

CAM 07



316 12:19:58.646

1
00:00:03,840 --> 00:00:07,510
10 seconds

2
00:00:07,520 --> 00:00:12,789
and mark

3
00:00:14,709 --> 00:00:13,749
5

4
00:00:15,749 --> 00:00:14,719
4

5
00:00:16,550 --> 00:00:15,759
3

6
00:00:20,550 --> 00:00:16,560
2

7
00:00:20,560 --> 00:00:29,780
and we have ignition

8
00:00:29,790 --> 00:00:36,310
[Music]

9
00:00:40,630 --> 00:00:38,950
liftoff confirmed antares and the ss

10
00:01:06,469 --> 00:00:40,640
gene cernan now bound for the

11
00:01:11,190 --> 00:01:09,270
the cygnus cargo spacecraft now enroute

12
00:01:13,109 --> 00:01:11,200
to the space station following this

13
00:01:16,230 --> 00:01:13,119

morning's successful launch from nasa's

14

00:01:18,070 --> 00:01:16,240

wallops flight facility in virginia at 7

15

00:01:19,990 --> 00:01:18,080

19 a.m

16

00:01:21,910 --> 00:01:20,000

i'm tabitha thompson with nasa's office

17

00:01:23,350 --> 00:01:21,920

of communications i have with me dan

18

00:01:26,310 --> 00:01:23,360

hartman with the international space

19

00:01:28,149 --> 00:01:26,320

station program frank demaro who is vice

20

00:01:30,789 --> 00:01:28,159

president and general manager of orbital

21

00:01:32,550 --> 00:01:30,799

atk advanced programs division and in

22

00:01:34,550 --> 00:01:32,560

the center kurt ebberly who is the

23

00:01:36,469 --> 00:01:34,560

antares deputy program manager with

24

00:01:38,870 --> 00:01:36,479

orbital atk we're going to start with

25

00:01:41,670 --> 00:01:38,880

dan thank you tabitha

26

00:01:43,990 --> 00:01:41,680

beautiful morning beautiful launch it is

27

00:01:46,389 --> 00:01:44,000

uh it was great to put a rumble in the

28

00:01:48,389 --> 00:01:46,399

air here and and get cygnus off the

29

00:01:51,030 --> 00:01:48,399

ground and it's on on its way to the

30

00:01:53,429 --> 00:01:51,040

international space station uh it was

31

00:01:55,270 --> 00:01:53,439

just a miraculous launch and and a

32

00:01:56,630 --> 00:01:55,280

flawless countdown and these gentlemen

33

00:01:58,630 --> 00:01:56,640

will talk a lot more about that but i

34

00:02:01,350 --> 00:01:58,640

would would like to congratulate the

35

00:02:02,709 --> 00:02:01,360

orbital atk team and and all the folks

36

00:02:04,789 --> 00:02:02,719

here at the

37

00:02:06,870 --> 00:02:04,799

at the center that uh put this show on

38

00:02:08,550 --> 00:02:06,880

this morning for everybody uh again it's

39

00:02:09,830 --> 00:02:08,560

just great to have that spacecraft

40

00:02:12,229 --> 00:02:09,840

heading toward the international space

41

00:02:14,070 --> 00:02:12,239

station uh the onboard crew was able to

42

00:02:15,270 --> 00:02:14,080

uh watch the the launch live we were

43

00:02:16,869 --> 00:02:15,280

able to hook that up through the mission

44

00:02:18,150 --> 00:02:16,879

control center in houston and so they

45

00:02:21,589 --> 00:02:18,160

enjoyed the show

46

00:02:23,670 --> 00:02:21,599

uh presently uh they're fully trained uh

47

00:02:26,550 --> 00:02:23,680

the spacecraft will arrive

48

00:02:28,150 --> 00:02:26,560

on tuesday morning at about 3 50 a.m

49

00:02:31,270 --> 00:02:28,160

houston time

50

00:02:33,190 --> 00:02:31,280

where paula will use the ssrms and and

51
00:02:35,350 --> 00:02:33,200
burst it and bring it into uh into our

52
00:02:38,470 --> 00:02:35,360
node 1 nader location

53
00:02:40,229 --> 00:02:38,480
crews really rested ready to go

54
00:02:42,070 --> 00:02:40,239
they'll have a busy time in front of

55
00:02:44,470 --> 00:02:42,080
them that for the next three weeks as we

56
00:02:46,630 --> 00:02:44,480
unpack all the cargo about 7 400 pounds

57
00:02:49,509 --> 00:02:46,640
of cargo

58
00:02:51,270 --> 00:02:49,519
and and then turn that back around and

59
00:02:52,390 --> 00:02:51,280
repack it

60
00:02:54,710 --> 00:02:52,400
and

61
00:02:55,830 --> 00:02:54,720
full of disposable items which is very

62
00:02:57,750 --> 00:02:55,840
key to

63
00:02:59,110 --> 00:02:57,760

keeping the the flexibility and the

64

00:03:00,630 --> 00:02:59,120

operations on board the international

65

00:03:03,509 --> 00:03:00,640

space station

66

00:03:05,750 --> 00:03:03,519

at full tilt and plan to keep it there

67

00:03:07,750 --> 00:03:05,760

until december 3rd uh then we'll do a

68

00:03:09,910 --> 00:03:07,760

maneuver and do a test with the cygnus

69

00:03:11,990 --> 00:03:09,920

vehicle and then finally on its release

70

00:03:14,949 --> 00:03:12,000

on december 4th and so

71

00:03:18,229 --> 00:03:14,959

uh again it was a it was a great mission

72

00:03:19,750 --> 00:03:18,239

uh start today we're we're anxious to

73

00:03:22,390 --> 00:03:19,760

get cygnus on board the international

74

00:03:23,990 --> 00:03:22,400

space station and again just a hearty

75

00:03:27,750 --> 00:03:24,000

congratulations to the team that pulled

76

00:03:31,270 --> 00:03:29,110

okay thank you dan

77

00:03:32,550 --> 00:03:31,280

i'm really excited to be here after a

78

00:03:34,789 --> 00:03:32,560

really good launch

79

00:03:37,270 --> 00:03:34,799

uh today but first i'd like to uh

80

00:03:39,270 --> 00:03:37,280

to point out uh and and rewind to

81

00:03:41,750 --> 00:03:39,280

yesterday after after we aborted

82

00:03:43,430 --> 00:03:41,760

unfortunately for uh for a aircraft in

83

00:03:45,670 --> 00:03:43,440

the hazard area

84

00:03:47,509 --> 00:03:45,680

we initiated our abort processing and

85

00:03:50,390 --> 00:03:47,519

de-tanked the rocket

86

00:03:52,229 --> 00:03:50,400

and uh you know it was a good exercise

87

00:03:54,070 --> 00:03:52,239

of what we've been uh planning for which

88

00:03:54,949 --> 00:03:54,080

is the ability to count very count down

89

00:03:57,350 --> 00:03:54,959

very

90

00:03:59,589 --> 00:03:57,360

uh deep into the count really up to to

91

00:04:01,670 --> 00:03:59,599

10 and then be able to turn around and

92

00:04:03,750 --> 00:04:01,680

launch again the next day so

93

00:04:06,229 --> 00:04:03,760

so i'd really like to thank

94

00:04:07,429 --> 00:04:06,239

our spaceport operator the mid-atlantic

95

00:04:09,589 --> 00:04:07,439

regional spaceport which is run by

96

00:04:11,990 --> 00:04:09,599

virginia space

97

00:04:14,550 --> 00:04:12,000

they just scrambled yesterday

98

00:04:16,069 --> 00:04:14,560

they brought in tankers of liquid oxygen

99

00:04:17,749 --> 00:04:16,079

to top up the storage tank because we

100

00:04:19,189 --> 00:04:17,759

always boil off a little bit

101
00:04:21,590 --> 00:04:19,199
when we do an attempt they they

102
00:04:23,830 --> 00:04:21,600
repressurize the nitrogen

103
00:04:25,670 --> 00:04:23,840
uh and then we had our our antares team

104
00:04:27,430 --> 00:04:25,680
come in the second shift crew

105
00:04:29,590 --> 00:04:27,440
they saved the vehicle after de-tanking

106
00:04:33,270 --> 00:04:29,600
it

107
00:04:35,030 --> 00:04:33,280
have to go back through put desiccant

108
00:04:36,310 --> 00:04:35,040
plugs back into the tanks and so on and

109
00:04:37,510 --> 00:04:36,320
get ready for the next attempt and that

110
00:04:39,430 --> 00:04:37,520
was all done

111
00:04:41,270 --> 00:04:39,440
very well so so really thanks to

112
00:04:44,150 --> 00:04:41,280
everybody for all the support and

113
00:04:46,950 --> 00:04:44,160

enabling us to demonstrate that that

114

00:04:48,950 --> 00:04:46,960

rapid recycle for the next day

115

00:04:50,710 --> 00:04:48,960

uh compared to yesterday today was very

116

00:04:52,950 --> 00:04:50,720

boring and that's how we like it

117

00:04:55,270 --> 00:04:52,960

the more boring the better

118

00:04:56,950 --> 00:04:55,280

can't be boring enough

119

00:04:59,189 --> 00:04:56,960

so we really we just stepped right down

120

00:05:00,870 --> 00:04:59,199

through the countdown uh really had had

121

00:05:01,670 --> 00:05:00,880

very few issues the only issue we had

122

00:05:04,230 --> 00:05:01,680

was

123

00:05:06,310 --> 00:05:04,240

uh one of the main engines we chill down

124

00:05:08,150 --> 00:05:06,320

uh the engine with liquid oxygen as soon

125

00:05:09,909 --> 00:05:08,160

as we load liquid oxygen into the tank

126

00:05:11,909 --> 00:05:09,919

it starts trickling down into the engine

127

00:05:13,670 --> 00:05:11,919

pumps and starting to chill them down

128

00:05:15,510 --> 00:05:13,680

and we had one that

129

00:05:16,870 --> 00:05:15,520

that initially it gets the pre-burner

130

00:05:19,110 --> 00:05:16,880

gets loaded with liquid oxygen and then

131

00:05:21,749 --> 00:05:19,120

it uh it warms up and

132

00:05:23,270 --> 00:05:21,759

and that liquid oxygen boils off and

133

00:05:25,029 --> 00:05:23,280

escapes and that just didn't happen fast

134

00:05:27,189 --> 00:05:25,039

enough we initiated you may have heard

135

00:05:28,469 --> 00:05:27,199

steps called the tango one that that the

136

00:05:30,870 --> 00:05:28,479

launch conductor was calling that was to

137

00:05:32,870 --> 00:05:30,880

initiate a special nitrogen purge that

138

00:05:34,870 --> 00:05:32,880

we added to try to accelerate that

139

00:05:37,029 --> 00:05:34,880

process uh and it was just taking a

140

00:05:39,990 --> 00:05:37,039

little longer longer today than uh than

141

00:05:41,590 --> 00:05:40,000

anticipated so uh so actually that we

142

00:05:44,150 --> 00:05:41,600

decided we were going to push to the end

143

00:05:46,150 --> 00:05:44,160

of the window

144

00:05:48,390 --> 00:05:46,160

anyway that turned out fortuitous it

145

00:05:50,790 --> 00:05:48,400

gave the range some more time to clear

146

00:05:52,870 --> 00:05:50,800

out uh some boats that were that were

147

00:05:54,390 --> 00:05:52,880

trending towards the hazard area and

148

00:05:55,830 --> 00:05:54,400

then there was also a report of one

149

00:05:57,350 --> 00:05:55,840

aircraft south of the hazard area that

150

00:05:59,270 --> 00:05:57,360

didn't end up actually

151
00:06:00,469 --> 00:05:59,280
uh making it far enough into the hazard

152
00:06:03,189 --> 00:06:00,479
area so

153
00:06:04,230 --> 00:06:03,199
uh along that lines just uh for everyone

154
00:06:05,990 --> 00:06:04,240
who's listening would just like to

155
00:06:08,309 --> 00:06:06,000
encourage everyone to just listen to the

156
00:06:10,230 --> 00:06:08,319
range authorities pay attention to the

157
00:06:11,590 --> 00:06:10,240
notice to airmen the notice to mariners

158
00:06:14,230 --> 00:06:11,600
that they put out weeks in advance of

159
00:06:16,469 --> 00:06:14,240
each launch and uh ask for everyone's

160
00:06:18,309 --> 00:06:16,479
cooperation to just to follow the

161
00:06:19,909 --> 00:06:18,319
direction of the range crew and the and

162
00:06:21,270 --> 00:06:19,919
the troopers that keep everybody safe

163
00:06:23,749 --> 00:06:21,280

and out of the hazard area will be able

164

00:06:25,990 --> 00:06:23,759

to to put off a good launch

165

00:06:27,990 --> 00:06:26,000

okay and then we launched

166

00:06:29,510 --> 00:06:28,000

and the first stage worked very well

167

00:06:31,830 --> 00:06:29,520

very little steering command so it was

168

00:06:32,870 --> 00:06:31,840

right on the money

169

00:06:38,790 --> 00:06:32,880

we

170

00:06:41,110 --> 00:06:38,800

that all looked really good

171

00:06:42,950 --> 00:06:41,120

overall performance was a little high

172

00:06:44,230 --> 00:06:42,960

which is which is really good

173

00:06:45,590 --> 00:06:44,240

we try to be conservative in our

174

00:06:47,670 --> 00:06:45,600

estimates so

175

00:06:50,710 --> 00:06:47,680

you know we were targeting about 190 by

176

00:06:53,990 --> 00:06:50,720

290 degrees i'm sorry 190 kilometers by

177

00:06:55,510 --> 00:06:54,000

290 kilometers and we ended up at 200 by

178

00:06:57,350 --> 00:06:55,520

333

179

00:06:59,830 --> 00:06:57,360

kilometers and that's inclined right on

180

00:07:00,950 --> 00:06:59,840

the money at 51.636

181

00:07:02,629 --> 00:07:00,960

degrees

182

00:07:03,510 --> 00:07:02,639

and so looking at the statistics that's

183

00:07:05,830 --> 00:07:03,520

about

184

00:07:07,990 --> 00:07:05,840

uh one and a half sigma high

185

00:07:10,150 --> 00:07:08,000

uh when we do our monte carlo analyses

186

00:07:11,830 --> 00:07:10,160

on the on the orbit trajectory so

187

00:07:13,510 --> 00:07:11,840

so that all looked really good

188

00:07:14,710 --> 00:07:13,520

uh and then the other target the other

189

00:07:16,469 --> 00:07:14,720

parameter retarget is the right

190

00:07:18,309 --> 00:07:16,479

ascension of ascending node of the orbit

191

00:07:20,150 --> 00:07:18,319

to make sure that that we're aligned

192

00:07:22,150 --> 00:07:20,160

with the iss orbit and that was within

193

00:07:23,510 --> 00:07:22,160

one sigma so so overall it looked like a

194

00:07:26,790 --> 00:07:23,520

really good flight

195

00:07:28,309 --> 00:07:26,800

and uh very exciting very happy and uh

196

00:07:30,629 --> 00:07:28,319

and frank it's over to you for the rest

197

00:07:32,950 --> 00:07:30,639

of the mission okay thank you

198

00:07:35,110 --> 00:07:32,960

thanks to you and the great antares team

199

00:07:36,390 --> 00:07:35,120

for a fantastic launch this morning was

200

00:07:39,270 --> 00:07:36,400

beautiful

201
00:07:42,150 --> 00:07:39,280
to see the rocket lift off the pad

202
00:07:44,629 --> 00:07:42,160
the the spacecraft is in great shape uh

203
00:07:45,909 --> 00:07:44,639
entire has put us in a great orbit as as

204
00:07:48,550 --> 00:07:45,919
he described

205
00:07:50,390 --> 00:07:48,560
um we did some initial checkout of the

206
00:07:51,589 --> 00:07:50,400
spacecraft and everything looks

207
00:07:53,430 --> 00:07:51,599
it looks great on the vehicle the

208
00:07:54,629 --> 00:07:53,440
propulsion system is working uh as

209
00:07:56,070 --> 00:07:54,639
expected

210
00:07:57,110 --> 00:07:56,080
the attitude control systems keeping the

211
00:07:59,510 --> 00:07:57,120
spacecraft pointing in the right

212
00:08:01,990 --> 00:07:59,520
direction and the big event that we do

213
00:08:05,670 --> 00:08:02,000

early on is deploy the solar rays and

214

00:08:07,270 --> 00:08:05,680

those deployed exactly as we like them

215

00:08:08,550 --> 00:08:07,280

and we that enabled us to point the

216

00:08:09,990 --> 00:08:08,560

vehicle with the solar rays pointing

217

00:08:11,430 --> 00:08:10,000

towards the sun to keep the batteries

218

00:08:13,029 --> 00:08:11,440

charged

219

00:08:14,309 --> 00:08:13,039

they uh they are they're they're

220

00:08:16,550 --> 00:08:14,319

charging now

221

00:08:18,390 --> 00:08:16,560

and um we're going to do some additional

222

00:08:19,990 --> 00:08:18,400

additional checkout of the rendezvous

223

00:08:21,270 --> 00:08:20,000

sensors that'll happen over the next few

224

00:08:24,390 --> 00:08:21,280

hours

225

00:08:26,150 --> 00:08:24,400

but the initial data all looks great

226

00:08:28,150 --> 00:08:26,160

inside the cargo module the pressure

227

00:08:29,749 --> 00:08:28,160

looks uh looks right where we wanted it

228

00:08:32,310 --> 00:08:29,759

the powered payloads are drawing current

229

00:08:33,670 --> 00:08:32,320

just like we expect so that's exciting

230

00:08:36,070 --> 00:08:33,680

so it looks like the science is in good

231

00:08:38,709 --> 00:08:36,080

shape uh inside the module

232

00:08:40,790 --> 00:08:38,719

uh what we'll do now is uh start our

233

00:08:43,350 --> 00:08:40,800

plan start our phasing and orbit raising

234

00:08:45,910 --> 00:08:43,360

to get to the iss on tuesday morning the

235

00:08:48,870 --> 00:08:45,920

first big uh burn that we'll conduct

236

00:08:50,389 --> 00:08:48,880

will be around noon eastern time today

237

00:08:51,430 --> 00:08:50,399

there'll be several those burns over the

238

00:08:54,230 --> 00:08:51,440

next

239

00:08:55,350 --> 00:08:54,240

day a little more than day and a half we

240

00:08:57,269 --> 00:08:55,360

will

241

00:08:59,430 --> 00:08:57,279

arrive at a particular point in space we

242

00:09:02,070 --> 00:08:59,440

call the joint targeting reference point

243

00:09:03,829 --> 00:09:02,080

uh early in the morning on tuesday and

244

00:09:05,030 --> 00:09:03,839

we'll we'll slowly make our way towards

245

00:09:07,269 --> 00:09:05,040

the iss

246

00:09:09,990 --> 00:09:07,279

tuesday morning and as dan talked about

247

00:09:12,949 --> 00:09:10,000

the we expect to be grappled by the

248

00:09:15,509 --> 00:09:12,959

robotic arm operated by the crew at uh 4

249

00:09:17,910 --> 00:09:15,519

50 eastern standard time

250

00:09:19,350 --> 00:09:17,920

uh tuesday morning so a nice early

251
00:09:21,350 --> 00:09:19,360
morning for the team but they're they're

252
00:09:22,389 --> 00:09:21,360
all excited i was talking to the mission

253
00:09:23,670 --> 00:09:22,399
operations team

254
00:09:25,670 --> 00:09:23,680
um

255
00:09:27,670 --> 00:09:25,680
the uh they have been excited about the

256
00:09:30,310 --> 00:09:27,680
mission yesterday was sort of a little

257
00:09:31,750 --> 00:09:30,320
bit of a dry run so that worked out okay

258
00:09:33,430 --> 00:09:31,760
they got another good night's sleep and

259
00:09:35,990 --> 00:09:33,440
they're uh they're ready to go this will

260
00:09:36,870 --> 00:09:36,000
be the fastest that will go from launch

261
00:09:38,230 --> 00:09:36,880
to

262
00:09:40,310 --> 00:09:38,240
rendezvousing with the space station

263
00:09:42,630 --> 00:09:40,320

it's always been in our plan to do this

264

00:09:44,470 --> 00:09:42,640

uh this particular time we actually can

265

00:09:46,150 --> 00:09:44,480

can exercise that

266

00:09:49,509 --> 00:09:46,160

the opportunity to do that so we're

267

00:09:51,350 --> 00:09:49,519

excited to demonstrate that as well

268

00:09:53,190 --> 00:09:51,360

so once we're once we're grappled we

269

00:09:55,590 --> 00:09:53,200

will get birthed uh we'll be on the

270

00:09:58,150 --> 00:09:55,600

station for a few weeks as dan described

271

00:09:59,990 --> 00:09:58,160

and we'll uh we'll be ready to depart

272

00:10:03,509 --> 00:10:00,000

on the third and the fourth from uh from

273

00:10:05,030 --> 00:10:03,519

the iss so uh we have a busy couple of

274

00:10:07,750 --> 00:10:05,040

days ahead of us on the cygnus side but

275

00:10:10,310 --> 00:10:07,760

given the the great uh great work by the

276

00:10:12,550 --> 00:10:10,320

antares team and the wallops team and

277

00:10:14,150 --> 00:10:12,560

the mars team in virginia space uh we're

278

00:10:16,389 --> 00:10:14,160

in a great position the great position

279

00:10:18,630 --> 00:10:16,399

to do that uh the one thing i will uh

280

00:10:20,870 --> 00:10:18,640

we'll add you as as most or all of you

281

00:10:23,110 --> 00:10:20,880

probably know we did name the spacecraft

282

00:10:25,990 --> 00:10:23,120

uh after gene cernan this is the ss gene

283

00:10:27,509 --> 00:10:26,000

cernan uh we did get a great note from

284

00:10:29,509 --> 00:10:27,519

from the sternan family this morning

285

00:10:31,350 --> 00:10:29,519

after the launch they were able to watch

286

00:10:32,949 --> 00:10:31,360

uh really expressing their appreciation

287

00:10:35,590 --> 00:10:32,959

for naming the spacecraft after mr

288

00:10:37,030 --> 00:10:35,600

cernan so for someone of his uh of his

289

00:10:39,590 --> 00:10:37,040

stature in the space industry it was

290

00:10:41,750 --> 00:10:39,600

certainly our honor to do so uh and it

291

00:10:43,509 --> 00:10:41,760

was great to get that note from them so

292

00:10:45,030 --> 00:10:43,519

uh with that we'll signal this team will

293

00:10:46,790 --> 00:10:45,040

be busy for the next day and a half and

294

00:10:49,509 --> 00:10:46,800

we're looking forward to getting uh to

295

00:10:50,949 --> 00:10:49,519

dance station on tuesday morning

296

00:10:52,310 --> 00:10:50,959

thank you frank

297

00:10:55,030 --> 00:10:52,320

if you have a question in the room

298

00:10:56,630 --> 00:10:55,040

please raise your hand identify yourself

299

00:10:57,829 --> 00:10:56,640

and your outlet and let us know who

300

00:11:00,069 --> 00:10:57,839

you're directing your question to

301
00:11:01,350 --> 00:11:00,079
whether it's dan kurt or frank and

302
00:11:03,190 --> 00:11:01,360
please wait for the microphone to reach

303
00:11:05,750 --> 00:11:03,200
you we do have a question up front from

304
00:11:09,509 --> 00:11:07,430
i'm sorry we'll start with jason and

305
00:11:11,750 --> 00:11:09,519
we'll come together sorry ken uh jason

306
00:11:13,910 --> 00:11:11,760
ryan for space flight insider half

307
00:11:15,910 --> 00:11:13,920
jokingly is nasa or orbital atk

308
00:11:17,030 --> 00:11:15,920
considering investing in surface to air

309
00:11:19,269 --> 00:11:17,040
missiles

310
00:11:21,030 --> 00:11:19,279
or maybe 50 caliber machine guns to keep

311
00:11:23,110 --> 00:11:21,040
the boats out of the way

312
00:11:24,389 --> 00:11:23,120
but all joking aside what kind of

313
00:11:26,150 --> 00:11:24,399

penalty

314

00:11:27,990 --> 00:11:26,160

do these folks who

315

00:11:29,750 --> 00:11:28,000

stray into the exclusion zone what can

316

00:11:31,110 --> 00:11:29,760

they expect to see if they do this in

317

00:11:31,990 --> 00:11:31,120

the future because we've seen this quite

318

00:11:33,750 --> 00:11:32,000

a lot

319

00:11:35,670 --> 00:11:33,760

thank you sure

320

00:11:37,110 --> 00:11:35,680

and it's it's not a joking matter right

321

00:11:39,430 --> 00:11:37,120

i mean it's trying to keep the the

322

00:11:41,750 --> 00:11:39,440

public you know safe from these

323

00:11:43,269 --> 00:11:41,760

hazardous operations as far as penalties

324

00:11:44,389 --> 00:11:43,279

i'm going to let the faa work through

325

00:11:46,389 --> 00:11:44,399

that i know

326

00:11:48,310 --> 00:11:46,399

our nasa team here at wallops is working

327

00:11:50,389 --> 00:11:48,320

with the faa already

328

00:11:52,150 --> 00:11:50,399

and i imagine

329

00:11:55,110 --> 00:11:52,160

a little bit more stringent procedures

330

00:11:56,949 --> 00:11:55,120

or notifications that will go out to the

331

00:11:59,110 --> 00:11:56,959

to the folks that uh

332

00:12:00,629 --> 00:11:59,120

uh need to be informed of what what

333

00:12:02,310 --> 00:12:00,639

they're you know getting ready to go do

334

00:12:05,269 --> 00:12:02,320

or where they're what space they're

335

00:12:07,190 --> 00:12:05,279

entering uh and i i would expect to see

336

00:12:09,110 --> 00:12:07,200

uh additional measures in place for the

337

00:12:11,829 --> 00:12:09,120

uh for the may launch of the of the next

338

00:12:14,550 --> 00:12:11,839

orbital spacecraft

339

00:12:16,069 --> 00:12:14,560

we'll come to ken in the front

340

00:12:18,629 --> 00:12:16,079

all right thank you ken kramer universe

341

00:12:19,509 --> 00:12:18,639

today northeast astronomy forum for uh

342

00:12:21,430 --> 00:12:19,519

kurt

343

00:12:23,110 --> 00:12:21,440

you you mentioned the slight over

344

00:12:25,430 --> 00:12:23,120

performance of the second stage i think

345

00:12:27,190 --> 00:12:25,440

this happened last year also

346

00:12:29,509 --> 00:12:27,200

and i was wondering how this over

347

00:12:31,430 --> 00:12:29,519

performance compared to the last one and

348

00:12:33,350 --> 00:12:31,440

the lessons learned from last year did

349

00:12:35,990 --> 00:12:33,360

you apply them was it the same or was it

350

00:12:37,430 --> 00:12:36,000

an another over performance beyond that

351
00:12:42,710 --> 00:12:37,440
and for dan

352
00:12:45,190 --> 00:12:43,910
well uh

353
00:12:47,829 --> 00:12:45,200
you know we we

354
00:12:49,750 --> 00:12:47,839
last fall's oa5 launch was the first of

355
00:12:50,870 --> 00:12:49,760
the caster 30 xl

356
00:12:52,949 --> 00:12:50,880
and

357
00:12:55,350 --> 00:12:52,959
we have a process where we

358
00:12:57,430 --> 00:12:55,360
take the static fire results so we took

359
00:12:59,110 --> 00:12:57,440
you know to qualify a solid rocket motor

360
00:13:01,350 --> 00:12:59,120
we take the solid rocker motor and if

361
00:13:04,310 --> 00:13:01,360
it's an upper stage motor we fire it in

362
00:13:06,470 --> 00:13:04,320
a large vacuum chamber basically arnold

363
00:13:08,710 --> 00:13:06,480

engineering development center it's run

364

00:13:11,509 --> 00:13:08,720

by the air force allows us to do that

365

00:13:12,629 --> 00:13:11,519

and we measure uh the total impulse out

366

00:13:14,230 --> 00:13:12,639

of the engine and then we have some

367

00:13:15,829 --> 00:13:14,240

corrections that we do

368

00:13:17,030 --> 00:13:15,839

to translate that into flight

369

00:13:18,870 --> 00:13:17,040

performance and that that's our

370

00:13:19,670 --> 00:13:18,880

propulsion model that we then

371

00:13:21,590 --> 00:13:19,680

uh

372

00:13:23,430 --> 00:13:21,600

you know do our simulations on and plan

373

00:13:25,670 --> 00:13:23,440

the flight with

374

00:13:26,790 --> 00:13:25,680

the flight last fall was a little

375

00:13:28,870 --> 00:13:26,800

higher

376

00:13:30,230 --> 00:13:28,880

than we'd expected so we did adjust the

377

00:13:32,310 --> 00:13:30,240

model

378

00:13:33,750 --> 00:13:32,320

it looks like we got very cl

379

00:13:35,590 --> 00:13:33,760

from what our g and c guys were able to

380

00:13:37,190 --> 00:13:35,600

see real time they think it's probably

381

00:13:39,670 --> 00:13:37,200

we got another result it was very close

382

00:13:41,430 --> 00:13:39,680

to oa5 we had kind of hedged our bets on

383

00:13:42,629 --> 00:13:41,440

the model coming into oa8 to be a little

384

00:13:43,829 --> 00:13:42,639

conservative we like to be a little

385

00:13:46,150 --> 00:13:43,839

conservative

386

00:13:47,670 --> 00:13:46,160

uh to not over promise and and and also

387

00:13:50,310 --> 00:13:47,680

make sure that we

388

00:13:53,030 --> 00:13:50,320

you know achieve an orbit uh even if

389

00:13:54,389 --> 00:13:53,040

there's a an anomaly so so we try to

390

00:13:55,670 --> 00:13:54,399

error on the high side there's a big

391

00:13:57,910 --> 00:13:55,680

difference between

392

00:14:00,150 --> 00:13:57,920

uh making an orbit and not making an

393

00:14:02,310 --> 00:14:00,160

orbit versus you know a little

394

00:14:03,670 --> 00:14:02,320

difference on the high side is kind of

395

00:14:05,350 --> 00:14:03,680

immaterial since

396

00:14:07,030 --> 00:14:05,360

cygnus has such a capable propulsion

397

00:14:08,470 --> 00:14:07,040

system so so that's how we do the

398

00:14:10,310 --> 00:14:08,480

mission design to be more conservative

399

00:14:11,990 --> 00:14:10,320

and protect against anomalies and so i

400

00:14:13,590 --> 00:14:12,000

think we will make an update to the

401
00:14:15,189 --> 00:14:13,600
model for next time

402
00:14:17,189 --> 00:14:15,199
but we we will continue to err on the

403
00:14:19,189 --> 00:14:17,199
conservative side

404
00:14:20,790 --> 00:14:19,199
and on the one-year crew

405
00:14:23,430 --> 00:14:20,800
there is no doubt our human research

406
00:14:25,430 --> 00:14:23,440
program they have a strong desire to fly

407
00:14:28,069 --> 00:14:25,440
additional one-year crew members and so

408
00:14:30,629 --> 00:14:28,079
we're our goal is to try to meet that i

409
00:14:32,550 --> 00:14:30,639
don't see that happening as long as

410
00:14:34,870 --> 00:14:32,560
we're still flying with the on the soyuz

411
00:14:37,030 --> 00:14:34,880
and doing our our crew members flights

412
00:14:38,949 --> 00:14:37,040
on those vehicles but once we step into

413
00:14:40,870 --> 00:14:38,959

commercial crew and get a good cadence

414

00:14:42,949 --> 00:14:40,880

and a regular basis going there i think

415

00:14:45,670 --> 00:14:42,959

you'll see uh one of your crew members

416

00:14:47,030 --> 00:14:45,680

come back into play

417

00:14:48,550 --> 00:14:47,040

once again if you have a question in the

418

00:14:51,189 --> 00:14:48,560

room please raise your hand wait for the

419

00:14:53,189 --> 00:14:51,199

microphone to get to you

420

00:14:55,189 --> 00:14:53,199

john brett schneider federal times and

421

00:14:57,110 --> 00:14:55,199

defense news

422

00:15:00,629 --> 00:14:57,120

what is the

423

00:15:03,509 --> 00:15:00,639

range distance that you want boats

424

00:15:06,389 --> 00:15:03,519

and aircraft to stay away

425

00:15:09,509 --> 00:15:06,399

most of us don't have access to notices

426

00:15:13,189 --> 00:15:09,519

tear men and notices to seamen

427

00:15:15,189 --> 00:15:13,199

so how far away do you want them

428

00:15:17,030 --> 00:15:15,199

you guys know i i'd have to get back to

429

00:15:18,790 --> 00:15:17,040

you on that or we could uh you know

430

00:15:20,790 --> 00:15:18,800

certainly have uh

431

00:15:22,629 --> 00:15:20,800

we'll get information to tabitha i mean

432

00:15:24,310 --> 00:15:22,639

the local the local range people and the

433

00:15:26,790 --> 00:15:24,320

ksc range people those are the folks

434

00:15:28,470 --> 00:15:26,800

that uh put all that that practice into

435

00:15:30,230 --> 00:15:28,480

place and i'm just not aware of the of

436

00:15:31,910 --> 00:15:30,240

the actuals

437

00:15:33,910 --> 00:15:31,920

yeah i don't have the

438

00:15:36,310 --> 00:15:33,920

exact distances i know that the range

439

00:15:38,310 --> 00:15:36,320

roughly i think it's it's ten ten days

440

00:15:39,749 --> 00:15:38,320

to two weeks out they post the notice to

441

00:15:40,790 --> 00:15:39,759

airmen and notice to mariners those get

442

00:15:42,230 --> 00:15:40,800

posted

443

00:15:44,550 --> 00:15:42,240

and issued

444

00:15:46,470 --> 00:15:44,560

to the faa and to

445

00:15:48,629 --> 00:15:46,480

maritime organizations

446

00:15:50,230 --> 00:15:48,639

and they're i think they're available

447

00:15:51,670 --> 00:15:50,240

via wallops so

448

00:15:53,430 --> 00:15:51,680

so all the commercial operators

449

00:15:55,829 --> 00:15:53,440

certainly are aware of all that

450

00:15:57,829 --> 00:15:55,839

and and there's no uh

451

00:15:59,910 --> 00:15:57,839

there's no inability to find those uh

452

00:16:01,110 --> 00:15:59,920

notices uh

453

00:16:03,030 --> 00:16:01,120

i think all the pilots know where to

454

00:16:04,710 --> 00:16:03,040

find them we just uh and then on the on

455

00:16:06,710 --> 00:16:04,720

folks on the ground you know there's

456

00:16:09,189 --> 00:16:06,720

roadblocks that set up and the troopers

457

00:16:11,269 --> 00:16:09,199

are blocking off various roads uh so we

458

00:16:12,710 --> 00:16:11,279

just asked that everybody you know

459

00:16:14,710 --> 00:16:12,720

listen to the directions that you're

460

00:16:17,189 --> 00:16:14,720

given and not try to you know get the

461

00:16:19,110 --> 00:16:17,199

hero shot with your uh long-range camera

462

00:16:20,870 --> 00:16:19,120

and go around a roadblock or be clever

463

00:16:23,269 --> 00:16:20,880

and drape through the woods and enter

464

00:16:25,829 --> 00:16:23,279

the hazard area or take your boat into

465

00:16:26,949 --> 00:16:25,839

the into the back bay and uh and uh

466

00:16:29,269 --> 00:16:26,959

because you'll end up scrubbing it for

467

00:16:31,030 --> 00:16:29,279

everybody and and you know that's no fun

468

00:16:32,949 --> 00:16:31,040

for for anyone it costs everyone

469

00:16:35,189 --> 00:16:32,959

additional money so so that's what we

470

00:16:36,790 --> 00:16:35,199

ask is just to follow the directions and

471

00:16:37,910 --> 00:16:36,800

the guidance from the authorities

472

00:16:39,430 --> 00:16:37,920

appreciate that

473

00:16:41,350 --> 00:16:39,440

you also have

474

00:16:43,749 --> 00:16:41,360

a coast guard station here what's the

475

00:16:46,629 --> 00:16:43,759

possibility of bringing in additional

476
00:16:49,350 --> 00:16:46,639
coast guard assets whether it be

477
00:16:52,949 --> 00:16:49,360
surface craft or aircraft

478
00:16:55,749 --> 00:16:52,959
just to help out uh to scare away

479
00:16:57,590 --> 00:16:55,759
sure you know the intruders in fact i we

480
00:16:58,870 --> 00:16:57,600
had that very discussion this morning

481
00:17:00,230 --> 00:16:58,880
that's kind of why i mentioned i i

482
00:17:02,150 --> 00:17:00,240
assume there's some additional measures

483
00:17:03,509 --> 00:17:02,160
can be put in place in may so i just

484
00:17:06,150 --> 00:17:03,519
need to let that team that's working

485
00:17:08,470 --> 00:17:06,160
this go go work the problem and come up

486
00:17:10,870 --> 00:17:08,480
with solutions and and i bet they'll

487
00:17:12,230 --> 00:17:10,880
they'll be put into execution on for the

488
00:17:14,230 --> 00:17:12,240

for the next launch out of out of

489

00:17:15,829 --> 00:17:14,240

wallops

490

00:17:18,309 --> 00:17:15,839

we'll go now to a couple of questions

491

00:17:31,190 --> 00:17:18,319

from ask nasa

492

00:17:34,630 --> 00:17:32,630

this first question comes from a

493

00:17:36,150 --> 00:17:34,640

space.com reporter who's asking i was

494

00:17:39,590 --> 00:17:36,160

wondering if there are any thanksgiving

495

00:17:40,870 --> 00:17:39,600

food items or christmas gifts on cygnus

496

00:17:43,669 --> 00:17:40,880

uh

497

00:17:45,830 --> 00:17:43,679

i'm not aware of any specifics but it is

498

00:17:47,510 --> 00:17:45,840

customary that we fly

499

00:17:49,190 --> 00:17:47,520

thanksgiving food items up to the

500

00:17:50,870 --> 00:17:49,200

international space station so i don't

501
00:17:53,510 --> 00:17:50,880
know exactly what we flew but i bet

502
00:17:55,990 --> 00:17:53,520
there's uh those types of food groups uh

503
00:17:58,950 --> 00:17:56,000
on this flight and as far as christmas

504
00:18:00,390 --> 00:17:58,960
gifts a lot of the families do send

505
00:18:02,630 --> 00:18:00,400
christmas presents

506
00:18:04,870 --> 00:18:02,640
up to their uh you know they're given a

507
00:18:07,750 --> 00:18:04,880
certain allocation for any given mission

508
00:18:09,430 --> 00:18:07,760
and uh typically around the holidays

509
00:18:11,430 --> 00:18:09,440
they make use of that with with some

510
00:18:13,110 --> 00:18:11,440
gifts

511
00:18:15,350 --> 00:18:13,120
wonderful next question here comes from

512
00:18:16,950 --> 00:18:15,360
katrina on twitter who asks

513
00:18:18,789 --> 00:18:16,960

curious what happens to the antares

514

00:18:22,390 --> 00:18:18,799

second stage after cygnus is deployed

515

00:18:27,110 --> 00:18:25,190

uh yeah it does it uh it's in the same

516

00:18:30,549 --> 00:18:27,120

orbit as cygnus so that orbit parameter

517

00:18:32,310 --> 00:18:30,559

that i read out there 200 by 333

518

00:18:34,470 --> 00:18:32,320

that's uh not too far outside the

519

00:18:36,549 --> 00:18:34,480

atmosphere so that orbit will not last

520

00:18:37,990 --> 00:18:36,559

too long uh probably upwards of three

521

00:18:40,230 --> 00:18:38,000

weeks to a month

522

00:18:42,070 --> 00:18:40,240

uh we are you know things that affect

523

00:18:43,430 --> 00:18:42,080

how long you stay in orbit

524

00:18:45,430 --> 00:18:43,440

have to do with

525

00:18:48,310 --> 00:18:45,440

whether you're stable or not and how

526
00:18:49,110 --> 00:18:48,320
heavy you are and your

527
00:18:51,110 --> 00:18:49,120
your

528
00:18:52,710 --> 00:18:51,120
ballistic coefficient and so on and then

529
00:18:55,190 --> 00:18:52,720
also the atmosphere is not always the

530
00:18:57,270 --> 00:18:55,200
same height and it varies in height

531
00:18:59,029 --> 00:18:57,280
in accordance with a number of things so

532
00:19:01,190 --> 00:18:59,039
uh over time it will re-enter the

533
00:19:02,310 --> 00:19:01,200
atmosphere and burn up so it's not

534
00:19:05,830 --> 00:19:02,320
designed to make it through the

535
00:19:08,950 --> 00:19:07,510
all right another question here comes

536
00:19:11,270 --> 00:19:08,960
from fourth and fifth grade math and

537
00:19:12,950 --> 00:19:11,280
science students in the bronx who ask

538
00:19:15,510 --> 00:19:12,960

what are the orbital maneuvering

539

00:19:17,669 --> 00:19:15,520

capabilities of the cygnus ss gene

540

00:19:19,510 --> 00:19:17,679

cernan

541

00:19:22,630 --> 00:19:19,520

uh let's see orbital maneuver capability

542

00:19:24,390 --> 00:19:22,640

so the spacecraft is designed to be able

543

00:19:26,470 --> 00:19:24,400

to

544

00:19:28,150 --> 00:19:26,480

rotate

545

00:19:29,669 --> 00:19:28,160

translate meaning moving back and forth

546

00:19:31,510 --> 00:19:29,679

or sideways

547

00:19:32,870 --> 00:19:31,520

flip over if it needs to

548

00:19:33,909 --> 00:19:32,880

it's what we call a six degree of

549

00:19:35,590 --> 00:19:33,919

freedom

550

00:19:37,430 --> 00:19:35,600

spacecraft so

551
00:19:39,909 --> 00:19:37,440
we have 32

552
00:19:41,430 --> 00:19:39,919
thrusters mounted around the spacecraft

553
00:19:44,310 --> 00:19:41,440
in various

554
00:19:46,390 --> 00:19:44,320
places and depending on which thrusters

555
00:19:49,830 --> 00:19:46,400
you fire and for how long

556
00:19:51,350 --> 00:19:49,840
you can you can move the spacecraft

557
00:19:54,710 --> 00:19:51,360
pretty much any any which way it needs

558
00:19:56,950 --> 00:19:54,720
to we also have one large engine on it

559
00:19:58,710 --> 00:19:56,960
uh then that's the engine that we use to

560
00:20:00,070 --> 00:19:58,720
to raise the orbit

561
00:20:01,510 --> 00:20:00,080
so um

562
00:20:03,669 --> 00:20:01,520
we'll be using that engine from now

563
00:20:05,669 --> 00:20:03,679

through uh early tuesday morning and

564

00:20:07,990 --> 00:20:05,679

then when we get closer we'll only use

565

00:20:09,430 --> 00:20:08,000

the smaller engines but

566

00:20:11,830 --> 00:20:09,440

between the engines we have their

567

00:20:13,830 --> 00:20:11,840

locations the fuel we have on board

568

00:20:16,070 --> 00:20:13,840

cygnus can pretty much move in any which

569

00:20:18,149 --> 00:20:16,080

way

570

00:20:20,870 --> 00:20:18,159

one more question from nasa social sure

571

00:20:22,870 --> 00:20:20,880

this comes from uh phillip who asks does

572

00:20:24,630 --> 00:20:22,880

antares use one engine with two nozzles

573

00:20:26,630 --> 00:20:24,640

similar to an atlas v

574

00:20:27,990 --> 00:20:26,640

with the rd180 or is it two separate

575

00:20:32,149 --> 00:20:28,000

engines

576
00:20:34,630 --> 00:20:32,159
has its own turbo pump and is considered

577
00:20:36,390 --> 00:20:34,640
its own unit which is different from the

578
00:20:39,350 --> 00:20:36,400
rd180 which has a single turbo pump that

579
00:20:40,630 --> 00:20:39,360
feeds two thrust chambers

580
00:20:52,789 --> 00:20:40,640
once again if you have a question in the

581
00:20:56,230 --> 00:20:54,470
quick question for kurt with that extra

582
00:20:58,390 --> 00:20:56,240
oomph that the interior seems to have

583
00:20:59,830 --> 00:20:58,400
since you guys have put those rd-181s in

584
00:21:00,789 --> 00:20:59,840
it can you guys tell us a little bit

585
00:21:02,310 --> 00:21:00,799
about what

586
00:21:04,390 --> 00:21:02,320
is that starting to guide how orbital

587
00:21:05,750 --> 00:21:04,400
atk is thinking about using the rocket

588
00:21:07,430 --> 00:21:05,760

because now it's like okay we got a

589

00:21:09,190 --> 00:21:07,440

little more performance that it's

590

00:21:10,549 --> 00:21:09,200

capable of delivering

591

00:21:12,230 --> 00:21:10,559

can you maybe give us a preview of what

592

00:21:15,510 --> 00:21:12,240

we might be able to expect in the future

593

00:21:19,029 --> 00:21:17,510

well i think uh as i said earlier you

594

00:21:20,230 --> 00:21:19,039

know we we try to be conservative and

595

00:21:21,990 --> 00:21:20,240

make sure we can live up to our

596

00:21:24,950 --> 00:21:22,000

contractual obligations

597

00:21:27,270 --> 00:21:24,960

uh uh between antares and cygnus we have

598

00:21:29,430 --> 00:21:27,280

a really an integrated mission design

599

00:21:31,590 --> 00:21:29,440

and uh and we have margin to make sure

600

00:21:33,909 --> 00:21:31,600

that we're able to carry the cargo that

601
00:21:36,950 --> 00:21:33,919
we've we've contracted for

602
00:21:38,310 --> 00:21:36,960
i think we are in a good place now uh as

603
00:21:39,110 --> 00:21:38,320
i as i mentioned earlier we're going to

604
00:21:41,190 --> 00:21:39,120
be

605
00:21:42,830 --> 00:21:41,200
adjusting our models and when we do that

606
00:21:45,990 --> 00:21:42,840
we'll be able to bank a little bit more

607
00:21:48,070 --> 00:21:46,000
margin how we use that margin

608
00:21:49,990 --> 00:21:48,080
we're talking to cygnus and we're

609
00:21:51,590 --> 00:21:50,000
talking to nasa about how we might be

610
00:21:53,909 --> 00:21:51,600
able to use that to to everyone's

611
00:21:56,789 --> 00:21:53,919
benefit

612
00:21:59,430 --> 00:21:56,799
in addition uh next year

613
00:22:00,789 --> 00:21:59,440

we are looking to possibly add some

614

00:22:02,230 --> 00:22:00,799

secondaries

615

00:22:03,430 --> 00:22:02,240

some educate small educational

616

00:22:05,350 --> 00:22:03,440

satellites

617

00:22:07,590 --> 00:22:05,360

uh in conjunction with virginia space

618

00:22:08,950 --> 00:22:07,600

there's a program called thinsat if you

619

00:22:10,390 --> 00:22:08,960

go to the virginia space website you can

620

00:22:11,190 --> 00:22:10,400

read about the thinset program these are

621

00:22:15,270 --> 00:22:11,200

very

622

00:22:16,870 --> 00:22:15,280

ride on the second stage and not stay in

623

00:22:18,950 --> 00:22:16,880

orbit for too long but be

624

00:22:21,190 --> 00:22:18,960

really uh an education serve an

625

00:22:22,470 --> 00:22:21,200

educational purpose for uh schools

626

00:22:23,990 --> 00:22:22,480

around the commonwealth and some other

627

00:22:25,669 --> 00:22:24,000

states so we're really excited about

628

00:22:28,230 --> 00:22:25,679

that this this kind of margin would

629

00:22:31,110 --> 00:22:28,240

enable those kinds of secondary missions

630

00:22:32,310 --> 00:22:31,120

uh to be possible too but uh you know

631

00:22:33,669 --> 00:22:32,320

we're also interested in just you know

632

00:22:35,430 --> 00:22:33,679

making that available to cygnus and

633

00:22:39,590 --> 00:22:35,440

seeing how how that can improve the

634

00:22:44,470 --> 00:22:42,390

thank you kurt thank you frank and dan

635

00:22:46,630 --> 00:22:44,480

with that we'll conclude today just a

636

00:22:48,870 --> 00:22:46,640

reminder that cygnus will rendezvous

637

00:22:51,350 --> 00:22:48,880

with the space station on tuesday

638

00:22:54,149 --> 00:22:51,360

astronauts on board will use the robotic

639

00:22:57,350 --> 00:22:54,159

arm to capture the spacecraft about 4 50