



1  
00:00:06,720 --> 00:01:22,950

[Music]

2  
00:01:27,109 --> 00:01:24,950

it's a sunny saturday morning in wallops

3  
00:01:29,109 --> 00:01:27,119

island virginia at nasa's wallops flight

4  
00:01:30,710 --> 00:01:29,119

facility and you're looking at a live

5  
00:01:33,190 --> 00:01:30,720

view of the mid-atlantic regional

6  
00:01:35,030 --> 00:01:33,200

spaceport pad 0a

7  
00:01:37,109 --> 00:01:35,040

what you see right now is the antares

8  
00:01:39,190 --> 00:01:37,119

rocket with the cygnus spacecraft ready

9  
00:01:40,789 --> 00:01:39,200

for launch in just under 30 minutes on

10  
00:01:42,630 --> 00:01:40,799

northrop grumman's 12th commercial

11  
00:01:47,270 --> 00:01:42,640

resupply mission to the international

12  
00:01:50,950 --> 00:01:49,270

cygnus will be delivering over four tons

13  
00:01:53,109 --> 00:01:50,960

of cargo to the international space

14

00:01:55,670 --> 00:01:53,119

station and after its launch today it'll

15

00:01:57,990 --> 00:01:55,680

make a two day journey arriving monday

16

00:02:00,630 --> 00:01:58,000

november 4th

17

00:02:04,709 --> 00:02:00,640

fps external power nominal

18

00:02:06,550 --> 00:02:04,719

copy that will check 356 and 357.

19

00:02:08,070 --> 00:02:06,560

i'm nasa's leah cheshire and we're live

20

00:02:09,990 --> 00:02:08,080

from the international space station

21

00:02:12,550 --> 00:02:10,000

flight control room at nasa's johnson

22

00:02:14,150 --> 00:02:12,560

space center in houston texas where

23

00:02:17,910 --> 00:02:14,160

flight controllers are monitoring all

24

00:02:22,470 --> 00:02:20,030

space station is currently flying about

25

00:02:26,229 --> 00:02:22,480

259 statute miles

26

00:02:28,070 --> 00:02:26,239

north of bermuda in the sagaso sea

27

00:02:30,070 --> 00:02:28,080

flight director royce renfrew is leading

28

00:02:31,990 --> 00:02:30,080

teams in this room today you can see him

29

00:02:33,670 --> 00:02:32,000

there he's gathering data from all the

30

00:02:36,150 --> 00:02:33,680

flight controllers ahead of cygnus

31

00:02:37,750 --> 00:02:36,160

launch

32

00:02:42,309 --> 00:02:37,760

the visiting vehicle officer this

33

00:02:43,910 --> 00:02:42,319

morning or vvo is ray bijanes

34

00:02:45,830 --> 00:02:43,920

he's in direct communication with

35

00:02:50,710 --> 00:02:45,840

northrop grumman and is sharing cygnus

36

00:02:53,910 --> 00:02:53,110

arm on my mark three

37

00:02:55,830 --> 00:02:53,920

two

38

00:02:58,390 --> 00:02:55,840

one marked

39

00:03:02,309 --> 00:02:58,400

plus one plus two

40

00:03:08,550 --> 00:03:05,910

lc elect two fts arm indication received

41

00:03:11,910 --> 00:03:08,560

fts currently indicates safe

42

00:03:14,550 --> 00:03:11,920

and fso verify fts arm indication fso

43

00:03:17,990 --> 00:03:14,560

fts arm indication

44

00:03:19,190 --> 00:03:18,000

lc uh elect2 fts safe and arm and ftlu

45

00:03:22,869 --> 00:03:19,200

safe

46

00:03:26,070 --> 00:03:22,879

copy all we'll check 362 363 and 6

47

00:03:29,750 --> 00:03:27,589

there are multiple locations where the

48

00:03:31,190 --> 00:03:29,760

vehicle is being monitored today this is

49

00:03:33,509 --> 00:03:31,200

the north of grumman mission control

50

00:03:35,430 --> 00:03:33,519

center located in dulles virginia where

51  
00:03:37,750 --> 00:03:35,440  
teams continue to monitor the antares

52  
00:03:39,430 --> 00:03:37,760  
rocket and cygnus spacecraft everything

53  
00:03:43,750 --> 00:03:39,440  
currently proceeding nominally for an

54  
00:03:46,390 --> 00:03:43,760  
on-time launch at 8 59 central time 9 59

55  
00:03:48,550 --> 00:03:46,400  
a.m eastern time this morning the

56  
00:04:04,309 --> 00:03:48,560  
mission director today in dulles is paul

57  
00:04:08,070 --> 00:04:05,910  
it's a special time for the

58  
00:04:11,670 --> 00:04:08,080  
international space station on october

59  
00:04:13,589 --> 00:04:11,680  
31st the three-member crew expedition

60  
00:04:16,629 --> 00:04:13,599  
one crew of william shepherd yuri

61  
00:04:18,069 --> 00:04:16,639  
gadzenko and sergey krikalev arrived

62  
00:04:20,870 --> 00:04:18,079  
launched to the international space

63  
00:04:22,550 --> 00:04:20,880

station and on this day 19 years ago

64

00:04:25,430 --> 00:04:22,560

they arrived to the international space

65

00:04:36,310 --> 00:04:25,440

station beginning 19 years of continuous

66

00:04:39,430 --> 00:04:37,909

during an on-time launch today the

67

00:04:41,909 --> 00:04:39,440

international space station will be

68

00:04:44,550 --> 00:04:41,919

flying over the south atlantic southwest

69

00:04:48,230 --> 00:04:44,560

of cape town south africa at an altitude

70

00:04:49,670 --> 00:04:48,240

of 257 statute miles

71

00:04:51,510 --> 00:04:49,680

but down here on the ground and as you

72

00:04:53,909 --> 00:04:51,520

can see in this picture mostly clear

73

00:04:56,070 --> 00:04:53,919

skies actually totally clear skies and a

74

00:04:57,830 --> 00:04:56,080

little over 40 degrees fahrenheit

75

00:05:00,070 --> 00:04:57,840

expecting nice and clear conditions

76

00:05:02,230 --> 00:05:00,080

throughout the rest of the morning

77

00:05:14,710 --> 00:05:02,240

there is a zero percent chance of any

78

00:05:18,629 --> 00:05:16,390

cygnus will arrive to the international

79

00:05:21,029 --> 00:05:18,639

space station after a two-day journey

80

00:05:22,790 --> 00:05:21,039

and it will make its way to the unity

81

00:05:29,670 --> 00:05:22,800

module on the earth-facing side of the

82

00:05:33,990 --> 00:05:31,350

astronauts aboard the station will use

83

00:05:35,990 --> 00:05:34,000

the canadarm2 to reach out and grapple

84

00:05:37,350 --> 00:05:36,000

the spacecraft once it reaches its

85

00:05:39,350 --> 00:05:37,360

grapple point

86

00:05:41,590 --> 00:05:39,360

jessica meer will be the capture lead

87

00:05:43,189 --> 00:05:41,600

for that morning and she'll be backed up

88

00:05:45,029 --> 00:05:43,199

by christina cook

89

00:05:47,110 --> 00:05:45,039

nasa astronaut drew morgan will monitor

90

00:05:51,590 --> 00:05:47,120

cygnus systems during the final stage of

91

00:05:54,710 --> 00:05:52,870

once astronauts have captured the

92

00:05:56,469 --> 00:05:54,720

vehicle they'll turn controls back over

93

00:05:58,469 --> 00:05:56,479

to teams here on the ground where the

94

00:06:00,710 --> 00:05:58,479

robotics officer will use the canada arm

95

00:06:02,629 --> 00:06:00,720

too to reposition the spacecraft and

96

00:06:05,590 --> 00:06:02,639

bring it up toward the unity module and

97

00:06:07,510 --> 00:06:05,600

birth it with the space station

98

00:06:08,309 --> 00:06:07,520

crew will access the cargo later that

99

00:06:09,990 --> 00:06:08,319

day

100

00:06:13,110 --> 00:06:10,000

and cygnus will remain attached until

101  
00:06:15,270 --> 00:06:13,120  
january 13 2020 when it will depart the

102  
00:06:17,510 --> 00:06:15,280  
space station but not return to earth

103  
00:06:19,510 --> 00:06:17,520  
just yet it will complete some satellite

104  
00:06:21,590 --> 00:06:19,520  
deployments and additional objectives

105  
00:06:26,950 --> 00:06:21,600  
before burning up upon re-entry into

106  
00:06:32,870 --> 00:06:28,309  
prop 2

107  
00:06:34,629 --> 00:06:32,880  
place occs in the sac mode and pause the

108  
00:06:42,550 --> 00:06:34,639  
hss asc

109  
00:06:46,230 --> 00:06:44,309  
under 24 minutes until launch this

110  
00:06:47,670 --> 00:06:46,240  
morning let's take a look at what is on

111  
00:06:49,990 --> 00:06:47,680  
cygnus

112  
00:06:51,670 --> 00:06:50,000  
a total of over four tons over eight

113  
00:06:53,110 --> 00:06:51,680

thousand two hundred pounds will be

114

00:06:55,270 --> 00:06:53,120

launching to the space station this

115

00:06:57,670 --> 00:06:55,280

morning that's over one thousand seven

116

00:06:59,270 --> 00:06:57,680

hundred pounds of crew supplies

117

00:07:01,510 --> 00:06:59,280

over four thousand two hundred and forty

118

00:07:03,189 --> 00:07:01,520

two pounds of utilization equipment

119

00:07:05,029 --> 00:07:03,199

which is uh science experiments and

120

00:07:08,230 --> 00:07:05,039

other hardware

121

00:07:09,309 --> 00:07:08,240

203 pounds of spacewalk equipment

122

00:07:11,909 --> 00:07:09,319

another

123

00:07:14,070 --> 00:07:11,919

1561 pounds of vehicle and system

124

00:07:16,150 --> 00:07:14,080

equipment and 31 pounds of computer

125

00:07:18,469 --> 00:07:16,160

resources

126  
00:07:24,870 --> 00:07:18,479  
you can resume your hss asc and then

127  
00:07:31,430 --> 00:07:29,189  
nlc prop 2 hss asc resumed occs and auto

128  
00:07:35,270 --> 00:07:31,440  
control mode copy that too we'll check

129  
00:07:39,670 --> 00:07:35,280  
368 and 369 and gnc one can you provide

130  
00:07:45,670 --> 00:07:43,510  
lc gnc one upper level wins or go

131  
00:07:50,790 --> 00:07:45,680  
roger that tnc one will check 370

132  
00:07:56,830 --> 00:07:53,670  
ops one lc countdown one step 371

133  
00:08:07,110 --> 00:07:56,840  
enabled mu1 and me2 tvc and aha

134  
00:08:13,350 --> 00:08:11,430  
lc ops one pvc and eha buses enabled

135  
00:08:16,070 --> 00:08:13,360  
raw drops one

136  
00:09:41,590 --> 00:08:16,080  
side control step 372 arm tail for rapid

137  
00:09:45,430 --> 00:09:43,269  
this morning we are joined by christina

138  
00:09:48,230 --> 00:09:45,440

hollona program manager for antares

139

00:09:49,829 --> 00:09:48,240

systems engineering integration and test

140

00:09:51,190 --> 00:09:49,839

here with us from northrop grumman today

141

00:09:52,630 --> 00:09:51,200

thanks for joining us

142

00:09:54,070 --> 00:09:52,640

thank you for having me i'm excited to

143

00:09:55,670 --> 00:09:54,080

be here and good morning to everyone

144

00:09:57,030 --> 00:09:55,680

who's joined us this morning so can you

145

00:09:57,990 --> 00:09:57,040

tell us a little bit more about your

146

00:10:00,310 --> 00:09:58,000

role

147

00:10:02,069 --> 00:10:00,320

sure um as the anterior systems

148

00:10:03,829 --> 00:10:02,079

engineering and integration test

149

00:10:05,590 --> 00:10:03,839

engineer

150

00:10:07,590 --> 00:10:05,600

program manager my role is to provide

151  
00:10:09,190 --> 00:10:07,600  
systems engineering leadership to

152  
00:10:11,110 --> 00:10:09,200  
efficiently and

153  
00:10:12,470 --> 00:10:11,120  
reliably execute and terry's cargo

154  
00:10:14,230 --> 00:10:12,480  
resupply mission to the international

155  
00:10:16,310 --> 00:10:14,240  
space station

156  
00:10:19,670 --> 00:10:16,320  
my team and i work to increase the focus

157  
00:10:21,670 --> 00:10:19,680  
on clear requirements development

158  
00:10:23,430 --> 00:10:21,680  
interface design testability and

159  
00:10:24,870 --> 00:10:23,440  
verification

160  
00:10:28,150 --> 00:10:24,880  
the system engineering is an important

161  
00:10:29,590 --> 00:10:28,160  
role to antares as we actually get to

162  
00:10:30,949 --> 00:10:29,600  
you know interface with all the

163  
00:10:33,110 --> 00:10:30,959

different engineering disciplines

164

00:10:35,910 --> 00:10:33,120

through across the program

165

00:10:38,069 --> 00:10:35,920

and we do this to ensure that we are

166

00:10:39,910 --> 00:10:38,079

always in compliance with our customers

167

00:10:47,350 --> 00:10:39,920

requirements and their needs throughout

168

00:10:51,590 --> 00:10:48,790

that's great so there are some

169

00:10:53,430 --> 00:10:51,600

differences uh with this launch that we

170

00:10:55,110 --> 00:10:53,440

have we saw this before on northrop

171

00:10:56,870 --> 00:10:55,120

grumman 11 um but we're seeing it again

172

00:10:59,430 --> 00:10:56,880

on north dakota 12.

173

00:11:00,870 --> 00:10:59,440

the late load option for for cargo on

174

00:11:02,230 --> 00:11:00,880

cygnus can you tell us a little bit more

175

00:11:04,310 --> 00:11:02,240

about that

176

00:11:06,949 --> 00:11:04,320

sure one of the unique features of the

177

00:11:08,710 --> 00:11:06,959

antares 230 plus vehicles that we have

178

00:11:10,389 --> 00:11:08,720

built new specialized ground support

179

00:11:12,230 --> 00:11:10,399

equipment that allows us to take the

180

00:11:14,790 --> 00:11:12,240

vehicle from vertical

181

00:11:16,310 --> 00:11:14,800

um to horizontal this allows us to kind

182

00:11:18,069 --> 00:11:16,320

of drive what we call a mobile cleaning

183

00:11:20,710 --> 00:11:18,079

room right up to the pad as you see that

184

00:11:22,389 --> 00:11:20,720

there in the graphic and uh this allows

185

00:11:23,190 --> 00:11:22,399

us to um

186

00:11:25,269 --> 00:11:23,200

uh

187

00:11:26,470 --> 00:11:25,279

remove the pop top fairing um we can't

188

00:11:28,710 --> 00:11:26,480

see it there in the picture but there's

189

00:11:31,110 --> 00:11:28,720

actually a pop top on top of the fairing

190

00:11:33,269 --> 00:11:31,120

that comes off and we're able to load

191

00:11:35,509 --> 00:11:33,279

time sensitive research experiments and

192

00:11:39,030 --> 00:11:35,519

other perishable items that nasa needs

193

00:11:41,190 --> 00:11:39,040

to provide 24 hours prior to launch

194

00:11:43,350 --> 00:11:41,200

i'd also like to note a key flexibility

195

00:11:45,030 --> 00:11:43,360

feature added to the crs-2

196

00:11:47,430 --> 00:11:45,040

which is the ability for nasa to

197

00:11:49,110 --> 00:11:47,440

significantly alter the final cargo load

198

00:11:51,670 --> 00:11:49,120

by up to 20 percent

199

00:11:54,550 --> 00:11:51,680

as late as the 24 hour hours before

200

00:11:55,910 --> 00:11:54,560

liftoff and uh you can't see it here too

201  
00:11:58,230 --> 00:11:55,920  
but there's a bladder that inflates

202  
00:12:00,230 --> 00:11:58,240  
between the um between that little

203  
00:12:02,230 --> 00:12:00,240  
opening there and the fairing and that

204  
00:12:03,670 --> 00:12:02,240  
inflates to uh close the gap between the

205  
00:12:05,750 --> 00:12:03,680  
clean room and wall so that everything

206  
00:12:07,430 --> 00:12:05,760  
that goes in and out is protected

207  
00:12:10,069 --> 00:12:07,440  
it's very interesting and i understand

208  
00:12:11,829 --> 00:12:10,079  
this is not the only difference for this

209  
00:12:14,710 --> 00:12:11,839  
flight this is the first flight of the

210  
00:12:16,629 --> 00:12:14,720  
antares 230 plus rocket so what are some

211  
00:12:21,430 --> 00:12:16,639  
of the differences between 230 which

212  
00:12:24,629 --> 00:12:22,310  
oh

213  
00:12:27,269 --> 00:12:24,639

sure so the ng-12 is the first flight of

214

00:12:29,910 --> 00:12:27,279

the antares 230 plus configuration and

215

00:12:32,150 --> 00:12:29,920

the difference from antares 230 are the

216

00:12:33,990 --> 00:12:32,160

upgrades to the stage one core

217

00:12:36,389 --> 00:12:34,000

um it's also lighter composite

218

00:12:37,750 --> 00:12:36,399

structures and an optimized second stage

219

00:12:39,430 --> 00:12:37,760

mortar

220

00:12:41,190 --> 00:12:39,440

the upgraded stage one core allows

221

00:12:42,629 --> 00:12:41,200

antares engines to perform at full

222

00:12:45,430 --> 00:12:42,639

thrust throughout most of their first

223

00:12:47,590 --> 00:12:45,440

stage profile

224

00:12:50,389 --> 00:12:47,600

uh with these upgrades where we're able

225

00:12:52,389 --> 00:12:50,399

to offer nasa more cargo capability for

226

00:12:54,470 --> 00:12:52,399

their crs-2 missions by increasing the

227

00:12:56,310 --> 00:12:54,480

performance of antares we're also

228

00:12:58,710 --> 00:12:56,320

providing more flexibility for the final

229

00:13:00,710 --> 00:12:58,720

cargo load as well and and this figure

230

00:13:02,310 --> 00:13:00,720

you can everyone can see is the

231

00:13:04,069 --> 00:13:02,320

differences and you can see um in

232

00:13:05,990 --> 00:13:04,079

comparison how much we've kind of taken

233

00:13:08,310 --> 00:13:06,000

off and there's definitely lots of math

234

00:13:10,629 --> 00:13:08,320

savings for us for 230 plus

235

00:13:12,550 --> 00:13:10,639

great more efficient and able to deliver

236

00:13:14,550 --> 00:13:12,560

more cargo so that's what everyone wants

237

00:13:17,350 --> 00:13:14,560

oh yes yes and that well we'll be doing

238

00:13:19,509 --> 00:13:17,360

that for 2 30 plus going forward

239

00:13:21,910 --> 00:13:19,519

thank you so much christina we are now

240

00:13:24,629 --> 00:13:21,920

just over 17 minutes from launch of

241

00:13:28,389 --> 00:13:24,639

cygnus we'll be looking for that at 8 59

242

00:13:32,150 --> 00:13:28,399

a.m central and 47 seconds 9 59 a.m

243

00:13:35,590 --> 00:13:33,750

but the teams have been progressing

244

00:13:37,829 --> 00:13:35,600

smoothly throughout the morning through

245

00:13:39,350 --> 00:13:37,839

some pre-launch milestones that began

246

00:13:41,030 --> 00:13:39,360

about four hours ago with pole for

247

00:13:42,790 --> 00:13:41,040

readiness for the launch vehicle to be

248

00:13:44,629 --> 00:13:42,800

powered on

249

00:13:47,110 --> 00:13:44,639

and then an hour and 20 minutes before

250

00:13:51,110 --> 00:13:47,120

launch fueling began of the first stage

251  
00:13:55,910 --> 00:13:51,120  
that's liquid oxygen and r21 kerosene

252  
00:13:58,710 --> 00:13:57,110  
there have been various checks

253  
00:14:01,030 --> 00:13:58,720  
throughout the morning

254  
00:14:03,269 --> 00:14:01,040  
between houston and dulles virginia to

255  
00:14:05,110 --> 00:14:03,279  
ensure everything is on schedule and at

256  
00:14:07,030 --> 00:14:05,120  
the 12-minute mark before launch we will

257  
00:14:12,470 --> 00:14:07,040  
have a poll to proceed with the final

258  
00:14:15,829 --> 00:14:14,310  
everything continues to proceed smoothly

259  
00:14:21,030 --> 00:14:15,839  
and at five minutes before launch the

260  
00:14:27,829 --> 00:14:23,430  
go ahead lead

261  
00:14:30,069 --> 00:14:27,839  
f1 end level is 13 of 13.

262  
00:14:35,590 --> 00:14:30,079  
roger that lead core one lc countdown

263  
00:14:39,750 --> 00:14:37,110

about three minutes and 30 seconds

264

00:14:41,189 --> 00:14:39,760

before launch auto sequence handoff for

265

00:14:42,949 --> 00:14:41,199

terminal terminal countdown will be

266

00:14:45,590 --> 00:14:42,959

initiated and that marks the time the

267

00:14:51,189 --> 00:14:45,600

computers take over for the final steps

268

00:14:57,990 --> 00:14:54,310

uh launching bfi step 385 will be not

269

00:14:59,829 --> 00:14:58,000

required for today's operation

270

00:15:01,430 --> 00:14:59,839

we'll be coming up with our poll to

271

00:15:12,310 --> 00:15:01,440

proceed with final countdown just about

272

00:15:12,320 --> 00:15:23,670

and uh core one lc countdown one

273

00:15:27,829 --> 00:15:26,069

elsa's core one on

274

00:15:29,350 --> 00:15:27,839

all cygnus vehicles are named after

275

00:15:31,670 --> 00:15:29,360

people who have made significant

276

00:15:34,150 --> 00:15:31,680

contributions to space flight but have

277

00:15:35,990 --> 00:15:34,160

passed away and this vehicle is named

278

00:15:39,990 --> 00:15:36,000

after the late apollo and sky lab

279

00:15:42,870 --> 00:15:40,000

astronaut who died on may 26 2018 at the

280

00:15:44,470 --> 00:15:42,880

age of 86 that's alan bean

281

00:15:46,629 --> 00:15:44,480

it's very appropriate that cygnus is

282

00:15:49,269 --> 00:15:46,639

named after bean on this mission it

283

00:15:51,269 --> 00:15:49,279

launches 50 years to the month after

284

00:15:53,030 --> 00:15:51,279

alan bean pete conrad and dick gordon

285

00:15:55,590 --> 00:15:53,040

flew to the moon on the apollo 12

286

00:15:57,910 --> 00:15:55,600

mission in which bean became the fourth

287

00:15:59,590 --> 00:15:57,920

human to walk on the lunar surface

288

00:16:01,829 --> 00:15:59,600

he was the lunar module pilot aboard

289

00:16:03,189 --> 00:16:01,839

intrepid with mission commander conrad

290

00:16:06,829 --> 00:16:03,199

when they landed on the moon at the

291

00:16:09,350 --> 00:16:06,839

ocean of storms on november 19

292

00:16:12,069 --> 00:16:09,360

1969 four years later he commanded the

293

00:16:15,430 --> 00:16:12,079

second crude skylab mission skylab 3

294

00:16:17,509 --> 00:16:15,440

which launched on july july 28 1973.

295

00:16:20,230 --> 00:16:17,519

being owen garriott and jack luzma spent

296

00:16:22,230 --> 00:16:20,240

59 days in space aboard america's first

297

00:16:24,470 --> 00:16:22,240

space station

298

00:16:26,550 --> 00:16:24,480

that's alan bean and we will see the

299

00:17:06,150 --> 00:16:26,560

cygnus named after him flying very

300

00:17:06,160 --> 00:17:16,069

cmdlc countdown one

301

00:17:21,909 --> 00:17:19,750

and cmd lc countdown one

302

00:17:24,470 --> 00:17:21,919

cmd countdown one go ahead yeah cmd look

303

00:17:26,789 --> 00:17:24,480

for status on your internal power

304

00:17:28,950 --> 00:17:26,799

yes uh cygnus is on internal power and

305

00:17:51,270 --> 00:17:28,960

nominal roger the apple check 384

306

00:17:55,990 --> 00:17:53,990

and launch tmlc on countdown one at this

307

00:17:57,909 --> 00:17:56,000

time on a poll to proceed with final

308

00:18:03,190 --> 00:17:57,919

countdown gso

309

00:18:06,789 --> 00:18:03,200

gsogo rso rs go td tds go

310

00:18:11,350 --> 00:18:06,799

prop lead properly just go stage one

311

00:18:12,710 --> 00:18:11,360

stage one let's go mes1 mes1 is go gc

312

00:18:22,390 --> 00:18:12,720

gtego

313

00:18:27,029 --> 00:18:24,310

in honor of alan bean who shared the

314

00:18:28,789 --> 00:18:27,039

gift of exploration in both life and art

315

00:18:30,710 --> 00:18:28,799

and inspired future generations to

316

00:18:33,029 --> 00:18:30,720

travel back to the moon and beyond

317

00:18:34,630 --> 00:18:33,039

northrop grumman is go

318

00:19:20,230 --> 00:18:34,640

copy and we are going to proceed with

319

00:19:28,549 --> 00:19:24,230

and ops 2 lc countdown 1 step 387 go to

320

00:19:28,559 --> 00:19:34,150

engine evacuation started

321

00:19:38,070 --> 00:19:35,750

you just heard the poll to proceed with

322

00:19:40,390 --> 00:19:38,080

the final countdown and we're also

323

00:19:42,230 --> 00:19:40,400

watching some ducting happening off the

324

00:19:44,070 --> 00:19:42,240

rocket we can't really see the antares

325

00:19:45,830 --> 00:19:44,080

logo so well anymore so christina can

326

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

you tell us a little bit about what's

327

00:19:49,590 --> 00:19:47,600

happening there

328

00:19:51,510 --> 00:19:49,600

sure you can you can see the top half of

329

00:19:52,549 --> 00:19:51,520

the first stage of the vehicle is really

330

00:19:55,029 --> 00:19:52,559

cold

331

00:19:56,710 --> 00:19:55,039

with that cryogenic liquid oxygen the

332

00:19:58,390 --> 00:19:56,720

antares logo is almost completely

333

00:19:59,430 --> 00:19:58,400

completely obscured by ice as you can

334

00:20:01,590 --> 00:19:59,440

see there

335

00:20:03,270 --> 00:20:01,600

the evaporator process is happening so

336

00:20:06,710 --> 00:20:03,280

the liquid oxygen is blowing off of its

337

00:20:06,720 --> 00:20:28,230

that is super cool

338

00:20:28,240 --> 00:20:37,510

so

339

00:20:41,590 --> 00:20:39,430

just under 10 minutes until launch of

340

00:20:43,029 --> 00:20:41,600

antares things continuing to proceed

341

00:20:48,950 --> 00:20:43,039

smoothly throughout the countdown this

342

00:20:52,950 --> 00:20:51,350

once we get to the launch the first

343

00:20:55,430 --> 00:20:52,960

thing that will occur is the stage one

344

00:20:57,270 --> 00:20:55,440

ignition

345

00:20:59,350 --> 00:20:57,280

you'll see liftoff just a few uh short

346

00:21:00,710 --> 00:20:59,360

seconds afterward and those main two

347

00:21:02,870 --> 00:21:00,720

engines will burn for about three

348

00:21:04,789 --> 00:21:02,880

minutes and 18 seconds before cutting

349

00:21:08,230 --> 00:21:04,799

off and stage one will separate from the

350

00:21:11,669 --> 00:21:09,750

cygnus will coast for a bit until

351  
00:21:13,270 --> 00:21:11,679  
fairing separation when the external

352  
00:21:16,310 --> 00:21:13,280  
cover that protects the spacecraft

353  
00:21:17,909 --> 00:21:16,320  
during launch will separate the

354  
00:21:19,909 --> 00:21:17,919  
interstage adapter that connects the

355  
00:21:22,230 --> 00:21:19,919  
first and second stages will separate at

356  
00:21:24,789 --> 00:21:22,240  
3 minutes and 58 seconds into flight

357  
00:21:26,870 --> 00:21:24,799  
before stage 2 ignition a solid rocket

358  
00:21:30,149 --> 00:21:26,880  
fuel that will burn for 2 minutes and 43

359  
00:21:33,510 --> 00:21:32,070  
once the second stage burns out we'll be

360  
00:21:35,590 --> 00:21:33,520  
listening for the call of orbit

361  
00:21:38,710 --> 00:21:35,600  
insertion for the rocket at 6 minutes

362  
00:21:40,310 --> 00:21:38,720  
and 49 seconds after launch

363  
00:21:42,390 --> 00:21:40,320

the vehicle will coast for two minutes

364

00:21:44,390 --> 00:21:42,400

before cygnus separation 8 minutes and

365

00:21:46,390 --> 00:21:44,400

49 seconds after liftoff

366

00:21:49,750 --> 00:21:46,400

with solar array deploy occurring about

367

00:21:51,909 --> 00:21:49,760

2 hours and 53 minutes after launch

368

00:21:53,909 --> 00:21:51,919

the deployment of those two ultraflex

369

00:21:56,149 --> 00:21:53,919

solar arrays currently tucked away on

370

00:21:57,909 --> 00:21:56,159

cygnus takes about 30 minutes and then

371

00:21:59,590 --> 00:21:57,919

the vehicle will begin gathering power

372

00:22:04,630 --> 00:21:59,600

for the next couple of days during its

373

00:22:04,640 --> 00:22:12,710

we haven't showed the wall

374

00:22:12,720 --> 00:22:39,870

so um

375

00:23:33,990 --> 00:22:45,669

[Music]

376

00:23:37,350 --> 00:23:34,830

and

377

00:24:03,269 --> 00:23:37,360

uh It count down one stick

378

00:24:07,350 --> 00:24:04,950

activation verified

379

00:24:40,630 --> 00:24:07,360

copy all their properties with check 393

380

00:24:45,430 --> 00:24:43,510

lc site control app bay ecs transfer to

381

00:24:47,590 --> 00:24:45,440

gn2 confirmed

382

00:24:49,750 --> 00:24:47,600

five minutes and 45 seconds until the

383

00:24:51,909 --> 00:24:49,760

launch and the next uh the next

384

00:24:54,950 --> 00:24:51,919

milestone for antares will be for the

385

00:25:21,269 --> 00:24:54,960

vehicle to begin turning on to internal

386

00:25:26,710 --> 00:25:23,909

and launch team step 389 will be not

387

00:25:28,789 --> 00:25:26,720

required for today's operation

388

00:25:33,909 --> 00:25:28,799

and ops two you go to initiate engine

389

00:25:33,919 --> 00:25:37,990

engine prime is started

390

00:25:43,990 --> 00:25:40,310

ops one you go for step 398 transfer

391

00:25:54,549 --> 00:25:47,830

all internal power on selected

392

00:25:54,559 --> 00:26:00,870

all external power off

393

00:26:06,870 --> 00:26:03,669

and now c elec 1 confirms internal power

394

00:26:09,269 --> 00:26:06,880

is nominal ops 1 step 400 open fts envy

395

00:26:15,029 --> 00:26:09,279

loop and verify green indication

396

00:26:19,990 --> 00:26:18,310

lc elect 2 fclu and fps receiver

397

00:26:23,590 --> 00:26:20,000

indications are nominal

398

00:26:30,390 --> 00:26:23,600

op swan step 402 send all arm commands

399

00:26:35,029 --> 00:26:33,430

lc elect one confirms snas and odms all

400

00:26:37,430 --> 00:26:35,039

armed

401  
00:26:45,830 --> 00:26:37,440  
nasa td report range status

402  
00:26:59,269 --> 00:26:49,430  
lc mes1 step 405 rhyming verified

403  
00:27:02,950 --> 00:27:00,789  
three minutes and 30 seconds until

404  
00:27:04,470 --> 00:27:02,960  
launch

405  
00:27:07,750 --> 00:27:04,480  
everything continuing to proceed

406  
00:27:09,750 --> 00:27:07,760  
nominally for antares

407  
00:27:26,230 --> 00:27:09,760  
phase three dynamic limits will be

408  
00:27:26,240 --> 00:27:33,669  
fc command to fight mode

409  
00:27:33,679 --> 00:27:37,830  
auto sequence start

410  
00:27:43,110 --> 00:27:40,470  
odm bus voltages and currents domino

411  
00:27:45,430 --> 00:27:43,120  
copy all elect one tnt one step 411

412  
00:27:48,230 --> 00:27:45,440  
verify ready for nab mode

413  
00:27:51,590 --> 00:27:48,240

lc gmc one ready for nap

414

00:27:57,430 --> 00:27:51,600  
and opt 2 step 412 switch to nav

415

00:28:01,110 --> 00:27:59,430  
lc gnt 1

416

00:28:03,590 --> 00:28:01,120  
map telemetry verified

417

00:28:24,789 --> 00:28:03,600  
copy that gmc one check step 413

418

00:28:24,799 --> 00:28:32,950  
and we'll be at t minus two minutes

419

00:28:32,960 --> 00:28:46,789  
mark

420

00:28:50,389 --> 00:28:48,870  
one minute and 45 seconds until launch

421

00:28:53,909 --> 00:28:50,399  
everything proceeding smoothly for

422

00:28:57,750 --> 00:28:55,510  
still looking at an on-time launch at

423

00:29:00,630 --> 00:28:57,760  
the opening of a five-minute window

424

00:29:29,350 --> 00:29:00,640  
aiming for launch at 8 59 a.m central 9

425

00:29:29,360 --> 00:29:33,029  
t minus one minute

426  
00:29:33,039 --> 00:29:47,590  
mark

427  
00:30:00,710 --> 00:29:50,310  
range is green weather is good

428  
00:30:13,510 --> 00:30:02,950  
t-minus 30 seconds

429  
00:30:13,520 --> 00:30:21,990  
20 seconds until liftoff

430  
00:30:22,000 --> 00:30:28,070  
t minus ten

431  
00:30:29,990 --> 00:30:28,950  
five

432  
00:30:31,029 --> 00:30:30,000  
four

433  
00:30:31,990 --> 00:30:31,039  
three

434  
00:31:02,470 --> 00:30:32,000  
two

435  
00:31:02,480 --> 00:31:08,870  
or pressure nozzle

436  
00:31:08,880 --> 00:31:12,549  
power nominal

437  
00:31:12,559 --> 00:31:26,789  
tvc performance nominal

438  
00:31:26,799 --> 00:31:31,110

estimated alpha one degree

439

00:31:31,120 --> 00:31:36,630

bno3 is open

440

00:31:45,110 --> 00:31:40,310

engines remain at 100 and steady

441

00:31:45,120 --> 00:31:51,269

power is nominal

442

00:31:55,430 --> 00:31:53,190

estimated alpha one degree

443

00:32:00,230 --> 00:31:55,440

engines remain at one percent

444

00:32:00,240 --> 00:32:03,509

powers now

445

00:32:03,519 --> 00:32:09,830

load relief phasing out

446

00:32:09,840 --> 00:32:16,310

the ng3 is open

447

00:32:16,320 --> 00:32:22,870

roughly 100 seconds to mikko

448

00:32:30,549 --> 00:32:25,269

everything proceeding smoothly about 100

449

00:32:30,559 --> 00:32:34,630

just passing one hundred thousand feet

450

00:32:34,640 --> 00:32:41,190

100 feet per second squared

451  
00:32:41,200 --> 00:32:50,149  
high altitude pitch up at 5 degrees

452  
00:32:56,149 --> 00:32:52,310  
enabling velocity steering

453  
00:32:56,159 --> 00:33:02,630  
one minute to mikko

454  
00:33:02,640 --> 00:33:07,990  
engines remain at 100 percent

455  
00:33:17,830 --> 00:33:11,029  
attitude is nominal

456  
00:33:17,840 --> 00:33:22,310  
power nominal

457  
00:33:22,320 --> 00:33:28,950  
just passing two hundred thousand feet

458  
00:33:35,110 --> 00:33:30,630  
slow throttle down to eighty percent

459  
00:33:41,590 --> 00:33:37,029  
main engine cutoff coming up in about 15

460  
00:33:41,600 --> 00:33:46,230  
engines 55

461  
00:33:46,240 --> 00:33:53,269  
engines remain nominal

462  
00:33:53,279 --> 00:33:56,870  
main engine cutoff nominal

463  
00:34:03,990 --> 00:33:58,789

pss disabled

464

00:34:04,000 --> 00:34:08,149

acs enabled

465

00:34:08,159 --> 00:34:11,430

attitude

466

00:34:15,109 --> 00:34:13,109

you can see in this graphic sickness is

467

00:34:16,869 --> 00:34:15,119

separated from the stage one and in the

468

00:34:19,030 --> 00:34:16,879

next few seconds we'll be looking for

469

00:34:20,790 --> 00:34:19,040

the fairing separation that's the shroud

470

00:34:22,629 --> 00:34:20,800

that covers and protects cygnus during

471

00:34:25,270 --> 00:34:22,639

its launch

472

00:34:29,589 --> 00:34:25,280

stage one ignition time projected at t

473

00:34:29,599 --> 00:34:33,750

fairing separation

474

00:34:33,760 --> 00:34:40,710

enter stage separation

475

00:34:45,750 --> 00:34:43,829

stage two ignition

476  
00:34:47,750 --> 00:34:45,760  
stage two is that solid rocket fuel that

477  
00:34:48,869 --> 00:34:47,760  
will burn for about two minutes and 43

478  
00:34:52,069 --> 00:34:48,879  
seconds

479  
00:34:57,670 --> 00:34:53,589  
everything proceeding smoothly for

480  
00:34:57,680 --> 00:35:05,030  
avionics power is nominal

481  
00:35:05,040 --> 00:35:11,510  
reaching 135 kilometers

482  
00:35:11,520 --> 00:35:16,870  
attitude nominal

483  
00:35:16,880 --> 00:35:23,990  
stage two tvc is nominal

484  
00:35:24,000 --> 00:35:33,670  
power subsystems remain nominal

485  
00:35:33,680 --> 00:35:45,190  
altitude has just reached 150 kilometers

486  
00:35:59,589 --> 00:35:47,349  
stage 2 continuing to propel cygnus now

487  
00:36:14,790 --> 00:36:01,109  
system

488  
00:36:27,670 --> 00:36:16,790

we are nearing one minute to stage two

489

00:36:27,680 --> 00:36:32,150

dvc is nominal

490

00:36:43,109 --> 00:36:33,910

attitude nominal

491

00:36:43,119 --> 00:36:50,069

power subsystem nominal

492

00:36:54,950 --> 00:36:52,550

stage 2 burnout coming up in about 30

493

00:37:06,630 --> 00:36:54,960

seconds sigma's velocity currently over

494

00:37:06,640 --> 00:37:12,470

attitude remains nominal

495

00:37:24,230 --> 00:37:13,589

altitude

496

00:37:24,240 --> 00:37:30,069

stage two burnout

497

00:37:30,079 --> 00:37:41,030

fts disabled

498

00:37:46,230 --> 00:37:43,430

attitude nominal

499

00:37:47,870 --> 00:37:46,240

stage 2 burnout confirmed cygnus moving

500

00:37:56,470 --> 00:37:47,880

at over 16

501  
00:38:00,230 --> 00:37:57,750  
the next milestone will be cygnus

502  
00:38:08,150 --> 00:38:00,240  
separation at about 8 minutes and 49

503  
00:38:29,190 --> 00:38:09,910  
antares will coast for roughly another

504  
00:38:29,200 --> 00:38:36,550  
systems continue to perform nominal

505  
00:38:36,560 --> 00:38:44,310  
altitude 190 kilometers

506  
00:38:44,320 --> 00:38:53,109  
apogee and perigee within one sigma

507  
00:39:00,870 --> 00:38:55,270  
roughly 30 seconds to space craft

508  
00:39:00,880 --> 00:39:28,630  
power is nominal

509  
00:39:28,640 --> 00:39:37,190  
spacecraft separation

510  
00:39:41,910 --> 00:39:39,030  
teams celebrating the confirmation of

511  
00:39:46,310 --> 00:39:41,920  
the spacecraft separation cygnus is now

512  
00:39:51,349 --> 00:39:48,950  
uh lc uh that will end our callouts here

513  
00:39:54,150 --> 00:39:51,359

for the ng-12 mission for antares

514

00:39:55,670 --> 00:39:54,160

excellent job ace excellent job uh good

515

00:39:57,349 --> 00:39:55,680

good launch all the way around let's go

516

00:39:59,990 --> 00:39:57,359

ahead and continue with our post launch

517

00:40:03,510 --> 00:40:00,000

checklist on countdown one

518

00:40:11,430 --> 00:40:03,520

and uh prop one step 423 can you give me

519

00:40:14,950 --> 00:40:13,510

uh elsa just prop one post purging is

520

00:40:17,829 --> 00:40:14,960

complete

521

00:40:20,150 --> 00:40:17,839

okay copy that and uh site control step

522

00:40:22,390 --> 00:40:20,160

424 remove app again to flow and

523

00:40:25,109 --> 00:40:22,400

reconfigure ets for post launch

524

00:40:30,870 --> 00:40:25,119

copy that and work copy and work

525

00:40:34,470 --> 00:40:33,190

lc core one on countdown one yeah core

526

00:40:36,470 --> 00:40:34,480

one you can direct using away to power

527

00:40:39,510 --> 00:40:36,480

off their ms ground equipment

528

00:40:42,710 --> 00:40:39,520

and report when complete

529

00:40:44,550 --> 00:40:42,720

uh same with their fms as well

530

00:40:46,790 --> 00:40:44,560

copy that lc uh they have to wait till

531

00:40:49,349 --> 00:40:46,800

they get access to the island to do that

532

00:40:50,950 --> 00:40:49,359

oh okay uh but i will let them know

533

00:40:53,030 --> 00:40:50,960

they're allowed to proceed once they get

534

00:40:55,750 --> 00:40:53,040

access roger that

535

00:40:57,510 --> 00:40:55,760

and uh ops 1 step 427 you can deactivate

536

00:41:00,230 --> 00:40:57,520

arm enable and verify

537

00:41:01,990 --> 00:41:00,240

lcs 1 arm enable rotated arm enable

538

00:41:05,589 --> 00:41:02,000

indication no longer illuminated and i

539

00:41:07,270 --> 00:41:05,599

can give you 248 or sorry 428 ops one

540

00:41:09,990 --> 00:41:07,280

launch enable removed

541

00:41:16,309 --> 00:41:10,000

copy that and tso disable your local

542

00:41:20,069 --> 00:41:17,990

launch enable button

543

00:41:24,069 --> 00:41:20,079

off

544

00:41:26,150 --> 00:41:24,079

copy that gsa we'll check 429.

545

00:41:27,670 --> 00:41:26,160

lc this side control step 424 is

546

00:41:32,630 --> 00:41:27,680

complete

547

00:41:38,309 --> 00:41:34,470

and off two if you can record your

548

00:41:44,309 --> 00:41:40,550

ground mach uh external power on in

549

00:41:47,430 --> 00:41:44,319

green and uh power supply voltage is 27

550

00:41:50,870 --> 00:41:47,440

decimal 96 power supply current zero

551  
00:41:56,390 --> 00:41:53,270  
copy all their ops too and you can you

552  
00:41:59,030 --> 00:41:56,400  
remove ground mock power

553  
00:42:00,950 --> 00:41:59,040  
ground mark external power off

554  
00:42:03,750 --> 00:42:00,960  
roger that ops two

555  
00:42:05,829 --> 00:42:03,760  
uh tlm 432 report when telemetry lock

556  
00:42:07,829 --> 00:42:05,839  
has been lost at the dcom for the

557  
00:42:10,550 --> 00:42:07,839  
avionics motor with that successful

558  
00:42:12,390 --> 00:42:10,560  
confirmation of orbital insertion

559  
00:42:14,069 --> 00:42:12,400  
cygnus is now on its way to the

560  
00:42:17,190 --> 00:42:14,079  
international space station where it

561  
00:42:18,470 --> 00:42:17,200  
will arrive in two days on november 4th

562  
00:42:20,470 --> 00:42:18,480  
right now we're here with christina

563  
00:42:23,030 --> 00:42:20,480

helona the program manager for antares

564

00:42:24,870 --> 00:42:23,040

systems engineering integration and test

565

00:42:26,950 --> 00:42:24,880

so christina what's going on now on the

566

00:42:30,550 --> 00:42:26,960

ground and what will the teams

567

00:42:32,550 --> 00:42:30,560

be doing until cygnus arrives on monday

568

00:42:34,950 --> 00:42:32,560

so the cygnus ground team will be

569

00:42:36,790 --> 00:42:34,960

monitoring the spacecraft as well as

570

00:42:38,710 --> 00:42:36,800

performing a series of orbit maneuver

571

00:42:42,069 --> 00:42:38,720

burns to arrive at the international

572

00:42:43,750 --> 00:42:42,079

space station at a certain given time

573

00:42:44,550 --> 00:42:43,760

the nasa ground team will be preparing

574

00:42:49,270 --> 00:42:44,560

the

575

00:42:50,190 --> 00:42:49,280

arrival and installation power supply

576  
00:42:52,309 --> 00:42:50,200  
voltage

577  
00:42:54,950 --> 00:42:52,319  
27.99 and we're looking forward to that

578  
00:42:55,670 --> 00:42:54,960  
arrival early early monday morning

579  
00:42:57,990 --> 00:42:55,680  
but

580  
00:43:00,309 --> 00:42:58,000  
looking forward to cygnus departure it

581  
00:43:02,790 --> 00:43:00,319  
will leave the space station in january

582  
00:43:04,710 --> 00:43:02,800  
2020 but it's scheduled to complete an

583  
00:43:07,510 --> 00:43:04,720  
extended mission so what will it be

584  
00:43:09,510 --> 00:43:07,520  
doing during that time

585  
00:43:11,270 --> 00:43:09,520  
post departure from the space station

586  
00:43:13,270 --> 00:43:11,280  
the cygnus vehicle

587  
00:43:16,069 --> 00:43:13,280  
performs a series of various

588  
00:43:17,190 --> 00:43:16,079

uh secondary operations along we're

589

00:43:19,030 --> 00:43:17,200

going to be launching some small

590

00:43:21,270 --> 00:43:19,040

satellites or cubesats as well as

591

00:43:23,349 --> 00:43:21,280

performing maneuvers to test vehicle

592

00:43:25,349 --> 00:43:23,359

functions eventually the vehicle will

593

00:43:27,109 --> 00:43:25,359

perform a destructive entry over the

594

00:43:29,510 --> 00:43:27,119

sovereign pacific ocean

595

00:43:31,750 --> 00:43:29,520

and also be carrying out all of the

596

00:43:33,910 --> 00:43:31,760

trash from the space station as well

597

00:43:36,710 --> 00:43:33,920

and burning up on that re-entry it's a

598

00:43:40,470 --> 00:43:36,720

very advanced way to dispose of trash

599

00:43:43,510 --> 00:43:41,829

well thank you so much for joining us

600

00:43:44,950 --> 00:43:43,520

this morning christina in just a few

601  
00:43:47,589 --> 00:43:44,960  
moments we'll be speaking with kenny

602  
00:43:50,950 --> 00:43:47,599  
todd the iss manager for operations and

603  
00:43:54,550 --> 00:43:53,109  
for the failsafe

604  
00:43:56,309 --> 00:43:54,560  
this is a view of the north of grumman

605  
00:43:58,309 --> 00:43:56,319  
mission control center in dulles where

606  
00:43:59,829 --> 00:43:58,319  
mission director paul brauer is

607  
00:44:02,069 --> 00:43:59,839  
overseeing all of the teams who are

608  
00:44:03,430 --> 00:44:02,079  
monitoring the systems aboard cygnus and

609  
00:44:05,670 --> 00:44:03,440  
they'll be keeping a close eye on the

610  
00:44:07,349 --> 00:44:05,680  
vehicle over the next couple of days

611  
00:44:15,109 --> 00:44:07,359  
while it makes its journey to the space

612  
00:44:20,829 --> 00:44:19,270  
for step 442 i have all four values

613  
00:44:24,470 --> 00:44:20,839

nominal in

614

00:44:27,270 --> 00:44:24,480

green 443 the pad j box pressure is

615

00:44:32,069 --> 00:44:27,280

often red tower j box pressure is on and

616

00:44:41,829 --> 00:44:34,470

and i'm selecting off for the ground

617

00:44:50,550 --> 00:44:44,309

okay copy all their ops one thanks for

618

00:44:56,950 --> 00:44:53,510

and ops 1 ops 2 you can proceed with the

619

00:44:58,790 --> 00:44:56,960

vic client safing and power down

620

00:45:01,829 --> 00:44:58,800

and ops 2 if i can get you to extract

621

00:45:03,430 --> 00:45:01,839

the ups logs for the lav a recap of

622

00:45:06,710 --> 00:45:03,440

everything that happened this morning we

623

00:45:09,750 --> 00:45:06,720

saw an on-time launch of cygnus at 8 59

624

00:45:14,710 --> 00:45:09,760

a.m central time 9 59 a.m eastern

625

00:45:18,870 --> 00:45:17,109

cygnus lifted off from nasa's wallops

626

00:45:21,349 --> 00:45:18,880

flight facility in wallace island

627

00:45:28,309 --> 00:45:21,359

virginia and the mid-atlantic regional

628

00:45:32,790 --> 00:45:30,630

cygnus is carrying with it over four

629

00:45:35,030 --> 00:45:32,800

tons of cargo to the international space

630

00:45:37,109 --> 00:45:35,040

station including the last hardware

631

00:45:39,510 --> 00:45:37,119

needed for the upcoming alpha magnetic

632

00:45:45,990 --> 00:45:39,520

spectrometer spacewalks

633

00:45:50,550 --> 00:45:47,670

cygnus will arrive at the space station

634

00:45:53,270 --> 00:45:50,560

in two days that'll be monday november

635

00:45:55,750 --> 00:45:53,280

4th and we'll be live at 1 45 a.m

636

00:45:58,069 --> 00:45:55,760

central time for the capture of the

637

00:45:58,950 --> 00:45:58,079

vehicle by nasa astronauts christina

638

00:46:00,309 --> 00:45:58,960

cook

639

00:46:02,309 --> 00:46:00,319  
and jessica mear aboard the

640

00:46:04,950 --> 00:46:02,319  
international space station

641

00:46:07,349 --> 00:46:04,960  
449 450

642

00:46:09,990 --> 00:46:07,359  
determination of pulse purging verifying

643

00:46:12,829 --> 00:46:10,000  
all sequencer activities are complete

644

00:46:15,430 --> 00:46:12,839  
and transitioning occs to manual

645

00:46:16,710 --> 00:46:15,440  
mode and verifying on both servers well

646

00:46:18,950 --> 00:46:16,720  
can you what can you give me on those

647

00:46:37,349 --> 00:46:18,960  
steps

648

00:46:37,359 --> 00:47:02,950  
and gso i'll wait for your call

649

00:47:07,270 --> 00:47:05,430  
it was a smooth timeline and a scent for

650

00:47:10,470 --> 00:47:07,280  
cygnus this morning

651  
00:47:12,069 --> 00:47:10,480  
after an 8 minute and 49 second

652  
00:47:13,750 --> 00:47:12,079  
ride into orbit

653  
00:47:15,349 --> 00:47:13,760  
cygnus is now

654  
00:47:17,430 --> 00:47:15,359  
on its way to the international space

655  
00:47:20,150 --> 00:47:17,440  
station next milestone will be the

656  
00:47:22,309 --> 00:47:20,160  
unfolding of the ultraflex solar arrays

657  
00:47:24,230 --> 00:47:22,319  
which will help power the craft as it

658  
00:48:10,870 --> 00:47:24,240  
makes its journey to the orbiting

659  
00:48:16,230 --> 00:48:14,390  
llc this is prop lead on countdown one

660  
00:48:18,390 --> 00:48:16,240  
yeah go ahead properly

661  
00:48:20,790 --> 00:48:18,400  
yeah pulse purging with fgsc has been

662  
00:48:21,750 --> 00:48:20,800  
terminated all sequencer activities are

663  
00:48:24,710 --> 00:48:21,760

complete

664

00:48:26,870 --> 00:48:24,720

we are in auto sorry we are manual mode

665

00:48:29,589 --> 00:48:26,880

and all auto sequence controls are

666

00:48:37,750 --> 00:48:31,990

all right i copy that prop lead thanks

667

00:48:43,030 --> 00:48:41,829

and tsolc on countdown one

668

00:48:45,270 --> 00:48:43,040

gso

669

00:48:49,430 --> 00:48:45,280

yeah let me know when launch site is

670

00:48:55,589 --> 00:48:51,829

copy uh currently fire department is

671

00:49:00,710 --> 00:48:55,599

there and red team is in route

672

00:49:05,750 --> 00:49:03,829

and is i assume then red team will be

673

00:49:08,309 --> 00:49:05,760

waiting for permission from the fire

674

00:49:10,150 --> 00:49:08,319

department to reenter uh fire department

675

00:49:11,829 --> 00:49:10,160

has already checked no gross hazards red

676  
00:49:12,870 --> 00:49:11,839  
team has permission to enter to bed all

677  
00:49:14,829 --> 00:49:12,880  
right very good i'm going to go ahead

678  
00:49:18,710 --> 00:49:14,839  
and close 447

679  
00:49:20,870 --> 00:49:18,720  
then okay launch team lc on uh countdown

680  
00:49:23,030 --> 00:49:20,880  
one

681  
00:49:24,630 --> 00:49:23,040  
uh we completed our post launch uh

682  
00:49:27,430 --> 00:49:24,640  
checklist and at this time i'm gonna go

683  
00:49:28,710 --> 00:49:27,440  
ahead and release all stations great job

684  
00:49:31,190 --> 00:49:28,720  
antares

685  
00:49:32,549 --> 00:49:31,200  
and congratulations cygnus

686  
00:49:34,630 --> 00:49:32,559  
and uh

687  
00:49:36,069 --> 00:49:34,640  
wallops range great job today and mars

688  
00:49:37,750 --> 00:49:36,079

thanks so much for the support couldn't

689

00:49:39,030 --> 00:49:37,760

have done it without you

690

00:49:40,390 --> 00:49:39,040

lc out

691

00:49:42,470 --> 00:49:40,400

stations released

692

00:49:43,829 --> 00:49:42,480

chelsea lc.p.m

693

00:52:20,630 --> 00:49:43,839

are you going to need any support from

694

00:52:24,710 --> 00:52:22,630

we are joined now by international space

695

00:52:27,270 --> 00:52:24,720

station manager for operations and

696

00:52:29,109 --> 00:52:27,280

integration kenny todd it looked like a

697

00:52:31,190 --> 00:52:29,119

nominal launch today and cygnus is on

698

00:52:32,630 --> 00:52:31,200

its way to the space station so how's

699

00:52:35,270 --> 00:52:32,640

the program feeling

700

00:52:37,349 --> 00:52:35,280

well right now it's been a very busy 24

701  
00:52:38,230 --> 00:52:37,359  
hours yesterday we

702  
00:52:40,470 --> 00:52:38,240  
we

703  
00:52:42,950 --> 00:52:40,480  
released the the htv the japanese built

704  
00:52:45,030 --> 00:52:42,960  
htv after it stayed with us for 30 days

705  
00:52:47,510 --> 00:52:45,040  
and then we get up this morning and to a

706  
00:52:49,349 --> 00:52:47,520  
picture-perfect uh launch of

707  
00:52:51,670 --> 00:52:49,359  
the antares rocket with the cygnus so

708  
00:52:53,430 --> 00:52:51,680  
we're we're excited

709  
00:52:55,829 --> 00:52:53,440  
the pace just picks up from here but

710  
00:52:57,990 --> 00:52:55,839  
we're excited and ready to go

711  
00:52:59,910 --> 00:52:58,000  
and this launch is also carrying the

712  
00:53:01,670 --> 00:52:59,920  
remainder of the tools that will be used

713  
00:53:04,470 --> 00:53:01,680

during the alpha magnetic spectrometer

714

00:53:05,829 --> 00:53:04,480

spacewalks for later this month so

715

00:53:07,510 --> 00:53:05,839

can you talk maybe about what are some

716

00:53:09,589 --> 00:53:07,520

of the things that are that are going on

717

00:53:11,270 --> 00:53:09,599

board or maybe those spacewalks

718

00:53:13,109 --> 00:53:11,280

of course sure

719

00:53:16,390 --> 00:53:13,119

we've been working for the last several

720

00:53:17,910 --> 00:53:16,400

years to put together a plan to go out

721

00:53:19,349 --> 00:53:17,920

and repair the alpha magnetic

722

00:53:21,430 --> 00:53:19,359

spectrometer

723

00:53:23,750 --> 00:53:21,440

and that's led us to

724

00:53:25,670 --> 00:53:23,760

quite frankly some some ways of of

725

00:53:27,430 --> 00:53:25,680

thinking about approaching these evas

726

00:53:28,950 --> 00:53:27,440

that we hadn't ever considered before

727

00:53:31,589 --> 00:53:28,960

when it comes to our tools and the way

728

00:53:34,150 --> 00:53:31,599

we we access the work site and so it's

729

00:53:35,430 --> 00:53:34,160

going to be a challenging uh set of

730

00:53:37,589 --> 00:53:35,440

space walks right now we're thinking

731

00:53:39,750 --> 00:53:37,599

it's like four spacewalks possibly five

732

00:53:41,430 --> 00:53:39,760

but but we're leaning forward have a

733

00:53:42,630 --> 00:53:41,440

plan for four

734

00:53:44,549 --> 00:53:42,640

uh the

735

00:53:46,470 --> 00:53:44,559

the actual uh tools that we're going to

736

00:53:47,750 --> 00:53:46,480

use are going to be very unique in

737

00:53:49,349 --> 00:53:47,760

nature just because of some of the

738

00:53:51,270 --> 00:53:49,359

things we have to do with uh to get

739

00:53:52,710 --> 00:53:51,280

access into the areas that

740

00:53:54,950 --> 00:53:52,720

that we need to

741

00:53:57,750 --> 00:53:54,960

to put this new pump package that that's

742

00:54:00,069 --> 00:53:57,760

been built by the the ams consortium so

743

00:54:03,109 --> 00:54:00,079

uh we're excited to to get on board with

744

00:54:05,270 --> 00:54:03,119

these new tools uh we think that uh

745

00:54:07,430 --> 00:54:05,280

you know we have a a really really high

746

00:54:08,790 --> 00:54:07,440

probability of success uh based on all

747

00:54:09,589 --> 00:54:08,800

the work that's been done here on the

748

00:54:10,710 --> 00:54:09,599

ground

749

00:54:11,910 --> 00:54:10,720

and

750

00:54:13,589 --> 00:54:11,920

with the with the team that's put

751

00:54:15,910 --> 00:54:13,599

together these tools so again a lot of

752

00:54:18,150 --> 00:54:15,920

work that's went into it and we we feel

753

00:54:34,230 --> 00:54:18,160

pretty good about about this what i'll

754

00:54:38,150 --> 00:54:36,150

so you mentioned four space walks coming

755

00:54:40,230 --> 00:54:38,160

up in this next month month and a half

756

00:54:41,670 --> 00:54:40,240

maybe uh what is the pace look like for

757

00:54:44,630 --> 00:54:41,680

those

758

00:54:46,470 --> 00:54:44,640

well we uh you know we we we've got a

759

00:54:47,670 --> 00:54:46,480

blend of a lot of science coming on

760

00:54:49,270 --> 00:54:47,680

board right now

761

00:54:51,270 --> 00:54:49,280

you know the cygnus itself has a little

762

00:54:53,670 --> 00:54:51,280

over 8 000 pounds of cargo

763

00:54:55,430 --> 00:54:53,680

uh and over half of that about 45 4600

764

00:54:58,069 --> 00:54:55,440

pounds is dedicated to science on the

765

00:55:00,069 --> 00:54:58,079

international space station and so um

766

00:55:01,589 --> 00:55:00,079

while we're we're focused here in the

767

00:55:03,750 --> 00:55:01,599

near term on trying to get things ready

768

00:55:05,510 --> 00:55:03,760

to go do these ams evas we've also got a

769

00:55:07,750 --> 00:55:05,520

lot of science that's coming on board a

770

00:55:09,910 --> 00:55:07,760

lot of this is is time critical time

771

00:55:11,109 --> 00:55:09,920

phased science and so we're going to be

772

00:55:12,870 --> 00:55:11,119

putting together

773

00:55:14,710 --> 00:55:12,880

an integrated plan that allows us to

774

00:55:15,670 --> 00:55:14,720

conduct these ebas but at the same time

775

00:55:17,510 --> 00:55:15,680

do some

776

00:55:19,589 --> 00:55:17,520

some some high value high target

777

00:55:21,510 --> 00:55:19,599

research uh probably we have some rodent

778

00:55:22,950 --> 00:55:21,520

research that someone on it coming on

779

00:55:24,630 --> 00:55:22,960

board we also have some biology

780

00:55:25,990 --> 00:55:24,640

experiments that are coming on board

781

00:55:28,069 --> 00:55:26,000

again all that

782

00:55:30,950 --> 00:55:28,079

that uh have specific start and stop

783

00:55:33,270 --> 00:55:30,960

times uh in order to achieve the

784

00:55:35,190 --> 00:55:33,280

achieve the science objective so

785

00:55:36,710 --> 00:55:35,200

we'll uh over the next uh four to five

786

00:55:39,270 --> 00:55:36,720

weeks try to knock out

787

00:55:41,510 --> 00:55:39,280

as many of these ams ebas as we can get

788

00:55:43,190 --> 00:55:41,520

again not uh not wanting to compromise

789

00:55:45,109 --> 00:55:43,200

uh the other science objectives that

790

00:55:46,470 --> 00:55:45,119

we've we've we've got on board with the

791

00:55:49,030 --> 00:55:46,480

cygnus but

792

00:55:52,230 --> 00:55:49,040

uh once we once we get through uh these

793

00:55:55,030 --> 00:55:52,240

ams evas we'll be uh right on the on the

794

00:55:56,630 --> 00:55:55,040

doorstep of spacex the next spacex

795

00:55:59,430 --> 00:55:56,640

flight that that'll be coming our way

796

00:56:01,510 --> 00:55:59,440

and so in early december so anyway we're

797

00:56:03,349 --> 00:56:01,520

uh we're gonna be going at a pretty good

798

00:56:04,789 --> 00:56:03,359

clip here over the next few weeks uh

799

00:56:06,789 --> 00:56:04,799

we'll spend a lot of time in suits and

800

00:56:08,150 --> 00:56:06,799

checking out suits but in parallel with

801  
00:56:10,230 --> 00:56:08,160  
that we're going to be trying to do a

802  
00:56:13,190 --> 00:56:10,240  
whole lot of as i said high value high

803  
00:56:15,270 --> 00:56:13,200  
target research some of it aimed quite

804  
00:56:16,630 --> 00:56:15,280  
frankly at helping us check out some of

805  
00:56:17,750 --> 00:56:16,640  
the technologies and things that we're

806  
00:56:19,750 --> 00:56:17,760  
going to need when we go to moon and

807  
00:56:20,549 --> 00:56:19,760  
mars so it's a it's a pretty exciting

808  
00:56:24,390 --> 00:56:20,559  
time

809  
00:56:25,990 --> 00:56:24,400  
international space station well thank

810  
00:56:27,750 --> 00:56:26,000  
you so much for joining us this morning

811  
00:57:19,270 --> 00:56:27,760  
kenny we really appreciate it it's my

812  
00:57:23,190 --> 00:57:21,030  
the next milestone for cygnus will be

813  
00:57:25,670 --> 00:57:23,200

solar array deploy and you can monitor

814

00:57:27,510 --> 00:57:25,680

our blog and social media sites for more

815

00:57:29,270 --> 00:57:27,520

information once that has occurred this

816

00:57:30,630 --> 00:57:29,280

morning

817

00:57:31,910 --> 00:57:30,640

after that milestone cygnus will

818

00:57:33,510 --> 00:57:31,920

continue its journey to the space

819

00:57:35,910 --> 00:57:33,520

station and will arrive on monday

820

00:57:37,670 --> 00:57:35,920

november 4th 2019.

821

00:57:39,349 --> 00:57:37,680

it will be birthed to the earth-facing

822

00:57:41,430 --> 00:57:39,359

side of the unity module when jessica

823

00:57:43,750 --> 00:57:41,440

muir and christina cook capture the

824

00:57:46,950 --> 00:57:43,760

vehicle with the canadarm2 crew will

825

00:57:49,670 --> 00:57:46,960

access the cargo on the same day

826

00:57:52,630 --> 00:57:49,680

our capture coverage will be live on air

827

00:57:55,190 --> 00:57:52,640

at 1 45 a.m central time 2 45 a.m

828

00:57:57,109 --> 00:57:55,200

eastern time that morning november 4th

829

00:57:59,510 --> 00:57:57,119

and birthing coverage of cygnus to the

830

00:58:02,789 --> 00:57:59,520

station's unity module we'll go live at

831

00:58:05,510 --> 00:58:02,799

5 30 a.m central 6 30 a.m eastern we

832

00:58:07,829 --> 00:58:05,520

hope you'll join us for that

833

00:58:10,390 --> 00:58:07,839

also on monday we'll broadcast live from

834

00:58:13,109 --> 00:58:10,400

launch complex 32 at white sands missile

835

00:58:15,630 --> 00:58:13,119

range in new mexico as boeing prepares

836

00:58:19,589 --> 00:58:15,640

to put the launch abort system of its

837

00:58:21,190 --> 00:58:19,599

cst-100 starliner to the test

838

00:58:23,829 --> 00:58:21,200

coverage is scheduled to begin just

839

00:58:25,990 --> 00:58:23,839

before the 8 am central which is 7

840

00:58:27,990 --> 00:58:26,000

o'clock mountain time it's a 90-second

841

00:58:30,470 --> 00:58:28,000

test designed to demonstrate starliner's

842

00:58:33,270 --> 00:58:30,480

ability to quickly escape the launch pad

843

00:58:35,190 --> 00:58:33,280

in the event of a launch day emergency

844

00:58:37,109 --> 00:58:35,200

it'll be boeing's first flight test as

845

00:58:39,349 --> 00:58:37,119

part of nasa's commercial crew program

846

00:58:41,270 --> 00:58:39,359

and help evaluate the performance of the

847

00:58:43,510 --> 00:58:41,280

abort system prior to missions to the

848

00:58:44,870 --> 00:58:43,520

international space station with a crew

849

00:58:46,870 --> 00:58:44,880

on board

850

00:58:48,710 --> 00:58:46,880

nasa and the commercial partners boeing

851  
00:58:50,470 --> 00:58:48,720  
and spacex are working toward returning

852  
00:58:52,150 --> 00:58:50,480  
the capability to launch american

853  
00:58:54,390 --> 00:58:52,160  
astronauts to the international space

854  
00:58:56,789 --> 00:58:54,400  
station and low earth orbit on

855  
00:59:00,870 --> 00:58:56,799  
american-built spacecraft from american

856  
00:59:06,710 --> 00:59:03,190  
but for now a successful saturday launch

857  
00:59:09,510 --> 00:59:06,720  
of cygnus on time at 8 59 a.m central 9

858  
00:59:10,950 --> 00:59:09,520  
59 a.m eastern now on its way to the

859  
00:59:13,030 --> 00:59:10,960  
space station

860  
00:59:14,470 --> 00:59:13,040  
we'll be live on air again at 1 45 a.m

861  
00:59:15,430 --> 00:59:14,480  
central monday for rendezvous and

862  
00:59:18,230 --> 00:59:15,440  
capture

863  
00:59:20,069 --> 00:59:18,240

and at 5 30 a.m central for birthing of

864

00:59:22,390 --> 00:59:20,079

cygnus to the international space

865

00:59:24,950 --> 00:59:22,400

station we hope you'll join us for the

866

00:59:26,470 --> 00:59:24,960

arrival and until then that wraps up our