1
00:01:21,350 --> 00:00:37,280
[Music]

2
00:01:25,350 --> 00:01:23,030
good afternoon from the international

3
00:01:27,109 --> 00:01:25,360
space station flight control room this

4
00:01:29,030 --> 00:01:27,119
is mission control houston bringing you

5
00:01:31,510 --> 00:01:29,040
live coverage today of the launch of

6
00:01:33,350 --> 00:01:31,520
northrop grumman's 13th cargo resupply

7
00:01:35,590 --> 00:01:33,360
mission to the international space

8
00:01:37,749 --> 00:01:35,600
station

9
00:01:39,910 --> 00:01:37,759
you are looking live at the mid-atlantic

10
00:01:41,990 --> 00:01:39,920
regional spaceport of nasa's wallops

11
00:01:44,230 --> 00:01:42,000
flight facility in virginia where the

12
00:01:46,630 --> 00:01:44,240
antares rocket stands ready to launch a

13
00:01:49,190 --> 00:01:46,640

cygnus cargo spacecraft carrying about 7

14
00:01:51,190 --> 00:01:49,200
500 pounds of research crew supplies and

15
00:01:53,270 --> 00:01:51,200
hardware to the international space

16
00:01:54,789 --> 00:01:53,280
station

17
00:01:56,550 --> 00:01:54,799
the launch attempt on sunday was

18
00:01:58,870 --> 00:01:56,560
scrubbed due to a problem with ground

19
00:02:00,709 --> 00:01:58,880
support equipment at the launch site

20
00:02:02,789 --> 00:02:00,719
and following the scrub sunday antares

21
00:02:04,389 --> 00:02:02,799
was drained of its fuel and engineers

22
00:02:06,389 --> 00:02:04,399
worked to correct the ground support

23
00:02:07,830 --> 00:02:06,399
equipment that caused the scrub

24
00:02:09,910 --> 00:02:07,840
then on thursday it was rotated

25
00:02:11,750 --> 00:02:09,920
horizontally to freshen time critical

26
00:02:14,309 --> 00:02:11,760
payloads aboard the cygnus cargo

27
00:02:15,990 --> 00:02:14,319
spacecraft the vehicle was then rotated

28
00:02:17,750 --> 00:02:16,000
back into its vertical position but the

29
00:02:20,710 --> 00:02:17,760
launch attempt yesterday was scrubbed

30
00:02:23,350 --> 00:02:20,720
before fueling began due to high winds

31
00:02:25,670 --> 00:02:23,360
today fueling for antares began about 45

32
00:02:27,270 --> 00:02:25,680
minutes ago and now stands ready to send

33
00:02:30,790 --> 00:02:27,280
cygnus to the international space

34
00:02:33,750 --> 00:02:31,910
the winds are looking much more

35
00:02:35,110 --> 00:02:33,760
favorable for launch with

36
00:02:37,670 --> 00:02:35,120
for launch today with temperatures

37
00:02:39,430 --> 00:02:37,680
around 36 degrees fahrenheit

38
00:02:41,589 --> 00:02:39,440

joining me on console today is chad

39
00:02:43,990 --> 00:02:41,599
davis northrop grumman's human systems

40
00:02:45,509 --> 00:02:44,000
integration and operations manager

41
00:02:47,190 --> 00:02:45,519
chad can you tell us a little bit a

42
00:02:48,790 --> 00:02:47,200
little more about what caused the scrub

43
00:02:51,030 --> 00:02:48,800
on sunday and what the teams did to

44
00:02:53,350 --> 00:02:51,040
resolve the issue

45
00:02:55,509 --> 00:02:53,360
sure thing good afternoon

46
00:02:57,670 --> 00:02:55,519
basically with the the antares vehicle

47
00:02:59,670 --> 00:02:57,680
on sunday's scrub that we had we

48
00:03:01,270 --> 00:02:59,680
experienced an off nominal reading on

49
00:03:04,790 --> 00:03:01,280
part of the ground support equipment

50
00:03:07,030 --> 00:03:04,800
which stripped a limit sensor and so uh

51
00:03:09,030 --> 00:03:07,040
in the precaution and and per the flight

52
00:03:10,470 --> 00:03:09,040
rules they went ahead and

53
00:03:12,630 --> 00:03:10,480
scrubbed the launch since we were that

54
00:03:14,710 --> 00:03:12,640
far into the countdown in the in that

55
00:03:16,070 --> 00:03:14,720
very close time to t-minus three minutes

56
00:03:18,309 --> 00:03:16,080
or so

57
00:03:19,750 --> 00:03:18,319
and since that time the the crew out

58
00:03:22,309 --> 00:03:19,760
there with the

59
00:03:25,350 --> 00:03:22,319
interiors as well as the cygnus team uh

60
00:03:27,589 --> 00:03:25,360
worked very hard to go ahead and uh

61
00:03:29,030 --> 00:03:27,599
take that equipment replace it and do

62
00:03:31,430 --> 00:03:29,040
thorough testing of it to make sure we

63
00:03:32,630 --> 00:03:31,440

were good to go for today's activities

64
00:03:34,149 --> 00:03:32,640
actually we're good to go for

65
00:03:35,430 --> 00:03:34,159
yesterday's activities had the winds

66
00:03:37,670 --> 00:03:35,440
been on our side

67
00:03:40,309 --> 00:03:37,680
and also part of that allowed the

68
00:03:42,390 --> 00:03:40,319
opportunity to refresh the cargo that we

69
00:03:46,789 --> 00:03:42,400
talked about back on sunday on on that

70
00:03:50,630 --> 00:03:48,789
so with those issues now behind us the

71
00:03:53,030 --> 00:03:50,640
teams in the launch control center in

72
00:03:55,030 --> 00:03:53,040
wallops island virginia those northrop

73
00:03:57,270 --> 00:03:55,040
grumman teams are monitoring systems on

74
00:03:59,190 --> 00:03:57,280
the antares rocket and cygnus spacecraft

75
00:04:01,190 --> 00:03:59,200
to ensure all systems are a go for

76
00:04:03,030 --> 00:04:01,200
launch today teams are reporting that

77
00:04:05,830 --> 00:04:03,040
all systems are in good shape up to this

78
00:04:07,589 --> 00:04:05,840
point for an on time launch at 2 21 pm

79
00:04:09,670 --> 00:04:07,599
central time

80
00:04:11,830 --> 00:04:09,680
and once cygnus reaches its preliminary

81
00:04:13,509 --> 00:04:11,840
orbit controls of the vehicle will be

82
00:04:15,030 --> 00:04:13,519
handed over to teams at northrop

83
00:04:16,710 --> 00:04:15,040
grumman's mission control center in

84
00:04:18,390 --> 00:04:16,720
dulles virginia

85
00:04:19,749 --> 00:04:18,400
teams are being led by mission director

86
00:04:22,069 --> 00:04:19,759
zach dwyer

87
00:04:23,510 --> 00:04:22,079
again as soon as cygnus separates from

88
00:04:25,590 --> 00:04:23,520

the rocket today controls of that

89
00:04:28,550 --> 00:04:25,600
vehicle will be handed over to the

90
00:04:30,469 --> 00:04:28,560
flight controllers there in dulles and

91
00:04:32,469 --> 00:04:30,479
back in the internet international space

92
00:04:34,629 --> 00:04:32,479
station flight control room in houston

93
00:04:36,870 --> 00:04:34,639
texas flight control teams are being led

94
00:04:38,629 --> 00:04:36,880
by flight director ron spencer

95
00:04:40,629 --> 00:04:38,639
teams here are monitoring systems on the

96
00:04:43,030 --> 00:04:40,639
international space station ensuring all

97
00:04:54,790 --> 00:04:43,040
systems are a go for cygnus launch today

98
00:04:58,310 --> 00:04:56,629
and i copy that cygnus will arrive to

99
00:05:00,390 --> 00:04:58,320
the international space station after a

100
00:05:02,790 --> 00:05:00,400
three-day journey on tuesday february

101
00:05:05,670 --> 00:05:02,800
18th where it will be installed on the

102
00:05:07,430 --> 00:05:05,680
unity module's earth-facing port nasa's

103
00:05:09,510 --> 00:05:07,440
flight engineer drew morgan will use the

104
00:05:11,670 --> 00:05:09,520
canada arm 2 robotic arm to grapple the

105
00:05:13,110 --> 00:05:11,680
cygnus spacecraft backed up by jessica

106
00:05:14,710 --> 00:05:13,120
mir of nasa

107
00:05:16,550 --> 00:05:14,720
once the astronauts have captured the

108
00:05:18,150 --> 00:05:16,560
vehicle they'll turn controls back over

109
00:05:20,070 --> 00:05:18,160
to teams here on the ground in mission

110
00:05:21,909 --> 00:05:20,080
control houston where the robotics

111
00:05:23,749 --> 00:05:21,919
officer will use the canada arm 2 to

112
00:05:25,749 --> 00:05:23,759
reposition the spacecraft and bring it

113
00:05:28,629 --> 00:05:25,759

toward the unity module to install it to

114
00:05:30,230 --> 00:05:28,639
the international space station

115
00:05:31,909 --> 00:05:30,240
cygnus will remain attached to the

116
00:05:33,110 --> 00:05:31,919
station until may 11

117
00:05:35,510 --> 00:05:33,120
when it will depart the orbiting

118
00:05:37,189 --> 00:05:35,520
laboratory and complete some satellite

119
00:05:39,029 --> 00:05:37,199
deployments and additional objectives

120
00:05:41,110 --> 00:05:39,039
before disposing of several tons of

121
00:05:51,590 --> 00:05:41,120
trash during a fiery re-entry into the

122
00:05:55,350 --> 00:05:53,430
just two weeks ago northrop grumman's

123
00:05:57,670 --> 00:05:55,360
cygnus cargo vehicle from its 12th

124
00:05:59,510 --> 00:05:57,680
resupply mission named the allen bean

125
00:06:01,749 --> 00:05:59,520
departed the international space station

126
00:06:03,830 --> 00:06:01,759
after its 88-day stay

127
00:06:05,430 --> 00:06:03,840
so when the 13th resupply mission

128
00:06:07,590 --> 00:06:05,440
launches today northrop grumman will

129
00:06:09,830 --> 00:06:07,600
perform dual cygnus capability for a

130
00:06:12,070 --> 00:06:09,840
two-week period before its de-orbit burn

131
00:06:13,909 --> 00:06:12,080
on february 29th

132
00:06:15,909 --> 00:06:13,919
still joined on console today by chad

133
00:06:18,390 --> 00:06:15,919
davis north of grumman's human systems

134
00:06:19,909 --> 00:06:18,400
integration and operations manager chad

135
00:06:21,749 --> 00:06:19,919
can you explain how northrop grumman

136
00:06:23,270 --> 00:06:21,759
teams managed two vehicles in flight at

137
00:06:25,189 --> 00:06:23,280
once

138
00:06:27,670 --> 00:06:25,199

uh yeah sure we had developed the

139
00:06:29,749 --> 00:06:27,680
capability uh back whenever we were we

140
00:06:32,230 --> 00:06:29,759
knew we were going to fly the ng-11

141
00:06:33,830 --> 00:06:32,240
vehicle for the extended period of time

142
00:06:35,670 --> 00:06:33,840
and knew that that would overlap with

143
00:06:37,990 --> 00:06:35,680
the ng-12 mission

144
00:06:40,230 --> 00:06:38,000
so uh the the teams in the mission

145
00:06:41,990 --> 00:06:40,240
operations center as well as our ground

146
00:06:44,469 --> 00:06:42,000
segment folks developed the software

147
00:06:46,309 --> 00:06:44,479
needed to be able to clearly identify

148
00:06:48,550 --> 00:06:46,319
two separate vehicles so you knew which

149
00:06:50,710 --> 00:06:48,560
vehicle you were commanding and flying

150
00:06:53,029 --> 00:06:50,720
and we went through multiple simulations

151
00:06:54,710 --> 00:06:53,039
to verify all those capabilities and

152
00:06:57,110 --> 00:06:54,720
then we got the chance

153
00:06:59,670 --> 00:06:57,120
at the end of the ng11 mission to test

154
00:07:01,749 --> 00:06:59,680
it out on 12 which now at this point

155
00:07:03,909 --> 00:07:01,759
it's a sort of standard operating

156
00:07:11,589 --> 00:07:03,919
procedure how we do it from this point

157
00:07:15,430 --> 00:07:13,670
and each cygnus spacecraft is named

158
00:07:17,029 --> 00:07:15,440
after influential individuals in the

159
00:07:18,790 --> 00:07:17,039
world of space flight and the cygnus

160
00:07:21,670 --> 00:07:18,800
spacecraft for this space station

161
00:07:24,070 --> 00:07:21,680
resupply mission is dedicated to u.s air

162
00:07:25,830 --> 00:07:24,080
force major robert lawrence who was the

163
00:07:27,990 --> 00:07:25,840

first african-american astronaut

164
00:07:30,070 --> 00:07:28,000
selected by any program specifically

165
00:07:33,070 --> 00:07:30,080
chosen for the air force's manned

166
00:07:34,870 --> 00:07:33,080
orbital laboratory program in june of

167
00:07:37,430 --> 00:07:34,880
1967.

168
00:07:39,510 --> 00:07:37,440
lawrence died in an f-104 starfighter

169
00:07:41,510 --> 00:07:39,520
aircraft accident at edwards air force

170
00:07:45,350 --> 00:07:41,520
base six months later at the age of

171
00:07:45,360 --> 00:07:49,189
fdx external power nominal

172
00:07:54,309 --> 00:07:52,309
lc elect two fps is safe configuration

173
00:07:55,990 --> 00:07:54,319
verified check channel being reset

174
00:07:57,749 --> 00:07:56,000
scattered clouds for launch back at the

175
00:07:59,430 --> 00:07:57,759
mid-atlantic regional spaceport at

176
00:08:01,909 --> 00:07:59,440
nasa's wallops flight facility in

177
00:08:03,350 --> 00:08:01,919
virginia temperatures now about 36

178
00:08:04,950 --> 00:08:03,360
degrees fahrenheit

179
00:08:09,830 --> 00:08:04,960
lc ops 1

180
00:08:18,950 --> 00:08:13,029
ftsa external power off

181
00:08:21,510 --> 00:08:18,960
and b off irig is 19 52 10.

182
00:08:23,350 --> 00:08:21,520
going up on cygnus today is about 7 500

183
00:08:25,909 --> 00:08:23,360
pounds of research crew supplies and

184
00:08:28,070 --> 00:08:25,919
hardware within that cargo is one

185
00:08:29,589 --> 00:08:28,080
thousand five hundred and seventy pounds

186
00:08:31,189 --> 00:08:29,599
of crew supplies

187
00:08:33,589 --> 00:08:31,199
two thousand one hundred and twenty nine

188
00:08:35,589 --> 00:08:33,599

pounds of science investigations one

189
00:08:37,110 --> 00:08:35,599
hundred and seventy nine pounds of space

190
00:08:38,550 --> 00:08:37,120
walk equipment

191
00:08:41,430 --> 00:08:38,560
three thousand five hundred and one

192
00:08:43,829 --> 00:08:41,440
pounds of vehicle hardware and 66 pounds

193
00:08:46,790 --> 00:08:43,839
of computer resources

194
00:08:49,910 --> 00:08:46,800
lc elect 2 fps arm indication received

195
00:08:52,150 --> 00:08:49,920
fps is currently indicating safe and fso

196
00:08:56,070 --> 00:08:52,160
verify fts arm indication

197
00:09:00,230 --> 00:08:57,829
and courtney i'd like to add to that uh

198
00:09:02,710 --> 00:09:00,240
manifest uh some fresh fruit that was

199
00:09:05,430 --> 00:09:02,720
part of the uh changeover as they did

200
00:09:06,870 --> 00:09:05,440
the refresh uh so the crew

201
00:09:08,790 --> 00:09:06,880
will be getting some fresh fruit

202
00:09:11,910 --> 00:09:08,800
vegetables uh i'm sure they'll be

203
00:09:13,990 --> 00:09:11,920
excited to see when sigma shows up close

204
00:09:33,269 --> 00:09:14,000
me to vpg

205
00:09:37,829 --> 00:09:35,910
now about 27 minutes and 30 seconds from

206
00:09:40,389 --> 00:09:37,839
launch today all systems are still on

207
00:09:44,870 --> 00:09:40,399
track for an on-time launch today at 2

208
00:09:46,070 --> 00:09:44,880
21 pm central time 3 21 pm eastern

209
00:09:48,150 --> 00:09:46,080
teams have been running through some

210
00:09:50,070 --> 00:09:48,160
pre-launch milestones today which began

211
00:09:52,389 --> 00:09:50,080
about four hours ago with the pole for

212
00:09:54,070 --> 00:09:52,399
the launch vehicle to be powered on and

213
00:10:06,550 --> 00:09:54,080

just about an hour ago fueling for the

214
00:10:09,350 --> 00:10:07,990
there have also been various checks

215
00:10:11,350 --> 00:10:09,360
between flight controllers here in

216
00:10:12,949 --> 00:10:11,360
houston and dulles virginia to ensure

217
00:10:14,230 --> 00:10:12,959
everything is on track for an on-time

218
00:10:17,430 --> 00:10:14,240
lunch today

219
00:10:21,190 --> 00:10:17,440
again still on track for that launch

220
00:10:48,069 --> 00:10:21,200
set to start at 2 21 pm central time 3

221
00:10:48,079 --> 00:11:25,430
we have a hot mic on countdown one

222
00:11:28,870 --> 00:11:27,269
some upcoming milestones about 12

223
00:11:30,710 --> 00:11:28,880
minutes from launch flight controllers

224
00:11:33,030 --> 00:11:30,720
will conduct a poll to proceed with the

225
00:11:34,389 --> 00:11:33,040
final launch countdown and about five

226
00:11:36,310 --> 00:11:34,399
minutes from launch the vehicle will

227
00:11:37,990 --> 00:11:36,320
switch to internal power

228
00:11:39,990 --> 00:11:38,000
then just about three minutes and 30

229
00:11:41,670 --> 00:11:40,000
seconds before launch auto sequence

230
00:11:43,670 --> 00:11:41,680
handoff for terminal countdown will be

231
00:11:45,430 --> 00:11:43,680
initiated that'll mark the time the

232
00:11:48,870 --> 00:11:45,440
computers take over for the final

233
00:11:58,870 --> 00:11:50,870
approaching the 25-minute mark before

234
00:12:04,949 --> 00:12:02,310
and launch team lc countdown one

235
00:12:06,310 --> 00:12:04,959
currently at t minus 25 minutes and

236
00:12:08,389 --> 00:12:06,320
counting

237
00:12:13,990 --> 00:12:08,399
and

238
00:12:17,269 --> 00:12:14,000

at this time you go to place occs in the

239
00:12:31,430 --> 00:12:17,279
sac mode pause the hss asc

240
00:12:52,230 --> 00:12:34,870
lc prop 2 hss asc paused and prop 2

241
00:12:57,829 --> 00:12:54,949
lc prop 2 80 21 opened

242
00:12:59,750 --> 00:12:57,839
roger that prop 2 properly verify ehs rp

243
00:13:03,269 --> 00:12:59,760
valve configuration

244
00:13:04,870 --> 00:13:03,279
lc this is properly ehs rp configured

245
00:13:06,470 --> 00:13:04,880
for final countdown

246
00:13:09,509 --> 00:13:06,480
roger that lead in property you can

247
00:13:14,310 --> 00:13:09,519
resume your hss asc and return occs to

248
00:13:20,389 --> 00:13:18,150
lc prop 2 hssasd resumed occs and auto

249
00:13:22,629 --> 00:13:20,399
control mode

250
00:13:26,710 --> 00:13:22,639
after that two we'll go ahead check 370

251
00:13:28,389 --> 00:13:26,720
and 371 and gnc one lc on countdown one

252
00:13:29,829 --> 00:13:28,399
uh can you provide status of upper level

253
00:13:36,310 --> 00:13:29,839
winds

254
00:13:40,310 --> 00:13:36,320
back to that chance we'll check 372.

255
00:13:45,189 --> 00:13:40,320
ops 1 lc countdown 1 step 373 your go to

256
00:13:51,189 --> 00:13:45,199
enable me1 and me2 tvc and eha buses

257
00:14:13,910 --> 00:13:55,670
lc ops 1 tvc and eha buses enabled roger

258
00:14:17,750 --> 00:14:16,470
site control lc countdown one side

259
00:14:20,069 --> 00:14:17,760
control go ahead

260
00:14:21,670 --> 00:14:20,079
yeah let's press for step 374 arm tell

261
00:15:18,790 --> 00:14:21,680
for rapid retract

262
00:15:23,670 --> 00:15:21,509
now just under 22 minutes away from

263
00:15:39,590 --> 00:15:23,680

liftoff and all systems are still on

264
00:15:43,430 --> 00:15:41,430
and uh launch team b advise we are going

265
00:15:47,269 --> 00:15:43,440
to be waving a constraint here we'll get

266
00:15:48,949 --> 00:15:47,279
that briefed out in just a minute

267
00:15:51,749 --> 00:15:48,959
uh at this time i actually want to get a

268
00:15:53,350 --> 00:15:51,759
readiness for recalibration of engine

269
00:15:56,389 --> 00:15:53,360
pressure engine

270
00:16:02,949 --> 00:15:56,399
pressure sensors step 376

271
00:16:06,790 --> 00:16:05,269
yeah mes1 on countdown one maybe s1

272
00:16:08,389 --> 00:16:06,800
counts on one yeah i mean that's when

273
00:16:10,150 --> 00:16:08,399
i'd like to go ahead and uh get our

274
00:16:11,910 --> 00:16:10,160
recall the engine pressure sensors are

275
00:16:15,430 --> 00:16:11,920
you ready for that yeah we'll go for

276
00:16:18,150 --> 00:16:15,440
that the hs1 hs1 let's go grab that

277
00:16:19,590 --> 00:16:18,160
option step 377 recalibrate engine

278
00:16:37,269 --> 00:16:19,600
pressure sensors

279
00:16:41,749 --> 00:16:37,279
recalibrated and ready for flight

280
00:16:45,110 --> 00:16:41,759
cap that option to check 377 complete

281
00:16:48,230 --> 00:16:45,120
and ops 1 let's proceed with step 378

282
00:16:53,350 --> 00:16:51,030
lcs 1 arm enable rotated arm enable

283
00:16:57,670 --> 00:16:53,360
illuminated and arm stage 1 controller

284
00:17:02,829 --> 00:17:00,550
stage 1 controller odm armed and set

285
00:17:10,390 --> 00:17:02,839
your stage 1 controller etv

286
00:17:16,309 --> 00:17:13,189
stage 1 control atv review wrap set copy

287
00:17:17,990 --> 00:17:16,319
ops 2 check 378 379

288
00:17:21,029 --> 00:17:18,000

380 launch team we've just passed our

289
00:17:23,829 --> 00:17:21,039
t-minus 20-minute mark and counting

290
00:17:25,350 --> 00:17:23,839
uh we are uh going to be briefing out a

291
00:17:28,150 --> 00:17:25,360
waiver here in just a minute i believe

292
00:17:31,510 --> 00:17:28,160
we have our management concurrence

293
00:17:33,830 --> 00:17:31,520
and system llc on countdown one

294
00:17:35,990 --> 00:17:33,840
lc system here yeah you go to coordinate

295
00:17:38,630 --> 00:17:36,000
final adjustment to the palo dc step 10

296
00:17:40,789 --> 00:17:38,640
point to a target fairing air temp

297
00:17:43,350 --> 00:17:40,799
if you would go ahead and use anomaly 2

298
00:17:46,549 --> 00:17:43,360
to perform that with site control

299
00:17:49,190 --> 00:17:46,559
copy copy and work

300
00:17:51,110 --> 00:17:49,200
lc this is site control step 374 is

301
00:17:59,270 --> 00:17:51,120
complete

302
00:18:03,990 --> 00:18:01,990
tell lc countdown one

303
00:18:05,750 --> 00:18:04,000
health retail

304
00:18:08,470 --> 00:18:05,760
yeah can you confirm tail arm for rapid

305
00:18:31,430 --> 00:18:08,480
retract tell is armed for referee track

306
00:18:37,350 --> 00:18:34,710
lc system countdown one go ahead system

307
00:18:41,430 --> 00:18:37,360
yeah stepping 381 complete

308
00:18:45,190 --> 00:18:43,669
and launching that does complete all of

309
00:18:47,590 --> 00:18:45,200
our steps in our propellant loading

310
00:19:00,310 --> 00:18:47,600
operations currently at the start of our

311
00:19:05,270 --> 00:19:02,710
and launch team this is lca on countdown

312
00:19:06,870 --> 00:19:05,280
one be advised we do have engineering

313
00:19:10,230 --> 00:19:06,880

recommendation

314
00:19:11,750 --> 00:19:10,240
and launch director concurrence to wave

315
00:19:12,950 --> 00:19:11,760
the engine pre-burner surface

316
00:19:14,909 --> 00:19:12,960
temperature constraints those are

317
00:19:18,310 --> 00:19:14,919
constraint ids

318
00:19:21,590 --> 00:19:18,320
10.024 10.025

319
00:19:25,990 --> 00:19:21,600
and 10.026 again we'll be waiving

320
00:20:03,669 --> 00:19:26,000
constraint ids 10.024 through 10.026

321
00:20:07,669 --> 00:20:05,669
now 17 minutes from liftoff and all

322
00:20:42,630 --> 00:20:07,679
systems are still a go for an on time

323
00:20:57,029 --> 00:20:44,070
and properly i'll be waiting for your

324
00:21:01,750 --> 00:21:00,149
llc this is properly

325
00:21:06,549 --> 00:21:01,760
go ahead properly

326
00:21:11,029 --> 00:21:08,789
copy that core 1 provide recommendation

327
00:21:15,750 --> 00:21:11,039
f1n level

328
00:21:15,760 --> 00:21:20,950
cygnus excuse me cmd lc countdown one

329
00:21:25,669 --> 00:21:23,270
cmd you go to transfer signals to

330
00:22:03,270 --> 00:21:25,679
internal power and report when complete

331
00:22:07,990 --> 00:22:05,510
and we're at t minus 15 minutes and

332
00:22:12,870 --> 00:22:10,149
llc core one on countdown one no fuel

333
00:22:15,669 --> 00:22:12,880
adjustment is required

334
00:22:18,149 --> 00:22:15,679
copy core 1 we'll check step 383 prop 2

335
00:22:21,190 --> 00:22:18,159
configure occs for no adjustment to fuel

336
00:22:24,630 --> 00:22:21,200
level it didn't work

337
00:22:29,909 --> 00:22:24,640
and properly perform excuse me step 385

338
00:22:34,630 --> 00:22:32,549

llc prop 2 occs configured for no

339
00:22:42,230 --> 00:22:34,640
adjustment to fuel level copy that we'll

340
00:22:45,590 --> 00:22:43,750
and launching we're about two minutes

341
00:22:50,630 --> 00:22:45,600
away for our final poll we'll proceed

342
00:22:57,110 --> 00:22:54,390
ops two lc countdown one

343
00:22:59,990 --> 00:22:57,120
go ahead lc let's go ahead initiate step

344
00:23:01,909 --> 00:23:00,000
387 you can initiate fib position

345
00:23:03,590 --> 00:23:01,919
override

346
00:23:05,350 --> 00:23:03,600
overwrite complete

347
00:23:15,110 --> 00:23:05,360
copy that off too we'll check 387

348
00:23:18,950 --> 00:23:17,110
again we're standing by now for that 12

349
00:23:20,470 --> 00:23:18,960
minute mark before launch where flight

350
00:23:22,710 --> 00:23:20,480
controllers will conduct a poll to

351
00:23:25,510 --> 00:23:22,720
proceed with the final launch countdown

352
00:23:26,870 --> 00:23:25,520
one minute from our final poll

353
00:23:28,789 --> 00:23:26,880
today

354
00:23:31,270 --> 00:23:28,799
i want to give kudos out to our house

355
00:23:33,029 --> 00:23:31,280
one and ops 2 team today

356
00:23:54,710 --> 00:23:33,039
and franz it's almost time to say

357
00:24:01,110 --> 00:23:57,110
and cmg do you have status on internal

358
00:24:22,789 --> 00:24:03,430
yes we're on internal power nominal copy

359
00:24:26,870 --> 00:24:25,430
okay launch team lc countdown one step

360
00:24:30,470 --> 00:24:26,880
388

361
00:24:35,430 --> 00:24:30,480
hold proceed with final countdown gso

362
00:24:36,630 --> 00:24:35,440
gsogo rso car oscilloscope td tds go

363
00:24:41,350 --> 00:24:36,640

prop lead

364
00:24:43,909 --> 00:24:41,360
stage one the team is go

365
00:24:45,190 --> 00:24:43,919
mes1 nes one is go

366
00:24:46,390 --> 00:24:45,200
gce

367
00:24:48,870 --> 00:24:46,400
is go

368
00:24:51,029 --> 00:24:48,880
ace aces go

369
00:24:52,070 --> 00:24:51,039
mars mars is go

370
00:24:54,390 --> 00:24:52,080
cmd

371
00:24:57,110 --> 00:24:54,400
ld

372
00:24:59,110 --> 00:24:57,120
and ng

373
00:25:00,789 --> 00:24:59,120
in honor of major robert lawrence whose

374
00:25:02,950 --> 00:25:00,799
courage and sacrifice in the name of

375
00:25:04,549 --> 00:25:02,960
space exploration will inspire

376
00:25:06,470 --> 00:25:04,559
generations of people from all

377
00:25:08,470 --> 00:25:06,480
backgrounds to reach for the stars

378
00:25:10,630 --> 00:25:08,480
northrop grumman is go

379
00:25:15,590 --> 00:25:10,640
and i copy that ng will go to proceed

380
00:25:21,110 --> 00:25:18,950
and launching bfi step 389 will not be

381
00:25:22,230 --> 00:25:21,120
required and step 390 will not be

382
00:25:30,149 --> 00:25:22,240
required

383
00:25:33,510 --> 00:25:31,750
you just heard the poll to proceed with

384
00:26:03,990 --> 00:25:33,520
the final countdown to launch and all

385
00:26:07,750 --> 00:26:06,149
just under 11 minutes now from launch

386
00:26:10,390 --> 00:26:07,760
and everything is still proceeding

387
00:26:14,149 --> 00:26:10,400
smoothly for an on-time launch at 2 21

388
00:26:15,590 --> 00:26:14,159

pm central time 3 21 pm eastern

389
00:26:17,269 --> 00:26:15,600
once we get to that launch time the

390
00:26:19,110 --> 00:26:17,279
first thing that will occur is the stage

391
00:26:21,269 --> 00:26:19,120
one ignition and you'll see lift off

392
00:26:22,870 --> 00:26:21,279
just a few seconds after that and those

393
00:26:24,710 --> 00:26:22,880
two main engines will burn for about

394
00:26:27,110 --> 00:26:24,720
three minutes and 28 seconds before

395
00:26:28,789 --> 00:26:27,120
cutting off and stage one will separate

396
00:26:30,470 --> 00:26:28,799
cygnus will coast for a bit until

397
00:26:32,149 --> 00:26:30,480
fairing separation when the external

398
00:26:34,149 --> 00:26:32,159
cover that protects the spacecraft

399
00:26:35,430 --> 00:26:34,159
during launch will separate

400
00:26:37,750 --> 00:26:35,440
countdown one we're going to go ahead

401
00:26:38,950 --> 00:26:37,760
and perform the main engine five opening

402
00:26:42,630 --> 00:26:38,960
checklist

403
00:26:44,470 --> 00:26:42,640
you are going to proceed on steps q1 q2

404
00:26:48,870 --> 00:26:44,480
and q3

405
00:26:56,070 --> 00:26:54,310
opening vcd on my mark three two one

406
00:27:01,510 --> 00:26:56,080
mark

407
00:27:01,520 --> 00:27:15,190
copy q1

408
00:27:18,470 --> 00:27:16,870
the inner stage adapter that connects

409
00:27:20,549 --> 00:27:18,480
the first and second stages will

410
00:27:23,029 --> 00:27:20,559
separate at 4 minutes and 14 seconds

411
00:27:25,269 --> 00:27:23,039
into flight before stage 2 ignition

412
00:27:27,990 --> 00:27:25,279
which is a solid rocket fuel that will

413
00:27:29,990 --> 00:27:28,000

burn for 2 minutes and 43 seconds

414
00:27:31,510 --> 00:27:30,000
once the second stage burns out we'll be

415
00:27:33,830 --> 00:27:31,520
listening for the call of orbital

416
00:27:36,149 --> 00:27:33,840
insertion at 7 minutes and four seconds

417
00:27:38,230 --> 00:27:36,159
after launch the vehicle will coast for

418
00:27:39,990 --> 00:27:38,240
two minutes before cygnus separation at

419
00:27:41,110 --> 00:27:40,000
nine minutes and four seconds after

420
00:27:42,710 --> 00:27:41,120
liftoff

421
00:27:45,750 --> 00:27:42,720
at the time of launch the international

422
00:27:47,430 --> 00:27:45,760
space station will be flying 258 statute

423
00:27:50,230 --> 00:27:47,440
miles over the western

424
00:27:52,310 --> 00:27:50,240
western pacific then solar array deploy

425
00:27:56,230 --> 00:27:52,320
is expected to occur just about an hour

426
00:28:00,950 --> 00:27:59,669
and uh ops one lc countdown one

427
00:28:03,190 --> 00:28:00,960
go ahead

428
00:28:06,950 --> 00:28:03,200
let's kick off step 392 you go to enable

429
00:28:26,149 --> 00:28:12,070
lc ops one acs vdm's internal power on

430
00:28:31,190 --> 00:28:28,710
acs vdm is enabled voltage nominal odm

431
00:28:42,830 --> 00:28:31,200
commands clear after that elect one

432
00:28:42,840 --> 00:28:49,430
393. have a hot mic on countdown one

433
00:28:52,789 --> 00:28:51,029
so this is this is the official

434
00:28:54,470 --> 00:28:52,799
countdown okay this is what daniel's

435
00:28:56,149 --> 00:28:54,480
liking

436
00:29:12,389 --> 00:28:56,159
vrg

437
00:29:12,399 --> 00:29:27,590
not available

438
00:29:27,600 --> 00:29:32,630

lc mes1 fib is indicating

439
00:29:32,640 --> 00:29:37,430
okay copy that mes1

440
00:29:44,389 --> 00:29:39,029
yeah

441
00:29:49,269 --> 00:29:47,669
prg deactivated

442
00:29:51,830 --> 00:29:49,279
copy all that completes our main engine

443
00:29:56,789 --> 00:29:51,840
fib opening check

444
00:30:27,669 --> 00:29:58,470
yeah we did we hung

445
00:30:34,070 --> 00:30:31,110
lc prop lead vpso activation verified

446
00:30:35,590 --> 00:30:34,080
i copy that properly ops 2 step 396

447
00:30:40,870 --> 00:30:35,600
initialized ground ordnance power

448
00:30:45,269 --> 00:30:42,630
ground ordinance power supplies

449
00:30:47,909 --> 00:30:46,630
and ground ordnance power supply is

450
00:31:11,990 --> 00:30:47,919
nominal

451
00:31:16,470 --> 00:31:14,870
lc site control app bay ecs transfer to

452
00:31:20,070 --> 00:31:16,480
gn2 confirmed

453
00:31:22,789 --> 00:31:20,080
roger that side control checks 398

454
00:31:58,950 --> 00:31:22,799
and step 399 is not required for today's

455
00:32:02,549 --> 00:32:01,110
and launch teamwork at t minus five

456
00:32:04,310 --> 00:32:02,559
minutes and counting

457
00:32:07,909 --> 00:32:04,320
ops one step four hundred you go to

458
00:32:10,470 --> 00:32:07,919
transfer avionics to internal power

459
00:32:17,029 --> 00:32:10,480
lc ops one avionics internal power on

460
00:32:17,039 --> 00:32:25,509
external power off

461
00:32:29,590 --> 00:32:27,350
and you'll see a liquid internal powers

462
00:32:31,509 --> 00:32:29,600
nominal roger that elect one ops one you

463
00:32:33,269 --> 00:32:31,519

can open your fts envelope and verify

464
00:32:35,830 --> 00:32:33,279
green indication

465
00:32:40,310 --> 00:32:35,840
lc ops one fps zombie loop open and

466
00:32:46,149 --> 00:32:44,070
lc elect two ftlu and fts receiver

467
00:32:49,110 --> 00:32:46,159
indications are nominal

468
00:32:51,590 --> 00:32:49,120
roger that elect two ops one step 404

469
00:32:58,549 --> 00:32:51,600
send all arm command

470
00:33:03,750 --> 00:33:01,750
lca liquid sna's odms all armed copy

471
00:33:04,789 --> 00:33:03,760
elect one we're at t minus four minutes

472
00:33:08,870 --> 00:33:04,799
and counting

473
00:33:11,990 --> 00:33:08,880
nasa td report range status range screen

474
00:33:14,549 --> 00:33:12,000
roger that td ranges green

475
00:33:30,870 --> 00:33:14,559
and launch team advise step 407 will not

476
00:33:35,190 --> 00:33:33,269
and we're passing t minus three minutes

477
00:33:37,430 --> 00:33:35,200
thirty seconds phase three dynamic

478
00:33:54,230 --> 00:33:37,440
limits will be active at t minus three

479
00:33:54,240 --> 00:34:04,549
fc commanded to fight mode

480
00:34:04,559 --> 00:34:08,950
auto sequence start

481
00:34:13,750 --> 00:34:11,349
rdm bus voltages and currents nominal

482
00:34:15,349 --> 00:34:13,760
roger that elec one gnc one verifier

483
00:34:18,310 --> 00:34:15,359
ready for nab mode

484
00:34:20,869 --> 00:34:18,320
lc gsv one orb nav ready for nav

485
00:34:29,669 --> 00:34:20,879
ops ii switch the nav

486
00:34:35,589 --> 00:34:32,869
lc gnc one or nav telemetry verified

487
00:35:00,870 --> 00:34:35,599
roger that tnc gnc one

488
00:35:29,349 --> 00:35:02,950

and launch team we're passing t minus

489
00:35:33,510 --> 00:35:31,750
and t minus one minute

490
00:36:00,630 --> 00:35:33,520
thirty seconds

491
00:36:22,950 --> 00:36:03,430
and t minus one minute

492
00:36:22,960 --> 00:36:30,950
40 seconds until liftoff

493
00:36:42,950 --> 00:36:33,510
t-minus 30 seconds

494
00:36:42,960 --> 00:36:53,109
20 seconds to lift off

495
00:36:53,119 --> 00:36:58,470
t minus ten

496
00:37:00,390 --> 00:36:59,430
five

497
00:37:01,430 --> 00:37:00,400
four

498
00:37:02,390 --> 00:37:01,440
three

499
00:37:17,589 --> 00:37:02,400
two

500
00:37:17,599 --> 00:37:22,310
attitude

501
00:37:22,320 --> 00:37:26,790
is dominant

502
00:37:26,800 --> 00:37:31,510
core pressures are nominal

503
00:37:31,520 --> 00:37:45,670
engine chamber pressures are nominal

504
00:37:45,680 --> 00:37:49,349
altitude 10 000

505
00:37:49,359 --> 00:37:52,069
attitude feet

506
00:37:52,079 --> 00:38:00,310
core system performance nominal

507
00:38:00,320 --> 00:38:05,190
engine and pvc systems nominal

508
00:38:05,200 --> 00:38:11,270
velocity 1100 feet per second

509
00:38:11,280 --> 00:38:20,470
attitude continues down

510
00:38:20,480 --> 00:38:25,109
max q attitude nominal

511
00:38:25,119 --> 00:38:29,030
power subsystem continues down

512
00:38:29,040 --> 00:38:34,069
altitude 50k feet

513
00:38:34,079 --> 00:38:39,109

engine steady 100

514
00:38:39,119 --> 00:38:45,190
core bng 3 activated

515
00:38:45,200 --> 00:38:49,510
attitude domino

516
00:38:53,589 --> 00:38:51,670
three thousand feet per second added to

517
00:38:55,510 --> 00:38:53,599
them coming up on two minutes into the

518
00:38:57,430 --> 00:38:55,520
flight they've passed maximum dynamic

519
00:39:01,990 --> 00:38:57,440
pressure on the vehicle

520
00:39:09,910 --> 00:39:03,990
one hundred thousand feet altitude two

521
00:39:09,920 --> 00:39:15,510
core pressure is nominal

522
00:39:15,520 --> 00:39:21,430
engine steady 100

523
00:39:25,030 --> 00:39:23,349
a minute and a half to go in first stage

524
00:39:29,190 --> 00:39:25,040
performance

525
00:39:29,200 --> 00:39:36,630
150k feed altitude

526
00:39:36,640 --> 00:39:43,750
engine steady pressure is nominal

527
00:39:43,760 --> 00:39:48,870
eight thousand feet per second

528
00:39:48,880 --> 00:39:54,470
core pressures are nominal

529
00:39:58,230 --> 00:39:56,390
engines at 100 coming up on three

530
00:40:02,230 --> 00:39:58,240
minutes into flight low throttle down

531
00:40:06,950 --> 00:40:03,109
mico

532
00:40:06,960 --> 00:40:12,390
attitude nominal

533
00:40:12,400 --> 00:40:22,309
engines at 55 percent and nominal

534
00:40:25,910 --> 00:40:24,710
fourteen thousand feet per second main

535
00:40:33,349 --> 00:40:25,920
engine cut off

536
00:40:39,910 --> 00:40:38,069
upper acs enable stage one step

537
00:40:41,990 --> 00:40:39,920
stage one separation confirmed the next

538
00:40:45,990 --> 00:40:42,000

milestone is fairing separation which

539
00:40:46,000 --> 00:40:53,589
altitude 100 kilometers

540
00:40:53,599 --> 00:40:59,510
roughly 15 seconds to stage two ignition

541
00:41:05,030 --> 00:41:01,750
fairing separation confirmed bearing

542
00:41:07,910 --> 00:41:06,710
four minutes into flight center stage

543
00:41:13,910 --> 00:41:07,920
separation

544
00:41:20,309 --> 00:41:16,309
stage two ignition

545
00:41:22,390 --> 00:41:20,319
stage two is that solid rocket fuel that

546
00:41:24,390 --> 00:41:22,400
will burn for about three minutes and 43

547
00:41:26,950 --> 00:41:24,400
seconds burnout will come about seven

548
00:41:31,190 --> 00:41:26,960
minutes and nine seconds into flight h2

549
00:41:31,200 --> 00:41:35,910
power subsystem nominal

550
00:41:35,920 --> 00:41:45,109
stage 2 attitude nominal

551
00:41:45,119 --> 00:41:50,950
stage 2 tvc system performance nominal

552
00:41:50,960 --> 00:41:57,910
power subsystems continue nominal

553
00:41:57,920 --> 00:42:14,950
fds nominal

554
00:42:24,150 --> 00:42:16,870
roughly 100 seconds till stage two

555
00:42:24,160 --> 00:42:36,790
vehicle systems

556
00:42:36,800 --> 00:42:50,150
cdc system performance terminal

557
00:42:50,160 --> 00:42:58,630
roughly one minute and stage two burnout

558
00:43:04,830 --> 00:43:01,349
kilometers per second velocity

559
00:43:17,589 --> 00:43:04,840
uh 183 kilometers

560
00:43:25,990 --> 00:43:19,190
vehicle performance nominal good

561
00:43:26,000 --> 00:43:40,390
30 seconds to stage two burnout

562
00:43:56,470 --> 00:43:42,630
system continues to perform normally

563
00:44:03,150 --> 00:43:58,630

stage 2 burnout

564
00:44:08,470 --> 00:44:03,160
moving about 16

565
00:44:08,480 --> 00:44:14,390
acs enable

566
00:44:30,550 --> 00:44:16,870
beginning maneuver to acquire payload

567
00:44:34,390 --> 00:44:32,309
power nominal

568
00:44:35,829 --> 00:44:34,400
the vehicle will continue to coast until

569
00:44:42,309 --> 00:44:35,839
conditions are met for payload

570
00:44:46,790 --> 00:44:44,150
cygnus separation will come about nine

571
00:44:49,270 --> 00:44:46,800
minutes and four seconds into flight

572
00:45:00,710 --> 00:44:49,280
attitude nominal roughly one minute to

573
00:45:17,670 --> 00:45:03,430
acs and power subsystems nominal

574
00:45:21,670 --> 00:45:18,829
altitude

575
00:45:35,109 --> 00:45:21,680
197 kilometers

576
00:45:38,870 --> 00:45:37,030
vehicle subsystems continue to operate

577
00:45:52,230 --> 00:45:38,880
nominal

578
00:45:56,630 --> 00:45:54,390
is not available at this time please try

579
00:46:01,430 --> 00:45:56,640
your call again later announcement one

580
00:46:03,750 --> 00:46:01,440
switch one seven zero dash three

581
00:46:05,349 --> 00:46:03,760
we have payload separation welcome to

582
00:46:06,630 --> 00:46:05,359
verizon and spacecraft separation

583
00:46:08,790 --> 00:46:06,640
confirmed

584
00:46:10,870 --> 00:46:08,800
is not available at this time please try

585
00:46:13,030 --> 00:46:10,880
your call again later announcement one

586
00:47:27,430 --> 00:46:13,040
beginning

587
00:47:31,270 --> 00:47:29,829
and cygnus is now on its way to the

588
00:47:33,270 --> 00:47:31,280

international space station where it

589
00:47:35,510 --> 00:47:33,280
will arrive in three days on tuesday

590
00:47:37,589 --> 00:47:35,520
february 18th i'm still joined on

591
00:47:39,990 --> 00:47:37,599
console here by chad davis of northrop

592
00:47:43,430 --> 00:47:41,670
chad what will the north of german teams

593
00:47:45,829 --> 00:47:43,440
do here on the ground until cygnus

594
00:47:47,589 --> 00:47:45,839
arrives to the space station

595
00:47:49,510 --> 00:47:47,599
uh from this point moving forward now

596
00:47:52,710 --> 00:47:49,520
that cygnus is separated from the upper

597
00:47:54,950 --> 00:47:52,720
stage the team in uh mcc douglas that we

598
00:47:56,950 --> 00:47:54,960
saw earlier zach dwyer the current

599
00:47:59,750 --> 00:47:56,960
mission director followed by

600
00:48:02,069 --> 00:47:59,760
uh paul brower the second shift mission

601
00:48:03,990 --> 00:48:02,079
director will be

602
00:48:05,670 --> 00:48:04,000
making sure all the systems are nominal

603
00:48:07,030 --> 00:48:05,680
going through getting the solar rays

604
00:48:09,670 --> 00:48:07,040
deployed

605
00:48:11,430 --> 00:48:09,680
initializing the prop system and

606
00:48:14,549 --> 00:48:11,440
essentially starting to play catch up

607
00:48:16,309 --> 00:48:14,559
with the international space station

608
00:48:18,230 --> 00:48:16,319
and looking forward to cygnus departure

609
00:48:19,829 --> 00:48:18,240
on may 11 cygnus will perform some

610
00:48:22,150 --> 00:48:19,839
secondary operations can you go over

611
00:48:25,030 --> 00:48:22,160
some of those

612
00:48:27,109 --> 00:48:25,040
sure yeah once once we depart the iss we

613
00:48:29,030 --> 00:48:27,119

typically perform a burn to climb up to

614
00:48:30,950 --> 00:48:29,040
a little bit higher altitude

615
00:48:33,670 --> 00:48:30,960
and then we have different payloads on

616
00:48:34,870 --> 00:48:33,680
board uh microsoft cubesat deploys we

617
00:48:37,030 --> 00:48:34,880
typically do

618
00:48:38,950 --> 00:48:37,040
and for this particular mission

619
00:48:40,630 --> 00:48:38,960
we have the sapphire or the fire

620
00:48:43,270 --> 00:48:40,640
experiment that we talked about on

621
00:48:45,670 --> 00:48:43,280
sunday uh provided by the glenn research

622
00:48:46,870 --> 00:48:45,680
center and we'll actually set off that

623
00:48:49,109 --> 00:48:46,880
experiment

624
00:48:51,990 --> 00:48:49,119
to measure different uh

625
00:48:54,069 --> 00:48:52,000
interactions of fire and microgravity

626
00:48:56,390 --> 00:48:54,079
and that will occur inside sickness post

627
00:48:58,150 --> 00:48:56,400
deploy so those are two two of the main

628
00:48:58,950 --> 00:48:58,160
activities that we do along with some

629
00:49:01,670 --> 00:48:58,960
other

630
00:49:03,349 --> 00:49:01,680
uh what we call you know lessons learned

631
00:49:06,230 --> 00:49:03,359
that we gain more and more experience

632
00:49:09,190 --> 00:49:07,750
all right chad thank you for joining us

633
00:49:11,109 --> 00:49:09,200
today and here shortly we'll be talking

634
00:49:13,750 --> 00:49:11,119
to joel montalbano international space

635
00:50:58,069 --> 00:49:13,760
station deputy program manager

636
00:51:01,430 --> 00:50:59,589
now joining me on console is joel

637
00:51:03,349 --> 00:51:01,440
montalbano international space station

638
00:51:05,589 --> 00:51:03,359

deputy program manager joel thanks for

639
00:51:07,270 --> 00:51:05,599
joining us today oh my pleasure it's

640
00:51:09,349 --> 00:51:07,280
great to be here awesome launch awesome

641
00:51:10,790 --> 00:51:09,359
launch today

642
00:51:12,790 --> 00:51:10,800
cygnus is

643
00:51:14,790 --> 00:51:12,800
in orbit and route to the station for

644
00:51:16,309 --> 00:51:14,800
its arrival on tuesday so how important

645
00:51:18,390 --> 00:51:16,319
was today's launch in terms of

646
00:51:20,230 --> 00:51:18,400
continuing resupply of the station and

647
00:51:23,750 --> 00:51:20,240
the science it is delivering to the crew

648
00:51:25,349 --> 00:51:23,760
on board you know we meticulously plan

649
00:51:27,670 --> 00:51:25,359
every one of the missions going to the

650
00:51:29,430 --> 00:51:27,680
international space station and today's

651
00:51:31,270 --> 00:51:29,440
mission is no different

652
00:51:33,430 --> 00:51:31,280
we have hardware on board that will

653
00:51:34,870 --> 00:51:33,440
continue the robust science and research

654
00:51:37,270 --> 00:51:34,880
program we have onboard the space

655
00:51:39,190 --> 00:51:37,280
station we also have equipment on board

656
00:51:41,349 --> 00:51:39,200
that will continue the development of

657
00:51:43,589 --> 00:51:41,359
commercialization of low earth orbit

658
00:51:46,309 --> 00:51:43,599
and we have hardware on board that helps

659
00:51:48,470 --> 00:51:46,319
us in exploration it helps us buy down

660
00:51:54,230 --> 00:51:48,480
risk for the artemis program as we

661
00:51:57,750 --> 00:51:55,990
and the northrop grumman flight control

662
00:51:59,910 --> 00:51:57,760
team continues to be busy managing

663
00:52:01,990 --> 00:51:59,920

cygnus's launch today its journey to the

664
00:52:03,750 --> 00:52:02,000
station in the previous cygnus that will

665
00:52:05,589 --> 00:52:03,760
remain in orbit for the next two weeks

666
00:52:07,510 --> 00:52:05,599
serving as a science platform how

667
00:52:09,430 --> 00:52:07,520
impressive is the ability of these

668
00:52:11,109 --> 00:52:09,440
commercial flight control teams to

669
00:52:13,030 --> 00:52:11,119
multi-task in support of station

670
00:52:14,390 --> 00:52:13,040
operations

671
00:52:16,549 --> 00:52:14,400
you know we have a really good

672
00:52:17,990 --> 00:52:16,559
relationship with northrop grumman and

673
00:52:19,829 --> 00:52:18,000
all our domestic partners and

674
00:52:21,990 --> 00:52:19,839
international partners and

675
00:52:22,870 --> 00:52:22,000
and it's a partnership we work together

676
00:52:24,790 --> 00:52:22,880
to

677
00:52:27,750 --> 00:52:24,800
one fulfill the nasa contract that we

678
00:52:29,750 --> 00:52:27,760
have with these companies as well as to

679
00:52:32,390 --> 00:52:29,760
help them meet their company objectives

680
00:52:33,990 --> 00:52:32,400
on board you know for one example is

681
00:52:36,390 --> 00:52:34,000
this mission was scheduled about two

682
00:52:38,230 --> 00:52:36,400
months from now and nasa had the need to

683
00:52:39,910 --> 00:52:38,240
move it up we worked with northrop

684
00:52:42,230 --> 00:52:39,920
grumman team we're able to move it up

685
00:52:44,390 --> 00:52:42,240
into this time frame and what you saw

686
00:52:46,309 --> 00:52:44,400
today was just an awesome launch and a

687
00:52:50,150 --> 00:52:46,319
result of some of that work and an

688
00:52:53,910 --> 00:52:51,990

and no time to rest for the station

689
00:52:55,750 --> 00:52:53,920
program with spacex almost two weeks

690
00:52:57,990 --> 00:52:55,760
from its next cargo run to the station

691
00:53:00,549 --> 00:52:58,000
and a soyuz crew rotation to follow in

692
00:53:02,069 --> 00:53:00,559
the early to mid april time frame as

693
00:53:03,750 --> 00:53:02,079
always how complex will the next few

694
00:53:05,910 --> 00:53:03,760
months be for the station program and

695
00:53:07,190 --> 00:53:05,920
the global partnership

696
00:53:10,390 --> 00:53:07,200
you know this year we're going to

697
00:53:11,750 --> 00:53:10,400
celebrate 20 years of continuing human

698
00:53:13,589 --> 00:53:11,760
presence are born the international

699
00:53:15,349 --> 00:53:13,599
space station and one of the coolest

700
00:53:17,750 --> 00:53:15,359
things about working on space station is

701
00:53:20,230 --> 00:53:17,760
the next two months are always busy

702
00:53:22,870 --> 00:53:20,240
you know following this launch today

703
00:53:24,309 --> 00:53:22,880
we'll have a birthing early next week

704
00:53:26,790 --> 00:53:24,319
looking forward in march we'll have a

705
00:53:28,390 --> 00:53:26,800
spacex cargo mission launching to the

706
00:53:30,309 --> 00:53:28,400
international space station

707
00:53:32,710 --> 00:53:30,319
going april we'll have a soyuz mission

708
00:53:34,710 --> 00:53:32,720
bringing three new crew members and then

709
00:53:36,069 --> 00:53:34,720
mid april soyuz landing bringing through

710
00:53:37,750 --> 00:53:36,079
crew members home

711
00:53:39,430 --> 00:53:37,760
fast forward a few weeks after that

712
00:53:41,030 --> 00:53:39,440
we'll have a japanese cargo mission

713
00:53:42,470 --> 00:53:41,040

bringing critical batteries to the

714
00:53:44,309 --> 00:53:42,480
international space station

715
00:53:45,910 --> 00:53:44,319
that allow us to continue our upgrade of

716
00:53:47,670 --> 00:53:45,920
our power system

717
00:53:50,150 --> 00:53:47,680
in addition to all that we're working

718
00:53:51,829 --> 00:53:50,160
with spacex and boeing to launch crew

719
00:53:53,829 --> 00:53:51,839
members from kennedy space center this

720
00:53:55,430 --> 00:53:53,839
year we plan to have both of those

721
00:53:56,630 --> 00:53:55,440
missions visiting the international

722
00:53:58,950 --> 00:53:56,640
space station

723
00:54:01,510 --> 00:53:58,960
and on top of all that we do our daily

724
00:54:03,589 --> 00:54:01,520
job of the research and science we do on

725
00:54:05,829 --> 00:54:03,599
board the exploration objectives i

726
00:54:07,990 --> 00:54:05,839
talked earlier as well as work to

727
00:54:09,190 --> 00:54:08,000
commercialize low earth orbit so just an

728
00:54:11,030 --> 00:54:09,200
awesome time to be working on the

729
00:54:13,190 --> 00:54:11,040
international space station

730
00:54:16,390 --> 00:54:13,200
and these two months and and the future

731
00:54:17,589 --> 00:54:16,400
two months are always going to be busy

732
00:54:19,190 --> 00:54:17,599
all right joel thanks for your time

733
00:54:21,270 --> 00:54:19,200
today and thanks for joining us here on

734
00:54:23,109 --> 00:54:21,280
console my pleasure thank you

735
00:57:05,910 --> 00:54:23,119
congratulations everyone on this

736
00:57:09,750 --> 00:57:07,990
just to recap cygnus lifted off from

737
00:57:11,349 --> 00:57:09,760
nasa's wallops flight facility in

738
00:57:14,710 --> 00:57:11,359

wallops island virginia at the

739
00:57:18,069 --> 00:57:14,720
mid-atlantic regional spaceport pad 0-a

740
00:57:20,789 --> 00:57:18,079
on time today at 2 21 pm central time

741
00:58:14,470 --> 00:57:20,799
3 21 pm eastern to begin its journey to

742
00:58:17,990 --> 00:58:16,470
so again cygnus lifted off from nasa's

743
00:58:19,750 --> 00:58:18,000
wallops flight facility in wallops

744
00:58:22,870 --> 00:58:19,760
island virginia at the mid-atlantic

745
00:58:26,549 --> 00:58:22,880
regional spaceport pad 0a on time at 2

746
00:58:28,069 --> 00:58:26,559
21 pm central time 3 21 pm eastern to

747
00:58:29,589 --> 00:58:28,079
begin its journey to the international

748
00:58:32,150 --> 00:58:29,599
space station where it will deliver

749
00:58:34,470 --> 00:58:32,160
about 7 500 pounds of research crew

750
00:58:36,069 --> 00:58:34,480
supplies and hardware at the time of

751
00:58:38,870 --> 00:58:36,079
launch the international space station

752
00:58:40,950 --> 00:58:38,880
was flying 258 statute miles over the

753
00:58:42,870 --> 00:58:40,960
western pacific northeast of the

754
00:58:45,030 --> 00:58:42,880
northern marina islands

755
00:58:46,950 --> 00:58:45,040
solar ray deploy is expected to occur

756
00:58:48,950 --> 00:58:46,960
about an hour and 19 minutes after

757
00:58:51,430 --> 00:58:48,960
launch so within the next hour if all

758
00:58:53,190 --> 00:58:51,440
goes as planned cygnus will complete its

759
00:58:55,109 --> 00:58:53,200
solar array deployment which will take

760
00:58:56,870 --> 00:58:55,119
about 30 minutes and once that activity

761
00:58:59,270 --> 00:58:56,880
is complete we will update the station

762
00:59:00,789 --> 00:58:59,280
webpage on nasa.gov

763
00:59:02,309 --> 00:59:00,799

with cygnus now on its way to the

764
00:59:04,309 --> 00:59:02,319
international space station we hope

765
00:59:06,390 --> 00:59:04,319
you'll join us back on air when cygnus

766
00:59:11,270 --> 00:59:06,400
arrives to the station in the early

767
00:59:14,950 --> 00:59:13,190
nasa's television television coverage

768
00:59:18,150 --> 00:59:14,960
for cygnus arrival and capture will

769
00:59:20,470 --> 00:59:18,160
begin at 1 30 a.m central 2 30 a.m

770
00:59:24,150 --> 00:59:20,480
eastern time for a capture around 305

771
00:59:26,950 --> 00:59:24,160
a.m central 405 a.m eastern then we'll

772
00:59:28,710 --> 00:59:26,960
be back on air at 5 a.m central 6 a.m

773
00:59:30,470 --> 00:59:28,720
eastern for cygnus installation

774
00:59:32,390 --> 00:59:30,480
operations coverage

775
00:59:34,150 --> 00:59:32,400
with cygnus now safely on its way to the

776
00:59:36,710 --> 00:59:34,160
international space station to deliver

777
00:59:38,549 --> 00:59:36,720
about 7 500 pounds of cargo that'll wrap

778
01:00:09,270 --> 00:59:38,559
up our coverage for today this is