1
00:01:10,630 --> 00:00:11,470
[Music]

2
00:01:19,570 --> 00:01:12,969
Dragon doesn't count down

3
00:01:19,580 --> 00:01:30,180
Reagan SpaceX go for watch

4
00:01:30,190 --> 00:01:37,490
[Music]

5
00:01:50,450 --> 00:01:37,710
ing

6
00:01:52,910 --> 00:01:50,460
39a at Kennedy Space Center we are about

7
00:01:55,850 --> 00:01:52,920
20 minutes away from liftoff of this

8
00:01:58,550 --> 00:01:55,860
Falcon 9 rocket for the 26th Commercial

9
00:02:00,770 --> 00:01:58,560
resupply Services Mission from both NASA

10
00:02:02,090 --> 00:02:00,780
and SpaceX to the International Space

11
00:02:04,490 --> 00:02:02,100
Station

12
00:02:07,969 --> 00:02:04,500
good afternoon and welcome to live

13
00:02:10,550 --> 00:02:07,979

coverage of crs26 I'm Jasmine Hopkins

14
00:02:13,130 --> 00:02:10,560
with NASA Communications fueling of the

15
00:02:15,170 --> 00:02:13,140
Falcon 9 began about 20 minutes ago and

16
00:02:18,710 --> 00:02:15,180
we are counting down to an instantaneous

17
00:02:20,570 --> 00:02:18,720
launch at 2 20 PM Eastern Time

18
00:02:22,610 --> 00:02:20,580
Tuesday's launch attempt was scrubbed

19
00:02:24,470 --> 00:02:22,620
due to weather but fortunately it's

20
00:02:27,110 --> 00:02:24,480
looking much sunnier on the space coast

21
00:02:30,830 --> 00:02:27,120
today this Mission will deliver more

22
00:02:32,990 --> 00:02:30,840
than 7 700 pounds of food supplies and

23
00:02:35,270 --> 00:02:33,000
science to the space station this

24
00:02:37,490 --> 00:02:35,280
includes a new pair of roll out solar

25
00:02:39,949 --> 00:02:37,500
arrays to power the orbiting laboratory

26
00:02:43,009 --> 00:02:39,959
and tomato plant seeds for the

27
00:02:45,410 --> 00:02:43,019
continuous fresh food production system

28
00:02:47,509 --> 00:02:45,420
these resupply missions help NASA and

29
00:02:49,070 --> 00:02:47,519
our partners continue research that

30
00:02:52,130 --> 00:02:49,080
could better our life right here on

31
00:02:54,290 --> 00:02:52,140
Earth and help us explore deep space

32
00:02:55,790 --> 00:02:54,300
that being said let's go now to SpaceX

33
00:02:58,430 --> 00:02:55,800
headquarters in Hawthorne California

34
00:03:00,589 --> 00:02:58,440
where Jesse Anderson is standing by to

35
00:03:04,910 --> 00:03:00,599
tell us about the rocket fueling today's

36
00:03:09,050 --> 00:03:07,610
great thanks Jasmine hi everyone my name

37
00:03:11,630 --> 00:03:09,060
is Jesse Anderson I'm a production

38
00:03:13,430 --> 00:03:11,640

engineering manager here at SpaceX it's

39
00:03:15,890 --> 00:03:13,440
great to be covering today's mission in

40
00:03:17,930 --> 00:03:15,900
partnership with NASA the rocket that

41
00:03:20,149 --> 00:03:17,940
you're looking at on your screen is

42
00:03:22,190 --> 00:03:20,159
brand new the Falcon 9 and dragon

43
00:03:24,770 --> 00:03:22,200
spacecraft will be flying for the first

44
00:03:27,229 --> 00:03:24,780
time on today's Mission so far this year

45
00:03:31,610 --> 00:03:27,239
we've launched four dragon missions crew

46
00:03:33,589 --> 00:03:31,620
4 crew 5 Axiom one and crs-25 today's

47
00:03:36,410 --> 00:03:33,599
launch marks spacex's fifth Dragon

48
00:03:38,089 --> 00:03:36,420
launch of 2022 and our final dragon

49
00:03:39,949 --> 00:03:38,099
mission this year

50
00:03:42,170 --> 00:03:39,959
now looking at the rocket on your screen

51
00:03:44,809 --> 00:03:42,180
above the Falcon 9 is the dragon

52
00:03:46,369 --> 00:03:44,819
spacecraft sitting at the very top now

53
00:03:47,930 --> 00:03:46,379
as I mentioned previously the dragon

54
00:03:49,970 --> 00:03:47,940
that you're seeing on your screen will

55
00:03:51,770 --> 00:03:49,980
be embarking on its first flight and

56
00:03:54,170 --> 00:03:51,780
will be joining the crew 5 spacecraft

57
00:03:56,449 --> 00:03:54,180
already docked at station

58
00:03:59,210 --> 00:03:56,459
moving down the vehicle we have our

59
00:04:00,770 --> 00:03:59,220
reusable two-stage rocket Falcon 9 is

60
00:04:02,630 --> 00:04:00,780
actually two rockets in one the lower

61
00:04:05,210 --> 00:04:02,640
part which is also the largest part of

62
00:04:07,309 --> 00:04:05,220
the rocket is called the first stage the

63
00:04:09,350 --> 00:04:07,319

smaller stage above the first stage and

64
00:04:11,929 --> 00:04:09,360
the black inner stage is called the

65
00:04:13,729 --> 00:04:11,939
second stage not only does spacex's

66
00:04:16,129 --> 00:04:13,739
second stage look similar to the first

67
00:04:17,870 --> 00:04:16,139
stage it also has the same diameter uses

68
00:04:20,150 --> 00:04:17,880
the same metal in the tanks same

69
00:04:22,310 --> 00:04:20,160
computers same propellant and nearly the

70
00:04:24,469 --> 00:04:22,320
same engine this allows us to use

71
00:04:26,210 --> 00:04:24,479
similar tooling design and systems to

72
00:04:27,469 --> 00:04:26,220
essentially build two rockets that are

73
00:04:29,150 --> 00:04:27,479
more reliable

74
00:04:31,430 --> 00:04:29,160
now above the first stage in black

75
00:04:33,050 --> 00:04:31,440
interstage is our second stage the

76
00:04:34,790 --> 00:04:33,060
stages will separate about two and a

77
00:04:36,650 --> 00:04:34,800
half minutes into flight and then the

78
00:04:38,629 --> 00:04:36,660
second stage will ignite its mvac engine

79
00:04:41,749 --> 00:04:38,639
which is the 10th engine on the rocket

80
00:04:43,730 --> 00:04:41,759
to carry Dragon to its desired orbit

81
00:04:45,890 --> 00:04:43,740
now moving down the rocket the bottom of

82
00:04:48,770 --> 00:04:45,900
the first stage has nine Merlin 1D

83
00:04:50,210 --> 00:04:48,780
engines hence the name Falcon 9. these

84
00:04:51,770 --> 00:04:50,220
engines accelerate the vehicle through

85
00:04:53,510 --> 00:04:51,780
the Earth's atmosphere and into various

86
00:04:55,310 --> 00:04:53,520
orbits in space

87
00:04:57,590 --> 00:04:55,320
and we will be attempting to recover the

88
00:04:59,450 --> 00:04:57,600

first stage on a drone ship named just

89
00:05:01,430 --> 00:04:59,460
read the instructions today and there

90
00:05:03,650 --> 00:05:01,440
you can see it on your screen currently

91
00:05:05,990 --> 00:05:03,660
positioned off the coast of Florida in

92
00:05:07,850 --> 00:05:06,000
the Atlantic Ocean but for now let's

93
00:05:10,310 --> 00:05:07,860
turn it back over to you Jasmine

94
00:05:12,890 --> 00:05:10,320
thanks so much Jesse in addition to

95
00:05:15,230 --> 00:05:12,900
SpaceX in California NASA team is both

96
00:05:17,150 --> 00:05:15,240
here in Florida and Texas are monitoring

97
00:05:18,770 --> 00:05:17,160
today's launch as well you'll hear from

98
00:05:21,110 --> 00:05:18,780
Sandra Jones inside Mission Control

99
00:05:23,150 --> 00:05:21,120
Houston but first let's check in with

100
00:05:26,150 --> 00:05:23,160
NASA's Megan Cruz who's monitoring the

101
00:05:27,590 --> 00:05:26,160
launch Team here at Kennedy Megan

102
00:05:30,350 --> 00:05:27,600
thank you Jasmine and welcome everyone

103
00:05:32,689 --> 00:05:30,360
into Hangar AE at nearby Cape Canaveral

104
00:05:34,670 --> 00:05:32,699
space force station this is where the

105
00:05:36,529 --> 00:05:34,680
space force monitors things like the

106
00:05:38,629 --> 00:05:36,539
range for us making sure it's safe to

107
00:05:40,070 --> 00:05:38,639
fly where we intend to fly but also the

108
00:05:41,990 --> 00:05:40,080
weather which as you said Jasmine is

109
00:05:44,150 --> 00:05:42,000
looking much better today than it was on

110
00:05:46,969 --> 00:05:44,160
Tuesday when we try to launch on Tuesday

111
00:05:49,850 --> 00:05:46,979
we were 30 percent go because of things

112
00:05:52,610 --> 00:05:49,860
like rain and clouds today we are 80

113
00:05:54,650 --> 00:05:52,620

percent go launch weather officer Alina

114
00:05:56,330 --> 00:05:54,660
Moses is currently tracking some storms

115
00:05:58,670 --> 00:05:56,340
to the east of us but expects them to

116
00:06:00,170 --> 00:05:58,680
remain well offshore today now right now

117
00:06:01,969 --> 00:06:00,180
fueling of the Falcon 9 rocket is

118
00:06:05,270 --> 00:06:01,979
underway it started about 20 minutes ago

119
00:06:07,249 --> 00:06:05,280
at T-minus 35 minutes rp1 or rocket

120
00:06:09,469 --> 00:06:07,259
grade kerosene is being loaded into the

121
00:06:11,270 --> 00:06:09,479
first stage liquid oxygen is also

122
00:06:13,550 --> 00:06:11,280
loading into the first stage and should

123
00:06:15,590 --> 00:06:13,560
begin on the second stage momentarily

124
00:06:18,590 --> 00:06:15,600
the white clouds you see that are coming

125
00:06:20,390 --> 00:06:18,600
off of the rocket that is because SpaceX

126
00:06:22,249 --> 00:06:20,400
is venting off some of that liquid

127
00:06:24,590 --> 00:06:22,259
oxygen to maintain the right pressure in

128
00:06:26,809 --> 00:06:24,600
the tanks and those clouds form when the

129
00:06:28,969 --> 00:06:26,819
locks makes contact with the humid

130
00:06:31,790 --> 00:06:28,979
Florida Air now we have an instantaneous

131
00:06:33,710 --> 00:06:31,800
launch opportunity at 2 20 and 43

132
00:06:35,330 --> 00:06:33,720
seconds eastern time if we want to dock

133
00:06:37,309 --> 00:06:35,340
with the International Space Station to

134
00:06:43,730 --> 00:06:37,319
tomorrow morning for more on that let's

135
00:06:48,050 --> 00:06:46,129
good afternoon I'm NASA's Sandra Jones

136
00:06:49,790 --> 00:06:48,060
here inside the International Space

137
00:06:51,469 --> 00:06:49,800
Station flight control room at the

138
00:06:54,350 --> 00:06:51,479

Johnson Space Center in Houston Texas

139
00:06:56,930 --> 00:06:54,360
Mission Control Houston is the nerve

140
00:06:59,390 --> 00:06:56,940
center for space station operations and

141
00:07:02,270 --> 00:06:59,400
our flight control team is on Console as

142
00:07:04,850 --> 00:07:02,280
they are 24 hours a day and are ready to

143
00:07:06,590 --> 00:07:04,860
support today's cargo launch leading the

144
00:07:09,710 --> 00:07:06,600
team in Mission Control during today's

145
00:07:12,890 --> 00:07:09,720
launch and during this orbit 2 flight

146
00:07:15,050 --> 00:07:12,900
shift is NASA flight director ADI Bula

147
00:07:17,390 --> 00:07:15,060
the ultimate destination for today's

148
00:07:19,790 --> 00:07:17,400
cargo Dragon launch is of course the

149
00:07:22,730 --> 00:07:19,800
International Space Station where right

150
00:07:25,490 --> 00:07:22,740
now the seven person Expedition 68 crew

151
00:07:27,830 --> 00:07:25,500
continues to live and work that crew

152
00:07:30,770 --> 00:07:27,840
includes NASA astronauts Frank Rubio

153
00:07:33,350 --> 00:07:30,780
Nicole Mann and Josh cassida as well as

154
00:07:36,290 --> 00:07:33,360
jaxa or Japan Aerospace Exploration

155
00:07:39,350 --> 00:07:36,300
Agency astronaut koichiwakada and three

156
00:07:42,230 --> 00:07:39,360
Russian cosmonauts Sergey procapiev

157
00:07:44,570 --> 00:07:42,240
Dimitri patelan and Anna kikuna when

158
00:07:46,790 --> 00:07:44,580
Dragon arrives to the space station on

159
00:07:49,189 --> 00:07:46,800
Sunday it will dock to the Zenith or

160
00:07:51,770 --> 00:07:49,199
space-facing Port of the harmony module

161
00:07:53,870 --> 00:07:51,780
and NASA astronauts Josh cassida and

162
00:07:56,150 --> 00:07:53,880
Nicole Mann will be on tap to monitor

163
00:07:58,430 --> 00:07:56,160

the approach and docking Dragon will

164
00:08:00,650 --> 00:07:58,440
spend about 45 days attached to the

165
00:08:02,330 --> 00:08:00,660
International Space Station before it

166
00:08:04,969 --> 00:08:02,340
undocks and returns to Earth with

167
00:08:06,589 --> 00:08:04,979
critical research and return cargo and

168
00:08:08,930 --> 00:08:06,599
splashes down off the coast of Florida

169
00:08:10,550 --> 00:08:08,940
but for now everything continuing to

170
00:08:12,469 --> 00:08:10,560
look good on the station side for

171
00:08:14,809 --> 00:08:12,479
today's launch so we'll toss it back

172
00:08:16,790 --> 00:08:14,819
over to you Jasmine thank you Sandra and

173
00:08:18,950 --> 00:08:16,800
Megan for those updates we are now about

174
00:08:21,469 --> 00:08:18,960
13 minutes and Counting from liftoff of

175
00:08:22,850 --> 00:08:21,479
crs-26 so let's get a closer look at

176
00:08:24,920 --> 00:08:22,860
some of the science flying on this

177
00:08:36,350 --> 00:08:24,930
mission

178
00:08:36,360 --> 00:08:42,180
foreign

179
00:08:42,190 --> 00:08:55,130
[Music]

180
00:08:55,140 --> 00:08:59,310
foreign

181
00:08:59,320 --> 00:09:36,590
[Music]

182
00:09:36,600 --> 00:09:44,240
foreign

183
00:10:12,790 --> 00:10:04,910
[Music]

184
00:10:18,530 --> 00:10:16,190
experiment on crs-26 could help feed

185
00:10:20,750 --> 00:10:18,540
astronauts as they explore deep space in

186
00:10:23,150 --> 00:10:20,760
the future in this experiment small

187
00:10:25,550 --> 00:10:23,160
tomato plant seeds are grown in two

188
00:10:29,389 --> 00:10:25,560

veggie Chambers with different LED light

189
00:10:31,430 --> 00:10:29,399
conditions for 104 days then they are

190
00:10:33,590 --> 00:10:31,440
analyzed for how many tomatoes they grow

191
00:10:35,870 --> 00:10:33,600
and their nutritional composition

192
00:10:39,350 --> 00:10:35,880
station crew members will rate their

193
00:10:41,690 --> 00:10:39,360
flavor texture and juiciness

194
00:10:44,810 --> 00:10:41,700
this resupply Mission will also increase

195
00:10:47,530 --> 00:10:44,820
the power on station with two new roll

196
00:10:50,630 --> 00:10:47,540
out solar arrays these are also called

197
00:10:52,550 --> 00:10:50,640
irosas after being installed on upcoming

198
00:10:55,370 --> 00:10:52,560
space walks the arrays will roll out

199
00:10:58,009 --> 00:10:55,380
using stored kinetic energy almost like

200
00:11:00,530 --> 00:10:58,019
a yoga mat the irosa is a new design

201
00:11:03,949 --> 00:11:00,540
that uses one piece of flexible material

202
00:11:06,350 --> 00:11:03,959
that snaps open in space

203
00:11:08,690 --> 00:11:06,360
we are now at T minus 11 minutes and

204
00:11:10,550 --> 00:11:08,700
Counting from liftoff of the 26

205
00:11:12,769 --> 00:11:10,560
Commercial resupply Services Mission

206
00:11:14,690 --> 00:11:12,779
from both NASA and SpaceX to the

207
00:11:16,430 --> 00:11:14,700
International Space Station so let's

208
00:11:21,170 --> 00:11:16,440
bring back Jesse now to tell us more

209
00:11:24,110 --> 00:11:21,180
about today's launch and dragon Jesse

210
00:11:27,410 --> 00:11:24,120
thanks Jasmine as we near the end of the

211
00:11:29,630 --> 00:11:27,420
year today's Mission Mark spacex's 192nd

212
00:11:31,069 --> 00:11:29,640
overall launch and the fifth flight of

213
00:11:32,990 --> 00:11:31,079

dragon to the International Space

214
00:11:37,370 --> 00:11:33,000
Station this year following the launches

215
00:11:39,230 --> 00:11:37,380
of crew 4 crew 5 Axiom 1 and crs-25 to

216
00:11:41,810 --> 00:11:39,240
give a bit of History dragon has been

217
00:11:44,630 --> 00:11:41,820
flying for 12 years Dragon made its

218
00:11:46,610 --> 00:11:44,640
debut at the orbiting lab in 2012 as the

219
00:11:48,110 --> 00:11:46,620
first private spacecraft in history to

220
00:11:50,990 --> 00:11:48,120
visit the International Space Station

221
00:11:53,090 --> 00:11:51,000
now since then it's made 32 trips to and

222
00:11:55,009 --> 00:11:53,100
from the orbiting lab and today dragon

223
00:11:57,050 --> 00:11:55,019
is one of the few vehicles that can

224
00:11:59,090 --> 00:11:57,060
deliver significant cargo to the space

225
00:12:01,490 --> 00:11:59,100
station and the only vehicle that can

226
00:12:03,170 --> 00:12:01,500
deliver cargo from it Falcon 9 and

227
00:12:04,850 --> 00:12:03,180
dragon were both designed with reflight

228
00:12:06,829 --> 00:12:04,860
in mind and the vehicle Hardware is

229
00:12:09,949 --> 00:12:06,839
built to support multiple missions with

230
00:12:12,050 --> 00:12:09,959
minimal refurbishment now to date 16 of

231
00:12:14,630 --> 00:12:12,060
our missions have flown on flight proven

232
00:12:16,190 --> 00:12:14,640
dragons while today's launch marks the

233
00:12:18,889 --> 00:12:16,200
first flight for this particular dragon

234
00:12:20,690 --> 00:12:18,899
and Falcon 9. we do plan to recover and

235
00:12:22,370 --> 00:12:20,700
fly both the vehicle and spacecraft

236
00:12:24,850 --> 00:12:22,380
again in the future

237
00:12:27,889 --> 00:12:24,860
now so far we've reflown first stages

238
00:12:30,050 --> 00:12:27,899

127 times and that includes Falcon 9 and

239
00:12:31,970 --> 00:12:30,060
Falcon heavy flights and are planning to

240
00:12:33,650 --> 00:12:31,980
recover this one on our drone ship just

241
00:12:36,590 --> 00:12:33,660
read the instructions today

242
00:12:39,889 --> 00:12:36,600
now if successful it will Mark the 153rd

243
00:12:42,470 --> 00:12:39,899
recovery of an orbital class rocket now

244
00:12:44,150 --> 00:12:42,480
we're at T minus nine minutes until

245
00:12:46,370 --> 00:12:44,160
liftoff with the range and weather

246
00:12:48,110 --> 00:12:46,380
tracking green for an on-time launch so

247
00:12:50,629 --> 00:12:48,120
we'll turn it back over to you Jasmine

248
00:12:52,610 --> 00:12:50,639
thank you Jesse there are also several

249
00:12:54,230 --> 00:12:52,620
International Partners contributing to

250
00:12:56,269 --> 00:12:54,240
the science and research on today's

251
00:12:58,190 --> 00:12:56,279
Mission earlier this week I had the

252
00:13:00,350 --> 00:12:58,200
honor of speaking with Carlos mura

253
00:13:02,449 --> 00:13:00,360
president of the Brazilian space agency

254
00:13:04,670 --> 00:13:02,459
about today's launch let's take a look

255
00:13:06,889 --> 00:13:04,680
at what he had to say

256
00:13:09,650 --> 00:13:06,899
there are several International Partners

257
00:13:11,509 --> 00:13:09,660
flying as part of the crs-26 mission I

258
00:13:13,730 --> 00:13:11,519
am so glad now to be joined by Carlos

259
00:13:16,009 --> 00:13:13,740
Mara president of the Brazilian space

260
00:13:18,410 --> 00:13:16,019
agency so glad to have you here thank

261
00:13:20,389 --> 00:13:18,420
you Jasmine we are open to discuss a lot

262
00:13:22,129 --> 00:13:20,399
of good opportunities with the mass and

263
00:13:24,829 --> 00:13:22,139

the United States right and one of those

264
00:13:26,509 --> 00:13:24,839
great opportunities is the sport cubesat

265
00:13:28,069 --> 00:13:26,519
the Brazilian space agency partnered

266
00:13:30,290 --> 00:13:28,079
with Marshall space flight center to

267
00:13:32,750 --> 00:13:30,300
create that tell me more about it it

268
00:13:35,449 --> 00:13:32,760
will investigate a phenomena that occurs

269
00:13:36,610 --> 00:13:35,459
in the South Atlantic around Brazil it

270
00:13:39,530 --> 00:13:36,620
affects

271
00:13:41,810 --> 00:13:39,540
communication GPS signals so it's

272
00:13:44,509 --> 00:13:41,820
important not only for Brazil but for

273
00:13:45,530 --> 00:13:44,519
everybody that best in that region right

274
00:13:47,150 --> 00:13:45,540
and I'm glad that you mentioned that

275
00:13:48,590 --> 00:13:47,160
it's not not just one region it's

276
00:13:49,790 --> 00:13:48,600
several regions you know we're not just

277
00:13:51,290 --> 00:13:49,800
looking at one place where we're really

278
00:13:53,090 --> 00:13:51,300
helping each other out why is

279
00:13:56,210 --> 00:13:53,100
international collaboration so important

280
00:13:58,790 --> 00:13:56,220
well spacing that is an open domain we

281
00:14:01,490 --> 00:13:58,800
can share opportunities we can advance

282
00:14:03,949 --> 00:14:01,500
in the size we can share the risks so

283
00:14:06,170 --> 00:14:03,959
that opportunity the NASA open a new

284
00:14:08,990 --> 00:14:06,180
domain for us not only with the Nano

285
00:14:10,730 --> 00:14:09,000
sets but with all all other missions

286
00:14:13,069 --> 00:14:10,740
scientific and Technology conditions

287
00:14:14,690 --> 00:14:13,079
also we have a good future ahead oh

288
00:14:16,490 --> 00:14:14,700

absolutely a very bright future you're

289
00:14:17,870 --> 00:14:16,500
also helping with the Artemis missions

290
00:14:20,509 --> 00:14:17,880
can you tell me how the Brazilian space

291
00:14:23,150 --> 00:14:20,519
agency is involved in those involved in

292
00:14:26,810 --> 00:14:23,160
a lot of Nano satellites some of them

293
00:14:29,990 --> 00:14:26,820
are academic we will have in February a

294
00:14:32,389 --> 00:14:30,000
predeforced private satellite in Brazil

295
00:14:35,090 --> 00:14:32,399
it's also nanosat we are open in

296
00:14:37,790 --> 00:14:35,100
December the alcantra Spaceport for

297
00:14:40,069 --> 00:14:37,800
private operations so the new space is

298
00:14:41,990 --> 00:14:40,079
booming in Brazil absolutely it very

299
00:14:43,009 --> 00:14:42,000
much is booming in Brazil and he thinks

300
00:14:45,290 --> 00:14:43,019
that you want to give to your teammates

301
00:14:48,710 --> 00:14:45,300
that have worked on these things well we

302
00:14:50,750 --> 00:14:48,720
we that Force satellite with NASA will

303
00:14:53,329 --> 00:14:50,760
open opportunities for science for

304
00:14:55,730 --> 00:14:53,339
technology for business and we hope we

305
00:14:58,189 --> 00:14:55,740
can do a lot of good things concerning

306
00:14:59,930 --> 00:14:58,199
space around the earth and also in the

307
00:15:02,389 --> 00:14:59,940
Artemis we have a mission already

308
00:15:07,550 --> 00:15:02,399
planning advancing for the Artemis

309
00:15:12,410 --> 00:15:10,310
or pleasure good space absolutely go to

310
00:15:14,449 --> 00:15:12,420
space

311
00:15:17,509 --> 00:15:14,459
all right now we are just about six

312
00:15:19,490 --> 00:15:17,519
minutes into liftoff of crs-26 so let's

313
00:15:21,590 --> 00:15:19,500

bring back Megan here on Florida's Space

314
00:15:23,810 --> 00:15:21,600
Coast and Jesse live at SpaceX

315
00:15:25,370 --> 00:15:23,820
headquarters in Hawthorne California to

316
00:15:29,389 --> 00:15:25,380
walk us through the final moments of

317
00:15:32,569 --> 00:15:29,399
countdown and liftoff take it away

318
00:15:34,430 --> 00:15:32,579
great thanks Jasmine it's T minus six

319
00:15:36,250 --> 00:15:34,440
minutes and 20 seconds and the SpaceX

320
00:15:40,730 --> 00:15:36,260
team is working no significant issues

321
00:15:43,550 --> 00:15:40,740
whether is 80 go for t0 and the range is

322
00:15:46,610 --> 00:15:43,560
ready to support now as far as a vehicle

323
00:15:48,170 --> 00:15:46,620
at this point rp1 fuel is completely

324
00:15:50,750 --> 00:15:48,180
loaded on the second stage and nearly

325
00:15:52,730 --> 00:15:50,760
complete on first stage liquid oxygen

326
00:15:54,710 --> 00:15:52,740
loading is underway on both stages and

327
00:15:56,930 --> 00:15:54,720
will complete at T minus two minutes to

328
00:15:59,629 --> 00:15:56,940
launch now we're also loading helium gas

329
00:16:00,829 --> 00:15:59,639
into both stages Falcon 9 uses helium as

330
00:16:03,410 --> 00:16:00,839
a pressure ant to backfill the

331
00:16:05,569 --> 00:16:03,420
propellant tanks as liquid oxygen rp1

332
00:16:08,569 --> 00:16:05,579
are consumed by the Merlin engines

333
00:16:10,430 --> 00:16:08,579
during Ascent helium load began before

334
00:16:12,410 --> 00:16:10,440
the broadcast went live and will

335
00:16:14,150 --> 00:16:12,420
continue to top off until a minute and a

336
00:16:16,310 --> 00:16:14,160
half before launch

337
00:16:18,710 --> 00:16:16,320
and to make sure engine startup goes

338
00:16:21,170 --> 00:16:18,720

well SpaceX also performs what it calls

339
00:16:23,030 --> 00:16:21,180
engine chill this happened at T-minus

340
00:16:25,250 --> 00:16:23,040
seven minutes where we flowed a small

341
00:16:27,829 --> 00:16:25,260
amount of the super chilled locks into

342
00:16:29,810 --> 00:16:27,839
the Merlin engines turbo pumps SpaceX

343
00:16:32,210 --> 00:16:29,820
does this to avoid a thermal shock to

344
00:16:33,949 --> 00:16:32,220
the system when that full flow of super

345
00:16:35,150 --> 00:16:33,959
chilled liquid oxygen hits the prop

346
00:16:37,069 --> 00:16:35,160
system

347
00:16:39,050 --> 00:16:37,079
Dragon also began its startup sequence

348
00:16:41,870 --> 00:16:39,060
at T minus 35 minutes when it

349
00:16:43,370 --> 00:16:41,880
coordinated timing with Falcon 9 it's

350
00:16:45,530 --> 00:16:43,380
currently undergoing vehicle health

351
00:16:47,569 --> 00:16:45,540
checks with the next big step just

352
00:16:52,629 --> 00:16:47,579
before liftoff when Dragon transitions

353
00:16:59,930 --> 00:16:55,009
internal power

354
00:17:03,949 --> 00:17:01,850
coming up next we did hear that call out

355
00:17:06,169 --> 00:17:03,959
the large trust structure next to Falcon

356
00:17:08,030 --> 00:17:06,179
9 called The Transporter erector or what

357
00:17:10,730 --> 00:17:08,040
you may hear called the strong back will

358
00:17:13,010 --> 00:17:10,740
begin to retract a way for the away from

359
00:17:15,890 --> 00:17:13,020
the rocket in preparation for liftoff in

360
00:17:17,809 --> 00:17:15,900
order to do so there are clamp arms just

361
00:17:20,449 --> 00:17:17,819
below the dragon vehicle that will begin

362
00:17:22,370 --> 00:17:20,459
to open once those are fully open and

363
00:17:24,710 --> 00:17:22,380

there you can see them on your screen

364
00:17:26,990 --> 00:17:24,720
just below Dragon once those are fully

365
00:17:29,210 --> 00:17:27,000
open then the te can begin to retract

366
00:17:31,010 --> 00:17:29,220
away from the vehicle

367
00:17:33,169 --> 00:17:31,020
now in these last few minutes Falcon 9

368
00:17:34,909 --> 00:17:33,179
is performing performing final health

369
00:17:37,130 --> 00:17:34,919
checks on its primary Communications

370
00:17:38,930 --> 00:17:37,140
avionics and propulsion systems in

371
00:17:41,029 --> 00:17:38,940
preparation for flight

372
00:17:43,490 --> 00:17:41,039
and we may hear some callouts that

373
00:17:50,150 --> 00:17:43,500
engines are sufficiently chilled as we

374
00:17:54,770 --> 00:17:52,730
now you can see uh

375
00:17:56,630 --> 00:17:54,780
see at the bottom of the Dragon vehicle

376
00:17:58,970 --> 00:17:56,640
the clamp arms are beginning to open up

377
00:18:01,010 --> 00:17:58,980
again once those are fully open the te

378
00:18:06,890 --> 00:18:01,020
can begin to retract away from the

379
00:18:10,610 --> 00:18:08,930
now as Jesse said the next visual cue

380
00:18:12,770 --> 00:18:10,620
we're going to see is that strong back

381
00:18:15,409 --> 00:18:12,780
beginning to recline

382
00:18:17,750 --> 00:18:15,419
um it will recline only a few degrees at

383
00:18:21,770 --> 00:18:17,760
first and then fully recline back to

384
00:18:26,630 --> 00:18:24,529
now the next call out we'll hear is a

385
00:18:32,210 --> 00:18:26,640
stage one locks load complete that'll

386
00:18:37,970 --> 00:18:36,169
T minus two minutes and 30 seconds

387
00:18:39,650 --> 00:18:37,980
as we wait for that this is The Last

388
00:18:42,890 --> 00:18:39,660

Dragon launch of this year bringing

389
00:18:45,409 --> 00:18:42,900
about 7 700 pounds of cargo science and

390
00:18:49,610 --> 00:18:45,419
supplies to the space station of the 7

391
00:18:53,810 --> 00:18:50,990
there's that call out we were expecting

392
00:18:55,549 --> 00:18:53,820
each one Pogo

393
00:18:58,850 --> 00:18:55,559
our life support and medical equipment

394
00:19:00,529 --> 00:18:58,860
also gym hardware and solar arrays

395
00:19:02,810 --> 00:19:00,539
Dragon will be docked at a space station

396
00:19:05,510 --> 00:19:02,820
a little longer than usual 45 days

397
00:19:08,750 --> 00:19:05,520
versus about 30 and that's to allow time

398
00:19:11,270 --> 00:19:08,760
to install those new solar arrays

399
00:19:13,669 --> 00:19:11,280
now coming up in about 10 seconds check

400
00:19:17,150 --> 00:19:13,679
out so the second stage thrust vector

401
00:19:19,130 --> 00:19:17,160
control actuators will be underway this

402
00:19:21,529 --> 00:19:19,140
is often referred to as an engine wiggle

403
00:19:24,289 --> 00:19:21,539
test it's when SpaceX moves the thrust

404
00:19:26,350 --> 00:19:24,299
novel nozzles slightly to make sure that

405
00:19:28,850 --> 00:19:26,360
the guidance Hardware is go for flight

406
00:19:30,710 --> 00:19:28,860
SpaceX does the exact same checkouts on

407
00:19:35,750 --> 00:19:30,720
the first stage engines and that happens

408
00:19:41,029 --> 00:19:39,049
now coming up next at the T minus two

409
00:19:42,590 --> 00:19:41,039
minute Mark liquid oxygen loading should

410
00:19:44,450 --> 00:19:42,600
be completing on the second stage and

411
00:19:47,029 --> 00:19:44,460
that will wrap up propellant loading for

412
00:19:48,409 --> 00:19:47,039
Falcon 9. dragon is also performing its

413
00:19:50,330 --> 00:19:48,419

final health checks to make sure that

414
00:19:54,470 --> 00:19:50,340
all of his primary systems are ready for

415
00:19:58,490 --> 00:19:56,330
now again those white clouds that you

416
00:20:03,289 --> 00:19:58,500
see around the vehicle is the chilled

417
00:20:09,590 --> 00:20:04,970
and there's that call out that stage two

418
00:20:12,470 --> 00:20:10,970
and again those white clouds that you

419
00:20:15,049 --> 00:20:12,480
see around the vehicle is the chilled

420
00:20:17,210 --> 00:20:15,059
gas above the liquid oxygen tank liquid

421
00:20:19,130 --> 00:20:17,220
surface that we vent overboard to

422
00:20:21,950 --> 00:20:19,140
maintain pressure in the tank as needed

423
00:20:23,810 --> 00:20:21,960
when that gas comes into contact with

424
00:20:26,750 --> 00:20:23,820
the warmer air

425
00:20:29,330 --> 00:20:26,760
it condenses into white clouds

426
00:20:31,549 --> 00:20:29,340
and about 24 seconds Dragon transitions

427
00:20:33,529 --> 00:20:31,559
to internal power Falcon 9 computers

428
00:20:36,110 --> 00:20:33,539
will enter startup mode which is when

429
00:20:38,090 --> 00:20:36,120
the Falcon 9 flight computers will take

430
00:20:39,890 --> 00:20:38,100
control of the countdown guiding the

431
00:20:42,890 --> 00:20:39,900
rocket through the last seconds before

432
00:20:48,049 --> 00:20:44,570
and at that moment we will hear a call

433
00:20:50,029 --> 00:20:48,059
out saying Falcon 9 is in startup

434
00:20:52,490 --> 00:20:50,039
and dragon is in countdown so let's wait

435
00:20:54,830 --> 00:20:52,500
for that Falcon 9 is a startup

436
00:20:56,810 --> 00:20:54,840
dragon is in countdown

437
00:20:58,730 --> 00:20:56,820
all right so both stages are now

438
00:21:01,430 --> 00:20:58,740

pressurizing for launch we will next

439
00:21:03,770 --> 00:21:01,440
hear a T minus 45 seconds the SpaceX

440
00:21:07,370 --> 00:21:03,780
launch director Mike Taylor verifying go

441
00:21:12,169 --> 00:21:10,070
go for lunch

442
00:21:14,570 --> 00:21:12,179
all right range remains go for Launch

443
00:21:16,430 --> 00:21:14,580
Weather is a go today will be the first

444
00:21:19,549 --> 00:21:16,440
flight of both the booster and dragon

445
00:21:19,559 --> 00:21:23,690
a few minus 30 seconds

446
00:21:28,370 --> 00:21:25,310
at launch the International Space

447
00:21:34,450 --> 00:21:28,380
Station will be 260 miles in altitude

448
00:21:39,770 --> 00:21:36,529
15 seconds

449
00:21:44,270 --> 00:21:43,250
minus ten nine eight

450
00:21:45,010 --> 00:21:44,280
seven

451
00:21:51,409 --> 00:21:45,020
six

452
00:21:55,190 --> 00:21:51,419
five four three two one engine full

453
00:21:57,590 --> 00:21:55,200
power and lift off a CRS 26 go Falcon

454
00:22:00,289 --> 00:21:57,600
and Happy Thanksgiving I attached

455
00:22:02,630 --> 00:22:00,299
that's right lift off of spacex's Falcon

456
00:22:04,909 --> 00:22:02,640
9 rocket for the 26th cargo resupply

457
00:22:06,590 --> 00:22:04,919
Mission bringing new science experiments

458
00:22:12,049 --> 00:22:06,600
and solar arrays to the International

459
00:22:12,059 --> 00:22:34,490
come on

460
00:22:38,870 --> 00:22:36,430
here you can see Falcon 9 carrying

461
00:22:40,730 --> 00:22:38,880
crs-26 on its way to the International

462
00:22:42,770 --> 00:22:40,740
Space Station

463
00:22:45,169 --> 00:22:42,780

we are throttling down the engines on

464
00:22:47,930 --> 00:22:45,179
the first stage this helps us prepare

465
00:22:49,610 --> 00:22:47,940
for a Max Q which is maximum Dynamic

466
00:22:52,370 --> 00:22:49,620
pressure it's the largest structural

467
00:22:54,169 --> 00:22:52,380
load that the vehicle sees on ascent

468
00:22:55,370 --> 00:22:54,179
and we should be passing through that

469
00:23:02,070 --> 00:22:55,380
period

470
00:23:02,080 --> 00:23:08,210
[Music]

471
00:23:13,310 --> 00:23:09,950
and there's that call out that we passed

472
00:23:20,330 --> 00:23:17,149
great views there of Falcon 9 carrying

473
00:23:22,549 --> 00:23:20,340
NASA's crs-26 Mission we are coming up

474
00:23:25,370 --> 00:23:22,559
on a few events happening back to back

475
00:23:27,529 --> 00:23:25,380
that's going to be Mikko or main engine

476
00:23:30,110 --> 00:23:27,539
cutoff as the first event that's where

477
00:23:31,430 --> 00:23:30,120
all nine of the m1g engines shut down on

478
00:23:33,110 --> 00:23:31,440
that first stage all night of those

479
00:23:34,130 --> 00:23:33,120
engines that you see lit up on your

480
00:23:36,230 --> 00:23:34,140
screen there

481
00:23:37,970 --> 00:23:36,240
and that's in preparation for the next

482
00:23:39,350 --> 00:23:37,980
event which is stage separation that's

483
00:23:41,930 --> 00:23:39,360
where the first and second stage

484
00:23:44,149 --> 00:23:41,940
separate the first stage will flip

485
00:23:46,850 --> 00:23:44,159
around and make its way back down to

486
00:23:49,070 --> 00:23:46,860
earth and land on our drone ship named

487
00:23:51,409 --> 00:23:49,080
just read the instructions while the

488
00:23:53,870 --> 00:23:51,419

second stage ignites its Merlin and back

489
00:23:56,630 --> 00:23:53,880
engine to boost Dragon to low earth

490
00:23:58,070 --> 00:23:56,640
orbit during scs-1 or second stage

491
00:24:00,289 --> 00:23:58,080
engine start one

492
00:24:04,130 --> 00:24:00,299
then the last event is the Boost back

493
00:24:08,090 --> 00:24:05,750
so reduce the velocity of the first

494
00:24:09,470 --> 00:24:08,100
stage in preparation for atmospheric

495
00:24:11,750 --> 00:24:09,480
re-entry

496
00:24:13,430 --> 00:24:11,760
and that whole sequence takes about 30

497
00:24:15,409 --> 00:24:13,440
seconds and we are coming up on those

498
00:24:31,149 --> 00:24:15,419
few events happening here in a few

499
00:24:31,159 --> 00:24:39,649
back startup stage two ignition

500
00:24:45,470 --> 00:24:42,169
some really cool views there we had

501
00:24:47,930 --> 00:24:45,480
Mikko stage separation the mvac engine

502
00:24:50,570 --> 00:24:47,940
lighting up on your right hand screen we

503
00:24:53,330 --> 00:24:50,580
also saw the first stage kind of in the

504
00:24:55,610 --> 00:24:53,340
view of the second stage view there

505
00:24:59,330 --> 00:24:55,620
falling back to Earth doing a flip and

506
00:25:04,669 --> 00:24:59,340
now in its boost back burn

507
00:25:04,679 --> 00:25:09,529
they joined boost back shutdown

508
00:25:14,210 --> 00:25:11,930
and there's that call out and the Boost

509
00:25:17,350 --> 00:25:14,220
back burn has shut down on the first

510
00:25:20,090 --> 00:25:17,360
stage that is the left hand screen

511
00:25:22,970 --> 00:25:20,100
that's a view of the first stage there

512
00:25:24,769 --> 00:25:22,980
on your right hand screen A View From

513
00:25:26,990 --> 00:25:24,779

the second stage looking at our mvac

514
00:25:30,710 --> 00:25:28,549
you can see on your screen on your left

515
00:25:37,730 --> 00:25:30,720
hand screen the grid fins are deploying

516
00:25:43,909 --> 00:25:40,549
very cool views you're watching a live

517
00:25:45,710 --> 00:25:43,919
webcast for the 26 commercial resupply

518
00:25:49,789 --> 00:25:45,720
mission to the International Space

519
00:25:52,310 --> 00:25:49,799
Station for NASA this is spacex's 54th

520
00:25:55,310 --> 00:25:52,320
mission for 2022 and the fifth Dragon

521
00:25:57,590 --> 00:25:55,320
flights for to the International Space

522
00:25:59,690 --> 00:25:57,600
Station just this year

523
00:26:01,909 --> 00:25:59,700
now we lifted off just about four

524
00:26:07,310 --> 00:26:01,919
minutes ago from Kennedy Space Center at

525
00:26:11,990 --> 00:26:09,830
and so far both vehicles on nominal

526
00:26:15,169 --> 00:26:12,000
trajectories again on your left hand

527
00:26:16,909 --> 00:26:15,179
screen is a view from the first stage on

528
00:26:19,850 --> 00:26:16,919
your right hand screen an awesome view

529
00:26:23,810 --> 00:26:19,860
of the second stage and back engine with

530
00:26:28,010 --> 00:26:25,789
for the first stage in order to make its

531
00:26:30,649 --> 00:26:28,020
way back to our drone ship again just

532
00:26:32,930 --> 00:26:30,659
read the instructions it has a couple

533
00:26:34,909 --> 00:26:32,940
more Burns to execute the first is the

534
00:26:38,149 --> 00:26:34,919
entry burn that's where three of the

535
00:26:39,950 --> 00:26:38,159
Merlin engines reignite this helps to

536
00:26:43,610 --> 00:26:39,960
slow the stage down as it re-enters the

537
00:26:47,570 --> 00:26:45,409
great call outs there

538
00:26:49,490 --> 00:26:47,580

this entry burn helps to slow the

539
00:26:51,830 --> 00:26:49,500
vehicle down as it re-enters the upper

540
00:26:53,930 --> 00:26:51,840
part of the Earth's atmosphere

541
00:26:55,669 --> 00:26:53,940
now the second burn is the final burn

542
00:26:57,470 --> 00:26:55,679
for the first stage it is called The

543
00:26:59,330 --> 00:26:57,480
Landing burn and this is a single engine

544
00:27:01,789 --> 00:26:59,340
burn that brings the vehicle's speed

545
00:27:04,250 --> 00:27:01,799
down rapidly in order to touch down on

546
00:27:07,010 --> 00:27:04,260
the Drone ship

547
00:27:09,350 --> 00:27:07,020
and you may see some bursts of gas on

548
00:27:13,970 --> 00:27:09,360
your left hand screen that is nitrogen

549
00:27:17,990 --> 00:27:15,950
and then again you can see the grid fins

550
00:27:21,289 --> 00:27:18,000
you could see two of the four grid fins

551
00:27:23,210 --> 00:27:21,299
on the first stage these are Hypersonic

552
00:27:24,470 --> 00:27:23,220
grid fins positioned near the top of the

553
00:27:26,570 --> 00:27:24,480
first stage

554
00:27:29,990 --> 00:27:26,580
so once it's in the atmosphere stage one

555
00:27:32,330 --> 00:27:30,000
only uses the grid fins to steer as it

556
00:27:36,049 --> 00:27:32,340
makes its way back down to earth

557
00:27:49,970 --> 00:27:37,789
they Orient the rocket during re-entry

558
00:27:53,750 --> 00:27:51,890
for that call out now you can see on

559
00:28:02,930 --> 00:27:53,760
your left hand screen the entry burn has

560
00:28:08,510 --> 00:28:05,450
and there you can see those engines shut

561
00:28:10,190 --> 00:28:08,520
down that concludes the entry burn for

562
00:28:12,890 --> 00:28:10,200
the first stage

563
00:28:15,549 --> 00:28:12,900

again next up will be the landing burn

564
00:28:21,950 --> 00:28:15,559
for that first stage vehicle

565
00:28:26,510 --> 00:28:24,289
stage two is still looking good on your

566
00:28:28,430 --> 00:28:26,520
right hand screen again A View From the

567
00:28:38,750 --> 00:28:28,440
Falcon 9 second stage looking at the end

568
00:28:43,789 --> 00:28:40,909
about 20 seconds away from that Landing

569
00:28:46,010 --> 00:28:43,799
very beginning on the first stage

570
00:28:49,669 --> 00:28:46,020
again this is a single engine the center

571
00:28:52,130 --> 00:28:49,679
E9 engine burn

572
00:28:54,169 --> 00:28:52,140
to help slow the vehicle down

573
00:29:01,190 --> 00:28:54,179
just enough to touch down on the Drone

574
00:29:05,690 --> 00:29:03,409
and you can see that the landing burn

575
00:29:08,210 --> 00:29:05,700
has begun on the first stage let's watch

576
00:29:19,669 --> 00:29:08,220
as Falcon 9 touches down on just read

577
00:29:19,679 --> 00:29:36,529
Landing light deploy

578
00:29:36,539 --> 00:29:40,130
really awesome

579
00:29:44,750 --> 00:29:42,649
Falcon 9 has touched down as you can see

580
00:29:46,610 --> 00:29:44,760
it's Standing Tall on just bringing the

581
00:29:49,310 --> 00:29:46,620
read the instructions there on your

582
00:29:51,789 --> 00:29:49,320
screen now while this Falcon 9 just

583
00:29:54,649 --> 00:29:51,799
completed its first flight it marks the

584
00:29:57,230 --> 00:29:54,659
153rd successful Landing for an orbital

585
00:30:00,110 --> 00:29:57,240
class rocket

586
00:30:01,549 --> 00:30:00,120
now next up we do have Seco one on the

587
00:30:07,549 --> 00:30:01,559
second stage that's where the Merlin

588
00:30:07,559 --> 00:30:14,149

and Seco one or second stage engineers

589
00:30:25,130 --> 00:30:16,610
we'll be coming up here in just under 20

590
00:30:35,990 --> 00:30:28,370
incredible view there with the Earth in

591
00:30:52,610 --> 00:30:45,110
Seco

592
00:30:57,830 --> 00:30:55,669
and great call out there that means we

593
00:30:59,090 --> 00:30:57,840
have confirmation of a good orbit for

594
00:31:03,049 --> 00:30:59,100
the second stage

595
00:31:06,409 --> 00:31:03,059
still carrying the dragon vehicle

596
00:31:08,810 --> 00:31:06,419
now we are t plus nine minutes into the

597
00:31:10,850 --> 00:31:08,820
mission coming up on the last major task

598
00:31:13,789 --> 00:31:10,860
for our stage two commanding separation

599
00:31:17,029 --> 00:31:13,799
of dragon a couple minutes from now now

600
00:31:19,730 --> 00:31:17,039
we expect to have a live video of of

601
00:31:22,310 --> 00:31:19,740
dragon separation from the top of the

602
00:31:25,850 --> 00:31:22,320
Falcon 9 second stage which looks into

603
00:31:28,130 --> 00:31:25,860
the trunk of the Dragon vehicle

604
00:31:30,769 --> 00:31:28,140
crs-26 will be joining the crew 5

605
00:31:32,570 --> 00:31:30,779
vehicle currently on orbit so we'll be

606
00:31:35,149 --> 00:31:32,580
back to having two dragon spacecraft

607
00:31:37,610 --> 00:31:35,159
docked at the space station

608
00:31:40,610 --> 00:31:37,620
as for cargo today we will be delivering

609
00:31:43,070 --> 00:31:40,620
more than 7 700 pounds of science

610
00:31:45,950 --> 00:31:43,080
research crew supplies and vehicle

611
00:31:49,010 --> 00:31:45,960
Hardware to the orbital laboratory and

612
00:31:52,370 --> 00:31:49,020
its crew and to date SpaceX has sent and

613
00:31:54,230 --> 00:31:52,380

brought back over 250 000 pounds of crew

614
00:32:01,010 --> 00:31:54,240
and cargo to and from the International

615
00:32:05,990 --> 00:32:03,470
the dragon separation is just under a

616
00:32:08,630 --> 00:32:06,000
couple minutes away

617
00:32:15,889 --> 00:32:08,640
we should be able to get a live view of

618
00:32:23,090 --> 00:32:18,889
some fun facts about dragon dragon has

619
00:32:26,149 --> 00:32:23,100
16 Draco engines which have about 90

620
00:32:28,370 --> 00:32:26,159
pounds of thrust each but there are no

621
00:32:31,070 --> 00:32:28,380
super draco's on this vehicle no seats

622
00:32:33,470 --> 00:32:31,080
no life support systems and that saves

623
00:32:36,769 --> 00:32:33,480
weight and space for faster

624
00:32:39,289 --> 00:32:36,779
refurbishment time because this is a

625
00:32:42,110 --> 00:32:39,299
dragon cargo vehicle versus a crew

626
00:32:46,549 --> 00:32:44,630
Dragon also has thick solar arrays on

627
00:32:48,649 --> 00:32:46,559
the trunk the dark side is covered in

628
00:32:51,230 --> 00:32:48,659
solar arrays and the light side is a

629
00:32:53,450 --> 00:32:51,240
radiator to cool the spacecraft the

630
00:32:54,950 --> 00:32:53,460
dragon can autonomously dock using its

631
00:32:59,630 --> 00:32:54,960
navigation sensors and Center Line

632
00:33:05,450 --> 00:33:03,049
and we are just about a minute away from

633
00:33:08,510 --> 00:33:05,460
Dragon separation again if you're just

634
00:33:18,649 --> 00:33:08,520
now joining us you are watching a live

635
00:33:22,370 --> 00:33:20,990
this is the 26 commercial resupply

636
00:33:25,370 --> 00:33:22,380
mission to the International Space

637
00:33:27,049 --> 00:33:25,380
Station for NASA this is spacex's 54th

638
00:33:31,850 --> 00:33:27,059

Mission this year and fifth Dragon

639
00:33:34,669 --> 00:33:31,860
flight to station for 2022 and we lifted

640
00:33:36,590 --> 00:33:34,679
off just under 12 minutes ago from

641
00:33:37,909 --> 00:33:36,600
Kennedy Space Center at launch complex

642
00:33:41,810 --> 00:33:37,919
39a

643
00:33:44,509 --> 00:33:41,820
and we are just a few seconds away from

644
00:33:46,610 --> 00:33:44,519
Dragon separation from Falcon 9's second

645
00:33:49,009 --> 00:33:46,620
stage you are looking at a live view

646
00:33:56,570 --> 00:33:49,019
into the trunk of the Dragon view Dragon

647
00:34:02,210 --> 00:34:00,169
Dragon separation and as you can see

648
00:34:04,970 --> 00:34:02,220
as you can see there on your screen and

649
00:34:07,490 --> 00:34:04,980
hearing those callouts as well dragon is

650
00:34:10,129 --> 00:34:07,500
drifting away from Falcon 9's second

651
00:34:16,070 --> 00:34:13,430
incredible view there the next Milestone

652
00:34:18,829 --> 00:34:16,080
coming up is the nose cone opening

653
00:34:21,470 --> 00:34:18,839
sequence this protects the docking ring

654
00:34:23,750 --> 00:34:21,480
and navigation sensors

655
00:34:25,849 --> 00:34:23,760
and that's gonna do it for me here in

656
00:34:27,889 --> 00:34:25,859
Hawthorne so I'm gonna send it over to

657
00:34:32,990 --> 00:34:27,899
Sandra in Houston how's it going over

658
00:34:37,609 --> 00:34:35,270
hey thanks Jesse beautiful launch as

659
00:34:38,869 --> 00:34:37,619
always great to see that and of course

660
00:34:41,089 --> 00:34:38,879
welcome back into the International

661
00:34:42,409 --> 00:34:41,099
Space Station flight control room here

662
00:34:44,750 --> 00:34:42,419
in Texas

663
00:34:46,909 --> 00:34:44,760

we are standing by for confirmation of

664
00:34:48,770 --> 00:34:46,919
that nose cone deploy that's the next

665
00:34:50,149 --> 00:34:48,780
major Milestone that we are tracking

666
00:34:52,490 --> 00:34:50,159
today

667
00:34:54,409 --> 00:34:52,500
now the nose cone does cover the docking

668
00:34:56,690 --> 00:34:54,419
Hardware which will be critical tomorrow

669
00:34:59,329 --> 00:34:56,700
during docking operations but also

670
00:35:03,670 --> 00:34:59,339
navigation and Rendezvous sensors as

671
00:35:06,349 --> 00:35:03,680
well as the fort forward bulkhead dracos

672
00:35:09,050 --> 00:35:06,359
once open the nose cone will stay open

673
00:35:11,690 --> 00:35:09,060
until the end of the mission

674
00:35:16,970 --> 00:35:11,700
but will be reopened just after the

675
00:35:22,790 --> 00:35:20,030
as we look ahead to nose cone opening it

676
00:35:24,950 --> 00:35:22,800
is a process that involves opening the

677
00:35:27,170 --> 00:35:24,960
hard capture hooks with six non-nose

678
00:35:29,690 --> 00:35:27,180
cone hooks opening and then six nose

679
00:35:32,630 --> 00:35:29,700
cone hooks opening and I did hear that

680
00:35:34,670 --> 00:35:32,640
that process has now begun

681
00:35:38,589 --> 00:35:34,680
again we are in the process of the nose

682
00:35:43,310 --> 00:35:41,150
these are the same 12 hooks that will

683
00:35:46,609 --> 00:35:43,320
hold dragon in place after it docks with

684
00:35:48,589 --> 00:35:46,619
the International Space Station tomorrow

685
00:36:27,410 --> 00:35:48,599
and following the hook opening the nose

686
00:36:32,569 --> 00:36:29,990
so we are continuing to stand by for the

687
00:36:34,550 --> 00:36:32,579
nose cone to open this process can take

688
00:36:44,470 --> 00:36:34,560

a few minutes as all of those hooks do

689
00:36:50,390 --> 00:36:47,990
once the nose cone is open the team will

690
00:36:53,210 --> 00:36:50,400
have a process where each of the four

691
00:36:55,310 --> 00:36:53,220
forward bulkhead thrusters perform short

692
00:36:57,109 --> 00:36:55,320
impulse firings to check them out and

693
00:37:06,790 --> 00:36:57,119
make sure everything is performing as

694
00:37:06,800 --> 00:37:48,370
second set of hooks now opening

695
00:37:52,670 --> 00:37:50,569
additional steps will also take place

696
00:37:54,770 --> 00:37:52,680
once the nose cone is open and that

697
00:37:57,109 --> 00:37:54,780
includes the spacecraft thermal control

698
00:37:59,270 --> 00:37:57,119
system which will automatically be

699
00:38:06,349 --> 00:37:59,280
configured after the nose cone deploy

700
00:38:12,410 --> 00:38:08,930
the SpaceX team will also configure the

701
00:38:14,030 --> 00:38:12,420
systems on the trunk for operations

702
00:38:15,770 --> 00:38:14,040
and this includes performing a health

703
00:38:22,190 --> 00:38:15,780
check on the solar arrays which are

704
00:38:26,390 --> 00:38:24,290
and following that will be some

705
00:38:27,950 --> 00:38:26,400
communication reconfiguration with the

706
00:38:31,690 --> 00:38:27,960
team just to verify they're receiving

707
00:38:34,550 --> 00:38:31,700
Telemetry through tedris

708
00:38:36,349 --> 00:38:34,560
that is the network of satellites that

709
00:38:50,630 --> 00:38:36,359
we utilize to communicate with the

710
00:38:54,950 --> 00:38:52,730
and then the final group of tasks after

711
00:38:57,170 --> 00:38:54,960
dragon is on orbit which of course it

712
00:38:59,990 --> 00:38:57,180
now is we are standing by for that nose

713
00:39:02,030 --> 00:39:00,000

cone deployment and opening is to check

714
00:39:07,190 --> 00:39:02,040
out the guidance navigation and control

715
00:39:11,089 --> 00:39:09,290
this will involve verifying the

716
00:39:14,270 --> 00:39:11,099
Rendezvous plan and taking into account

717
00:39:16,069 --> 00:39:14,280
the initial orbital parameters

718
00:39:18,770 --> 00:39:16,079
as well as looking at the targeted

719
00:39:20,750 --> 00:39:18,780
rendezvous rendezvous Burns that will be

720
00:39:27,650 --> 00:39:20,760
needed as Dragon approaches the

721
00:39:37,370 --> 00:39:30,130
there will also be a checkout of

722
00:39:41,569 --> 00:39:39,290
and we are hearing that all of the hooks

723
00:40:12,290 --> 00:39:41,579
are opening standing by for confirmation

724
00:40:29,930 --> 00:40:15,230
and we are beginning to get a view as

725
00:40:35,089 --> 00:40:32,630
prior to this each of the six hooks

726
00:40:49,750 --> 00:40:35,099
opened up and now we are continuing to

727
00:40:56,810 --> 00:40:53,470
once open the nose cone

728
00:40:59,690 --> 00:40:56,820
the tracking

729
00:41:12,710 --> 00:40:59,700
the dragon docking Hardware will be

730
00:41:26,950 --> 00:41:15,170
and the nose cone will remain open

731
00:42:06,849 --> 00:41:29,569
continuing to get views of the nose cone

732
00:42:36,410 --> 00:42:09,950
and we are standing by to hear a good

733
00:42:50,050 --> 00:42:39,109
and nose cone deploy complete everything

734
00:42:55,670 --> 00:42:53,390
and with dragon's nose cone now open

735
00:42:58,010 --> 00:42:55,680
successfully I do have a special guest

736
00:42:59,569 --> 00:42:58,020
who is dialing in today to discuss

737
00:43:02,150 --> 00:42:59,579
today's launch

738
00:43:05,210 --> 00:43:02,160

joining me is Jeff Aaron who is the

739
00:43:07,490 --> 00:43:05,220
manager of the manager of the systems

740
00:43:08,990 --> 00:43:07,500
engineering and integration office with

741
00:43:10,730 --> 00:43:09,000
the International Space Station program

742
00:43:12,050 --> 00:43:10,740
so thank you so much for joining today

743
00:43:13,730 --> 00:43:12,060
Jeff

744
00:43:19,569 --> 00:43:13,740
yeah thanks for having me Sandra it's

745
00:43:23,450 --> 00:43:22,130
so I do have a couple of questions for

746
00:43:25,730 --> 00:43:23,460
you and thank you again for taking some

747
00:43:27,890 --> 00:43:25,740
time on your Saturday to join us so

748
00:43:30,349 --> 00:43:27,900
successful launches are always exciting

749
00:43:32,930 --> 00:43:30,359
but a lot of work does go in for the

750
00:43:35,089 --> 00:43:32,940
crew and the people on the ground how is

751
00:43:37,670 --> 00:43:35,099
the combined team feeling after today's

752
00:43:40,309 --> 00:43:37,680
successful launch

753
00:43:42,290 --> 00:43:40,319
yeah that's a great question uh first a

754
00:43:44,510 --> 00:43:42,300
big congratulations to the entire team

755
00:43:46,130 --> 00:43:44,520
the SpaceX team for a great Falcon

756
00:43:49,309 --> 00:43:46,140
launch and healthy dragon

757
00:43:51,410 --> 00:43:49,319
the cargo team the science team it takes

758
00:43:53,630 --> 00:43:51,420
a lot of dedicated folks to to pull off

759
00:43:55,250 --> 00:43:53,640
a launch I know the ground teams are

760
00:43:56,569 --> 00:43:55,260
excited to get this Mission off the

761
00:43:57,890 --> 00:43:56,579
ground especially with the weather we've

762
00:43:59,990 --> 00:43:57,900
had of late

763
00:44:02,150 --> 00:44:00,000

everyone on the operations side is

764
00:44:04,490 --> 00:44:02,160
really excited the flight controllers

765
00:44:06,470 --> 00:44:04,500
around the world Houston and in

766
00:44:09,170 --> 00:44:06,480
Huntsville Alabama will all have their

767
00:44:10,730 --> 00:44:09,180
hands full with science operations and

768
00:44:13,250 --> 00:44:10,740
everyone's anxious to see the science

769
00:44:15,829 --> 00:44:13,260
kick off as soon as docking occurs

770
00:44:18,050 --> 00:44:15,839
also we have two roll out solar raids on

771
00:44:20,510 --> 00:44:18,060
board so the team will be preparing the

772
00:44:22,190 --> 00:44:20,520
Eva timelines the suits and the tools

773
00:44:24,109 --> 00:44:22,200
for those installs

774
00:44:25,670 --> 00:44:24,119
and there are a lot and there are a lot

775
00:44:27,349 --> 00:44:25,680
of Robotics with the Canadian arm

776
00:44:29,750 --> 00:44:27,359
associated with the mission and the

777
00:44:31,190 --> 00:44:29,760
arrays so the international team on the

778
00:44:33,170 --> 00:44:31,200
ground is ready to go execute the

779
00:44:34,910 --> 00:44:33,180
mission and the crew has been preparing

780
00:44:36,470 --> 00:44:34,920
for the docking especially Josh and

781
00:44:38,630 --> 00:44:36,480
Nicole who will be monitoring the

782
00:44:40,910 --> 00:44:38,640
approach so I know that the crew and the

783
00:44:44,990 --> 00:44:40,920
teams are all very happy to see dragon

784
00:44:50,270 --> 00:44:46,970
UE that's great to hear Jeff thank you

785
00:44:52,010 --> 00:44:50,280
so my last question for you involves the

786
00:44:53,390 --> 00:44:52,020
fact that this is the last vehicle to

787
00:44:56,270 --> 00:44:53,400
launch to the International Space

788
00:44:58,309 --> 00:44:56,280

Station in 2022 it's been a very busy

789
00:45:01,069 --> 00:44:58,319
year but the year isn't quite done yet

790
00:45:03,170 --> 00:45:01,079
so any word for the teams around the

791
00:45:06,470 --> 00:45:03,180
world who have helped support station

792
00:45:08,510 --> 00:45:06,480
operations through such a milestone year

793
00:45:10,069 --> 00:45:08,520
yeah absolutely but but let me at least

794
00:45:11,210 --> 00:45:10,079
kind of start with a summary of some of

795
00:45:13,790 --> 00:45:11,220
the things that have been going on it

796
00:45:16,309 --> 00:45:13,800
has been a spectacular year

797
00:45:18,650 --> 00:45:16,319
we've had uh five Russian launches and

798
00:45:20,450 --> 00:45:18,660
dockings two of those were crude soyuz

799
00:45:23,270 --> 00:45:20,460
Vehicles three of those were cargo

800
00:45:24,410 --> 00:45:23,280
progress vehicles or progress cargo

801
00:45:26,690 --> 00:45:24,420
vehicles I guess it's probably a better

802
00:45:28,670 --> 00:45:26,700
way to say it we've had eight U.S

803
00:45:31,010 --> 00:45:28,680
launches three of those were crew

804
00:45:32,210 --> 00:45:31,020
dragons uh one was the first private

805
00:45:34,190 --> 00:45:32,220
astronaut mission

806
00:45:34,970 --> 00:45:34,200
and then we also had crew 4 and crew

807
00:45:36,829 --> 00:45:34,980
five

808
00:45:39,349 --> 00:45:36,839
we had the test flight and docking of

809
00:45:40,849 --> 00:45:39,359
the Boeing Starliner vehicle that will

810
00:45:43,250 --> 00:45:40,859
hopefully see crew on board in the

811
00:45:45,829 --> 00:45:43,260
future hopefully 2023

812
00:45:47,930 --> 00:45:45,839
to Northrop Grumman cargo vehicles and

813
00:45:50,510 --> 00:45:47,940

then of course SpaceX this is the second

814
00:45:52,609 --> 00:45:50,520
cargo vehicle for for them this year

815
00:45:54,410 --> 00:45:52,619
each time we launch one of these we need

816
00:45:55,970 --> 00:45:54,420
to undock it and for returning Vehicles

817
00:45:58,250 --> 00:45:55,980
the teams have to make sure that we have

818
00:46:00,109 --> 00:45:58,260
a safe landing or Splashdown

819
00:46:02,030 --> 00:46:00,119
and each of these missions brings its

820
00:46:05,030 --> 00:46:02,040
own challenges new international crew

821
00:46:07,609 --> 00:46:05,040
members new science new Robotics and new

822
00:46:09,950 --> 00:46:07,619
operations of all kinds and we continue

823
00:46:11,510 --> 00:46:09,960
to have seamless cooperation and Integra

824
00:46:13,670 --> 00:46:11,520
and integration of all of our

825
00:46:15,230 --> 00:46:13,680
International partner objectives to

826
00:46:16,490 --> 00:46:15,240
accomplish the mission of each of our

827
00:46:19,370 --> 00:46:16,500
agencies

828
00:46:20,750 --> 00:46:19,380
so he asked me for Words uh to the teams

829
00:46:21,829 --> 00:46:20,760
around the world that have supported

830
00:46:24,109 --> 00:46:21,839
this year

831
00:46:26,030 --> 00:46:24,119
and well I think I would really like to

832
00:46:28,490 --> 00:46:26,040
express my admiration for the teams that

833
00:46:31,370 --> 00:46:28,500
make it happen those that design build

834
00:46:34,190 --> 00:46:31,380
and sustained ISS Hardware the

835
00:46:35,930 --> 00:46:34,200
scientists the operations teams those

836
00:46:38,270 --> 00:46:35,940
that work the spacecraft and launch

837
00:46:41,390 --> 00:46:38,280
Vehicles those that help us Inspire

838
00:46:43,550 --> 00:46:41,400

students our medical personnel the folks

839
00:46:45,950 --> 00:46:43,560
that could pack up the vehicle

840
00:46:47,630 --> 00:46:45,960
the cruise Food Lab the list goes on and

841
00:46:48,710 --> 00:46:47,640
on and as you said these folks are all

842
00:46:51,470 --> 00:46:48,720
over the world

843
00:46:53,450 --> 00:46:51,480
you have my admiration and thanks and

844
00:46:55,970 --> 00:46:53,460
another congratulations on a successful

845
00:46:58,910 --> 00:46:57,650
thank you Jeff those were some beautiful

846
00:47:01,970 --> 00:46:58,920
words I'm sure the team really

847
00:47:03,770 --> 00:47:01,980
appreciates it so with cargo dragon now

848
00:47:05,510 --> 00:47:03,780
it's safely on its way to the

849
00:47:07,309 --> 00:47:05,520
International Space Station that'll do

850
00:47:09,890 --> 00:47:07,319
it for us here in Mission Control

851
00:47:12,170 --> 00:47:09,900
Houston but do be sure to tune in for

852
00:47:14,809 --> 00:47:12,180
docking coverage tomorrow we will be

853
00:47:18,589 --> 00:47:14,819
live on the air covering it all at 5 a.m

854
00:47:20,870 --> 00:47:18,599
central 6 a.m Central Time 6 a.m Eastern

855
00:47:22,970 --> 00:47:20,880
so with that I'll send it back over to

856
00:47:25,069 --> 00:47:22,980
the Kennedy Space Center in Florida and

857
00:47:27,349 --> 00:47:25,079
Jasmine how's it going Jasmine

858
00:47:28,970 --> 00:47:27,359
thank you Sandra it's going well we just

859
00:47:31,370 --> 00:47:28,980
witnessed another beautiful launch from

860
00:47:33,890 --> 00:47:31,380
Florida's Space Coast and we are hard at

861
00:47:36,589 --> 00:47:33,900
work in low earth orbit and heading for

862
00:47:39,290 --> 00:47:36,599
deep space right now Artemis 1 is on a

863
00:47:41,270 --> 00:47:39,300

mission around the moon the space launch

864
00:47:43,490 --> 00:47:41,280
system rocket lifted off from Kennedy

865
00:47:46,430 --> 00:47:43,500
Space Center just last week on Wednesday

866
00:47:48,710 --> 00:47:46,440
November 16th this Mission will pave the

867
00:47:53,089 --> 00:47:48,720
way for long-term presence on the lunar

868
00:47:55,010 --> 00:47:53,099
surface and eventually on to Mars the 26

869
00:47:57,710 --> 00:47:55,020
day Artemis Mission will end with the

870
00:47:59,690 --> 00:47:57,720
Splashdown of the Orion capsule which is

871
00:48:02,930 --> 00:47:59,700
set for December 11th and coverage of

872
00:48:04,970 --> 00:48:02,940
that will begin at 11 A.M on that day to

873
00:48:07,550 --> 00:48:04,980
learn more you can go to nasa.gov

874
00:48:09,650 --> 00:48:07,560
forward slash Artemis

875
00:48:12,290 --> 00:48:09,660
that's going to wrap up our launch

876
00:48:14,270 --> 00:48:12,300
coverage for the 26 Commercial resupply

877
00:48:16,849 --> 00:48:14,280
Services Mission from both NASA and

878
00:48:18,890 --> 00:48:16,859
SpaceX dragon is on its way to dock to

879
00:48:21,770 --> 00:48:18,900
the International Space Station tomorrow

880
00:48:24,349 --> 00:48:21,780
at 7 30 a.m eastern time and we'll have

881
00:48:28,790 --> 00:48:24,359
live coverage of that beginning at 6 a.m

882
00:48:30,890 --> 00:48:28,800
right here on NASA TV and nasa.gov live

883
00:48:32,390 --> 00:48:30,900
thank you again for joining us and we'll

884
00:48:35,930 --> 00:48:32,400
leave you with a replay of today's

885
00:48:39,050 --> 00:48:35,940
launch until next time go NASA go SpaceX

886
00:48:41,210 --> 00:48:39,060
and go CRS 26.

887
00:48:44,390 --> 00:48:41,220
put 15 seconds

888
00:48:50,829 --> 00:48:49,910

minus ten nine eight seven six

889
00:48:57,410 --> 00:48:50,839
five

890
00:49:00,050 --> 00:48:57,420
four three two one full power and lift

891
00:49:02,150 --> 00:49:00,060
off but here at point six go Falcon and

892
00:49:04,550 --> 00:49:02,160
Happy Thanksgiving

893
00:49:06,710 --> 00:49:04,560
that's right lifts off of spacex's

894
00:49:08,690 --> 00:49:06,720
Falcon 9 rocket for the 26th cargo

895
00:49:11,030 --> 00:49:08,700
resupply Mission bringing new science

896
00:49:21,300 --> 00:49:11,040
experiments and solar arrays to the