al-niadi

4283

02:42:30,790 --> 02:42:26,340

will be the first UAE astronaut to fly

4284

02:42:35,570 --> 02:42:33,590

will be making his first trip to space

4285

02:42:37,070 --> 02:42:35,580

and will also serve as a mission

4286

02:42:39,170 --> 02:42:37,080

specialist monitoring the spacecraft

4287

02:42:41,570 --> 02:42:39,180

during the dynamic launch and re-entry

4288

02:42:43,849 --> 02:42:41,580

phases of flight he was selected as a

4289

02:42:46,790 --> 02:42:43,859

cosmonaut in 2012 and will be the second

4290

02:42:48,710 --> 02:42:46,800

cosmet to flyboard a SpaceX dragon

4291

02:42:51,110 --> 02:42:48,720

each of these crew members will be a

4292

02:42:53,389 --> 02:42:51,120

part of expedition 68 upon their arrival

4293

02:42:54,830 --> 02:42:53,399

to the International Space Station now

4294

02:42:56,750 --> 02:42:54,840

let's head back over to Kate for another

4295

02:42:58,550 --> 02:42:56,760

status update on the countdown how's it

4296

02:43:01,849 --> 02:42:58,560

going Kate

4297

02:43:04,610 --> 02:43:01,859

thanks Jesse it's now T-minus 48 minutes

4298

02:43:06,950 --> 02:43:04,620

and five seconds the SpaceX launch teams

4299

02:43:08,929 --> 02:43:06,960

are finishing final review of data from

4300

02:43:11,210 --> 02:43:08,939

checkouts of Falcon 9 that have occurred

4301
02:43:12,770 --> 02:43:11,220
over the last hour the launch director

4302
02:43:14,690 --> 02:43:12,780
has confirmed with the launch weather

4303
02:43:17,090 --> 02:43:14,700
officer that weather meets propellant

4304
02:43:19,790 --> 02:43:17,100
loading constraints so next up will be

4305
02:43:22,250 --> 02:43:19,800
to pull the team for readiness both to

4306
02:43:24,290 --> 02:43:22,260
load propellant and to launch therefore

4307
02:43:26,750 --> 02:43:24,300
that will be the final poll that occurs

4308
02:43:28,849 --> 02:43:26,760
prior to liftoff the seven SpaceX

4309
02:43:31,550 --> 02:43:28,859
responsible Engineers often called res

4310
02:43:34,190 --> 02:43:31,560
indicate that they are go for launch and

4311
02:43:36,410 --> 02:43:34,200
prop load electronically voting on the

4312
02:43:39,349 --> 02:43:36,420
online countdown procedure the launch

4313
02:43:41,809 --> 02:43:39,359

director or LD as it's called out on the

4314

02:43:44,570 --> 02:43:41,819

Nets also checks with the dragon mission

4315

02:43:46,309 --> 02:43:44,580

director or MD as well as the NASA

4316

02:43:47,330 --> 02:43:46,319

launch manager to make sure that they

4317

02:43:49,550 --> 02:43:47,340

are ready

4318

02:43:52,490 --> 02:43:49,560

now earlier you saw the Vehicle Assembly

4319

02:43:55,070 --> 02:43:52,500

Building lovingly referred to as the VAB

4320

02:43:57,110 --> 02:43:55,080

the Falcon and Dragon launch team as

4321

02:43:58,670 --> 02:43:57,120

well as key NASA launch members are in

4322

02:44:01,250 --> 02:43:58,680

the launch control center which is

4323

02:44:02,990 --> 02:44:01,260

adjacent to the VAB you have a view of

4324

02:44:06,710 --> 02:44:03,000

that room there on the left hand side of

4325

02:44:08,450 --> 02:44:06,720

your screen that is firing room four and

4326
02:44:10,070 --> 02:44:08,460
they have a view looking straight toward

4327
02:44:12,110 --> 02:44:10,080
pad 39a

4328
02:44:13,969 --> 02:44:12,120
now they're also on your screen on the

4329
02:44:16,969 --> 02:44:13,979
right hand side you can see the Dragon

4330
02:44:19,790 --> 02:44:16,979
capsule that crew access arm is still in

4331
02:44:21,830 --> 02:44:19,800
the surface position inside the capsule

4332
02:44:24,290 --> 02:44:21,840
there are four crew members looking

4333
02:44:25,610 --> 02:44:24,300
pretty comfy and pretty relaxed prior to

4334
02:44:27,830 --> 02:44:25,620
liftoff

4335
02:44:28,969 --> 02:44:27,840
as you can see that crew onboard Dragon

4336
02:44:31,849 --> 02:44:28,979
they're waiting for the next

4337
02:44:33,889 --> 02:44:31,859
instructions which will be to Stow the

4338
02:44:36,230 --> 02:44:33,899

crew arm for launch and to arm the

4339

02:44:38,270 --> 02:44:36,240

launch Escape system now once the launch

4340

02:44:40,490 --> 02:44:38,280

director gives the final instructions to

4341

02:44:42,889 --> 02:44:40,500

the launch Team the crew arm sequence

4342

02:44:44,990 --> 02:44:42,899

will be armed and initiated now we

4343

02:44:47,389 --> 02:44:45,000

should get a good view of the axis arm

4344

02:44:48,950 --> 02:44:47,399

as it swings away from the capsule which

4345

02:44:51,050 --> 02:44:48,960

will take about two minutes to

4346

02:44:53,330 --> 02:44:51,060

completely move out of the way

4347

02:44:55,969 --> 02:44:53,340

checking in on the Range continues to be

4348

02:44:57,950 --> 02:44:55,979

go for launch there they are monitoring

4349

02:45:01,190 --> 02:44:57,960

the clearance area around the launch pad

4350

02:45:03,710 --> 02:45:01,200

as around as the as well as the air and

4351
02:45:06,469 --> 02:45:03,720
sea space around the flight Corridor

4352
02:45:08,630 --> 02:45:06,479
there at Kennedy Space Center the

4353
02:45:10,610 --> 02:45:08,640
weather conditions are predicted to be

4354
02:45:13,849 --> 02:45:10,620
acceptable for launch as I mentioned

4355
02:45:16,330 --> 02:45:13,859
before only a five percent chance of

4356
02:45:19,670 --> 02:45:16,340
violating the conditions which include

4357
02:45:22,610 --> 02:45:19,680
winds both upper and launch altitudes

4358
02:45:25,309 --> 02:45:22,620
thick clouds as well as the downrange

4359
02:45:27,590 --> 02:45:25,319
landing zones in the unlikely event that

4360
02:45:29,210 --> 02:45:27,600
an abort is

4361
02:45:30,590 --> 02:45:29,220
um is called for it in that escape

4362
02:45:32,090 --> 02:45:30,600
sequence

4363
02:45:34,010 --> 02:45:32,100

um we have to make sure that the weather

4364

02:45:35,690 --> 02:45:34,020

for those downrange Landing zones is

4365

02:45:37,730 --> 02:45:35,700

also acceptable but everything is

4366

02:45:40,070 --> 02:45:37,740

looking there looking good on the

4367

02:45:43,370 --> 02:45:40,080

weather front uh now we are expecting

4368

02:45:46,730 --> 02:45:43,380

that uh final pull from the LD to occur

4369

02:45:51,290 --> 02:45:46,740

here in about 20 seconds so we will

4370

02:46:13,250 --> 02:45:51,300

pause and listen in for that uh for that

4371

02:46:16,969 --> 02:46:15,050

poll is complete and the team is ready

4372

02:46:21,170 --> 02:46:16,979

for crew access arm retract propelled

4373

02:46:24,830 --> 02:46:22,849

both control rooms will go into lockdown

4374

02:46:26,570 --> 02:46:24,840

at T minus 45 minutes and remain that

4375

02:46:28,910 --> 02:46:26,580

state until the launch Escape system is

4376
02:46:31,370 --> 02:46:28,920
disarmed all operators ought to remain

4377
02:46:33,469 --> 02:46:31,380
in their console and maintain a sterile

4378
02:46:35,090 --> 02:46:33,479
cockpit until MD confirms successful

4379
02:46:37,429 --> 02:46:35,100
disarming of the launch Escape system

4380
02:46:39,170 --> 02:46:37,439
following orbit insertion or propellant

4381
02:46:41,570 --> 02:46:39,180
offload in the event of a scrub

4382
02:46:44,510 --> 02:46:41,580
or non-urgent no-go conditions brief the

4383
02:46:46,370 --> 02:46:44,520
CE or the LD and the approval boarding

4384
02:46:47,690 --> 02:46:46,380
the launch countdown for Urgent issues

4385
02:46:49,910 --> 02:46:47,700
affecting the safety of the operation

4386
02:46:51,950 --> 02:46:49,920
operator shall call hold hold hold hold

4387
02:46:53,690 --> 02:46:51,960
on the countdown net launch control

4388
02:46:55,670 --> 02:46:53,700

worthy launch ICS immediately and

4389

02:46:57,710 --> 02:46:55,680

proceed into the launch of our sequence

4390

02:46:59,030 --> 02:46:57,720

at T minus 10 seconds lost control will

4391

02:47:00,530 --> 02:46:59,040

be hands off relying on automated

4392

02:47:01,370 --> 02:47:00,540

working material for the remainder of

4393

02:47:03,110 --> 02:47:01,380

the count

4394

02:47:05,210 --> 02:47:03,120

operators advise the launch tractor with

4395

02:47:06,590 --> 02:47:05,220

a structural breakup is eminent or

4396

02:47:09,230 --> 02:47:06,600

occurring for Dragon manual Escape

4397

02:47:11,389 --> 02:47:09,240

flight rules launch control you may have

4398

02:47:15,110 --> 02:47:11,399

pursued with arming launcher the crew

4399

02:47:15,120 --> 02:47:31,670

proceeding with Quran movement

4400

02:47:36,410 --> 02:47:34,070

all right as you just heard there that

4401
02:47:38,210 --> 02:47:36,420
final go for launch as well as for

4402
02:47:42,110 --> 02:47:38,220
propellant load coming from the launch

4403
02:47:45,170 --> 02:47:42,120
director or LD so all good news there we

4404
02:47:47,450 --> 02:47:45,180
are still goat for space tonight as of

4405
02:47:50,929 --> 02:47:47,460
right now the crew access arm is being

4406
02:47:53,210 --> 02:47:50,939
prepared to be moved out of the way so

4407
02:47:56,210 --> 02:47:53,220
to basically to clear room for the

4408
02:47:58,250 --> 02:47:56,220
Falcon 9 to lift off so to follow along

4409
02:48:00,530 --> 02:47:58,260
with that action live let's go back over

4410
02:48:01,969 --> 02:48:00,540
time attraction has started and there's

4411
02:48:03,710 --> 02:48:01,979
that call out for that retraction

4412
02:48:05,870 --> 02:48:03,720
beginning let's go back over to Daryl to

4413
02:48:07,250 --> 02:48:05,880

follow that live at KSC all right thank

4414

02:48:10,190 --> 02:48:07,260

you Kate appreciate it the countdown

4415

02:48:12,950 --> 02:48:10,200

continuing to tick down as you see the

4416

02:48:17,929 --> 02:48:12,960

crew access arm moving away

4417

02:48:22,969 --> 02:48:21,230

that crew access arm as it rotates out

4418

02:48:25,849 --> 02:48:22,979

of the way is that something that you

4419

02:48:27,650 --> 02:48:25,859

can feel when it disconnects so we

4420

02:48:31,190 --> 02:48:27,660

talked about that we could definitely

4421

02:48:32,870 --> 02:48:31,200

hear uh like uh thought we the 10th

4422

02:48:34,429 --> 02:48:32,880

cents the vibration of it

4423

02:48:37,250 --> 02:48:34,439

um I think we got a little bit of sense

4424

02:48:39,530 --> 02:48:37,260

of motion uh from the wind but I don't

4425

02:48:41,270 --> 02:48:39,540

know if we were just imagining it or not

4426

02:48:43,969 --> 02:48:41,280

because there's a whole lot of your

4427

02:48:45,290 --> 02:48:43,979

senses there are super like heightened

4428

02:48:46,190 --> 02:48:45,300

right now yeah

4429

02:48:48,469 --> 02:48:46,200

um

4430

02:48:51,650 --> 02:48:48,479

so you're definitely uh

4431

02:48:52,849 --> 02:48:51,660

uh we do we actually did talk through I

4432

02:48:53,809 --> 02:48:52,859

do remember talking to them as we talked

4433

02:48:55,790 --> 02:48:53,819

earlier about how you're kind of going

4434

02:48:58,610 --> 02:48:55,800

through different scenarios and

4435

02:49:00,889 --> 02:48:58,620

timelines and one thing is if there is a

4436

02:49:02,570 --> 02:49:00,899

emergency egress button in the capsule

4437

02:49:04,670 --> 02:49:02,580

but one of the things the big difference

4438

02:49:05,929 --> 02:49:04,680

is now that the arm is swung back is you

4439

02:49:07,610 --> 02:49:05,939

definitely want to make sure the arm has

4440

02:49:09,349 --> 02:49:07,620

swung back towards you in the event of

4441

02:49:11,330 --> 02:49:09,359

an egress that makes sense but you don't

4442

02:49:13,910 --> 02:49:11,340

want to step out into no nothing was at

4443

02:49:15,710 --> 02:49:13,920

this point the the Les is not hot but

4444

02:49:17,929 --> 02:49:15,720

the arms the arm would have to come out

4445

02:49:19,730 --> 02:49:17,939

to swing back yes and there's two rates

4446

02:49:20,990 --> 02:49:19,740

so the arm moves away at a slow rate but

4447

02:49:22,490 --> 02:49:21,000

in the event of emergency egress it

4448

02:49:23,510 --> 02:49:22,500

swings back in pretty quick right right

4449

02:49:25,130 --> 02:49:23,520

for themselves you want to get out

4450

02:49:26,210 --> 02:49:25,140

quickly but that's one of the things

4451

02:49:27,530 --> 02:49:26,220

they're probably talking to is like hey

4452

02:49:29,450 --> 02:49:27,540

don't forget first person out the door

4453

02:49:32,210 --> 02:49:29,460

make sure to look down first make sure

4454

02:49:35,210 --> 02:49:32,220

there's a that's a big first step if you

4455

02:49:37,429 --> 02:49:35,220

know if it hasn't swag back into place

4456

02:49:39,230 --> 02:49:37,439

great insight there Raja on the crew

4457

02:49:40,849 --> 02:49:39,240

access arm I didn't know that about it

4458

02:49:43,309 --> 02:49:40,859

being able to return so quickly but it

4459

02:49:45,349 --> 02:49:43,319

makes great sense from a safety

4460

02:49:49,250 --> 02:49:45,359

perspective and so now

4461

02:49:54,950 --> 02:49:49,260

coming up we expect to hear a call

4462

02:49:58,370 --> 02:49:57,290

yep and so the crew at this point uh in

4463

02:49:59,809 --> 02:49:58,380

preparation for that we'll be putting

4464

02:50:01,370 --> 02:49:59,819

the visors down they should have already

4465

02:50:03,830 --> 02:50:01,380

done all those steps

4466

02:50:05,510 --> 02:50:03,840

um they'll verify that and once they get

4467

02:50:07,670 --> 02:50:05,520

the go then they will arm the Las and

4468

02:50:09,230 --> 02:50:07,680

get confirmation uh that is armed we

4469

02:50:11,270 --> 02:50:09,240

talked before about the hatch close

4470

02:50:13,309 --> 02:50:11,280

state so that's also in this phase

4471

02:50:15,050 --> 02:50:13,319

that's the way you actually know it's

4472

02:50:17,570 --> 02:50:15,060

armed as you see the flight computer

4473

02:50:19,610 --> 02:50:17,580

State change so it's a command you send

4474

02:50:20,929 --> 02:50:19,620

to put it into the Armed State and then

4475

02:50:22,309 --> 02:50:20,939

you know what's happened when you'll

4476
02:50:23,270 --> 02:50:22,319
hear sounds but that's the that's the

4477
02:50:26,210 --> 02:50:23,280
official way you know it's actually

4478
02:50:30,230 --> 02:50:28,070
and the Really the purpose of the the

4479
02:50:32,389 --> 02:50:30,240
Alias of the launch Escape system is is

4480
02:50:35,270 --> 02:50:32,399
it's both an automated and a manual

4481
02:50:36,650 --> 02:50:35,280
system so there's the the vehicle is

4482
02:50:38,210 --> 02:50:36,660
monitoring a whole bunch of parameters

4483
02:50:39,710 --> 02:50:38,220
and so one of the reasons they have to

4484
02:50:40,910 --> 02:50:39,720
do a poll for arming is all the

4485
02:50:42,530 --> 02:50:40,920
operators on the ground are checking

4486
02:50:43,790 --> 02:50:42,540
that there's no parameter out of limits

4487
02:50:46,010 --> 02:50:43,800
that would trigger an escape

4488
02:50:47,150 --> 02:50:46,020

inadvertently so you don't want to turn

4489

02:50:49,790 --> 02:50:47,160

on the system only to have it

4490

02:50:50,750 --> 02:50:49,800

immediately fire the capsule off so the

4491

02:50:52,130 --> 02:50:50,760

first thing they're doing is making sure

4492

02:50:54,349 --> 02:50:52,140

everything all the parameters stable the

4493

02:50:55,670 --> 02:50:54,359

Telemetry is good there's no noisy

4494

02:50:57,710 --> 02:50:55,680

signals in the data that would

4495

02:50:59,270 --> 02:50:57,720

inadvertently trigger it uh and then

4496

02:51:00,710 --> 02:50:59,280

you'll then you arm the system and then

4497

02:51:02,210 --> 02:51:00,720

once it's armed there's the automated

4498

02:51:04,309 --> 02:51:02,220

abort and then there's also a manual

4499

02:51:05,389 --> 02:51:04,319

abort so I don't know that you can see

4500

02:51:07,309 --> 02:51:05,399

it in the camera views we have but

4501
02:51:10,610 --> 02:51:07,319
there's a handle that sits between Woody

4502
02:51:12,770 --> 02:51:10,620
and Steve that you can reach you rotate

4503
02:51:15,590 --> 02:51:12,780
and pull that will manually initiate and

4504
02:51:17,030 --> 02:51:15,600
abort and so just very similar to an

4505
02:51:20,030 --> 02:51:17,040
injection seat where you pull the handle

4506
02:51:22,250 --> 02:51:20,040
camera attraction complete

4507
02:51:25,070 --> 02:51:22,260
I mean that's a big responsibility for

4508
02:51:27,290 --> 02:51:25,080
the commander and pilot if

4509
02:51:28,670 --> 02:51:27,300
you had to pull that handle I mean

4510
02:51:30,530 --> 02:51:28,680
that's a you don't want to do that

4511
02:51:33,170 --> 02:51:30,540
unless you're right absolutely certain

4512
02:51:35,270 --> 02:51:33,180
exactly exactly and so there's a few

4513
02:51:37,490 --> 02:51:35,280

cases or if that's why earlier they did

4514

02:51:38,929 --> 02:51:37,500

all those checks on the uh the loops to

4515

02:51:41,150 --> 02:51:38,939

make sure that the people on the ground

4516

02:51:42,710 --> 02:51:41,160

that have the insight to the status of

4517

02:51:44,330 --> 02:51:42,720

the F9 and the dragon have the ability

4518

02:51:45,650 --> 02:51:44,340

to talk to the crew so if there's a

4519

02:51:47,210 --> 02:51:45,660

failure of the automated system that

4520

02:51:48,950 --> 02:51:47,220

someone could tell the crew to manual

4521

02:51:50,570 --> 02:51:48,960

inshape or there might be some scenarios

4522

02:51:53,990 --> 02:51:50,580

where the crew May notice something

4523

02:51:55,010 --> 02:51:54,000

first and manually initiate in just a

4524

02:51:57,230 --> 02:51:55,020

few seconds we're going to hear drag

4525

02:52:00,769 --> 02:51:57,240

into ground and that announcement for go

4526
02:52:04,370 --> 02:52:00,779
for Section section seven Dragon SpaceX

4527
02:52:07,370 --> 02:52:04,380
your go for Section six close visors and

4528
02:52:13,849 --> 02:52:07,380
arm launch Escape system

4529
02:52:17,809 --> 02:52:15,889
I think it used to be seven though it is

4530
02:52:19,190 --> 02:52:17,819
yeah so it's a great science there

4531
02:52:22,190 --> 02:52:19,200
constantly like we talked about before

4532
02:52:23,450 --> 02:52:22,200
sex Dragon advises the clues

4533
02:52:26,510 --> 02:52:23,460
I'm constantly learning and making

4534
02:52:28,070 --> 02:52:26,520
changes to procedures right

4535
02:52:31,490 --> 02:52:28,080
earlier tonight we saw a lot of work

4536
02:52:33,650 --> 02:52:31,500
happening in parallel for the first time

4537
02:52:36,410 --> 02:52:33,660
so we had a lot of margin left over and

4538
02:52:38,210 --> 02:52:36,420

there you can see the white room

4539

02:52:41,809 --> 02:52:38,220

exposed to the

4540

02:52:44,090 --> 02:52:41,819

elements outside the dragon Army and

4541

02:52:45,290 --> 02:52:44,100

launch Escape system okay so that's uh

4542

02:52:46,849 --> 02:52:45,300

Steve telling him that there are six

4543

02:52:48,830 --> 02:52:46,859

copies initiating the command like we

4544

02:52:50,210 --> 02:52:48,840

mentioned they'll do it actually you can

4545

02:52:52,309 --> 02:52:50,220

hear this you can definitely hear this

4546

02:52:54,170 --> 02:52:52,319

and feel it in the vehicle there's some

4547

02:52:56,389 --> 02:52:54,180

valves that are opening that are to the

4548

02:52:58,070 --> 02:52:56,399

super dracos which are the engines that

4549

02:53:00,290 --> 02:52:58,080

would fire to initiate an abort and

4550

02:53:01,969 --> 02:53:00,300

those valves are safe until this point

4551
02:53:03,710 --> 02:53:01,979
so this command is essentially unsaving

4552
02:53:05,510 --> 02:53:03,720
those valves and you can barely very

4553
02:53:07,670 --> 02:53:05,520
definitely hear and feel that inside the

4554
02:53:09,830 --> 02:53:07,680
capsule those super Draco engines you

4555
02:53:13,389 --> 02:53:09,840
mentioned Raja capable of moving dragon

4556
02:53:17,389 --> 02:53:13,399
half a mile in just 7.5 seconds

4557
02:53:20,929 --> 02:53:17,399
equivalent to a peak velocity of 436

4558
02:53:22,490 --> 02:53:20,939
miles per hour such a tremendous focus

4559
02:53:25,490 --> 02:53:22,500
on safety

4560
02:53:28,429 --> 02:53:25,500
is

4561
02:53:30,230 --> 02:53:28,439
are in the hands of SpaceX and they want

4562
02:53:31,849 --> 02:53:30,240
to get them out of there as fast as

4563
02:53:33,889 --> 02:53:31,859

possible if there were to be it's an

4564

02:53:35,510 --> 02:53:33,899

impressive system so actually we did a

4565

02:53:37,849 --> 02:53:35,520

flight test of the abort system before

4566

02:53:39,889 --> 02:53:37,859

demo 2 and that was that was impressive

4567

02:53:41,269 --> 02:53:39,899

to see that thing work and yeah just a

4568

02:53:42,530 --> 02:53:41,279

strong Testament I think one of the key

4569

02:53:44,570 --> 02:53:42,540

things with the commercial crew program

4570

02:53:46,250 --> 02:53:44,580

of having launch abort systems on both

4571

02:53:47,450 --> 02:53:46,260

the Starliner and the dragon just a

4572

02:53:49,849 --> 02:53:47,460

testament to how much we've learned over

4573

02:53:51,889 --> 02:53:49,859

the years of space flight and the try to

4574

02:53:53,809 --> 02:53:51,899

make it as safe as we can going forward

4575

02:53:55,910 --> 02:53:53,819

if you heard the call from SpaceX

4576
02:53:57,530 --> 02:53:55,920
confirming that the the launch Escape

4577
02:53:59,150 --> 02:53:57,540
system is armed so the next big thing

4578
02:54:00,590 --> 02:53:59,160
now that it's armed now it is safe to

4579
02:54:10,309 --> 02:54:00,600
start loading prop

4580
02:54:14,030 --> 02:54:12,230
if there were a pad abort

4581
02:54:16,610 --> 02:54:14,040
it would take the Dragon capsule two and

4582
02:54:21,830 --> 02:54:16,620
a half miles east of pad a into the

4583
02:54:26,870 --> 02:54:23,570
Dragon would come down under its

4584
02:54:28,550 --> 02:54:26,880
parachutes land in the ocean

4585
02:54:29,870 --> 02:54:28,560
could take about four hours to remove

4586
02:54:32,690 --> 02:54:29,880
the crew

4587
02:54:35,630 --> 02:54:32,700
we have uh assets with the Air Force

4588
02:54:37,309 --> 02:54:35,640

called Detachment three yep three is

4589

02:54:39,710 --> 02:54:37,319

what they call it yeah yeah so there's a

4590

02:54:42,530 --> 02:54:39,720

what's called PJs or pair rescue jumpers

4591

02:54:43,849 --> 02:54:42,540

so we use a myriad of assets uh the Air

4592

02:54:46,370 --> 02:54:43,859

Force and navy help support these

4593

02:54:49,969 --> 02:54:46,380

Launches on both coasts

4594

02:54:53,030 --> 02:54:49,979

um and uh basically the C-17 c-130s

4595

02:54:55,070 --> 02:54:53,040

helicopters PJs uh it's quite a quite a

4596

02:54:56,210 --> 02:54:55,080

group and all the more reason we have to

4597

02:54:58,550 --> 02:54:56,220

look at that whole weather in a port

4598

02:55:00,590 --> 02:54:58,560

Corridor to have that ready uh if we

4599

02:55:03,170 --> 02:55:00,600

need if we need help yeah because if

4600

02:55:04,730 --> 02:55:03,180

they landed in the Atlantic Ocean it

4601
02:55:06,710 --> 02:55:04,740
would take them take some time to get

4602
02:55:08,929 --> 02:55:06,720
there we've got assets along the Eastern

4603
02:55:12,290 --> 02:55:08,939
Seaboard could take about six to eight

4604
02:55:14,210 --> 02:55:12,300
hours so you want those C's to be calm

4605
02:55:21,469 --> 02:55:14,220
exactly and not bobbing around in the

4606
02:55:26,389 --> 02:55:23,030
all right we're getting ready to get

4607
02:55:28,670 --> 02:55:26,399
that propellant load started

4608
02:55:31,969 --> 02:55:28,680
and once they start that load you're

4609
02:55:33,830 --> 02:55:31,979
making calls for different phases of

4610
02:55:35,030 --> 02:55:33,840
load like the locks the helium different

4611
02:55:36,950 --> 02:55:35,040
things and the reason they're doing that

4612
02:55:38,630 --> 02:55:36,960
is again you can hear that and feel it

4613
02:55:39,830 --> 02:55:38,640

inside the vehicle as different valves

4614

02:55:42,889 --> 02:55:39,840

open and close

4615

02:55:44,510 --> 02:55:42,899

um you can hear uh hear the sounds of

4616

02:55:46,490 --> 02:55:44,520

fluid flowing here's feel some different

4617

02:55:48,590 --> 02:55:46,500

vibrations and so that's why they're

4618

02:55:50,510 --> 02:55:48,600

calling those that so the crew isn't

4619

02:55:52,010 --> 02:55:50,520

aware of if something's novel or off

4620

02:55:53,389 --> 02:55:52,020

phenomenal if you hear a sound without a

4621

02:55:54,710 --> 02:55:53,399

call that could make you worry so that

4622

02:55:56,450 --> 02:55:54,720

way you know like okay that's the one

4623

02:55:57,530 --> 02:55:56,460

that we expected to you know that valve

4624

02:56:08,150 --> 02:55:57,540

was supposed to open or supposed to

4625

02:56:08,160 --> 02:56:13,969

propellant load has started

4626
02:56:20,090 --> 02:56:16,190
okay and there we have the call that

4627
02:56:23,210 --> 02:56:20,100
propellant load has begun

4628
02:56:25,910 --> 02:56:23,220
a big milestone as we count down to

4629
02:56:28,190 --> 02:56:25,920
liftoff now T-minus 34 minutes and

4630
02:56:30,469 --> 02:56:28,200
Counting

4631
02:56:32,090 --> 02:56:30,479
today we'll begin the next six month

4632
02:56:34,849 --> 02:56:32,100
rotation mission to the International

4633
02:56:36,349 --> 02:56:34,859
Space Station the launch Escape system

4634
02:56:38,809 --> 02:56:36,359
is armed

4635
02:56:43,370 --> 02:56:38,819
which happened just before we began the

4636
02:56:47,389 --> 02:56:45,349
meanwhile the Dragon capsule was loaded

4637
02:56:48,950 --> 02:56:47,399
with its propellants about a week and a

4638
02:56:52,309 --> 02:56:48,960

half ago just a few miles down the road

4639

02:56:54,950 --> 02:56:52,319

if a facility SpaceX calls Dragon Land

4640

02:56:57,650 --> 02:56:54,960

in order to fly Dragon needs a fuel and

4641

02:57:01,070 --> 02:56:57,660

an oxidizer for the fuel SpaceX uses

4642

02:57:04,190 --> 02:57:01,080

monomethyl hydrogen or mmh and nitrogen

4643

02:57:06,650 --> 02:57:04,200

tetroxide or nto for oxidizer and

4644

02:57:08,889 --> 02:57:06,660

together these propellants feed those

4645

02:57:12,290 --> 02:57:08,899

Draco engines that maneuver Dragon

4646

02:57:14,389 --> 02:57:12,300

rather on orbit as well as the eight

4647

02:57:16,370 --> 02:57:14,399

super Draco engines that would power the

4648

02:57:21,050 --> 02:57:16,380

launch Escape system in an abort

4649

02:57:24,590 --> 02:57:22,910

and again now that the fueling for

4650

02:57:27,050 --> 02:57:24,600

Falcon 9 has started that means the

4651
02:57:30,110 --> 02:57:27,060
eight super Draco engines inside crew

4652
02:57:32,690 --> 02:57:30,120
Dragon are ready if needed to launch the

4653
02:57:34,670 --> 02:57:32,700
capsule away from the Falcon 9 rocket in

4654
02:57:36,830 --> 02:57:34,680
an instant should there be any kind of

4655
02:57:41,090 --> 02:57:36,840
emergency associated with the rocket or

4656
02:57:43,670 --> 02:57:41,100
the pad of course NASA and SpaceX trains

4657
02:57:45,710 --> 02:57:43,680
extensively for exactly that type of

4658
02:57:47,750 --> 02:57:45,720
contingency

4659
02:57:49,969 --> 02:57:47,760
so now let's head over to SpaceX

4660
02:57:51,290 --> 02:57:49,979
commentator Kate Tice at SpaceX

4661
02:57:55,490 --> 02:57:51,300
headquarters in Hawthorne for an

4662
02:57:59,690 --> 02:57:58,070
thanks Daryl yeah exactly right we're

4663
02:58:01,370 --> 02:57:59,700

continuing to count down the final

4664

02:58:03,710 --> 02:58:01,380

minutes everything's still looking good

4665

02:58:05,929 --> 02:58:03,720

for Falcon 9 and dragon with the teams

4666

02:58:08,389 --> 02:58:05,939

reporting no major issues at this time

4667

02:58:10,849 --> 02:58:08,399

uh now with the launch Escape system

4668

02:58:13,550 --> 02:58:10,859

armed and Falcon 9 propellant loading

4669

02:58:17,809 --> 02:58:13,560

underway we are heading for an on-time

4670

02:58:20,990 --> 02:58:17,819

launch just under 33 minutes from now

4671

02:58:23,330 --> 02:58:21,000

as we saw earlier or rather heard Falcon

4672

02:58:24,410 --> 02:58:23,340

9 propellant load began at T minus 35

4673

02:58:26,870 --> 02:58:24,420

minutes

4674

02:58:28,730 --> 02:58:26,880

Daryl did a great job of explaining uh

4675

02:58:29,990 --> 02:58:28,740

the propellants on Dragon let's talk a

4676
02:58:32,330 --> 02:58:30,000
little bit about the repellents on

4677
02:58:34,309 --> 02:58:32,340
Falcon 9. slightly different

4678
02:58:36,050 --> 02:58:34,319
the first and second stages of Falcon 9

4679
02:58:38,210 --> 02:58:36,060
are each loaded with two liquid

4680
02:58:39,950 --> 02:58:38,220
propellants one is fuel loaded loaded

4681
02:58:42,530 --> 02:58:39,960
into a tank at the bottom of the stage

4682
02:58:45,050 --> 02:58:42,540
the other an oxidizer loaded into a tank

4683
02:58:47,330 --> 02:58:45,060
at the top of the stage the fuel that we

4684
02:58:50,929 --> 02:58:47,340
use to power the Merlin engines is a

4685
02:58:52,670 --> 02:58:50,939
refined kerosene referring to as rp1 or

4686
02:58:56,030 --> 02:58:52,680
rocket propellant one

4687
02:58:58,910 --> 02:58:56,040
the oxidizer loaded on each stage is a

4688
02:59:01,429 --> 02:58:58,920

densified liquid oxygen or lox densified

4689

02:59:03,590 --> 02:59:01,439

meaning that it's kept much colder than

4690

02:59:06,110 --> 02:59:03,600

typical for launch Vehicles therefore it

4691

02:59:08,330 --> 02:59:06,120

takes a plus volume which allows for us

4692

02:59:10,070 --> 02:59:08,340

to put more of that oxidizer into the

4693

02:59:12,889 --> 02:59:10,080

first and second stages

4694

02:59:14,809 --> 02:59:12,899

to ignite the fuel and the oxidizer and

4695

02:59:17,510 --> 02:59:14,819

the Merlin rocket engine we use the

4696

02:59:20,690 --> 02:59:17,520

ignition fluids of triethyl aluminum and

4697

02:59:22,610 --> 02:59:20,700

triethyl Boron also called t-tub now

4698

02:59:24,950 --> 02:59:22,620

when t-tub comes into contact with

4699

02:59:27,290 --> 02:59:24,960

oxygen it burns giving off a green

4700

02:59:28,790 --> 02:59:27,300

colored flame once we have the flame

4701

02:59:30,710 --> 02:59:28,800

going we add a little bit of that

4702

02:59:32,809 --> 02:59:30,720

kerosene fuel into the Merlin chamber

4703

02:59:34,969 --> 02:59:32,819

and the engine ramps up to full power

4704

02:59:37,190 --> 02:59:34,979

now actually you might see that green

4705

02:59:40,190 --> 02:59:37,200

flash just as the second stage engine

4706

02:59:42,230 --> 02:59:40,200

ignites following stage separation

4707

02:59:44,330 --> 02:59:42,240

now topping off helium into pressure

4708

02:59:46,490 --> 02:59:44,340

vessels on both stages also underway

4709

02:59:48,230 --> 02:59:46,500

this is used to pressurize the tanks in

4710

02:59:50,570 --> 02:59:48,240

flight AS propellant is pulled out by

4711

02:59:52,610 --> 02:59:50,580

the Merlin turbo pumps you can think of

4712

02:59:54,349 --> 02:59:52,620

this similar to when you're drinking out

4713

02:59:56,570 --> 02:59:54,359

of a plastic water bottle you have to

4714

02:59:58,250 --> 02:59:56,580

put some air back into the bottle in

4715

02:59:59,450 --> 02:59:58,260

order to keep it from crumpling so

4716

03:00:00,889 --> 02:59:59,460

that's exactly what we're doing with

4717

03:00:02,809 --> 03:00:00,899

that helium

4718

03:00:04,190 --> 03:00:02,819

on board the spacecraft the astronauts

4719

03:00:06,410 --> 03:00:04,200

are monitoring the systems while

4720

03:00:08,510 --> 03:00:06,420

propellants are loaded into the Falcon 9

4721

03:00:10,610 --> 03:00:08,520

below them the cruise training in the

4722

03:00:13,070 --> 03:00:10,620

simulator here at SpaceX headquarters in

4723

03:00:15,230 --> 03:00:13,080

Hawthorne California actually includes

4724

03:00:18,469 --> 03:00:15,240

playback of sounds recorded in Dragon

4725

03:00:19,849 --> 03:00:18,479

capsules during recent flights so even

4726
03:00:22,070 --> 03:00:19,859
though today is the first day they're

4727
03:00:23,809 --> 03:00:22,080
hearing it live they are prepared for

4728
03:00:25,969 --> 03:00:23,819
these new sounds

4729
03:00:28,849 --> 03:00:25,979
now the range continues to report no

4730
03:00:32,030 --> 03:00:28,859
problems helium loading has started they

4731
03:00:34,250 --> 03:00:32,040
are go to support launch weather also

4732
03:00:36,650 --> 03:00:34,260
continues to look great currently wins

4733
03:00:39,830 --> 03:00:36,660
from the west southwest at nine miles

4734
03:00:41,870 --> 03:00:39,840
per hour great conditions we only have a

4735
03:00:43,910 --> 03:00:41,880
five percent probability of violation

4736
03:00:46,010 --> 03:00:43,920
for those constraints so all in all

4737
03:00:47,809 --> 03:00:46,020
looking good as I mentioned earlier

4738
03:00:49,969 --> 03:00:47,819

today we have an instantaneous launch

4739

03:00:51,950 --> 03:00:49,979

time so at this point if we hear a hold

4740

03:00:53,990 --> 03:00:51,960

for any reason we'll have to stand down

4741

03:00:56,330 --> 03:00:54,000

and Target our backup launch opportunity

4742

03:00:58,910 --> 03:00:56,340

which is tomorrow just under 24 hours

4743

03:01:02,090 --> 03:00:58,920

from tonight's planned launch

4744

03:01:04,190 --> 03:01:02,100

now at T minus 30 minutes and six

4745

03:01:06,050 --> 03:01:04,200

seconds let's turn it over to Jesse and

4746

03:01:09,050 --> 03:01:06,060

Gary for an overview of events that

4747

03:01:12,349 --> 03:01:09,060

we'll see after liftoff

4748

03:01:14,030 --> 03:01:12,359

thanks Kate for crew 60 astronauts

4749

03:01:15,469 --> 03:01:14,040

flight to station will take about 25

4750

03:01:18,110 --> 03:01:15,479

hours

4751
03:01:20,269 --> 03:01:18,120
now as we wait for that t0 Mark in just

4752
03:01:22,070 --> 03:01:20,279
under 30 minutes the ground operations

4753
03:01:23,990 --> 03:01:22,080
teams are doing a series of system

4754
03:01:26,389 --> 03:01:24,000
checks to make sure that both the dragon

4755
03:01:28,490 --> 03:01:26,399
and the Falcon 9 are ready for launch

4756
03:01:30,230 --> 03:01:28,500
you're looking at a live view of our

4757
03:01:32,450 --> 03:01:30,240
teams at the cape as they prepare for

4758
03:01:34,490 --> 03:01:32,460
liftoff now as we wait for that launch

4759
03:01:36,469 --> 03:01:34,500
clock to hit zero we wanted to give you

4760
03:01:39,170 --> 03:01:36,479
an overview of what the ascent portion

4761
03:01:42,110 --> 03:01:39,180
of the mission is going to look like

4762
03:01:44,809 --> 03:01:42,120
once we hit t0 and a successful launch

4763
03:01:47,750 --> 03:01:44,819

occurs we will watch Falcon 9 and dragon

4764

03:01:49,910 --> 03:01:47,760

lift off from historic launch pad 39a

4765

03:01:52,250 --> 03:01:49,920

and make their ascent

4766

03:01:54,650 --> 03:01:52,260

at about 50 seconds into flight Falcon

4767

03:01:56,570 --> 03:01:54,660

9's engines will throttle down to help

4768

03:01:59,030 --> 03:01:56,580

pass through the period of Maximum

4769

03:02:02,210 --> 03:01:59,040

Dynamic pressure on the rocket or what

4770

03:02:04,790 --> 03:02:02,220

we typically refer to as Max Q it's

4771

03:02:07,370 --> 03:02:04,800

worth noting that once we hit Max Q the

4772

03:02:09,170 --> 03:02:07,380

vehicle will be going supersonic

4773

03:02:11,090 --> 03:02:09,180

now once we are through the period of

4774

03:02:13,670 --> 03:02:11,100

Maximum Dynamic pressure we can throttle

4775

03:02:14,990 --> 03:02:13,680

up our nine Merlin engines again from

4776
03:02:16,849 --> 03:02:15,000
there at about two and a half minutes

4777
03:02:18,230 --> 03:02:16,859
into flight we have a series of three

4778
03:02:19,370 --> 03:02:18,240
events that will happen in Rapid

4779
03:02:22,670 --> 03:02:19,380
succession

4780
03:02:25,550 --> 03:02:22,680
first is Miko or main engine cutoff this

4781
03:02:28,429 --> 03:02:25,560
is where all nine Merlin 1D engines shut

4782
03:02:30,769 --> 03:02:28,439
off in preparation or stage separation

4783
03:02:32,870 --> 03:02:30,779
which is our second event

4784
03:02:34,490 --> 03:02:32,880
this is where the first stage detaches

4785
03:02:36,650 --> 03:02:34,500
from the second stage with the first

4786
03:02:39,469 --> 03:02:36,660
stage making its way back to Earth for

4787
03:02:41,710 --> 03:02:39,479
landing as a second stage continues its

4788
03:02:45,170 --> 03:02:41,720

Journey with the third event

4789

03:02:48,050 --> 03:02:45,180

ses1 or second stage engine start number

4790

03:02:50,450 --> 03:02:48,060

one where the mvac engine lights up and

4791

03:02:52,910 --> 03:02:50,460

propels the second stage along with our

4792

03:02:55,610 --> 03:02:52,920

crew 6 astronauts into orbit

4793

03:02:57,889 --> 03:02:55,620

as stage two heads towards its targeted

4794

03:02:59,690 --> 03:02:57,899

drop-off orbit stage one will execute

4795

03:03:01,969 --> 03:02:59,700

two Burns in order to make its way back

4796

03:03:04,130 --> 03:03:01,979

down to earth the first is the entry

4797

03:03:05,809 --> 03:03:04,140

burn that's where three of the m1d

4798

03:03:07,969 --> 03:03:05,819

engines will reignite and then shut down

4799

03:03:10,309 --> 03:03:07,979

again this helps to slow the stage down

4800

03:03:11,690 --> 03:03:10,319

in preparation for entry back into the

4801
03:03:13,610 --> 03:03:11,700

Earth's atmosphere

4802
03:03:15,710 --> 03:03:13,620

and while that first stage is heading

4803
03:03:17,510 --> 03:03:15,720

back to Earth the second stage will cut

4804
03:03:19,849 --> 03:03:17,520

off its one Merlin engine that was

4805
03:03:22,370 --> 03:03:19,859

ignited right after stage separation

4806
03:03:25,429 --> 03:03:22,380

once this happens we'll wait for a

4807
03:03:27,710 --> 03:03:25,439

confirmation of a good orbital insertion

4808
03:03:30,050 --> 03:03:27,720

about 90 seconds after Dragon gets into

4809
03:03:31,910 --> 03:03:30,060

orbit Falcon 9 will land back on Earth

4810
03:03:33,950 --> 03:03:31,920

The Landing burn is just a

4811
03:03:36,290 --> 03:03:33,960

engine burn but it's powerful enough to

4812
03:03:38,090 --> 03:03:36,300

bring the vehicle speed down rapidly in

4813
03:03:40,670 --> 03:03:38,100

order to land on the Drone ship at about

4814

03:03:42,889 --> 03:03:40,680

nine and a half minutes into the mission

4815

03:03:45,230 --> 03:03:42,899

ball Falcon 9 first stage is landing

4816

03:03:47,030 --> 03:03:45,240

dragon is preparing to separate from the

4817

03:03:49,190 --> 03:03:47,040

second stage at about three minutes

4818

03:03:51,590 --> 03:03:49,200

after the second stage gets into orbit

4819

03:03:54,170 --> 03:03:51,600

we should have a great view of dragon

4820

03:03:56,929 --> 03:03:54,180

with its four-person crew drifting away

4821

03:03:58,730 --> 03:03:56,939

from the second stage once dragon is a

4822

03:04:01,010 --> 03:03:58,740

short distance away it'll begin checking

4823

03:04:03,170 --> 03:04:01,020

out its Draco maneuvering thrusters to

4824

03:04:05,510 --> 03:04:03,180

make sure Dragon continues to increase

4825

03:04:07,610 --> 03:04:05,520

separation distance from that second

4826
03:04:09,349 --> 03:04:07,620
stage it's worth noting that these are

4827
03:04:11,990 --> 03:04:09,359
not the Super Draco engines that would

4828
03:04:14,269 --> 03:04:12,000
be used during an abort scenario

4829
03:04:16,610 --> 03:04:14,279
about 40 seconds after separation

4830
03:04:19,010 --> 03:04:16,620
dragon's nose cone deploy sequence will

4831
03:04:20,990 --> 03:04:19,020
begin it will take roughly four minutes

4832
03:04:23,269 --> 03:04:21,000
for the nose cone hooks to unlatch and

4833
03:04:24,730 --> 03:04:23,279
open exposing its guidance navigation

4834
03:04:27,290 --> 03:04:24,740
controls that will help dragon

4835
03:04:29,630 --> 03:04:27,300
autonomously fly to the space station

4836
03:04:31,490 --> 03:04:29,640
and lastly once the nose cone is

4837
03:04:33,530 --> 03:04:31,500
deployed the remaining Draco thrusters

4838
03:04:36,349 --> 03:04:33,540

on the forward bulkhead will be checked

4839

03:04:38,570 --> 03:04:36,359

from there over the next 25 hours Dragon

4840

03:04:40,849 --> 03:04:38,580

will be on its approach and Rendezvous

4841

03:04:42,769 --> 03:04:40,859

phases undergoing a number of phasing

4842

03:04:45,110 --> 03:04:42,779

Burns as it makes its way to the station

4843

03:04:46,490 --> 03:04:45,120

and all that will be coming up soon but

4844

03:04:48,110 --> 03:04:46,500

for now let's check back in with

4845

03:04:51,410 --> 03:04:48,120

Courtney in Mission Control Houston

4846

03:04:55,670 --> 03:04:53,630

thanks Gary the flight controllers here

4847

03:04:57,889 --> 03:04:55,680

in Mission Control Houston are laser

4848

03:05:00,050 --> 03:04:57,899

focused on the onboard systems of the

4849

03:05:02,150 --> 03:05:00,060

space station ensuring it is ready to

4850

03:05:04,250 --> 03:05:02,160

receive crew Dragon they're also making

4851
03:05:06,050 --> 03:05:04,260
sure all communication links between the

4852
03:05:08,330 --> 03:05:06,060
station dragon and the ground are

4853
03:05:09,889 --> 03:05:08,340
working properly the consensus to this

4854
03:05:12,110 --> 03:05:09,899
point is that everything is proceeding

4855
03:05:13,969 --> 03:05:12,120
right on track the team here in Mission

4856
03:05:15,290 --> 03:05:13,979
Control Houston the team in Hawthorne

4857
03:05:16,969 --> 03:05:15,300
and the astronauts aboard the space

4858
03:05:18,889 --> 03:05:16,979
station will monitor the autonomous

4859
03:05:21,290 --> 03:05:18,899
docking of the Dragon spacecraft

4860
03:05:22,910 --> 03:05:21,300
tomorrow they'll perform a series of

4861
03:05:25,010 --> 03:05:22,920
leak checks then work to open the

4862
03:05:26,990 --> 03:05:25,020
hatches on both the dragon side and

4863
03:05:29,630 --> 03:05:27,000

inside the station's pressurized mating

4864

03:05:31,190 --> 03:05:29,640

adapter we expect hatch opening to take

4865

03:05:33,950 --> 03:05:31,200

place about an hour and a half after

4866

03:05:35,269 --> 03:05:33,960

docking and once on board the astronauts

4867

03:05:37,490 --> 03:05:35,279

will be greeted by the space station

4868

03:05:39,469 --> 03:05:37,500

crew

4869

03:05:41,570 --> 03:05:39,479

and will then join in for welcoming

4870

03:05:42,769 --> 03:05:41,580

remarks for the new crew members from

4871

03:05:44,750 --> 03:05:42,779

there on out they will no longer be

4872

03:05:46,010 --> 03:05:44,760

referred to as Cruise 6 but rather as

4873

03:05:48,950 --> 03:05:46,020

flight Engineers of the International

4874

03:05:50,630 --> 03:05:48,960

Space Station until their return back to

4875

03:05:52,429 --> 03:05:50,640

Earth here in Mission Control Houston

4876
03:05:54,590 --> 03:05:52,439
flight director Chris Dobbins is on

4877
03:05:56,330 --> 03:05:54,600
Console overseeing the team for launch

4878
03:05:58,250 --> 03:05:56,340
and that'll do it from here in Mission

4879
03:06:00,830 --> 03:05:58,260
Control Houston so I'll toss it back

4880
03:06:02,990 --> 03:06:00,840
over to our team in Florida Daryl how's

4881
03:06:04,790 --> 03:06:03,000
it looking thank you very much Courtney

4882
03:06:06,469 --> 03:06:04,800
and we're out here at the Kennedy Space

4883
03:06:08,269 --> 03:06:06,479
Center folks are gathering on the lawn

4884
03:06:10,070 --> 03:06:08,279
now getting ready for this launch and

4885
03:06:12,530 --> 03:06:10,080
it's a beautiful sight behind us Roger

4886
03:06:14,030 --> 03:06:12,540
it's looking pretty good it's a great

4887
03:06:15,590 --> 03:06:14,040
View and looking forward to seeing my

4888
03:06:17,210 --> 03:06:15,600

first launch and watching another turtle

4889

03:06:19,790 --> 03:06:17,220

go to space yeah we're going to watch

4890

03:06:22,010 --> 03:06:19,800

the launch and we're going to watch you

4891

03:06:24,230 --> 03:06:22,020

reaction well if you're just joining us

4892

03:06:27,290 --> 03:06:24,240

we are T-minus 24 minutes and Counting

4893

03:06:28,790 --> 03:06:27,300

now until the sixth astronaut rotation

4894

03:06:31,070 --> 03:06:28,800

mission to the International Space

4895

03:06:33,769 --> 03:06:31,080

Station under NASA's commercial crew

4896

03:06:35,389 --> 03:06:33,779

program Commander Stephen Bowen pilot

4897

03:06:38,630 --> 03:06:35,399

Woody hoberg and Mission specialist

4898

03:06:40,190 --> 03:06:38,640

Sultan al-niadi and Andre fediev are

4899

03:06:41,570 --> 03:06:40,200

strapped into their seats inside Dragon

4900

03:06:44,269 --> 03:06:41,580

endeavor

4901
03:06:46,490 --> 03:06:44,279
they're in that capsule right there as

4902
03:06:48,590 --> 03:06:46,500
the Falcon 9 rocket fueling operation is

4903
03:06:50,809 --> 03:06:48,600
well underway the launch Escape system

4904
03:06:52,429 --> 03:06:50,819
is armed and that means dragon is

4905
03:06:55,550 --> 03:06:52,439
prepared to launch itself away from the

4906
03:06:58,130 --> 03:06:55,560
Falcon 9 in case of an emergency on the

4907
03:07:00,230 --> 03:06:58,140
pad or after liftoff

4908
03:07:01,309 --> 03:07:00,240
so far operations look and sound as

4909
03:07:05,570 --> 03:07:01,319
expected

4910
03:07:09,530 --> 03:07:05,580
counting down to that liftoff at 145 and

4911
03:07:11,330 --> 03:07:09,540
three seconds am Eastern Time yep and we

4912
03:07:13,429 --> 03:07:11,340
heard the call from the core that the

4913
03:07:15,769 --> 03:07:13,439

stage two cryo helium loaded started and

4914

03:07:18,469 --> 03:07:15,779

like they described out at Hawthorne so

4915

03:07:21,010 --> 03:07:18,479

far what we've loaded is the gas to

4916

03:07:22,969 --> 03:07:21,020

pressurize the tanks around

4917

03:07:24,769 --> 03:07:22,979

probably about three-ish minutes from

4918

03:07:26,570 --> 03:07:24,779

now we'll actually start the gas itself

4919

03:07:29,150 --> 03:07:26,580

so like they're ascribing we need what

4920

03:07:30,590 --> 03:07:29,160

you need you need pressure to move the

4921

03:07:33,349 --> 03:07:30,600

gas and then you need the actual gas in

4922

03:07:35,510 --> 03:07:33,359

the locks itself so right now we're we

4923

03:07:37,490 --> 03:07:35,520

are loader they are loading that helium

4924

03:07:39,050 --> 03:07:37,500

that pressurizes the tanks and then the

4925

03:07:42,370 --> 03:07:39,060

next thing will be the the fuel and then

4926

03:07:46,490 --> 03:07:42,380

the oxidizer those inert gases key to

4927

03:07:48,590 --> 03:07:46,500

pressurizing those especially the locks

4928

03:07:50,030 --> 03:07:48,600

this mission is the continuation of

4929

03:07:51,530 --> 03:07:50,040

rotational crew flights to the

4930

03:07:53,630 --> 03:07:51,540

International Space Station from U.S

4931

03:07:55,610 --> 03:07:53,640

soil on private rockets and spacecraft

4932

03:07:58,190 --> 03:07:55,620

and it would have been possible without

4933

03:08:02,030 --> 03:07:58,200

the success of of course NASA SpaceX

4934

03:08:03,530 --> 03:08:02,040

demo 2 that test flight now two two and

4935

03:08:04,969 --> 03:08:03,540

a half years ago

4936

03:08:07,250 --> 03:08:04,979

of course it was the safe delivery and

4937

03:08:09,349 --> 03:08:07,260

return of cruise one and two that got

4938

03:08:11,450 --> 03:08:09,359

the operational flights rolling there

4939

03:08:14,570 --> 03:08:11,460

you can see inside

4940

03:08:19,190 --> 03:08:16,969

you can see their visors are down and

4941

03:08:20,570 --> 03:08:19,200

we'll stay down now since the Les is

4942

03:08:22,730 --> 03:08:20,580

armed and you can see they're also not

4943

03:08:25,610 --> 03:08:22,740

writing or doing anything more at this

4944

03:08:26,929 --> 03:08:25,620

point was with the Les arm Ed you just

4945

03:08:31,010 --> 03:08:26,939

have to wait until they're done with

4946

03:08:35,269 --> 03:08:32,750

and you can see now evidence that that

4947

03:08:38,809 --> 03:08:35,279

liquid oxygen is flowing into that first

4948

03:08:41,870 --> 03:08:38,819

stage as it super chills the outer skin

4949

03:08:43,849 --> 03:08:41,880

of the rocket and then it

4950

03:08:46,849 --> 03:08:43,859

um you know condenses the

4951

03:08:55,309 --> 03:08:46,859

Florida humid air into a little bit of a

4952

03:08:59,330 --> 03:08:57,469

talking about the crew inside

4953

03:09:01,670 --> 03:08:59,340

the commander of crew 6 is Captain

4954

03:09:03,469 --> 03:09:01,680

Stephen Bowen hails from Cohasset

4955

03:09:05,750 --> 03:09:03,479

Massachusetts he's married with three

4956

03:09:07,730 --> 03:09:05,760

children he holds the title of first U.S

4957

03:09:10,010 --> 03:09:07,740

Navy submarine officer to be selected as

4958

03:09:11,990 --> 03:09:10,020

a mission specialist by NASA Captain

4959

03:09:14,030 --> 03:09:12,000

Bowen is also a veteran of NASA space

4960

03:09:18,830 --> 03:09:14,040

flights including space shuttle flights

4961

03:09:20,510 --> 03:09:18,840

on sts-126 132 and 133 and Steve's a

4962

03:09:21,889 --> 03:09:20,520

veteran spacewalker and just a great

4963

03:09:24,769 --> 03:09:21,899

veteran to have the off around the

4964

03:09:26,330 --> 03:09:24,779

office and great Commander to have for

4965

03:09:27,830 --> 03:09:26,340

for three rookies

4966

03:09:29,090 --> 03:09:27,840

um he's just and I think what we've

4967

03:09:31,010 --> 03:09:29,100

learned about submarines is they're a

4968

03:09:32,990 --> 03:09:31,020

lot like a space station Kayla who's

4969

03:09:34,429 --> 03:09:33,000

also submarine I'd like to say that both

4970

03:09:35,929 --> 03:09:34,439

things are you know putting people where

4971

03:09:38,450 --> 03:09:35,939

people aren't meant to be and a lot of

4972

03:09:40,010 --> 03:09:38,460

the systems and ways you have to work

4973

03:09:41,990 --> 03:09:40,020

together are very similar and you need

4974

03:09:43,969 --> 03:09:42,000

good people working together in those

4975

03:09:47,030 --> 03:09:43,979

tight quarters sitting next to Stephen

4976

03:09:49,730 --> 03:09:47,040

is pilot Warren Woody hoberg the 37 year

4977

03:09:51,590 --> 03:09:49,740

old is from Pittsburgh Pennsylvania he

4978

03:09:53,990 --> 03:09:51,600

studied Aeronautics and astronautics

4979

03:09:55,550 --> 03:09:54,000

from MIT before getting a doctorate in

4980

03:09:57,889 --> 03:09:55,560

electrical engineering and computer

4981

03:10:00,110 --> 03:09:57,899

science from the University of of

4982

03:10:02,630 --> 03:10:00,120

California Berkeley during grad school

4983

03:10:04,370 --> 03:10:02,640

hoberg worked as an EMT with the

4984

03:10:07,070 --> 03:10:04,380

Yosemite search and rescue I've seen

4985

03:10:09,650 --> 03:10:07,080

pictures of him on a rope scaling Half

4986

03:10:11,929 --> 03:10:09,660

Dome crew 6 will be hoberg's first

4987

03:10:15,290 --> 03:10:11,939

flight since NASA selected him to be an

4988

03:10:16,969 --> 03:10:15,300

astronaut in 2017. he is one sharp

4989

03:10:19,130 --> 03:10:16,979

fellow but also a great guy yeah and

4990

03:10:21,290 --> 03:10:19,140

also a turtle so proud to see him going

4991

03:10:23,510 --> 03:10:21,300

up there as he had another member of our

4992

03:10:25,790 --> 03:10:23,520

uh yeah and super excited Woody like you

4993

03:10:28,130 --> 03:10:25,800

said just amazingly brilliant uh but

4994

03:10:30,110 --> 03:10:28,140

also just so operationally sound uh you

4995

03:10:33,349 --> 03:10:30,120

know his time working as a basically

4996

03:10:34,910 --> 03:10:33,359

rescuing people from ridiculous places I

4997

03:10:36,710 --> 03:10:34,920

mean we're not talking run-of-the-mill

4998

03:10:38,809 --> 03:10:36,720

like you know off a ski slope we're

4999

03:10:40,849 --> 03:10:38,819

talking like off of rock faces and

5000

03:10:43,010 --> 03:10:40,859

cliffs and just some yeah crazy stuff

5001
03:10:45,469 --> 03:10:43,020
and doing that and carrying someone else

5002
03:10:49,370 --> 03:10:45,479
with you who's injured right is not is

5003
03:10:51,290 --> 03:10:49,380
no joke high risk rescues and it's uh

5004
03:10:53,510 --> 03:10:51,300
incredible what he's been able to

5005
03:10:55,490 --> 03:10:53,520
accomplish before becoming an astronaut

5006
03:10:58,670 --> 03:10:55,500
in the role of mission specialist is

5007
03:11:00,110 --> 03:10:58,680
astronaut Sultan al-niadi stage two rp1

5008
03:11:03,469 --> 03:11:00,120
though complete

5009
03:11:05,630 --> 03:11:03,479
okay we heard the rp1 complete in the

5010
03:11:07,849 --> 03:11:05,640
stage two stage one will continue going

5011
03:11:10,910 --> 03:11:07,859
all the way down to round T minus six

5012
03:11:13,130 --> 03:11:10,920
minutes back to Sultan he was chosen by

5013
03:11:15,830 --> 03:11:13,140

the Muhammad bin Rashi Rasheed space

5014

03:11:19,490 --> 03:11:15,840

center of the United Arab Emirates to be

5015

03:11:21,710 --> 03:11:19,500

part of expeditions 6869 the father of

5016

03:11:24,830 --> 03:11:21,720

five spent most of his life in al-ayin

5017

03:11:27,170 --> 03:11:24,840

and Abu Dhabi but in 2020 it traded it

5018

03:11:30,230 --> 03:11:27,180

all in for Astronaut training in Houston

5019

03:11:32,570 --> 03:11:30,240

at NASA's Johnson Space Center and this

5020

03:11:34,610 --> 03:11:32,580

will be his first trip to space yeah and

5021

03:11:37,010 --> 03:11:34,620

so important to have our UAE partners

5022

03:11:39,170 --> 03:11:37,020

with us the first long duration UAE

5023

03:11:40,550 --> 03:11:39,180

flight so what a historic moment for UAE

5024

03:11:42,290 --> 03:11:40,560

and for NASA to be working in

5025

03:11:44,630 --> 03:11:42,300

partnership with them like you heard

5026

03:11:46,250 --> 03:11:44,640

Hazard mentioned earlier Sultan and him

5027

03:11:48,590 --> 03:11:46,260

had trained together at Ross Cosmos now

5028

03:11:51,230 --> 03:11:48,600

trained together here and it's uh cool

5029

03:11:53,330 --> 03:11:51,240

to see Sultan now going up there on a

5030

03:11:56,450 --> 03:11:53,340

U.S commercial rocket to go to the go to

5031

03:12:01,790 --> 03:11:58,550

and now we just heard the call

5032

03:12:03,410 --> 03:12:01,800

the strong back chill has begun and you

5033

03:12:06,050 --> 03:12:03,420

can see the

5034

03:12:08,469 --> 03:12:06,060

condensing of the outside air

5035

03:12:11,150 --> 03:12:08,479

that super chilled liquid oxygen both

5036

03:12:13,190 --> 03:12:11,160

chilling the rocket and of course the

5037

03:12:15,290 --> 03:12:13,200

venting of that locks

5038

03:12:17,990 --> 03:12:15,300

going out into the air

5039

03:12:21,170 --> 03:12:18,000

our next mission specialist

5040

03:12:24,349 --> 03:12:21,180

Andre fediev it's also his first trip to

5041

03:12:26,809 --> 03:12:24,359

space for the second mission specialist

5042

03:12:28,490 --> 03:12:26,819

he's a Ross Cosmos Cosmonaut and he will

5043

03:12:30,950 --> 03:12:28,500

be working to monitor the spacecraft

5044

03:12:33,530 --> 03:12:30,960

during the dynamic launch and re-entry

5045

03:12:37,610 --> 03:12:33,540

phases of flight he will be a flight

5046

03:12:39,650 --> 03:12:37,620

engineer for expedition 68.

5047

03:12:42,889 --> 03:12:39,660

yeah considering the partnership with

5048

03:12:45,349 --> 03:12:42,899

cosmonauts riding on uh dragons and U.S

5049

03:12:47,050 --> 03:12:45,359

astronauts riding on soyuz so great to

5050

03:12:49,550 --> 03:12:47,060

see that continuing and Andre the latest

5051

03:12:52,730 --> 03:12:49,560

Cosmonaut heading up on a dragon

5052

03:12:54,830 --> 03:12:52,740

and happy birthday to him he turns 42.

5053

03:12:56,690 --> 03:12:54,840

what a way to celebrate

5054

03:12:59,090 --> 03:12:56,700

each of these four crew members will be

5055

03:13:02,330 --> 03:12:59,100

part of the Expedition 68 once they

5056

03:13:06,170 --> 03:13:02,340

arrive at the International Space

5057

03:13:11,510 --> 03:13:09,469

at this moment Raja

5058

03:13:13,190 --> 03:13:11,520

what's the crew feeling

5059

03:13:14,990 --> 03:13:13,200

I think it's hoping that everything

5060

03:13:15,950 --> 03:13:15,000

continues that you've trained so long

5061

03:13:17,929 --> 03:13:15,960

for this

5062

03:13:19,849 --> 03:13:17,939

um you obviously don't want to get

5063

03:13:21,170 --> 03:13:19,859

what's called go fever you know when

5064

03:13:23,389 --> 03:13:21,180

meaning you're going to ignore a problem

5065

03:13:24,950 --> 03:13:23,399

but you're just kind of just hoping that

5066

03:13:26,809 --> 03:13:24,960

there's not any problems that pop up at

5067

03:13:28,550 --> 03:13:26,819

this point and most of it's honestly out

5068

03:13:31,910 --> 03:13:28,560

of your control so you but you have

5069

03:13:33,710 --> 03:13:31,920

complete trust in the team this is where

5070

03:13:35,450 --> 03:13:33,720

you know the reason we've trained so

5071

03:13:36,590 --> 03:13:35,460

long and trained with these actual

5072

03:13:38,570 --> 03:13:36,600

operators the same people are in the

5073

03:13:39,950 --> 03:13:38,580

loops is uh if there are any issues you

5074

03:13:42,230 --> 03:13:39,960

can hear it in their voices you've

5075

03:13:45,290 --> 03:13:42,240

worked with them you know them complete

5076

03:13:47,210 --> 03:13:45,300

confidence in the the JSC and and mccc

5077

03:13:48,650 --> 03:13:47,220

the Hawthorne teams and just actually

5078

03:13:49,910 --> 03:13:48,660

looking to looking forward to actually

5079

03:13:51,889 --> 03:13:49,920

getting to execute what you've trained

5080

03:13:53,690 --> 03:13:51,899

so long to do it makes sense so much

5081

03:13:56,389 --> 03:13:53,700

work and so much effort over the years

5082

03:13:58,910 --> 03:13:56,399

has gone in to get to this point you

5083

03:14:00,710 --> 03:13:58,920

want to keep going yep

5084

03:14:02,150 --> 03:14:00,720

yeah that's uh and I think right now

5085

03:14:04,130 --> 03:14:02,160

just the final my guess is what they're

5086

03:14:05,929 --> 03:14:04,140

talking through is so again on those

5087

03:14:07,910 --> 03:14:05,939

displays they're probably looking

5088

03:14:09,769 --> 03:14:07,920

forward a few events and talking through

5089

03:14:10,849 --> 03:14:09,779

those and so specifically they are

5090

03:14:13,370 --> 03:14:10,859

probably talking through the different

5091

03:14:15,050 --> 03:14:13,380

launch abort phases so you'll hear once

5092

03:14:18,469 --> 03:14:15,060

they actually lift off you'll hear

5093

03:14:20,090 --> 03:14:18,479

Stephen calling 1a1b 2A those are the

5094

03:14:21,230 --> 03:14:20,100

different launch abort stages and what

5095

03:14:23,690 --> 03:14:21,240

they are probably talking through right

5096

03:14:25,849 --> 03:14:23,700

now is the timing of that what things

5097

03:14:27,590 --> 03:14:25,859

they're looking for on the displays and

5098

03:14:28,849 --> 03:14:27,600

just again re you know sort of

5099

03:14:30,650 --> 03:14:28,859

rehearsing as much as you can because

5100

03:14:32,450 --> 03:14:30,660

once it happens it happens really quick

5101
03:14:34,849 --> 03:14:32,460
so you're just kind of running through

5102
03:14:38,929 --> 03:14:34,859
things over and over again the other

5103
03:14:42,830 --> 03:14:41,389
start of stage two lock float

5104
03:14:45,230 --> 03:14:42,840
right

5105
03:14:46,610 --> 03:14:45,240
so there's the start of the locks being

5106
03:14:48,469 --> 03:14:46,620
loaded on stage two you heard the call

5107
03:14:51,469 --> 03:14:48,479
there so things still progressing well

5108
03:14:52,910 --> 03:14:51,479
and so the crew has a a timeline of

5109
03:14:54,650 --> 03:14:52,920
these events so they're also that's

5110
03:14:57,110 --> 03:14:54,660
another way they can kind of QC if

5111
03:14:58,790 --> 03:14:57,120
things are proceeding maybe if the fuel

5112
03:14:59,870 --> 03:14:58,800
is taking longer or slower to slow so

5113
03:15:01,250 --> 03:14:59,880

they're kind of comparing what what

5114

03:15:02,990 --> 03:15:01,260

they're seeing on the clock versus those

5115

03:15:04,090 --> 03:15:03,000

calls and gives them a sense of how

5116

03:15:07,250 --> 03:15:04,100

things are going but there's no

5117

03:15:08,870 --> 03:15:07,260

immediate direct Telemetry in the Dragon

5118

03:15:10,429 --> 03:15:08,880

capsule that tells you all the

5119

03:15:12,769 --> 03:15:10,439

subsystems in the F9 rocket you're

5120

03:15:13,849 --> 03:15:12,779

relying on the timing and some cues and

5121

03:15:15,410 --> 03:15:13,859

listening to these calls to know what's

5122

03:15:17,809 --> 03:15:15,420

going on with the rocket itself once it

5123

03:15:19,670 --> 03:15:17,819

launches you have Telemetry on the F9

5124

03:15:21,590 --> 03:15:19,680

engines the status of the throttling

5125

03:15:23,389 --> 03:15:21,600

command so he talked about out at

5126

03:15:24,889 --> 03:15:23,399

Hawthorne the max Q event and the

5127

03:15:25,969 --> 03:15:24,899

throttle down you can see that you can

5128

03:15:27,769 --> 03:15:25,979

feel it

5129

03:15:29,389 --> 03:15:27,779

um and actually that was probably what I

5130

03:15:32,330 --> 03:15:29,399

thought as one of the coolest things

5131

03:15:34,730 --> 03:15:32,340

about our launch was that I we could

5132

03:15:36,710 --> 03:15:34,740

feel and hear the throttle down before

5133

03:15:38,030 --> 03:15:36,720

we saw it in the Telemetry so for all

5134

03:15:40,790 --> 03:15:38,040

the Automation and all the coolest

5135

03:15:42,889 --> 03:15:40,800

Electronics I thought it was amazing and

5136

03:15:45,110 --> 03:15:42,899

very awesome that the person is still

5137

03:15:47,870 --> 03:15:45,120

could still beat the machine how about

5138

03:15:49,250 --> 03:15:47,880

that but so that's kind of what they're

5139

03:15:50,690 --> 03:15:49,260

since they don't have that inside to the

5140

03:15:52,670 --> 03:15:50,700

F9 rocket they're relying on the calls

5141

03:15:54,410 --> 03:15:52,680

and the timing as they are sitting here

5142

03:15:56,510 --> 03:15:54,420

now and just making sure everything's on

5143

03:15:58,190 --> 03:15:56,520

track critical Communications

5144

03:16:00,230 --> 03:15:58,200

to the astronauts so they know exactly

5145

03:16:02,030 --> 03:16:00,240

what's going on as Raja mentioned if

5146

03:16:04,010 --> 03:16:02,040

you're outside and getting ready to

5147

03:16:05,750 --> 03:16:04,020

watch this launch you can hear it on the

5148

03:16:08,889 --> 03:16:05,760

radio it'll be available on local

5149

03:16:12,710 --> 03:16:08,899

amateur VHF radio frequency

5150

03:16:14,410 --> 03:16:12,720

146.940 megahertz and on the UHF radio

5151

03:16:17,690 --> 03:16:14,420

frequency

5152

03:16:23,269 --> 03:16:17,700

444.925 megahertz FM mode heard within

5153

03:16:26,990 --> 03:16:25,429

so the next thing you should be as we

5154

03:16:28,250 --> 03:16:27,000

get closer to 10 minutes they're going

5155

03:16:29,450 --> 03:16:28,260

to make sure the launch displays are set

5156

03:16:30,769 --> 03:16:29,460

up and the reason they're going to do

5157

03:16:33,650 --> 03:16:30,779

that is because once the launch happens

5158

03:16:35,150 --> 03:16:33,660

you have the ability to all the layers

5159

03:16:36,170 --> 03:16:35,160

are touch screen so you can change and

5160

03:16:37,730 --> 03:16:36,180

move them but you don't want to be doing

5161

03:16:39,290 --> 03:16:37,740

that during launch and so there's a

5162

03:16:41,809 --> 03:16:39,300

check in there to make sure you have all

5163

03:16:43,610 --> 03:16:41,819

the views you want generally what I'm

5164

03:16:46,309 --> 03:16:43,620

guessing they'll do is they'll scroll on

5165

03:16:47,510 --> 03:16:46,319

the procedure to where they expect to uh

5166

03:16:50,389 --> 03:16:47,520

so they don't have to scroll while

5167

03:16:52,130 --> 03:16:50,399

they're you know under G's they'll make

5168

03:16:54,349 --> 03:16:52,140

sure that the admission Specialists have

5169

03:16:55,969 --> 03:16:54,359

the views they need you can see Andre is

5170

03:16:58,010 --> 03:16:55,979

actually reaching up there right now so

5171

03:17:00,610 --> 03:16:58,020

they'll kind of check to make sure that

5172

03:17:03,290 --> 03:17:00,620

their line of sight is not obstructed

5173

03:17:04,910 --> 03:17:03,300

and that one more check of probably the

5174

03:17:06,950 --> 03:17:04,920

volume control of their seats that

5175

03:17:08,510 --> 03:17:06,960

everyone can hear each other maybe give

5176
03:17:09,410 --> 03:17:08,520
it a few clicks to account for the fact

5177
03:17:11,269 --> 03:17:09,420
that it's going to get a little louder

5178
03:17:13,790 --> 03:17:11,279
after launch all right let's get another

5179
03:17:17,330 --> 03:17:13,800
update from SpaceX and check in with

5180
03:17:23,510 --> 03:17:20,570
thanks Daryl we are T minus 13 minutes

5181
03:17:26,210 --> 03:17:23,520
and 47 seconds from launch everything's

5182
03:17:29,389 --> 03:17:26,220
still looking good for tonight's Falcon

5183
03:17:30,590 --> 03:17:29,399
9 launch for Dragon crew 6. if you've

5184
03:17:32,690 --> 03:17:30,600
been following along you know that

5185
03:17:35,570 --> 03:17:32,700
Falcon 9 began propellant load at

5186
03:17:37,910 --> 03:17:35,580
T-minus 35 minutes loading of the rp1

5187
03:17:39,670 --> 03:17:37,920
fuel on the second stage is complete

5188
03:17:42,650 --> 03:17:39,680

that finished around T minus 20 minutes

5189

03:17:45,950 --> 03:17:42,660

fuel loading on the first stage

5190

03:17:48,769 --> 03:17:45,960

continues it's approximately 75 percent

5191

03:17:51,230 --> 03:17:48,779

full and we'll finish around T minus six

5192

03:17:53,389 --> 03:17:51,240

minutes tensified liquid oxygen loading

5193

03:17:54,670 --> 03:17:53,399

is underway on both the first and second

5194

03:17:58,250 --> 03:17:54,680

stages

5195

03:18:00,830 --> 03:17:58,260

they are looking about 80 percent full

5196

03:18:03,170 --> 03:18:00,840

on the first stage and just under 10 on

5197

03:18:04,969 --> 03:18:03,180

the second stage that will wrap up at T

5198

03:18:06,469 --> 03:18:04,979

minus three minutes and T minus two

5199

03:18:08,269 --> 03:18:06,479

minutes respectively

5200

03:18:10,730 --> 03:18:08,279

checkouts of the thrust Vector

5201
03:18:12,769 --> 03:18:10,740
controllers what we call TVC Wiggles

5202
03:18:14,929 --> 03:18:12,779
those are coming up that's basically

5203
03:18:17,570 --> 03:18:14,939
when we use those thrust Vector

5204
03:18:20,090 --> 03:18:17,580
controllers to slightly move each engine

5205
03:18:22,730 --> 03:18:20,100
nozzle that's what allows Falcon 9 to

5206
03:18:24,830 --> 03:18:22,740
steer itself during ascent

5207
03:18:26,809 --> 03:18:24,840
Dragon Michigan director and team are

5208
03:18:29,030 --> 03:18:26,819
reporting no major issues at this time

5209
03:18:31,010 --> 03:18:29,040
communication checkouts are complete the

5210
03:18:32,750 --> 03:18:31,020
crew access arm is retracted as you can

5211
03:18:35,450 --> 03:18:32,760
see there on your screen it's nowhere in

5212
03:18:38,030 --> 03:18:35,460
sight the crew access arm excuse me the

5213
03:18:40,309 --> 03:18:38,040

launch Escape system is armed and the

5214

03:18:41,750 --> 03:18:40,319

crew is strapped into their seats and

5215

03:18:43,910 --> 03:18:41,760

ready to go to space

5216

03:18:46,910 --> 03:18:43,920

final instructions to the crew will come

5217

03:18:48,830 --> 03:18:46,920

at T minus 10 minutes the crew displays

5218

03:18:50,750 --> 03:18:48,840

will be configured for launch that setup

5219

03:18:52,250 --> 03:18:50,760

gives the crew insight into how the

5220

03:18:54,710 --> 03:18:52,260

launch is proceeding and provides

5221

03:18:56,210 --> 03:18:54,720

constant updates on Vehicle Health you

5222

03:18:57,769 --> 03:18:56,220

can see the crew there on the right hand

5223

03:18:58,910 --> 03:18:57,779

side of your screen now looking pretty

5224

03:19:01,130 --> 03:18:58,920

comfortable

5225

03:19:02,929 --> 03:19:01,140

at T minus five minutes we'll be in

5226

03:19:05,690 --> 03:19:02,939

terminal count and dragon will then

5227

03:19:07,610 --> 03:19:05,700

transition to internal power we'll hear

5228

03:19:09,889 --> 03:19:07,620

continued call outs on the countdown net

5229

03:19:14,030 --> 03:19:09,899

as we continue to get closer to liftoff

5230

03:19:16,250 --> 03:19:14,040

as for the range they remain green for

5231

03:19:18,650 --> 03:19:16,260

launch ready to go weather also still

5232

03:19:21,530 --> 03:19:18,660

looking really good winds down to four

5233

03:19:23,630 --> 03:19:21,540

miles per hour coming from the West only

5234

03:19:26,570 --> 03:19:23,640

a five percent chance of violation for

5235

03:19:28,250 --> 03:19:26,580

the criteria so continues to look good

5236

03:19:30,230 --> 03:19:28,260

I'm sure if it was Daylight it would

5237

03:19:32,809 --> 03:19:30,240

probably be a cloudless guy for the most

5238

03:19:34,969 --> 03:19:32,819

part there at Kennedy Space Center so

5239

03:19:37,730 --> 03:19:34,979

with that in mind let's go back to Daryl

5240

03:19:40,250 --> 03:19:37,740

at Kennedy as we continue to approach

5241

03:19:42,590 --> 03:19:40,260

liftoff just under 11 and a half minutes

5242

03:19:44,510 --> 03:19:42,600

from now all right good call outs there

5243

03:19:46,969 --> 03:19:44,520

Kate appreciate that some final thoughts

5244

03:19:49,370 --> 03:19:46,979

from the commander of crew 3 before we

5245

03:19:50,750 --> 03:19:49,380

watch crew six it's a great time to be

5246

03:19:52,429 --> 03:19:50,760

here you'll hear them in a few minutes

5247

03:19:54,110 --> 03:19:52,439

when they make the 10-minute call and

5248

03:19:55,190 --> 03:19:54,120

confirm their displays are ready the

5249

03:19:57,349 --> 03:19:55,200

crew will probably give a message

5250

03:19:59,450 --> 03:19:57,359

thanking folks and just the thoughts on

5251

03:20:01,190 --> 03:19:59,460

their mind there's a lot of work and a

5252

03:20:03,469 --> 03:20:01,200

lot of people that worked a lot of time

5253

03:20:05,330 --> 03:20:03,479

to get them here and yeah it's a pretty

5254

03:20:08,690 --> 03:20:05,340

special moment and when they lift off

5255

03:20:11,450 --> 03:20:08,700

there'll be 260 miles over Southwest of

5256

03:20:13,550 --> 03:20:11,460

New Zealand and with that we want to

5257

03:20:14,870 --> 03:20:13,560

focus on the pad now as we proceed

5258

03:20:16,910 --> 03:20:14,880

through the final stretch of the

5259

03:20:19,130 --> 03:20:16,920

countdown we'll turn it over to Gary and

5260

03:20:21,230 --> 03:20:19,140

Kate at SpaceX headquarters in Hawthorne

5261

03:20:25,010 --> 03:20:21,240

California to take us through launch and

5262

03:20:30,230 --> 03:20:27,830

thanks Daryl the energy is certainly

5263

03:20:33,410 --> 03:20:30,240

starting to grow as we get closer and

5264

03:20:36,590 --> 03:20:33,420

closer to t0 as you can see the vehicle

5265

03:20:39,830 --> 03:20:36,600

there at pad 39a that's Falcon 9 with

5266

03:20:41,269 --> 03:20:39,840

the Dragon capsule positioned on top now

5267

03:20:43,429 --> 03:20:41,279

we're going to go through a couple of

5268

03:20:47,809 --> 03:20:43,439

things including some physical changes

5269

03:20:51,410 --> 03:20:47,819

to the pad but you will likely hear a

5270

03:20:53,389 --> 03:20:51,420

number of call outs after liftoff that

5271

03:20:56,510 --> 03:20:53,399

are basically indicative of the various

5272

03:21:08,150 --> 03:20:56,520

abort modes that Dragon passes through

5273

03:21:16,690 --> 03:21:11,210

now T minus 10 minutes SpaceX confirm

5274

03:21:25,070 --> 03:21:19,730

uh SpaceX Dragon crew displays are

5275

03:21:29,269 --> 03:21:27,230

three six copies on behalf of our entire

5276
03:21:30,650 --> 03:21:29,279
team at SpaceX we're honored we are

5277
03:21:32,450 --> 03:21:30,660
honored to have you aboard Dragon

5278
03:21:34,190 --> 03:21:32,460
capsule Endeavor today for its next trip

5279
03:21:36,130 --> 03:21:34,200
to the International Space Station we

5280
03:21:41,210 --> 03:21:36,140
wish you a great Mission good luck

5281
03:21:44,870 --> 03:21:43,309
and thank you very much to those kind

5282
03:21:47,630 --> 03:21:44,880
words we'd like to thank all the

5283
03:21:50,269 --> 03:21:47,640
trainers technicians Engineers assistant

5284
03:21:51,530 --> 03:21:50,279
makers and planners who have defined our

5285
03:21:54,230 --> 03:21:51,540
mission ahead

5286
03:21:57,050 --> 03:21:54,240
and trained us and I'm given the faith

5287
03:22:14,750 --> 03:21:57,060
in us to execute that mission and crew

5288
03:22:19,849 --> 03:22:17,269

and those words coming from the crew

5289

03:22:22,849 --> 03:22:19,859

six inside the dragon right now under

5290

03:22:24,889 --> 03:22:22,859

nine minutes from launch those final

5291

03:22:26,269 --> 03:22:24,899

instructions meaning we are in terminal

5292

03:22:28,849 --> 03:22:26,279

counts

5293

03:22:32,210 --> 03:22:28,859

Falcon 9 launched commit criteria is

5294

03:22:40,490 --> 03:22:33,650

and we're in the final stretch here

5295

03:22:45,469 --> 03:22:43,429

Kate was mentioning a series of uh

5296

03:22:47,269 --> 03:22:45,479

number and letter combinations that

5297

03:22:50,330 --> 03:22:47,279

you'll hear upon Ascent once we get to

5298

03:22:51,710 --> 03:22:50,340

that point that'll be those uh abort

5299

03:22:53,870 --> 03:22:51,720

different abort modes that we'll be

5300

03:22:56,269 --> 03:22:53,880

tracking throughout the ascent there's

5301
03:22:59,030 --> 03:22:56,279
an alpha and and Bravo on the first

5302
03:23:00,230 --> 03:22:59,040
stage and there's 2A through 2E on the

5303
03:23:03,590 --> 03:23:00,240
second stage

5304
03:23:05,630 --> 03:23:03,600
as we track it up the Eastern seaboard

5305
03:23:07,969 --> 03:23:05,640
right now coming up on T minus eight

5306
03:23:10,610 --> 03:23:07,979
minutes the next major Milestone that

5307
03:23:13,429 --> 03:23:10,620
we'll be hearing uh will be about the

5308
03:23:16,729 --> 03:23:13,439
engine chill

5309
03:23:19,490 --> 03:23:16,739
that's right that's a important step of

5310
03:23:23,809 --> 03:23:19,500
the countdown that's basically when T

5311
03:23:26,750 --> 03:23:23,819
minus seven minutes we will open the

5312
03:23:28,610 --> 03:23:26,760
pre-valves of the engines to allow a

5313
03:23:31,969 --> 03:23:28,620

little bit of the super chilled liquid

5314

03:23:34,550 --> 03:23:31,979

oxygen into the Merlin turbo pumps prior

5315

03:23:36,349 --> 03:23:34,560

to the full flow of locks that occurs

5316

03:23:38,929 --> 03:23:36,359

during ignition now that's important

5317

03:23:41,750 --> 03:23:38,939

because at this point in time all the

5318

03:23:43,969 --> 03:23:41,760

hardware is at ambient temperature so by

5319

03:23:45,290 --> 03:23:43,979

opening the pre-valves and flowing a

5320

03:23:48,590 --> 03:23:45,300

little bit of that super chilled

5321

03:23:51,290 --> 03:23:48,600

intensified liquid oxygen helps prepare

5322

03:23:55,610 --> 03:23:51,300

the hardware for that colder temperature

5323

03:23:57,889 --> 03:23:55,620

when the full flow of locks occurs

5324

03:24:11,090 --> 03:23:57,899

we should hear that call out in about 10

5325

03:24:11,100 --> 03:24:14,630

engine chill

5326

03:24:18,290 --> 03:24:16,670

there's that call out indicating that

5327

03:24:19,550 --> 03:24:18,300

those pre-valves have been opened and

5328

03:24:21,530 --> 03:24:19,560

now there's a little bit of that super

5329

03:24:24,110 --> 03:24:21,540

chilled liquid oxygen flowing through

5330

03:24:28,849 --> 03:24:24,120

the hardware uh basically chilling it

5331

03:24:34,250 --> 03:24:30,050

that's right in the meantime we're

5332

03:24:36,229 --> 03:24:34,260

tracking fuel on the vehicle stage 2 rp1

5333

03:24:39,349 --> 03:24:36,239

or the fuel on the second stage is

5334

03:24:42,469 --> 03:24:39,359

complete it's one of the earlier tanks

5335

03:24:45,229 --> 03:24:42,479

to be completely filled in the countdown

5336

03:24:47,750 --> 03:24:45,239

but as we are continue to track the fuel

5337

03:24:51,889 --> 03:24:47,760

loading the next thing will be the stage

5338

03:24:55,910 --> 03:24:53,990

that's coming up here in about 15

5339

03:24:57,830 --> 03:24:55,920

seconds

5340

03:25:01,250 --> 03:24:57,840

later in the countdown we'll be tracking

5341

03:25:05,090 --> 03:25:01,260

the tanks of

5342

03:25:08,269 --> 03:25:05,100

oxidizer being completely filled

5343

03:25:11,330 --> 03:25:08,279

that rp1 load is now complete on the

5344

03:25:14,929 --> 03:25:11,340

first stage so at this point in time all

5345

03:25:18,830 --> 03:25:14,939

rp1 is now on Falcon 9 both for the

5346

03:25:23,510 --> 03:25:21,650

locks load continues wrapping up at

5347

03:25:25,729 --> 03:25:23,520

about T minus three minutes for first

5348

03:25:31,010 --> 03:25:25,739

stage and T minus two minutes for the

5349

03:25:36,110 --> 03:25:33,170

coming up we'll hear the call for Dragon

5350

03:25:37,729 --> 03:25:36,120

Tech SpaceX for awareness we are seeing

5351

03:25:39,830 --> 03:25:37,739

a t-tab load issue and our

5352

03:25:41,870 --> 03:25:39,840

troubleshooting we are currently still

5353

03:25:44,090 --> 03:25:41,880

go but have further evaluation before

5354

03:25:53,750 --> 03:25:44,100

making a final decision we'll get to a

5355

03:25:58,550 --> 03:25:55,670

that call out there just communicating

5356

03:26:01,910 --> 03:25:58,560

to the crew that the launch teams are

5357

03:26:03,969 --> 03:26:01,920

troubleshooting a small issue with t-tep

5358

03:26:06,410 --> 03:26:03,979

and they will have some more information

5359

03:26:08,269 --> 03:26:06,420

for the crew and the next couple of

5360

03:26:10,010 --> 03:26:08,279

minutes that t-tab as I mentioned

5361

03:26:11,450 --> 03:26:10,020

earlier is in configure for terminal

5362

03:26:14,210 --> 03:26:11,460

count

5363

03:26:16,190 --> 03:26:14,220

and there's that call pressurizing for

5364

03:26:18,110 --> 03:26:16,200

strong back retract a lot of information

5365

03:26:20,929 --> 03:26:18,120

coming through right now just indicating

5366

03:26:24,710 --> 03:26:20,939

that uh that dragon is now on internal

5367

03:26:27,710 --> 03:26:24,720

power and now we are basically preparing

5368

03:26:29,690 --> 03:26:27,720

to retract the strong back which is the

5369

03:26:32,210 --> 03:26:29,700

white structure there to the right of

5370

03:26:34,429 --> 03:26:32,220

the rocket we will see the clamps open

5371

03:26:36,530 --> 03:26:34,439

just under those clamps just under the

5372

03:26:39,830 --> 03:26:36,540

dragon trunk those will begin to open

5373

03:26:42,370 --> 03:26:39,840

and the strong backed will retract away

5374

03:26:45,050 --> 03:26:42,380

from the vehicle

5375

03:26:46,729 --> 03:26:45,060

yeah that's right we'll see those clamps

5376

03:26:49,550 --> 03:26:46,739

on the top of the structure there just

5377

03:26:52,790 --> 03:26:49,560

under the dragon's trunk which you can

5378

03:26:54,769 --> 03:26:52,800

identify by the black solar panels on

5379

03:26:56,330 --> 03:26:54,779

the left of the base of the capsule

5380

03:26:58,790 --> 03:26:56,340

itself and to the right

5381

03:27:01,429 --> 03:26:58,800

and then the structure itself will lean

5382

03:27:03,410 --> 03:27:01,439

about two degrees uh and then it will

5383

03:27:05,630 --> 03:27:03,420

retract the rest of the way once Dragon

5384

03:27:08,809 --> 03:27:05,640

actually hits that t0 Mark and lifts off

5385

03:27:12,469 --> 03:27:08,819

we're seeing those clamps

5386

03:27:16,849 --> 03:27:15,410

it's a two degree lean will be very

5387

03:27:18,349 --> 03:27:16,859

subtle

5388

03:27:22,190 --> 03:27:18,359

and then you'll see it more when we hit

5389

03:27:27,950 --> 03:27:24,590

that's right at liftoff Falcon 9 well

5390

03:27:30,050 --> 03:27:27,960

excuse me the te will actually retract

5391

03:27:33,910 --> 03:27:30,060

to 45 degrees to clear the way for

5392

03:27:36,710 --> 03:27:33,920

falcon 9. that te is basically what

5393

03:27:39,170 --> 03:27:36,720

attaches has the umbilicals that attach

5394

03:27:49,670 --> 03:27:39,180

to the vehicle that provide Power

5395

03:27:49,680 --> 03:27:56,090

relax

5396

03:28:01,070 --> 03:27:58,849

now coming up in 10 seconds will be

5397

03:28:24,110 --> 03:28:01,080

listening for a call on stage one liquid

5398

03:28:38,269 --> 03:28:25,969

dragon is in terminal account and on

5399

03:28:44,030 --> 03:28:40,729

it's minus two minutes 30 seconds on

5400

03:28:46,550 --> 03:28:44,040

countdown one hold hold hold hold

5401
03:28:55,910 --> 03:28:46,560
we are standing down to to do a t-tab

5402
03:28:59,690 --> 03:28:57,769
as you just heard we have report has

5403
03:29:02,410 --> 03:28:59,700
started

5404
03:29:05,330 --> 03:29:02,420
as you just heard we have a hold tonight

5405
03:29:08,450 --> 03:29:05,340
due to the t-tep issue that I mentioned

5406
03:29:10,670 --> 03:29:08,460
prior and the Dragon SpaceX with that

5407
03:29:15,170 --> 03:29:10,680
call from LD your go to step into five

5408
03:29:21,950 --> 03:29:18,229
five decimal 100 launch scrub

5409
03:29:26,330 --> 03:29:24,590
as with everything else we are prepared

5410
03:29:28,550 --> 03:29:26,340
for all scenarios including

5411
03:29:30,650 --> 03:29:28,560
unfortunately as we've seen tonight a

5412
03:29:36,110 --> 03:29:30,660
scrub so the teens are now stepping into

5413
03:29:40,250 --> 03:29:38,389

it's right again it was uh the teams

5414

03:29:43,429 --> 03:29:40,260

were tracking and a ground issue with

5415

03:29:46,309 --> 03:29:43,439

t-tep that's the ignition fluid uh that

5416

03:29:49,729 --> 03:29:46,319

actually Sparks with the oxidizer and

5417

03:29:52,670 --> 03:29:49,739

allows the engines to fire

5418

03:29:53,870 --> 03:29:52,680

the teams were tracking this issue and

5419

03:29:57,229 --> 03:29:53,880

so we're in a nominal scrub

5420

03:30:01,370 --> 03:29:59,570

we'll start to see sort of the sequence

5421

03:30:06,349 --> 03:30:01,380

of

5422

03:30:09,650 --> 03:30:06,359

Milestones we've been tracking as part

5423

03:30:17,210 --> 03:30:14,450

until the crew access arm swings back to

5424

03:30:20,450 --> 03:30:17,220

the side hatch and so the actual the

5425

03:30:37,849 --> 03:30:20,460

crew can egress the vehicle as part of a

5426
03:30:43,910 --> 03:30:40,309
so for those of you just joining at

5427
03:30:45,710 --> 03:30:43,920
about just just under two t t minus two

5428
03:30:49,790 --> 03:30:45,720
and a half minutes we unfortunately had

5429
03:30:51,710 --> 03:30:49,800
a scrub due to a t-tep issue uh with the

5430
03:30:54,410 --> 03:30:51,720
ground systems

5431
03:30:57,410 --> 03:30:54,420
so as Gary mentioned we are in a nominal

5432
03:30:59,950 --> 03:30:57,420
scrub configuration

5433
03:31:03,769 --> 03:30:59,960
there we have our procedures now being

5434
03:31:06,950 --> 03:31:03,779
enacted to basically reverse all the

5435
03:31:09,349 --> 03:31:06,960
progress that we made this evening

5436
03:31:11,750 --> 03:31:09,359
including propellant offload and

5437
03:31:13,849 --> 03:31:11,760
bringing that crew access arm

5438
03:31:18,050 --> 03:31:13,859

back into position and getting the

5439

03:31:22,910 --> 03:31:20,570

up into that point everything was

5440

03:31:25,790 --> 03:31:22,920

looking good the ground team had

5441

03:31:34,250 --> 03:31:25,800

reported that issue I believe it was

5442

03:31:41,630 --> 03:31:36,170

at this point in time the launch Escape

5443

03:31:45,710 --> 03:31:43,250

but the crew continuing to look

5444

03:31:57,830 --> 03:31:45,720

comfortable there inside

5445

03:32:03,290 --> 03:32:00,650

and dragon LD on countdown one at this

5446

03:32:04,849 --> 03:32:03,300

time our offloads are underway vehicle

5447

03:32:07,070 --> 03:32:04,859

is safe and proceeding not only with

5448

03:32:13,350 --> 03:32:07,080

offload expecting about a 50 minute

5449

03:32:16,250 --> 03:32:15,050

[Music]

5450

03:32:17,630 --> 03:32:16,260

ing we'll be sitting here waiting

5451
03:32:19,849 --> 03:32:17,640
tonight

5452
03:32:22,070 --> 03:32:19,859
so it will be a very methodical process

5453
03:32:24,229 --> 03:32:22,080
to offload the Falcon 9 with the

5454
03:32:26,809 --> 03:32:24,239
propellant and oxidizer

5455
03:32:27,769 --> 03:32:26,819
you can still you can see some of that

5456
03:32:30,229 --> 03:32:27,779
uh

5457
03:32:33,050 --> 03:32:30,239
some of that oxygen billowing off still

5458
03:32:36,769 --> 03:32:33,060
that'll be part of the sequence they've

5459
03:32:39,410 --> 03:32:36,779
also re-enabled auxiliary power to buy

5460
03:32:41,330 --> 03:32:39,420
umbilical to the dragon as they work

5461
03:32:43,849 --> 03:32:41,340
their way through the nominal scrub

5462
03:32:46,130 --> 03:32:43,859
timeline again that's a 50 minute

5463
03:32:48,410 --> 03:32:46,140

offload for those again that are joining

5464

03:32:51,530 --> 03:32:48,420

we are in a scrub situation just under

5465

03:32:54,769 --> 03:32:51,540

two minutes and 30 seconds from launch

5466

03:32:58,370 --> 03:32:54,779

teams declared a scrub due to tracking a

5467

03:33:02,389 --> 03:32:58,380

an uh ground issue with uh t-tep this is

5468

03:33:04,969 --> 03:33:02,399

the ignition fluid that's used uh for

5469

03:33:07,670 --> 03:33:04,979

the first and second stages that ignites

5470

03:33:12,650 --> 03:33:07,680

the oxidizer for uh igniting the engines

5471

03:33:14,269 --> 03:33:12,660

themselves to lift dragon and into space

5472

03:33:16,130 --> 03:33:14,279

they were tracking this issue and

5473

03:33:18,469 --> 03:33:16,140

declared a scrub again at the two minute

5474

03:33:21,050 --> 03:33:18,479

30 second Mark so we're going through a

5475

03:33:25,610 --> 03:33:21,060

nominal uh scrub

5476
03:33:29,929 --> 03:33:27,950
you can see the strong back clamps have

5477
03:33:33,050 --> 03:33:29,939
been re-enabled

5478
03:33:35,690 --> 03:33:33,060
in this view right here

5479
03:33:38,630 --> 03:33:35,700
after we on the offload prop we'll see

5480
03:33:40,790 --> 03:33:38,640
the crew access arm swing back to get

5481
03:33:42,769 --> 03:33:40,800
the crew out in the meantime the launch

5482
03:33:45,650 --> 03:33:42,779
Escape system

5483
03:33:47,389 --> 03:33:45,660
which is enables the super draco's to

5484
03:33:49,610 --> 03:33:47,399
fire should there be any anomaly with

5485
03:33:51,229 --> 03:33:49,620
the Falcon 9 during the offload

5486
03:33:53,389 --> 03:33:51,239
procedure the screw the crew does they

5487
03:33:55,849 --> 03:33:53,399
have the ability to to perform a pad

5488
03:33:59,809 --> 03:33:57,950

right now uh the ground teams are

5489

03:35:21,290 --> 03:33:59,819

tracking no issues everything going

5490

03:35:26,389 --> 03:35:23,090

all right for those who are just joining

5491

03:35:29,210 --> 03:35:26,399

as a reminder we are in a uh scrub at a

5492

03:35:32,330 --> 03:35:29,220

just under two minutes 30 seconds from

5493

03:35:34,070 --> 03:35:32,340

launch the ground teams declared a scrub

5494

03:35:37,429 --> 03:35:34,080

as they were tracking its uh ground

5495

03:35:39,769 --> 03:35:37,439

issue with the t-tep ignition fluid

5496

03:35:41,630 --> 03:35:39,779

and as a precaution made a scrub for

5497

03:35:43,070 --> 03:35:41,640

today's launch as we were counting down

5498

03:35:45,050 --> 03:35:43,080

to t0

5499

03:35:46,550 --> 03:35:45,060

now we're working our way through

5500

03:35:49,010 --> 03:35:46,560

nominal

5501
03:35:52,309 --> 03:35:49,020
um scrub uh procedures which include

5502
03:35:55,790 --> 03:35:52,319
offloading the fuel and oxidizer that

5503
03:35:58,790 --> 03:35:55,800
are loaded on the Falcon 9 right now

5504
03:36:01,670 --> 03:35:58,800
you can see we made our way through the

5505
03:36:03,469 --> 03:36:01,680
countdown to a strong back retract that

5506
03:36:07,070 --> 03:36:03,479
has been put back into place and the

5507
03:36:11,210 --> 03:36:07,080
clamps just under the trunk of dragon

5508
03:36:13,910 --> 03:36:11,220
are now uh in their configuration that

5509
03:36:14,990 --> 03:36:13,920
they were prior to that part of the

5510
03:36:16,910 --> 03:36:15,000
countdown

5511
03:36:20,510 --> 03:36:16,920
and Kate we're making our way through

5512
03:36:23,450 --> 03:36:20,520
offloading that uh falcon 9.

5513
03:36:27,170 --> 03:36:23,460

that's right in total that prop offload

5514

03:36:29,090 --> 03:36:27,180

is expected to take 50 minutes 5-0 so

5515

03:36:30,950 --> 03:36:29,100

unfortunately at this point in time

5516

03:36:33,710 --> 03:36:30,960

there's not a whole lot that the crew

5517

03:36:36,769 --> 03:36:33,720

there can do except patiently wait

5518

03:36:39,830 --> 03:36:36,779

I could imagine that they might be a

5519

03:36:41,389 --> 03:36:39,840

little sad as of because the otherwise

5520

03:36:44,630 --> 03:36:41,399

they they would be in space at this

5521

03:36:46,910 --> 03:36:44,640

point effectively but it right now they

5522

03:36:48,650 --> 03:36:46,920

as you can see they are just sitting

5523

03:36:51,769 --> 03:36:48,660

back and relaxing

5524

03:36:54,710 --> 03:36:51,779

um as the Falcon 9 teams on the ground

5525

03:36:57,710 --> 03:36:54,720

continue to keep them updated as Gary

5526

03:37:00,410 --> 03:36:57,720

said this is a nominal scrub uh

5527

03:37:02,809 --> 03:37:00,420

procedure or configuration we have

5528

03:37:04,990 --> 03:37:02,819

procedures listing out every step of

5529

03:37:07,910 --> 03:37:05,000

this so right now we are basically

5530

03:37:11,269 --> 03:37:07,920

unfueling Falcon 9 from both the first

5531

03:37:14,510 --> 03:37:11,279

and second stages as Falcon 9 was nearly

5532

03:37:16,790 --> 03:37:14,520

fully loaded at the time of this scrub

5533

03:37:19,130 --> 03:37:16,800

so as this continues we will see some

5534

03:37:22,550 --> 03:37:19,140

puffs of white clouds like you just saw

5535

03:37:26,870 --> 03:37:22,560

there live as that detanking effectively

5536

03:37:30,650 --> 03:37:26,880

is underway we will also see the crew

5537

03:37:35,090 --> 03:37:30,660

access arm go back into the service

5538

03:37:38,269 --> 03:37:35,100

position that will enable the basically

5539

03:37:41,630 --> 03:37:38,279

the pad team to re-enter the pad go back

5540

03:37:44,990 --> 03:37:41,640

up and help the four astronauts that are

5541

03:37:47,769 --> 03:37:45,000

currently there in the capsule basically

5542

03:37:50,090 --> 03:37:47,779

unbuckle and and and and

5543

03:37:52,130 --> 03:37:50,100

get out of the capsule and make their

5544

03:37:53,870 --> 03:37:52,140

way back down to the ground

5545

03:37:56,590 --> 03:37:53,880

and it is going to be a methodical

5546

03:37:59,030 --> 03:37:56,600

process like you said Kate the uh

5547

03:38:01,610 --> 03:37:59,040

through the fueling that began at T

5548

03:38:03,290 --> 03:38:01,620

minus 35 minutes we made our way uh

5549

03:38:05,630 --> 03:38:03,300

quite a bit through the timeline and

5550

03:38:08,269 --> 03:38:05,640

those tanks were pretty full so the

5551
03:38:10,790 --> 03:38:08,279
ground teams estimated a 50-minute 5-0

5552
03:38:13,010 --> 03:38:10,800
minute offload of that fuel meantime in

5553
03:38:14,690 --> 03:38:13,020
the meantime the crew 6 astronauts are

5554
03:38:16,429 --> 03:38:14,700
in a passive State they'll be tracking

5555
03:38:18,349 --> 03:38:16,439
the fuel offloading process and

5556
03:38:20,030 --> 03:38:18,359
listening to the communications from the

5557
03:38:22,309 --> 03:38:20,040
ground teams giving them status updates

5558
03:38:24,349 --> 03:38:22,319
along the way but we are in a nominal

5559
03:38:26,929 --> 03:38:24,359
configuration in the meantime they've

5560
03:38:29,030 --> 03:38:26,939
taken the dragon Falcon 9 off of

5561
03:38:31,490 --> 03:38:29,040
internal power and re-enabled auxiliary

5562
03:38:33,889 --> 03:38:31,500
power back into the vehicle as they

5563
03:38:36,050 --> 03:38:33,899

continue to go through this process and

5564

03:38:37,250 --> 03:38:36,060

like you said Kate it'll be uh it'll be

5565

03:38:40,130 --> 03:38:37,260

a little bit and then we'll see that

5566

03:38:42,469 --> 03:38:40,140

crew access arm swing back and they'll

5567

03:38:44,750 --> 03:38:42,479

re-axis the side hatch if you were

5568

03:38:46,250 --> 03:38:44,760

following Along on our coverage they

5569

03:38:47,809 --> 03:38:46,260

walked down the crew access arm and

5570

03:38:50,030 --> 03:38:47,819

Enter the Dragon through that side hatch

5571

03:38:51,469 --> 03:38:50,040

they'll be exiting the same way uh in

5572

03:38:54,410 --> 03:38:51,479

the meantime through this whole process

5573

03:38:56,990 --> 03:38:54,420

the crew and the dragon itself will

5574

03:39:00,349 --> 03:38:57,000

remain with the I-e-s the launch Escape

5575

03:39:02,450 --> 03:39:00,359

system armed uh so the if in any event

5576

03:39:04,370 --> 03:39:02,460

something were to happen as part of the

5577

03:39:06,530 --> 03:39:04,380

offloading process they'll be able to

5578

03:39:08,090 --> 03:39:06,540

escape using the super Draco engines the

5579

03:39:10,250 --> 03:39:08,100

eight super draco's that are on the

5580

03:39:13,670 --> 03:39:10,260

dragon uh it'll be a pad aboard over

5581

03:39:15,650 --> 03:39:13,680

into the Atlantic Ocean but for now all

5582

03:39:17,389 --> 03:39:15,660

the ground teams are tracking that

5583

03:39:18,950 --> 03:39:17,399

everything is nominal the fuel offload

5584

03:39:21,050 --> 03:39:18,960

is going as planned as part of a normal

5585

03:39:22,490 --> 03:39:21,060

scrub and we're just continuing to

5586

03:39:24,469 --> 03:39:22,500

follow along

5587

03:39:27,410 --> 03:39:24,479

that's right and one thing I want to

5588

03:39:29,330 --> 03:39:27,420

mention although this is not what we had

5589

03:39:31,250 --> 03:39:29,340

hoped to happen today

5590

03:39:34,670 --> 03:39:31,260

um and while we said that this is a

5591

03:39:37,370 --> 03:39:34,680

nominal abort configuration technically

5592

03:39:39,710 --> 03:39:37,380

the crew and the launch teams have

5593

03:39:43,790 --> 03:39:39,720

already practiced this very similar

5594

03:39:45,950 --> 03:39:43,800

scenario on Thursday February 23rd the

5595

03:39:49,550 --> 03:39:45,960

integrated launch operations teams along

5596

03:39:52,010 --> 03:39:49,560

with the astronauts performed a full dry

5597

03:39:54,170 --> 03:39:52,020

dress rehearsal which basically means a

5598

03:39:57,650 --> 03:39:54,180

a total dress rehearsal including suit

5599

03:39:59,990 --> 03:39:57,660

up transporting to the pad going up the

5600

03:40:02,389 --> 03:40:00,000

elevators in the crew Tower down the

5601
03:40:05,690 --> 03:40:02,399
crew access arm and ingressing into the

5602
03:40:08,570 --> 03:40:05,700
capsule and basically doing a full

5603
03:40:11,750 --> 03:40:08,580
rehearsal of launch day as if it were

5604
03:40:13,010 --> 03:40:11,760
real but no no propellant involved so

5605
03:40:14,450 --> 03:40:13,020
that's why it's called a dry dress

5606
03:40:17,630 --> 03:40:14,460
rehearsal because there was no

5607
03:40:19,190 --> 03:40:17,640
propellant involved so technically this

5608
03:40:22,130 --> 03:40:19,200
is very similar to what they would have

5609
03:40:25,910 --> 03:40:22,140
done on Thursday in terms of simulating

5610
03:40:29,510 --> 03:40:25,920
that that scrub and basically having the

5611
03:40:31,550 --> 03:40:29,520
teams go back up into the crew Tower and

5612
03:40:33,889 --> 03:40:31,560
retrieve the astronauts from the capsule

5613
03:40:36,710 --> 03:40:33,899

so at this point in time we are

5614

03:40:39,170 --> 03:40:36,720

following along with the procedures for

5615

03:40:42,170 --> 03:40:39,180

this unfortunate Scrub but everything

5616

03:40:45,290 --> 03:40:42,180

continues to track nominally for this

5617

03:40:49,010 --> 03:40:45,300

activity right now for those that have

5618

03:40:51,469 --> 03:40:49,020

recently joined we had a hold called on

5619

03:40:54,050 --> 03:40:51,479

the countdown at about T minus two and a

5620

03:40:56,210 --> 03:40:54,060

half minutes the crew had reported

5621

03:40:59,330 --> 03:40:56,220

around T minus five minutes excuse me

5622

03:41:01,729 --> 03:40:59,340

the ground teams had the SpaceX round

5623

03:41:05,210 --> 03:41:01,739

teams had reported around T minus five

5624

03:41:06,710 --> 03:41:05,220

minutes an issue with the t-tep which is

5625

03:41:18,349 --> 03:41:06,720

the

5626
03:41:20,990 --> 03:41:18,359
teams called that hold at T minus two

5627
03:41:24,290 --> 03:41:21,000
and a half minutes and then proceeded

5628
03:41:27,290 --> 03:41:24,300
into nominal off detanking or or

5629
03:41:29,450 --> 03:41:27,300
basically unloading the vehicle with all

5630
03:41:32,150 --> 03:41:29,460
of its propellants given the fact that

5631
03:41:35,990 --> 03:41:32,160
that occurred at T minus two and a half

5632
03:41:37,790 --> 03:41:36,000
minutes the majority of the propellants

5633
03:41:39,830 --> 03:41:37,800
were already on the vehicle with the

5634
03:41:43,450 --> 03:41:39,840
propellant load propellant offload

5635
03:41:43,460 --> 03:41:47,929
oh straight six dragon go ahead

5636
03:41:51,469 --> 03:41:49,610
offload they're proceeding nominally

5637
03:41:55,849 --> 03:41:51,479
anticipating another half hour until

5638
03:42:02,210 --> 03:41:57,590

I understand like in about a half hour

5639

03:42:06,349 --> 03:42:04,250

all right so good news there coming from

5640

03:42:09,170 --> 03:42:06,359

the ground teams indicating that we have

5641

03:42:12,170 --> 03:42:09,180

about 30 minutes left of the propellant

5642

03:42:13,610 --> 03:42:12,180

offloading we heard Commander Steve

5643

03:42:15,889 --> 03:42:13,620

Bowen

5644

03:42:17,389 --> 03:42:15,899

um sounding pretty unbothered by

5645

03:42:19,610 --> 03:42:17,399

everything like I mentioned before

5646

03:42:22,490 --> 03:42:19,620

everything is written down in the

5647

03:42:24,889 --> 03:42:22,500

procedure they practiced this very

5648

03:42:27,590 --> 03:42:24,899

similar egress procedure during Thursday

5649

03:42:30,229 --> 03:42:27,600

night's dry dress rehearsal so all in

5650

03:42:33,290 --> 03:42:30,239

all everything continuing nominally

5651
03:42:36,170 --> 03:42:33,300
there for this these next steps as I

5652
03:42:38,269 --> 03:42:36,180
mentioned before we will see eventually

5653
03:42:40,550 --> 03:42:38,279
the crew access arm swing back into the

5654
03:42:44,809 --> 03:42:40,560
service position and we will have the

5655
03:42:47,210 --> 03:42:44,819
the pad teams re-enter the the pad area

5656
03:42:50,450 --> 03:42:47,220
and and basically enable the astronauts

5657
03:42:55,910 --> 03:42:52,790
I also mentioned earlier that our backup

5658
03:43:00,170 --> 03:42:55,920
launch opportunity is about the same

5659
03:43:07,130 --> 03:43:00,180
time tomorrow roughly 24 hours after our

5660
03:43:11,990 --> 03:43:09,410
due to the fact that we were launching

5661
03:43:13,610 --> 03:43:12,000
the crew that you see there on the right

5662
03:43:15,050 --> 03:43:13,620
hand side of your screen they were

5663
03:43:19,309 --> 03:43:15,060

headed to the International Space

5664

03:43:21,590 --> 03:43:19,319

Station as such that is down to the very

5665

03:43:22,849 --> 03:43:21,600

second in terms of catching up to the

5666

03:43:25,309 --> 03:43:22,859

International Space Station when

5667

03:43:28,849 --> 03:43:25,319

launching from uh from Kennedy Space

5668

03:43:31,610 --> 03:43:28,859

Center so when it comes to crew launches

5669

03:43:35,030 --> 03:43:31,620

there's only one shot and so therefore

5670

03:43:37,250 --> 03:43:35,040

due to that scrub that was called at T

5671

03:43:47,330 --> 03:43:37,260

minus two and a half minutes that was

5672

03:43:52,250 --> 03:43:49,309

that's right Kate and as you mentioned

5673

03:43:53,750 --> 03:43:52,260

that scrub would be 24 hours so we'll

5674

03:43:56,690 --> 03:43:53,760

get to do this all over again you

5675

03:43:59,750 --> 03:43:56,700

mentioned the dry dress rehearsal uh

5676

03:44:01,790 --> 03:43:59,760

with a nominal offload of the fuel for

5677

03:44:03,469 --> 03:44:01,800

this particular scrub this is almost

5678

03:44:06,229 --> 03:44:03,479

like a wet dress rehearsal just taking

5679

03:44:08,090 --> 03:44:06,239

it one step uh further as you mentioned

5680

03:44:10,429 --> 03:44:08,100

for the dry dress they did everything

5681

03:44:13,370 --> 03:44:10,439

that we saw today driving out to the pad

5682

03:44:15,410 --> 03:44:13,380

going up the elevators and making their

5683

03:44:17,510 --> 03:44:15,420

way into the vehicle buckling up the

5684

03:44:19,910 --> 03:44:17,520

seats rotated and they made their way

5685

03:44:21,950 --> 03:44:19,920

far into the countdown but but before

5686

03:44:24,110 --> 03:44:21,960

they started fueling the vehicle now

5687

03:44:26,750 --> 03:44:24,120

they feel the vehicle prior to launch

5688

03:44:29,150 --> 03:44:26,760

and again we're following a scrub at the

5689

03:44:33,590 --> 03:44:29,160

that was occurred at about two minutes

5690

03:44:36,590 --> 03:44:33,600

and 30 seconds prior to the t0 time uh

5691

03:44:39,170 --> 03:44:36,600

due to tracking a uh a ground issue with

5692

03:44:42,110 --> 03:44:39,180

the t-tab ignition fluid that's used on

5693

03:44:44,690 --> 03:44:42,120

the engines to ignite them and uh fire

5694

03:44:46,370 --> 03:44:44,700

the crew into orbit and eventually

5695

03:44:47,330 --> 03:44:46,380

catching up with the International Space

5696

03:44:49,550 --> 03:44:47,340

Station

5697

03:44:52,010 --> 03:44:49,560

but as they were continuing to look at

5698

03:44:54,590 --> 03:44:52,020

this issue decided to declare a scrub

5699

03:44:58,070 --> 03:44:54,600

for today that scrub is again a nominal

5700

03:44:59,570 --> 03:44:58,080

scrub so we'll be going through uh the

5701

03:45:01,490 --> 03:44:59,580

scrub procedures which include the

5702

03:45:03,290 --> 03:45:01,500

detanking they seem to be going a little

5703

03:45:04,790 --> 03:45:03,300

faster than originally predicted they

5704

03:45:07,030 --> 03:45:04,800

were called out to the crew about five

5705

03:45:10,490 --> 03:45:07,040

zero minutes now we're inside 30 minutes

5706

03:45:14,809 --> 03:45:10,500

from detanking the Falcon 9 that means

5707

03:45:17,150 --> 03:45:14,819

the rp1 refined kerosene and the liquid

5708

03:45:20,090 --> 03:45:17,160

oxygen that's that the densified liquid

5709

03:45:21,950 --> 03:45:20,100

oxygen that's on board is uh being

5710

03:45:22,849 --> 03:45:21,960

brought back into the lines that fuel

5711

03:45:25,790 --> 03:45:22,859

them

5712

03:45:28,010 --> 03:45:25,800

so we'll be emptying those tanks you can

5713

03:45:30,410 --> 03:45:28,020

still see some of the oxygen some of the

5714

03:45:33,050 --> 03:45:30,420

gaseous oxygen billowing off the Falcon

5715

03:45:34,370 --> 03:45:33,060

9 rocket itself so there is a little bit

5716

03:45:36,530 --> 03:45:34,380

of fuel in there you're seeing some of

5717

03:45:38,630 --> 03:45:36,540

the Puffs that are part of the detanking

5718

03:45:41,090 --> 03:45:38,640

process in the meantime just a reminder

5719

03:45:42,469 --> 03:45:41,100

that that launch a skate system is armed

5720

03:45:44,450 --> 03:45:42,479

through the whole thing just to keep the

5721

03:45:46,070 --> 03:45:44,460

crew safe but you see for the crew

5722

03:45:48,110 --> 03:45:46,080

themselves it's a very passive

5723

03:45:50,150 --> 03:45:48,120

experience the launch scrub all of these

5724

03:45:51,889 --> 03:45:50,160

commands being issued by the teams on

5725

03:45:52,969 --> 03:45:51,899

the ground

5726

03:45:56,510 --> 03:45:52,979

um

5727

03:45:58,670 --> 03:45:56,520

they'll continue to wait until and get

5728

03:46:01,370 --> 03:45:58,680

status updates from the ground teams

5729

03:46:04,250 --> 03:46:01,380

right now they are connected by

5730

03:46:05,870 --> 03:46:04,260

umbilical we did hear that as part of

5731

03:46:08,090 --> 03:46:05,880

the normal Countdown the Falcon 9

5732

03:46:09,950 --> 03:46:08,100

transferred to internal power but they

5733

03:46:12,290 --> 03:46:09,960

re-enable the auxiliary power back into

5734

03:46:13,849 --> 03:46:12,300

the vehicle so through the Decay tanking

5735

03:46:17,030 --> 03:46:13,859

process we're getting power from the

5736

03:46:19,610 --> 03:46:17,040

ground and not relying on the uh on the

5737

03:46:21,469 --> 03:46:19,620

batteries inside the vehicles

5738

03:46:23,870 --> 03:46:21,479

so we can continue to work through this

5739

03:46:32,570 --> 03:46:28,309

again Steve Bowen Woody hoberg Sultan

5740

03:46:35,030 --> 03:46:32,580

almiati and Andre finayov on board

5741

03:46:38,450 --> 03:46:35,040

crew Dragon Endeavor now passively

5742

03:46:40,610 --> 03:46:38,460

waiting uh for the scrub process

5743

03:46:43,190 --> 03:46:40,620

detaking fuel first this is going to be

5744

03:46:45,349 --> 03:46:43,200

one of the lengthier processes before

5745

03:46:48,050 --> 03:46:45,359

the crew access arm swings back and

5746

03:46:49,370 --> 03:46:48,060

allows the crew to egress or exit the

5747

03:46:50,990 --> 03:46:49,380

dragon vehicle

5748

03:46:53,769 --> 03:46:51,000

and get back on the ground we'll do the

5749

03:46:55,969 --> 03:46:53,779

same thing again and in about 24 hours

5750

03:46:58,910 --> 03:46:55,979

witnessing the same series of events

5751
03:47:01,429 --> 03:46:58,920
suiting up in the suit room before going

5752
03:47:02,450 --> 03:47:01,439
down uh and making their way over to the

5753
03:47:04,070 --> 03:47:02,460
pad

5754
03:47:07,150 --> 03:47:04,080
via Tesla

5755
03:47:10,670 --> 03:47:07,160
until they make their way up the

5756
03:47:12,410 --> 03:47:10,680
launch Tower the elevator is over there

5757
03:47:26,510 --> 03:47:12,420
and make their way back into the same

5758
03:47:32,150 --> 03:47:28,849
we'll continue to follow along and give

5759
03:47:35,269 --> 03:47:32,160
you updates as we hear them right now uh

5760
03:47:37,429 --> 03:47:35,279
really it's just the detanking process

5761
03:47:38,929 --> 03:47:37,439
which is quite a lengthy process so

5762
03:47:41,570 --> 03:47:38,939
we'll continue to keep you updated there

5763
03:47:44,510 --> 03:47:41,580

that is still underway that's one of the

5764

03:47:53,929 --> 03:47:44,520

longer events that occur as part of a

5765

03:47:58,309 --> 03:47:57,290

from left to right Andre fidayev Woody

5766

03:48:00,469 --> 03:47:58,319

hoberg

5767

03:48:02,809 --> 03:48:00,479

Steve Bowen

5768

03:48:09,410 --> 03:48:02,819

sultan almiati

5769

03:48:14,450 --> 03:48:11,570

we'll continue to follow along through

5770

03:48:18,469 --> 03:48:16,490

but from here over in Hawthorne we're

5771

03:48:20,150 --> 03:48:18,479

now going to toss it back over to the

5772

03:48:23,090 --> 03:48:20,160

Kennedy Space Center

5773

03:48:25,910 --> 03:48:23,100

uh where again we scrubbed at about two

5774

03:48:27,950 --> 03:48:25,920

minutes 30 seconds to take us through uh

5775

03:48:30,889 --> 03:48:27,960

and continue to give us updates along

5776

03:48:33,110 --> 03:48:30,899

the scrub process Daryl

5777

03:48:35,030 --> 03:48:33,120

all right thanks so much Gary

5778

03:48:36,229 --> 03:48:35,040

back here at the Kennedy Space Center in

5779

03:48:38,750 --> 03:48:36,239

Florida

5780

03:48:43,190 --> 03:48:38,760

I'm Daryl nail and I'm with crew 3

5781

03:48:45,349 --> 03:48:43,200

Commander NASA astronaut rajachari

5782

03:48:47,929 --> 03:48:45,359

and it goes without saying Raja looks

5783

03:48:50,570 --> 03:48:47,939

like you're gonna have to wait on seeing

5784

03:48:53,510 --> 03:48:50,580

your first launch as Gary mentioned we

5785

03:48:57,530 --> 03:48:53,520

had a scrub that uh right around 1 43

5786

03:49:00,410 --> 03:48:57,540

a.m eastern time got down inside T minus

5787

03:49:03,050 --> 03:49:00,420

10 minutes and uh there started to

5788

03:49:04,910 --> 03:49:03,060

notice an issue with what's called t-tab

5789

03:49:08,570 --> 03:49:04,920

in the these are the chemicals that help

5790

03:49:10,670 --> 03:49:08,580

ignite the Falcon 9 engines all nine of

5791

03:49:13,250 --> 03:49:10,680

them and uh

5792

03:49:14,570 --> 03:49:13,260

as it turned out uh it looks like there

5793

03:49:16,250 --> 03:49:14,580

wasn't enough confidence in moving

5794

03:49:17,809 --> 03:49:16,260

forward with the amount of t-tep that

5795

03:49:21,229 --> 03:49:17,819

was there to light those engines and so

5796

03:49:24,710 --> 03:49:21,239

we uh we had a scrub called and so now

5797

03:49:26,330 --> 03:49:24,720

from the astronauts perspective Raja

5798

03:49:29,389 --> 03:49:26,340

you're sitting in there first of all

5799

03:49:31,010 --> 03:49:29,399

tell me about what kind of reacts yeah

5800

03:49:33,469 --> 03:49:31,020

so I think it's it's uh good and bad

5801

03:49:35,750 --> 03:49:33,479

right the the bad side is obviously you

5802

03:49:37,070 --> 03:49:35,760

know you're ready to go uh I've been

5803

03:49:38,630 --> 03:49:37,080

waiting for it but I think what's really

5804

03:49:41,330 --> 03:49:38,640

encouraging and what uh you know

5805

03:49:42,830 --> 03:49:41,340

especially were appreciative as the

5806

03:49:44,389 --> 03:49:42,840

astronauts is knowing that everyone's

5807

03:49:46,490 --> 03:49:44,399

got our back and that safety is the

5808

03:49:48,349 --> 03:49:46,500

Paramount thing so as much as everyone

5809

03:49:50,389 --> 03:49:48,359

wants to go the right thing to do is

5810

03:49:51,469 --> 03:49:50,399

obviously in this case the scrub uh and

5811

03:49:52,610 --> 03:49:51,479

so I think that's really easy to

5812

03:49:53,990 --> 03:49:52,620

remember when you're in the seat and

5813

03:49:55,490 --> 03:49:54,000

when you're dealing with you know as you

5814

03:49:57,050 --> 03:49:55,500

go through the process of de-arming the

5815

03:49:58,610 --> 03:49:57,060

launch Escape system all those steps

5816

03:50:00,650 --> 03:49:58,620

just remind you like oh yeah this the

5817

03:50:02,150 --> 03:50:00,660

safety's got to be first I think it's

5818

03:50:04,190 --> 03:50:02,160

also kind of a good deal basically it's

5819

03:50:05,510 --> 03:50:04,200

a free run-through of all the events in

5820

03:50:07,370 --> 03:50:05,520

the timeline so now they've seen it all

5821

03:50:09,050 --> 03:50:07,380

once they have the wet dress but now

5822

03:50:10,729 --> 03:50:09,060

you've taken it all the way down to near

5823

03:50:12,650 --> 03:50:10,739

launch and you get another run of that

5824

03:50:13,729 --> 03:50:12,660

another run through the procedures we

5825

03:50:14,809 --> 03:50:13,739

talked earlier in the night about sleep

5826

03:50:16,729 --> 03:50:14,819

shifting so they're already sleep

5827

03:50:18,769 --> 03:50:16,739

shifted uh they're you know that's why

5828

03:50:21,050 --> 03:50:18,779

we do it that way so that they're you

5829

03:50:23,510 --> 03:50:21,060

know you can continue uh and no earlier

5830

03:50:25,010 --> 03:50:23,520

than tomorrow another large opportunity

5831

03:50:26,269 --> 03:50:25,020

um so I think that's kind of what's

5832

03:50:27,889 --> 03:50:26,279

going into mind right now you heard

5833

03:50:29,630 --> 03:50:27,899

earlier the call up from the core to get

5834

03:50:31,250 --> 03:50:29,640

into 5.100 so that's the procedure

5835

03:50:33,349 --> 03:50:31,260

they're running now earlier in the night

5836

03:50:34,729 --> 03:50:33,359

they're using 4.100 is the procedure

5837

03:50:37,070 --> 03:50:34,739

name and that was launch prep and this

5838

03:50:38,330 --> 03:50:37,080

is the scrub prep and so as a rough rule

5839

03:50:40,190 --> 03:50:38,340

of thumb what they teach the crew is

5840

03:50:41,990 --> 03:50:40,200

about as long as you were fueling it'll

5841

03:50:43,429 --> 03:50:42,000

take that long to defuel so since we

5842

03:50:45,229 --> 03:50:43,439

were pretty deep into the count you

5843

03:50:47,150 --> 03:50:45,239

would expect to take about that amount

5844

03:50:48,650 --> 03:50:47,160

of time to un basically take all the

5845

03:50:51,769 --> 03:50:48,660

fuel out of the rocket so the big

5846

03:50:53,450 --> 03:50:51,779

picture is uh the crew is going to stay

5847

03:50:55,370 --> 03:50:53,460

there just like they were ready for

5848

03:50:57,830 --> 03:50:55,380

launch with the visors down completely

5849

03:50:59,510 --> 03:50:57,840

restrained uh because the rocket still

5850

03:51:01,490 --> 03:50:59,520

has prop on board and so the launch

5851
03:51:05,690 --> 03:51:01,500
Escape system is still armed so it is

5852
03:51:07,729 --> 03:51:05,700
still a volatile machine exactly so they

5853
03:51:10,130 --> 03:51:07,739
still yeah so we still have to treat it

5854
03:51:10,969 --> 03:51:10,140
as if it's ready to go as it is ready to

5855
03:51:14,150 --> 03:51:10,979
go

5856
03:51:16,910 --> 03:51:14,160
um and uh then once the prop is all off

5857
03:51:19,130 --> 03:51:16,920
then they can disarm the launches system

5858
03:51:20,690 --> 03:51:19,140
bring the crew access arm back out and

5859
03:51:22,550 --> 03:51:20,700
then egress the vehicle so essentially

5860
03:51:24,349 --> 03:51:22,560
what we saw earlier tonight just run

5861
03:51:25,969 --> 03:51:24,359
back in Reverse

5862
03:51:27,710 --> 03:51:25,979
um and then I think it's also a good

5863
03:51:29,510 --> 03:51:27,720

example you mentioned like inside T

5864

03:51:31,370 --> 03:51:29,520

minus 10 minutes is when we see star to

5865

03:51:33,050 --> 03:51:31,380

see some ground chatter and know there

5866

03:51:34,910 --> 03:51:33,060

was an issue you didn't hear that on the

5867

03:51:36,410 --> 03:51:34,920

loops to the the crew and one of the

5868

03:51:37,670 --> 03:51:36,420

reasons is you know we work a lot in

5869

03:51:39,050 --> 03:51:37,680

training to figure out what do you tell

5870

03:51:40,849 --> 03:51:39,060

the crew what don't you tell the crew

5871

03:51:43,010 --> 03:51:40,859

but generally speaking if there's

5872

03:51:44,809 --> 03:51:43,020

nothing the crew can do about something

5873

03:51:47,150 --> 03:51:44,819

or you know in this case there's an

5874

03:51:48,830 --> 03:51:47,160

action being worked um then maybe it

5875

03:51:50,750 --> 03:51:48,840

will maybe potentially only confuse the

5876

03:51:52,790 --> 03:51:50,760

situation to to give them extraneous

5877

03:51:54,290 --> 03:51:52,800

information in this case once they had

5878

03:51:56,450 --> 03:51:54,300

actionable info like Hey we're going to

5879

03:51:58,250 --> 03:51:56,460

scrub or we're looking at this that's

5880

03:52:00,889 --> 03:51:58,260

when they call it up versus just

5881

03:52:02,030 --> 03:52:00,899

peppering them with random random pieces

5882

03:52:02,990 --> 03:52:02,040

of information that may or may not be

5883

03:52:04,610 --> 03:52:03,000

relevant

5884

03:52:06,050 --> 03:52:04,620

um in today's case it turned out to be

5885

03:52:08,210 --> 03:52:06,060

relevant but they let them know that

5886

03:52:10,010 --> 03:52:08,220

once that that was the case but but yeah

5887

03:52:12,349 --> 03:52:10,020

I think from the crew standpoint this is

5888

03:52:13,670 --> 03:52:12,359

something we you know just about uh you

5889

03:52:15,710 --> 03:52:13,680

know honestly our launch was the first

5890

03:52:17,330 --> 03:52:15,720

time we ever had an event where nothing

5891

03:52:19,070 --> 03:52:17,340

went wrong because in all the Sims you

5892

03:52:20,630 --> 03:52:19,080

do something generally goes wrong that's

5893

03:52:22,250 --> 03:52:20,640

the whole point right so if this is

5894

03:52:23,750 --> 03:52:22,260

actually par for the course that you're

5895

03:52:25,130 --> 03:52:23,760

like oh yeah of course of course

5896

03:52:26,330 --> 03:52:25,140

something happened because that's what

5897

03:52:28,370 --> 03:52:26,340

always happens to the Sims that's how

5898

03:52:31,429 --> 03:52:28,380

you assume yeah that's how you said so I

5899

03:52:33,050 --> 03:52:31,439

think it's unexpected and with uh I mean

5900

03:52:35,450 --> 03:52:33,060

I think we relearned this every time we

5901
03:52:38,150 --> 03:52:35,460
launch a vehicle whether it's Artemis uh

5902
03:52:40,429 --> 03:52:38,160
you know SpaceX Dragon a Starliner we

5903
03:52:41,750 --> 03:52:40,439
always learn things and you can never

5904
03:52:43,849 --> 03:52:41,760
assume everything's gonna go perfectly

5905
03:52:45,830 --> 03:52:43,859
so I don't think it surprises anyone not

5906
03:52:50,769 --> 03:52:45,840
to say that they're not disappointed I

5907
03:52:55,490 --> 03:52:53,570
oh that's good right they made the safe

5908
03:52:57,650 --> 03:52:55,500
decision but yeah absolutely a little

5909
03:52:58,849 --> 03:52:57,660
disappointed but uh yeah you're still

5910
03:53:01,370 --> 03:52:58,859
gonna get to go to space we'll just

5911
03:53:04,309 --> 03:53:01,380
maybe do it a day or two later

5912
03:53:05,690 --> 03:53:04,319
and currently according to uh SpaceX

5913
03:53:07,550 --> 03:53:05,700

when they initially made the

5914

03:53:09,889 --> 03:53:07,560

announcement it takes about 50 minutes

5915

03:53:14,090 --> 03:53:09,899

to detank the rocket and currently we're

5916

03:53:15,769 --> 03:53:14,100

right around a half hour uh left in that

5917

03:53:18,710 --> 03:53:15,779

process so we've gone about 20 minutes

5918

03:53:20,809 --> 03:53:18,720

in detanking as you mentioned astronauts

5919

03:53:23,510 --> 03:53:20,819

have to stay strapped in exactly where

5920

03:53:26,090 --> 03:53:23,520

they are to wait it out as that

5921

03:53:28,610 --> 03:53:26,100

propellant is detanked and I found that

5922

03:53:32,090 --> 03:53:28,620

you can kind of get a visual marker by

5923

03:53:34,309 --> 03:53:32,100

what you see right here right the uh you

5924

03:53:36,830 --> 03:53:34,319

can see that's some venting venting of

5925

03:53:39,769 --> 03:53:36,840

the locks at the top but then also just

5926
03:53:41,929 --> 03:53:39,779
about as high as that con condensation

5927
03:53:44,269 --> 03:53:41,939
is coming off the rocket Basics with a

5928
03:53:46,670 --> 03:53:44,279
propellant offload update

5929
03:53:50,929 --> 03:53:46,680
I will get an update

5930
03:53:57,050 --> 03:53:54,469
our stage two Lux tank is offloaded uh

5931
03:53:59,269 --> 03:53:57,060
we're still tracking about another 25 to

5932
03:54:03,830 --> 03:53:59,279
30 minutes here last estimate may have

5933
03:54:03,840 --> 03:54:10,010
let's explain something

5934
03:54:13,550 --> 03:54:11,929
so about halfway done

5935
03:54:15,050 --> 03:54:13,560
about halfway and you can see yeah

5936
03:54:16,610 --> 03:54:15,060
you're almost about a halfway down

5937
03:54:17,929 --> 03:54:16,620
actually never noticed that before but

5938
03:54:20,870 --> 03:54:17,939

that's actually a really good really

5939

03:54:23,990 --> 03:54:20,880

good insight and so

5940

03:54:25,969 --> 03:54:24,000

and so now the astronauts are waiting

5941

03:54:28,370 --> 03:54:25,979

in the capsule

5942

03:54:30,650 --> 03:54:28,380

SpaceX is looking at

5943

03:54:32,510 --> 03:54:30,660

and we'll look at after this procedure

5944

03:54:34,090 --> 03:54:32,520

is is complete

5945

03:54:38,330 --> 03:54:34,100

um what's going on with the hardware

5946

03:54:40,429 --> 03:54:38,340

there is a launch opportunity tomorrow

5947

03:54:42,229 --> 03:54:40,439

and I want to emphasize this is an

5948

03:54:45,050 --> 03:54:42,239

opportunity

5949

03:54:47,990 --> 03:54:45,060

um if the team decides that they can

5950

03:54:52,429 --> 03:54:48,000

turn it around in 24 hours and that

5951
03:54:58,070 --> 03:54:52,439
would be with a t0 of 122 and 29 seconds

5952
03:55:05,150 --> 03:55:00,650
well this would be Tuesday February 28th

5953
03:55:08,929 --> 03:55:05,160
with a t 0 of 122 and 29 seconds am

5954
03:55:10,969 --> 03:55:08,939
there is a launch opportunity

5955
03:55:12,950 --> 03:55:10,979
if NASA and SpaceX decide to go forward

5956
03:55:16,610 --> 03:55:12,960
with that

5957
03:55:18,530 --> 03:55:16,620
our coverage on NASA TV would start at 9

5958
03:55:20,750 --> 03:55:18,540
45 pm

5959
03:55:23,269 --> 03:55:20,760
both on NASA TV and our streaming

5960
03:55:25,969 --> 03:55:23,279
platforms

5961
03:55:29,450 --> 03:55:25,979
also from launch to dock that Transit

5962
03:55:30,830 --> 03:55:29,460
would be about 33 and a half hours so if

5963
03:55:33,590 --> 03:55:30,840

they decide to launch on that day

5964

03:55:37,070 --> 03:55:33,600

docking would happen on March 1st at

5965

03:55:38,809 --> 03:55:37,080

1004 Eastern Time there'd be a

5966

03:55:41,090 --> 03:55:38,819

rendezvous docking and welcoming

5967

03:55:45,710 --> 03:55:41,100

ceremony coverage on NASA TV that would

5968

03:55:50,689 --> 03:55:48,110

and I say all that again

5969

03:55:52,370 --> 03:55:50,699

with the asterisk that that is a

5970

03:55:54,229 --> 03:55:52,380

decision that has yet to be made whether

5971

03:55:55,490 --> 03:55:54,239

or not they take the that launch

5972

03:55:57,050 --> 03:55:55,500

opportunity

5973

03:56:00,050 --> 03:55:57,060

there's going to be a

5974

03:56:02,090 --> 03:56:00,060

time to look at this situation right and

5975

03:56:04,070 --> 03:56:02,100

so like we heard that it was a situation

5976

03:56:05,870 --> 03:56:04,080

with the T tab which is again sort of

5977

03:56:07,250 --> 03:56:05,880

the if you weld the igniter for the

5978

03:56:08,929 --> 03:56:07,260

engines and making sure the fluid

5979

03:56:10,550 --> 03:56:08,939

there's enough fluid or sufficient fluid

5980

03:56:13,370 --> 03:56:10,560

so whatever that yeah whatever the

5981

03:56:14,750 --> 03:56:13,380

technical uh underlying of that problem

5982

03:56:16,010 --> 03:56:14,760

that let do today if that's something

5983

03:56:17,030 --> 03:56:16,020

that can be resolved and obviously

5984

03:56:19,309 --> 03:56:17,040

that's something the teams will be

5985

03:56:20,689 --> 03:56:19,319

diving into probably as soon as the prop

5986

03:56:21,830 --> 03:56:20,699

is off the rocket I'm sure they're going

5987

03:56:22,910 --> 03:56:21,840

to be crawling all over and that's

5988

03:56:24,530 --> 03:56:22,920

that's one of the other logistical

5989

03:56:26,809 --> 03:56:24,540

things that's happening here so there's

5990

03:56:28,610 --> 03:56:26,819

you know once they start fueling the

5991

03:56:30,830 --> 03:56:28,620

rocket as part of the countdown sequence

5992

03:56:32,689 --> 03:56:30,840

and the crew uh armed the launch Escape

5993

03:56:34,670 --> 03:56:32,699

system all the Personnel around they're

5994

03:56:36,769 --> 03:56:34,680

also cleared out and so right now there

5995

03:56:39,830 --> 03:56:36,779

is no one really close to the rocket so

5996

03:56:42,590 --> 03:56:39,840

once the fuel is off the rocket um and

5997

03:56:44,389 --> 03:56:42,600

then the crew dearms the Les then people

5998

03:56:46,670 --> 03:56:44,399

can approach again so it does take some

5999

03:56:48,229 --> 03:56:46,680

some time for the vehicles and people

6000

03:56:51,410 --> 03:56:48,239

and the closeout crew just like it did

6001
03:56:52,550 --> 03:56:51,420
to you know clear out the arm and and

6002
03:56:55,070 --> 03:56:52,560
prep it they'll have to do the same

6003
03:56:57,050 --> 03:56:55,080
thing to bring people back to the arm

6004
03:56:59,510 --> 03:56:57,060
um re-prepare it to connect to the the

6005
03:57:00,830 --> 03:56:59,520
capsule but again it's actually in the

6006
03:57:02,150 --> 03:57:00,840
long run kind of the good things when

6007
03:57:03,590 --> 03:57:02,160
they do try this the second time it

6008
03:57:05,389 --> 03:57:03,600
means it'll go all the more smoother but

6009
03:57:06,469 --> 03:57:05,399
still they'll have got another rep of

6010
03:57:07,729 --> 03:57:06,479
doing it

6011
03:57:10,130 --> 03:57:07,739
um you mentioned though the one thing

6012
03:57:11,570 --> 03:57:10,140
having a a longer time to run maybe the

6013
03:57:14,870 --> 03:57:11,580

33 hours actually that's kind of another

6014

03:57:16,429 --> 03:57:14,880

little uh maybe a positive Silver Lining

6015

03:57:17,929 --> 03:57:16,439

out of this because I know for us for

6016

03:57:19,309 --> 03:57:17,939

crew three we really enjoyed our time in

6017

03:57:21,710 --> 03:57:19,319

the capsule you spend so much time

6018

03:57:24,110 --> 03:57:21,720

training in the Hawthorne training in

6019

03:57:26,269 --> 03:57:24,120

Houston and there's something special I

6020

03:57:27,950 --> 03:57:26,279

think about being in a small vehicle yes

6021

03:57:30,349 --> 03:57:27,960

it's cramped so I wouldn't necessarily

6022

03:57:33,229 --> 03:57:30,359

want to spend two weeks in there but but

6023

03:57:35,330 --> 03:57:33,239

uh more than a few hours is just kind of

6024

03:57:37,130 --> 03:57:35,340

fun because catch your breath exactly

6025

03:57:39,110 --> 03:57:37,140

yes because once you hit the space

6026
03:57:40,969 --> 03:57:39,120
station you are on a tight timeline

6027
03:57:42,469 --> 03:57:40,979
everything you know every five minutes

6028
03:57:43,969 --> 03:57:42,479
is accounted for and it should be

6029
03:57:45,830 --> 03:57:43,979
because you know it's expensive to get

6030
03:57:46,670 --> 03:57:45,840
there and we're doing a whole lot of

6031
03:57:48,229 --> 03:57:46,680
science

6032
03:57:49,370 --> 03:57:48,239
um the nice thing in the in the vehicle

6033
03:57:50,630 --> 03:57:49,380
when you're just rendezvousing or

6034
03:57:52,550 --> 03:57:50,640
waiting things for those we talked about

6035
03:57:54,110 --> 03:57:52,560
phasing the orbits you get time to just

6036
03:57:56,150 --> 03:57:54,120
look out the window and hang out with

6037
03:57:58,330 --> 03:57:56,160
their buds it's a kind of like a you

6038
03:58:01,130 --> 03:57:58,340

know a glamping trip

6039

03:58:02,750 --> 03:58:01,140

because you're you know sort of roughing

6040

03:58:04,550 --> 03:58:02,760

it but uh obviously it's some pretty

6041

03:58:06,050 --> 03:58:04,560

nice digs but you can get out of your

6042

03:58:08,450 --> 03:58:06,060

seat right exactly and that's that's so

6043

03:58:10,849 --> 03:58:08,460

it's it's a great time so once they get

6044

03:58:12,110 --> 03:58:10,859

uh in orbit uh and everything's checked

6045

03:58:14,210 --> 03:58:12,120

out they do get out of their seats they

6046

03:58:15,469 --> 03:58:14,220

can change out of their suits and I

6047

03:58:17,210 --> 03:58:15,479

thought that was some of the the best

6048

03:58:19,670 --> 03:58:17,220

time both on the way up and the way down

6049

03:58:22,130 --> 03:58:19,680

just spending time in the dragon and in

6050

03:58:24,229 --> 03:58:22,140

the thing that you've trained in so long

6051
03:58:26,150 --> 03:58:24,239
um and you can really hear it it talks

6052
03:58:27,830 --> 03:58:26,160
to you you can hear when you do burns

6053
03:58:30,469 --> 03:58:27,840
you'll hear the prop flowing you can see

6054
03:58:32,870 --> 03:58:30,479
the thrusters out the window so it's

6055
03:58:34,610 --> 03:58:32,880
it's a nice time and it gives you some

6056
03:58:36,950 --> 03:58:34,620
time to adapt to space so for especially

6057
03:58:38,929 --> 03:58:36,960
in our our crew just like their crew

6058
03:58:41,330 --> 03:58:38,939
having three rookies on board

6059
03:58:42,889 --> 03:58:41,340
um getting some time to adapt to zero

6060
03:58:45,530 --> 03:58:42,899
gravity getting used to moving around

6061
03:58:47,090 --> 03:58:45,540
how you restrain yourself the more time

6062
03:58:48,830 --> 03:58:47,100
you can get in the dragon the the

6063
03:58:50,450 --> 03:58:48,840

quicker you can adapt and get to work on

6064

03:58:52,969 --> 03:58:50,460

the on the space station so I think it's

6065

03:58:55,429 --> 03:58:52,979

all time well spent when you have a few

6066

03:58:57,950 --> 03:58:55,439

extra hours in the Dragon

6067

03:59:00,830 --> 03:58:57,960

Raj has talked a lot about the crew and

6068

03:59:04,250 --> 03:59:00,840

what that means for them

6069

03:59:06,349 --> 03:59:04,260

um going potentially going forward

6070

03:59:07,790 --> 03:59:06,359

um I want to go back to the t-tab we've

6071

03:59:09,769 --> 03:59:07,800

we've mentioned this and heard it a

6072

03:59:12,050 --> 03:59:09,779

couple of times I think one of our

6073

03:59:14,510 --> 03:59:12,060

commentators actually spelled it out if

6074

03:59:16,849 --> 03:59:14,520

you look at the picture on the left the

6075

03:59:19,010 --> 03:59:16,859

SpaceX rocket on the pad

6076

03:59:22,550 --> 03:59:19,020

now for those who are familiar with

6077

03:59:26,630 --> 03:59:22,560

watching launches at night that t-tab

6078

03:59:29,210 --> 03:59:26,640

it's the it's the ignition fluid you can

6079

03:59:31,550 --> 03:59:29,220

actually see it light because it flashes

6080

03:59:33,769 --> 03:59:31,560

green all around the bottom of the

6081

03:59:36,650 --> 03:59:33,779

rocket you can see a green flash and

6082

03:59:39,530 --> 03:59:36,660

that's what it does it lights those nine

6083

03:59:42,290 --> 03:59:39,540

uh Merlin engines and then you have a

6084

03:59:45,110 --> 03:59:42,300

liftoff and they call it t-tab because

6085

03:59:48,950 --> 03:59:45,120

that's the acronym for tri-ethyl

6086

03:59:51,889 --> 03:59:48,960

aluminum triethyl Boron and when they

6087

03:59:54,950 --> 03:59:51,899

come together they create that yeah that

6088

03:59:57,710 --> 03:59:54,960

ignition that's necessary to uh to light

6089

04:00:02,389 --> 03:59:59,689

and so that's something that SpaceX is

6090

04:00:04,969 --> 04:00:02,399

going to look at we also heard an update

6091

04:00:07,790 --> 04:00:04,979

from SpaceX on the loops about the the

6092

04:00:11,630 --> 04:00:07,800

timing of the d-tank which we are

6093

04:00:15,229 --> 04:00:11,640

currently just about 25 27 minutes into

6094

04:00:20,389 --> 04:00:18,229

as a astronaut Raja Chari was saying

6095

04:00:22,910 --> 04:00:20,399

this is uh a period of time where the

6096

04:00:25,969 --> 04:00:22,920

astronauts just have to hold still

6097

04:00:28,790 --> 04:00:25,979

while the propellant is taken out of the

6098

04:00:32,929 --> 04:00:30,410

yep and they're probably also going

6099

04:00:34,849 --> 04:00:32,939

through uh so we're always trying to

6100

04:00:36,110 --> 04:00:34,859

think what what what if what if what if

6101
04:00:37,309 --> 04:00:36,120
that's always what's going through our

6102
04:00:40,370 --> 04:00:37,319
mind so right now they're probably

6103
04:00:42,650 --> 04:00:40,380
thinking through uh well the the Les is

6104
04:00:44,269 --> 04:00:42,660
still hot so that was you know but we're

6105
04:00:45,110 --> 04:00:44,279
not planning on going so if there was a

6106
04:00:46,670 --> 04:00:45,120
problem we'd probably hit the emergency

6107
04:00:49,870 --> 04:00:46,680
ground address button wait for the crew

6108
04:00:52,550 --> 04:00:49,880
arm to swing out at that faster rate

6109
04:00:53,689 --> 04:00:52,560
yeah so yeah but uh yeah but we would

6110
04:00:55,070 --> 04:00:53,699
still want to if you had to get out

6111
04:00:56,990 --> 04:00:55,080
quickly do the emerging ground address

6112
04:00:59,090 --> 04:00:57,000
make sure the Les is disarmed before you

6113
04:01:01,189 --> 04:00:59,100

get out of your seats uh and then and

6114

04:01:03,410 --> 04:01:01,199

then egress if you had to uh and so

6115

04:01:06,229 --> 04:01:03,420

there's there's a few different ways a

6116

04:01:07,550 --> 04:01:06,239

few different types of egress in if

6117

04:01:08,929 --> 04:01:07,560

something else went wrong and so

6118

04:01:11,450 --> 04:01:08,939

whenever prop is moving whether it's

6119

04:01:13,610 --> 04:01:11,460

getting unloaded or offloaded you're

6120

04:01:16,309 --> 04:01:13,620

always ready for that

6121

04:01:18,110 --> 04:01:16,319

um so that Les stays armed through this

6122

04:01:20,570 --> 04:01:18,120

book actually stays armed as long as

6123

04:01:22,610 --> 04:01:20,580

there's propellant on the uh the rocket

6124

04:01:24,590 --> 04:01:22,620

that stays armed because if there was

6125

04:01:27,110 --> 04:01:24,600

any kind of contingency you'd want to

6126

04:01:28,969 --> 04:01:27,120

use that to get off quickly

6127

04:01:30,410 --> 04:01:28,979

the other thing that the Hat will have

6128

04:01:32,630 --> 04:01:30,420

to happen eventually is they'll have to

6129

04:01:34,189 --> 04:01:32,640

rotate the seats back so just like we

6130

04:01:37,490 --> 04:01:34,199

saw this the seats rotate to the launch

6131

04:01:39,469 --> 04:01:37,500

position uh once the Les is disarmed and

6132

04:01:40,990 --> 04:01:39,479

they'll rotate back to the you know the

6133

04:01:43,490 --> 04:01:41,000

loading and unloading configuration

6134

04:01:45,710 --> 04:01:43,500

there's also uh we didn't talk about it

6135

04:01:47,210 --> 04:01:45,720

uh too much but uh it's not just people

6136

04:01:49,490 --> 04:01:47,220

that the dragon takes up there it's

6137

04:01:51,229 --> 04:01:49,500

cargo and so you can't really see in

6138

04:01:52,189 --> 04:01:51,239

this view we saw for earlier in the

6139

04:01:53,809 --> 04:01:52,199

night when they were first loading up

6140

04:01:55,969 --> 04:01:53,819

you got a shot underneath their legs

6141

04:01:57,710 --> 04:01:55,979

yeah exactly and so you can see the

6142

04:01:59,630 --> 04:01:57,720

cargo that's under there and that the

6143

04:02:01,550 --> 04:01:59,640

stuff on the left under Andre's seat is

6144

04:02:04,010 --> 04:02:01,560

mostly uh

6145

04:02:05,570 --> 04:02:04,020

crew related in terms of like Survival

6146

04:02:07,550 --> 04:02:05,580

equipment that you see that red you can

6147

04:02:10,130 --> 04:02:07,560

kind of just see the red bag that's the

6148

04:02:11,570 --> 04:02:10,140

like the life raft and so we talked you

6149

04:02:13,849 --> 04:02:11,580

saw that video earlier tonight we talked

6150

04:02:15,889 --> 04:02:13,859

about the Orion the porch and you know

6151
04:02:18,290 --> 04:02:15,899
the Orion water training so a lot of the

6152
04:02:20,750 --> 04:02:18,300
water recovery equipment is in those

6153
04:02:22,490 --> 04:02:20,760
those pallets underneath Andre's seat if

6154
04:02:25,250 --> 04:02:22,500
if the crew had to do something on their

6155
04:02:27,290 --> 04:02:25,260
own uh for some kind of uh Landing in an

6156
04:02:29,689 --> 04:02:27,300
unplanned area and then this stuff

6157
04:02:30,950 --> 04:02:29,699
that's kind of under Woody and Steve's

6158
04:02:33,229 --> 04:02:30,960
seats you can see they look like more

6159
04:02:35,389 --> 04:02:33,239
like metal lockers and so those uh

6160
04:02:37,490 --> 04:02:35,399
positions actually have power so under

6161
04:02:40,189 --> 04:02:37,500
Andre and Sultan seats there's no power

6162
04:02:42,710 --> 04:02:40,199
to those locations those cargo locations

6163
04:02:43,910 --> 04:02:42,720

but the ones under Woody and Steve they

6164

04:02:46,010 --> 04:02:43,920

actually have power which means you can

6165

04:02:47,689 --> 04:02:46,020

cool or heat things but generally when

6166

04:02:49,250 --> 04:02:47,699

you're talking about science going up

6167

04:02:51,229 --> 04:02:49,260

and back from the station oftentimes you

6168

04:02:53,809 --> 04:02:51,239

need to keep stuff Frozen or temperature

6169

04:02:55,910 --> 04:02:53,819

controlled and so those usually the

6170

04:02:57,889 --> 04:02:55,920

probably the more valuable I'm sure it's

6171

04:03:01,309 --> 04:02:57,899

valuable but like the the more time

6172

04:03:03,410 --> 04:03:01,319

critical stuff is in those and so more

6173

04:03:05,150 --> 04:03:03,420

than likely when they offload the crew

6174

04:03:06,590 --> 04:03:05,160

will probably won't be on camera anymore

6175

04:03:08,389 --> 04:03:06,600

but they'll probably also go in and

6176
04:03:10,070 --> 04:03:08,399
either you know take some of that stuff

6177
04:03:12,170 --> 04:03:10,080
out if there's anything that has to be

6178
04:03:14,929 --> 04:03:12,180
chilled or temperature control to make

6179
04:03:16,429 --> 04:03:14,939
sure it's it's still in a good State and

6180
04:03:17,990 --> 04:03:16,439
then when you dock with the station

6181
04:03:19,969 --> 04:03:18,000
those are some of the first things that

6182
04:03:21,950 --> 04:03:19,979
come off to make sure that they get into

6183
04:03:26,090 --> 04:03:21,960
the right SpaceX with propellant offload

6184
04:03:26,100 --> 04:03:29,510
there's a stranger

6185
04:03:36,910 --> 04:03:31,189
offloads are proceeding nominally

6186
04:03:42,530 --> 04:03:40,490
thank you Captain Stephen Boeing

6187
04:03:44,450 --> 04:03:42,540
communicating with the launch Team

6188
04:03:45,889 --> 04:03:44,460

exactly happened about another 15 to 20

6189

04:03:48,469 --> 04:03:45,899

minutes and sounds like things are going

6190

04:03:49,790 --> 04:03:48,479

nominally but yeah so the uh those

6191

04:03:52,429 --> 04:03:49,800

pallets underneath there like I said

6192

04:03:53,750 --> 04:03:52,439

they may I'm not exactly sure what's in

6193

04:03:55,610 --> 04:03:53,760

those particular ones but it would not

6194

04:03:57,769 --> 04:03:55,620

be uncommon to to pull some of that

6195

04:04:01,130 --> 04:03:57,779

stuff they caught like late load cargo

6196

04:04:02,389 --> 04:04:01,140

that uh you know for is very sensitive

6197

04:04:03,889 --> 04:04:02,399

to temperature or maybe some power

6198

04:04:05,630 --> 04:04:03,899

considerations that you would pull off

6199

04:04:07,309 --> 04:04:05,640

and and store and then like I said when

6200

04:04:08,929 --> 04:04:07,319

you dock those are the first things they

6201

04:04:10,550 --> 04:04:08,939

come out but again if the kind of

6202

04:04:12,769 --> 04:04:10,560

takeaways it's not just people but a

6203

04:04:15,170 --> 04:04:12,779

whole bunch of stuff that goes to the

6204

04:04:16,490 --> 04:04:15,180

space station by way of the dragon and

6205

04:04:17,809 --> 04:04:16,500

then you can also put things in the

6206

04:04:20,150 --> 04:04:17,819

trunk as well

6207

04:04:21,710 --> 04:04:20,160

um on like the cargo dragons we used the

6208

04:04:23,450 --> 04:04:21,720

we saw it earlier tonight the solar

6209

04:04:25,189 --> 04:04:23,460

panels but you can load things into the

6210

04:04:27,650 --> 04:04:25,199

trunk and here's a great shot of it so

6211

04:04:29,030 --> 04:04:27,660

that bottom section that looks uh with

6212

04:04:31,969 --> 04:04:29,040

the solar panels and the black and the

6213

04:04:34,189 --> 04:04:31,979

white inside there you can actually put

6214

04:04:36,950 --> 04:04:34,199

things inside there as well uh that

6215

04:04:38,929 --> 04:04:36,960

obviously it doesn't have to be in a

6216

04:04:42,290 --> 04:04:38,939

nice atmosphere or uh so it's the things

6217

04:04:46,550 --> 04:04:44,450

all right good stuff NASA astronaut

6218

04:04:49,010 --> 04:04:46,560

ranja Charlie keeping us

6219

04:04:50,330 --> 04:04:49,020

informed and updated on

6220

04:04:54,170 --> 04:04:50,340

what the astronauts are going through

6221

04:04:56,630 --> 04:04:54,180

and what it means for the cargo on board

6222

04:04:58,610 --> 04:04:56,640

I want to now take a moment to go back

6223

04:05:00,889 --> 04:04:58,620

to SpaceX in Hawthorne California and

6224

04:05:06,110 --> 04:05:00,899

get caught up with our NASA commentator

6225

04:05:11,450 --> 04:05:08,150

hey thank you Daryl yeah we're following

6226
04:05:13,910 --> 04:05:11,460
along here in Mission Control Hawthorne

6227
04:05:16,070 --> 04:05:13,920
as you mentioned that status update on

6228
04:05:18,710 --> 04:05:16,080
the fuel offloading we're looking at

6229
04:05:20,750 --> 04:05:18,720
about 15 20 minutes until that is

6230
04:05:23,510 --> 04:05:20,760
completed in the meantime you see the

6231
04:05:27,170 --> 04:05:23,520
crew six astronauts on board inside crew

6232
04:05:30,590 --> 04:05:27,180
Dragon Endeavor uh passively waiting

6233
04:05:32,570 --> 04:05:30,600
they'll be going through uh a series of

6234
04:05:34,610 --> 04:05:32,580
more steps once fuel offloading is

6235
04:05:36,889 --> 04:05:34,620
complete in the meantime

6236
04:05:39,469 --> 04:05:36,899
um the uh

6237
04:05:42,650 --> 04:05:39,479
the dragon is gonna or the Falcon 9 is

6238
04:05:44,450 --> 04:05:42,660

going to continue to uh uh get rid of

6239

04:05:46,309 --> 04:05:44,460

the fuel and the oxidizer that's inside

6240

04:05:48,349 --> 04:05:46,319

the Falcon 9.

6241

04:05:51,170 --> 04:05:48,359

um the seats themselves will rotate from

6242

04:05:54,769 --> 04:05:51,180

the launch position down uh so that the

6243

04:05:56,090 --> 04:05:54,779

uh closeout team can come back and get

6244

04:05:58,670 --> 04:05:56,100

them out of their seats they'll open up

6245

04:06:01,370 --> 04:05:58,680

that side hatch and uh get the crew back

6246

04:06:04,010 --> 04:06:01,380

walk down the crew access arm down the

6247

04:06:05,330 --> 04:06:04,020

elevators and go back to crew quarters

6248

04:06:07,130 --> 04:06:05,340

to await for the next launch attempt

6249

04:06:09,889 --> 04:06:07,140

right now uh the next launch attempt

6250

04:06:12,830 --> 04:06:09,899

we're looking at is about 24 hours from

6251
04:06:15,170 --> 04:06:12,840
now but right now if you're if you're

6252
04:06:19,010 --> 04:06:15,180
just tuning in uh and looking for

6253
04:06:21,349 --> 04:06:19,020
updates on the launch of the crew dragon

6254
04:06:24,229 --> 04:06:21,359
to the International Space Station we

6255
04:06:27,530 --> 04:06:24,239
are in a launch scrub situation so at

6256
04:06:29,389 --> 04:06:27,540
about two minutes 30 seconds the team's

6257
04:06:32,150 --> 04:06:29,399
ground teams declared a scrub due to

6258
04:06:34,370 --> 04:06:32,160
tracking what's called a t-tep this is

6259
04:06:36,590 --> 04:06:34,380
the ignition fluid that allows the

6260
04:06:39,650 --> 04:06:36,600
engines on the first and second stage to

6261
04:06:41,809 --> 04:06:39,660
ignore night and Propel the Falcon 9 and

6262
04:06:44,990 --> 04:06:41,819
the crew into orbit over the nine minute

6263
04:06:48,170 --> 04:06:45,000

Ascent usually if you follow our our

6264

04:06:51,710 --> 04:06:48,180

coverage t-tep when the second stage

6265

04:06:54,530 --> 04:06:51,720

ignites at about three minutes uh into

6266

04:06:56,689 --> 04:06:54,540

the Flight of the Falcon 9. there's this

6267

04:06:58,910 --> 04:06:56,699

green flash that you see from the mvac

6268

04:07:01,070 --> 04:06:58,920

engine at the tip and then the titanium

6269

04:07:04,790 --> 04:07:01,080

stabilization ring at the end of the

6270

04:07:07,070 --> 04:07:04,800

expansion nozzle uh goes away after that

6271

04:07:10,550 --> 04:07:07,080

t-tab ignition and the and the second

6272

04:07:13,189 --> 04:07:10,560

stage ignites that's that green flash is

6273

04:07:14,809 --> 04:07:13,199

the t-tep ignition fluid and you can

6274

04:07:16,969 --> 04:07:14,819

actually see it in our launch coverage

6275

04:07:19,910 --> 04:07:16,979

but it was that that the ground teams

6276
04:07:22,309 --> 04:07:19,920
were tracking and so they identified a

6277
04:07:25,429 --> 04:07:22,319
ground issue and are now going through

6278
04:07:28,550 --> 04:07:25,439
the stages of a nominal uh a nominal

6279
04:07:30,170 --> 04:07:28,560
scrub situation just regular uh tank

6280
04:07:32,689 --> 04:07:30,180
offloading we were originally looking at

6281
04:07:35,929 --> 04:07:32,699
about 50 minutes of tank offloading now

6282
04:07:38,389 --> 04:07:35,939
we're about 15 20 minutes from the

6283
04:07:40,070 --> 04:07:38,399
latest report of the ground teams in the

6284
04:07:43,070 --> 04:07:40,080
meantime the crew six astronauts are

6285
04:07:46,790 --> 04:07:43,080
aboard passively waiting and tracking

6286
04:07:48,469 --> 04:07:46,800
the uh tracking the fuel offload

6287
04:07:50,929 --> 04:07:48,479
and why don't we check in with Kate for

6288
04:07:54,170 --> 04:07:50,939

for more on the scrub situation

6289

04:07:57,610 --> 04:07:54,180

yeah thanks Gary I am following along

6290

04:08:00,349 --> 04:07:57,620

with the SpaceX ground teams procedures

6291

04:08:03,290 --> 04:08:00,359

As We are continuing through this

6292

04:08:04,910 --> 04:08:03,300

nominal scrub as we heard called out a

6293

04:08:07,790 --> 04:08:04,920

couple minutes ago

6294

04:08:11,510 --> 04:08:07,800

um we have about 15 to 20 minutes left

6295

04:08:14,450 --> 04:08:11,520

of the offload so that should wrap up

6296

04:08:17,809 --> 04:08:14,460

between 12 excuse me around between 2 30

6297

04:08:19,189 --> 04:08:17,819

and 4 30 a.m eastern time so we're

6298

04:08:22,130 --> 04:08:19,199

coming up to that soon everything

6299

04:08:24,710 --> 04:08:22,140

progressing nominally looking at the

6300

04:08:27,710 --> 04:08:24,720

current levels I'm expecting a call out

6301
04:08:30,530 --> 04:08:27,720
to occur any minute now indicating that

6302
04:08:35,090 --> 04:08:30,540
all rp1 has been detanked from the

6303
04:08:36,590 --> 04:08:35,100
second stage so liquid oxygen de-tanking

6304
04:08:39,110 --> 04:08:36,600
has already completed from the second

6305
04:08:41,990 --> 04:08:39,120
stage so I'm expecting that call out to

6306
04:08:45,050 --> 04:08:42,000
come any second now indicating that rp1

6307
04:08:47,269 --> 04:08:45,060
has been completely detanked as for the

6308
04:08:49,189 --> 04:08:47,279
first stage also really low levels there

6309
04:08:52,929 --> 04:08:49,199
I would say less than five percent

6310
04:08:56,750 --> 04:08:52,939
remaining locks on the first stage to go

6311
04:08:59,090 --> 04:08:56,760
and then probably about 10 fuel left to

6312
04:09:01,490 --> 04:08:59,100
go uh there on the first stage so we're

6313
04:09:03,830 --> 04:09:01,500

nearly there but we will hear those

6314

04:09:06,050 --> 04:09:03,840

progress call outs on the loops

6315

04:09:07,929 --> 04:09:06,060

informing the crew as you can see there

6316

04:09:10,790 --> 04:09:07,939

on the right hand side of your screen

6317

04:09:14,210 --> 04:09:10,800

they remain comfortable in their seats

6318

04:09:16,550 --> 04:09:14,220

visors down seats rotated back the

6319

04:09:19,130 --> 04:09:16,560

launch Escape system is still armed at

6320

04:09:20,630 --> 04:09:19,140

this point although from that view of

6321

04:09:22,910 --> 04:09:20,640

the pad on the left hand side of your

6322

04:09:26,389 --> 04:09:22,920

screen it might kind of look like the

6323

04:09:28,550 --> 04:09:26,399

crew access arm is reaching toward the

6324

04:09:32,389 --> 04:09:28,560

capsule it's not we have not moved that

6325

04:09:35,750 --> 04:09:32,399

yet into the service position it and we

6326

04:09:37,250 --> 04:09:35,760

won't do that for a little bit yet but

6327

04:09:39,769 --> 04:09:37,260

we still have a number of things that

6328

04:09:42,349 --> 04:09:39,779

we're going going to go through

6329

04:09:45,469 --> 04:09:42,359

in this nominal offload procedure as I

6330

04:09:47,330 --> 04:09:45,479

mentioned before the crew had a dry

6331

04:09:50,150 --> 04:09:47,340

dress rehearsal on Thursday night

6332

04:09:51,710 --> 04:09:50,160

meaning no propellant involved

6333

04:09:54,469 --> 04:09:51,720

um so that what that's what makes it a

6334

04:09:56,990 --> 04:09:54,479

dry dress but they have gone through

6335

04:10:00,769 --> 04:09:57,000

this very similar procedure in terms of

6336

04:10:03,050 --> 04:10:00,779

the closeout team going back up into the

6337

04:10:05,150 --> 04:10:03,060

tower back down the crew access arm and

6338

04:10:07,969 --> 04:10:05,160

helping the crew get out of the capsule

6339

04:10:10,070 --> 04:10:07,979

including reopening that side hatch so

6340

04:10:11,689 --> 04:10:10,080

the astronauts will egress from the

6341

04:10:15,290 --> 04:10:11,699

capsule the exact same way that they

6342

04:10:17,330 --> 04:10:15,300

Ingress Just In Reverse so pretty simple

6343

04:10:20,450 --> 04:10:17,340

from that standpoint but there are also

6344

04:10:22,849 --> 04:10:20,460

other things that we'll have to do inclu

6345

04:10:25,309 --> 04:10:22,859

in addition to that that fuel detanking

6346

04:10:28,309 --> 04:10:25,319

or offloading and the disarming of that

6347

04:10:30,710 --> 04:10:28,319

launch Escape system we will also check

6348

04:10:32,530 --> 04:10:30,720

with the hyper Gull sensors that those

6349

04:10:34,870 --> 04:10:32,540

hypergolic fluids

6350

04:10:38,990 --> 04:10:34,880

monomethyl hydrazine and nitrogen

6351
04:10:42,110 --> 04:10:39,000
tetroxide that mmh and nto those are the

6352
04:10:45,170 --> 04:10:42,120
fuels that are used to power Dragon when

6353
04:10:47,630 --> 04:10:45,180
it's in orbit and they are toxic to

6354
04:10:49,010 --> 04:10:47,640
humans to breathe so we will engage

6355
04:10:51,590 --> 04:10:49,020
Those sensors and make sure that there's

6356
04:10:54,889 --> 04:10:51,600
a zero you know that there's no presence

6357
04:10:57,349 --> 04:10:54,899
of those propellants prior to allowing

6358
04:10:59,809 --> 04:10:57,359
the closeout team return to the white

6359
04:11:02,269 --> 04:10:59,819
room we'll also make sure that the

6360
04:11:06,050 --> 04:11:02,279
closeout crew themselves are prepared

6361
04:11:07,370 --> 04:11:06,060
and ready to re-enter the BDA or glass

6362
04:11:09,830 --> 04:11:07,380
danger area

6363
04:11:13,010 --> 04:11:09,840

so it's basically everything that they

6364

04:11:14,809 --> 04:11:13,020

did earlier today but in reverse and

6365

04:11:17,389 --> 04:11:14,819

then another thing that we will also do

6366

04:11:19,370 --> 04:11:17,399

is we will release the range assets so

6367

04:11:21,889 --> 04:11:19,380

of course all of that

6368

04:11:24,830 --> 04:11:21,899

ground example that sea and airspace

6369

04:11:27,110 --> 04:11:24,840

that we had closed off in preparation

6370

04:11:30,110 --> 04:11:27,120

for launch after that launch Escape

6371

04:11:32,630 --> 04:11:30,120

system is disabled we'll be able to

6372

04:11:34,429 --> 04:11:32,640

basically release or free up all of

6373

04:11:37,429 --> 04:11:34,439

those range assets that are still

6374

04:11:40,610 --> 04:11:37,439

currently locked down just in case a

6375

04:11:42,170 --> 04:11:40,620

launch abort excuse me a dragon abort a

6376

04:11:44,090 --> 04:11:42,180

pad abort in this case would be

6377

04:11:45,830 --> 04:11:44,100

triggered but as we mentioned before

6378

04:11:48,410 --> 04:11:45,840

everything continues to progress

6379

04:11:55,670 --> 04:11:48,420

nominally with no issues that's Basics

6380

04:12:01,370 --> 04:11:58,729

three or six things

6381

04:12:04,070 --> 04:12:01,380

at this time we have rp1 unlocks off of

6382

04:12:05,809 --> 04:12:04,080

stage two expecting just another five

6383

04:12:08,990 --> 04:12:05,819

minutes or so here until we are fully

6384

04:12:09,000 --> 04:12:17,030

36 dragon's office thank you

6385

04:12:23,870 --> 04:12:20,389

so that was SpaceX core Arthur barriolt

6386

04:12:25,849 --> 04:12:23,880

just informing the crew that there's

6387

04:12:28,189 --> 04:12:25,859

about five minutes remaining as I

6388

04:12:30,490 --> 04:12:28,199

mentioned before at this point in time

6389

04:12:33,650 --> 04:12:30,500

the second stage is now completely

6390

04:12:36,290 --> 04:12:33,660

mostly empty completely empty of of its

6391

04:12:39,290 --> 04:12:36,300

propellants the locks tank on the first

6392

04:12:41,809 --> 04:12:39,300

stage is nearly empty and the fuel tank

6393

04:12:45,410 --> 04:12:41,819

on the first stage has maybe about five

6394

04:12:47,750 --> 04:12:45,420

percent remaining uh to be pulled out so

6395

04:12:48,889 --> 04:12:47,760

everything continuing normally with this

6396

04:12:51,650 --> 04:12:48,899

offload

6397

04:12:53,870 --> 04:12:51,660

um we heard their Commander Steve Bowen

6398

04:12:56,150 --> 04:12:53,880

as I mentioned earlier

6399

04:12:59,750 --> 04:12:56,160

um it sounds he sounds pretty relaxed

6400

04:13:02,929 --> 04:12:59,760

and cool as an ice cube here and for

6401
04:13:06,290 --> 04:13:02,939
good reason the astronauts train for

6402
04:13:07,969 --> 04:13:06,300
every possible scenario this included as

6403
04:13:09,790 --> 04:13:07,979
we've mentioned several times before we

6404
04:13:13,189 --> 04:13:09,800
have procedures for everything

6405
04:13:16,790 --> 04:13:13,199
I am following along with this scrub

6406
04:13:20,150 --> 04:13:16,800
procedure and everything continues to to

6407
04:13:22,990 --> 04:13:20,160
go so as planned which is kind of funny

6408
04:13:26,269 --> 04:13:23,000
to say for an event that we obviously

6409
04:13:30,050 --> 04:13:26,279
didn't want to happen tonight but

6410
04:13:32,330 --> 04:13:30,060
um as uh John endsbrucker reminded me a

6411
04:13:35,929 --> 04:13:32,340
little bit ago the

6412
04:13:37,370 --> 04:13:35,939
uh the Mercury flight director said back

6413
04:13:39,830 --> 04:13:37,380

in the early days of the Space Program

6414

04:13:42,229 --> 04:13:39,840

it's better to be on the ground wishing

6415

04:13:44,570 --> 04:13:42,239

you were flying than to be flying

6416

04:13:47,269 --> 04:13:44,580

wishing you were on the ground so

6417

04:13:50,150 --> 04:13:47,279

um this is a good example of

6418

04:13:52,670 --> 04:13:50,160

um the system doing exactly what it was

6419

04:13:56,689 --> 04:13:52,680

supposed to do in the case of off

6420

04:13:59,030 --> 04:13:56,699

nominal t-tep readings there was a scrub

6421

04:14:03,050 --> 04:13:59,040

called at about two minutes and 30

6422

04:14:05,450 --> 04:14:03,060

seconds prior to liftoff and uh that was

6423

04:14:07,130 --> 04:14:05,460

an issue that the the the crew had and

6424

04:14:09,290 --> 04:14:07,140

that excuse me that the ground teams had

6425

04:14:11,269 --> 04:14:09,300

informed the crew of around T-minus five

6426
04:14:12,769 --> 04:14:11,279
minutes had indicated that they would

6427
04:14:14,689 --> 04:14:12,779
need a couple more minutes to

6428
04:14:17,570 --> 04:14:14,699
troubleshoot the problem and ultimately

6429
04:14:20,030 --> 04:14:17,580
called that scrub at T minus two minutes

6430
04:14:22,689 --> 04:14:20,040
and 30 seconds so at this point in time

6431
04:14:24,830 --> 04:14:22,699
the crew remains in their chairs

6432
04:14:26,689 --> 04:14:24,840
unfortunately not a whole lot for them

6433
04:14:29,030 --> 04:14:26,699
to do other than Mont continue to

6434
04:14:31,910 --> 04:14:29,040
monitor uh using their crew displays

6435
04:14:34,849 --> 04:14:31,920
continue to monitor the progress of the

6436
04:14:38,170 --> 04:14:34,859
propel and offloading and the overall

6437
04:14:41,090 --> 04:14:38,180
Vehicle Health but as I mentioned before

6438
04:14:43,849 --> 04:14:41,100

the Commander's tone of voice indicates

6439

04:14:44,990 --> 04:14:43,859

that everyone is I'm sure disappointed

6440

04:14:47,990 --> 04:14:45,000

that they didn't get to go to space

6441

04:14:50,150 --> 04:14:48,000

today but unbothered or not worried

6442

04:14:52,969 --> 04:14:50,160

about what we're walking through as we

6443

04:14:54,830 --> 04:14:52,979

have practice practice a similar

6444

04:14:56,809 --> 04:14:54,840

scenario very recently with that dry

6445

04:15:01,429 --> 04:14:56,819

dress rehearsal just this past Thursday

6446

04:15:04,610 --> 04:15:01,439

evening so after we fully detank the

6447

04:15:06,290 --> 04:15:04,620

vehicle we will be able to disarm the

6448

04:15:08,450 --> 04:15:06,300

launch Escape system

6449

04:15:09,889 --> 04:15:08,460

and then bring that crew access arm

6450

04:15:12,590 --> 04:15:09,899

wedge a great shot there on the left

6451
04:15:15,050 --> 04:15:12,600
hand side of your screen of it stowed

6452
04:15:19,250 --> 04:15:15,060
away we will basically rotate it back

6453
04:15:21,889 --> 04:15:19,260
into its service position and the

6454
04:15:24,050 --> 04:15:21,899
closeout team will

6455
04:15:26,630 --> 04:15:24,060
um I guess it will be the opposite more

6456
04:15:30,229 --> 04:15:26,640
of like a close-in team they will return

6457
04:15:33,110 --> 04:15:30,239
to the pad and uh go back up to the side

6458
04:15:38,210 --> 04:15:33,120
hatch reopen it and help the astronauts

6459
04:15:43,370 --> 04:15:41,030
that's right Kate and again uh we're

6460
04:15:45,650 --> 04:15:43,380
getting that live view from inside the

6461
04:15:47,809 --> 04:15:45,660
dragon they are passively waiting it's

6462
04:15:49,309 --> 04:15:47,819
the ground teams monitoring uh the

6463
04:15:51,349 --> 04:15:49,319

detanking process which we're really

6464

04:15:53,630 --> 04:15:51,359

just minutes away from finishing in the

6465

04:15:55,910 --> 04:15:53,640

meantime we continue to keep that launch

6466

04:15:58,070 --> 04:15:55,920

Escape system armed just to make sure

6467

04:16:00,229 --> 04:15:58,080

the crew is safe through the process now

6468

04:16:03,050 --> 04:16:00,239

after that detanking is complete one of

6469

04:16:05,689 --> 04:16:03,060

the next steps will be to disarm uh the

6470

04:16:07,370 --> 04:16:05,699

launch Escape system when the Falcon 9

6471

04:16:10,010 --> 04:16:07,380

is not fueled

6472

04:16:11,630 --> 04:16:10,020

um the it's in a safe configuration to

6473

04:16:13,849 --> 04:16:11,640

go ahead and disarm that and go through

6474

04:16:16,070 --> 04:16:13,859

the next series of steps including that

6475

04:16:18,889 --> 04:16:16,080

crew access arm swinging back and

6476

04:16:21,110 --> 04:16:18,899

retrieving the crew now crew six will

6477

04:16:23,929 --> 04:16:21,120

have another opportunity to launch right

6478

04:16:26,630 --> 04:16:23,939

now we're tracking a 24-hour turnaround

6479

04:16:28,790 --> 04:16:26,640

for the next launch attempt of course

6480

04:16:32,090 --> 04:16:28,800

the teams on the ground will have to

6481

04:16:34,250 --> 04:16:32,100

evaluate and continue to evaluate uh the

6482

04:16:36,889 --> 04:16:34,260

issue that was identified as part of

6483

04:16:39,349 --> 04:16:36,899

today's launch scrub and again that was

6484

04:16:42,710 --> 04:16:39,359

a ground issue identify with the t-tab

6485

04:16:44,929 --> 04:16:42,720

ignition fluid that allows the first and

6486

04:16:47,510 --> 04:16:44,939

second stage engines to ignite and

6487

04:16:49,729 --> 04:16:47,520

Propel the Falcon 9 and the dragon into

6488

04:16:51,830 --> 04:16:49,739

orbit so they'll continue to talk and

6489

04:16:53,150 --> 04:16:51,840

discuss about the issues before going

6490

04:16:55,849 --> 04:16:53,160

ahead and proceeding with that next

6491

04:16:57,769 --> 04:16:55,859

attempt but we have that identified if

6492

04:17:00,710 --> 04:16:57,779

we were to proceed with a launch attempt

6493

04:17:03,650 --> 04:17:00,720

tomorrow again today's launch attempt we

6494

04:17:06,170 --> 04:17:03,660

were counting down to 1 45 a.m eastern

6495

04:17:08,570 --> 04:17:06,180

time for tomorrow for a 24-hour scrub

6496

04:17:12,290 --> 04:17:08,580

it's just about 24 hours a little shy of

6497

04:17:16,250 --> 04:17:12,300

that so we'd be looking at about 122 a.m

6498

04:17:18,229 --> 04:17:16,260

eastern time tomorrow for our next

6499

04:17:21,490 --> 04:17:18,239

attempt in the meantime we're continuing

6500

04:17:24,830 --> 04:17:21,500

to follow along just really minutes away

6501
04:17:28,250 --> 04:17:24,840
from uh completely detanking the Falcon

6502
04:17:30,769 --> 04:17:28,260
9 so we'll continue to follow along and

6503
04:17:33,349 --> 04:17:30,779
get this next status update until that's

6504
04:17:34,729 --> 04:17:33,359
completely detanked and we hear that

6505
04:17:38,809 --> 04:17:34,739
they're disarming the launch Escape

6506
04:17:43,729 --> 04:17:40,729
all right so okay we're continuing to

6507
04:17:45,769 --> 04:17:43,739
follow along really just uh sitting and

6508
04:17:48,410 --> 04:17:45,779
waiting at this point for that detanking

6509
04:17:49,729 --> 04:17:48,420
process but we should be expecting to

6510
04:17:52,849 --> 04:17:49,739
hear something from the ground teams

6511
04:17:58,610 --> 04:17:55,130
yeah that's right we continue to see the

6512
04:18:00,349 --> 04:17:58,620
crew remaining buckled in their seats

6513
04:18:02,929 --> 04:18:00,359

um keeping their hands inside the ride

6514

04:18:05,630 --> 04:18:02,939

at all times for a lack of a better

6515

04:18:07,429 --> 04:18:05,640

analogy uh yeah their advisors remain in

6516

04:18:09,229 --> 04:18:07,439

the closed position

6517

04:18:11,809 --> 04:18:09,239

um this of course is as you just

6518

04:18:14,929 --> 04:18:11,819

mentioned the launch Escape system is

6519

04:18:17,269 --> 04:18:14,939

still armed so while it is armed the

6520

04:18:22,189 --> 04:18:17,279

crew will stay exactly as you see them

6521

04:18:22,990 --> 04:18:22,199

now this is just in case a for some

6522

04:18:27,349 --> 04:18:23,000

reason

6523

04:18:30,590 --> 04:18:27,359

a dragon pad abort is required as I

6524

04:18:34,490 --> 04:18:30,600

mentioned before not likely but it's a

6525

04:18:37,309 --> 04:18:34,500

good backup of course crew safety is the

6526
04:18:40,150 --> 04:18:37,319
top priority at all times even as we

6527
04:18:43,010 --> 04:18:40,160
work through this nominal scrub

6528
04:18:46,689 --> 04:18:43,020
procedure so we will see the crew remain

6529
04:18:50,210 --> 04:18:46,699
like this until further notice basically

6530
04:18:51,410 --> 04:18:50,220
checking in on vehicle status here as I

6531
04:18:54,710 --> 04:18:51,420
mentioned before

6532
04:18:57,530 --> 04:18:54,720
the second stage completely empty of all

6533
04:19:00,590 --> 04:18:57,540
of its propellants the first stage lox

6534
04:19:03,290 --> 04:19:00,600
tank also basically completely empty I'm

6535
04:19:05,689 --> 04:19:03,300
seeing a tiny little bit of fuel that

6536
04:19:09,050 --> 04:19:05,699
rp1 rocket propellant one still coming

6537
04:19:10,510 --> 04:19:09,060
off of the first stage tank there but

6538
04:19:13,969 --> 04:19:10,520

for the most part

6539

04:19:16,010 --> 04:19:13,979

Falcon 9 is basically entirely empty of

6540

04:19:18,429 --> 04:19:16,020

its propellants at this point in time so

6541

04:19:22,010 --> 04:19:18,439

as I mentioned before we were expecting

6542

04:19:25,990 --> 04:19:22,020

this to wrap up sometime between 2 30

6543

04:19:30,469 --> 04:19:26,000

a.m and 2 40 a.m eastern time so now at

6544

04:19:34,130 --> 04:19:30,479

2 33 we are in that range so we should

6545

04:19:36,110 --> 04:19:34,140

be hearing momentarily from SpaceX core

6546

04:19:36,889 --> 04:19:36,120

Arthur berialt

6547

04:19:39,590 --> 04:19:36,899

um

6548

04:19:40,610 --> 04:19:39,600

located here at SpaceX Hawthorne Mission

6549

04:19:43,010 --> 04:19:40,620

Control

6550

04:19:44,570 --> 04:19:43,020

just behind Gary and I

6551
04:19:47,090 --> 04:19:44,580
um we should hear from him soon

6552
04:19:50,450 --> 04:19:47,100
indicating that the propellant

6553
04:19:53,450 --> 04:19:50,460
offloading is complete and that we will

6554
04:19:56,570 --> 04:19:53,460
then prepare to disarm the launch Escape

6555
04:19:59,990 --> 04:19:56,580
system so for those that have recently

6556
04:20:02,990 --> 04:20:00,000
tuned in we had a nominal countdown

6557
04:20:07,010 --> 04:20:03,000
um the T the SpaceX teams reported

6558
04:20:09,290 --> 04:20:07,020
um a issue with the t-tab the basically

6559
04:20:11,389 --> 04:20:09,300
the fluids that we use to ignite the

6560
04:20:13,849 --> 04:20:11,399
Merlin engines you can kind of think of

6561
04:20:16,670 --> 04:20:13,859
it like the spark plug to your car if

6562
04:20:19,490 --> 04:20:16,680
you drive a combustion engine vehicle so

6563
04:20:21,830 --> 04:20:19,500

that t-tep is a critical component to

6564

04:20:23,349 --> 04:20:21,840

getting the rocket to fly it's it's what

6565

04:20:27,889 --> 04:20:23,359

creates the spark

6566

04:20:30,530 --> 04:20:27,899

for that engine ignition so we heard

6567

04:20:32,929 --> 04:20:30,540

around T minus five minutes that the

6568

04:20:34,969 --> 04:20:32,939

SpaceX teams were troubleshooting an

6569

04:20:37,550 --> 04:20:34,979

issue and then about two and a half

6570

04:20:40,670 --> 04:20:37,560

minutes later at T minus two minutes 30

6571

04:20:42,469 --> 04:20:40,680

seconds there was a scrub called in the

6572

04:20:45,170 --> 04:20:42,479

launch down it was me in the launch

6573

04:20:48,349 --> 04:20:45,180

countdown but as I said

6574

04:20:51,050 --> 04:20:48,359

prior to that we had a nominal countdown

6575

04:20:53,269 --> 04:20:51,060

and now just working through this uh

6576
04:20:57,290 --> 04:20:53,279
this scrub procedure dragons Basics with

6577
04:20:57,300 --> 04:21:01,610
it's pretty 16 go ahead

6578
04:21:06,229 --> 04:21:04,010
at this time we have all propellant off

6579
04:21:10,269 --> 04:21:06,239
the vehicle and are proceeding with

6580
04:21:10,279 --> 04:21:22,670
Basics tracking copies

6581
04:21:22,680 --> 04:21:27,469
all right so that's an important call

6582
04:21:31,309 --> 04:21:29,870
propellant load or the propellant

6583
04:21:34,070 --> 04:21:31,319
offload rather

6584
04:21:37,729 --> 04:21:34,080
being complete so we'll be uh we'll be

6585
04:21:40,370 --> 04:21:37,739
tracking to see when the launch Escape

6586
04:21:42,349 --> 04:21:40,380
system gets disarmed

6587
04:21:44,330 --> 04:21:42,359
right now it's still armed just as a

6588
04:21:46,969 --> 04:21:44,340

precautionary measure as the ground

6589

04:21:49,790 --> 04:21:46,979

train teams continue to track the

6590

04:21:52,010 --> 04:21:49,800

package Basics with that call

6591

04:21:54,290 --> 04:21:52,020

you are go for section two of five

6592

04:22:02,090 --> 04:21:54,300

decimal 100 and disarm launch Escape

6593

04:22:05,870 --> 04:22:04,070

all right and I'm not sure what call

6594

04:22:06,830 --> 04:22:05,880

that was that they're referring to other

6595

04:22:11,349 --> 04:22:06,840

than

6596

04:22:16,250 --> 04:22:11,359

that we are going for today

6597

04:22:16,260 --> 04:22:21,950

and copy that good read back dragon

6598

04:22:27,889 --> 04:22:26,090

okay system saving we are two alpha one

6599

04:22:58,429 --> 04:22:27,899

and we're there at two alpha two but

6600

04:23:03,410 --> 04:23:00,889

so again if you're just tuning in the uh

6601
04:23:05,630 --> 04:23:03,420
ground teams were were tracking Propel

6602
04:23:07,670 --> 04:23:05,640
and offload so it'll be the crew

6603
04:23:09,950 --> 04:23:07,680
themselves inside crew Dragon endurance

6604
04:23:11,570 --> 04:23:09,960
that issues the command to turn off the

6605
04:23:13,790 --> 04:23:11,580
launch Escape system will wait for

6606
04:23:30,650 --> 04:23:13,800
confirmation of that command being

6607
04:23:35,389 --> 04:23:33,170
all right and it looks like we uh got

6608
04:23:42,229 --> 04:23:35,399
that confirmation that the launch Escape

6609
04:23:48,010 --> 04:23:44,889
so that uh that confronts

6610
04:23:52,429 --> 04:23:48,020
offload and the launch Escape system

6611
04:23:54,250 --> 04:23:52,439
disarmed so the crew will work uh

6612
04:24:17,349 --> 04:23:54,260
through this series

6613
04:24:24,349 --> 04:24:20,150

this SpaceX Dragon we are ready for a

6614

04:24:30,830 --> 04:24:25,910

SpaceX copies will report when

6615

04:24:37,010 --> 04:24:34,490

okay so uh recap of what happened we uh

6616

04:24:39,050 --> 04:24:37,020

declared a scrub inside two minutes 30

6617

04:24:40,870 --> 04:24:39,060

seconds that scrub time was actually two

6618

04:24:43,849 --> 04:24:40,880

minutes 14 seconds

6619

04:24:45,650 --> 04:24:43,859

and the scrub for the day uh since then

6620

04:24:55,010 --> 04:24:45,660

we've been in a nominal scrub uh

6621

04:24:55,020 --> 04:25:02,030

so we're continuing to follow along

6622

04:25:07,309 --> 04:25:05,689

and uh that uh crew access arm we did

6623

04:25:09,769 --> 04:25:07,319

get confirmation you can see it visually

6624

04:25:12,229 --> 04:25:09,779

actually it is swinging back into place

6625

04:25:20,330 --> 04:25:12,239

to access the side hatch on the side of

6626
04:25:26,689 --> 04:25:23,689
so again the uh

6627
04:25:28,550 --> 04:25:26,699
Falcon 9 is completely offloaded with

6628
04:25:31,550 --> 04:25:28,560
fuel and oxidizer and the launch Escape

6629
04:25:33,710 --> 04:25:31,560
system has been disarmed

6630
04:25:35,570 --> 04:25:33,720
those commands confirmed before going

6631
04:25:37,790 --> 04:25:35,580
ahead and Swinging The Crew access arm

6632
04:25:40,130 --> 04:25:37,800
back

6633
04:25:41,870 --> 04:25:40,140
you heard the uh command for seat

6634
04:25:48,349 --> 04:25:41,880
rotation

6635
04:25:54,110 --> 04:25:51,769
for launch the seat rotates up to about

6636
04:25:56,809 --> 04:25:54,120
a 14 degree angle that's the seat that's

6637
04:25:59,210 --> 04:25:56,819
the launch position

6638
04:26:16,610 --> 04:25:59,220

the seat rotation goes down to about a

6639

04:26:21,590 --> 04:26:18,530

so there we can see the crew access arm

6640

04:26:24,189 --> 04:26:21,600

closing the final inches as it moves

6641

04:26:28,370 --> 04:26:24,199

back toward Dragon Endeavor

6642

04:26:31,090 --> 04:26:28,380

we are now pulling the closeout team to

6643

04:26:34,309 --> 04:26:31,100

re-enter the BDA or a blast danger area

6644

04:26:36,710 --> 04:26:34,319

so as we've mentioned before they will

6645

04:26:39,710 --> 04:26:36,720

go back up the tower back down the crew

6646

04:26:42,050 --> 04:26:39,720

access arm reopen that side hatch and

6647

04:26:44,750 --> 04:26:42,060

help the astronauts egress from the

6648

04:26:49,130 --> 04:26:44,760

capsule as we heard called out earlier

6649

04:26:50,870 --> 04:26:49,140

the seats are back down in so they were

6650

04:26:54,050 --> 04:26:50,880

in the launch position they've rotated

6651
04:26:56,510 --> 04:26:54,060
back down into the egress Ingress

6652
04:26:59,990 --> 04:26:56,520
position so we can see the crew access

6653
04:27:03,710 --> 04:27:00,000
arm just closing the final inches up

6654
04:27:07,910 --> 04:27:05,389
at this point in time we're going to

6655
04:27:11,210 --> 04:27:07,920
head back over to Kennedy Space Center's

6656
04:27:14,330 --> 04:27:11,220
Daryl for additional updates

6657
04:27:15,950 --> 04:27:14,340
um I'm sure that they can see the they

6658
04:27:18,469 --> 04:27:15,960
were able to see that crew access arm

6659
04:27:21,290 --> 04:27:18,479
move from their seats at the Press site

6660
04:27:23,570 --> 04:27:21,300
Daryl how are things over there

6661
04:27:26,269 --> 04:27:23,580
thank you Kate and yes indeed we could

6662
04:27:29,809 --> 04:27:26,279
see the crew access Arm coming back and

6663
04:27:32,149 --> 04:27:29,819

making a connection with dragon Endeavor

6664

04:27:33,170 --> 04:27:32,159

and as you see on the screen there the

6665

04:27:35,210 --> 04:27:33,180

white room

6666

04:27:39,469 --> 04:27:35,220

connected back in

6667

04:27:42,530 --> 04:27:39,479

and so as we watch the astronauts

6668

04:27:46,610 --> 04:27:42,540

can unbuckle and pull up their visors

6669

04:27:47,450 --> 04:27:46,620

take a moment to relax and uh from here

6670

04:27:49,790 --> 04:27:47,460

on

6671

04:27:51,410 --> 04:27:49,800

Commander Chari looks like they'll be

6672

04:27:53,030 --> 04:27:51,420

heading out at some point they should be

6673

04:27:54,769 --> 04:27:53,040

yeah and at this point the vehicle's uh

6674

04:27:58,130 --> 04:27:54,779

pretty much completely safe so with the

6675

04:28:00,229 --> 04:27:58,140

Las uh disarmed or saved there's

6676

04:28:02,510 --> 04:28:00,239

basically no longer active prop in the

6677

04:28:04,790 --> 04:28:02,520

F9 and also the super draco's are safe

6678

04:28:06,950 --> 04:28:04,800

on the vehicle so uh there that

6679

04:28:08,149 --> 04:28:06,960

completes their procedure 5.100 which is

6680

04:28:09,590 --> 04:28:08,159

the one they're running inside the

6681

04:28:12,110 --> 04:28:09,600

vehicle at this point they're just

6682

04:28:13,969 --> 04:28:12,120

waiting for the recovery crew to show up

6683

04:28:16,309 --> 04:28:13,979

like was mentioned earlier they have to

6684

04:28:18,229 --> 04:28:16,319

stay outside an exclusion area while

6685

04:28:20,689 --> 04:28:18,239

there's any potential of propellants or

6686

04:28:22,130 --> 04:28:20,699

the the abort engine's kicking off and

6687

04:28:24,469 --> 04:28:22,140

so now that that's safe those teams will

6688

04:28:26,570 --> 04:28:24,479

approach the vehicle you can see they

6689

04:28:27,469 --> 04:28:26,580

loosen their straps uh you know one of

6690

04:28:29,149 --> 04:28:27,479

the questions we were talking about

6691

04:28:30,170 --> 04:28:29,159

while we were listening to SpaceX was

6692

04:28:32,809 --> 04:28:30,180

why don't they just get out on their own

6693

04:28:34,370 --> 04:28:32,819

which they could but we mentioned before

6694

04:28:36,410 --> 04:28:34,380

that whole white room is a clean room

6695

04:28:38,990 --> 04:28:36,420

and so if they were to get out on their

6696

04:28:40,969 --> 04:28:39,000

own they may be like scuff a boot touch

6697

04:28:42,469 --> 04:28:40,979

a hatch seal and since all those things

6698

04:28:44,149 --> 04:28:42,479

we want to keep really pristine there's

6699

04:28:45,710 --> 04:28:44,159

there's no rush right now there's no

6700

04:28:47,149 --> 04:28:45,720

reason to risk anything like that you

6701
04:28:49,429 --> 04:28:47,159
know bumping a visor scratching

6702
04:28:51,229 --> 04:28:49,439
something tearing a Rubber seal so the

6703
04:28:52,309 --> 04:28:51,239
safest thing to do since we're gonna

6704
04:28:54,769 --> 04:28:52,319
have to do this again on the next

6705
04:28:56,330 --> 04:28:54,779
opportunity is to let the closeout crew

6706
04:28:58,010 --> 04:28:56,340
come and make sure they help them out

6707
04:28:59,750 --> 04:28:58,020
and make sure nothing is you know

6708
04:29:01,969 --> 04:28:59,760
nothing gets damaged or anything like

6709
04:29:03,649 --> 04:29:01,979
that on the way out and preserve the

6710
04:29:05,210 --> 04:29:03,659
opportunity uh those follow-on

6711
04:29:06,290 --> 04:29:05,220
opportunities the good news is the next

6712
04:29:07,729 --> 04:29:06,300
opportunities will probably go faster

6713
04:29:08,990 --> 04:29:07,739

because everyone's done it once now so

6714

04:29:10,790 --> 04:29:09,000

they've got they've got some more

6715

04:29:12,410 --> 04:29:10,800

practice they don't have to sign the

6716

04:29:14,750 --> 04:29:12,420

patch like you said they've knocked that

6717

04:29:17,510 --> 04:29:14,760

out so you save ourselves a few seconds

6718

04:29:19,610 --> 04:29:17,520

here and there and again that's uh for

6719

04:29:22,309 --> 04:29:19,620

the crew you know although there's the

6720

04:29:24,229 --> 04:29:22,319

the some you know uh disappointment of

6721

04:29:25,670 --> 04:29:24,239

like oh you didn't get to go but it

6722

04:29:26,689 --> 04:29:25,680

feels a lot just like another Sim and

6723

04:29:28,429 --> 04:29:26,699

another chance to go through the

6724

04:29:30,050 --> 04:29:28,439

procedures and other transfers like we

6725

04:29:31,670 --> 04:29:30,060

talked about once that rocket lights

6726
04:29:34,550 --> 04:29:31,680
things happen really really fast so the

6727
04:29:36,950 --> 04:29:34,560
more times you have to to walk through

6728
04:29:38,269 --> 04:29:36,960
it and talk through it and especially in

6729
04:29:40,010 --> 04:29:38,279
a case like this we're actually sitting

6730
04:29:42,769 --> 04:29:40,020
in the seats with the displays up

6731
04:29:45,950 --> 04:29:42,779
hearing the vehicle sounds that in and

6732
04:29:48,950 --> 04:29:45,960
of itself is a worthwhile experience and

6733
04:29:50,809 --> 04:29:48,960
it it makes you more uh perceptive if

6734
04:29:52,010 --> 04:29:50,819
things aren't nominal so the next time

6735
04:29:53,149 --> 04:29:52,020
if you hear a sound they're like well

6736
04:29:54,889 --> 04:29:53,159
that was that's not that's different

6737
04:29:56,990 --> 04:29:54,899
than what we heard before and have a

6738
04:29:58,309 --> 04:29:57,000

baseline for comparison uh looks like

6739

04:29:59,809 --> 04:29:58,319

Woody's playing with his box setting so

6740

04:30:01,130 --> 04:29:59,819

now that the advisor's up they're

6741

04:30:02,269 --> 04:30:01,140

probably changing their settings just so

6742

04:30:03,469 --> 04:30:02,279

they're not getting a background noise

6743

04:30:05,389 --> 04:30:03,479

you can see they're starting to get

6744

04:30:07,010 --> 04:30:05,399

their their gloves out unzipped yep

6745

04:30:09,889 --> 04:30:07,020

getting their hands out and just get a

6746

04:30:11,389 --> 04:30:09,899

little more just cool off and

6747

04:30:13,070 --> 04:30:11,399

um yeah just kind of hanging out

6748

04:30:15,229 --> 04:30:13,080

relaxing for the waiting for the crew to

6749

04:30:17,149 --> 04:30:15,239

come get them so crew six uh did a dry

6750

04:30:19,309 --> 04:30:17,159

dress just a few days ago we could think

6751
04:30:20,450 --> 04:30:19,319
of this as a wet dress exactly Yep this

6752
04:30:22,309 --> 04:30:20,460
one had the problem so the more

6753
04:30:25,130 --> 04:30:22,319
experience they get uh the better off

6754
04:30:27,229 --> 04:30:25,140
they'll be for the next attempt just to

6755
04:30:29,750 --> 04:30:27,239
recap if you're just joining us we scrub

6756
04:30:33,429 --> 04:30:29,760
the launch attempt at T minus two

6757
04:30:36,229 --> 04:30:33,439
minutes and 14 seconds before liftoff

6758
04:30:40,010 --> 04:30:36,239
there was a hold in the countdown

6759
04:30:42,830 --> 04:30:40,020
happened at 1 43 a.m eastern time the

6760
04:30:45,349 --> 04:30:42,840
SpaceX team encountered an issue in the

6761
04:30:49,130 --> 04:30:45,359
ground system affecting the loading of

6762
04:30:52,250 --> 04:30:49,140
triethyl aluminum and triethyl Boron

6763
04:30:55,790 --> 04:30:52,260

which together the acronym t-tab

6764

04:30:57,590 --> 04:30:55,800

they are the ignition fluids for F9 the

6765

04:30:59,990 --> 04:30:57,600

ground team couldn't provide sufficient

6766

04:31:03,050 --> 04:31:00,000

confidence of a full load of that t-tab

6767

04:31:05,269 --> 04:31:03,060

which is important to light all nine of

6768

04:31:08,809 --> 04:31:05,279

the Merlin 1D engines underneath the

6769

04:31:11,689 --> 04:31:08,819

falcon 9. so the team scrubbed it

6770

04:31:14,389 --> 04:31:11,699

and uh now they're going through their

6771

04:31:15,889 --> 04:31:14,399

procedures for launch scrub

6772

04:31:18,229 --> 04:31:15,899

and so

6773

04:31:25,550 --> 04:31:18,239

moving forward we have some launch

6774

04:31:29,809 --> 04:31:27,229

I mentioned the first one on February

6775

04:31:38,149 --> 04:31:29,819

28th there's also another one on March

6776

04:31:43,189 --> 04:31:40,309

yeah and if we were to go then we would

6777

04:31:46,070 --> 04:31:43,199

uh begin our NASA TV coverage on March

6778

04:31:48,469 --> 04:31:46,080

1st at 9 30 pm

6779

04:31:52,910 --> 04:31:48,479

and there will be a docking at 105 a.m

6780

04:31:55,849 --> 04:31:52,920

Eastern Time on March 3rd also want to

6781

04:31:58,670 --> 04:31:55,859

make a note that there is no press

6782

04:31:59,990 --> 04:31:58,680

conference tonight initially that was

6783

04:32:04,250 --> 04:32:00,000

scheduled

6784

04:32:05,649 --> 04:32:04,260

um had there been a nominal launch but

6785

04:32:08,630 --> 04:32:05,659

in this case

6786

04:32:11,269 --> 04:32:08,640

NASA is foregoing the opportunity for a

6787

04:32:14,630 --> 04:32:11,279

press conference and so stay tuned to

6788

04:32:18,769 --> 04:32:14,640

your social media channels

6789

04:32:20,870 --> 04:32:18,779

and NASA's officials we've pulled go for

6790

04:32:23,030 --> 04:32:20,880

the closeout team to start re-entering

6791

04:32:25,070 --> 04:32:23,040

the BDA and they'll be back alongside

6792

04:32:28,010 --> 04:32:25,080

you at the capsule shortly

6793

04:32:30,110 --> 04:32:28,020

uh and helping you egress additionally

6794

04:32:31,250 --> 04:32:30,120

just want to do a quick Comfort check uh

6795

04:32:32,929 --> 04:32:31,260

make sure you guys are still feel okay

6796

04:32:43,670 --> 04:32:32,939

sitting there and if you need a PMC I

6797

04:32:48,590 --> 04:32:46,970

and wait for Captain Bowen to respond

6798

04:32:50,750 --> 04:32:48,600

[Music]

6799

04:32:52,250 --> 04:32:50,760

waiting on the opportunity to get out of

6800

04:32:55,130 --> 04:32:52,260

the castle

6801

04:32:56,689 --> 04:32:55,140

all right SpaceX copies

6802

04:32:59,030 --> 04:32:56,699

yeah so the call there you heard was uh

6803

04:33:00,469 --> 04:32:59,040

that gives the crew some essay that uh

6804

04:33:01,550 --> 04:33:00,479

the recovery crew is going to be

6805

04:33:03,410 --> 04:33:01,560

approaching because if they do hear

6806

04:33:05,510 --> 04:33:03,420

bumps or see Shadows or Silhouettes

6807

04:33:06,890 --> 04:33:05,520

moving outside the windows you can't see

6808

04:33:08,750 --> 04:33:06,900

you don't have direct line of sight into

6809

04:33:10,369 --> 04:33:08,760

the room but you can see maybe some

6810

04:33:11,570 --> 04:33:10,379

movement or light changes and that lets

6811

04:33:13,849 --> 04:33:11,580

you know that's people that's intended

6812

04:33:15,470 --> 04:33:13,859

versus something off nominal happening

6813

04:33:17,631 --> 04:33:15,480

and then a PMC stands for a private

6814

04:33:19,131 --> 04:33:17,641

medical conference and as you heard

6815

04:33:21,709 --> 04:33:19,141

they're doing fine just waiting to get

6816

04:33:25,250 --> 04:33:23,150

and so

6817

04:33:29,090 --> 04:33:25,260

that's going to do it for our coverage

6818

04:33:30,949 --> 04:33:29,100

of crew six the first attempt of cruise

6819

04:33:33,170 --> 04:33:30,959

ship crew six to launch to the

6820

04:33:35,810 --> 04:33:33,180

International Space Station aboard a

6821

04:33:38,631 --> 04:33:35,820

SpaceX Falcon 9 rocket and dragon

6822

04:33:40,310 --> 04:33:38,641

Endeavor didn't get to do it today

6823

04:33:43,131 --> 04:33:40,320

Roger you're gonna have to wait to see

6824

04:33:45,890 --> 04:33:43,141

your first launch yeah yeah but uh good

6825

04:33:47,570 --> 04:33:45,900

good things come to those who wait and

6826
04:33:49,250 --> 04:33:47,580
so I want to thank you for being here I

6827
04:33:50,689 --> 04:33:49,260
appreciate it was a fun time I'm sure

6828
04:33:52,310 --> 04:33:50,699
I'll get to see you launch eventually so

6829
04:33:54,109 --> 04:33:52,320
uh as you mentioned those follow-on

6830
04:33:55,789 --> 04:33:54,119
launch opportunities uh right now I'm

6831
04:33:57,890 --> 04:33:55,799
sure the teams are going to be working

6832
04:34:00,170 --> 04:33:57,900
continuing to work through breakfast and

6833
04:34:01,609 --> 04:34:00,180
lunch to figure out uh what the if they

6834
04:34:03,769 --> 04:34:01,619
can fix the problem and when we'll be

6835
04:34:05,631 --> 04:34:03,779
ready to go but uh we'll go when what's

6836
04:34:08,390 --> 04:34:05,641
safe and ready to go so absolutely

6837
04:34:10,369 --> 04:34:08,400
NASA's ethos will launch when we're

6838
04:34:12,410 --> 04:34:10,379

ready and so that's going to wrap up our

6839

04:34:14,990 --> 04:34:12,420

coverage for this evening thank you for

6840

04:34:16,310 --> 04:34:15,000

watching crew six's launch attempt to

6841

04:34:18,890 --> 04:34:16,320

the International Space Station I'm

6842

04:34:21,230 --> 04:34:18,900

Daryl nail for rajachary and everyone at