1
00:00:45,970 --> 00:00:08,720
[Music]

2
00:00:54,610 --> 00:00:48,310
Dragon isn't countdown

3
00:01:13,550 --> 00:00:57,840
Dragon SpaceX go for launch

4
00:01:19,670 --> 00:01:15,820
foreign

5
00:01:22,510 --> 00:01:19,680
[Music]

6
00:01:25,190 --> 00:01:22,520
you are looking live at launch complex

7
00:01:27,590 --> 00:01:25,200
39a at Kennedy Space Center

8
00:01:30,710 --> 00:01:27,600
we are just about 24 minutes away from

9
00:01:32,450 --> 00:01:30,720
liftoff of this Falcon 9 for the 26th

10
00:01:34,850 --> 00:01:32,460
Commercial resupply Services Mission

11
00:01:36,950 --> 00:01:34,860
from both NASA and SpaceX to the

12
00:01:39,289 --> 00:01:36,960
International Space Station

13
00:01:42,469 --> 00:01:39,299

good afternoon and welcome to live

14
00:01:45,170 --> 00:01:42,479
coverage of crs26 I'm Jasmine Hopkins

15
00:01:47,210 --> 00:01:45,180
with NASA Communications fueling of the

16
00:01:49,490 --> 00:01:47,220
Falcon 9 rocket began about 10 minutes

17
00:01:53,030 --> 00:01:49,500
ago and we are counting down to an

18
00:01:53,990 --> 00:01:53,040
instantaneous launch at 3 54 PM Eastern

19
00:01:56,149 --> 00:01:54,000
Time

20
00:01:59,870 --> 00:01:56,159
this Mission will deliver more than 7

21
00:02:01,550 --> 00:01:59,880
700 pounds of food supplies and science

22
00:02:04,010 --> 00:02:01,560
to the space station

23
00:02:06,109 --> 00:02:04,020
this includes a pair of roll out solar

24
00:02:08,570 --> 00:02:06,119
arrays to power the orbiting laboratory

25
00:02:10,430 --> 00:02:08,580
and tomato plant seeds for the

26
00:02:12,350 --> 00:02:10,440
continuous fresh food production system

27
00:02:14,750 --> 00:02:12,360
on station

28
00:02:16,490 --> 00:02:14,760
these resupply missions help NASA and

29
00:02:17,930 --> 00:02:16,500
our partners continue research that

30
00:02:20,750 --> 00:02:17,940
could better our life right here on

31
00:02:23,089 --> 00:02:20,760
Earth and help us explore deep space

32
00:02:25,010 --> 00:02:23,099
let's go now to SpaceX headquarters in

33
00:02:26,809 --> 00:02:25,020
Hawthorne California where Jesse

34
00:02:28,490 --> 00:02:26,819
Anderson is standing by to tell us more

35
00:02:30,470 --> 00:02:28,500
about the rocket supporting today's

36
00:02:32,809 --> 00:02:30,480
resupply Mission how are things looking

37
00:02:35,869 --> 00:02:32,819
Jesse

38
00:02:37,190 --> 00:02:35,879

awesome thank you Jasmine hi everyone my

39
00:02:38,869 --> 00:02:37,200
name is Jesse Anderson and I'm a

40
00:02:40,970 --> 00:02:38,879
production and engineering manager here

41
00:02:44,330 --> 00:02:40,980
at SpaceX it's great to be covering

42
00:02:46,190 --> 00:02:44,340
today's mission in partnership with NASA

43
00:02:49,369 --> 00:02:46,200
the rocket that you see on your screen

44
00:02:51,050 --> 00:02:49,379
is brand new the Falcon 9 and dragon

45
00:02:52,729 --> 00:02:51,060
spacecraft will be flying for the first

46
00:02:54,890 --> 00:02:52,739
time on today's mission

47
00:02:58,430 --> 00:02:54,900
so far this year we've launched four

48
00:03:00,290 --> 00:02:58,440
dragon missions crew 4 crew 5 Axiom 1

49
00:03:02,390 --> 00:03:00,300
and crs-25

50
00:03:04,670 --> 00:03:02,400
today's launch marks spacex's fifth

51
00:03:06,710 --> 00:03:04,680
Dragon launch of 2022 and our final

52
00:03:08,509 --> 00:03:06,720
dragon mission this year

53
00:03:11,570 --> 00:03:08,519
now back to the rocket that you see on

54
00:03:14,509 --> 00:03:11,580
your screen above Falcon 9 is the dragon

55
00:03:16,009 --> 00:03:14,519
spacecraft sitting at the very top as I

56
00:03:17,809 --> 00:03:16,019
mentioned previously the dragon you're

57
00:03:20,210 --> 00:03:17,819
seeing on the screen will be embarking

58
00:03:23,390 --> 00:03:20,220
on its first flight and will be joining

59
00:03:24,649 --> 00:03:23,400
the crew 5 spacecraft already docked at

60
00:03:26,809 --> 00:03:24,659
station

61
00:03:29,750 --> 00:03:26,819
moving down we have Falcon 9 our

62
00:03:31,670 --> 00:03:29,760
reusable two-stage rocket Falcon 9 is

63
00:03:33,890 --> 00:03:31,680

actually two rockets in one the lower

64
00:03:36,170 --> 00:03:33,900
part also the largest part of the rocket

65
00:03:37,790 --> 00:03:36,180
is called the first stage the smaller

66
00:03:39,229 --> 00:03:37,800
stage above the first stage and the

67
00:03:41,930 --> 00:03:39,239
black inner stage is called the second

68
00:03:43,850 --> 00:03:41,940
stage not only does spacex's second

69
00:03:46,070 --> 00:03:43,860
stage look similar to the first stage it

70
00:03:48,530 --> 00:03:46,080
also has the same diameter uses the same

71
00:03:50,990 --> 00:03:48,540
metal in the tanks same computers same

72
00:03:52,970 --> 00:03:51,000
propellant and nearly the same engine

73
00:03:54,710 --> 00:03:52,980
this allows us to use similar tooling

74
00:03:57,649 --> 00:03:54,720
design and systems to essentially build

75
00:03:59,330 --> 00:03:57,659
two rockets that are more reliable

76
00:04:01,729 --> 00:03:59,340
now above the first stage in black

77
00:04:03,410 --> 00:04:01,739
interstage is our second stage the

78
00:04:05,149 --> 00:04:03,420
stages will separate about two and a

79
00:04:07,309 --> 00:04:05,159
half minutes into flight and then the

80
00:04:09,470 --> 00:04:07,319
second stage will ignite its mbac engine

81
00:04:12,589 --> 00:04:09,480
which is the 10th engine on the rocket

82
00:04:15,229 --> 00:04:12,599
to carry Dragon to its desired orbit

83
00:04:18,050 --> 00:04:15,239
moving down the rocket the bottom of the

84
00:04:20,810 --> 00:04:18,060
first stage has nine Merlin 1D engines

85
00:04:22,189 --> 00:04:20,820
hence the name Falcon 9. these engines

86
00:04:23,930 --> 00:04:22,199
accelerate the vehicle through the

87
00:04:25,909 --> 00:04:23,940
Earth's atmosphere and into various

88
00:04:27,590 --> 00:04:25,919

orbits in space

89
00:04:29,930 --> 00:04:27,600
and we will be attempting to recover

90
00:04:31,730 --> 00:04:29,940
this first stage on our drone ship which

91
00:04:35,689 --> 00:04:31,740
you see there on your screen named

92
00:04:39,590 --> 00:04:37,550
just read the instructions is currently

93
00:04:41,150 --> 00:04:39,600
positioned off the coast of Florida in

94
00:04:43,189 --> 00:04:41,160
the Atlantic Ocean

95
00:04:44,570 --> 00:04:43,199
but for now let's turn it back over to

96
00:04:47,390 --> 00:04:44,580
you Jasmine

97
00:04:49,610 --> 00:04:47,400
thank you Jesse in addition to SpaceX in

98
00:04:51,710 --> 00:04:49,620
California NASA teams both here in

99
00:04:53,510 --> 00:04:51,720
Florida and Texas are also monitoring

100
00:04:55,189 --> 00:04:53,520
today's launch you'll hear from Dan

101
00:04:57,590 --> 00:04:55,199
Hewitt inside Mission Control Houston

102
00:04:59,390 --> 00:04:57,600
but first let's check in with NASA's

103
00:05:02,210 --> 00:04:59,400
Megan Cruz who's monitoring the launch

104
00:05:04,129 --> 00:05:02,220
Team here at Kennedy Megan thank you

105
00:05:06,530 --> 00:05:04,139
Jasmine and welcome everyone into Hangar

106
00:05:08,270 --> 00:05:06,540
AE at nearby Cape Canaveral space force

107
00:05:10,370 --> 00:05:08,280
station where the U.S space force

108
00:05:12,650 --> 00:05:10,380
monitors the range for us making sure

109
00:05:15,469 --> 00:05:12,660
it's safe to fly where we want to fly

110
00:05:17,450 --> 00:05:15,479
but also the weather which is better

111
00:05:19,610 --> 00:05:17,460
than it had been a few hours ago but

112
00:05:20,870 --> 00:05:19,620
still not looking great and this is why

113
00:05:24,590 --> 00:05:20,880

I take a look so the launch weather

114
00:05:28,370 --> 00:05:24,600
officer was predicting a 10 chance of go

115
00:05:30,650 --> 00:05:28,380
today we are now at a 30 chance of go so

116
00:05:32,990 --> 00:05:30,660
again an improvement but if we take

117
00:05:34,850 --> 00:05:33,000
another live look at the pad I'll

118
00:05:37,070 --> 00:05:34,860
explain to you why there are still some

119
00:05:39,650 --> 00:05:37,080
concerns so as you can see very very

120
00:05:41,689 --> 00:05:39,660
cloudy there's still rain coming down at

121
00:05:43,490 --> 00:05:41,699
the pad and it's conditions like these

122
00:05:45,710 --> 00:05:43,500
that are concerning because of the

123
00:05:47,510 --> 00:05:45,720
likelihood to trigger lightning and

124
00:05:49,730 --> 00:05:47,520
lightning can cause serious damage to

125
00:05:52,430 --> 00:05:49,740
the rocket which could in turn endanger

126
00:05:54,110 --> 00:05:52,440
the public but the launch team is hoping

127
00:05:56,870 --> 00:05:54,120
for a break in the weather and that's

128
00:05:59,029 --> 00:05:56,880
why the team went ahead with fueling the

129
00:06:00,890 --> 00:05:59,039
rocket and around T minus 35 minutes

130
00:06:02,990 --> 00:06:00,900
today remember they would need a break

131
00:06:05,390 --> 00:06:03,000
in the weather at exactly when we have

132
00:06:08,450 --> 00:06:05,400
our instantaneous launch opportunity at

133
00:06:09,890 --> 00:06:08,460
354 and 3 seconds if we want to dock

134
00:06:11,749 --> 00:06:09,900
with the International Space Station

135
00:06:13,490 --> 00:06:11,759
tomorrow morning so we'll of course

136
00:06:15,110 --> 00:06:13,500
continue to monitor the weather but for

137
00:06:16,969 --> 00:06:15,120
now let's send it over to Dan Hewitt

138
00:06:20,150 --> 00:06:16,979

inside of NASA's Mission Control Center

139
00:06:23,629 --> 00:06:22,129
hey thanks so much Megan and everybody

140
00:06:25,129 --> 00:06:23,639
Welcome to the International Space

141
00:06:27,050 --> 00:06:25,139
Station flight control room here in

142
00:06:28,490 --> 00:06:27,060
Houston at the Johnson Space Center so

143
00:06:30,170 --> 00:06:28,500
the people behind me these are the ones

144
00:06:32,090 --> 00:06:30,180
literally flying the space station

145
00:06:33,950 --> 00:06:32,100
they're working in concert with control

146
00:06:36,230 --> 00:06:33,960
rooms all around the globe to support

147
00:06:37,550 --> 00:06:36,240
the orbiting laboratory Mike Lammers is

148
00:06:39,529 --> 00:06:37,560
the flight director in the room right

149
00:06:41,570 --> 00:06:39,539
now leading everybody and he actually

150
00:06:44,270 --> 00:06:41,580
pulled the entire international team a

151
00:06:45,950 --> 00:06:44,280
couple hours ago to get their go for a

152
00:06:47,450 --> 00:06:45,960
launch today so we're also going to be

153
00:06:50,570 --> 00:06:47,460
watching the weather but everything on

154
00:06:52,790 --> 00:06:50,580
space station is ready to go for this

155
00:06:55,370 --> 00:06:52,800
cargo Mission we have seven crew members

156
00:06:58,010 --> 00:06:55,380
on board right now three Americans three

157
00:07:00,170 --> 00:06:58,020
Russians and one Japanese astronaut and

158
00:07:02,510 --> 00:07:00,180
two of our Americans Josh cassida Nicole

159
00:07:04,790 --> 00:07:02,520
Mann are going to be primed for

160
00:07:06,050 --> 00:07:04,800
monitoring dragon's arrival so with the

161
00:07:08,029 --> 00:07:06,060
launch day we're looking at about two

162
00:07:10,730 --> 00:07:08,039
days to Rendezvous and Doc heading to

163
00:07:12,050 --> 00:07:10,740

the space facing side of the node 2

164
00:07:14,029 --> 00:07:12,060
Harmony module that'll give us two

165
00:07:15,529 --> 00:07:14,039
dragons on board and this will kick off

166
00:07:17,689 --> 00:07:15,539
about a month and a half of really

167
00:07:19,490 --> 00:07:17,699
intensive cargo operations on the space

168
00:07:20,689 --> 00:07:19,500
station so fingers crossed for the

169
00:07:22,550 --> 00:07:20,699
weather we're going to keep watching and

170
00:07:24,409 --> 00:07:22,560
we'll be ready for Dragon once it gets

171
00:07:27,469 --> 00:07:24,419
on orbit but for now I will send it back

172
00:07:29,270 --> 00:07:27,479
over to Jasmine at Kennedy thank you so

173
00:07:31,850 --> 00:07:29,280
much to both Dan and Megan for those

174
00:07:34,210 --> 00:07:31,860
updates we are now about T minus 17

175
00:07:36,830 --> 00:07:34,220
minutes and Counting from liftoff of

176
00:07:38,210 --> 00:07:36,840
crs-26 so let's get a closer look at

177
00:07:40,340 --> 00:07:38,220
some of the science flying on this

178
00:07:51,710 --> 00:07:40,350
mission

179
00:07:51,720 --> 00:07:54,950
foreign

180
00:08:58,490 --> 00:08:56,769
[Music]

181
00:09:02,449 --> 00:08:58,500
thank you

182
00:09:27,250 --> 00:09:03,080
foreign

183
00:09:30,350 --> 00:09:27,260
[Music]

184
00:09:32,210 --> 00:09:30,360
focus is put on exploring deep space the

185
00:09:34,790 --> 00:09:32,220
risk of injury or unexpected medical

186
00:09:37,070 --> 00:09:34,800
surgeries increases here to tell us more

187
00:09:39,290 --> 00:09:37,080
about that is from the suture and space

188
00:09:41,630 --> 00:09:39,300

team we have Monica minici biologist for

189
00:09:44,350 --> 00:09:41,640
the European Space Agency thank you so

190
00:09:46,910 --> 00:09:44,360
much for being here Monica

191
00:09:48,650 --> 00:09:46,920
of course yes we're so glad to have you

192
00:09:50,870 --> 00:09:48,660
so we're going to talk about Sutra and

193
00:09:52,310 --> 00:09:50,880
space or the biologist on that team uh

194
00:09:54,290 --> 00:09:52,320
can you tell us how you think wounds

195
00:09:56,930 --> 00:09:54,300
will heal in microgravity on the space

196
00:09:58,750 --> 00:09:56,940
station yes uh well

197
00:10:03,170 --> 00:09:58,760
um

198
00:10:06,410 --> 00:10:03,180
tell us that it is possible that the

199
00:10:08,710 --> 00:10:06,420
wound healing process is delayed and

200
00:10:12,050 --> 00:10:08,720
impaired in space

201
00:10:16,310 --> 00:10:12,060
uh wound healing is a very complex

202
00:10:20,449 --> 00:10:16,320
process with several steps strictly

203
00:10:24,170 --> 00:10:20,459
regulated in our organism

204
00:10:27,949 --> 00:10:24,180
if even just one of these steps is

205
00:10:31,610 --> 00:10:27,959
altered the whole process is impaired so

206
00:10:36,370 --> 00:10:31,620
with this experiment we hope to

207
00:10:41,870 --> 00:10:36,380
understand at least in part if and how

208
00:10:44,210 --> 00:10:41,880
weightlessness affects uh the steps of

209
00:10:46,970 --> 00:10:44,220
the healing process right and the

210
00:10:48,650 --> 00:10:46,980
healing process is very complex and so

211
00:10:50,509 --> 00:10:48,660
um how will the suture techniques in

212
00:10:54,650 --> 00:10:50,519
space differ from what we do here on

213
00:10:58,930 --> 00:10:54,660

Earth a suture interacts mechanically

214
00:11:04,970 --> 00:10:58,940
with our tissues because

215
00:11:08,829 --> 00:11:04,980
shooter has to join the wound Edge

216
00:11:12,949 --> 00:11:08,839
um previous studies tell us that the

217
00:11:15,250 --> 00:11:12,959
network of proteins surrounding the

218
00:11:18,710 --> 00:11:15,260
cells in our tissues

219
00:11:21,650 --> 00:11:18,720
could undergo some change in

220
00:11:26,350 --> 00:11:21,660
weightlessness and also the mechanical

221
00:11:28,970 --> 00:11:26,360
properties of the tissues can change

222
00:11:33,970 --> 00:11:28,980
consequently also the interaction

223
00:11:37,030 --> 00:11:33,980
between tissues and suitors could change

224
00:11:41,690 --> 00:11:37,040
so this is an aspect that

225
00:11:43,970 --> 00:11:41,700
should be considered in in the choice of

226
00:11:45,470 --> 00:11:43,980
the suited materials for space right

227
00:11:46,970 --> 00:11:45,480
Monica minichi thank you so much for

228
00:11:49,430 --> 00:11:46,980
joining us very fascinating things that

229
00:11:51,650 --> 00:11:49,440
you're doing thank you thank you

230
00:11:53,569 --> 00:11:51,660
all right another experiment on this

231
00:11:55,850 --> 00:11:53,579
resupply Mission could help feed

232
00:11:58,730 --> 00:11:55,860
astronauts as they explore deep space in

233
00:12:01,009 --> 00:11:58,740
the future that's where veg 05 comes in

234
00:12:03,230 --> 00:12:01,019
in this experiment small tomato plant

235
00:12:05,949 --> 00:12:03,240
seeds are grown in two veggie Chambers

236
00:12:09,410 --> 00:12:05,959
with different LED light conditions for

237
00:12:11,329 --> 00:12:09,420
104 days then they are analyzed for how

238
00:12:13,670 --> 00:12:11,339

many tomatoes they grow and their

239
00:12:15,829 --> 00:12:13,680
nutritional composition station crew

240
00:12:19,250 --> 00:12:15,839
members will rate their flavor texture

241
00:12:22,490 --> 00:12:19,260
and juiciness the ability to grow space

242
00:12:24,530 --> 00:12:22,500
food will help us reduce launch mass and

243
00:12:26,210 --> 00:12:24,540
improve quality for our meals for

244
00:12:28,250 --> 00:12:26,220
astronauts in the future

245
00:12:29,690 --> 00:12:28,260
earlier this month some celebrity chefs

246
00:12:31,430 --> 00:12:29,700
even stopped by the space plant

247
00:12:33,590 --> 00:12:31,440
production lab right here at Kennedy

248
00:12:35,990 --> 00:12:33,600
they're on your screen you see chefs

249
00:12:38,449 --> 00:12:36,000
Rocco de spirito Doug Goldman and Mark

250
00:12:40,370 --> 00:12:38,459
Murphy as they got an inside look at how

251
00:12:42,350 --> 00:12:40,380
food is grown in space while they were

252
00:12:44,930 --> 00:12:42,360
here for the visitor complex Taste of

253
00:12:47,389 --> 00:12:44,940
space 2022 event

254
00:12:49,550 --> 00:12:47,399
all right now we are only about T minus

255
00:12:51,530 --> 00:12:49,560
12 minutes and Counting from liftoff of

256
00:12:54,410 --> 00:12:51,540
the 26 Commercial resupply Services

257
00:12:56,449 --> 00:12:54,420
Mission from NASA and SpaceX to the

258
00:12:58,730 --> 00:12:56,459
International Space Station excuse me

259
00:13:00,530 --> 00:12:58,740
let's bring back now Jesse Anderson to

260
00:13:03,410 --> 00:13:00,540
tell us more about today's launch and

261
00:13:09,530 --> 00:13:06,230
thanks Jasmine as we near the end of the

262
00:13:11,870 --> 00:13:09,540
year today's Mission Mark spacex's 185th

263
00:13:13,069 --> 00:13:11,880

overall Falcon 9 launch and the fifth

264
00:13:15,230 --> 00:13:13,079
flight of dragon to the International

265
00:13:18,190 --> 00:13:15,240
Space Station this year following the

266
00:13:20,930 --> 00:13:18,200
launches of crew 4 crew 5 Axiom 1 and

267
00:13:23,569 --> 00:13:20,940
crs-25 now to give a bit of History

268
00:13:26,150 --> 00:13:23,579
dragon has been flying for 12 years

269
00:13:28,910 --> 00:13:26,160
Dragon made his debut at the orbiting

270
00:13:31,310 --> 00:13:28,920
lab in 2012 as the first private

271
00:13:33,470 --> 00:13:31,320
spacecraft in history to visit the

272
00:13:35,750 --> 00:13:33,480
International Space Station since then

273
00:13:39,050 --> 00:13:35,760
it's made 32 trips to and from the

274
00:13:40,490 --> 00:13:39,060
orbiting lab now today dragon is one of

275
00:13:42,590 --> 00:13:40,500
the few vehicles that can deliver

276
00:13:44,750 --> 00:13:42,600
significant cargo to the space station

277
00:13:47,569 --> 00:13:44,760
and the only vehicle that can deliver

278
00:13:49,730 --> 00:13:47,579
cargo from it Falcon 9 and dragon were

279
00:13:51,410 --> 00:13:49,740
both designed with reflight in mind and

280
00:13:52,970 --> 00:13:51,420
the vehicle Hardware is built to support

281
00:13:54,230 --> 00:13:52,980
multiple missions with minimal

282
00:13:56,990 --> 00:13:54,240
refurbishment

283
00:13:59,569 --> 00:13:57,000
now today 16 of our missions have flown

284
00:14:01,490 --> 00:13:59,579
on flight proven dragons while today's

285
00:14:03,650 --> 00:14:01,500
launch marks the first flight for this

286
00:14:06,050 --> 00:14:03,660
particular dragon and Falcon 9 we plan

287
00:14:08,930 --> 00:14:06,060
to recover and fly both the vehicle and

288
00:14:12,290 --> 00:14:08,940

spacecraft again in the future

289
00:14:14,389 --> 00:14:12,300
so far we've reflown first stages 126

290
00:14:17,750 --> 00:14:14,399
times and this includes Falcon 9 and

291
00:14:19,550 --> 00:14:17,760
Falcon heavy flights and we are planning

292
00:14:22,310 --> 00:14:19,560
to recover this one on our drone ship

293
00:14:24,889 --> 00:14:22,320
just read the instructions today and if

294
00:14:27,710 --> 00:14:24,899
successful it will Mark the 153rd

295
00:14:30,769 --> 00:14:27,720
recovery of an orbital class rocket

296
00:14:32,990 --> 00:14:30,779
we're now at T minus 10 minutes and

297
00:14:35,449 --> 00:14:33,000
about 20 seconds until liftoff with a

298
00:14:38,210 --> 00:14:35,459
range looking good we are still tracking

299
00:14:40,310 --> 00:14:38,220
weather for an on-time launch today so

300
00:14:42,710 --> 00:14:40,320
we'll turn it back over to you Jasmine

301
00:14:44,990 --> 00:14:42,720
thanks so much Jesse now we're talking

302
00:14:46,910 --> 00:14:45,000
about going from the classroom to space

303
00:14:48,769 --> 00:14:46,920
there are several student and

304
00:14:51,050 --> 00:14:48,779
university-led experiments on this

305
00:14:53,210 --> 00:14:51,060
Mission including four small satellites

306
00:14:55,189 --> 00:14:53,220
selected by NASA's cubesat launch

307
00:14:57,590 --> 00:14:55,199
initiative which gives students access

308
00:14:59,810 --> 00:14:57,600
to space one of them is the Mario

309
00:15:01,850 --> 00:14:59,820
cubesat from the University of Michigan

310
00:15:04,370 --> 00:15:01,860
and it will test a material that could

311
00:15:08,030 --> 00:15:04,380
help improve the accuracy of space

312
00:15:10,550 --> 00:15:08,040
telescopes also on this mission is mit's

313
00:15:12,410 --> 00:15:10,560

Black Box Extrusion project which will

314
00:15:15,290 --> 00:15:12,420
explore how buildings and structures

315
00:15:16,069 --> 00:15:15,300
could be 3D printed in space in the

316
00:15:18,050 --> 00:15:16,079
future

317
00:15:19,730 --> 00:15:18,060
joining me now we have two students from

318
00:15:21,829 --> 00:15:19,740
the universities we just mentioned we

319
00:15:23,090 --> 00:15:21,839
have Jillian Haas from the University of

320
00:15:25,370 --> 00:15:23,100
Michigan thank you so much for being

321
00:15:26,810 --> 00:15:25,380
here as well as Martin nissert from MIT

322
00:15:28,129 --> 00:15:26,820
we're so glad to have you guys here

323
00:15:29,750 --> 00:15:28,139
today thank you for having me thanks for

324
00:15:31,430 --> 00:15:29,760
having us of course so you guys are

325
00:15:33,230 --> 00:15:31,440
regular students but you have something

326
00:15:35,750 --> 00:15:33,240
launching to space how are you feeling

327
00:15:37,250 --> 00:15:35,760
Jillian I'm so excited it's incredible

328
00:15:39,290 --> 00:15:37,260
to have something that I worked on

329
00:15:41,090 --> 00:15:39,300
personally to be going to space very

330
00:15:42,769 --> 00:15:41,100
soon right it's really exciting I can

331
00:15:44,569 --> 00:15:42,779
just see the excitement of your face too

332
00:15:47,509 --> 00:15:44,579
Martin let's talk about Black Box

333
00:15:49,910 --> 00:15:47,519
Extrusion you guys are using resin to 3D

334
00:15:52,490 --> 00:15:49,920
print in space how does that work

335
00:15:54,949 --> 00:15:52,500
yeah so our ability to manufacture

336
00:15:57,410 --> 00:15:54,959
structures in Space is really key to the

337
00:15:59,689 --> 00:15:57,420
success of sustainable long duration

338
00:16:01,250 --> 00:15:59,699

future space missions

339
00:16:04,490 --> 00:16:01,260
um and so

340
00:16:07,129 --> 00:16:04,500
uh but a problem right now is that any

341
00:16:08,990 --> 00:16:07,139
structures we launched to space have to

342
00:16:10,970 --> 00:16:09,000
be small enough to fit within the

343
00:16:12,530 --> 00:16:10,980
confines or rocket Fairing and they have

344
00:16:15,110 --> 00:16:12,540
to be strong enough to actually survive

345
00:16:17,329 --> 00:16:15,120
the rigors of launch so our team at the

346
00:16:19,189 --> 00:16:17,339
MIT space exploration initiative have

347
00:16:22,069 --> 00:16:19,199
been working on a technology which will

348
00:16:24,590 --> 00:16:22,079
let us launch raw material in a highly

349
00:16:27,470 --> 00:16:24,600
compact liquid form which we then

350
00:16:30,710 --> 00:16:27,480
solidify on orbit to manufacture space

351
00:16:32,569 --> 00:16:30,720
structures in space itself and we hope

352
00:16:34,069 --> 00:16:32,579
that this technology will really

353
00:16:36,650 --> 00:16:34,079
address some of the fundamental

354
00:16:39,650 --> 00:16:36,660
challenges and constraints associated

355
00:16:40,970 --> 00:16:39,660
with launch mass and volume today right

356
00:16:42,889 --> 00:16:40,980
it's very exciting to see that you're

357
00:16:44,449 --> 00:16:42,899
working on that Julian back to you Mario

358
00:16:46,490 --> 00:16:44,459
is

359
00:16:47,930 --> 00:16:46,500
thick material in space can you tell us

360
00:16:50,269 --> 00:16:47,940
more about that and why was it selected

361
00:16:52,009 --> 00:16:50,279
yeah absolutely so Mario is studying a

362
00:16:54,230 --> 00:16:52,019
piezoelectric material which is a

363
00:16:56,749 --> 00:16:54,240

material that bends when a voltage is

364
00:16:59,509 --> 00:16:56,759
applied to it so we selected to study it

365
00:17:02,269 --> 00:16:59,519
because we want to know how it degrades

366
00:17:04,370 --> 00:17:02,279
in a vacuum essentially to test how it

367
00:17:07,010 --> 00:17:04,380
reacts to a space environment for a

368
00:17:09,289 --> 00:17:07,020
future applications in space

369
00:17:10,610 --> 00:17:09,299
all right that is fantastic so I know

370
00:17:12,049 --> 00:17:10,620
that there's one last thing that each of

371
00:17:13,669 --> 00:17:12,059
you wanted to say to your universities

372
00:17:15,289 --> 00:17:13,679
go ahead you can look at the screen and

373
00:17:17,270 --> 00:17:15,299
say we'll start with Jillian and then

374
00:17:19,750 --> 00:17:17,280
we'll say it from you Martin uh go blue

375
00:17:22,610 --> 00:17:19,760
and beat Ohio

376
00:17:23,990 --> 00:17:22,620
I guess I should say go beavers but uh

377
00:17:26,090 --> 00:17:24,000
yeah thanks so much for the opportunity

378
00:17:28,730 --> 00:17:26,100
to both NASA and MIT and we're looking

379
00:17:30,830 --> 00:17:28,740
forward to working on the project and

380
00:17:32,930 --> 00:17:30,840
go beaver is very exciting

381
00:17:34,789 --> 00:17:32,940
is here today thank you guys thank you

382
00:17:37,549 --> 00:17:34,799
all right now we're going to talk about

383
00:17:39,470 --> 00:17:37,559
a boost in power this resupply Mission

384
00:17:41,510 --> 00:17:39,480
will increase the power on the space

385
00:17:45,049 --> 00:17:41,520
station with the addition of two new

386
00:17:47,570 --> 00:17:45,059
roll out solar arrays also known as I

387
00:17:50,029 --> 00:17:47,580
Rosas after being installed on an

388
00:17:52,789 --> 00:17:50,039

upcoming spacewalk the arrays will roll

389
00:17:55,610 --> 00:17:52,799
out using stored kinetic energy almost

390
00:17:57,770 --> 00:17:55,620
like a yoga mat the irosa is a new

391
00:18:01,070 --> 00:17:57,780
design that uses one piece of flexible

392
00:18:03,049 --> 00:18:01,080
material that snaps open in Space the

393
00:18:05,450 --> 00:18:03,059
first two eye roses were installed last

394
00:18:08,029 --> 00:18:05,460
year and after this set there will be a

395
00:18:09,710 --> 00:18:08,039
third set as well totaling six eye roses

396
00:18:12,710 --> 00:18:09,720
which could increase power on the

397
00:18:14,630 --> 00:18:12,720
station by 20 to 30 percent

398
00:18:16,970 --> 00:18:14,640
the roll out solar array technology

399
00:18:18,830 --> 00:18:16,980
isn't just for the space station it is

400
00:18:21,110 --> 00:18:18,840
also planned for the Gateway lunar

401
00:18:22,730 --> 00:18:21,120
Outpost part of the Artemis deep space

402
00:18:25,130 --> 00:18:22,740
missions

403
00:18:27,289 --> 00:18:25,140
all right we are now heading to just

404
00:18:31,070 --> 00:18:27,299
about T minus six minutes and Counting

405
00:18:33,230 --> 00:18:31,080
until the liftoff of CRS 2626 so let's

406
00:18:36,350 --> 00:18:33,240
bring back Jesse live at SpaceX

407
00:18:38,570 --> 00:18:36,360
headquarters in California and Megan

408
00:18:40,730 --> 00:18:38,580
here on Florida's Space Coast to walk us

409
00:18:43,909 --> 00:18:40,740
through the final moments of liftoff and

410
00:18:47,690 --> 00:18:43,919
countdown take it away

411
00:18:51,590 --> 00:18:47,700
great thank you Jasmine it is T minus

412
00:18:53,990 --> 00:18:51,600
six minutes from t0 and state the SpaceX

413
00:18:55,730 --> 00:18:54,000

team is working no significant issues we

414
00:18:57,890 --> 00:18:55,740
are keeping an eye out for weather and

415
00:19:00,049 --> 00:18:57,900
we're currently only 30 percent go for

416
00:19:03,289 --> 00:19:00,059
launch but the rains Remain the range

417
00:19:05,630 --> 00:19:03,299
remains ready to support launch today as

418
00:19:07,789 --> 00:19:05,640
far as the vehicle at this point rp1

419
00:19:09,950 --> 00:19:07,799
fuel is completely loaded on the second

420
00:19:12,470 --> 00:19:09,960
stage and nearly complete on the first

421
00:19:14,570 --> 00:19:12,480
stage liquid oxygen loading is underway

422
00:19:17,029 --> 00:19:14,580
on both stages and will complete at T

423
00:19:18,830 --> 00:19:17,039
minus two minutes to launch we're also

424
00:19:21,230 --> 00:19:18,840
loading helium gas into both stages

425
00:19:23,150 --> 00:19:21,240
Falcon 9 uses helium as a pressure ant

426
00:19:25,610 --> 00:19:23,160
to backfill the propellant tanks as

427
00:19:27,890 --> 00:19:25,620
liquid oxygen and rp1 are consumed by

428
00:19:30,049 --> 00:19:27,900
the Merlin engines during ascend

429
00:19:31,970 --> 00:19:30,059
helium load began before the broadcast

430
00:19:35,570 --> 00:19:31,980
went live and we'll continue to top off

431
00:19:38,029 --> 00:19:35,580
until a minute and a half before lunch

432
00:19:40,070 --> 00:19:38,039
to make sure engine startup goes well we

433
00:19:41,990 --> 00:19:40,080
also perform what we call engine fill

434
00:19:44,450 --> 00:19:42,000
this happens at T minus seven minutes

435
00:19:46,730 --> 00:19:44,460
where we flowed a small amount of the

436
00:19:49,190 --> 00:19:46,740
super chilled locks into the Merlin

437
00:19:51,049 --> 00:19:49,200
engines turbo pumps we're trying to do

438
00:19:53,630 --> 00:19:51,059

this to avoid a thermal shock to the

439
00:19:55,370 --> 00:19:53,640
system when uh that full flow of super

440
00:19:56,270 --> 00:19:55,380
chilled liquid oxygen hits the prop

441
00:19:58,370 --> 00:19:56,280
system

442
00:20:00,710 --> 00:19:58,380
Dragon also began at startup sequence at

443
00:20:02,930 --> 00:20:00,720
T minus 35 minutes when it coordinated

444
00:20:05,090 --> 00:20:02,940
timing with Falcon 9. it's currently

445
00:20:07,070 --> 00:20:05,100
undergoing vehicle health checks with

446
00:20:09,230 --> 00:20:07,080
the next big step just before liftoff

447
00:20:11,150 --> 00:20:09,240
when Dragon transitions to internal

448
00:20:12,470 --> 00:20:11,160
battery power

449
00:20:15,289 --> 00:20:12,480
foreign

450
00:20:17,990 --> 00:20:15,299
now next up the large trust structure

451
00:20:19,430 --> 00:20:18,000
next to Falcon 9 which is called The

452
00:20:21,710 --> 00:20:19,440
Transporter Rector or what you'll hear

453
00:20:23,390 --> 00:20:21,720
called the strong back will retract away

454
00:20:25,850 --> 00:20:23,400
from the rocket in preparation for

455
00:20:27,590 --> 00:20:25,860
liftoff before that happens the clamp

456
00:20:29,870 --> 00:20:27,600
arms just below the dragon that you see

457
00:20:32,450 --> 00:20:29,880
on your screen will begin to open once

458
00:20:34,549 --> 00:20:32,460
those are fully open then the te can

459
00:20:36,470 --> 00:20:34,559
begin to recline back

460
00:20:39,169 --> 00:20:36,480
now in these last few minutes Falcon 9

461
00:20:41,150 --> 00:20:39,179
is performing final health checks on its

462
00:20:43,070 --> 00:20:41,160
primary Communications avionics and

463
00:20:44,690 --> 00:20:43,080

propulsion systems in preparation for

464
00:20:46,730 --> 00:20:44,700
flight

465
00:20:48,650 --> 00:20:46,740
and there you can see on your screen

466
00:20:52,490 --> 00:20:48,660
those clamp arms that I mentioned are

467
00:20:54,470 --> 00:20:52,500
opening up again once those are

468
00:20:57,529 --> 00:20:54,480
our launch weather officer has received

469
00:21:00,230 --> 00:20:57,539
his final set of data for today's launch

470
00:21:01,430 --> 00:21:00,240
attempt and is uh no go for the

471
00:21:03,650 --> 00:21:01,440
opportunity

472
00:21:05,630 --> 00:21:03,660
from a launch management standpoint we

473
00:21:08,270 --> 00:21:05,640
will continue the count for the purposes

474
00:21:10,730 --> 00:21:08,280
of Simplicity with our Automation and

475
00:21:12,590 --> 00:21:10,740
we'll stop at T minus 60 seconds at

476
00:21:14,990 --> 00:21:12,600
which time launch control

477
00:21:17,270 --> 00:21:15,000
I'll say the three magic words and and

478
00:21:19,190 --> 00:21:17,280
the launch time so for now clock will

479
00:21:21,650 --> 00:21:19,200
continue to count for an additional two

480
00:21:23,450 --> 00:21:21,660
and a half minutes

481
00:21:25,070 --> 00:21:23,460
sorry to pause there for a moment folks

482
00:21:29,570 --> 00:21:25,080
I was just listening to the launch Team

483
00:21:31,610 --> 00:21:29,580
talking uh with uh the launch weather

484
00:21:33,590 --> 00:21:31,620
team to talk about the weather and it

485
00:21:36,230 --> 00:21:33,600
does sound like we are going to scrub

486
00:21:38,630 --> 00:21:36,240
for the day uh there are still three

487
00:21:40,430 --> 00:21:38,640
launch weather constraints that they

488
00:21:43,850 --> 00:21:40,440

have not been able to clear and they

489
00:21:46,370 --> 00:21:43,860
don't think will clear by the time it's

490
00:21:48,350 --> 00:21:46,380
one lock code complete but as you can

491
00:21:50,990 --> 00:21:48,360
hear the call-outs they're continuing

492
00:21:51,890 --> 00:21:51,000
with the countdown

493
00:21:54,350 --> 00:21:51,900
um

494
00:21:57,590 --> 00:21:54,360
and they're just going to let this

495
00:22:01,070 --> 00:21:57,600
countdown terminate on its own so again

496
00:22:04,250 --> 00:22:01,080
scrubbing for the day because of weather

497
00:22:06,470 --> 00:22:04,260
concerns concerns that if we were to

498
00:22:08,450 --> 00:22:06,480
launch uh it would trigger lightning and

499
00:22:10,970 --> 00:22:08,460
that would be very danger Dangerous for

500
00:22:14,390 --> 00:22:10,980
the vehicle it could uh destroy things

501
00:22:17,810 --> 00:22:14,400
on the vehicle and in turn uh be a

502
00:22:20,390 --> 00:22:17,820
public safety risk so again weather

503
00:22:22,310 --> 00:22:20,400
being the cause of the scrub today there

504
00:22:24,409 --> 00:22:22,320
are other backup opportunities

505
00:22:28,430 --> 00:22:24,419
thankfully already we have two on the

506
00:22:31,909 --> 00:22:28,440
range for Saturday November 26th at 2 20

507
00:22:36,289 --> 00:22:31,919
PM eastern time also Sunday November

508
00:22:37,850 --> 00:22:36,299
27th at 1 58 p.m Eastern Time both of

509
00:22:39,710 --> 00:22:37,860
those days looking much better in terms

510
00:22:41,570 --> 00:22:39,720
of weather I did speak to the launched

511
00:22:44,810 --> 00:22:41,580
weather officer for today that's Mike

512
00:22:46,789 --> 00:22:44,820
mcelinan and he did tell me that the

513
00:22:49,070 --> 00:22:46,799

percent go for those days are a lot

514
00:22:52,149 --> 00:22:49,080
better than today the 30 percent go we

515
00:22:55,549 --> 00:22:52,159
had on Saturday the percent go is 60

516
00:22:57,710 --> 00:22:55,559
where Sunday it would be 40 percent go

517
00:22:59,049 --> 00:22:57,720
so we have to wait a couple of days but

518
00:23:01,370 --> 00:22:59,059
it says

519
00:23:02,750 --> 00:23:01,380
the weight again you still hear those

520
00:23:04,430 --> 00:23:02,760
call outs because we were going to let

521
00:23:07,690 --> 00:23:04,440
this countdown terminate dragon is in

522
00:23:12,529 --> 00:23:10,610
but again we are not going to attempt a

523
00:23:20,930 --> 00:23:12,539
launch today for the safety of the

524
00:23:26,630 --> 00:23:23,029
now when we launched this will be the

525
00:23:30,590 --> 00:23:26,640
last dragon launch of this year

526
00:23:33,830 --> 00:23:30,600
we are bringing about 7 700 pounds of

527
00:23:39,049 --> 00:23:33,840
cargo science and supplies to the

528
00:23:45,169 --> 00:23:41,630
some of the items include gym hardware

529
00:23:47,450 --> 00:23:45,179
for the astronauts

530
00:23:49,789 --> 00:23:47,460
as well as some life support equipment

531
00:23:51,289 --> 00:23:49,799
also medical equipment hold hold hold

532
00:23:52,270 --> 00:23:51,299
hold

533
00:23:55,310 --> 00:23:52,280
um

534
00:24:00,049 --> 00:23:55,320
that call for hold hold hold launch

535
00:24:06,409 --> 00:24:03,049
so that finally terminates the countdown

536
00:24:08,630 --> 00:24:06,419
again in line with what has been decided

537
00:24:10,909 --> 00:24:08,640
earlier which was that we will scrub

538
00:24:12,890 --> 00:24:10,919

because of weather

539
00:24:16,789 --> 00:24:12,900
three launch weather constraints that

540
00:24:18,830 --> 00:24:16,799
could not be cleared in time for the

541
00:24:23,049 --> 00:24:18,840
instantaneous launch opportunity today

542
00:24:26,090 --> 00:24:23,059
at 3 54 and three seconds Eastern Time

543
00:24:27,890 --> 00:24:26,100
those rules are the cumulus cloud rule

544
00:24:30,169 --> 00:24:27,900
the Disturbed weather Rule and the

545
00:24:33,710 --> 00:24:30,179
flight through precipitation rule again

546
00:24:37,370 --> 00:24:33,720
those rules could not be cleared

547
00:24:43,010 --> 00:24:37,380
by the time we wanted to launch at 354

548
00:24:47,930 --> 00:24:45,230
another look live look at the pad there

549
00:24:50,149 --> 00:24:47,940
you can still see liquid oxygen venting

550
00:24:53,690 --> 00:24:50,159
off from both the first and second

551
00:25:12,610 --> 00:24:55,730
and you saw that the countdown was

552
00:25:18,230 --> 00:25:15,110
SpaceX and NASA will be standing down

553
00:25:20,810 --> 00:25:18,240
for the next couple of days

554
00:25:23,149 --> 00:25:20,820
the next time we plan to try to Launch

555
00:25:27,890 --> 00:25:23,159
crs-26

556
00:25:29,450 --> 00:25:27,900
is Saturday November 26th

557
00:25:32,029 --> 00:25:29,460
again

558
00:25:34,250 --> 00:25:32,039
the last

559
00:25:38,510 --> 00:25:34,260
at last check for the weather on that

560
00:25:40,070 --> 00:25:38,520
day we are 60 go so a lot better of an

561
00:25:43,610 --> 00:25:40,080
opportunity there

562
00:25:46,909 --> 00:25:43,620
the time for the launch on the 26th is 2

563
00:25:48,529 --> 00:25:46,919

20 p.m eastern time if for whatever

564
00:25:51,169 --> 00:25:48,539
reason we don't launch on Saturday

565
00:25:54,169 --> 00:25:51,179
November 26th we're going to go to

566
00:26:07,549 --> 00:25:54,179
Sunday November 27th launching hopefully

567
00:26:11,149 --> 00:26:09,590
so thank you so much for following along

568
00:26:14,029 --> 00:26:11,159
with the launch that is the latest from

569
00:26:16,310 --> 00:26:14,039
the launch weather team and again a

570
00:26:17,930 --> 00:26:16,320
weather scrub for today but we will try

571
00:26:20,450 --> 00:26:17,940
again in a couple of days but for now

572
00:26:22,070 --> 00:26:20,460
I'm Megan Cruz from Hangar AE over at

573
00:26:23,510 --> 00:26:22,080
Cape Canaveral space force station I'll

574
00:26:25,370 --> 00:26:23,520
send it back over to Jasmine of the host

575
00:26:27,710 --> 00:26:25,380
desk

576
00:26:29,690 --> 00:26:27,720
thank you so much Megan for those

577
00:26:32,029 --> 00:26:29,700
updates as we just heard today's launch

578
00:26:33,830 --> 00:26:32,039
attempt has ended in a scrub due to

579
00:26:37,130 --> 00:26:33,840
weather our next attempt will be

580
00:26:39,230 --> 00:26:37,140
Saturday November 26th at 2 20 p.m

581
00:26:42,230 --> 00:26:39,240
eastern time live coverage will begin

582
00:26:44,810 --> 00:26:42,240
here on NASA TV at 2PM you can also

583
00:26:46,250 --> 00:26:44,820
watch on the SpaceX webcast as well we

584
00:26:47,870 --> 00:26:46,260
thank you so much for joining us hope