1
00:00:54,869 --> 00:00:50,600
[Music]

2
00:00:59,590 --> 00:00:57,670
we are looking live at a falcon 9 rocket

3
00:01:01,990 --> 00:00:59,600
on the launch pad at the cape canaveral

4
00:01:05,030 --> 00:01:02,000
air force station in florida

5
00:01:07,750 --> 00:01:05,040
at 11 50 tonight the aerospace company

6
00:01:10,870 --> 00:01:07,760
spacex will launch a dragon cargo

7
00:01:13,670 --> 00:01:10,880
spacecraft on a nasa mission to resupply

8
00:01:16,149 --> 00:01:13,680
the international space station

9
00:01:18,710 --> 00:01:16,159
happy friday evening everyone and

10
00:01:21,030 --> 00:01:18,720
welcome to nasa's john f kennedy space

11
00:01:24,070 --> 00:01:21,040
center for live launch coverage of

12
00:01:26,390 --> 00:01:24,080
spacex's commercial resupply mission 20

13
00:01:28,149 --> 00:01:26,400

for the international space station

14
00:01:31,429 --> 00:01:28,159
what a fantastic way to start the

15
00:01:34,550 --> 00:01:31,439
weekend with smoke and fire i'm your

16
00:01:37,190 --> 00:01:34,560
host tammy long and we are but 19

17
00:01:39,590 --> 00:01:37,200
minutes away from the planned liftoff of

18
00:01:41,190 --> 00:01:39,600
a falcon 9 rocket from the beautiful

19
00:01:44,149 --> 00:01:41,200
coast of florida

20
00:01:46,389 --> 00:01:44,159
the crs-20 mission will fly much needed

21
00:01:48,550 --> 00:01:46,399
astronaut supplies and research

22
00:01:51,270 --> 00:01:48,560
experiments up to the international

23
00:01:53,830 --> 00:01:51,280
space station which at launch time will

24
00:01:57,030 --> 00:01:53,840
be orbiting

25
00:01:59,270 --> 00:01:57,040
statute miles above our earth

26
00:02:01,670 --> 00:01:59,280
back here on earth our team of

27
00:02:03,910 --> 00:02:01,680
correspondents are reporting from across

28
00:02:04,950 --> 00:02:03,920
the country to cover this thrilling

29
00:02:06,630 --> 00:02:04,960
launch

30
00:02:09,109 --> 00:02:06,640
we'll head to the mission director

31
00:02:11,589 --> 00:02:09,119
center here on the space coast for

32
00:02:13,270 --> 00:02:11,599
updates on the weather and the countdown

33
00:02:15,830 --> 00:02:13,280
then we'll head west to spacex

34
00:02:17,910 --> 00:02:15,840
headquarters in hawthorne california and

35
00:02:20,869 --> 00:02:17,920
of course we'll check in with mission

36
00:02:22,630 --> 00:02:20,879
control houston at johnson space center

37
00:02:24,949 --> 00:02:22,640
so let's get fired up

38
00:02:30,150 --> 00:02:24,959

by reviewing some quick facts about

39
00:02:34,949 --> 00:02:32,710
crs 20 is the third flight of this

40
00:02:37,270 --> 00:02:34,959
dragon spacecraft and the last

41
00:02:39,030 --> 00:02:37,280
commercial resupply mission to utilize

42
00:02:41,750 --> 00:02:39,040
the dragon one vehicle

43
00:02:44,790 --> 00:02:41,760
the spacecraft includes more than 4

44
00:02:47,270 --> 00:02:44,800
500 pounds of astronaut supplies and

45
00:02:50,470 --> 00:02:47,280
payloads for science research

46
00:02:53,190 --> 00:02:50,480
tonight's launch window is instantaneous

47
00:02:55,910 --> 00:02:53,200
meaning that spacex must launch at the

48
00:02:58,149 --> 00:02:55,920
exact second of the planned liftoff or

49
00:03:01,190 --> 00:02:58,159
try again on another day

50
00:03:02,949 --> 00:03:01,200
as planned the dragon spacecraft stays

51
00:03:05,430 --> 00:03:02,959
docked to the international space

52
00:03:07,670 --> 00:03:05,440
station for about a month before

53
00:03:11,270 --> 00:03:07,680
returning to terra firma

54
00:03:13,589 --> 00:03:11,280
not only will crs-20 resupply the iss

55
00:03:16,149 --> 00:03:13,599
it's also delivering important science

56
00:03:19,110 --> 00:03:16,159
experiments some of which will impact

57
00:03:21,509 --> 00:03:19,120
directly humanity's quality of life

58
00:03:23,149 --> 00:03:21,519
so let's take a deeper dive into the

59
00:03:25,670 --> 00:03:23,159
payloads

60
00:03:28,149 --> 00:03:25,680
bartolomeo is an external payload

61
00:03:30,710 --> 00:03:28,159
platform operating up to 12 active

62
00:03:33,030 --> 00:03:30,720
payload sites on the station

63
00:03:35,030 --> 00:03:33,040

the airbus platform hosts commercial and

64
00:03:37,190 --> 00:03:35,040
institutional payloads

65
00:03:39,270 --> 00:03:37,200
offers unlimited opportunities for new

66
00:03:41,350 --> 00:03:39,280
space missions and

67
00:03:44,550 --> 00:03:41,360
enables the growth of the commercial

68
00:03:47,270 --> 00:03:44,560
space marketplace and next is a payload

69
00:03:49,509 --> 00:03:47,280
that seeks out of this world performance

70
00:03:51,430 --> 00:03:49,519
that is adidas boost

71
00:03:54,149 --> 00:03:51,440
the shoe and apparel giant is using

72
00:03:57,270 --> 00:03:54,159
space to test its tiny foam sphere

73
00:03:58,630 --> 00:03:57,280
technology to improve foot performance

74
00:04:00,789 --> 00:03:58,640
and comfort

75
00:04:03,589 --> 00:04:00,799
crs crs-20 also carries a droplet

76
00:04:05,990 --> 00:04:03,599
formation study delta faucet is sending

77
00:04:08,070 --> 00:04:06,000
up an experiment that could help reduce

78
00:04:10,789 --> 00:04:08,080
water without sacrificing the

79
00:04:13,670 --> 00:04:10,799
performance of shower heads and the mvp

80
00:04:15,270 --> 00:04:13,680
cell03 investigation is looking at

81
00:04:17,189 --> 00:04:15,280
helping your heart

82
00:04:19,990 --> 00:04:17,199
it will look at stem cells that could

83
00:04:24,070 --> 00:04:20,000
treat cardiovascular disease or heart

84
00:04:26,469 --> 00:04:24,080
abnormalities caused by space flight

85
00:04:28,550 --> 00:04:26,479
a little later patrick o'neill is

86
00:04:30,550 --> 00:04:28,560
joining us live in studio with more

87
00:04:32,310 --> 00:04:30,560
details about the exciting research

88
00:04:35,189 --> 00:04:32,320

heading to station

89
00:04:37,430 --> 00:04:35,199
joining us now are nasa's marie lewis

90
00:04:39,990 --> 00:04:37,440
and daryl nail they are live in the

91
00:04:42,390 --> 00:04:40,000
mission director center just a few miles

92
00:04:44,230 --> 00:04:42,400
away from the launch pad hi marie hi

93
00:04:46,629 --> 00:04:44,240
daryl what's the latest

94
00:04:49,030 --> 00:04:46,639
hi tammy i'm marie lewis and daryl nail

95
00:04:51,350 --> 00:04:49,040
here daryl nail here excuse me that's

96
00:04:52,950 --> 00:04:51,360
right a tongue twister for me

97
00:04:54,629 --> 00:04:52,960
we've been uh monitoring the weather

98
00:04:56,230 --> 00:04:54,639
pretty closely um and watching the

99
00:04:58,150 --> 00:04:56,240
rocket on the pad yeah the launch

100
00:05:00,629 --> 00:04:58,160
director just about a half hour ago gave

101
00:05:03,270 --> 00:05:00,639
the go for fueling up and so right now

102
00:05:05,029 --> 00:05:03,280
we're about halfway uh filled with fuel

103
00:05:07,590 --> 00:05:05,039
at the uh out at the launch pad for the

104
00:05:09,350 --> 00:05:07,600
spacex falcon 9 rocket he gave that go

105
00:05:11,270 --> 00:05:09,360
ahead right around 11

106
00:05:14,950 --> 00:05:11,280
uh this evening and we are set of course

107
00:05:17,510 --> 00:05:14,960
for a liftoff at 11 50 and 31 seconds

108
00:05:19,990 --> 00:05:17,520
eastern time we are t minus 15 minutes

109
00:05:22,550 --> 00:05:20,000
and 54 seconds and counting

110
00:05:23,990 --> 00:05:22,560
and so the rocket looking good here of

111
00:05:25,830 --> 00:05:24,000
course they had to make some adjustments

112
00:05:27,510 --> 00:05:25,840
marie in order to make this happen

113
00:05:29,029 --> 00:05:27,520

that's right we were actually originally

114
00:05:31,270 --> 00:05:29,039
scheduled to go at the beginning of this

115
00:05:33,670 --> 00:05:31,280
week but then during those uh pre-flight

116
00:05:35,430 --> 00:05:33,680
inspections spacex found a valve motor

117
00:05:37,749 --> 00:05:35,440
on the second stage engine wasn't

118
00:05:39,590 --> 00:05:37,759
performing or wasn't behaving quite as

119
00:05:41,350 --> 00:05:39,600
expected so in order to be on the safe

120
00:05:42,870 --> 00:05:41,360
side they decided to just swap that out

121
00:05:44,469 --> 00:05:42,880
with another second stage that was

122
00:05:46,629 --> 00:05:44,479
already here on the cape and ready for

123
00:05:48,710 --> 00:05:46,639
flight so that's past all pre-flight

124
00:05:50,550 --> 00:05:48,720
inspections and so technically we

125
00:05:51,350 --> 00:05:50,560
haven't had any show stoppers it sounds

126
00:05:53,909 --> 00:05:51,360
like

127
00:05:55,350 --> 00:05:53,919
the real area of threat right now is the

128
00:05:57,270 --> 00:05:55,360
weather right it really is and that's

129
00:05:59,590 --> 00:05:57,280
something that they've been watching

130
00:06:02,070 --> 00:05:59,600
throughout the evening and one of the

131
00:06:03,670 --> 00:06:02,080
particular areas of concerns is liftoff

132
00:06:06,710 --> 00:06:03,680
winds and as you're looking at the

133
00:06:09,110 --> 00:06:06,720
picture there of the cargo dragon we

134
00:06:10,790 --> 00:06:09,120
want to move now to the satellite view

135
00:06:12,870 --> 00:06:10,800
of the weather and as you can see off to

136
00:06:15,590 --> 00:06:12,880
the right hand side of the screen that's

137
00:06:17,510 --> 00:06:15,600
a cold front that pushed off to the east

138
00:06:19,430 --> 00:06:17,520

and it brought in lower temperatures but

139
00:06:21,430 --> 00:06:19,440
because it was a low pressure system

140
00:06:25,110 --> 00:06:21,440
followed by a high pressure system to

141
00:06:27,350 --> 00:06:25,120
the north we have a gusty wind situation

142
00:06:30,230 --> 00:06:27,360
on the ground we've been moving air

143
00:06:32,550 --> 00:06:30,240
about 25 to 30 miles per hour around the

144
00:06:35,189 --> 00:06:32,560
launch site there is a

145
00:06:37,830 --> 00:06:35,199
small craft warning advisory in the area

146
00:06:40,150 --> 00:06:37,840
put out by the local weather service so

147
00:06:41,830 --> 00:06:40,160
winds are going pretty good it all sums

148
00:06:42,629 --> 00:06:41,840
up to this though we're looking right

149
00:06:45,510 --> 00:06:42,639
now

150
00:06:47,830 --> 00:06:45,520
at a basically a

151
00:06:50,390 --> 00:06:47,840
probability of violation of 60 percent

152
00:06:53,189 --> 00:06:50,400
for crs 20. the winds as i mentioned

153
00:06:55,430 --> 00:06:53,199
between 25 and 30 knots the temperature

154
00:06:57,589 --> 00:06:55,440
has come down quite a bit down to 56

155
00:07:00,390 --> 00:06:57,599
degrees but the big concern is that

156
00:07:03,029 --> 00:07:00,400
liftoff wind and they're monitoring it

157
00:07:05,749 --> 00:07:03,039
earlier tonight around sunset it wasn't

158
00:07:07,589 --> 00:07:05,759
too bad but it has gone up since then

159
00:07:09,029 --> 00:07:07,599
and it continues to trend in that

160
00:07:11,110 --> 00:07:09,039
general direction so we're pushing right

161
00:07:14,070 --> 00:07:11,120
up against the limit but as of right now

162
00:07:16,550 --> 00:07:14,080
we are okay we are go for liftoff winds

163
00:07:18,550 --> 00:07:16,560

and we're just under 14 minutes now from

164
00:07:22,469 --> 00:07:18,560
liftoff that instantaneous window as a

165
00:07:23,990 --> 00:07:22,479
reminder is at 11 50 and 31 seconds

166
00:07:26,070 --> 00:07:24,000
taking a look again at the pad that

167
00:07:28,469 --> 00:07:26,080
cargo dragon you see on the top is

168
00:07:31,830 --> 00:07:28,479
reusable in fact it's been flown two

169
00:07:35,430 --> 00:07:31,840
times before the first was crs 10 that

170
00:07:37,270 --> 00:07:35,440
was back in february 2017 and then the

171
00:07:39,350 --> 00:07:37,280
second flight of this particular crew

172
00:07:42,029 --> 00:07:39,360
dragon um you can see it on your screen

173
00:07:45,189 --> 00:07:42,039
there was in december 2018 that was

174
00:07:47,830 --> 00:07:45,199
crs-16 so those two previous flights um

175
00:07:50,869 --> 00:07:47,840
there you see those lifts liftoffs side

176
00:07:53,589 --> 00:07:50,879
by side so excited to see this third and

177
00:07:55,189 --> 00:07:53,599
final flight of this uh cargo dragon

178
00:07:57,189 --> 00:07:55,199
this is actually the last flight not

179
00:08:00,070 --> 00:07:57,199
just of this particular capsule but the

180
00:08:02,710 --> 00:08:00,080
final flight of the first version of the

181
00:08:05,110 --> 00:08:02,720
cargo dragon so a big moment tonight if

182
00:08:07,029 --> 00:08:05,120
they're able to uh to see lift off here

183
00:08:08,950 --> 00:08:07,039
and the weather cooperates yeah and uh

184
00:08:10,790 --> 00:08:08,960
hopefully that will happen but we will

185
00:08:12,869 --> 00:08:10,800
continue to continue to monitor the

186
00:08:14,869 --> 00:08:12,879
situation as you look at the rocket

187
00:08:17,589 --> 00:08:14,879
there you can see about how much has

188
00:08:19,830 --> 00:08:17,599

been fueled the liquid oxygen because

189
00:08:22,550 --> 00:08:19,840
that's where you see that gaseous oxygen

190
00:08:23,830 --> 00:08:22,560
coming off the first stage so so far

191
00:08:25,749 --> 00:08:23,840
we're looking good but of course we're

192
00:08:27,670 --> 00:08:25,759
going to continue to monitor the

193
00:08:30,150 --> 00:08:27,680
situation until then though we'll toss

194
00:08:31,990 --> 00:08:30,160
it back to the studio to tammy

195
00:08:35,110 --> 00:08:32,000
thanks marie and daryl we'll check back

196
00:08:38,070 --> 00:08:35,120
a little later right now we are t minus

197
00:08:40,149 --> 00:08:38,080
12 minutes and counting let's check in

198
00:08:42,790 --> 00:08:40,159
with spacex headquarters in hawthorne

199
00:08:45,110 --> 00:08:42,800
california where the falcon 9 rocket and

200
00:08:48,470 --> 00:08:45,120
crew dragon were designed and built

201
00:08:50,470 --> 00:08:48,480
shiva bharadvaj is joining us live hello

202
00:08:53,269 --> 00:08:50,480
california tell us about the history of

203
00:08:59,190 --> 00:08:55,990
yeah thanks tammy now today's mission is

204
00:09:01,990 --> 00:08:59,200
spacex's fifth launch of 2020 and it

205
00:09:03,750 --> 00:09:02,000
also marks the last flight of the first

206
00:09:06,310 --> 00:09:03,760
version of our dragon vehicle which

207
00:09:09,190 --> 00:09:06,320
we've been operating for nine years now

208
00:09:11,910 --> 00:09:09,200
um dragon made its debut in 2012 as the

209
00:09:13,910 --> 00:09:11,920
first spacecraft in excuse me first

210
00:09:15,670 --> 00:09:13,920
private spacecraft in history to visit

211
00:09:17,670 --> 00:09:15,680
the international space station and

212
00:09:20,230 --> 00:09:17,680
since then it's actually made 20 trips

213
00:09:21,910 --> 00:09:20,240

to and from the national lab today it's

214
00:09:24,230 --> 00:09:21,920
one of the few vehicles that can deliver

215
00:09:26,389 --> 00:09:24,240
significant cargo to the station and the

216
00:09:27,110 --> 00:09:26,399
only vehicle that can deliver cargo from

217
00:09:31,910 --> 00:09:27,120
it

218
00:09:34,949 --> 00:09:31,920
for a total of 26 cargo resupply

219
00:09:36,870 --> 00:09:34,959
missions and starting with crs 21 will

220
00:09:38,470 --> 00:09:36,880
be flying an upgraded version of the

221
00:09:40,790 --> 00:09:38,480
dragon spacecraft that'll also be

222
00:09:42,870 --> 00:09:40,800
capable of flying people

223
00:09:44,870 --> 00:09:42,880
both falcon 9 and dragon were designed

224
00:09:47,110 --> 00:09:44,880
with re-flight in mind and the hardware

225
00:09:49,750 --> 00:09:47,120
is built to support multiple missions

226
00:09:51,509 --> 00:09:49,760
with minimal refurbishment and tonight's

227
00:09:53,670 --> 00:09:51,519
mission will actually be the ninth time

228
00:09:55,269 --> 00:09:53,680
that we've reflown a dragon spacecraft

229
00:09:57,509 --> 00:09:55,279
which is really awesome

230
00:09:59,350 --> 00:09:57,519
now as daryl and marie had mentioned

231
00:10:01,990 --> 00:09:59,360
this dragon has been to the station

232
00:10:04,230 --> 00:10:02,000
twice before a fun bit of trivia this

233
00:10:06,550 --> 00:10:04,240
will be the third time that a dragon

234
00:10:08,069 --> 00:10:06,560
spacecraft has visited the space station

235
00:10:10,550 --> 00:10:08,079
three times

236
00:10:11,750 --> 00:10:10,560
the first stage has also flown once

237
00:10:15,350 --> 00:10:11,760
before

238
00:10:17,269 --> 00:10:15,360

on our last crs mission back in december

239
00:10:19,509 --> 00:10:17,279
after stage separation will be

240
00:10:21,829 --> 00:10:19,519
attempting a landing at landing zone one

241
00:10:23,670 --> 00:10:21,839
in cape canaveral so it can be reused on

242
00:10:26,069 --> 00:10:23,680
future missions and if that landing is

243
00:10:28,630 --> 00:10:26,079
successful it'll mark our 50th

244
00:10:30,710 --> 00:10:28,640
successful landing of a first stage

245
00:10:31,590 --> 00:10:30,720
now there is a pretty good crowd behind

246
00:10:33,750 --> 00:10:31,600
me

247
00:10:35,750 --> 00:10:33,760
that are eagerly awaiting this 21st trip

248
00:10:37,590 --> 00:10:35,760
to the space station and we're all

249
00:10:40,150 --> 00:10:37,600
really looking forward to a successful

250
00:10:41,670 --> 00:10:40,160
launch tonight so back to you tammy

251
00:10:43,430 --> 00:10:41,680
thanks shiva

252
00:10:45,990 --> 00:10:43,440
we also want to commemorate the

253
00:10:47,350 --> 00:10:46,000
international space station's 20th year

254
00:10:50,230 --> 00:10:47,360
of operation

255
00:10:52,389 --> 00:10:50,240
this november 2nd marks 20 years of

256
00:10:55,030 --> 00:10:52,399
continuous human presence on the

257
00:11:54,230 --> 00:10:55,040
orbiting laboratory a fantastic

258
00:11:59,269 --> 00:11:56,470
liftoff of today's rocket from launch

259
00:12:01,990 --> 00:11:59,279
complex 40 is timed right down to the

260
00:12:04,550 --> 00:12:02,000
very second so the cargo spacecraft is

261
00:12:07,350 --> 00:12:04,560
lined up correctly to rendezvous with

262
00:12:10,150 --> 00:12:07,360
what with the iss excuse me for more

263
00:12:13,190 --> 00:12:10,160

details on launch trajectory let's check

264
00:12:18,230 --> 00:12:13,200
in with nasa's leah cheshire who is live

265
00:12:21,430 --> 00:12:19,910
thanks tammy and welcome to the

266
00:12:24,389 --> 00:12:21,440
international space station flight

267
00:12:27,030 --> 00:12:24,399
control room here in houston texas the

268
00:12:29,269 --> 00:12:27,040
orbit 3 team is currently on console and

269
00:12:30,870 --> 00:12:29,279
that's the last shift of today but the

270
00:12:34,870 --> 00:12:30,880
space station flight control room is

271
00:12:36,550 --> 00:12:34,880
monitored 24 7 365 days a year all of

272
00:12:38,470 --> 00:12:36,560
these people keeping tabs on what's

273
00:12:39,430 --> 00:12:38,480
going on aboard the international space

274
00:12:41,750 --> 00:12:39,440
station

275
00:12:43,350 --> 00:12:41,760
tonight they are led by flight director

276
00:12:44,629 --> 00:12:43,360
mike lammers he's gathering the

277
00:12:46,629 --> 00:12:44,639
information from all the flight

278
00:12:48,470 --> 00:12:46,639
controllers and overseeing the team

279
00:12:50,230 --> 00:12:48,480
throughout their tasks

280
00:12:52,230 --> 00:12:50,240
we have three crew members on board the

281
00:12:54,629 --> 00:12:52,240
international space station right now

282
00:12:56,710 --> 00:12:54,639
that's nasa astronauts jessica mir and

283
00:12:58,949 --> 00:12:56,720
andrew morgan and in the center of your

284
00:13:00,710 --> 00:12:58,959
screen roscosmos cosmonaut oleg

285
00:13:02,710 --> 00:13:00,720
skripochka

286
00:13:04,949 --> 00:13:02,720
they'll be eagerly anticipating the over

287
00:13:07,590 --> 00:13:04,959
4 000 pounds of experiments equipment

288
00:13:08,949 --> 00:13:07,600

supplies and maybe even more that are

289
00:13:11,990 --> 00:13:08,959
arriving to the international space

290
00:13:14,710 --> 00:13:12,000
station scheduled for this monday march

291
00:13:17,030 --> 00:13:14,720
9th however they are still in the last

292
00:13:19,670 --> 00:13:17,040
hour or so of their sleep for the night

293
00:13:21,910 --> 00:13:19,680
as the space station operates in gmt or

294
00:13:23,910 --> 00:13:21,920
greenwich mean time

295
00:13:25,350 --> 00:13:23,920
the astronauts will capture and birth

296
00:13:27,750 --> 00:13:25,360
the vehicle to the space station's

297
00:13:29,590 --> 00:13:27,760
harmony module once it arrives on monday

298
00:13:32,310 --> 00:13:29,600
morning march 9th and will be live for

299
00:13:34,790 --> 00:13:32,320
that at 4 30 a.m central time to watch

300
00:13:36,310 --> 00:13:34,800
it all unfold until then things are

301
00:13:37,910 --> 00:13:36,320
looking good here in the international

302
00:13:39,829 --> 00:13:37,920
space station flight control room in

303
00:13:43,509 --> 00:13:39,839
houston and with that we will send it

304
00:13:49,189 --> 00:13:46,550
patrick o'neill joins us live in studio

305
00:13:51,430 --> 00:13:49,199
he is with the u.s national lab an

306
00:13:53,910 --> 00:13:51,440
organization that acts as a conduit for

307
00:13:56,069 --> 00:13:53,920
science experiments to the iss hey

308
00:13:57,430 --> 00:13:56,079
patrick tammy how you doing i'm good you

309
00:13:58,389 --> 00:13:57,440
you're getting ready for getting ready

310
00:13:59,990 --> 00:13:58,399
for a rocket launch so i'm pretty

311
00:14:01,670 --> 00:14:00,000
excited i know it's a great friday night

312
00:14:04,310 --> 00:14:01,680
it is so tell us what's the difference

313
00:14:06,550 --> 00:14:04,320

between the payloads that you handle and

314
00:14:07,750 --> 00:14:06,560
the payloads that nasa oversees yeah so

315
00:14:09,430 --> 00:14:07,760
the biggest difference so when you think

316
00:14:10,870 --> 00:14:09,440
about nasa you think about exploration

317
00:14:12,230 --> 00:14:10,880
living and working in space better

318
00:14:13,910 --> 00:14:12,240
understanding the human conditions so

319
00:14:15,829 --> 00:14:13,920
that we can go to places beyond low

320
00:14:18,310 --> 00:14:15,839
earth orbit whether that be the moon

321
00:14:20,069 --> 00:14:18,320
mars etc however there's an opportunity

322
00:14:21,670 --> 00:14:20,079
for researchers to leverage this unique

323
00:14:23,670 --> 00:14:21,680
microgravity environment of the space

324
00:14:25,110 --> 00:14:23,680
station to ultimately benefit life on

325
00:14:27,189 --> 00:14:25,120
earth and that's where the us national

326
00:14:29,590 --> 00:14:27,199
lab comes into play so the experiments

327
00:14:31,509 --> 00:14:29,600
that we sponsor all have this capacity

328
00:14:33,509 --> 00:14:31,519
to benefit life on earth that's the main

329
00:14:35,110 --> 00:14:33,519
difference that's awesome so we know

330
00:14:36,870 --> 00:14:35,120
you're focused on this mission but tell

331
00:14:38,550 --> 00:14:36,880
us some of the exciting things coming up

332
00:14:40,150 --> 00:14:38,560
on the horizon well i would say first

333
00:14:41,269 --> 00:14:40,160
and foremost there's so much science

334
00:14:42,710 --> 00:14:41,279
that's going to be happening on station

335
00:14:44,230 --> 00:14:42,720
whether that be from this launch where

336
00:14:46,150 --> 00:14:44,240
we have more than 20 payloads that are

337
00:14:47,990 --> 00:14:46,160
launching from a myriad of scientific

338
00:14:49,590 --> 00:14:48,000

disciplines but then also down the road

339
00:14:50,710 --> 00:14:49,600
it's just more science more new

340
00:14:52,230 --> 00:14:50,720
facilities are going to be going to

341
00:14:53,350 --> 00:14:52,240
station uh

342
00:14:55,030 --> 00:14:53,360
more commercial companies are going to

343
00:14:57,030 --> 00:14:55,040
be leveraging this microgravity

344
00:14:59,509 --> 00:14:57,040
environment and institutions like the

345
00:15:01,350 --> 00:14:59,519
nih is the nss of the world all of them

346
00:15:02,949 --> 00:15:01,360
wanting to take advantage of that unique

347
00:15:04,389 --> 00:15:02,959
space-based environment of the space

348
00:15:06,069 --> 00:15:04,399
station so there's going to be an awful

349
00:15:08,230 --> 00:15:06,079
lot of activity on the station whether

350
00:15:09,509 --> 00:15:08,240
that be right now from this launch as

351
00:15:10,949 --> 00:15:09,519
well as things are going to be happening

352
00:15:12,389 --> 00:15:10,959
down the road for the foreseeable future

353
00:15:13,910 --> 00:15:12,399
and we're really excited about the

354
00:15:15,269 --> 00:15:13,920
promise of the potential of what the

355
00:15:17,269 --> 00:15:15,279
microgravity environment of the space

356
00:15:18,949 --> 00:15:17,279
station brings sky's the limit patrick

357
00:15:20,710 --> 00:15:18,959
well maybe even beyond that well thank

358
00:15:22,949 --> 00:15:20,720
you

359
00:15:24,470 --> 00:15:22,959
we are now just minutes from launch

360
00:15:26,310 --> 00:15:24,480
let's head back over to the mission

361
00:15:28,310 --> 00:15:26,320
director center to get an update from

362
00:15:30,230 --> 00:15:28,320
marie and darrell

363
00:15:32,550 --> 00:15:30,240

thank you tammy and that's right i'm

364
00:15:35,189 --> 00:15:32,560
here with marie lewis i'm daryl nail and

365
00:15:37,910 --> 00:15:35,199
the falcon 9 rocket is nearly filled

366
00:15:40,470 --> 00:15:37,920
with fuel the first stage that is and

367
00:15:43,110 --> 00:15:40,480
then they'll begin second stage fueling

368
00:15:46,310 --> 00:15:43,120
we are go for launch across all weather

369
00:15:48,389 --> 00:15:46,320
criteria so that's a good sign um now

370
00:15:50,150 --> 00:15:48,399
we're just watching and waiting for the

371
00:15:53,350 --> 00:15:50,160
count we're sitting at five minutes and

372
00:15:55,590 --> 00:15:53,360
22 seconds until liftoff absolutely and

373
00:15:57,910 --> 00:15:55,600
of course the primary objective is to

374
00:15:59,910 --> 00:15:57,920
get that cargo dragon into the correct

375
00:16:02,629 --> 00:15:59,920
orbit and it accomplishes that on this

376
00:16:05,269 --> 00:16:02,639
two-stage falcon 9 rocket

377
00:16:08,069 --> 00:16:05,279
it stands 230 feet tall 12 feet in

378
00:16:11,350 --> 00:16:08,079
diameter and falcon 9 has nine merlin

379
00:16:13,749 --> 00:16:11,360
engines that combined produce about 1.7

380
00:16:15,509 --> 00:16:13,759
million pounds of thrust at liftoff and

381
00:16:18,949 --> 00:16:15,519
then after that point uh the second

382
00:16:21,749 --> 00:16:18,959
stage takes over and gets its own merlin

383
00:16:23,910 --> 00:16:21,759
1d vacuum engine producing another 210

384
00:16:26,629 --> 00:16:23,920
000 pounds of thrust and the vacuum of

385
00:16:28,470 --> 00:16:26,639
space to push dragon into its correct

386
00:16:30,470 --> 00:16:28,480
orbit so that's the really cool part

387
00:16:32,230 --> 00:16:30,480
about how it gets dragging up to space

388
00:16:33,670 --> 00:16:32,240

uh dragging up to space station but

389
00:16:35,749 --> 00:16:33,680
there's some really cool stuff happening

390
00:16:37,829 --> 00:16:35,759
uh in the meantime back here closer to

391
00:16:39,590 --> 00:16:37,839
earth yeah absolutely right now you're

392
00:16:41,829 --> 00:16:39,600
looking at that shot you can see the uh

393
00:16:44,069 --> 00:16:41,839
the dragon capsule at the top of the

394
00:16:46,310 --> 00:16:44,079
rocket it actually has two uh

395
00:16:47,910 --> 00:16:46,320
international space station badges on it

396
00:16:49,910 --> 00:16:47,920
because it's been to space as you've

397
00:16:51,670 --> 00:16:49,920
heard uh throughout the broadcast it's

398
00:16:53,350 --> 00:16:51,680
been to the international space station

399
00:16:55,430 --> 00:16:53,360
twice and this will be its third time so

400
00:16:58,230 --> 00:16:55,440
it's got a couple markings up there on

401
00:17:00,150 --> 00:16:58,240
the capsule at the very top and pretty

402
00:17:02,230 --> 00:17:00,160
soon we're going to see that strong back

403
00:17:04,630 --> 00:17:02,240
retract off from the rocket so you want

404
00:17:06,390 --> 00:17:04,640
to look closely when we take that rocket

405
00:17:07,990 --> 00:17:06,400
shot again right now you're looking at

406
00:17:09,669 --> 00:17:08,000
spacex mission control center in

407
00:17:12,069 --> 00:17:09,679
hawthorne california where they are

408
00:17:14,549 --> 00:17:12,079
commanding the launch but there's the

409
00:17:16,549 --> 00:17:14,559
shot from the ground and you can see the

410
00:17:18,309 --> 00:17:16,559
gaseous oxygen mixing around down the

411
00:17:20,549 --> 00:17:18,319
bottom that's because they're

412
00:17:22,549 --> 00:17:20,559
pre-chilling the engines

413
00:17:24,230 --> 00:17:22,559

before liftoff so

414
00:17:25,909 --> 00:17:24,240
that's why you see that

415
00:17:27,990 --> 00:17:25,919
that kind of smokey look at the bottom

416
00:17:29,590 --> 00:17:28,000
it's really just gaseous oxygen but a

417
00:17:31,350 --> 00:17:29,600
neat thing about this booster is it's

418
00:17:33,590 --> 00:17:31,360
coming back to land and there you can

419
00:17:35,430 --> 00:17:33,600
see some of that uh that gaseous oxygen

420
00:17:37,669 --> 00:17:35,440
at the top and certainly the winds are a

421
00:17:39,510 --> 00:17:37,679
factor we talked about that we're go for

422
00:17:41,190 --> 00:17:39,520
winds but it kind of shows you how the

423
00:17:42,710 --> 00:17:41,200
wind's coming across that rocket yep and

424
00:17:44,710 --> 00:17:42,720
it looked like we started to just see

425
00:17:46,150 --> 00:17:44,720
that strong back just tip back ever so

426
00:17:47,669 --> 00:17:46,160
slightly in preparation for launch

427
00:17:49,029 --> 00:17:47,679
because we're inside of three and a half

428
00:17:49,909 --> 00:17:49,039
minutes now

429
00:17:52,630 --> 00:17:49,919
but

430
00:17:54,630 --> 00:17:52,640
after liftoff about six minutes after

431
00:17:57,270 --> 00:17:54,640
liftoff we should see on the beginning

432
00:17:59,350 --> 00:17:57,280
of the booster starting to return back

433
00:18:01,190 --> 00:17:59,360
to land and it's going to be pretty

434
00:18:02,630 --> 00:18:01,200
interesting because they've never uh

435
00:18:04,230 --> 00:18:02,640
they'll this will be the highest wins

436
00:18:06,390 --> 00:18:04,240
they've ever landed that booster and if

437
00:18:10,310 --> 00:18:06,400
it goes well right they were clocking

438
00:18:13,510 --> 00:18:10,320

winds between 20 and 25 miles per hour

439
00:18:15,909 --> 00:18:13,520
at the landing site lz1

440
00:18:18,230 --> 00:18:15,919
and so that's still within limits for it

441
00:18:19,430 --> 00:18:18,240
to land but it's going to be windy when

442
00:18:21,669 --> 00:18:19,440
it comes down so it should be

443
00:18:23,830 --> 00:18:21,679
interesting to see what happens we will

444
00:18:26,870 --> 00:18:23,840
certainly have cameras spacex has

445
00:18:28,789 --> 00:18:26,880
cameras on the booster itself as well as

446
00:18:30,150 --> 00:18:28,799
the second stage so we'll be able to see

447
00:18:32,150 --> 00:18:30,160
and on the ground we'll be able to see

448
00:18:34,070 --> 00:18:32,160
it come down which is uh certainly an

449
00:18:36,390 --> 00:18:34,080
exciting time for

450
00:18:39,110 --> 00:18:36,400
that part of the mission but again we're

451
00:18:42,630 --> 00:18:39,120
t minus two minutes and 33 seconds and

452
00:18:45,029 --> 00:18:42,640
counting until launch of the spacex uh

453
00:18:47,190 --> 00:18:45,039
falcon 9 rocket and dragon spacecraft

454
00:18:50,150 --> 00:18:47,200
and as we mentioned we're going to get a

455
00:18:51,830 --> 00:18:50,160
double sonic boom when that landing

456
00:18:53,510 --> 00:18:51,840
stage comes down and it's actually going

457
00:18:54,870 --> 00:18:53,520
to ring in our saturday because it's

458
00:18:57,110 --> 00:18:54,880
going to happen right around midnight

459
00:18:59,190 --> 00:18:57,120
yeah so it should uh we got to celebrate

460
00:19:00,789 --> 00:18:59,200
the weekend somehow right i mean we're

461
00:19:02,630 --> 00:19:00,799
working on friday night let's start with

462
00:19:04,630 --> 00:19:02,640
the bank well we got a rocket launch so

463
00:19:06,870 --> 00:19:04,640

that's pretty exciting um

464
00:19:08,310 --> 00:19:06,880
but uh as we get closer of course marie

465
00:19:09,990 --> 00:19:08,320
this will be your first launch countdown

466
00:19:12,390 --> 00:19:10,000
which we're looking forward to

467
00:19:14,070 --> 00:19:12,400
you'll uh count us on into the the

468
00:19:15,750 --> 00:19:14,080
liftoff which is an exciting personal

469
00:19:17,669 --> 00:19:15,760
accomplishment your first ever yeah and

470
00:19:20,310 --> 00:19:17,679
an honor to do it on the last flight of

471
00:19:23,510 --> 00:19:20,320
dragon one absolutely gonna retire

472
00:19:26,549 --> 00:19:23,520
dragon one and uh no decision on what

473
00:19:29,430 --> 00:19:26,559
the future holds for that spacecraft but

474
00:19:32,070 --> 00:19:29,440
they're moving on to dragon 2 and it has

475
00:19:34,630 --> 00:19:32,080
a higher reusability rate so that's

476
00:19:37,510 --> 00:19:34,640
something that spacex has often

477
00:19:39,029 --> 00:19:37,520
been very excited about reusing their

478
00:19:41,669 --> 00:19:39,039
their spacecraft and their rockets and

479
00:19:44,710 --> 00:19:41,679
this will only help that

480
00:19:45,830 --> 00:19:44,720
so t minus one minute and 28 seconds and

481
00:19:47,590 --> 00:19:45,840
counting

482
00:19:49,669 --> 00:19:47,600
pretty soon what you're going to hear is

483
00:19:52,710 --> 00:19:49,679
the launch director give the go for

484
00:19:55,270 --> 00:19:52,720
launch that'll happen around t minus 45

485
00:19:56,630 --> 00:19:55,280
seconds so keep an ear for that

486
00:19:59,029 --> 00:19:56,640
at this point

487
00:20:01,029 --> 00:19:59,039
they've got the propellants uh almost

488
00:20:03,029 --> 00:20:01,039

fully loaded they're going to pressurize

489
00:20:05,590 --> 00:20:03,039
those and then they're going to let that

490
00:20:08,870 --> 00:20:05,600
command flight computer take over here

491
00:20:15,270 --> 00:20:10,549
so we should have hear that go for

492
00:20:15,280 --> 00:20:22,149
dragon isn't started

493
00:20:27,029 --> 00:20:24,390
let's listen in as the launch director

494
00:20:36,230 --> 00:20:27,039
gives the go for launch

495
00:20:36,240 --> 00:20:40,789
so there you heard it

496
00:20:40,799 --> 00:20:55,830
all weather conditions are green

497
00:20:55,840 --> 00:21:01,270
t-minus 15 seconds

498
00:21:04,070 --> 00:21:02,310
ten

499
00:21:05,190 --> 00:21:04,080
nine eight

500
00:21:06,310 --> 00:21:05,200
seven

501
00:21:07,270 --> 00:21:06,320
six

502
00:21:08,310 --> 00:21:07,280
five

503
00:21:09,430 --> 00:21:08,320
four

504
00:21:10,470 --> 00:21:09,440
three

505
00:21:11,350 --> 00:21:10,480
two

506
00:21:13,110 --> 00:21:11,360
one

507
00:21:16,149 --> 00:21:13,120
zero

508
00:21:18,870 --> 00:21:16,159
and liftoff of the falcon 9 rocket and

509
00:21:21,669 --> 00:21:18,880
cargo dragon on the final flight of the

510
00:21:23,590 --> 00:21:21,679
dragon one spacecraft taking research

511
00:21:26,210 --> 00:21:23,600
designed to improve life on earth and

512
00:21:28,870 --> 00:21:26,220
lead discovery in space

513
00:21:30,470 --> 00:21:28,880

[Music]

514
00:21:43,750 --> 00:21:30,480
pitching downrange

515
00:21:48,070 --> 00:21:45,830
falcon 9 is looking good

516
00:21:57,430 --> 00:21:48,080
2 million pounds of thrust as it goes

517
00:22:02,390 --> 00:21:59,350
coming up in just a few seconds it will

518
00:22:04,710 --> 00:22:02,400
experience its maximum amount of force

519
00:22:06,549 --> 00:22:04,720
on the rocket

520
00:22:08,840 --> 00:22:06,559
that'll happen at one minute and 18

521
00:22:23,270 --> 00:22:08,850
seconds

522
00:22:27,990 --> 00:22:24,830
aerodynamic

523
00:22:31,270 --> 00:22:28,000
pressure vehicle experiencing maximum

524
00:22:35,750 --> 00:22:33,750
so you hear the call

525
00:22:38,870 --> 00:22:35,760
beautiful shot right there as it goes

526
00:22:43,510 --> 00:22:40,789
now in less than a minute we should hear

527
00:22:45,669 --> 00:22:43,520
confirmation of main engine cut off

528
00:22:52,470 --> 00:22:45,679
so far looking great it's a beautiful

529
00:22:55,990 --> 00:22:54,070
now though there will be a rapid

530
00:22:57,990 --> 00:22:56,000
succession of events coming up in just a

531
00:23:00,630 --> 00:22:58,000
bit as marie noted um we'll have the

532
00:23:02,950 --> 00:23:00,640
first stage main engine cut off it'll be

533
00:23:05,350 --> 00:23:02,960
followed by a separation

534
00:23:08,630 --> 00:23:05,360
and then um that second stage will start

535
00:23:19,350 --> 00:23:08,640
that'll all happen within a matter of

536
00:23:23,590 --> 00:23:21,590
there's a great close-up shot of those

537
00:23:34,710 --> 00:23:23,600
merlin d engines

538
00:23:39,990 --> 00:23:37,750

and there they go

539
00:23:41,669 --> 00:23:40,000
stage separation confirmed

540
00:23:44,630 --> 00:23:41,679
all right the first stage is loose and

541
00:23:47,669 --> 00:23:44,640
it is now falling back to earth

542
00:23:51,430 --> 00:23:47,679
and there you see the second stage

543
00:23:59,029 --> 00:23:55,909
another 210 000 pounds of thrust

544
00:24:01,269 --> 00:23:59,039
propelling dragon into orbit

545
00:24:12,390 --> 00:24:01,279
there's a shot from the booster is it uh

546
00:24:16,870 --> 00:24:14,950
so far everything with regards to this

547
00:24:19,830 --> 00:24:16,880
flight is looking nominal which means

548
00:24:21,990 --> 00:24:19,840
it's it's performing as expected

549
00:24:23,590 --> 00:24:22,000
you see the split screen there on your

550
00:24:25,110 --> 00:24:23,600
right hand side you have the second

551
00:24:27,350 --> 00:24:25,120
stage engine

552
00:24:30,310 --> 00:24:27,360
on the left hand side the booster and

553
00:24:34,870 --> 00:24:30,320
just briefly believe we saw uh part of

554
00:24:39,590 --> 00:24:37,590
and again the booster is headed back

555
00:24:41,110 --> 00:24:39,600
towards cape canaveral air

556
00:24:43,510 --> 00:24:41,120
air force station

557
00:24:44,870 --> 00:24:43,520
where they are going to attempt to land

558
00:24:47,350 --> 00:24:44,880
this booster

559
00:24:50,230 --> 00:24:47,360
at landing zone one here that first

560
00:24:53,190 --> 00:24:50,240
stage entry burn begins in about three

561
00:24:54,310 --> 00:24:53,200
minutes now for that booster

562
00:24:56,630 --> 00:24:54,320
and here we're looking again at the

563
00:25:01,830 --> 00:24:56,640

second stage

564
00:25:09,110 --> 00:25:01,840
engine propelling dragon towards orbit

565
00:25:09,120 --> 00:25:21,990
acquisition of signal in bermuda

566
00:25:26,310 --> 00:25:24,630
so we were really watching closely

567
00:25:28,710 --> 00:25:26,320
listening closely to the weather reports

568
00:25:30,789 --> 00:25:28,720
tonight but so far all things nominal

569
00:25:32,070 --> 00:25:30,799
yeah it had no problem with the winds

570
00:25:34,710 --> 00:25:32,080
down on the ground

571
00:25:36,789 --> 00:25:34,720
lifted off right through there no no

572
00:25:39,029 --> 00:25:36,799
issues at all the first stage conducted

573
00:25:40,710 --> 00:25:39,039
its burn and now that first stage is

574
00:25:43,350 --> 00:25:40,720
falling back to earth and the second

575
00:25:45,190 --> 00:25:43,360
stage is carrying dragon onwards to get

576
00:25:57,190 --> 00:25:45,200
into that orbit to meet up with the

577
00:26:01,830 --> 00:25:59,830
we are now four minutes and 45 seconds

578
00:26:03,110 --> 00:26:01,840
into flight you see the split screen

579
00:26:05,110 --> 00:26:03,120
there

580
00:26:06,710 --> 00:26:05,120
everything is going well

581
00:26:25,750 --> 00:26:06,720
for dragon

582
00:26:30,470 --> 00:26:28,230
coming up in just about a minute

583
00:26:32,149 --> 00:26:30,480
we'll get the first stage entry burn

584
00:26:35,350 --> 00:26:32,159
will begin this will

585
00:26:37,750 --> 00:26:35,360
this burn will allow it to slow down the

586
00:26:39,590 --> 00:26:37,760
booster and get it into position so that

587
00:26:41,430 --> 00:26:39,600
it can land

588
00:26:43,750 --> 00:26:41,440

and i think we heard shiva say earlier

589
00:26:45,510 --> 00:26:43,760
if they do this landing successfully it

590
00:26:48,149 --> 00:26:45,520
will be the 50th

591
00:26:49,669 --> 00:26:48,159
landing of a spacex booster um which is

592
00:26:51,350 --> 00:26:49,679
that's a big number they've gotten

593
00:26:52,950 --> 00:26:51,360
really consistent at being able to land

594
00:26:54,630 --> 00:26:52,960
these boosters uh but it'll be

595
00:26:58,230 --> 00:26:54,640
interesting because we know we've got 20

596
00:26:59,990 --> 00:26:58,240
to 25 mile per hour winds um elon musk

597
00:27:02,390 --> 00:27:00,000
ceo of spacex tweeting it'll be the

598
00:27:06,310 --> 00:27:02,400
greatest wins uh that this boosters face

599
00:27:08,390 --> 00:27:06,320
it'll be interesting to see what happens

600
00:27:09,990 --> 00:27:08,400
this uh as you look at the second stage

601
00:27:12,070 --> 00:27:10,000
burning there

602
00:27:14,230 --> 00:27:12,080
dragon is expected to rendezvous with

603
00:27:21,750 --> 00:27:14,240
the international space station right

604
00:27:26,389 --> 00:27:23,990
and this will be the

605
00:27:29,110 --> 00:27:26,399
19th time they've landed a booster back

606
00:27:30,950 --> 00:27:29,120
on land uh the rest of those uh

607
00:27:35,269 --> 00:27:30,960
landings have been on their drone ship

608
00:27:37,029 --> 00:27:35,279
one of their two drone ships out at sea

609
00:27:38,389 --> 00:27:37,039
so again really hoping

610
00:27:40,710 --> 00:27:38,399
they're able to do that even with the

611
00:27:43,430 --> 00:27:40,720
winds going on and we should have that

612
00:27:50,070 --> 00:27:43,440
first stage entry burn beginning

613
00:27:55,430 --> 00:27:52,549

and for those who are gathered locally

614
00:27:57,110 --> 00:27:55,440
make sure you keep an ear out for uh the

615
00:27:58,870 --> 00:27:57,120
double sonic boom

616
00:28:00,630 --> 00:27:58,880
when the booster comes back and breaks

617
00:28:03,510 --> 00:28:00,640
the speed of sound there you can see

618
00:28:05,669 --> 00:28:03,520
that that burn that entry burn has begun

619
00:28:07,269 --> 00:28:05,679
on the left hand side of your screen you

620
00:28:10,149 --> 00:28:07,279
can see the grid fins are out for the

621
00:28:12,950 --> 00:28:10,159
first stage booster and down it comes

622
00:28:15,430 --> 00:28:12,960
stage one entry burn shutdown

623
00:28:18,789 --> 00:28:15,440
so they shut down that entry burn

624
00:28:20,389 --> 00:28:18,799
everything looking great so far

625
00:28:22,149 --> 00:28:20,399
of course the burn helped illuminate the

626
00:28:23,750 --> 00:28:22,159
picture you can't see much when it's not

627
00:28:25,510 --> 00:28:23,760
burning but uh

628
00:28:27,990 --> 00:28:25,520
but it's a good sign that it uh

629
00:28:32,230 --> 00:28:28,000
completed its first burn stage one fps

630
00:28:36,230 --> 00:28:33,990
all right that's going to wrap up our

631
00:28:38,230 --> 00:28:36,240
coverage for this portion of the mission

632
00:28:40,710 --> 00:28:38,240
thanks for joining us we're now going to

633
00:28:42,549 --> 00:28:40,720
toss it over to shiva at spacex

634
00:28:45,430 --> 00:28:42,559
headquarters in hawthorne california

635
00:28:47,430 --> 00:28:45,440
shiva

636
00:28:50,389 --> 00:28:47,440
yeah thanks guys so coming up in just

637
00:28:53,430 --> 00:28:50,399
about 15 seconds we have our landing

638
00:28:55,669 --> 00:28:53,440

burn um falcon 9 is takes a series of

639
00:28:57,110 --> 00:28:55,679
three burns to do that landing first is

640
00:28:59,110 --> 00:28:57,120
the boost back burn that you guys that

641
00:29:00,710 --> 00:28:59,120
everyone has watched and the entry burn

642
00:29:01,669 --> 00:29:00,720
to reduce the aerodynamic loads on the

643
00:29:05,350 --> 00:29:01,679
vehicle

644
00:29:07,430 --> 00:29:05,360
uh now is coming up on the entry burn

645
00:29:10,149 --> 00:29:07,440
it looks like we have good ignition this

646
00:29:12,149 --> 00:29:10,159
only lights up the center merlin engine

647
00:29:14,549 --> 00:29:12,159
and shortly after the four landing legs

648
00:29:15,830 --> 00:29:14,559
will deploy

649
00:29:17,269 --> 00:29:15,840
you can see on your screen that left

650
00:29:18,789 --> 00:29:17,279
hand side the grid fins there's a

651
00:29:22,389 --> 00:29:18,799
beautiful shot of falcon 9 as it's

652
00:29:23,830 --> 00:29:22,399
coming back towards landing zone one

653
00:29:29,269 --> 00:29:23,840
keep an eye out here for landing like

654
00:29:33,190 --> 00:29:31,669
i'm hearing a lot of cheers behind me

655
00:29:36,590 --> 00:29:33,200
there's

656
00:29:38,070 --> 00:29:36,600
it sounds like we may have touched down

657
00:29:40,230 --> 00:29:38,080
[Applause]

658
00:29:42,870 --> 00:29:40,240
beautiful and that that is confirmation

659
00:29:46,310 --> 00:29:42,880
that is the 50th successful landing of a

660
00:29:49,350 --> 00:29:46,320
falcon 9 for stage um congratulations to

661
00:29:51,029 --> 00:29:49,360
the entire spacex team now real quick

662
00:29:52,950 --> 00:29:51,039
here and you can see this on your right

663
00:29:56,549 --> 00:29:52,960

hand side the second stage is going to

664
00:29:58,470 --> 00:29:56,559
have shut down of its mvac engine

665
00:30:00,470 --> 00:29:58,480
so there's the call out you can see seco

666
00:30:06,950 --> 00:30:00,480
there

667
00:30:12,789 --> 00:30:08,950
and uh shortly after the guidance team

668
00:30:14,149 --> 00:30:12,799
will let us know if uh the second stage

669
00:30:15,830 --> 00:30:14,159
there's that call out for the nominal

670
00:30:17,430 --> 00:30:15,840
orbit insertion so that means that we're

671
00:30:19,750 --> 00:30:17,440
ready for the next step which is

672
00:30:21,990 --> 00:30:19,760
deployment of dragon from the top of the

673
00:30:24,789 --> 00:30:22,000
second stage

674
00:30:26,149 --> 00:30:24,799
now once once uh dragon deploys from the

675
00:30:28,070 --> 00:30:26,159
second stage we'll actually get a

676
00:30:30,630 --> 00:30:28,080
there's that camera view actually

677
00:30:32,389 --> 00:30:30,640
looking up into dragon's trunk

678
00:30:34,870 --> 00:30:32,399
dragon carries two types of cargo

679
00:30:36,710 --> 00:30:34,880
pressurized and unpressurized cargo

680
00:30:39,909 --> 00:30:36,720
unpressurized cargo in the trunk portion

681
00:30:42,789 --> 00:30:39,919
and pressurized within the capsule

682
00:30:44,070 --> 00:30:42,799
so shortly here we should have dragon

683
00:30:45,510 --> 00:30:44,080
deploy

684
00:30:57,430 --> 00:30:45,520
we'll hear that on the launch nets

685
00:31:02,389 --> 00:30:59,830
there is dragon gently floating away

686
00:31:04,789 --> 00:31:02,399
people behind me are ecstatic to see

687
00:31:06,389 --> 00:31:04,799
uh this this final dragon space dragon

688
00:31:08,870 --> 00:31:06,399

one spacecraft heading off to the

689
00:31:11,190 --> 00:31:08,880
international space station um on on the

690
00:31:14,070 --> 00:31:11,200
sides of dragon you can actually see the

691
00:31:15,830 --> 00:31:14,080
fairings that protect these solar arrays

692
00:31:18,070 --> 00:31:15,840
those solar arrays produce more than

693
00:31:19,909 --> 00:31:18,080
five kilowatts of power that helped

694
00:31:21,990 --> 00:31:19,919
recharge dragon as it makes its way

695
00:31:23,909 --> 00:31:22,000
towards the international space station

696
00:31:26,149 --> 00:31:23,919
we're expecting the solar rays to deploy

697
00:31:28,230 --> 00:31:26,159
around t plus 12 minutes

698
00:31:30,549 --> 00:31:28,240
and uh why don't we check in with leah

699
00:31:34,549 --> 00:31:30,559
at johnson space center for coverage of

700
00:31:38,310 --> 00:31:36,470
thanks shiva a great launch and of

701
00:31:40,149 --> 00:31:38,320
course really exciting always to see

702
00:31:42,230 --> 00:31:40,159
that first stage landing congrats on the

703
00:31:43,909 --> 00:31:42,240
50th one of those

704
00:31:46,149 --> 00:31:43,919
we are seeing live views and got

705
00:31:47,830 --> 00:31:46,159
confirmation of the second stage

706
00:31:49,990 --> 00:31:47,840
separation and if you looked inside

707
00:31:50,789 --> 00:31:50,000
dragon's trunk which you can kind of see

708
00:31:52,389 --> 00:31:50,799
now

709
00:31:54,470 --> 00:31:52,399
floating toward its destination of the

710
00:31:56,710 --> 00:31:54,480
space station you might have gotten a

711
00:31:59,110 --> 00:31:56,720
glimpse of the bartolomeo platform as an

712
00:32:01,029 --> 00:31:59,120
unpressurized payload that's a payload

713
00:32:03,430 --> 00:32:01,039

by the european space agency which will

714
00:32:05,190 --> 00:32:03,440
serve as an experiment platform and it

715
00:32:06,950 --> 00:32:05,200
will sit at a unique spot on the station

716
00:32:09,269 --> 00:32:06,960
where it has an unobstructed view of the

717
00:32:10,870 --> 00:32:09,279
earth and into space

718
00:32:12,710 --> 00:32:10,880
and as you mentioned the next milestone

719
00:32:14,789 --> 00:32:12,720
for dragon is the solar array deployed

720
00:32:16,710 --> 00:32:14,799
to occur at 12 minutes after launch

721
00:32:18,870 --> 00:32:16,720
providing power to the spacecraft over

722
00:32:20,630 --> 00:32:18,880
its journey for the next two days

723
00:32:22,630 --> 00:32:20,640
believe it or not the wingspan of dragon

724
00:32:25,830 --> 00:32:22,640
once those solar arrays unfurl is about

725
00:32:27,990 --> 00:32:25,840
54 feet but this is actually the last

726
00:32:30,710 --> 00:32:28,000
time we'll see a solar array deploy on

727
00:32:32,630 --> 00:32:30,720
dragon because the new crs2 vehicle is

728
00:32:33,669 --> 00:32:32,640
switching to a little bit of a different

729
00:32:35,430 --> 00:32:33,679
style

730
00:32:37,750 --> 00:32:35,440
the same as the crew dragon vehicle

731
00:32:43,110 --> 00:32:37,760
where the solar panels are instead

732
00:32:47,190 --> 00:32:44,870
upon its arrival to the space station

733
00:32:49,750 --> 00:32:47,200
spacex dragon will be the fourth vehicle

734
00:32:52,230 --> 00:32:49,760
parked joining a soyuz spacecraft one

735
00:33:01,029 --> 00:32:52,240
russian progress resupply craft and

736
00:33:05,590 --> 00:33:03,110
we expect to see those solar arrays

737
00:33:50,630 --> 00:33:05,600
deploy shortly and we are going to stand

738
00:33:53,669 --> 00:33:51,990

dragging the propulsion system has

739
00:34:48,069 --> 00:33:53,679
successfully primed and all thrusters

740
00:34:51,990 --> 00:34:50,310
and there you can see those solar arrays

741
00:34:55,109 --> 00:34:52,000
beginning to deploy

742
00:35:13,910 --> 00:34:55,119
things are looking good for dragon

743
00:35:21,109 --> 00:35:15,829
dragon solar arrays have successfully

744
00:35:25,510 --> 00:35:23,349
and there we have it with the successful

745
00:35:27,910 --> 00:35:25,520
deployment of the solar arrays dragon

746
00:35:30,710 --> 00:35:27,920
will begin gathering energy from the sun

747
00:35:32,710 --> 00:35:30,720
on its two-day two-day journey to the

748
00:35:35,030 --> 00:35:32,720
international space station once it

749
00:35:37,109 --> 00:35:35,040
reaches the space station on march 9th

750
00:35:38,790 --> 00:35:37,119
astronaut jessica muir will enter the

751
00:35:40,710 --> 00:35:38,800
cupola of the

752
00:35:42,710 --> 00:35:40,720
international space station that window

753
00:35:44,550 --> 00:35:42,720
area where she'll have a great view to

754
00:35:46,390 --> 00:35:44,560
reach out and capture the spacecraft

755
00:35:47,910 --> 00:35:46,400
with the canada arm 2.

756
00:35:49,510 --> 00:35:47,920
she'll then turn the controls over to

757
00:35:51,990 --> 00:35:49,520
the ground who will then reposition the

758
00:35:53,829 --> 00:35:52,000
spacecraft and install it to the

759
00:35:58,950 --> 00:35:53,839
station's harmony module where it will

760
00:36:03,589 --> 00:36:01,510
but before then we are going to take a

761
00:36:05,670 --> 00:36:03,599
moment and talk with kenny todd

762
00:36:07,670 --> 00:36:05,680
operations and integration manager for

763
00:36:09,190 --> 00:36:07,680

the international space station thanks

764
00:36:10,950 --> 00:36:09,200
so much for joining us kenny yeah it's

765
00:36:12,550 --> 00:36:10,960
my pleasure thanks for having me

766
00:36:15,430 --> 00:36:12,560
so we mentioned this is the end of the

767
00:36:17,670 --> 00:36:15,440
crs-1 contract what can we look forward

768
00:36:20,390 --> 00:36:17,680
to with crs-2

769
00:36:22,390 --> 00:36:20,400
well the crs-2 you know we learned a lot

770
00:36:23,910 --> 00:36:22,400
with this first 20 flights with with

771
00:36:26,630 --> 00:36:23,920
spacex and so

772
00:36:28,870 --> 00:36:26,640
um we were able to step back when we

773
00:36:30,390 --> 00:36:28,880
went to the crs 2 contract take a look

774
00:36:32,790 --> 00:36:30,400
at those things how to flow in some

775
00:36:34,310 --> 00:36:32,800
additional flexibility so um one of the

776
00:36:36,630 --> 00:36:34,320
things we'll have with crs2 we'll have a

777
00:36:37,829 --> 00:36:36,640
little bit more power payload locker

778
00:36:38,630 --> 00:36:37,839
capability

779
00:36:40,630 --> 00:36:38,640
and

780
00:36:43,589 --> 00:36:40,640
that'll help us with being able to put

781
00:36:45,270 --> 00:36:43,599
on more payloads a lot of the a lot of

782
00:36:47,990 --> 00:36:45,280
the science the high value science we

783
00:36:51,510 --> 00:36:48,000
fly is associated with uh some of our

784
00:36:53,589 --> 00:36:51,520
biological samples and our ability to

785
00:36:55,349 --> 00:36:53,599
fly more of those allows us to to

786
00:36:58,069 --> 00:36:55,359
support more users here on the ground

787
00:36:59,750 --> 00:36:58,079
with a lot of investigations in the

788
00:37:01,510 --> 00:36:59,760

biomedical area so

789
00:37:04,069 --> 00:37:01,520
we're excited about that again that's

790
00:37:05,750 --> 00:37:04,079
more more science we can get to orbit to

791
00:37:08,550 --> 00:37:05,760
support those communities and more

792
00:37:10,069 --> 00:37:08,560
science we can return to in addition to

793
00:37:12,069 --> 00:37:10,079
that um

794
00:37:14,150 --> 00:37:12,079
you'll uh one thing you'll you'll notice

795
00:37:16,390 --> 00:37:14,160
if you've watched spacex uh dragon

796
00:37:18,390 --> 00:37:16,400
launches and captures uh

797
00:37:21,190 --> 00:37:18,400
in the past is we won't be capturing

798
00:37:23,510 --> 00:37:21,200
anymore they'll be docking and

799
00:37:26,390 --> 00:37:23,520
again that's an important capability as

800
00:37:28,310 --> 00:37:26,400
as this same uh dragon two spacecraft

801
00:37:30,630 --> 00:37:28,320
the crude version of that also docked to

802
00:37:32,310 --> 00:37:30,640
the space station so uh again that's a

803
00:37:34,950 --> 00:37:32,320
significant change in the way we'll do

804
00:37:36,630 --> 00:37:34,960
uh our our integrated operations between

805
00:37:39,910 --> 00:37:36,640
station and the dragon

806
00:37:41,270 --> 00:37:39,920
and uh and finally um if you uh if

807
00:37:42,950 --> 00:37:41,280
you're familiar with

808
00:37:45,109 --> 00:37:42,960
the dragon landings in the past they've

809
00:37:46,390 --> 00:37:45,119
happened in the pacific ocean and as a

810
00:37:48,550 --> 00:37:46,400
result of that

811
00:37:50,710 --> 00:37:48,560
sometimes it takes one maybe two days

812
00:37:52,310 --> 00:37:50,720
for for the boat to retrieve uh the

813
00:37:53,990 --> 00:37:52,320

dragon and actually get it back to port

814
00:37:56,710 --> 00:37:54,000
and get some of our samples in the hands

815
00:38:00,150 --> 00:37:56,720
of of these uh of these investigators so

816
00:38:01,190 --> 00:38:00,160
um with the dragon dragon 2 spacecraft

817
00:38:03,349 --> 00:38:01,200
they're actually going to land in the

818
00:38:05,910 --> 00:38:03,359
atlantic so when they do that they'll be

819
00:38:07,270 --> 00:38:05,920
a matter of hours from the from the port

820
00:38:08,950 --> 00:38:07,280
and so they'll allow us to get this

821
00:38:10,150 --> 00:38:08,960
critical science back in the in the

822
00:38:12,310 --> 00:38:10,160
investigation

823
00:38:14,390 --> 00:38:12,320
investigators hands much much quicker so

824
00:38:16,230 --> 00:38:14,400
that's all pluses and we're excited

825
00:38:19,109 --> 00:38:16,240
about about moving them forward into the

826
00:38:20,710 --> 00:38:19,119
crs2 contract absolutely definitely all

827
00:38:21,910 --> 00:38:20,720
things to be excited about moving

828
00:38:24,230 --> 00:38:21,920
forward and

829
00:38:25,750 --> 00:38:24,240
making things even better so commercial

830
00:38:28,710 --> 00:38:25,760
resupply missions aren't the only thing

831
00:38:30,870 --> 00:38:28,720
we're working on with spacex we are also

832
00:38:32,390 --> 00:38:30,880
preparing to launch crews from american

833
00:38:34,870 --> 00:38:32,400
soil for the first time on american

834
00:38:36,150 --> 00:38:34,880
rockets since 2011. can you talk a

835
00:38:38,230 --> 00:38:36,160
little bit about how these commercial

836
00:38:40,710 --> 00:38:38,240
resupply missions have paved the way for

837
00:38:42,150 --> 00:38:40,720
those uh those crew missions

838
00:38:44,870 --> 00:38:42,160

sure um

839
00:38:46,310 --> 00:38:44,880
you know spacex when we set up the crs

840
00:38:48,310 --> 00:38:46,320
one contract with them the first thing

841
00:38:50,150 --> 00:38:48,320
they had to learn to do was how to build

842
00:38:52,390 --> 00:38:50,160
a spacecraft and how to certify it and

843
00:38:53,990 --> 00:38:52,400
how to how to get it into low earth

844
00:38:56,630 --> 00:38:54,000
orbit and get it get it back on the

845
00:38:59,190 --> 00:38:56,640
ground again and so the the very first

846
00:39:00,950 --> 00:38:59,200
uh you know contract was huge and and

847
00:39:02,470 --> 00:39:00,960
helping them to establish that

848
00:39:04,069 --> 00:39:02,480
confidence that they could that they

849
00:39:05,990 --> 00:39:04,079
could get their spacecraft get it turned

850
00:39:07,829 --> 00:39:06,000
back around and get it get it on orbit

851
00:39:09,349 --> 00:39:07,839
and get it back home again and so

852
00:39:10,390 --> 00:39:09,359
getting in that cadence is very

853
00:39:12,950 --> 00:39:10,400
important

854
00:39:15,430 --> 00:39:12,960
uh additionally um just learning how to

855
00:39:17,829 --> 00:39:15,440
operate being an operations team just

856
00:39:19,589 --> 00:39:17,839
like here in mission control in houston

857
00:39:21,670 --> 00:39:19,599
you know they had to stand up their own

858
00:39:23,510 --> 00:39:21,680
operations team and so that's a very

859
00:39:25,750 --> 00:39:23,520
important capability that they they're

860
00:39:27,589 --> 00:39:25,760
able to carry over as they as they step

861
00:39:29,030 --> 00:39:27,599
up to the crude missions

862
00:39:30,230 --> 00:39:29,040
uh so the

863
00:39:32,790 --> 00:39:30,240

the uh

864
00:39:34,870 --> 00:39:32,800
the ability just to uh to uh to know

865
00:39:36,950 --> 00:39:34,880
that they can do this job they have the

866
00:39:39,109 --> 00:39:36,960
experience that they they built on with

867
00:39:41,589 --> 00:39:39,119
uh with this uh with all these cargo

868
00:39:43,750 --> 00:39:41,599
missions and and so while it's a totally

869
00:39:45,430 --> 00:39:43,760
um different vehicle there are a lot of

870
00:39:47,109 --> 00:39:45,440
similarities there are a lot of the the

871
00:39:49,510 --> 00:39:47,119
same components they're carrying over

872
00:39:51,670 --> 00:39:49,520
into into that spacecraft and and they

873
00:39:53,430 --> 00:39:51,680
can do some with some some level of

874
00:39:55,270 --> 00:39:53,440
confidence that they're going to be

875
00:39:57,670 --> 00:39:55,280
ready to go

876
00:39:59,829 --> 00:39:57,680
and once dragon arrives monday morning

877
00:40:01,589 --> 00:39:59,839
there will be three crew members on the

878
00:40:02,950 --> 00:40:01,599
international space station can you tell

879
00:40:05,190 --> 00:40:02,960
us a little bit about what station

880
00:40:06,710 --> 00:40:05,200
operations are going to look like with a

881
00:40:09,030 --> 00:40:06,720
new vehicle all the science and

882
00:40:10,550 --> 00:40:09,040
experiments and supplies to unload and

883
00:40:13,109 --> 00:40:10,560
our three crew members

884
00:40:15,430 --> 00:40:13,119
sure um uh it'll be

885
00:40:18,390 --> 00:40:15,440
a bit of a a sprint for the next four

886
00:40:20,230 --> 00:40:18,400
weeks or so i tell all the crews before

887
00:40:21,349 --> 00:40:20,240
before they launch that uh you know

888
00:40:22,470 --> 00:40:21,359

especially the new folks who haven't

889
00:40:24,870 --> 00:40:22,480
been there before when you get when you

890
00:40:26,710 --> 00:40:24,880
get a dragon on board it's gonna it is a

891
00:40:29,430 --> 00:40:26,720
about a four week sprint uh from

892
00:40:32,710 --> 00:40:29,440
beginning to end um but with three crew

893
00:40:34,390 --> 00:40:32,720
it's even a little bit more of uh of a

894
00:40:36,230 --> 00:40:34,400
situation where they're they're having

895
00:40:37,670 --> 00:40:36,240
to manage themselves we're having to

896
00:40:39,829 --> 00:40:37,680
help manage the schedules for them and

897
00:40:42,150 --> 00:40:39,839
make sure that we don't you know tire

898
00:40:43,910 --> 00:40:42,160
them out too much and so that so that

899
00:40:45,589 --> 00:40:43,920
they're ready to do all of the all the

900
00:40:48,950 --> 00:40:45,599
things necessary for that particular

901
00:40:50,790 --> 00:40:48,960
mission but anyway um yeah the this uh

902
00:40:54,069 --> 00:40:50,800
this particular mission uh towards the

903
00:40:56,630 --> 00:40:54,079
end of it uh we'll also start to to flow

904
00:40:58,790 --> 00:40:56,640
in some of our return activities for for

905
00:41:00,470 --> 00:40:58,800
jessica and drew so

906
00:41:02,230 --> 00:41:00,480
about the first week of april or so

907
00:41:04,950 --> 00:41:02,240
things are gonna kind of get really

908
00:41:06,390 --> 00:41:04,960
really dynamic as we as we look to wrap

909
00:41:08,710 --> 00:41:06,400
up this particular mission plus get

910
00:41:11,430 --> 00:41:08,720
ready for jessica and drew uh to come

911
00:41:13,349 --> 00:41:11,440
home uh the new the new soyuz with chris

912
00:41:16,309 --> 00:41:13,359
cassidy will be arriving in that same

913
00:41:18,630 --> 00:41:16,319

same time frame so um it'll be a busy

914
00:41:20,150 --> 00:41:18,640
place at station and uh and so we're

915
00:41:21,349 --> 00:41:20,160
looking forward to it but at the same

916
00:41:22,550 --> 00:41:21,359
time we're going to have to cure keep

917
00:41:24,950 --> 00:41:22,560
our eye on the ball and make sure the

918
00:41:26,630 --> 00:41:24,960
crews stay rested and and able to to get

919
00:41:28,230 --> 00:41:26,640
the work done that they need to get done

920
00:41:30,870 --> 00:41:28,240
and they always seem to

921
00:41:33,109 --> 00:41:30,880
so uh the bartolomeo facility also

922
00:41:34,630 --> 00:41:33,119
launched on this dragon spacecraft what

923
00:41:36,230 --> 00:41:34,640
does that mean for future station

924
00:41:38,550 --> 00:41:36,240
research opportunities

925
00:41:41,430 --> 00:41:38,560
oh it's fantastic you know we only have

926
00:41:43,829 --> 00:41:41,440
so many sites uh external to the station

927
00:41:45,349 --> 00:41:43,839
that we can put science and research on

928
00:41:47,030 --> 00:41:45,359
and you know there it's it's a

929
00:41:48,870 --> 00:41:47,040
competitive resource

930
00:41:50,710 --> 00:41:48,880
and so our our european colleagues

931
00:41:52,870 --> 00:41:50,720
they're they're stepping out into the

932
00:41:54,710 --> 00:41:52,880
into the into the commercial market with

933
00:41:57,670 --> 00:41:54,720
this with this launch of this platform

934
00:41:59,430 --> 00:41:57,680
and so uh we're excited uh about it from

935
00:42:00,870 --> 00:41:59,440
an overall station partnership

936
00:42:02,630 --> 00:42:00,880
perspective because it brings capability

937
00:42:04,790 --> 00:42:02,640
to this station but we're also excited

938
00:42:06,309 --> 00:42:04,800

for for our european colleagues because

939
00:42:09,109 --> 00:42:06,319
again you know they're they're

940
00:42:10,950 --> 00:42:09,119
interested in and uh and and continuing

941
00:42:12,950 --> 00:42:10,960
this growth into this commercial low

942
00:42:16,309 --> 00:42:12,960
earth orbit economy that we're that

943
00:42:18,390 --> 00:42:16,319
we're all trying to grow uh as a as a

944
00:42:20,470 --> 00:42:18,400
you know space faring nations uh part of

945
00:42:22,150 --> 00:42:20,480
the international space station so uh

946
00:42:24,309 --> 00:42:22,160
this uh we think is gonna be a great

947
00:42:26,790 --> 00:42:24,319
thing for for everybody out there who

948
00:42:28,790 --> 00:42:26,800
who is interested in getting uh getting

949
00:42:31,030 --> 00:42:28,800
access to low earth orbit especially on

950
00:42:32,630 --> 00:42:31,040
the external platform

951
00:42:34,950 --> 00:42:32,640
that's on that's on station and this

952
00:42:36,150 --> 00:42:34,960
just adds to that capability so it's a

953
00:42:37,670 --> 00:42:36,160
again all around good for the

954
00:42:39,829 --> 00:42:37,680
partnership and it's certainly good for

955
00:42:41,510 --> 00:42:39,839
easy colleagues an all-around good

956
00:42:43,190 --> 00:42:41,520
launch and and great views we had

957
00:42:45,670 --> 00:42:43,200
tonight thank you so much for joining us

958
00:42:48,230 --> 00:42:45,680
kenny it's my pleasure we are

959
00:42:49,910 --> 00:42:48,240
we are now expecting a dragon to arrive

960
00:42:52,150 --> 00:42:49,920
to the international space station

961
00:42:54,870 --> 00:42:52,160
monday morning very early and you can

962
00:42:56,870 --> 00:42:54,880
join us live at 4 30 a.m central time

963
00:42:59,030 --> 00:42:56,880

for the arrival of dragon as kenny

964
00:43:00,790 --> 00:42:59,040
mentioned it will be the last time that

965
00:43:02,470 --> 00:43:00,800
dragon needs to be grappled and birthed

966
00:43:04,630 --> 00:43:02,480
to the international space station in

967
00:43:07,030 --> 00:43:04,640
the future it will dock so join us for

968
00:43:08,630 --> 00:43:07,040
that last bit of mission coverage for

969
00:43:10,390 --> 00:43:08,640
dragon

970
00:43:12,150 --> 00:43:10,400
with all of that we will toss it back to

971
00:43:13,750 --> 00:43:12,160
tammy at kennedy space center everything

972
00:43:15,190 --> 00:43:13,760
looking good here in mission control

973
00:43:16,710 --> 00:43:15,200
houston

974
00:43:19,910 --> 00:43:16,720
thanks leah

975
00:43:21,670 --> 00:43:19,920
shiva out in california you guys look

976
00:43:23,990 --> 00:43:21,680
pretty excited can you tell us a little

977
00:43:27,190 --> 00:43:24,000
bit about how the launch went tonight we

978
00:43:28,950 --> 00:43:27,200
heard a lot of screaming yeah actually

979
00:43:30,710 --> 00:43:28,960
there's a there's probably still a good

980
00:43:33,670 --> 00:43:30,720
like 50 people out here maybe they're

981
00:43:35,670 --> 00:43:33,680
about 100 or 200 earlier and you know we

982
00:43:38,550 --> 00:43:35,680
had a beautiful on-time launch tonight

983
00:43:41,349 --> 00:43:38,560
at about 11 50 eastern that just lit up

984
00:43:43,349 --> 00:43:41,359
the florida east coast um it launched

985
00:43:45,829 --> 00:43:43,359
from space launch complex 40 this

986
00:43:47,270 --> 00:43:45,839
evening and you know this was our 21st

987
00:43:49,109 --> 00:43:47,280
launch to the international space

988
00:43:50,790 --> 00:43:49,119

station and our ninth launch ever with a

989
00:43:53,829 --> 00:43:50,800
flight proven dragon

990
00:43:56,069 --> 00:43:53,839
so this was also our final crs mission

991
00:43:58,150 --> 00:43:56,079
using the first version of dragon and

992
00:43:59,670 --> 00:43:58,160
beginning with crs-21 we are going to be

993
00:44:01,589 --> 00:43:59,680
flying an upgraded version of the

994
00:44:04,470 --> 00:44:01,599
spacecraft that will be capable of

995
00:44:06,390 --> 00:44:04,480
flying people aboard um i can confirm

996
00:44:09,030 --> 00:44:06,400
now that dragon is in a good orbit the

997
00:44:11,190 --> 00:44:09,040
solar is deployed on time the guidance

998
00:44:12,950 --> 00:44:11,200
bay door should be opening shortly and

999
00:44:15,270 --> 00:44:12,960
we're making our way towards the space

1000
00:44:18,150 --> 00:44:15,280
station uh we're planning to arrive at

1001
00:44:19,430 --> 00:44:18,160
the station on march 9th at about 7 a.m

1002
00:44:21,829 --> 00:44:19,440
eastern time

1003
00:44:23,829 --> 00:44:21,839
the astronauts aboard will then

1004
00:44:26,950 --> 00:44:23,839
capture dragon in a process called

1005
00:44:29,109 --> 00:44:26,960
birthing using the station's robotic arm

1006
00:44:30,870 --> 00:44:29,119
and then once dragon is safely docked to

1007
00:44:33,589 --> 00:44:30,880
the international space station they'll

1008
00:44:35,190 --> 00:44:33,599
unload the about 4 500 pounds of cargo

1009
00:44:38,230 --> 00:44:35,200
and crew supplies and scientific

1010
00:44:40,390 --> 00:44:38,240
payloads that are aboard the spacecraft

1011
00:44:42,150 --> 00:44:40,400
dragon's going to spend about four weeks

1012
00:44:44,550 --> 00:44:42,160
at the space station before it comes

1013
00:44:46,870 --> 00:44:44,560

back to earth and

1014
00:44:49,349 --> 00:44:46,880
you know all in all a successful day for

1015
00:44:51,750 --> 00:44:49,359
for dragon awesome day for falcon 2.

1016
00:44:54,630 --> 00:44:51,760
this was our 50th recovery of a first

1017
00:44:57,190 --> 00:44:54,640
stage so really just a fantastic mission

1018
00:44:59,030 --> 00:44:57,200
for the entire spacex team

1019
00:45:01,510 --> 00:44:59,040
really want to thank the

1020
00:45:03,430 --> 00:45:01,520
our friends at nasa and at the air force

1021
00:45:05,109 --> 00:45:03,440
and the federal aviation administration

1022
00:45:07,190 --> 00:45:05,119
and of course all of our customers for

1023
00:45:08,790 --> 00:45:07,200
the support and hard work they put into

1024
00:45:10,470 --> 00:45:08,800
tonight's launch

1025
00:45:13,430 --> 00:45:10,480
and a big congratulations to both the

1026
00:45:15,589 --> 00:45:13,440
spacex and nasa teams that developed and

1027
00:45:17,270 --> 00:45:15,599
supported the first version of dragon

1028
00:45:19,829 --> 00:45:17,280
all that hard work has really paved the

1029
00:45:21,910 --> 00:45:19,839
way for the upcoming first crew flight

1030
00:45:24,870 --> 00:45:21,920
with nasa astronauts aboard later on

1031
00:45:27,589 --> 00:45:24,880
this year so with that back to you tammy

1032
00:45:30,069 --> 00:45:27,599
thanks shivan congratulations

1033
00:45:32,950 --> 00:45:30,079
and that's going to wrap up our coverage

1034
00:45:36,069 --> 00:45:32,960
for more information visit nasa.gov

1035
00:45:39,670 --> 00:45:36,079
forward slash station or nasa.gov

1036
00:45:42,069 --> 00:45:39,680
forward slash spacex i'm tammy long and

1037
00:45:44,550 --> 00:45:42,079
from everyone here at nasa's kennedy

1038
00:45:47,589 --> 00:45:44,560

space center thank you for being part of

1039
00:45:50,230 --> 00:45:47,599
the successful launch of crs 20.

1040
00:45:52,790 --> 00:45:50,240
we leave you with another stunning look

1041
00:45:56,069 --> 00:45:52,800
at tonight's launch have a great weekend

1042
00:45:59,270 --> 00:45:56,079
everyone and go crs 20 and go

1043
00:46:01,430 --> 00:45:59,280
international space station good night

1044
00:46:02,550 --> 00:46:01,440
eight seven

1045
00:46:03,510 --> 00:46:02,560
six

1046
00:46:04,550 --> 00:46:03,520
five

1047
00:46:05,670 --> 00:46:04,560
four

1048
00:46:06,710 --> 00:46:05,680
three

1049
00:46:07,589 --> 00:46:06,720
two

1050
00:46:09,349 --> 00:46:07,599
one

1051
00:46:12,390 --> 00:46:09,359
zero

1052
00:46:15,109 --> 00:46:12,400
and liftoff of the falcon 9 rocket and

1053
00:46:17,910 --> 00:46:15,119
cargo dragon on the final flight of the

1054
00:46:19,829 --> 00:46:17,920
dragon one spacecraft taking research

1055
00:46:23,990 --> 00:46:19,839
designed to improve life on earth and

1056
00:46:39,990 --> 00:46:26,710
so the vehicle begins pitching downrange

1057
00:46:53,750 --> 00:46:42,630
falcon 9 is looking good 2 million

1058
00:46:53,760 --> 00:47:15,360
coming up in just a few seconds