
ANTARES

1
00:01:43,030 --> 00:00:16,840
[Music]

2
00:01:46,630 --> 00:01:44,870
with a full moon shining brightly

3
00:01:48,630 --> 00:01:46,640
overhead you're looking live at launch

4
00:01:51,190 --> 00:01:48,640
pad 0a at the mid-atlantic regional

5
00:01:53,350 --> 00:01:51,200
spaceport on wallops island virginia

6
00:01:55,149 --> 00:01:53,360
where northrop grumman's antares rocket

7
00:01:58,709 --> 00:01:55,159
stands fully fueled

8
00:02:00,630 --> 00:01:58,719
133 feet tall ready to launch 31 minutes

9
00:02:03,109 --> 00:02:00,640
from now to send the unpiloted cygnus

10
00:02:05,109 --> 00:02:03,119
cargo craft into orbit on a three-day

11
00:02:07,670 --> 00:02:05,119
journey to deliver some four tons of

12
00:02:10,150 --> 00:02:07,680
supplies and scientific experiments to

13
00:02:11,990 --> 00:02:10,160

the international space station

14
00:02:14,390 --> 00:02:12,000
following a last-minute scrub of last

15
00:02:17,589 --> 00:02:14,400
night's initial launch attempt tonight's

16
00:02:19,270 --> 00:02:17,599
liftoff is set for 8 16 and 14 seconds

17
00:02:22,949 --> 00:02:19,280
p.m central time

18
00:02:25,430 --> 00:02:22,959
9 16 and 14 seconds pm eastern time at

19
00:02:27,350 --> 00:02:25,440
the start of a five-minute launch window

20
00:02:29,350 --> 00:02:27,360
the weather for tonight's launch just

21
00:02:31,910 --> 00:02:29,360
couldn't be better it is absolutely

22
00:02:34,550 --> 00:02:31,920
pristine at wallops island just a few

23
00:02:36,710 --> 00:02:34,560
clouds at 4 500 feet winds out of the

24
00:02:39,430 --> 00:02:36,720
northwest at four knots temperature of

25
00:02:41,509 --> 00:02:39,440
about 58 degrees fahrenheit everything

26
00:02:43,750 --> 00:02:41,519
is green across the board and there is

27
00:02:46,710 --> 00:02:43,760
the target for the artemis program

28
00:02:49,190 --> 00:02:46,720
coming up for nasa the moon

29
00:02:51,990 --> 00:02:49,200
with sites set on that destination to

30
00:02:55,750 --> 00:02:52,000
land the first woman and the next man on

31
00:02:57,350 --> 00:02:55,760
the surface of the moon in 2024

32
00:02:58,869 --> 00:02:57,360
good evening from mission control in

33
00:03:00,550 --> 00:02:58,879
houston and the international space

34
00:03:02,949 --> 00:03:00,560
station flight control room here at the

35
00:03:04,710 --> 00:03:02,959
johnson space center flight controllers

36
00:03:07,670 --> 00:03:04,720
here are watching over the station as

37
00:03:09,350 --> 00:03:07,680
they do 24 7 365

38
00:03:11,509 --> 00:03:09,360

tending to its systems and the three

39
00:03:14,790 --> 00:03:11,519
crew members comprising the expedition

40
00:03:15,830 --> 00:03:14,800
63 crew we'll talk more about them in a

41
00:03:17,589 --> 00:03:15,840
moment

42
00:03:19,110 --> 00:03:17,599
back at the wallops flight facility

43
00:03:20,790 --> 00:03:19,120
northrop grumman engineers are

44
00:03:22,949 --> 00:03:20,800
monitoring the countdown at this hour

45
00:03:24,789 --> 00:03:22,959
from the range control center they will

46
00:03:27,190 --> 00:03:24,799
be in control of the nine-minute climb

47
00:03:29,350 --> 00:03:27,200
to orbit for the two-stage antares

48
00:03:31,750 --> 00:03:29,360
rocket from liftoff to the point when

49
00:03:34,149 --> 00:03:31,760
the cygnus resupply craft separates from

50
00:03:35,830 --> 00:03:34,159
the vehicle's second stage they just

51
00:03:37,750 --> 00:03:35,840
completed a poll of all of the

52
00:03:41,190 --> 00:03:37,760
engineering positions just a moment or

53
00:03:43,430 --> 00:03:41,200
two ago everyone is go for launch

54
00:03:45,270 --> 00:03:43,440
in dulles virginia another team of

55
00:03:47,589 --> 00:03:45,280
northrop grumman engineers are on duty

56
00:03:49,830 --> 00:03:47,599
as well ready to take over the flight of

57
00:03:51,750 --> 00:03:49,840
cygnss after spacecraft separation under

58
00:03:52,789 --> 00:03:51,760
the direction of mission director zach

59
00:03:54,550 --> 00:03:52,799
dwyer

60
00:03:57,190 --> 00:03:54,560
they'll be following all of cygnus's

61
00:04:00,789 --> 00:03:57,200
maneuvers during its three-day trek to

62
00:04:02,390 --> 00:04:00,799
the international space station

63
00:04:04,149 --> 00:04:02,400

back here in mission control in houston

64
00:04:06,229 --> 00:04:04,159
the orbit 3 team of flight controllers

65
00:04:07,990 --> 00:04:06,239
is on duty with the station crew members

66
00:04:11,030 --> 00:04:08,000
well into their sleep period for the

67
00:04:13,190 --> 00:04:11,040
night as was the case last night flight

68
00:04:15,429 --> 00:04:13,200
director tj creamer is back in charge

69
00:04:17,590 --> 00:04:15,439
presiding over the orbit 3 team this

70
00:04:19,830 --> 00:04:17,600
evening

71
00:04:22,230 --> 00:04:19,840
excuse me cygnus's launch was originally

72
00:04:24,070 --> 00:04:22,240
scheduled for this past tuesday night

73
00:04:25,749 --> 00:04:24,080
but a forecast of inclement weather at

74
00:04:27,670 --> 00:04:25,759
wallace for both tuesday and wednesday

75
00:04:29,189 --> 00:04:27,680
night pushed the initial launch attempt

76
00:04:30,950 --> 00:04:29,199
to last night

77
00:04:32,790 --> 00:04:30,960
and with the weather finally cooperating

78
00:04:35,110 --> 00:04:32,800
last night the countdown reached the

79
00:04:36,790 --> 00:04:35,120
two-minute 40-second mark before the

80
00:04:40,070 --> 00:04:36,800
launch was scrubbed we'll talk more

81
00:04:42,230 --> 00:04:40,080
about that in a moment at the present

82
00:04:44,390 --> 00:04:42,240
time we're sitting at minus 28 minutes

83
00:04:46,390 --> 00:04:44,400
and counting there are no issues being

84
00:04:47,830 --> 00:04:46,400
worked by the launch control team at

85
00:04:49,590 --> 00:04:47,840
wallops

86
00:04:51,749 --> 00:04:49,600
as we mentioned last night each launch

87
00:04:54,070 --> 00:04:51,759
of a cygnus cargo craft carries with it

88
00:04:56,070 --> 00:04:54,080

a tradition for northrop grumman the

89
00:04:58,629 --> 00:04:56,080
naming of the spacecraft after a noted

90
00:05:00,390 --> 00:04:58,639
space explorer who contributed to human

91
00:05:02,070 --> 00:05:00,400
space exploration

92
00:05:04,629 --> 00:05:02,080
the cygnus being launched tonight is

93
00:05:07,110 --> 00:05:04,639
named for nasa astronaut kultner chavla

94
00:05:09,350 --> 00:05:07,120
who twice flew into space first on the

95
00:05:12,469 --> 00:05:09,360
sts-87 mission aboard the space shuttle

96
00:05:14,870 --> 00:05:12,479
columbia in 1997 and then on the

97
00:05:18,710 --> 00:05:14,880
ill-fated sts-107 mission aboard

98
00:05:20,710 --> 00:05:18,720
columbia in 2003 in which she and her

99
00:05:21,830 --> 00:05:20,720
six crewmates lost their lives during

100
00:05:23,990 --> 00:05:21,840
entry

101
00:05:26,469 --> 00:05:24,000
culpner chavla the first nasa astronaut

102
00:05:28,950 --> 00:05:26,479
of indian and south asian descent being

103
00:05:43,110 --> 00:05:28,960
honored on this mission of cygnus to the

104
00:05:46,629 --> 00:05:44,710
the antares rocket being launched

105
00:05:48,710 --> 00:05:46,639
tonight is a two-stage rocket that will

106
00:05:51,189 --> 00:05:48,720
propel the cygnus cargo craft to its

107
00:05:53,110 --> 00:05:51,199
preliminary orbit to begin the chase to

108
00:05:55,670 --> 00:05:53,120
reach the international space station in

109
00:05:57,749 --> 00:05:55,680
the wee hours monday morning but before

110
00:06:00,469 --> 00:05:57,759
we look ahead let's look back 24 hours

111
00:06:02,469 --> 00:06:00,479
to last night's postponement and with us

112
00:06:04,230 --> 00:06:02,479
this evening by phone to discuss all of

113
00:06:05,189 --> 00:06:04,240

these developments returning tonight

114
00:06:07,350 --> 00:06:05,199
with us

115
00:06:09,510 --> 00:06:07,360
is christina hellona the northrop

116
00:06:11,909 --> 00:06:09,520
grumman antares system engineering

117
00:06:15,270 --> 00:06:11,919
program manager christina thanks for

118
00:06:16,870 --> 00:06:15,280
joining us once again this evening

119
00:06:19,189 --> 00:06:16,880
thank you rob i'm excited to be back

120
00:06:21,909 --> 00:06:19,199
with you and our nasa tv viewers to see

121
00:06:23,670 --> 00:06:21,919
a successful antares launch and

122
00:06:24,790 --> 00:06:23,680
signification to the national space

123
00:06:26,710 --> 00:06:24,800
station

124
00:06:28,790 --> 00:06:26,720
everything's looking great tonight but

125
00:06:30,790 --> 00:06:28,800
before we get into all of that walk us

126
00:06:32,710 --> 00:06:30,800
through last night's scrub what was the

127
00:06:34,390 --> 00:06:32,720
cause how did northrop grumman remedy

128
00:06:37,990 --> 00:06:34,400
the issue that brought us to this

129
00:06:41,909 --> 00:06:39,830
no problem rob so

130
00:06:44,230 --> 00:06:41,919
last night during the countdown the

131
00:06:46,950 --> 00:06:44,240
computer auto aborted at approximately t

132
00:06:49,430 --> 00:06:46,960
minus 2 minutes and 49 seconds when it

133
00:06:51,749 --> 00:06:49,440
received an off nominal reading

134
00:06:53,830 --> 00:06:51,759
from the ground support equipment the

135
00:06:55,189 --> 00:06:53,840
team tracked the automated abort to a

136
00:06:57,510 --> 00:06:55,199
software issue

137
00:06:59,510 --> 00:06:57,520
and it was and it was resolved

138
00:07:00,629 --> 00:06:59,520

nonetheless launch scrubs for ground

139
00:07:03,029 --> 00:07:00,639
systems

140
00:07:04,790 --> 00:07:03,039
issues do sometimes occur as we place

141
00:07:07,270 --> 00:07:04,800
mission success and the safety of our

142
00:07:09,350 --> 00:07:07,280
team and the public all

143
00:07:10,150 --> 00:07:09,360
above all other considerations

144
00:07:14,550 --> 00:07:10,160
um

145
00:07:17,270 --> 00:07:14,560
scrubs this launches have this past

146
00:07:19,830 --> 00:07:17,280
week including a delta iv and falcon 9

147
00:07:21,670 --> 00:07:19,840
due to weather and ground system faults

148
00:07:23,189 --> 00:07:21,680
each and every countdown will not always

149
00:07:24,950 --> 00:07:23,199
result in a launch attempt which is just

150
00:07:26,550 --> 00:07:24,960
simply part of the launch

151
00:07:29,270 --> 00:07:26,560
launch business

152
00:07:31,110 --> 00:07:29,280
um our norfolk grumman team is uh is

153
00:07:32,629 --> 00:07:31,120
trained to respond professionally to

154
00:07:34,950 --> 00:07:32,639
scrub launch attempts

155
00:07:36,629 --> 00:07:34,960
in order to maintain antares and cygnus

156
00:07:38,469 --> 00:07:36,639
in a safe condition

157
00:07:40,309 --> 00:07:38,479
we always quickly investigate the root

158
00:07:42,309 --> 00:07:40,319
cause if there's any issues and maintain

159
00:07:43,110 --> 00:07:42,319
readiness to launch as early as the next

160
00:07:45,510 --> 00:07:43,120
day

161
00:07:47,270 --> 00:07:45,520
i just want to say what a great work

162
00:07:49,670 --> 00:07:47,280
great teamwork it was by the launch team

163
00:07:51,510 --> 00:07:49,680

last night and this morning to quickly

164
00:07:54,150 --> 00:07:51,520
respond to the scrub launch attempts and

165
00:07:56,869 --> 00:07:54,160
put us back in position to launch again

166
00:07:59,909 --> 00:07:56,879
less than 24 hours later we are a go for

167
00:08:03,749 --> 00:08:01,909
christina this antares rocket has become

168
00:08:05,749 --> 00:08:03,759
a workhorse for northrop grumman and

169
00:08:07,830 --> 00:08:05,759
contributing to that supply chain for

170
00:08:10,550 --> 00:08:07,840
the international space station

171
00:08:12,150 --> 00:08:10,560
how robust is this vehicle how important

172
00:08:13,909 --> 00:08:12,160
is tonight's launch as we head into a

173
00:08:16,629 --> 00:08:13,919
busy period aboard the international

174
00:08:21,589 --> 00:08:19,029
so rob ng 14 was

175
00:08:23,670 --> 00:08:21,599
designated as a mission essential

176
00:08:26,309 --> 00:08:23,680
mission by nasa during the covet 19

177
00:08:28,230 --> 00:08:26,319
pandemic and our team has been focused

178
00:08:30,790 --> 00:08:28,240
on being ready on time despite the

179
00:08:33,110 --> 00:08:30,800
additional restrictions and mitigations

180
00:08:34,790 --> 00:08:33,120
put in place to keep our workforce safe

181
00:08:37,350 --> 00:08:34,800
the interior's launch system and the

182
00:08:39,909 --> 00:08:37,360
virginia space launch pad we are we both

183
00:08:41,509 --> 00:08:39,919
use our way to be very robust which has

184
00:08:44,630 --> 00:08:41,519
allowed us to achieve

185
00:08:47,110 --> 00:08:44,640
seven consecutive successful antares 230

186
00:08:50,150 --> 00:08:47,120
and 230 plus flights that enabled

187
00:08:53,110 --> 00:08:50,160
successful sickness missions to the iss

188
00:08:55,190 --> 00:08:53,120

antares is our 230 plus workforce and we

189
00:08:57,829 --> 00:08:55,200
are carrying cygnus loaded with nearly

190
00:08:59,670 --> 00:08:57,839
eight thousand pounds of cargo tonight

191
00:09:01,829 --> 00:08:59,680
northrop grumman is very proud of our

192
00:09:04,389 --> 00:09:01,839
contributions in supplying critical

193
00:09:05,750 --> 00:09:04,399
research and cargo to the crew on the

194
00:09:07,590 --> 00:09:05,760
space station

195
00:09:09,829 --> 00:09:07,600
and for me personally as a native

196
00:09:11,590 --> 00:09:09,839
american from the navajo nation i am

197
00:09:13,590 --> 00:09:11,600
truly honored to be part of our human

198
00:09:15,430 --> 00:09:13,600
exploration program and i hope to

199
00:09:17,030 --> 00:09:15,440
inspire others to reach for the stars

200
00:09:20,070 --> 00:09:17,040
when getting their

201
00:09:23,910 --> 00:09:21,670
thank you very much christina christina

202
00:09:25,750 --> 00:09:23,920
hallona of northrop grumman with us this

203
00:09:29,190 --> 00:09:25,760
evening by phone the countdown for

204
00:09:32,389 --> 00:09:29,200
cygnus's launch now stands at t-minus 23

205
00:09:35,430 --> 00:09:32,399
minutes 14 seconds and counting

206
00:09:38,550 --> 00:09:35,440
at the time of launch at 8 16 and 14

207
00:09:40,949 --> 00:09:38,560
seconds pm central time 9 16 14 pm

208
00:09:42,710 --> 00:09:40,959
eastern the international space station

209
00:09:45,829 --> 00:09:42,720
and its three residents will be flying

210
00:09:47,750 --> 00:09:45,839
258 statute miles over the southern

211
00:09:50,230 --> 00:09:47,760
indian ocean

212
00:09:51,990 --> 00:09:50,240
antares and cygnus will arc out to the

213
00:09:53,110 --> 00:09:52,000

southeast from wallops to start the

214
00:09:55,350 --> 00:09:53,120
rendezvous

215
00:09:57,670 --> 00:09:55,360
and a series of pre-programmed engine

216
00:09:59,430 --> 00:09:57,680
firings that will lead to its arrival at

217
00:10:02,069 --> 00:09:59,440
the international space station and its

218
00:10:04,069 --> 00:10:02,079
robotic capture monday morning

219
00:10:06,310 --> 00:10:04,079
station commander chris cassidy of nasa

220
00:10:08,790 --> 00:10:06,320
backed up by russian cosmonaut yvonne

221
00:10:11,269 --> 00:10:08,800
wagner from roscosmos will be in the

222
00:10:13,829 --> 00:10:11,279
cupola at the robotic workstation

223
00:10:15,110 --> 00:10:13,839
monitoring cygnus's systems during its

224
00:10:18,470 --> 00:10:15,120
final approach

225
00:10:21,350 --> 00:10:18,480
with cassidy using the canadarm2 robotic

226
00:10:23,350 --> 00:10:21,360
arm to reach out and grapple the

227
00:10:24,310 --> 00:10:23,360
northrop grumman resupply

228
00:10:26,389 --> 00:10:24,320
vehicle

229
00:10:28,150 --> 00:10:26,399
at that point he will turn the robotic

230
00:10:30,230 --> 00:10:28,160
chores over to a team of ground

231
00:10:32,550 --> 00:10:30,240
controllers here in houston who will

232
00:10:35,910 --> 00:10:32,560
maneuver cygnus into an installation

233
00:10:37,910 --> 00:10:35,920
position to be installed and bolted into

234
00:10:40,389 --> 00:10:37,920
place on the earth-facing side of the

235
00:10:44,470 --> 00:10:40,399
unity module of the international space

236
00:10:46,790 --> 00:10:44,480
station for a stay of about two months

237
00:10:49,750 --> 00:10:46,800
the cygnus is scheduled to depart the

238
00:10:51,110 --> 00:10:49,760

station in mid-december for a two-week

239
00:10:55,670 --> 00:10:51,120
free flight in which additional

240
00:10:59,829 --> 00:10:57,910
on board the international space station

241
00:11:02,150 --> 00:10:59,839
cassidy wagner and russian cosmonaut

242
00:11:04,550 --> 00:11:02,160
anatoly ivanishin are asleep at this

243
00:11:05,990 --> 00:11:04,560
hour less than three weeks away from the

244
00:11:08,550 --> 00:11:06,000
end of their six and a half month

245
00:11:10,230 --> 00:11:08,560
mission on the orbital outpost they are

246
00:11:13,829 --> 00:11:10,240
scheduled to return to earth on the

247
00:11:15,910 --> 00:11:13,839
evening of october 21st u.s time which

248
00:11:18,470 --> 00:11:15,920
will be the morning of october 22nd on

249
00:11:20,949 --> 00:11:18,480
the step of kazakhstan for a parachute

250
00:11:23,670 --> 00:11:20,959
assisted landing in their soyuz ms-16

251
00:11:25,670 --> 00:11:23,680
spacecraft that will come eight days

252
00:11:27,269 --> 00:11:25,680
after the arrival of the next trio of

253
00:11:30,150 --> 00:11:27,279
residents to the international space

254
00:11:33,110 --> 00:11:30,160
station nasa astronaut kate rubins

255
00:11:35,910 --> 00:11:33,120
sergey rizhikov and sergey kud zvertkoff

256
00:11:38,310 --> 00:11:35,920
of roscosmos who are in final training

257
00:11:40,310 --> 00:11:38,320
right now at the baikonur cosmodrome in

258
00:11:42,350 --> 00:11:40,320
kazakhstan for their launch on october

259
00:11:45,750 --> 00:11:42,360
14th in the soyuz

260
00:11:48,230 --> 00:11:45,760
ms-17 spacecraft

261
00:11:51,030 --> 00:11:48,240
inside 21 minutes until launch

262
00:11:54,230 --> 00:11:51,040
everything continues to proceed on track

263
00:11:59,590 --> 00:11:54,240

and on time for a lift off at 8 16 and

264
00:12:02,790 --> 00:12:01,590
we'll check 379.

265
00:12:06,230 --> 00:12:02,800
the uh

266
00:12:07,829 --> 00:12:06,240
ascent profile for antares and cygnus

267
00:12:09,990 --> 00:12:07,839
following liftoff

268
00:12:12,389 --> 00:12:10,000
calls for main engine cutoff on the

269
00:12:14,230 --> 00:12:12,399
first stage of the antares rocket about

270
00:12:16,389 --> 00:12:14,240
three minutes and 18 seconds after

271
00:12:18,710 --> 00:12:16,399
launch followed six seconds later by the

272
00:12:22,389 --> 00:12:18,720
separation of the first stage

273
00:12:25,350 --> 00:12:22,399
some 30 seconds later the fairing which

274
00:12:27,430 --> 00:12:25,360
encapsulates the cygnus resupply vehicle

275
00:12:29,350 --> 00:12:27,440
will also separate

276
00:12:31,269 --> 00:12:29,360
exposing cygnus uh

277
00:12:33,190 --> 00:12:31,279
during the uphill ride to its

278
00:12:35,990 --> 00:12:33,200
preliminary orbit

279
00:12:37,670 --> 00:12:36,000
stage two ignition on the antares rocket

280
00:12:39,990 --> 00:12:37,680
is scheduled at about the four minutes

281
00:12:42,629 --> 00:12:40,000
seven second mark into the flight

282
00:12:45,269 --> 00:12:42,639
it will uh burn for two minutes and 44

283
00:12:46,389 --> 00:12:45,279
seconds until uh stage two burnout

284
00:12:49,990 --> 00:12:46,399
occurs

285
00:12:52,629 --> 00:12:50,000
putting cygnus into its initial orbit

286
00:12:54,310 --> 00:12:52,639
with the cygnus vehicle itself

287
00:12:57,430 --> 00:12:54,320
separating from the second stage of

288
00:12:59,829 --> 00:12:57,440

antares at about the nine minute nine

289
00:13:02,710 --> 00:12:59,839
second mark into the flight

290
00:13:05,269 --> 00:13:02,720
the ultraflex solar arrays on cygnus are

291
00:13:07,590 --> 00:13:05,279
scheduled to be deployed about two hours

292
00:13:09,910 --> 00:13:07,600
and eight minutes into the mission

293
00:13:11,670 --> 00:13:09,920
we will not be on the air live during

294
00:13:14,230 --> 00:13:11,680
that activity it's about a 30 minute

295
00:13:16,949 --> 00:13:14,240
procedure we will however provide

296
00:13:18,550 --> 00:13:16,959
updates on the web on nasa.gov and the

297
00:13:20,870 --> 00:13:18,560
station blog site

298
00:13:23,990 --> 00:13:20,880
when solar rate deploy is completed

299
00:13:28,150 --> 00:13:26,150
if everything goes as planned cygnus

300
00:13:29,670 --> 00:13:28,160
again will arrive in the wee hours

301
00:13:31,910 --> 00:13:29,680
monday morning at the international

302
00:13:33,590 --> 00:13:31,920
space station

303
00:13:35,990 --> 00:13:33,600
arriving along

304
00:13:38,629 --> 00:13:36,000
the intersection called the r bar the

305
00:13:40,150 --> 00:13:38,639
radial vector which is an imaginary line

306
00:13:42,069 --> 00:13:40,160
drawn between

307
00:13:43,269 --> 00:13:42,079
the international space station and the

308
00:13:45,990 --> 00:13:43,279
earth

309
00:13:47,990 --> 00:13:46,000
that the cygnus will arrive about 400

310
00:13:50,550 --> 00:13:48,000
feet directly below the station and inch

311
00:13:52,389 --> 00:13:50,560
worm its way up to the point where

312
00:13:57,030 --> 00:13:52,399
cassidy will use the robotic arm to

313
00:13:59,509 --> 00:13:57,040

reach out and grapple the resupply craft

314
00:14:00,389 --> 00:13:59,519
the capture of cygnus is scheduled right

315
00:14:04,150 --> 00:14:00,399
now

316
00:14:14,230 --> 00:14:04,160
at 4 20 a.m central time 5 20 a.m

317
00:14:14,240 --> 00:14:17,990
and off to lc countdown

318
00:14:23,350 --> 00:14:20,790
good lc yeah just be advised step 386

319
00:14:32,389 --> 00:14:23,360
will be required for today's op

320
00:14:38,550 --> 00:14:36,389
nlc this is prop lead actual f1 n level

321
00:14:42,629 --> 00:14:38,560
is 10 of 10.

322
00:14:48,230 --> 00:14:42,639
copy 10 of 10 381 core 1 provide status

323
00:14:48,240 --> 00:15:01,829
llc core one countdown one standby

324
00:15:06,150 --> 00:15:04,150
as we approach the 17-minute mark into

325
00:15:09,030 --> 00:15:06,160
the countdown propellant loading is

326
00:15:12,710 --> 00:15:09,040
complete you see the venting uh

327
00:15:15,430 --> 00:15:12,720
at the inter stage area of the two-stage

328
00:15:17,509 --> 00:15:15,440
antares rocket everything continues to

329
00:15:19,350 --> 00:15:17,519
be green across the board at wallops the

330
00:15:21,670 --> 00:15:19,360
weather is perfect

331
00:15:23,910 --> 00:15:21,680
everything all set for antares to begin

332
00:15:25,910 --> 00:15:23,920
its flight to deliver the cygnus

333
00:15:43,509 --> 00:15:25,920
resupply vehicle to its preliminary

334
00:15:43,519 --> 00:15:50,790
and cmdlc countdown one

335
00:15:54,870 --> 00:15:52,870
lc core one countdown one

336
00:15:57,189 --> 00:15:54,880
go ahead core one uh field level

337
00:15:58,949 --> 00:15:57,199
adjustment is not required

338
00:16:00,870 --> 00:15:58,959

copy not required we'll go ahead and

339
00:16:04,710 --> 00:16:00,880
check 382

340
00:16:20,150 --> 00:16:04,720
and prop 2 step 383 configure occs for

341
00:16:25,749 --> 00:16:23,430
cmdlc countdown one

342
00:16:27,749 --> 00:16:25,759
i'll see the cmd yeah you go for step

343
00:16:30,629 --> 00:16:27,759
385 you can transfer cygnus to launch

344
00:16:36,470 --> 00:16:31,430
two

345
00:16:38,790 --> 00:16:36,480
one occs configured for no adjustment to

346
00:16:40,949 --> 00:16:38,800
fuel level at t-minus 16 minutes and

347
00:16:43,189 --> 00:16:40,959
counting those calls from the range

348
00:16:44,790 --> 00:16:43,199
control center engineers for northrop

349
00:16:46,949 --> 00:16:44,800
grumman indicate

350
00:16:49,030 --> 00:16:46,959
that the fuel loading

351
00:16:52,069 --> 00:16:49,040
for the antares rocket is at the proper

352
00:16:54,069 --> 00:16:52,079
level into stable replenish now no

353
00:16:56,389 --> 00:16:54,079
adjustment for fuel required this

354
00:16:58,870 --> 00:16:56,399
evening and cygnus is about to go on

355
00:17:01,189 --> 00:16:58,880
internal power tonight's launch kicks

356
00:17:03,829 --> 00:17:01,199
off a very busy period of activity at

357
00:17:05,990 --> 00:17:03,839
the international space station again a

358
00:17:08,150 --> 00:17:06,000
launch tonight uh results in cygnus

359
00:17:10,549 --> 00:17:08,160
arriving at the station in the wee hours

360
00:17:12,309 --> 00:17:10,559
monday morning

361
00:17:14,710 --> 00:17:12,319
that will be followed in a couple of

362
00:17:17,189 --> 00:17:14,720
weeks by a soyuz crew rotation as we

363
00:17:19,669 --> 00:17:17,199

mentioned with kate rubins of nasa and

364
00:17:21,909 --> 00:17:19,679
her two russian crewmates scheduled to

365
00:17:25,029 --> 00:17:21,919
launch october 14th from the baikonur

366
00:17:27,829 --> 00:17:25,039
cosmodrome in kazakhstan for a two-orbit

367
00:17:29,430 --> 00:17:27,839
rendezvous a three-hour fast-track

368
00:17:32,230 --> 00:17:29,440
journey to the international space

369
00:17:35,430 --> 00:17:32,240
station that will kick off an eight-day

370
00:17:37,510 --> 00:17:35,440
handover with chris cassidy and uh his

371
00:17:39,270 --> 00:17:37,520
two russian crewmates anatoly ivanishin

372
00:17:41,990 --> 00:17:39,280
and yvonne wagner who we said a moment

373
00:17:44,070 --> 00:17:42,000
ago are in the home stretch of their six

374
00:17:45,510 --> 00:17:44,080
and a half month mission on the station

375
00:17:48,870 --> 00:17:45,520
they'll be returning to earth on the

376
00:17:50,950 --> 00:17:48,880
night of october 21st us time

377
00:17:52,950 --> 00:17:50,960
and right on the heels of that on

378
00:17:56,070 --> 00:17:52,960
october 31st

379
00:17:58,789 --> 00:17:56,080
on the 20th just pass through t-minus in

380
00:18:00,950 --> 00:17:58,799
15 minutes we'll be coming up on our

381
00:18:02,870 --> 00:18:00,960
polling for our final county uh

382
00:18:06,710 --> 00:18:02,880
proceeding with our final countdown in

383
00:18:12,070 --> 00:18:09,430
on the 20th anniversary of uh the launch

384
00:18:14,710 --> 00:18:12,080
of expedition one bill shepard yuri

385
00:18:17,830 --> 00:18:14,720
godzenko and sergey krikalov

386
00:18:20,710 --> 00:18:17,840
on october 31st uh the crew one mission

387
00:18:22,789 --> 00:18:20,720
is scheduled to launch aboard a spacex

388
00:18:25,750 --> 00:18:22,799

falcon 9 rocket

389
00:18:27,270 --> 00:18:25,760
the uh resilience uh crew dragon

390
00:18:29,350 --> 00:18:27,280
spacecraft

391
00:18:32,310 --> 00:18:29,360
with mike hopkins victor glover shannon

392
00:18:33,990 --> 00:18:32,320
walker and soichi niguchi on board

393
00:18:43,270 --> 00:18:34,000
scheduled to arrive at the international

394
00:18:43,280 --> 00:18:49,270
t-minus 14 minutes and counting

395
00:18:49,280 --> 00:19:05,669
and cmd i'll wait for your call on 387

396
00:19:09,190 --> 00:19:07,590
elsie this is cnbc this is in launch

397
00:19:11,590 --> 00:19:09,200
mode and nominal

398
00:19:24,070 --> 00:19:11,600
copy that cmd will check step 387

399
00:19:28,470 --> 00:19:26,310
in the uh international space station

400
00:19:31,190 --> 00:19:28,480
flight control room a final go has been

401
00:19:33,350 --> 00:19:31,200
passed on uh to flight director tj

402
00:19:34,950 --> 00:19:33,360
creamer by uh the cygnus mission

403
00:19:37,029 --> 00:19:34,960
director in dulles

404
00:19:49,750 --> 00:19:37,039
both antares and cygnus are go for

405
00:19:54,630 --> 00:19:51,350
at this hour the international space

406
00:19:56,310 --> 00:19:54,640
station flying uh 258 miles over the

407
00:19:58,870 --> 00:19:56,320
south atlantic

408
00:20:02,470 --> 00:19:58,880
about to swing just to the south of the

409
00:20:08,310 --> 00:20:05,430
again at the time of launch at 8 16 and

410
00:20:10,070 --> 00:20:08,320
14 seconds pm central time the station

411
00:20:11,750 --> 00:20:10,080
and its three residents who are asleep

412
00:20:13,590 --> 00:20:11,760
at this hour will be flying over the

413
00:20:16,149 --> 00:20:13,600

southern indian ocean

414
00:20:18,830 --> 00:20:16,159
one step 388 at this time i want to pull

415
00:20:21,110 --> 00:20:18,840
to proceed with final countdown

416
00:20:25,510 --> 00:20:21,120
gso go

417
00:20:28,149 --> 00:20:25,520
rso rsos go td tds go

418
00:20:29,430 --> 00:20:28,159
prop lead properly let's go

419
00:20:32,390 --> 00:20:29,440
stage one

420
00:20:38,149 --> 00:20:32,400
mes1

421
00:20:40,789 --> 00:20:38,159
ace

422
00:20:43,510 --> 00:20:40,799
mars

423
00:20:46,230 --> 00:20:43,520
cmd

424
00:20:48,870 --> 00:20:46,240
ld

425
00:20:50,630 --> 00:20:48,880
ng

426
00:20:52,549 --> 00:20:50,640
in honor of kaufman chavla whose

427
00:20:54,789 --> 00:20:52,559
research on astronaut health and safety

428
00:20:56,870 --> 00:20:54,799
during space flight helped pave the way

429
00:20:58,789 --> 00:20:56,880
for humans to live and work in space

430
00:21:00,630 --> 00:20:58,799
northrop grumman is go

431
00:21:02,470 --> 00:21:00,640
copy that north of grumman we are go to

432
00:21:04,710 --> 00:21:02,480
proceed with final countdown check step

433
00:21:07,830 --> 00:21:04,720
388

434
00:21:10,310 --> 00:21:07,840
ops 2 lc be advised step 389 is not

435
00:21:11,909 --> 00:21:10,320
required for today's operation step 390

436
00:21:13,669 --> 00:21:11,919
will not be required for today's

437
00:21:14,830 --> 00:21:13,679
operation

438
00:21:16,549 --> 00:21:14,840

and also

439
00:21:18,549 --> 00:21:16,559
copies

440
00:21:21,190 --> 00:21:18,559
coming up on the t-minus 11 minute mark

441
00:21:22,950 --> 00:21:21,200
that final poll for launch conducted at

442
00:21:24,950 --> 00:21:22,960
the range control center

443
00:21:26,149 --> 00:21:24,960
at the wallops flight facility in

444
00:21:30,070 --> 00:21:26,159
virginia

445
00:21:32,070 --> 00:21:30,080
as antares is set to begin its journey

446
00:21:33,350 --> 00:21:32,080
of about nine minutes in duration to

447
00:21:35,830 --> 00:21:33,360
deliver the

448
00:21:40,549 --> 00:21:35,840
cygnus resupply craft to its preliminary

449
00:21:40,559 --> 00:22:13,590
and passing t minus 11 minutes

450
00:22:17,510 --> 00:22:15,510
coming up on the t minus 10 minute mark

451
00:22:18,630 --> 00:22:17,520
fuel loading complete the weather is

452
00:22:20,149 --> 00:22:18,640
perfect

453
00:22:22,230 --> 00:22:20,159
everything is all set to begin the

454
00:22:41,270 --> 00:22:22,240
journey of cygnus to the international

455
00:22:41,280 --> 00:23:10,390
and t minus 10 minutes

456
00:23:14,390 --> 00:23:12,390
no issues being worked in the range

457
00:23:18,310 --> 00:23:14,400
control center

458
00:23:19,909 --> 00:23:18,320
at wallops island virginia or at

459
00:23:20,870 --> 00:23:19,919
dulles virginia

460
00:23:23,430 --> 00:23:20,880
where the

461
00:23:24,549 --> 00:23:23,440
cygnus spacecraft team for northrop

462
00:23:26,950 --> 00:23:24,559
grumman

463
00:23:28,870 --> 00:23:26,960

monitoring cygnus systems ready to take

464
00:23:30,950 --> 00:23:28,880
over at the time of spacecraft

465
00:23:37,909 --> 00:23:30,960
separation just over nine minutes after

466
00:23:44,789 --> 00:23:43,029
and ops one step 391 enable acs vdms

467
00:23:50,310 --> 00:23:44,799
lc os1

468
00:23:54,470 --> 00:23:52,390
ddm is enabled voltage nominal and

469
00:23:58,149 --> 00:23:54,480
commands cleared

470
00:24:00,630 --> 00:23:58,159
copy that electron check 391 check 392.

471
00:24:16,149 --> 00:24:00,640
and launch team be advised step 393 will

472
00:24:19,990 --> 00:24:18,310
once cygnus arrives at the international

473
00:24:21,669 --> 00:24:20,000
space station in the wee hours monday

474
00:24:22,789 --> 00:24:21,679
morning and is

475
00:24:25,190 --> 00:24:22,799
grappled

476
00:24:27,909 --> 00:24:25,200
and then installed and bolted into place

477
00:24:29,269 --> 00:24:27,919
a series of leak checks at the birthing

478
00:24:31,350 --> 00:24:29,279
interface

479
00:24:32,710 --> 00:24:31,360
between cygnus and the unity module will

480
00:24:34,630 --> 00:24:32,720
be conducted

481
00:24:36,470 --> 00:24:34,640
by uh nasa

482
00:24:37,990 --> 00:24:36,480
astronaut and station commander chris

483
00:24:41,110 --> 00:24:38,000
cassidy

484
00:24:43,430 --> 00:24:41,120
uh making sure that we have a tight seal

485
00:24:45,669 --> 00:24:43,440
between the cygnus and the station

486
00:24:48,230 --> 00:24:45,679
before he begins the process of opening

487
00:24:51,110 --> 00:24:48,240
the hatch to cygnus and the start of the

488
00:24:53,590 --> 00:24:51,120

unloading of the most

489
00:24:55,110 --> 00:24:53,600
time critical experiments and supplies

490
00:24:55,990 --> 00:24:55,120
that are being brought up

491
00:25:13,000 --> 00:24:56,000
on

492
00:25:38,070 --> 00:25:18,810
[Music]

493
00:25:43,350 --> 00:25:40,070
passing through seven minutes until

494
00:25:43,360 --> 00:25:51,300
t-minus

495
00:26:08,310 --> 00:26:04,200
[Music]

496
00:26:10,390 --> 00:26:08,320
and up to your initialized ground

497
00:26:11,350 --> 00:26:10,400
ordnance power supplies

498
00:26:12,789 --> 00:26:11,360
lt

499
00:26:15,350 --> 00:26:12,799
ground ordnance power supplies

500
00:26:15,360 --> 00:26:18,630
power supplies

501
00:26:24,149 --> 00:26:21,669
lc probably utso activation verified

502
00:26:35,010 --> 00:26:24,159
copy all their prop lead ops 2 elect one

503
00:26:44,630 --> 00:26:41,960
[Music]

504
00:26:47,110 --> 00:26:44,640
t-minus six minutes and counting

505
00:26:48,789 --> 00:26:47,120
northrop grumman preparing to provide

506
00:26:50,310 --> 00:26:48,799
friday night lights down the eastern

507
00:26:52,870 --> 00:26:50,320
seaboard

508
00:26:56,070 --> 00:26:52,880
everything is go for launch

509
00:26:57,510 --> 00:26:56,080
lc site control apps a ecs transfer to

510
00:27:02,310 --> 00:26:57,520
gn2 confirm

511
00:27:28,950 --> 00:27:04,710
and launching be advised up 399 not

512
00:27:43,110 --> 00:27:30,710
coming up on the t-minus five-minute

513
00:27:48,870 --> 00:27:45,669

t minus five minutes ops one transfer

514
00:27:51,350 --> 00:27:48,880
avionics and turtle power lc ops 1

515
00:27:59,190 --> 00:27:51,360
avionics internal power on standby for

516
00:27:59,200 --> 00:28:09,350
lc ops 1 external power off

517
00:28:15,190 --> 00:28:11,029
internal power is nominal

518
00:28:20,870 --> 00:28:15,200
roger like one ops one open fts envelope

519
00:28:27,110 --> 00:28:23,830
lc elect 2 fplu and fps receiver

520
00:28:29,750 --> 00:28:27,120
indications are nominal copy electro

521
00:28:34,630 --> 00:28:29,760
option 1 you go to send all arm

522
00:28:34,640 --> 00:28:38,230
sna's odm's all arm

523
00:28:44,389 --> 00:28:41,269
nasa tv td report range status

524
00:28:45,990 --> 00:28:44,399
lctd range is green

525
00:28:48,389 --> 00:28:46,000
t-minus four minutes and counting

526
00:28:50,070 --> 00:28:48,399
everything in order no issues being

527
00:29:15,190 --> 00:28:50,080
worked at the range control center at

528
00:29:20,230 --> 00:29:17,190
and launching be advised phase three

529
00:29:34,149 --> 00:29:20,240
dynamic limits will be active at t minus

530
00:29:34,159 --> 00:29:38,389
fc commander to flight mode

531
00:29:38,399 --> 00:29:44,070
t-minus three minutes and counting

532
00:29:49,110 --> 00:29:46,470
auto sequence start

533
00:29:51,909 --> 00:29:49,120
rdm bus voltages and currents nominal

534
00:29:53,029 --> 00:29:51,919
copy all that one tnt-1 verify ready for

535
00:29:56,230 --> 00:29:53,039
nav mode

536
00:29:57,430 --> 00:29:56,240
lc gnc one organization

537
00:30:01,029 --> 00:29:57,440
roger that

538
00:30:05,510 --> 00:30:01,039

ops 2 step 414 switch to nav

539
00:30:08,950 --> 00:30:05,520
lc alpha 2 orbital switch to nav

540
00:30:11,110 --> 00:30:08,960
copy that ops 2 check 414 lcd unc 1

541
00:30:28,630 --> 00:30:11,120
orbital telemetry verified

542
00:30:33,269 --> 00:30:30,870
coming up on the t-minus two minute mark

543
00:30:38,389 --> 00:30:33,279
and terry's systems in excellent shape

544
00:30:38,399 --> 00:30:43,590
t-minus two minutes on my mark

545
00:30:43,600 --> 00:31:07,430
mark

546
00:31:07,440 --> 00:31:11,509
90 seconds until launch

547
00:31:11,519 --> 00:31:43,350
t-minus one minute 30 seconds

548
00:31:43,360 --> 00:31:50,789
t minus one minute

549
00:32:10,870 --> 00:31:53,350
well into the terminal count t-minus 50

550
00:32:28,070 --> 00:32:13,590
t minus 30 seconds

551
00:32:28,080 --> 00:32:33,190
t minus 15 seconds

552
00:32:33,200 --> 00:32:38,789
t minus 10

553
00:32:40,630 --> 00:32:39,669
5

554
00:32:41,669 --> 00:32:40,640
4

555
00:32:42,630 --> 00:32:41,679
3

556
00:32:47,110 --> 00:32:42,640
two

557
00:32:52,710 --> 00:32:50,470
engine start and liftoff the ss cult

558
00:33:03,590 --> 00:32:52,720
nacho takes flight sights set on the

559
00:33:03,600 --> 00:33:18,230
pitch and roll programmer in

560
00:33:31,029 --> 00:33:19,269
edit

561
00:33:31,039 --> 00:33:43,669
engines are steady and nominal 100

562
00:33:48,310 --> 00:33:46,630
altitude 20 000 feet one minute into the

563
00:34:01,509 --> 00:33:48,320

flight everything looking good on

564
00:34:06,389 --> 00:34:04,470
passing through max q attitude nominal

565
00:34:08,149 --> 00:34:06,399
engine's at

566
00:34:13,589 --> 00:34:08,159
through the area of maximum dynamic

567
00:34:13,599 --> 00:34:27,109
50 000 feet

568
00:34:35,109 --> 00:34:29,270
attitude nominal

569
00:34:43,430 --> 00:34:36,710
coming up on the two minute mark into

570
00:35:06,710 --> 00:34:46,470
just passing 100 000 feet attitude

571
00:35:10,870 --> 00:35:08,870
engines remain at 100

572
00:35:13,109 --> 00:35:10,880
attitude nominal

573
00:35:14,790 --> 00:35:13,119
vehicle subsystems nominal

574
00:35:17,270 --> 00:35:14,800
good reports from the range control

575
00:35:20,069 --> 00:35:17,280
center at wallops

576
00:35:21,910 --> 00:35:20,079
30 seconds to throttle down

577
00:35:36,630 --> 00:35:21,920
throttle down is the precursor to main

578
00:35:52,950 --> 00:35:38,310
coming up on the three-minute mark into

579
00:36:04,230 --> 00:35:56,150
engines at 55 thrust standing by from

580
00:36:04,240 --> 00:36:12,550
main engine cutoff

581
00:36:18,790 --> 00:36:14,310
stage one separation

582
00:36:20,630 --> 00:36:18,800
from the range control center

583
00:36:23,589 --> 00:36:20,640
and teres

584
00:36:25,270 --> 00:36:23,599
flying straight and true

585
00:36:27,670 --> 00:36:25,280
until proper conditions for fairing

586
00:36:39,750 --> 00:36:27,680
separation and staged ignition are

587
00:36:45,829 --> 00:36:42,870
fairing separation confirmed

588
00:36:48,150 --> 00:36:45,839

cygnus now exposed to the atmosphere as

589
00:36:51,589 --> 00:36:48,160
it continues its trek uphill to its

590
00:36:51,599 --> 00:36:55,910
stage two ignition

591
00:37:03,109 --> 00:36:57,990
this will be about a two minute 44

592
00:37:32,390 --> 00:37:24,310
attitude nominal

593
00:37:45,190 --> 00:37:34,230
coming up on the five minute mark into

594
00:38:15,750 --> 00:37:47,829
all systems continue continue nominal

595
00:38:20,310 --> 00:38:17,589
all systems nominal

596
00:38:23,510 --> 00:38:20,320
the second stage burnout is scheduled at

597
00:38:27,349 --> 00:38:23,520
about the six minute 51 second mark into

598
00:38:57,190 --> 00:38:30,630
altitude 170 kilometers roughly one

599
00:39:03,990 --> 00:39:01,030
altitude 184 kilometers all systems

600
00:39:19,670 --> 00:39:04,000
nominal roughly 30 seconds to stage two

601
00:39:30,870 --> 00:39:21,829
six minutes 40 seconds into the flight

602
00:39:30,880 --> 00:39:37,829
stage two tail off

603
00:39:37,839 --> 00:39:43,030
stage two burnout

604
00:39:47,670 --> 00:39:45,670
and cygnus has reached the preliminary

605
00:39:49,589 --> 00:39:47,680
orbital insertion

606
00:39:54,790 --> 00:39:49,599
and teres will coast for roughly 100

607
00:39:59,750 --> 00:39:56,950
and as you heard the next major event

608
00:40:02,310 --> 00:39:59,760
will be uh cygnus's separation from the

609
00:40:06,950 --> 00:40:02,320
second stage

610
00:40:11,430 --> 00:40:09,510
cygnus uh has begun its journey to reach

611
00:40:14,470 --> 00:40:11,440
the international space station early

612
00:40:14,480 --> 00:40:27,670
all vehicle subsystems nominal

613
00:40:36,790 --> 00:40:31,270

altitude 191 kilometers

614
00:40:43,910 --> 00:40:39,670
liftoff occurred right on the dime at 8

615
00:40:47,190 --> 00:40:43,920
16 and 14 seconds p.m central time 9 16

616
00:40:49,510 --> 00:40:47,200
14 p.m eastern time

617
00:40:51,589 --> 00:40:49,520
the international space station and its

618
00:40:53,750 --> 00:40:51,599
three crew members who are asleep at

619
00:41:00,150 --> 00:40:53,760
this hour approaching the southwest

620
00:41:06,069 --> 00:41:03,510
altitude remains uh 192 kilometers

621
00:41:09,349 --> 00:41:06,079
roughly 30 seconds to payload separation

622
00:41:12,470 --> 00:41:10,630
at the time of

623
00:41:15,910 --> 00:41:12,480
cygnus's separation from the second

624
00:41:18,870 --> 00:41:15,920
stage the operations will move to dulles

625
00:41:20,230 --> 00:41:18,880
virginia and the cygnus flight control

626
00:41:45,589 --> 00:41:20,240
room under the direction of mission

627
00:41:49,990 --> 00:41:48,069
spacecraft separation confirmed the ss

628
00:41:53,270 --> 00:41:50,000
culp nachovla well on its way to the

629
00:41:55,589 --> 00:41:53,280
international space station

630
00:41:57,030 --> 00:41:55,599
cam initiated

631
00:41:59,589 --> 00:41:57,040
attitude nominal

632
00:42:02,309 --> 00:41:59,599
lc ace out

633
00:42:04,790 --> 00:42:02,319
all right ace great job calling it out

634
00:42:05,910 --> 00:42:04,800
and great job to the north of grumman

635
00:42:09,670 --> 00:42:05,920
and

636
00:42:11,430 --> 00:42:09,680
everybody else

637
00:42:13,990 --> 00:42:11,440
mars

638
00:42:17,750 --> 00:42:14,000

on getting this mission off

639
00:42:19,109 --> 00:42:17,760
in difficult times okay launch team

640
00:42:24,230 --> 00:42:19,119
we're going to go ahead and proceed now

641
00:42:40,309 --> 00:42:27,030
and uh prop one excuse me properly i

642
00:42:45,510 --> 00:42:43,589
and prop lead lc countdown one

643
00:42:48,230 --> 00:42:45,520
yeah we've already began our warm helium

644
00:42:50,630 --> 00:42:48,240
and cooled helium purging okay copy that

645
00:42:54,950 --> 00:42:50,640
we'll check 425 complete

646
00:42:56,630 --> 00:42:54,960
gnc one lc step 426

647
00:42:59,190 --> 00:42:56,640
let me know when you've

648
00:43:01,109 --> 00:42:59,200
provided the atari state fact uh state

649
00:43:03,670 --> 00:43:01,119
vector to cygnus

650
00:43:06,470 --> 00:43:03,680
lc gnc one uh

651
00:43:09,190 --> 00:43:06,480
c vector submission in work

652
00:43:11,750 --> 00:43:09,200
okay copy and work lc

653
00:43:13,190 --> 00:43:11,760
go ahead ld lc this is ld i'd just like

654
00:43:15,349 --> 00:43:13,200
to thank the launch team for an

655
00:43:16,069 --> 00:43:15,359
outstanding effort way to go team thank

656
00:43:19,430 --> 00:43:16,079
you

657
00:43:21,270 --> 00:43:19,440
mars nasa and the antares launch team

658
00:43:22,390 --> 00:43:21,280
oh and cygnus too so thanks everybody

659
00:43:34,710 --> 00:43:22,400
great job

660
00:43:39,109 --> 00:43:36,950
this is mission control houston cygnus

661
00:43:41,589 --> 00:43:39,119
now safely in orbit on route to the

662
00:43:43,589 --> 00:43:41,599
international space station a perfect

663
00:43:45,190 --> 00:43:43,599

launch from the wallops flight facility

664
00:43:47,030 --> 00:43:45,200
in virginia

665
00:43:49,109 --> 00:43:47,040
on the line with us right now is the

666
00:43:51,589 --> 00:43:49,119
international space station's deputy

667
00:43:53,670 --> 00:43:51,599
program manager kenny todd kenny good

668
00:43:56,309 --> 00:43:53,680
evening thanks for joining us tonight

669
00:43:59,030 --> 00:43:56,319
hey rob it's great to be with you thanks

670
00:44:00,790 --> 00:43:59,040
well cygnus now safely on route to the

671
00:44:02,630 --> 00:44:00,800
international space station after that

672
00:44:04,950 --> 00:44:02,640
launch scrub last night

673
00:44:07,030 --> 00:44:04,960
uh carrying some four tons of supplies

674
00:44:08,630 --> 00:44:07,040
and experiments including a couple of

675
00:44:11,030 --> 00:44:08,640
nitrogen tanks

676
00:44:12,710 --> 00:44:11,040
give us uh sort of the big picture on

677
00:44:14,950 --> 00:44:12,720
what's on board cygnus why these

678
00:44:17,030 --> 00:44:14,960
nitrogen tanks are important and some of

679
00:44:19,109 --> 00:44:17,040
the other highlights for what the supply

680
00:44:20,630 --> 00:44:19,119
run will mean for the international

681
00:44:22,870 --> 00:44:20,640
complex

682
00:44:24,950 --> 00:44:22,880
yeah you bet uh rob uh first of all uh

683
00:44:27,190 --> 00:44:24,960
let me let me offer my congratulations

684
00:44:29,349 --> 00:44:27,200
to the entire northrop grumman team it

685
00:44:31,030 --> 00:44:29,359
was a spectacular launch i don't think

686
00:44:33,030 --> 00:44:31,040
you can ever get uh tired of watching

687
00:44:34,870 --> 00:44:33,040
these night launches and as you said

688
00:44:36,950 --> 00:44:34,880

yesterday you know creating a the

689
00:44:39,030 --> 00:44:36,960
artificial dawn for a few minutes there

690
00:44:40,630 --> 00:44:39,040
it's just gorgeous just gorgeous and the

691
00:44:42,630 --> 00:44:40,640
entire launch team there at the waltz

692
00:44:44,309 --> 00:44:42,640
flight facility again they just do a

693
00:44:46,790 --> 00:44:44,319
great job at launching these vehicles

694
00:44:48,150 --> 00:44:46,800
but yeah we're very excited about having

695
00:44:49,990 --> 00:44:48,160
cygnus

696
00:44:52,150 --> 00:44:50,000
off the pad on the way coming to the

697
00:44:54,550 --> 00:44:52,160
international space station with about

698
00:44:55,750 --> 00:44:54,560
about eight thousand pounds of cargo of

699
00:44:57,910 --> 00:44:55,760
which uh

700
00:44:59,990 --> 00:44:57,920
over a third of it is really really

701
00:45:02,550 --> 00:45:00,000
committed to the the science and

702
00:45:04,790 --> 00:45:02,560
utilization of the space station and and

703
00:45:07,829 --> 00:45:04,800
really taking advantage of this of this

704
00:45:10,069 --> 00:45:07,839
uh this low earth orbit asset uh where

705
00:45:12,309 --> 00:45:10,079
we can do some things in microgravity

706
00:45:15,109 --> 00:45:12,319
that quite frankly we can't do anywhere

707
00:45:18,150 --> 00:45:15,119
else on the planet so it's uh it's we're

708
00:45:20,230 --> 00:45:18,160
always excited to to have new uh new new

709
00:45:22,470 --> 00:45:20,240
people uh coming to station and and

710
00:45:24,069 --> 00:45:22,480
really uh trying to trying to see what

711
00:45:26,790 --> 00:45:24,079
uh what kind of things that they can

712
00:45:28,630 --> 00:45:26,800
they can learn in this environment so uh

713
00:45:31,270 --> 00:45:28,640

you mentioned earlier um about the

714
00:45:33,109 --> 00:45:31,280
nitrogen tanks uh uh we are we were a

715
00:45:35,349 --> 00:45:33,119
little anxious to get this this flight

716
00:45:37,190 --> 00:45:35,359
off the ground because of the fact that

717
00:45:38,470 --> 00:45:37,200
it it had some additional nitrogen on

718
00:45:40,069 --> 00:45:38,480
board as most

719
00:45:41,589 --> 00:45:40,079
uh people who follow station on a

720
00:45:44,069 --> 00:45:41,599
regular basis might have heard we've

721
00:45:46,230 --> 00:45:44,079
been dealing uh with a pesky little

722
00:45:48,630 --> 00:45:46,240
atmosphere leak on board the station for

723
00:45:50,550 --> 00:45:48,640
the uh for the better part of the three

724
00:45:52,550 --> 00:45:50,560
or four months now um

725
00:45:53,270 --> 00:45:52,560
station in general always leaks a little

726
00:45:55,430 --> 00:45:53,280
bit

727
00:45:57,349 --> 00:45:55,440
uh but uh over the last several months

728
00:45:59,030 --> 00:45:57,359
we've seen an increase in that which

729
00:46:01,829 --> 00:45:59,040
anytime you're you're dealing with a

730
00:46:03,190 --> 00:46:01,839
leak on a pressurized spacecraft

731
00:46:04,790 --> 00:46:03,200
you certainly want to know where it is

732
00:46:07,750 --> 00:46:04,800
and you certainly want to make sure that

733
00:46:10,150 --> 00:46:07,760
you have enough consumables on board to

734
00:46:11,589 --> 00:46:10,160
to to feed that leak until you find it

735
00:46:13,030 --> 00:46:11,599
and that's kind of where we find

736
00:46:14,630 --> 00:46:13,040
ourselves right now as we're working

737
00:46:15,990 --> 00:46:14,640
through

738
00:46:17,990 --> 00:46:16,000

several different troubleshooting

739
00:46:19,510 --> 00:46:18,000
efforts to to try to locate this leak

740
00:46:21,270 --> 00:46:19,520
but getting these uh getting these tanks

741
00:46:24,150 --> 00:46:21,280
on board certainly

742
00:46:26,390 --> 00:46:24,160
again helps us up our consumables

743
00:46:29,030 --> 00:46:26,400
in the nitrogen area and gives us a

744
00:46:31,910 --> 00:46:29,040
little more runway as we we try to sort

745
00:46:34,390 --> 00:46:31,920
through this this issue

746
00:46:36,790 --> 00:46:34,400
kenny uh the cygnus vehicle arrives at

747
00:46:39,910 --> 00:46:36,800
the station uh predawn on monday this

748
00:46:42,230 --> 00:46:39,920
kicks off a very busy period

749
00:46:44,550 --> 00:46:42,240
for the station and its crew if you

750
00:46:46,309 --> 00:46:44,560
would give us a little snapshot of the

751
00:46:48,230 --> 00:46:46,319
air traffic control pattern over the

752
00:46:50,150 --> 00:46:48,240
next few weeks with crews and vehicles

753
00:46:51,910 --> 00:46:50,160
coming and going

754
00:46:53,589 --> 00:46:51,920
you bet rob um

755
00:46:55,910 --> 00:46:53,599
you know last year we were

756
00:46:58,230 --> 00:46:55,920
around this same time frame i remember

757
00:46:59,990 --> 00:46:58,240
doing a press conference and calling

758
00:47:02,470 --> 00:47:00,000
last year around the same time frame the

759
00:47:04,710 --> 00:47:02,480
season of of evas because we were

760
00:47:06,309 --> 00:47:04,720
getting ready to swap out batteries and

761
00:47:08,309 --> 00:47:06,319
and that was coming with a huge series

762
00:47:10,950 --> 00:47:08,319
evas along with fixing the alpha

763
00:47:13,349 --> 00:47:10,960

magnetic spectrometer and and

764
00:47:15,349 --> 00:47:13,359
again another large number evas this

765
00:47:18,710 --> 00:47:15,359
year we find ourselves really with just

766
00:47:20,870 --> 00:47:18,720
a season of visiting vehicles and it

767
00:47:22,790 --> 00:47:20,880
starts tonight with the launch of this

768
00:47:24,150 --> 00:47:22,800
cygnus spacecraft

769
00:47:27,030 --> 00:47:24,160
we'll get it on board here monday

770
00:47:30,549 --> 00:47:27,040
morning um and then uh and

771
00:47:33,190 --> 00:47:30,559
on the uh on the 14th of october uh

772
00:47:35,349 --> 00:47:33,200
we'll see our next soyuz spacecraft with

773
00:47:37,270 --> 00:47:35,359
our next crew coming to the space

774
00:47:39,349 --> 00:47:37,280
station that particular spacecraft will

775
00:47:41,430 --> 00:47:39,359
actually perform a two orbit uh

776
00:47:44,069 --> 00:47:41,440
rendezvous on its way to the space

777
00:47:46,309 --> 00:47:44,079
station which uh hasn't been done for

778
00:47:48,630 --> 00:47:46,319
before with a with a crude spacecraft so

779
00:47:51,270 --> 00:47:48,640
we're we're pretty excited to

780
00:47:52,710 --> 00:47:51,280
to see all that works and again it'll be

781
00:47:54,470 --> 00:47:52,720
a pretty amazing when you think about a

782
00:47:56,630 --> 00:47:54,480
crew launching from the ground here and

783
00:47:58,230 --> 00:47:56,640
roughly three hours later being being on

784
00:47:59,750 --> 00:47:58,240
the international space station so we're

785
00:48:00,790 --> 00:47:59,760
excited that's coming on october the

786
00:48:03,190 --> 00:48:00,800
14th

787
00:48:05,270 --> 00:48:03,200
and then about a week later on the 21st

788
00:48:08,470 --> 00:48:05,280

uh chris cassidy and his two russian

789
00:48:10,710 --> 00:48:08,480
crewmates will will return to earth

790
00:48:12,630 --> 00:48:10,720
after their six-month approximately six

791
00:48:13,670 --> 00:48:12,640
months stay on board on board the

792
00:48:15,190 --> 00:48:13,680
station

793
00:48:18,950 --> 00:48:15,200
and uh

794
00:48:21,990 --> 00:48:18,960
kate rubins who will uh who will then

795
00:48:25,190 --> 00:48:22,000
succeed chris uh as being the handler of

796
00:48:26,630 --> 00:48:25,200
the usos segment we'll have about uh a

797
00:48:30,390 --> 00:48:26,640
little over a week

798
00:48:33,510 --> 00:48:30,400
before uh we we see the launch of of the

799
00:48:34,630 --> 00:48:33,520
next uh commercial crew vehicle

800
00:48:36,710 --> 00:48:34,640
which would be

801
00:48:38,630 --> 00:48:36,720
termed crew one coming to the

802
00:48:39,829 --> 00:48:38,640
international space station with an

803
00:48:41,030 --> 00:48:39,839
additional four

804
00:48:43,750 --> 00:48:41,040
us os

805
00:48:45,670 --> 00:48:43,760
crew members and so uh kate will be by

806
00:48:47,430 --> 00:48:45,680
herself for a short period of time and

807
00:48:49,109 --> 00:48:47,440
she's been there before she understands

808
00:48:50,950 --> 00:48:49,119
space station very well and was an

809
00:48:52,470 --> 00:48:50,960
excellent crew member when she was was

810
00:48:53,829 --> 00:48:52,480
on board several years ago and so we're

811
00:48:56,870 --> 00:48:53,839
looking forward to getting her back on

812
00:49:00,230 --> 00:48:56,880
but that crew size will will jump on

813
00:49:02,950 --> 00:49:00,240

board from from three to seven uh about

814
00:49:04,069 --> 00:49:02,960
a week after after she after she gets to

815
00:49:06,150 --> 00:49:04,079
orbit so

816
00:49:08,470 --> 00:49:06,160
once we get the crew back up to seven uh

817
00:49:10,549 --> 00:49:08,480
we'll have about a three week hiatus

818
00:49:12,710 --> 00:49:10,559
where we won't be dealing with arriving

819
00:49:14,390 --> 00:49:12,720
vehicles but but shortly after that

820
00:49:17,190 --> 00:49:14,400
probably somewhere around november the

821
00:49:20,230 --> 00:49:17,200
22nd we'll see the launch of of spacex

822
00:49:22,230 --> 00:49:20,240
21 which is a cargo vehicle and again

823
00:49:24,870 --> 00:49:22,240
bringing another several thousand pounds

824
00:49:27,030 --> 00:49:24,880
of of uh mostly science and utilization

825
00:49:28,549 --> 00:49:27,040
to the space station so uh this crew is

826
00:49:31,270 --> 00:49:28,559
going to be really busy uh throughout

827
00:49:33,510 --> 00:49:31,280
this full season leading up to basically

828
00:49:35,990 --> 00:49:33,520
the the end of the year

829
00:49:37,990 --> 00:49:36,000
and kenny uh finally uh before that

830
00:49:41,030 --> 00:49:38,000
happens we're just weeks away from a

831
00:49:42,549 --> 00:49:41,040
coveted anniversary on november 2nd that

832
00:49:45,270 --> 00:49:42,559
being the 20th anniversary of a

833
00:49:47,750 --> 00:49:45,280
permanent human presence on the station

834
00:49:49,829 --> 00:49:47,760
in the course of history in your mind

835
00:49:52,230 --> 00:49:49,839
how significant is that milestone in

836
00:49:53,829 --> 00:49:52,240
human exploration what has it meant for

837
00:49:56,150 --> 00:49:53,839
the station and the international

838
00:49:57,670 --> 00:49:56,160

partnership

839
00:49:59,349 --> 00:49:57,680
you know rob

840
00:50:01,670 --> 00:49:59,359
you know we uh for those of us that go

841
00:50:03,589 --> 00:50:01,680
around and talk around and

842
00:50:06,230 --> 00:50:03,599
you know to people outside our business

843
00:50:07,910 --> 00:50:06,240
uh you know uh sometimes it comes as a

844
00:50:09,910 --> 00:50:07,920
shock when we tell them you know

845
00:50:13,190 --> 00:50:09,920
especially the younger generation that

846
00:50:14,950 --> 00:50:13,200
that uh you know for your entire life um

847
00:50:16,790 --> 00:50:14,960
you know you haven't known a time when

848
00:50:18,309 --> 00:50:16,800
there hasn't been somebody living off

849
00:50:20,950 --> 00:50:18,319
the planet and

850
00:50:22,549 --> 00:50:20,960
and in some ways they know that and they

851
00:50:24,549 --> 00:50:22,559
they don't see a world that's any

852
00:50:26,150 --> 00:50:24,559
different but for those of us that

853
00:50:26,950 --> 00:50:26,160
have been around a number of years you

854
00:50:29,190 --> 00:50:26,960
know

855
00:50:31,430 --> 00:50:29,200
going going to orbit uh was such an

856
00:50:33,589 --> 00:50:31,440
amazing feat years ago and to think

857
00:50:35,430 --> 00:50:33,599
we've been living there for the last 20

858
00:50:37,510 --> 00:50:35,440
years is uh you know almost

859
00:50:40,549 --> 00:50:37,520
incomprehensible but you know the thing

860
00:50:42,390 --> 00:50:40,559
that really strikes me rob

861
00:50:44,549 --> 00:50:42,400
about the fact that we we've had

862
00:50:47,109 --> 00:50:44,559
international crews living living in

863
00:50:49,270 --> 00:50:47,119

orbit for the last 20 years is looking

864
00:50:51,270 --> 00:50:49,280
down at the earth and seeing

865
00:50:52,710 --> 00:50:51,280
what all has transpired on the earth in

866
00:50:55,589 --> 00:50:52,720
that time frame

867
00:50:57,750 --> 00:50:55,599
you know with disasters and conflicts uh

868
00:50:59,670 --> 00:50:57,760
successes and failures and and things

869
00:51:02,150 --> 00:50:59,680
that have gone on around around our

870
00:51:05,190 --> 00:51:02,160
planet and in the midst of all that

871
00:51:07,349 --> 00:51:05,200
as an international partnership uh we we

872
00:51:09,109 --> 00:51:07,359
know no boundaries um and every crew

873
00:51:10,870 --> 00:51:09,119
member that launches

874
00:51:12,390 --> 00:51:10,880
uh almost will come back and tell you

875
00:51:13,990 --> 00:51:12,400
when somebody asks what you see when you

876
00:51:17,030 --> 00:51:14,000
look down and it's you you don't see

877
00:51:18,950 --> 00:51:17,040
boundaries and uh and and that is

878
00:51:19,829 --> 00:51:18,960
something that over the last 20 years i

879
00:51:22,630 --> 00:51:19,839
think

880
00:51:23,589 --> 00:51:22,640
really hits home for me is is the fact

881
00:51:26,710 --> 00:51:23,599
that

882
00:51:28,230 --> 00:51:26,720
here as we

883
00:51:30,710 --> 00:51:28,240
as we circle

884
00:51:32,790 --> 00:51:30,720
circle around the sun every year we we

885
00:51:35,190 --> 00:51:32,800
continue as a partnership to to work

886
00:51:36,630 --> 00:51:35,200
together and and do amazing things and

887
00:51:38,470 --> 00:51:36,640
and pro it's probably one of the most

888
00:51:40,790 --> 00:51:38,480

harshest environments known known to

889
00:51:42,790 --> 00:51:40,800
humans

890
00:51:44,870 --> 00:51:42,800
kenny engineers such as yourself always

891
00:51:46,470 --> 00:51:44,880
say that space is hard which it is but

892
00:51:49,109 --> 00:51:46,480
tonight northrop grumman made it look

893
00:51:51,030 --> 00:51:49,119
easy and cygnus is well on its way to

894
00:51:53,270 --> 00:51:51,040
the international space station

895
00:51:55,430 --> 00:51:53,280
kenny todd the deputy iss program

896
00:51:57,750 --> 00:51:55,440
manager joining us tonight thanks very

897
00:52:01,109 --> 00:51:57,760
much kenny appreciate it hey happy to be

898
00:52:05,109 --> 00:52:03,270
back here in mission control the flight

899
00:52:06,870 --> 00:52:05,119
control team will be working uh

900
00:52:09,750 --> 00:52:06,880
throughout the course of the weekend in

901
00:52:12,549 --> 00:52:09,760
concert with northrop grumman's cygnus

902
00:52:15,829 --> 00:52:12,559
engineers at the cygnus law control

903
00:52:18,470 --> 00:52:15,839
center in dulles virginia monitoring all

904
00:52:21,190 --> 00:52:18,480
of the maneuvers that lie ahead for the

905
00:52:22,950 --> 00:52:21,200
uss colton traveler on its approach to

906
00:52:26,150 --> 00:52:22,960
the international space station for its

907
00:52:29,589 --> 00:52:26,160
capture scheduled at 4 20 a.m central

908
00:52:32,470 --> 00:52:29,599
time 5 20 a.m eastern time on monday

909
00:52:35,430 --> 00:52:32,480
morning the first major uh engine burns

910
00:52:37,990 --> 00:52:35,440
are scheduled uh early saturday morning

911
00:52:39,670 --> 00:52:38,000
to increase uh cygnus's altitude to

912
00:52:41,910 --> 00:52:39,680
match that of the international space

913
00:52:43,910 --> 00:52:41,920

station and the correct phasing to bring

914
00:52:46,390 --> 00:52:43,920
it into the neighborhood of the

915
00:55:02,950 --> 00:52:46,400
international space station on monday

916
00:55:08,950 --> 00:55:05,750
this is mission control houston to recap

917
00:55:10,789 --> 00:55:08,960
the northrop grumman antares rocket

918
00:55:13,510 --> 00:55:10,799
lifted off on time from the wallops

919
00:55:15,589 --> 00:55:13,520
flight facility in virginia

920
00:55:17,829 --> 00:55:15,599
launch pad 0a at the mid-atlantic

921
00:55:19,430 --> 00:55:17,839
regional spaceport at 8 16 and 14

922
00:55:22,069 --> 00:55:19,440
seconds p.m

923
00:55:24,150 --> 00:55:22,079
central time 9 16 and 14 seconds pm

924
00:55:26,950 --> 00:55:24,160
eastern time this evening it was a

925
00:55:28,950 --> 00:55:26,960
perfect ride to orbit sending the

926
00:55:31,510 --> 00:55:28,960
cygnus resupply vehicle to its

927
00:55:33,750 --> 00:55:31,520
preliminary orbit on route to a

928
00:55:35,430 --> 00:55:33,760
three-day rendezvous that will result in

929
00:55:37,829 --> 00:55:35,440
cygnus arriving at the international

930
00:55:39,990 --> 00:55:37,839
space station early monday morning our

931
00:55:42,789 --> 00:55:40,000
programming on monday october 5th looks

932
00:55:45,910 --> 00:55:42,799
like this we'll start our rendezvous and

933
00:55:47,109 --> 00:55:45,920
capture coverage for cygnus at 2 45 a.m

934
00:55:52,549 --> 00:55:47,119
central time

935
00:55:54,789 --> 00:55:52,559
3 45 a.m eastern time on nasa television

936
00:55:56,309 --> 00:55:54,799
chris cassidy the station commander nasa

937
00:55:58,710 --> 00:55:56,319
astronaut will

938
00:56:01,990 --> 00:55:58,720

use the canadarm2 robotic arm to reach

939
00:56:05,349 --> 00:56:02,000
out and capture cygnus at 4 20 a.m

940
00:56:07,430 --> 00:56:05,359
central time 5 20 a.m eastern time

941
00:56:10,150 --> 00:56:07,440
we then will take a pause and come back

942
00:56:11,190 --> 00:56:10,160
a couple of hours later for installation

943
00:56:13,510 --> 00:56:11,200
coverage

944
00:56:15,510 --> 00:56:13,520
where uh cygnus uh will be turned over

945
00:56:16,950 --> 00:56:15,520
to the robotic ground controllers here

946
00:56:20,470 --> 00:56:16,960
in houston

947
00:56:22,150 --> 00:56:20,480
to install and bolt cygnus into place on

948
00:56:23,829 --> 00:56:22,160
the earth-facing port of the unity

949
00:56:25,670 --> 00:56:23,839
module of the international space

950
00:56:29,030 --> 00:56:25,680
station with our installation coverage

951
00:56:30,470 --> 00:56:29,040
beginning at 6 30 a.m central time 7 30

952
00:56:32,950 --> 00:56:30,480
a.m eastern time

953
00:56:34,950 --> 00:56:32,960
on monday morning

954
00:56:36,789 --> 00:56:34,960
so with that we'll wrap up our coverage

955
00:56:39,349 --> 00:56:36,799
coming up but just a moment or two from

956
00:56:40,390 --> 00:56:39,359
now will be launch replays of tonight's

957
00:56:42,549 --> 00:56:40,400
liftoff

958
00:56:46,150 --> 00:56:42,559
of the antares rocket from wallops to

959
00:56:48,630 --> 00:56:46,160
send cygnus into its preliminary orbit

960
00:56:51,589 --> 00:56:48,640
for all of us here in mission control in

961
00:56:53,750 --> 00:56:51,599
houston have a safe weekend and we'll

962
00:57:26,150 --> 00:56:53,760
see you once again on monday morning

963
00:57:26,160 --> 00:58:49,810

hmm