1
00:00:02,990 --> 00:00:15,749
[Music]

2
00:00:20,230 --> 00:00:17,750
good morning everyone this is the

3
00:00:24,550 --> 00:00:20,240
pre-launch news conference for

4
00:00:26,470 --> 00:00:24,560
crs7 with our partners orbital atk and

5
00:00:28,390 --> 00:00:26,480
united launch alliance

6
00:00:30,470 --> 00:00:28,400
as well as our

7
00:00:32,470 --> 00:00:30,480
space science participant from the

8
00:00:34,389 --> 00:00:32,480
johnson space center in houston to

9
00:00:38,310 --> 00:00:34,399
discuss some about the

10
00:00:43,270 --> 00:00:39,990
first on the panel will be joel

11
00:00:45,910 --> 00:00:43,280
montelbano our deputy manager for the

12
00:00:50,229 --> 00:00:45,920
nasa international space station program

13
00:00:54,709 --> 00:00:52,470

vern thorpe the program manager for

14
00:00:58,790 --> 00:00:54,719
commercial missions from united launch

15
00:01:07,670 --> 00:01:01,189
frank culberson the space systems group

16
00:01:11,750 --> 00:01:09,750
tara rutley the associate program

17
00:01:15,749 --> 00:01:11,760
scientist for the international space

18
00:01:21,109 --> 00:01:18,230
and david kraft the launch weather

19
00:01:23,030 --> 00:01:21,119
officer from the u.s air force 45th

20
00:01:25,030 --> 00:01:23,040
weather squadron

21
00:01:27,109 --> 00:01:25,040
and we'll begin first with opening

22
00:01:29,749 --> 00:01:27,119
comments from joel topple

23
00:01:32,469 --> 00:01:29,759
montelbano from the nasa international

24
00:01:33,990 --> 00:01:32,479
space station program office joel

25
00:01:36,310 --> 00:01:34,000
well good morning and welcome again to

26
00:01:37,990 --> 00:01:36,320
the pre-launch press conference it's uh

27
00:01:40,149 --> 00:01:38,000
once again exciting to be down here at

28
00:01:41,910 --> 00:01:40,159
kennedy space center on the eve of

29
00:01:42,870 --> 00:01:41,920
another commercial cargo resupply

30
00:01:45,190 --> 00:01:42,880
mission

31
00:01:47,749 --> 00:01:45,200
i want to thank our ula and orbital

32
00:01:49,510 --> 00:01:47,759
colleagues for preparing vehicle

33
00:01:51,830 --> 00:01:49,520
the vehicles and and get us to where we

34
00:01:53,190 --> 00:01:51,840
are today we're looking forward to a

35
00:01:55,510 --> 00:01:53,200
great mission

36
00:01:57,510 --> 00:01:55,520
the cygnus spacecraft will carry about 3

37
00:01:59,830 --> 00:01:57,520
500 kilograms of equipment to the

38
00:02:01,749 --> 00:01:59,840

international space station highlights

39
00:02:04,709 --> 00:02:01,759
of that equipment about a thousand

40
00:02:05,749 --> 00:02:04,719
pounds of utilization and the crew

41
00:02:07,670 --> 00:02:05,759
research

42
00:02:10,070 --> 00:02:07,680
about a thousand pounds of or a thousand

43
00:02:13,030 --> 00:02:10,080
kilograms of crew supplies and about

44
00:02:14,790 --> 00:02:13,040
1200 kilograms of vehicle hardware

45
00:02:17,670 --> 00:02:14,800
we're looking forward to a launch

46
00:02:19,990 --> 00:02:17,680
tomorrow uh shortly after 11 o'clock

47
00:02:22,470 --> 00:02:20,000
local eastern time 11 11

48
00:02:24,710 --> 00:02:22,480
and then we'll have a capture saturday

49
00:02:26,630 --> 00:02:24,720
morning uh shortly after uh 6 a.m

50
00:02:28,309 --> 00:02:26,640
eastern time

51
00:02:31,190 --> 00:02:28,319
the reason for the long longer

52
00:02:32,630 --> 00:02:31,200
rendezvous is to uh clear the field for

53
00:02:38,309 --> 00:02:32,640
a soyuz launch

54
00:02:40,390 --> 00:02:38,319
kazakhstan on april 20th we'll have crew

55
00:02:42,630 --> 00:02:40,400
launching there they'll do a four orbit

56
00:02:45,110 --> 00:02:42,640
rendezvous or six hours from launch to

57
00:02:47,990 --> 00:02:45,120
docking we'll have a day in between and

58
00:02:49,750 --> 00:02:48,000
then we'll bring in the cygnus vehicle

59
00:02:52,070 --> 00:02:49,760
so looking forward to a great mission

60
00:02:54,949 --> 00:02:52,080
the the vehicle is expected to stay just

61
00:02:57,430 --> 00:02:54,959
over 80 days 85 days i believe is the

62
00:02:59,670 --> 00:02:57,440
the latest number and so i just want to

63
00:03:01,110 --> 00:02:59,680

thank you for coming and i'll hand it

64
00:03:02,470 --> 00:03:01,120
back over to you george all right thank

65
00:03:04,550 --> 00:03:02,480
you joel

66
00:03:06,550 --> 00:03:04,560
and now to vern thorpe the program

67
00:03:08,710 --> 00:03:06,560
manager for commercial missions from the

68
00:03:10,390 --> 00:03:08,720
united launch alliance fern

69
00:03:12,630 --> 00:03:10,400
thanks george good morning

70
00:03:15,030 --> 00:03:12,640
i'm happy to be here today with all of

71
00:03:16,869 --> 00:03:15,040
you just over 24 hours ahead of our

72
00:03:19,830 --> 00:03:16,879
planned launch tomorrow

73
00:03:22,309 --> 00:03:19,840
we're preparing an atlas 5 401 rocket to

74
00:03:24,869 --> 00:03:22,319
launch orbital atk's cygnus spacecraft

75
00:03:27,030 --> 00:03:24,879
on the initial leg of its cargo resupply

76
00:03:28,869 --> 00:03:27,040
mission bringing supplies equipment and

77
00:03:30,390 --> 00:03:28,879
science experiments to the international

78
00:03:33,190 --> 00:03:30,400
space station

79
00:03:35,509 --> 00:03:33,200
oa7 will be the seventh cygnus flight

80
00:03:37,830 --> 00:03:35,519
and the third time that cygnus has flown

81
00:03:39,750 --> 00:03:37,840
on board an atlas v rocket

82
00:03:41,509 --> 00:03:39,760
it's an honor to launch the spacecraft

83
00:03:44,149 --> 00:03:41,519
which has been named in memory of john

84
00:03:46,869 --> 00:03:44,159
glenn i feel like we're bridging history

85
00:03:49,430 --> 00:03:46,879
uh john glenn flew on an atlas rocket in

86
00:03:51,110 --> 00:03:49,440
1962 when he became the first american

87
00:03:53,670 --> 00:03:51,120
to orbit the earth

88
00:03:56,309 --> 00:03:53,680

and right now we are actually preparing

89
00:03:58,070 --> 00:03:56,319
atlas to begin flying astronauts again

90
00:04:00,390 --> 00:03:58,080
in the near future as part of nasa's

91
00:04:04,309 --> 00:04:00,400
commercial crew program

92
00:04:08,149 --> 00:04:04,319
oa7 will be ula's 71st launch of the

93
00:04:10,869 --> 00:04:08,159
atlas v rocket and the 36th of the 401

94
00:04:14,229 --> 00:04:10,879
configuration that 401 configuration has

95
00:04:16,069 --> 00:04:14,239
really become the atlas v workhorse that

96
00:04:18,390 --> 00:04:16,079
particular configuration has launched

97
00:04:19,830 --> 00:04:18,400
about half of our atlas 5 missions over

98
00:04:21,509 --> 00:04:19,840
the years

99
00:04:24,710 --> 00:04:21,519
this will be our fourth launch ula's

100
00:04:26,950 --> 00:04:24,720
fourth launch of 2017 and the 119th

101
00:04:28,950 --> 00:04:26,960
launch since ula was formed in december

102
00:04:31,430 --> 00:04:28,960
of 2006.

103
00:04:33,670 --> 00:04:31,440
the atlas 401 vehicle includes a four

104
00:04:35,270 --> 00:04:33,680
meter payload fairing and many of you

105
00:04:36,710 --> 00:04:35,280
know that that payload fairing comes in

106
00:04:38,790 --> 00:04:36,720
three different lengths we're using the

107
00:04:41,749 --> 00:04:38,800
longest version for this mission known

108
00:04:44,230 --> 00:04:41,759
as the xcpf that stands for extended or

109
00:04:47,670 --> 00:04:44,240
extra extended payload fairing

110
00:04:50,230 --> 00:04:47,680
um atlas 5 as usual is

111
00:04:52,629 --> 00:04:50,240
propelled by the rd-180 engine on the

112
00:04:56,150 --> 00:04:52,639
back end and the centaur upper stage

113
00:04:57,510 --> 00:04:56,160

will use aerojet rocketdyne's rl10c

114
00:04:59,030 --> 00:04:57,520
rocket engine

115
00:05:00,790 --> 00:04:59,040
and this configuration has enough

116
00:05:03,029 --> 00:05:00,800
performance capabilities so that we will

117
00:05:05,430 --> 00:05:03,039
not need any solid rocket booster

118
00:05:07,430 --> 00:05:05,440
strap-ons

119
00:05:08,629 --> 00:05:07,440
now i have a brief clip

120
00:05:10,230 --> 00:05:08,639
showing some of the processing

121
00:05:13,830 --> 00:05:10,240
activities that have gotten us to this

122
00:05:17,110 --> 00:05:13,840
point i'd like to roll that if we could

123
00:05:18,790 --> 00:05:17,120
so here you see our ula mariner arriving

124
00:05:22,150 --> 00:05:18,800
at port canaveral

125
00:05:23,350 --> 00:05:22,160
this happened on february 5th

126
00:05:25,590 --> 00:05:23,360
we

127
00:05:27,189 --> 00:05:25,600
brought in both of our stages the atlas

128
00:05:28,390 --> 00:05:27,199
booster stage and the centaur upper

129
00:05:30,310 --> 00:05:28,400
stage

130
00:05:33,510 --> 00:05:30,320
and then we transported them a few miles

131
00:05:36,390 --> 00:05:33,520
uh down the road to our atlas spacecraft

132
00:05:39,189 --> 00:05:36,400
operations center also known as the asoc

133
00:05:41,189 --> 00:05:39,199
when we get the stages there we do some

134
00:05:44,390 --> 00:05:41,199
final checkout and some additional

135
00:05:45,990 --> 00:05:44,400
processing to get ready for launch

136
00:05:48,950 --> 00:05:46,000
you can see the vehicle there in the

137
00:05:51,670 --> 00:05:48,960
high bay of the asoc

138
00:05:56,550 --> 00:05:51,680

and here we are out at the launch pad uh

139
00:05:58,390 --> 00:05:56,560
we put the booster up on february 22nd

140
00:06:01,029 --> 00:05:58,400
and that was when we were targeting the

141
00:06:03,189 --> 00:06:01,039
original march launch date

142
00:06:04,469 --> 00:06:03,199
uh the first thing we do when we go on

143
00:06:07,830 --> 00:06:04,479
stand with the vehicle is put the

144
00:06:10,309 --> 00:06:07,840
booster onto the mobile launch platform

145
00:06:12,870 --> 00:06:10,319
and once it's secure typically the next

146
00:06:14,950 --> 00:06:12,880
day will bring out the centaur upper

147
00:06:17,270 --> 00:06:14,960
stage and one thing that we've started

148
00:06:18,950 --> 00:06:17,280
doing in the last couple of years is

149
00:06:20,710 --> 00:06:18,960
actually integrating that centaur that

150
00:06:22,309 --> 00:06:20,720
you see there with the interstage

151
00:06:25,350 --> 00:06:22,319
adapter on the bottom and some of the

152
00:06:27,270 --> 00:06:25,360
other adapter structures on top

153
00:06:29,670 --> 00:06:27,280
each of those used to be a separate step

154
00:06:31,189 --> 00:06:29,680
where we would made it out at the

155
00:06:32,710 --> 00:06:31,199
at the vif our vertical integration

156
00:06:34,390 --> 00:06:32,720
facility but now we can do all that at

157
00:06:36,629 --> 00:06:34,400
one of our other processing facilities

158
00:06:38,390 --> 00:06:36,639
and bring that integrated stack out so

159
00:06:40,150 --> 00:06:38,400
putting up the vehicle is really just a

160
00:06:42,309 --> 00:06:40,160
two-step operation

161
00:06:44,150 --> 00:06:42,319
once the vehicle is up we'll bring the

162
00:06:45,749 --> 00:06:44,160
encapsulated spacecraft out that's what

163
00:06:47,670 --> 00:06:45,759

you see here

164
00:06:50,469 --> 00:06:47,680
that spacecraft transport and made

165
00:06:53,430 --> 00:06:50,479
operation occurred on march 17th

166
00:06:55,350 --> 00:06:53,440
a few weeks ago

167
00:06:57,029 --> 00:06:55,360
and of course once that's on top here

168
00:06:59,270 --> 00:06:57,039
about a week away from launch we do some

169
00:07:01,110 --> 00:06:59,280
final integrated testing and checkout

170
00:07:03,110 --> 00:07:01,120
and and then we're ready for our final

171
00:07:05,430 --> 00:07:03,120
reviews and we're ready to go

172
00:07:07,510 --> 00:07:05,440
and that leads us to the next video that

173
00:07:09,350 --> 00:07:07,520
i'd like to show you this is a video

174
00:07:12,550 --> 00:07:09,360
showing the flight sequence that you can

175
00:07:13,589 --> 00:07:12,560
expect to see tomorrow can we roll that

176
00:07:14,550 --> 00:07:13,599
five

177
00:07:17,589 --> 00:07:14,560
four

178
00:07:20,629 --> 00:07:17,599
three we have atlas ignition two one

179
00:07:24,070 --> 00:07:20,639
zero and liftoff we have liftoff of the

180
00:07:28,309 --> 00:07:26,469
so atlas v will lift off under the power

181
00:07:30,150 --> 00:07:28,319
of that rd-180 engine that i mentioned

182
00:07:31,670 --> 00:07:30,160
that's actually a single engine with two

183
00:07:33,110 --> 00:07:31,680
thrust chambers and it puts out a little

184
00:07:35,270 --> 00:07:33,120
less than nine hundred thousand pounds

185
00:07:37,189 --> 00:07:35,280
of thrust at liftoff that's enough to

186
00:07:39,029 --> 00:07:37,199
accelerate the vehicle to mach one in

187
00:07:41,029 --> 00:07:39,039
about 83 seconds

188
00:07:43,909 --> 00:07:41,039

we'll hit maximum dynamic pressure about

189
00:07:45,670 --> 00:07:43,919
94 seconds and then that will continue

190
00:07:47,909 --> 00:07:45,680
to burn for a little over four minutes

191
00:07:50,309 --> 00:07:47,919
about four minutes and 15 seconds

192
00:07:52,390 --> 00:07:50,319
at that point uh we'll be out of fuel

193
00:07:54,550 --> 00:07:52,400
we'll shut down the engine the vehicle

194
00:07:55,350 --> 00:07:54,560
will be traveling about 10 000 miles an

195
00:07:57,749 --> 00:07:55,360
hour

196
00:07:59,430 --> 00:07:57,759
and we will separate the

197
00:08:01,110 --> 00:07:59,440
centaur upper stage with the payload

198
00:08:02,790 --> 00:08:01,120
attached

199
00:08:05,029 --> 00:08:02,800
and then 10 10 seconds after that

200
00:08:06,950 --> 00:08:05,039
separation we'll light the engines after

201
00:08:08,469 --> 00:08:06,960
we do some some engine conditioning to

202
00:08:11,189 --> 00:08:08,479
get ready for that

203
00:08:14,230 --> 00:08:11,199
that first engine burn will

204
00:08:15,830 --> 00:08:14,240
last about 13 minutes and 21 seconds a

205
00:08:18,230 --> 00:08:15,840
few seconds into that will separate the

206
00:08:21,350 --> 00:08:18,240
payload fairing as you saw right there

207
00:08:23,749 --> 00:08:21,360
and that single burn will put the cygnus

208
00:08:25,510 --> 00:08:23,759
spacecraft into the orbit that we need

209
00:08:27,189 --> 00:08:25,520
to get it to

210
00:08:28,869 --> 00:08:27,199
we'll coast for

211
00:08:31,029 --> 00:08:28,879
a little less than three minutes about

212
00:08:33,269 --> 00:08:31,039
two minutes and 49 seconds

213
00:08:35,589 --> 00:08:33,279

orient to the proper separation attitude

214
00:08:37,670 --> 00:08:35,599
and separate the cygnus

215
00:08:39,589 --> 00:08:37,680
once that's done we will actually do

216
00:08:41,670 --> 00:08:39,599
another coast with centaur

217
00:08:43,750 --> 00:08:41,680
almost half an hour and then we'll do a

218
00:08:45,590 --> 00:08:43,760
short burn about a 12 second engine burn

219
00:08:48,230 --> 00:08:45,600
and that burn is to do a controlled

220
00:08:50,790 --> 00:08:48,240
deorbit of the centaur upper stage

221
00:08:52,230 --> 00:08:50,800
and the centaur will come down

222
00:08:55,110 --> 00:08:52,240
in the arctic ocean a little south of

223
00:08:57,190 --> 00:08:55,120
australia just after an hour

224
00:08:59,190 --> 00:08:57,200
after liftoff about i think one hour and

225
00:09:04,790 --> 00:08:59,200
six minutes they're predicting uh is

226
00:09:08,310 --> 00:09:06,550
so uh this morning just to give you the

227
00:09:10,550 --> 00:09:08,320
final update we did roll to the launch

228
00:09:12,710 --> 00:09:10,560
pad out at complex 41

229
00:09:14,870 --> 00:09:12,720
on our mobile launch platform final

230
00:09:17,509 --> 00:09:14,880
connections and some final checkouts are

231
00:09:19,670 --> 00:09:17,519
in work as we speak right now

232
00:09:22,230 --> 00:09:19,680
and we'll load rp1 propellant onto the

233
00:09:24,070 --> 00:09:22,240
booster a little bit later today after

234
00:09:25,110 --> 00:09:24,080
that operation is complete we'll secure

235
00:09:27,190 --> 00:09:25,120
the vehicle

236
00:09:28,630 --> 00:09:27,200
this afternoon we have one more major

237
00:09:30,230 --> 00:09:28,640
review and that's the final launch

238
00:09:32,470 --> 00:09:30,240

readiness review with the air force's

239
00:09:34,470 --> 00:09:32,480
45th space wing

240
00:09:36,470 --> 00:09:34,480
and after that we'll let our crew get

241
00:09:38,630 --> 00:09:36,480
some rest and very early tomorrow

242
00:09:40,870 --> 00:09:38,640
morning some of our folks on the various

243
00:09:42,470 --> 00:09:40,880
teams will start coming in to

244
00:09:43,990 --> 00:09:42,480
pick up the countdown

245
00:09:47,269 --> 00:09:44,000
and as was mentioned earlier we're

246
00:09:48,710 --> 00:09:47,279
targeting about an 11 11 a.m local time

247
00:09:50,230 --> 00:09:48,720
that could actually shift a little bit

248
00:09:51,829 --> 00:09:50,240
because what we do for this mission is

249
00:09:55,110 --> 00:09:51,839
we actually

250
00:09:57,269 --> 00:09:55,120
update the trajectory if needed about 24

251
00:09:59,350 --> 00:09:57,279
hours in advance to account for any last

252
00:10:01,750 --> 00:09:59,360
minute changes to the space station

253
00:10:03,269 --> 00:10:01,760
orbit we have that flexibility to really

254
00:10:05,030 --> 00:10:03,279
tailor the trajectory right down to the

255
00:10:06,790 --> 00:10:05,040
last minute

256
00:10:08,150 --> 00:10:06,800
um

257
00:10:10,710 --> 00:10:08,160
so with that i'd like to i'd like to

258
00:10:12,310 --> 00:10:10,720
thank all of our partners uh you know as

259
00:10:14,310 --> 00:10:12,320
always it takes an incredible team

260
00:10:16,389 --> 00:10:14,320
effort to get to this point i'd like to

261
00:10:19,110 --> 00:10:16,399
thank the air force the faa

262
00:10:21,269 --> 00:10:19,120
our customer orbital atk all of our

263
00:10:23,910 --> 00:10:21,279

suppliers who've worked with us

264
00:10:25,750 --> 00:10:23,920
as always we're relentlessly focused on

265
00:10:28,069 --> 00:10:25,760
mission success and we're looking

266
00:10:30,470 --> 00:10:28,079
forward to a great launch tomorrow and

267
00:10:32,470 --> 00:10:30,480
continuing our record of 100 mission

268
00:10:33,990 --> 00:10:32,480
success thank you back to you george

269
00:10:35,829 --> 00:10:34,000
thank you vern

270
00:10:38,949 --> 00:10:35,839
and now to frank culbertson the space

271
00:10:40,949 --> 00:10:38,959
systems group president from orbital atk

272
00:10:43,509 --> 00:10:40,959
frank thank you very much george and

273
00:10:45,269 --> 00:10:43,519
good morning to everyone on behalf of

274
00:10:47,350 --> 00:10:45,279
david thompson and the entire orbital

275
00:10:48,949 --> 00:10:47,360
atk team i'd like to thank you for the

276
00:10:50,310 --> 00:10:48,959
hospitality

277
00:10:52,550 --> 00:10:50,320
it's great to be back here at the

278
00:10:53,910 --> 00:10:52,560
kennedy space center cape canaveral

279
00:10:55,829 --> 00:10:53,920
complex

280
00:10:58,790 --> 00:10:55,839
we've had great service and great

281
00:11:00,230 --> 00:10:58,800
collaboration with the folks here at ksc

282
00:11:02,470 --> 00:11:00,240
in preparing our payload and our

283
00:11:04,310 --> 00:11:02,480
spacecraft and of course our partners

284
00:11:06,150 --> 00:11:04,320
ula have done a great job getting us

285
00:11:08,230 --> 00:11:06,160
ready for flight they've worked through

286
00:11:09,829 --> 00:11:08,240
a few issues that have delayed the

287
00:11:12,470 --> 00:11:09,839
original plan for the launch but we're

288
00:11:15,829 --> 00:11:12,480

still on track for delivering to the

289
00:11:17,030 --> 00:11:15,839
space station and flying the ss john

290
00:11:19,190 --> 00:11:17,040
glenn

291
00:11:21,750 --> 00:11:19,200
we are very proud of that fact that

292
00:11:23,509 --> 00:11:21,760
this spacecraft is named after

293
00:11:25,269 --> 00:11:23,519
my former

294
00:11:27,590 --> 00:11:25,279
fellow astronaut john glenn a real

295
00:11:29,670 --> 00:11:27,600
pioneer of course in the space world and

296
00:11:31,670 --> 00:11:29,680
as vern said who launched for the first

297
00:11:32,550 --> 00:11:31,680
time out of here on an atlas rocket so i

298
00:11:35,509 --> 00:11:32,560
think the

299
00:11:37,910 --> 00:11:35,519
almost 55 years ago uh it's uh it's a

300
00:11:40,150 --> 00:11:37,920
great uh great tribute to john to be

301
00:11:41,350 --> 00:11:40,160
able to to take his name to orbit once

302
00:11:42,550 --> 00:11:41,360
again

303
00:11:44,710 --> 00:11:42,560
um

304
00:11:46,150 --> 00:11:44,720
we do have a short video that i'd like

305
00:11:49,030 --> 00:11:46,160
to play if we could start rolling the

306
00:11:51,590 --> 00:11:49,040
video to show our processing

307
00:11:53,590 --> 00:11:51,600
uh sequence here this is the

308
00:11:54,710 --> 00:11:53,600
service module arriving at kennedy space

309
00:11:56,550 --> 00:11:54,720
center

310
00:11:58,550 --> 00:11:56,560
a couple of months ago

311
00:12:01,190 --> 00:11:58,560
we're preparing it to mate it with the

312
00:12:03,110 --> 00:12:01,200
pressurized cargo module

313
00:12:05,110 --> 00:12:03,120

which arrived separately

314
00:12:06,790 --> 00:12:05,120
it's being uncreated in this uh in this

315
00:12:08,389 --> 00:12:06,800
scene

316
00:12:11,030 --> 00:12:08,399
it came from

317
00:12:13,430 --> 00:12:11,040
torino italy manufactured by tala

318
00:12:15,750 --> 00:12:13,440
selenia some really great partners in

319
00:12:17,990 --> 00:12:15,760
building modules for space

320
00:12:19,750 --> 00:12:18,000
and for the international space station

321
00:12:21,430 --> 00:12:19,760
here they're being mated so that we

322
00:12:23,269 --> 00:12:21,440
could begin to

323
00:12:24,389 --> 00:12:23,279
load the cargo

324
00:12:25,670 --> 00:12:24,399
and uh

325
00:12:27,350 --> 00:12:25,680
and of course we'll host a number of

326
00:12:30,550 --> 00:12:27,360
science experiments

327
00:12:32,629 --> 00:12:30,560
it's a fairly complex process a lot of

328
00:12:35,190 --> 00:12:32,639
uh a lot of bolts have to be tightened

329
00:12:37,990 --> 00:12:35,200
and a lot of things put in place but

330
00:12:40,470 --> 00:12:38,000
here you see it being moved from the uh

331
00:12:42,710 --> 00:12:40,480
processing facility

332
00:12:46,069 --> 00:12:42,720
over to the phsf

333
00:12:49,829 --> 00:12:47,509
and of course it's shrouded to protect

334
00:12:50,949 --> 00:12:49,839
it from from the weather in this in this

335
00:12:52,949 --> 00:12:50,959
scene

336
00:12:55,110 --> 00:12:52,959
and here we are beginning the cargo load

337
00:12:56,710 --> 00:12:55,120
including the uh powered mid deck

338
00:12:58,949 --> 00:12:56,720

lockers that we're carrying to the space

339
00:13:01,030 --> 00:12:58,959
station uh we are carrying more this

340
00:13:03,110 --> 00:13:01,040
time than we have in the past and uh

341
00:13:05,269 --> 00:13:03,120
that's a good step forward for us and

342
00:13:06,790 --> 00:13:05,279
for the crew the more research we can

343
00:13:08,870 --> 00:13:06,800
carry the more they can do their job and

344
00:13:11,430 --> 00:13:08,880
the more they can show the utility of

345
00:13:13,670 --> 00:13:11,440
the international space station a nice

346
00:13:15,750 --> 00:13:13,680
shot of john there in that previous

347
00:13:17,350 --> 00:13:15,760
previous scene

348
00:13:19,829 --> 00:13:17,360
after it's loaded we take it to the vif

349
00:13:22,949 --> 00:13:19,839
as vern mentioned for

350
00:13:25,590 --> 00:13:22,959
installation on top of the rocket

351
00:13:27,430 --> 00:13:25,600
sort of a breathtaking event in itself

352
00:13:28,629 --> 00:13:27,440
but still one that they've done many

353
00:13:30,470 --> 00:13:28,639
times and one that we have a lot of

354
00:13:32,790 --> 00:13:30,480
confidence in

355
00:13:35,670 --> 00:13:32,800
this scene is what you will see when the

356
00:13:38,629 --> 00:13:35,680
cygnus detaches from the atlas upper

357
00:13:40,230 --> 00:13:38,639
stage and then we'll deploy the solar

358
00:13:42,790 --> 00:13:40,240
arrays which of course are built by

359
00:13:43,590 --> 00:13:42,800
another orbital atk component

360
00:13:45,670 --> 00:13:43,600
in

361
00:13:47,350 --> 00:13:45,680
goleta california

362
00:13:49,269 --> 00:13:47,360
these are our ulcer flex arrays that

363
00:13:51,829 --> 00:13:49,279

have done a fantastic job for us on this

364
00:13:53,590 --> 00:13:51,839
spacecraft and on others

365
00:13:56,150 --> 00:13:53,600
once we birth with the international

366
00:13:58,629 --> 00:13:56,160
space station after our approach and

367
00:13:59,910 --> 00:13:58,639
rendezvous

368
00:14:02,230 --> 00:13:59,920
of course the crew that will first

369
00:14:03,269 --> 00:14:02,240
grapple the sta the cygnus spacecraft

370
00:14:05,189 --> 00:14:03,279
with the

371
00:14:07,350 --> 00:14:05,199
canadian robotic arm

372
00:14:09,430 --> 00:14:07,360
and then attaches to the

373
00:14:11,829 --> 00:14:09,440
to node one unity node

374
00:14:13,430 --> 00:14:11,839
in preparation for unloading

375
00:14:15,189 --> 00:14:13,440
the

376
00:14:16,790 --> 00:14:15,199
crew of course is always very anxious to

377
00:14:18,629 --> 00:14:16,800
see what comes up in the cygnus

378
00:14:20,310 --> 00:14:18,639
spacecraft

379
00:14:21,670 --> 00:14:20,320
this is from a previous one of course

380
00:14:23,910 --> 00:14:21,680
but

381
00:14:26,949 --> 00:14:23,920
we do think they'll be excited

382
00:14:28,230 --> 00:14:26,959
we are sorry we missed easter but we're

383
00:14:30,710 --> 00:14:28,240
pretty sure they'll be excited about

384
00:14:31,829 --> 00:14:30,720
their easter baskets or whatever

385
00:14:33,670 --> 00:14:31,839
great things

386
00:14:35,910 --> 00:14:33,680
uh international space station science

387
00:14:37,670 --> 00:14:35,920
put on forward for them more experience

388
00:14:39,670 --> 00:14:37,680

experiments for them to

389
00:14:41,030 --> 00:14:39,680
to take part in i'm sure

390
00:14:43,670 --> 00:14:41,040
once we finish our mission at the

391
00:14:45,750 --> 00:14:43,680
station and we uh load the discarded

392
00:14:47,910 --> 00:14:45,760
cargo we will also conduct a couple more

393
00:14:49,990 --> 00:14:47,920
experiments including a

394
00:14:53,509 --> 00:14:50,000
combustion experiment on behalf of glenn

395
00:14:56,710 --> 00:14:53,519
research center deploy some cubesats

396
00:14:58,629 --> 00:14:56,720
and uh for planets

397
00:15:01,189 --> 00:14:58,639
for nanoracks and then of course

398
00:15:03,189 --> 00:15:01,199
there'll be an experiment to evaluate

399
00:15:05,269 --> 00:15:03,199
the re-entry of the cygnus itself which

400
00:15:06,790 --> 00:15:05,279
we've done on previous missions

401
00:15:09,269 --> 00:15:06,800
and of course everything will burn up as

402
00:15:10,629 --> 00:15:09,279
it reenters the atmosphere right frank

403
00:15:11,509 --> 00:15:10,639
okay good

404
00:15:12,710 --> 00:15:11,519
um

405
00:15:15,189 --> 00:15:12,720
but like i said we may be a little bit

406
00:15:17,670 --> 00:15:15,199
late but we're happy to to be coming uh

407
00:15:19,590 --> 00:15:17,680
easter week and and uh to see the

408
00:15:21,670 --> 00:15:19,600
uh the excitement on the face of the

409
00:15:23,750 --> 00:15:21,680
astronauts and there will be additional

410
00:15:26,389 --> 00:15:23,760
crew on board i'd like to

411
00:15:29,110 --> 00:15:26,399
wish my colleagues fioro your chicken

412
00:15:30,949 --> 00:15:29,120
and jack fisher or seafish

413
00:15:32,870 --> 00:15:30,959

bon voyage and

414
00:15:34,870 --> 00:15:32,880
and good luck on their flight on the

415
00:15:36,790 --> 00:15:34,880
soyuz in two days and they'll be

416
00:15:37,590 --> 00:15:36,800
arriving just before we do

417
00:15:39,590 --> 00:15:37,600
and

418
00:15:41,910 --> 00:15:39,600
we look forward to to look on their

419
00:15:43,269 --> 00:15:41,920
faces as they as they open the hatch and

420
00:15:44,470 --> 00:15:43,279
wish them well for their upcoming

421
00:15:45,910 --> 00:15:44,480
mission on the international space

422
00:15:47,749 --> 00:15:45,920
station

423
00:15:49,910 --> 00:15:47,759
uh as i said we're happy to be back here

424
00:15:51,189 --> 00:15:49,920
happy to be flying again and looking

425
00:15:52,790 --> 00:15:51,199
forward to many more flights in the

426
00:15:54,949 --> 00:15:52,800
future but this is the one we're focused

427
00:15:56,870 --> 00:15:54,959
on today everything looks great and

428
00:15:58,389 --> 00:15:56,880
again we appreciate the

429
00:16:00,629 --> 00:15:58,399
great work by all of our partners

430
00:16:02,629 --> 00:16:00,639
including as vern said the faa

431
00:16:04,790 --> 00:16:02,639
and nasa who've helped helped us get

432
00:16:06,949 --> 00:16:04,800
ready for this mission

433
00:16:09,430 --> 00:16:06,959
and as i hand it back to george i would

434
00:16:11,749 --> 00:16:09,440
like to also thank george for his 37

435
00:16:13,350 --> 00:16:11,759
years of service in this job and all the

436
00:16:14,629 --> 00:16:13,360
many interviews and

437
00:16:16,230 --> 00:16:14,639
and

438
00:16:18,389 --> 00:16:16,240

conferences like press conferences he's

439
00:16:20,150 --> 00:16:18,399
done like this and all that he's put up

440
00:16:22,069 --> 00:16:20,160
with in having to deal with some of us

441
00:16:24,150 --> 00:16:22,079
that have flown in space and trying to

442
00:16:26,150 --> 00:16:24,160
explain what the heck is he doing now

443
00:16:28,870 --> 00:16:26,160
but but george has done a terrific job

444
00:16:32,310 --> 00:16:28,880
of that a real true fan of the space

445
00:16:34,870 --> 00:16:32,320
program but also a real contributor and

446
00:16:36,550 --> 00:16:34,880
we do appreciate all of these done and

447
00:16:38,790 --> 00:16:36,560
i'm pretty sure he won't go very far

448
00:16:40,949 --> 00:16:38,800
away so george thank you for everything

449
00:16:44,790 --> 00:16:40,959
thank you it's a lot of fun sure has

450
00:16:48,790 --> 00:16:46,870
all right uh next

451
00:16:50,710 --> 00:16:48,800
to tara rutley the associate program

452
00:16:53,269 --> 00:16:50,720
scientist for the international space

453
00:16:55,269 --> 00:16:53,279
station tara yes good morning everyone

454
00:16:57,910 --> 00:16:55,279
uh like frank i share the sentiment that

455
00:16:59,990 --> 00:16:57,920
it's really great to be back at ksc

456
00:17:01,590 --> 00:17:00,000
watch the buzz about all the science

457
00:17:02,550 --> 00:17:01,600
that's getting ready to launch to

458
00:17:04,390 --> 00:17:02,560
station

459
00:17:05,909 --> 00:17:04,400
i got to talk to a couple of scientists

460
00:17:07,990 --> 00:17:05,919
this morning and they're ready to go

461
00:17:10,949 --> 00:17:08,000
excited to be here

462
00:17:11,909 --> 00:17:10,959
we have some a wide range of

463
00:17:14,309 --> 00:17:11,919

support

464
00:17:15,909 --> 00:17:14,319
equipment that's going to be headed to

465
00:17:17,909 --> 00:17:15,919
station to support the science that's up

466
00:17:20,150 --> 00:17:17,919
there already but also to introduce some

467
00:17:22,470 --> 00:17:20,160
brand new capabilities and some exciting

468
00:17:23,510 --> 00:17:22,480
new research to station

469
00:17:25,029 --> 00:17:23,520
i'm going to share some of those

470
00:17:27,829 --> 00:17:25,039
examples with you today but i could be

471
00:17:29,430 --> 00:17:27,839
here for over an hour myself so in the

472
00:17:31,029 --> 00:17:29,440
interest of time i want to make sure

473
00:17:32,950 --> 00:17:31,039
that you all are aware of our website

474
00:17:34,390 --> 00:17:32,960
where you can go and learn a lot about

475
00:17:39,029 --> 00:17:34,400
many more of the investigations for

476
00:17:44,950 --> 00:17:40,390
forward slash

477
00:17:47,190 --> 00:17:44,960
iss dash science so iss science that's

478
00:17:48,789 --> 00:17:47,200
where all the science information can be

479
00:17:50,950 --> 00:17:48,799
found

480
00:17:53,110 --> 00:17:50,960
so uh the first parts i want to share

481
00:17:54,710 --> 00:17:53,120
with you uh that's pretty exciting and

482
00:17:56,310 --> 00:17:54,720
and it's real exciting to see space

483
00:17:58,070 --> 00:17:56,320
station keep up with the advancements in

484
00:18:00,310 --> 00:17:58,080
technology on earth

485
00:18:01,750 --> 00:18:00,320
we it is a it is a laboratory we want to

486
00:18:03,750 --> 00:18:01,760
invite the best and the brightest the

487
00:18:06,630 --> 00:18:03,760
most capable scientists to use that

488
00:18:08,390 --> 00:18:06,640

platform and so uh the most interesting

489
00:18:10,630 --> 00:18:08,400
thing i think that's happening right now

490
00:18:13,270 --> 00:18:10,640
in terms of evolving science on station

491
00:18:15,590 --> 00:18:13,280
is all of the studies that are happening

492
00:18:17,590 --> 00:18:15,600
basically looking at our health at

493
00:18:19,830 --> 00:18:17,600
levels that you can't even see so these

494
00:18:22,710 --> 00:18:19,840
are levels at the very tiniest cell and

495
00:18:25,510 --> 00:18:22,720
molecular biological levels so

496
00:18:26,470 --> 00:18:25,520
one of those examples is a payload that

497
00:18:28,470 --> 00:18:26,480
is

498
00:18:30,070 --> 00:18:28,480
actually being developed or was a

499
00:18:31,990 --> 00:18:30,080
winning student proposal a high school

500
00:18:33,669 --> 00:18:32,000
student proposal this one's called gene

501
00:18:36,070 --> 00:18:33,679
in space ii

502
00:18:39,029 --> 00:18:36,080
now this student's proposal suggested to

503
00:18:40,710 --> 00:18:39,039
take a look at telomere length and how

504
00:18:42,630 --> 00:18:40,720
space flight affects telomere length now

505
00:18:45,270 --> 00:18:42,640
telomeres are little end caps on the end

506
00:18:46,950 --> 00:18:45,280
of our chromosomes and our dna and every

507
00:18:48,789 --> 00:18:46,960
as we get older with every cell division

508
00:18:51,110 --> 00:18:48,799
they get shorter and it's associated

509
00:18:53,430 --> 00:18:51,120
with aging and it's associated with also

510
00:18:55,909 --> 00:18:53,440
stressful environments um and it has

511
00:18:57,350 --> 00:18:55,919
impacts on our health so this student

512
00:18:59,270 --> 00:18:57,360
proposed to

513
00:19:00,789 --> 00:18:59,280

take a look at telomere

514
00:19:02,950 --> 00:19:00,799
length and how space flight affects that

515
00:19:05,830 --> 00:19:02,960
by amplifying the dna associated with

516
00:19:07,830 --> 00:19:05,840
the telomere sections now amplification

517
00:19:10,150 --> 00:19:07,840
of dna is a big deal if you want to go

518
00:19:13,270 --> 00:19:10,160
and study more about what's happening

519
00:19:15,350 --> 00:19:13,280
you know as we as we see it in health

520
00:19:18,470 --> 00:19:15,360
we actually were able to for the first

521
00:19:20,310 --> 00:19:18,480
time ever in space amplify dna last

522
00:19:21,750 --> 00:19:20,320
last year i believe it was last summer

523
00:19:23,590 --> 00:19:21,760
again another high school student

524
00:19:24,470 --> 00:19:23,600
proposal from the same program genes in

525
00:19:26,470 --> 00:19:24,480
space

526
00:19:27,909 --> 00:19:26,480
amplification of dna is an important

527
00:19:29,909 --> 00:19:27,919
first step and then being able to

528
00:19:33,750 --> 00:19:29,919
sequence it and tell us what's happening

529
00:19:35,909 --> 00:19:33,760
in real really so uh so we'll be able to

530
00:19:37,510 --> 00:19:35,919
see how this amplification process goes

531
00:19:39,110 --> 00:19:37,520
get the data back and maybe understand

532
00:19:40,870 --> 00:19:39,120
some of what might be happening with

533
00:19:42,549 --> 00:19:40,880
telomeres in space

534
00:19:44,950 --> 00:19:42,559
um now

535
00:19:47,590 --> 00:19:44,960
part of that also genes in space 3 will

536
00:19:48,710 --> 00:19:47,600
happen later a little bit later on and

537
00:19:50,630 --> 00:19:48,720
we're going to be able to take the

538
00:19:52,630 --> 00:19:50,640

process which is what scientists really

539
00:19:54,549 --> 00:19:52,640
do in the laboratory like i say when you

540
00:19:56,470 --> 00:19:54,559
start with amplification of dna then you

541
00:19:57,990 --> 00:19:56,480
want to be able to sequence dna and tell

542
00:20:00,150 --> 00:19:58,000
you what you're actually looking at what

543
00:20:02,390 --> 00:20:00,160
kind of a protein are you looking at so

544
00:20:04,549 --> 00:20:02,400
that's what's going to happen next

545
00:20:07,430 --> 00:20:04,559
in genes in space 3. we're going to

546
00:20:09,830 --> 00:20:07,440
combine two powerful dna capabilities

547
00:20:12,149 --> 00:20:09,840
analytic capabilities in space and for

548
00:20:15,110 --> 00:20:12,159
the first time ever take them from

549
00:20:16,470 --> 00:20:15,120
amplification to what are we looking at

550
00:20:19,430 --> 00:20:16,480
and that's combining what we call the

551
00:20:21,270 --> 00:20:19,440
mini pcr with the biomolecule sequencer

552
00:20:24,549 --> 00:20:21,280
that's a men ion product both are

553
00:20:26,390 --> 00:20:24,559
commercial products and we're able to

554
00:20:29,750 --> 00:20:26,400
take things end to end so inviting again

555
00:20:31,510 --> 00:20:29,760
more molecular biology studies on in

556
00:20:34,950 --> 00:20:31,520
space looking at lots of things that

557
00:20:37,590 --> 00:20:34,960
could be different in space flight

558
00:20:40,149 --> 00:20:37,600
we also are this this particular launch

559
00:20:42,870 --> 00:20:40,159
is also um enabling an investigation

560
00:20:45,510 --> 00:20:42,880
that is looking at um

561
00:20:47,590 --> 00:20:45,520
uh contributing to fighting cancer um

562
00:20:49,430 --> 00:20:47,600
using the microgravity environment to

563
00:20:51,909 --> 00:20:49,440

potentially fight cancer

564
00:20:54,070 --> 00:20:51,919
this is a company called oncolynx they

565
00:20:56,230 --> 00:20:54,080
are working on what's called antibody

566
00:20:57,669 --> 00:20:56,240
drug conjugates and they've developed

567
00:20:59,110 --> 00:20:57,679
them on the ground it's basically where

568
00:21:01,350 --> 00:20:59,120
you take

569
00:21:03,909 --> 00:21:01,360
you combine an antibody with a drug and

570
00:21:06,950 --> 00:21:03,919
be able to target directly the cancer

571
00:21:09,510 --> 00:21:06,960
cells themselves to fight cancer now

572
00:21:11,270 --> 00:21:09,520
this group is particularly interested in

573
00:21:14,630 --> 00:21:11,280
using the microgravity environment to

574
00:21:16,630 --> 00:21:14,640
test their uh process because uh in

575
00:21:18,070 --> 00:21:16,640
space you can uh if you're really good

576
00:21:20,710 --> 00:21:18,080
at culturing you can get some

577
00:21:22,630 --> 00:21:20,720
three-dimensional spherical uh cells

578
00:21:24,310 --> 00:21:22,640
developed cell cultures in a way that's

579
00:21:26,789 --> 00:21:24,320
similar to what they see

580
00:21:29,270 --> 00:21:26,799
in the body so this group is going to

581
00:21:31,270 --> 00:21:29,280
leverage the microgravity environment to

582
00:21:33,350 --> 00:21:31,280
to test their drug efficacy and just

583
00:21:35,750 --> 00:21:33,360
contribute more data to what they're

584
00:21:38,390 --> 00:21:35,760
already developing on earth

585
00:21:40,870 --> 00:21:38,400
you can see that it obviously could have

586
00:21:42,870 --> 00:21:40,880
earth-based therapeutic benefits for

587
00:21:44,470 --> 00:21:42,880
those of us on the ground

588
00:21:46,310 --> 00:21:44,480

but to be able to do studies like that

589
00:21:48,070 --> 00:21:46,320
you need to be able to grow really good

590
00:21:49,990 --> 00:21:48,080
cell cultures and so the next

591
00:21:53,110 --> 00:21:50,000
investigation that is enabled by this

592
00:21:55,510 --> 00:21:53,120
particular launch is called magnetic 3d

593
00:21:59,669 --> 00:21:55,520
cell culturing so this particular

594
00:22:01,909 --> 00:21:59,679
investigation will use magnetic cells

595
00:22:05,510 --> 00:22:01,919
that will be obviously levitated in

596
00:22:08,070 --> 00:22:05,520
microgravity but used to control cells

597
00:22:09,990 --> 00:22:08,080
hold them still if you think about it

598
00:22:11,029 --> 00:22:10,000
when you need to because growing cell

599
00:22:13,190 --> 00:22:11,039
cultures

600
00:22:14,710 --> 00:22:13,200
is very complicated on earth to do it in

601
00:22:16,470 --> 00:22:14,720
space is even more complicated because

602
00:22:18,230 --> 00:22:16,480
you have to feed them you have to change

603
00:22:21,110 --> 00:22:18,240
the media you have to keep the cells

604
00:22:23,590 --> 00:22:21,120
healthy and that can be tricky in space

605
00:22:25,590 --> 00:22:23,600
so this team is proposing to use magnets

606
00:22:26,950 --> 00:22:25,600
to basically hold your culture still

607
00:22:29,350 --> 00:22:26,960
while you do all those things to

608
00:22:31,430 --> 00:22:29,360
maintain cell cultures now what comes

609
00:22:33,669 --> 00:22:31,440
out of this could be very interesting in

610
00:22:35,110 --> 00:22:33,679
terms of new capabilities for all the

611
00:22:37,510 --> 00:22:35,120
different types of cells that we could

612
00:22:39,669 --> 00:22:37,520
potentially grow in space as we get more

613
00:22:42,710 --> 00:22:39,679

and more complex and we head towards

614
00:22:44,789 --> 00:22:42,720
more sophisticated studies

615
00:22:46,310 --> 00:22:44,799
this team is already doing these kind of

616
00:22:48,310 --> 00:22:46,320
manipulations on the ground and have

617
00:22:50,149 --> 00:22:48,320
seen really interesting results uh as

618
00:22:51,909 --> 00:22:50,159
well so now they're ready to use our

619
00:22:54,710 --> 00:22:51,919
laboratory in space to further their

620
00:22:57,510 --> 00:22:54,720
progress and further ours now on the

621
00:23:00,149 --> 00:22:57,520
technology front we have a new advanced

622
00:23:03,430 --> 00:23:00,159
plant habitat that's going up as well

623
00:23:05,510 --> 00:23:03,440
now this will be the the largest ever uh

624
00:23:07,590 --> 00:23:05,520
food production plant production

625
00:23:08,390 --> 00:23:07,600
capability on the international space

626
00:23:11,190 --> 00:23:08,400
station

627
00:23:13,669 --> 00:23:11,200
it's very um complex in its systems it's

628
00:23:15,510 --> 00:23:13,679
very capable more capable than ever in

629
00:23:17,830 --> 00:23:15,520
the environment that the plants can grow

630
00:23:20,230 --> 00:23:17,840
in it's got something like over 180

631
00:23:21,909 --> 00:23:20,240
different sensors that will treat the

632
00:23:23,909 --> 00:23:21,919
plants the way they want to be treated

633
00:23:25,669 --> 00:23:23,919
so that they can grow

634
00:23:28,230 --> 00:23:25,679
food eventually

635
00:23:29,750 --> 00:23:28,240
for our astronauts as we plan to

636
00:23:30,789 --> 00:23:29,760
explore longer and beyond low earth

637
00:23:32,549 --> 00:23:30,799
orbit

638
00:23:34,549 --> 00:23:32,559

let's see this what they're sending up

639
00:23:37,029 --> 00:23:34,559
on this particular flight is the

640
00:23:39,270 --> 00:23:37,039
structure and that's something called a

641
00:23:41,029 --> 00:23:39,280
science carrier and this science carrier

642
00:23:43,190 --> 00:23:41,039
will have a couple different seed types

643
00:23:45,669 --> 00:23:43,200
in them it will have a dwarf wheat i

644
00:23:47,430 --> 00:23:45,679
believe and arabidopsis now wheat is a

645
00:23:49,750 --> 00:23:47,440
kind of a crop plant right

646
00:23:51,590 --> 00:23:49,760
arabidopsis is a model organism plant

647
00:23:53,110 --> 00:23:51,600
that scientists can use they know a lot

648
00:23:55,590 --> 00:23:53,120
about the genetics and a lot about how

649
00:23:57,669 --> 00:23:55,600
these plants can behave so this first

650
00:24:00,549 --> 00:23:57,679
set of seeds will be used as a

651
00:24:02,470 --> 00:24:00,559
demonstration of how we can wet these

652
00:24:04,149 --> 00:24:02,480
seeds and get germination of these seeds

653
00:24:06,710 --> 00:24:04,159
in microgravity in this new plant

654
00:24:08,870 --> 00:24:06,720
habitat where the environmental

655
00:24:10,950 --> 00:24:08,880
the environmental control is can be

656
00:24:12,710 --> 00:24:10,960
precisely maintained exactly the way we

657
00:24:14,950 --> 00:24:12,720
want for studies and then we have our

658
00:24:16,549 --> 00:24:14,960
first peer-reviewed science study coming

659
00:24:19,430 --> 00:24:16,559
up in november that's going to use this

660
00:24:20,789 --> 00:24:19,440
plant habitat for hypothesis studies so

661
00:24:22,230 --> 00:24:20,799
we want to make sure that we check out

662
00:24:23,750 --> 00:24:22,240
this this

663
00:24:25,430 --> 00:24:23,760

this habitat and make sure it's in good

664
00:24:27,029 --> 00:24:25,440
use for that

665
00:24:28,870 --> 00:24:27,039
we also have

666
00:24:30,710 --> 00:24:28,880
two investigations that will be

667
00:24:33,110 --> 00:24:30,720
performed in what's called the subsa

668
00:24:34,950 --> 00:24:33,120
which is a solidification furnace here

669
00:24:37,029 --> 00:24:34,960
is a furnace that was used early in

670
00:24:38,950 --> 00:24:37,039
space station era and was decommissioned

671
00:24:41,190 --> 00:24:38,960
and brought back to life recently we've

672
00:24:42,630 --> 00:24:41,200
got two investigations that are going to

673
00:24:44,549 --> 00:24:42,640
perform what we call

674
00:24:46,549 --> 00:24:44,559
crystallization melts or basically

675
00:24:47,909 --> 00:24:46,559
growing crystals in in forms of

676
00:24:49,669 --> 00:24:47,919
scintillators

677
00:24:51,510 --> 00:24:49,679
and if you know anything about growing

678
00:24:53,190 --> 00:24:51,520
crystals in space this is a little bit

679
00:24:55,909 --> 00:24:53,200
different than what we would see with

680
00:24:57,590 --> 00:24:55,919
the traditional diffusion based this is

681
00:24:59,430 --> 00:24:57,600
more of a furnace based a heat base

682
00:25:01,909 --> 00:24:59,440
where you can melt the

683
00:25:03,750 --> 00:25:01,919
melt the materials and regrow perfect

684
00:25:04,950 --> 00:25:03,760
crystals or near-perfect crystals in a

685
00:25:06,710 --> 00:25:04,960
way that

686
00:25:08,549 --> 00:25:06,720
you can then study on earth and

687
00:25:10,870 --> 00:25:08,559
reproduce that massively on the ground

688
00:25:13,190 --> 00:25:10,880

what these scintillators do one provides

689
00:25:14,710 --> 00:25:13,200
a color change when neutrons or gamma

690
00:25:16,870 --> 00:25:14,720
rays are detected so it's kind of a

691
00:25:19,510 --> 00:25:16,880
radiation detector the second one is a

692
00:25:21,750 --> 00:25:19,520
semiconductor type of material that

693
00:25:23,830 --> 00:25:21,760
could be used to measure nuclear

694
00:25:26,070 --> 00:25:23,840
detection so both of them real

695
00:25:28,230 --> 00:25:26,080
implications on earth again using the

696
00:25:31,830 --> 00:25:28,240
microgravity environment where it's not

697
00:25:34,310 --> 00:25:31,840
it's a a calmer um less conductive

698
00:25:36,630 --> 00:25:34,320
environment that would affect uh crystal

699
00:25:40,149 --> 00:25:36,640
growth like it would on earth

700
00:25:42,230 --> 00:25:40,159
we also have um the nano the nanoracks

701
00:25:43,590 --> 00:25:42,240
cubesats deployment and this the you

702
00:25:45,669 --> 00:25:43,600
heard a little bit about this earlier

703
00:25:47,750 --> 00:25:45,679
and this is to be so fascinating because

704
00:25:51,110 --> 00:25:47,760
this didn't exist years ago and now what

705
00:25:53,190 --> 00:25:51,120
we have is a capability to shoot off or

706
00:25:55,110 --> 00:25:53,200
deploy off these tiny little cubesats

707
00:25:56,710 --> 00:25:55,120
from the international space station and

708
00:25:58,870 --> 00:25:56,720
those cubesats all serve a certain

709
00:26:01,990 --> 00:25:58,880
function as they circle around the earth

710
00:26:04,549 --> 00:26:02,000
these sensors or or taking photos and in

711
00:26:05,830 --> 00:26:04,559
this case there are 38 going up on the

712
00:26:08,149 --> 00:26:05,840
cygnus

713
00:26:09,430 --> 00:26:08,159

and they include customers such as the

714
00:26:11,909 --> 00:26:09,440
department of defense there are

715
00:26:14,789 --> 00:26:11,919
universities involved nasa has its own

716
00:26:17,110 --> 00:26:14,799
that's going to study ice in the clouds

717
00:26:20,110 --> 00:26:17,120
28 of those are from a program called

718
00:26:22,710 --> 00:26:20,120
qb50 it's a european european

719
00:26:25,590 --> 00:26:22,720
union-sponsored set of investigations

720
00:26:28,149 --> 00:26:25,600
and what that is is a constellation of

721
00:26:30,789 --> 00:26:28,159
universities around the world over 15

722
00:26:32,310 --> 00:26:30,799
countries spanning five continents and

723
00:26:34,390 --> 00:26:32,320
each one of those

724
00:26:37,029 --> 00:26:34,400
satellites detecting and taking their

725
00:26:39,110 --> 00:26:37,039
own sensors of the thermosphere

726
00:26:41,190 --> 00:26:39,120
and coming together as a constellation

727
00:26:42,789 --> 00:26:41,200
and and integrating data over the next

728
00:26:44,710 --> 00:26:42,799
few years that tells us

729
00:26:47,269 --> 00:26:44,720
about our earth's upper atmosphere so

730
00:26:49,350 --> 00:26:47,279
it's a fascinating um

731
00:26:52,390 --> 00:26:49,360
set of uh technology developments as

732
00:26:54,470 --> 00:26:52,400
we've seen grown we've over over 100 150

733
00:26:56,390 --> 00:26:54,480
of these cubesats has been launched um

734
00:26:57,750 --> 00:26:56,400
in the time of station so

735
00:26:59,430 --> 00:26:57,760
if you haven't ever seen any of those

736
00:27:01,190 --> 00:26:59,440
videos you should definitely go take a

737
00:27:03,110 --> 00:27:01,200
look it's really something to see

738
00:27:04,630 --> 00:27:03,120

those tiny little cubesats coming off of

739
00:27:06,549 --> 00:27:04,640
the space station

740
00:27:07,669 --> 00:27:06,559
and lastly since we're uh near in the

741
00:27:10,310 --> 00:27:07,679
end i'm going to talk a little bit about

742
00:27:12,549 --> 00:27:10,320
re-entry we've got a couple three three

743
00:27:16,310 --> 00:27:12,559
different pods um that are that are part

744
00:27:17,510 --> 00:27:16,320
of the red data 2 investigation that

745
00:27:19,990 --> 00:27:17,520
will

746
00:27:22,789 --> 00:27:20,000
kind of let go let loose of the vehicle

747
00:27:24,789 --> 00:27:22,799
as as the vehicles come in on re-entry

748
00:27:27,110 --> 00:27:24,799
and their goal of these three pods is to

749
00:27:29,669 --> 00:27:27,120
test new heat shield technologies for

750
00:27:31,430 --> 00:27:29,679
re-entry into the atmosphere one of

751
00:27:34,230 --> 00:27:31,440
those heat shield

752
00:27:36,310 --> 00:27:34,240
materials is a candidate for the orion

753
00:27:39,110 --> 00:27:36,320
that we're developing here at nasa but

754
00:27:41,350 --> 00:27:39,120
the the three pods will also take um

755
00:27:43,190 --> 00:27:41,360
telemetry data talk looking at breakup

756
00:27:45,350 --> 00:27:43,200
conditions as well and and sending that

757
00:27:48,470 --> 00:27:45,360
information back to earth to improve on

758
00:27:50,070 --> 00:27:48,480
future spacecraft reentry designs too

759
00:27:51,510 --> 00:27:50,080
and with that i want to say again

760
00:27:53,350 --> 00:27:51,520
there's much more that i can talk about

761
00:27:55,430 --> 00:27:53,360
but if you tune in again at about one

762
00:27:56,870 --> 00:27:55,440
o'clock eastern right here

763
00:27:58,470 --> 00:27:56,880

you will be able to hear from some of

764
00:28:00,389 --> 00:27:58,480
the scientists directly we have

765
00:28:02,149 --> 00:28:00,399
something called what's on board and

766
00:28:03,669 --> 00:28:02,159
each scientist will take turns showing

767
00:28:05,990 --> 00:28:03,679
off their hardware showing images

768
00:28:08,310 --> 00:28:06,000
talking in a lot of detail about these

769
00:28:11,350 --> 00:28:08,320
investigations that are headed to space

770
00:28:13,510 --> 00:28:11,360
station here uh hopefully tomorrow so

771
00:28:16,950 --> 00:28:13,520
with that uh i'll turn it back over all

772
00:28:19,269 --> 00:28:16,960
right thank you tara and now

773
00:28:21,510 --> 00:28:19,279
a snapshot of the weather for tomorrow

774
00:28:23,830 --> 00:28:21,520
morning david kraft launch weather

775
00:28:26,149 --> 00:28:23,840
officer from the u.s air force 45th

776
00:28:28,950 --> 00:28:26,159
weather squadron david hey thank you

777
00:28:30,549 --> 00:28:28,960
george i'm dave craft again

778
00:28:33,190 --> 00:28:30,559
u.s air force meteorologist one of the

779
00:28:35,350 --> 00:28:33,200
launch weather officers on this mission

780
00:28:37,190 --> 00:28:35,360
from the 45th space wing

781
00:28:39,029 --> 00:28:37,200
so what we are looking at as mentioned

782
00:28:41,909 --> 00:28:39,039
earlier one of the activities that is

783
00:28:45,190 --> 00:28:41,919
going on today is mlp roll to pad and

784
00:28:47,590 --> 00:28:45,200
as we do this briefing it's pro most of

785
00:28:49,990 --> 00:28:47,600
the activities are are firming up at the

786
00:28:51,830 --> 00:28:50,000
pad and we are we have a weather team

787
00:28:53,909 --> 00:28:51,840
that is actually monitoring

788
00:28:57,110 --> 00:28:53,919

that operation and everything is very

789
00:28:59,909 --> 00:28:57,120
favorable now the meteorologist in me

790
00:29:01,909 --> 00:28:59,919
wants some really cool severe weather to

791
00:29:02,789 --> 00:29:01,919
talk about during this briefing but i'll

792
00:29:04,789 --> 00:29:02,799
ask

793
00:29:07,190 --> 00:29:04,799
you you're going to get the

794
00:29:09,269 --> 00:29:07,200
kind of a down a little

795
00:29:10,549 --> 00:29:09,279
decreased version of that

796
00:29:13,110 --> 00:29:10,559
of that briefing it's not going to be

797
00:29:14,230 --> 00:29:13,120
very exciting but

798
00:29:17,029 --> 00:29:14,240
again

799
00:29:19,190 --> 00:29:17,039
climatologically this time of year is

800
00:29:21,510 --> 00:29:19,200
very generally very favorable for launch

801
00:29:23,110 --> 00:29:21,520
operations and it's no exception for

802
00:29:25,190 --> 00:29:23,120
this week we're actually looking at very

803
00:29:27,430 --> 00:29:25,200
good weather today very good weather for

804
00:29:30,470 --> 00:29:27,440
the primary day of launch and also for

805
00:29:34,870 --> 00:29:30,480
the 24 hour backup day now if i can

806
00:29:38,149 --> 00:29:36,470
what you're seeing i have it cycling

807
00:29:39,830 --> 00:29:38,159
through several images what you're

808
00:29:42,070 --> 00:29:39,840
seeing now is the visible satellite

809
00:29:43,990 --> 00:29:42,080
imagery it'll go to a radar imagery

810
00:29:46,230 --> 00:29:44,000
that here's your radar imagery now what

811
00:29:49,830 --> 00:29:46,240
you see on there there's some green

812
00:29:51,909 --> 00:29:49,840
uh echoes radar echoes offshore kind of

813
00:29:53,269 --> 00:29:51,919

slowly tracking toward the land mass

814
00:29:55,190 --> 00:29:53,279
that's going to be similar to what we

815
00:29:57,990 --> 00:29:55,200
see tomorrow so some light that green is

816
00:30:00,710 --> 00:29:58,000
rain showers now the infrared imagery

817
00:30:03,110 --> 00:30:00,720
the color the color cloud the colored

818
00:30:05,590 --> 00:30:03,120
enhanced clouds are deep convection all

819
00:30:08,389 --> 00:30:05,600
that activity is well to the west texas

820
00:30:10,950 --> 00:30:08,399
central united states frontal system as

821
00:30:12,710 --> 00:30:10,960
well to the north the visual satellite

822
00:30:14,789 --> 00:30:12,720
imagery is what you're seeing there the

823
00:30:17,430 --> 00:30:14,799
the brighter white clouds just off the

824
00:30:19,269 --> 00:30:17,440
spaceport that's that'll be similar to

825
00:30:22,070 --> 00:30:19,279
tomorrow's what we'll see we'll see a

826
00:30:24,950 --> 00:30:22,080
few isolated rain showers in the area

827
00:30:28,070 --> 00:30:24,960
some of those rain showers could grow to

828
00:30:30,710 --> 00:30:28,080
violate the cumulus cloud rule but the

829
00:30:32,870 --> 00:30:30,720
just the widely scattered nature of the

830
00:30:34,149 --> 00:30:32,880
activity i'm not really expecting too

831
00:30:35,669 --> 00:30:34,159
much

832
00:30:37,669 --> 00:30:35,679
of a chance and we'll get to the

833
00:30:42,549 --> 00:30:37,679
probabilities here so getting to the

834
00:30:47,190 --> 00:30:44,630
so for the primary day we're looking at

835
00:30:49,430 --> 00:30:47,200
easterly winds at 11 knots temperature

836
00:30:51,990 --> 00:30:49,440
range is going to be 75 to 76 degrees

837
00:30:54,789 --> 00:30:52,000
fahrenheit and again the concern would

838
00:30:57,269 --> 00:30:54,799

be the cumulus cloud rule basically that

839
00:30:59,669 --> 00:30:57,279
is a standoff distances based on the

840
00:31:01,909 --> 00:30:59,679
height of the cloud the cumulus clouds

841
00:31:04,389 --> 00:31:01,919
it could be a standoff distance

842
00:31:05,669 --> 00:31:04,399
of 10 nautical miles 5 nautical miles

843
00:31:07,750 --> 00:31:05,679
and then we have

844
00:31:09,990 --> 00:31:07,760
there is a portion of that rule flying

845
00:31:12,549 --> 00:31:10,000
through the cumulus cloud that would be

846
00:31:14,470 --> 00:31:12,559
the concern for the primary day but the

847
00:31:16,149 --> 00:31:14,480
probability of violating

848
00:31:18,870 --> 00:31:16,159
the rule or any

849
00:31:20,470 --> 00:31:18,880
violation for primary day is 10 percent

850
00:31:22,389 --> 00:31:20,480
so we're looking at a very so

851
00:31:24,630 --> 00:31:22,399
probability violation is 10 so looking

852
00:31:27,110 --> 00:31:24,640
at very good good chance to launch if we

853
00:31:29,430 --> 00:31:27,120
do see some violation in the count

854
00:31:30,950 --> 00:31:29,440
probably will be on the order of 15 to

855
00:31:33,430 --> 00:31:30,960
20 minutes and the shower will pass

856
00:31:35,909 --> 00:31:33,440
through so it should be very nice so for

857
00:31:38,310 --> 00:31:35,919
the 24-hour delay forecast

858
00:31:41,110 --> 00:31:38,320
very similar although tropical moisture

859
00:31:43,669 --> 00:31:41,120
is is trying to creep into southern

860
00:31:45,350 --> 00:31:43,679
florida on the the backup day but it

861
00:31:47,509 --> 00:31:45,360
should not affect us here in central

862
00:31:50,389 --> 00:31:47,519
florida so we should be looking at very

863
00:31:52,070 --> 00:31:50,399

similar conditions maybe some just very

864
00:31:53,029 --> 00:31:52,080
slightly stronger winds into the mid

865
00:31:57,750 --> 00:31:53,039
teens

866
00:31:59,909 --> 00:31:57,760
probability of violating is also again

867
00:32:01,909 --> 00:31:59,919
10 percent with the primary concern

868
00:32:03,750 --> 00:32:01,919
cumulus cloud rule

869
00:32:05,590 --> 00:32:03,760
that pretty much concludes the weather

870
00:32:07,590 --> 00:32:05,600
portion of the briefing then

871
00:32:08,549 --> 00:32:07,600
back to you george all right thank you

872
00:32:11,029 --> 00:32:08,559
dave

873
00:32:13,269 --> 00:32:11,039
and we're ready now to take questions

874
00:32:15,269 --> 00:32:13,279
please give your name and affiliation

875
00:32:17,509 --> 00:32:15,279
when the microphone comes to you and

876
00:32:19,750 --> 00:32:17,519
we'll start here in the front with bill

877
00:32:22,070 --> 00:32:19,760
bill harwood cbs for vern can you give

878
00:32:23,669 --> 00:32:22,080
us a little more detail on

879
00:32:25,430 --> 00:32:23,679
the hydraulic hose issue and what

880
00:32:27,190 --> 00:32:25,440
happened to you guys that kind of got in

881
00:32:28,710 --> 00:32:27,200
the way of the launch in march and what

882
00:32:30,710 --> 00:32:28,720
you did to fix it

883
00:32:32,630 --> 00:32:30,720
yeah we were uh i think the last time we

884
00:32:34,870 --> 00:32:32,640
talked we were targeting a march 19th

885
00:32:36,310 --> 00:32:34,880
launch and we had two hydraulic issues

886
00:32:37,509 --> 00:32:36,320
come up that we had to work through one

887
00:32:40,230 --> 00:32:37,519
of them was on

888
00:32:42,950 --> 00:32:40,240

some of our support gse and the other

889
00:32:45,590 --> 00:32:42,960
one was on an engine component so

890
00:32:47,190 --> 00:32:45,600
actually replacing those components was

891
00:32:49,350 --> 00:32:47,200
uh it didn't take a lot of time that's

892
00:32:51,190 --> 00:32:49,360
kind of the easy part the harder part is

893
00:32:52,870 --> 00:32:51,200
doing a very very thorough

894
00:32:55,029 --> 00:32:52,880
anomaly investigation to make sure that

895
00:32:57,590 --> 00:32:55,039
you understand you know what happened to

896
00:32:58,950 --> 00:32:57,600
those components why did they fail and

897
00:33:00,630 --> 00:32:58,960
is there anything we need to do to make

898
00:33:02,310 --> 00:33:00,640
sure that it won't happen again that

899
00:33:04,389 --> 00:33:02,320
took a little bit more time but we did

900
00:33:07,990 --> 00:33:04,399
successfully get through that

901
00:33:09,509 --> 00:33:08,000
i can't go into a lot of detail um on

902
00:33:11,190 --> 00:33:09,519
the engine components themselves because

903
00:33:15,509 --> 00:33:11,200
of the the proprietary nature of that

904
00:33:17,430 --> 00:33:15,519
data but again it was a gsc issue and a

905
00:33:20,230 --> 00:33:17,440
separate unrelated

906
00:33:21,350 --> 00:33:20,240
uh issue on the the vehicle itself so we

907
00:33:22,950 --> 00:33:21,360
had two

908
00:33:24,470 --> 00:33:22,960
back-to-back issues actually three that

909
00:33:27,509 --> 00:33:24,480
we had to work through all related to

910
00:33:30,950 --> 00:33:29,350
uh i understand but i don't understand

911
00:33:32,230 --> 00:33:30,960
why it's proprietary if it with the

912
00:33:33,909 --> 00:33:32,240
hydraulic system just to give us some

913
00:33:35,909 --> 00:33:33,919

general idea of what the problem was why

914
00:33:37,430 --> 00:33:35,919
is that proprietary i'm not asking for

915
00:33:39,110 --> 00:33:37,440
facts and figures i'm just trying to

916
00:33:40,310 --> 00:33:39,120
understand what broke

917
00:33:42,149 --> 00:33:40,320
my understanding was quick disconnect

918
00:33:43,590 --> 00:33:42,159
fittings of bellows and then you had

919
00:33:45,190 --> 00:33:43,600
some fatigue issues and then can you at

920
00:33:47,669 --> 00:33:45,200
least explain some of that yeah there

921
00:33:50,710 --> 00:33:47,679
was uh there there was a uh a hydraulic

922
00:33:53,669 --> 00:33:50,720
line on the vehicle it was a return line

923
00:33:55,669 --> 00:33:53,679
that uh there was a small uh

924
00:33:57,190 --> 00:33:55,679
section of it that developed a leak that

925
00:33:58,389 --> 00:33:57,200
we had to replace

926
00:33:59,350 --> 00:33:58,399
and then uh

927
00:34:02,230 --> 00:33:59,360
on the

928
00:34:04,310 --> 00:34:02,240
ground side i'm not an expert in exactly

929
00:34:06,310 --> 00:34:04,320
what our hydraulic gse looks like but

930
00:34:07,669 --> 00:34:06,320
there was uh some sort of a return

931
00:34:11,669 --> 00:34:07,679
mechanism on that that had to be

932
00:34:17,349 --> 00:34:13,349
marcia

933
00:34:19,669 --> 00:34:17,359
probably vern but i'd like to hear more

934
00:34:22,389 --> 00:34:19,679
about the camera set up for launch for

935
00:34:25,909 --> 00:34:22,399
the 360 degree view

936
00:34:27,349 --> 00:34:25,919
for uh live on tv can you explain

937
00:34:29,430 --> 00:34:27,359
you know where's the camera how's it

938
00:34:31,349 --> 00:34:29,440

going to work how difficult was it to

939
00:34:34,710 --> 00:34:31,359
gear up like that and how exciting is it

940
00:34:37,030 --> 00:34:34,720
to be able to to do this

941
00:34:38,869 --> 00:34:37,040
i don't have any details on that myself

942
00:34:40,310 --> 00:34:38,879
but i think as soon as we're done here i

943
00:34:41,909 --> 00:34:40,320
can i might be able to connect you with

944
00:34:45,510 --> 00:34:41,919
some other folks in the room who are

945
00:34:49,750 --> 00:34:47,430
are you guys excited about

946
00:34:52,389 --> 00:34:49,760
displaying the launch like this can you

947
00:34:54,389 --> 00:34:52,399
at least address that part oh it's it's

948
00:34:56,710 --> 00:34:54,399
great i mean to to be able to to get in

949
00:34:57,589 --> 00:34:56,720
there and experience that 360 degree

950
00:34:59,589 --> 00:34:57,599
view

951
00:35:01,349 --> 00:34:59,599
um you know combining it with the you

952
00:35:03,270 --> 00:35:01,359
know the oculus rift

953
00:35:05,109 --> 00:35:03,280
goggles and things like that it's uh it

954
00:35:06,390 --> 00:35:05,119
really gives you a new perspective that

955
00:35:07,510 --> 00:35:06,400
we've never been able to do before we've

956
00:35:11,910 --> 00:35:07,520
only been able to do that the last

957
00:35:17,670 --> 00:35:14,829
all right right back here

958
00:35:18,870 --> 00:35:17,680
on uh chris gubhart with nasa space

959
00:35:21,349 --> 00:35:18,880
flight um

960
00:35:22,870 --> 00:35:21,359
in terms of um the delay when when

961
00:35:24,390 --> 00:35:22,880
cygnus stayed atop the atlas was there

962
00:35:26,150 --> 00:35:24,400
anything you had to do to accommodate

963
00:35:28,310 --> 00:35:26,160

any of the payloads in there or any of

964
00:35:30,630 --> 00:35:28,320
the late stow items

965
00:35:32,790 --> 00:35:30,640
no we didn't have to make any changes um

966
00:35:33,990 --> 00:35:32,800
thanks for asking uh but we worked

967
00:35:36,069 --> 00:35:34,000
closely with nasa to make sure

968
00:35:38,630 --> 00:35:36,079
everything was uh going to be good to go

969
00:35:41,430 --> 00:35:38,640
uh all the way through april uh they did

970
00:35:43,829 --> 00:35:41,440
some additional analysis and and um

971
00:35:45,910 --> 00:35:43,839
so we didn't have to repack or restow

972
00:35:47,030 --> 00:35:45,920
anything so it's still the same payloads

973
00:35:49,910 --> 00:35:47,040
and they're all in good shape they've

974
00:35:52,150 --> 00:35:49,920
been powered since we loaded them

975
00:35:54,230 --> 00:35:52,160
um and for tara in terms of the heat

976
00:35:56,150 --> 00:35:54,240
shield test you monitor or you mentioned

977
00:35:57,829 --> 00:35:56,160
for reentry is that live telemetry

978
00:36:00,069 --> 00:35:57,839
downlink or is anything planned to be

979
00:36:02,150 --> 00:36:00,079
recovered from that that is a good

980
00:36:03,430 --> 00:36:02,160
question i'm not entirely sure about

981
00:36:04,630 --> 00:36:03,440
that um

982
00:36:05,990 --> 00:36:04,640
i'll have to check on that and get back

983
00:36:08,230 --> 00:36:06,000
with you if you don't mind stick around

984
00:36:10,829 --> 00:36:08,240
afterwards

985
00:36:18,550 --> 00:36:10,839
okay let's come up here ken cramer i

986
00:36:23,589 --> 00:36:20,870
thank you um ken kramer universe today

987
00:36:25,990 --> 00:36:23,599
northeast astronomy forum for uh frank

988
00:36:27,270 --> 00:36:26,000

and tara frank first could you could you

989
00:36:29,510 --> 00:36:27,280
talk a little bit more about the

990
00:36:31,829 --> 00:36:29,520
personal meaning of john glenn to you

991
00:36:35,109 --> 00:36:31,839
okay for this mission and a lot of that

992
00:36:37,430 --> 00:36:35,119
work tara was related to um his work on

993
00:36:38,870 --> 00:36:37,440
the shuttle uh the aging process you

994
00:36:40,470 --> 00:36:38,880
discussed it a little bit i wonder if

995
00:36:41,270 --> 00:36:40,480
you could talk a little bit more whether

996
00:36:42,230 --> 00:36:41,280
this

997
00:36:44,150 --> 00:36:42,240
uh

998
00:36:46,950 --> 00:36:44,160
amplify more on the aging process

999
00:36:48,870 --> 00:36:46,960
experiments you have perhaps on this

1000
00:36:50,790 --> 00:36:48,880
flight thank you

1001
00:36:52,150 --> 00:36:50,800
well my first exposure to john glenn was

1002
00:36:55,430 --> 00:36:52,160
when i was in

1003
00:36:57,030 --> 00:36:55,440
i won't tell you what grade but uh our

1004
00:36:59,510 --> 00:36:57,040
principal let us go across the street to

1005
00:37:02,710 --> 00:36:59,520
henry's house to watch the uh the launch

1006
00:37:04,310 --> 00:37:02,720
of john glenn on freedom 7 in february

1007
00:37:06,710 --> 00:37:04,320
of 1962.

1008
00:37:08,069 --> 00:37:06,720
very exciting day for me and i remember

1009
00:37:10,470 --> 00:37:08,079
thinking that would really be a lot of

1010
00:37:12,950 --> 00:37:10,480
fun i'd love to be a part of that

1011
00:37:15,750 --> 00:37:12,960
and so that was my earliest inspiration

1012
00:37:17,030 --> 00:37:15,760
of actually thinking maybe someone in

1013
00:37:18,230 --> 00:37:17,040

this country could grow up to be an

1014
00:37:21,829 --> 00:37:18,240
astronaut because i knew we were going

1015
00:37:23,990 --> 00:37:21,839
to go further and faster and we did

1016
00:37:26,150 --> 00:37:24,000
i've followed john glenn's career of

1017
00:37:28,150 --> 00:37:26,160
course over the years

1018
00:37:29,829 --> 00:37:28,160
met him several times i was very excited

1019
00:37:31,829 --> 00:37:29,839
when he came back to johnson space

1020
00:37:33,990 --> 00:37:31,839
center to train for his mission on the

1021
00:37:36,630 --> 00:37:34,000
on the space shuttle

1022
00:37:39,030 --> 00:37:36,640
and he was fantastic to work with then

1023
00:37:40,790 --> 00:37:39,040
um he and his family were

1024
00:37:43,750 --> 00:37:40,800
great to have around and and i've seen

1025
00:37:45,190 --> 00:37:43,760
him many times since he flew uh i'm i'm

1026
00:37:46,710 --> 00:37:45,200
sad that he's gone but he's lived a

1027
00:37:47,990 --> 00:37:46,720
really full life and he's provided

1028
00:37:50,470 --> 00:37:48,000
inspiration to

1029
00:37:51,670 --> 00:37:50,480
a couple of generations of of american

1030
00:37:53,589 --> 00:37:51,680
men and women

1031
00:37:56,390 --> 00:37:53,599
uh and i also want to point out that

1032
00:37:58,950 --> 00:37:56,400
he's still older than i am now when he

1033
00:38:01,510 --> 00:37:58,960
went back on the shuttle so

1034
00:38:05,750 --> 00:38:02,390
that's

1035
00:38:07,109 --> 00:38:05,760
wow yeah so thanks for asking um

1036
00:38:09,030 --> 00:38:07,119
so

1037
00:38:11,109 --> 00:38:09,040
interestingly with regard to aging our

1038
00:38:13,030 --> 00:38:11,119

astronaut population seems to to

1039
00:38:14,710 --> 00:38:13,040
represent kind of an accelerated model

1040
00:38:16,710 --> 00:38:14,720
of aging so to speak that's how we kind

1041
00:38:19,910 --> 00:38:16,720
of internally refer to it

1042
00:38:21,349 --> 00:38:19,920
yeah you're you're doing okay though so

1043
00:38:23,190 --> 00:38:21,359
you're you're i think you're aging

1044
00:38:24,790 --> 00:38:23,200
backwards yeah that's that earlier i was

1045
00:38:26,230 --> 00:38:24,800
going to comment on that

1046
00:38:29,270 --> 00:38:26,240
[Music]

1047
00:38:32,630 --> 00:38:29,280
but um with regard to uh this particular

1048
00:38:35,190 --> 00:38:32,640
investigation that i mentioned earlier

1049
00:38:37,910 --> 00:38:35,200
this is going to be sending up a

1050
00:38:40,470 --> 00:38:37,920
synthetic telomere set solution and so

1051
00:38:42,069 --> 00:38:40,480
the telomeres are at you know the end

1052
00:38:43,589 --> 00:38:42,079
caps of your chromosome and with every

1053
00:38:44,870 --> 00:38:43,599
cell division as we get older are

1054
00:38:45,910 --> 00:38:44,880
constantly our cells are constantly

1055
00:38:48,069 --> 00:38:45,920
dividing

1056
00:38:50,870 --> 00:38:48,079
those get shorter those telomere lengths

1057
00:38:53,030 --> 00:38:50,880
get shorter so uh it's associated with

1058
00:38:55,750 --> 00:38:53,040
aging it's part of just who we are and

1059
00:38:58,310 --> 00:38:55,760
how we age associated with health some

1060
00:39:00,550 --> 00:38:58,320
cardiovascular diseases and and such

1061
00:39:01,670 --> 00:39:00,560
when things go strange

1062
00:39:03,430 --> 00:39:01,680
and so

1063
00:39:05,750 --> 00:39:03,440

this particular set is really just going

1064
00:39:08,150 --> 00:39:05,760
to send up synthetic telomeres and look

1065
00:39:10,150 --> 00:39:08,160
at how they heat them up on orbit

1066
00:39:11,990 --> 00:39:10,160
get the samples home and just make sure

1067
00:39:14,630 --> 00:39:12,000
the technology and the system is

1068
00:39:17,190 --> 00:39:14,640
amplifying the dna associated with those

1069
00:39:18,870 --> 00:39:17,200
so that first step in and then us being

1070
00:39:21,349 --> 00:39:18,880
able to take that further and study that

1071
00:39:23,430 --> 00:39:21,359
molecular process of aging or stress or

1072
00:39:25,270 --> 00:39:23,440
or radiation effects and what it might

1073
00:39:26,790 --> 00:39:25,280
mean to our astronauts health in it and

1074
00:39:29,670 --> 00:39:26,800
of course uh it'll tell us something

1075
00:39:31,910 --> 00:39:29,680
about our own aging process too um and

1076
00:39:34,230 --> 00:39:31,920
the larger picture um with the our

1077
00:39:36,069 --> 00:39:34,240
astronauts and and the aging process we

1078
00:39:38,150 --> 00:39:36,079
look at things like um impacts on the

1079
00:39:41,430 --> 00:39:38,160
immune system uh some of the immune

1080
00:39:43,190 --> 00:39:41,440
system is showing uh similarities to

1081
00:39:45,990 --> 00:39:43,200
what we see in our aging population on

1082
00:39:48,470 --> 00:39:46,000
earth so we develop studies that look at

1083
00:39:49,510 --> 00:39:48,480
different sets of behavior in the immune

1084
00:39:51,430 --> 00:39:49,520
system

1085
00:39:53,109 --> 00:39:51,440
so we can keep our crew healthy but also

1086
00:39:54,069 --> 00:39:53,119
bring that information back to us on

1087
00:39:56,069 --> 00:39:54,079
earth

1088
00:39:57,670 --> 00:39:56,079

the bones are the big ones i think most

1089
00:39:59,910 --> 00:39:57,680
everybody can relate to that as we get

1090
00:40:02,310 --> 00:39:59,920
older our bones tend to get weaker and

1091
00:40:05,030 --> 00:40:02,320
you know we see things like osteoporosis

1092
00:40:07,589 --> 00:40:05,040
and our astronaut population um just

1093
00:40:09,510 --> 00:40:07,599
they if they did no exercise and no

1094
00:40:10,710 --> 00:40:09,520
counter measures no protection for bones

1095
00:40:13,589 --> 00:40:10,720
as it is

1096
00:40:15,270 --> 00:40:13,599
they would lose bone mass uh bone mass

1097
00:40:17,349 --> 00:40:15,280
at a rate of about one to two percent

1098
00:40:19,510 --> 00:40:17,359
per month which is more than that of a

1099
00:40:21,670 --> 00:40:19,520
post-menopausal woman

1100
00:40:23,910 --> 00:40:21,680
and so uh we have learned over the past

1101
00:40:27,270 --> 00:40:23,920
few years now how to combat the bone

1102
00:40:29,109 --> 00:40:27,280
mineral loss and maintain density we do

1103
00:40:30,630 --> 00:40:29,119
know that there's still bone turnover in

1104
00:40:32,630 --> 00:40:30,640
space and that's normal for all of us

1105
00:40:35,030 --> 00:40:32,640
but as and even as we age our bone will

1106
00:40:38,230 --> 00:40:35,040
break down and rebuild and it keeps our

1107
00:40:40,309 --> 00:40:38,240
bones and our bones strong um but we

1108
00:40:42,790 --> 00:40:40,319
have learned that if the crew keeps up

1109
00:40:45,109 --> 00:40:42,800
their resistive exercise they're kind of

1110
00:40:46,950 --> 00:40:45,119
weight lifting so to speak on orbit and

1111
00:40:48,470 --> 00:40:46,960
they take all the vitamin d big doses

1112
00:40:51,030 --> 00:40:48,480
that we give them and eat all their

1113
00:40:52,870 --> 00:40:51,040

calories they were able to maintain bone

1114
00:40:54,550 --> 00:40:52,880
mineral density which is interesting and

1115
00:40:55,910 --> 00:40:54,560
it's a first now we don't know yet about

1116
00:40:57,349 --> 00:40:55,920
the structure of that bone because it's

1117
00:40:59,349 --> 00:40:57,359
constantly rebuilding but those are the

1118
00:41:01,430 --> 00:40:59,359
next steps in research and that's an

1119
00:41:03,829 --> 00:41:01,440
example of information that you can take

1120
00:41:05,750 --> 00:41:03,839
back to earth and reiterate to the aging

1121
00:41:08,069 --> 00:41:05,760
population here is keep up your

1122
00:41:09,750 --> 00:41:08,079
resistive exercise eat the calories eat

1123
00:41:11,349 --> 00:41:09,760
nutrition take your vitamin d as you

1124
00:41:13,030 --> 00:41:11,359
talk to your doctors some of you may

1125
00:41:14,470 --> 00:41:13,040
have heard this before

1126
00:41:16,150 --> 00:41:14,480
we also

1127
00:41:18,950 --> 00:41:16,160
think about when i go back to the

1128
00:41:20,630 --> 00:41:18,960
telomere study you know telomeres i

1129
00:41:22,710 --> 00:41:20,640
mentioned they shortened interestingly

1130
00:41:25,190 --> 00:41:22,720
uh the twin study that was done uh when

1131
00:41:27,349 --> 00:41:25,200
mark kelly when the kelly brothers kelly

1132
00:41:28,950 --> 00:41:27,359
was in space scott was in space and uh

1133
00:41:31,510 --> 00:41:28,960
mark kelly was compared on the ground

1134
00:41:33,510 --> 00:41:31,520
they looked at the tilley mirrors

1135
00:41:35,670 --> 00:41:33,520
for both of them and interestingly and

1136
00:41:37,750 --> 00:41:35,680
strangely enough preliminarily it looked

1137
00:41:40,390 --> 00:41:37,760
like scots telling you telomeres were

1138
00:41:41,670 --> 00:41:40,400

actually lengthening which is completely

1139
00:41:43,349 --> 00:41:41,680
unexpected and again it's still

1140
00:41:45,910 --> 00:41:43,359
preliminary and the researchers are kind

1141
00:41:48,150 --> 00:41:45,920
of scratching their heads at that um

1142
00:41:49,510 --> 00:41:48,160
and so as soon as he stabilized on earth

1143
00:41:51,829 --> 00:41:49,520
for a little bit longer the telomeres

1144
00:41:53,109 --> 00:41:51,839
returned to where we would expect so

1145
00:41:54,870 --> 00:41:53,119
again lots of interesting things

1146
00:41:57,030 --> 00:41:54,880
happening at the molecular level aging

1147
00:41:58,950 --> 00:41:57,040
wise there's a whole lot going on inside

1148
00:42:00,230 --> 00:41:58,960
the bodies of the astronauts that we

1149
00:42:02,069 --> 00:42:00,240
take advantage of working with the

1150
00:42:04,069 --> 00:42:02,079
scientists to make sure that we gain

1151
00:42:05,670 --> 00:42:04,079
information gain insight into what's

1152
00:42:07,109 --> 00:42:05,680
really going on so we can make sure that

1153
00:42:09,190 --> 00:42:07,119
the public benefits here on earth as

1154
00:42:10,870 --> 00:42:09,200
well

1155
00:42:13,349 --> 00:42:10,880
all right we have a question right here

1156
00:42:15,750 --> 00:42:13,359
rick lasby with wfit i guess this is a

1157
00:42:18,390 --> 00:42:15,760
question for tara regarding the cubesats

1158
00:42:21,030 --> 00:42:18,400
are they deployed from the space station

1159
00:42:23,270 --> 00:42:21,040
or from the cygnus good question so i

1160
00:42:25,190 --> 00:42:23,280
think uh let's see

1161
00:42:27,829 --> 00:42:25,200
all but

1162
00:42:30,630 --> 00:42:27,839
so 34 will be deployed from the kibo

1163
00:42:32,790 --> 00:42:30,640

airlock on space station and the other

1164
00:42:34,950 --> 00:42:32,800
four will be deployed from cygnus as

1165
00:42:36,790 --> 00:42:34,960
cygnus leaves and it'll

1166
00:42:38,470 --> 00:42:36,800
enter a higher altitude of about 500

1167
00:42:39,670 --> 00:42:38,480
kilometers and those four will be

1168
00:42:42,069 --> 00:42:39,680
deployed

1169
00:42:48,710 --> 00:42:44,230
yeah we have a question up front here on

1170
00:42:52,790 --> 00:42:50,630
i'm jim siegel i'm with the celebration

1171
00:42:55,750 --> 00:42:52,800
independent and with space flight

1172
00:42:59,190 --> 00:42:55,760
insider i have a question for tara about

1173
00:43:01,430 --> 00:42:59,200
the advanced plant habitat experiments i

1174
00:43:03,030 --> 00:43:01,440
asked you about this a couple of times

1175
00:43:05,510 --> 00:43:03,040
ago

1176
00:43:07,829 --> 00:43:05,520
i'm interested in what what is unique or

1177
00:43:11,430 --> 00:43:07,839
different about the habitat that is

1178
00:43:13,109 --> 00:43:11,440
going up now will the astronauts consume

1179
00:43:15,349 --> 00:43:13,119
some of the plants that are going to be

1180
00:43:17,190 --> 00:43:15,359
grown and do some of the plants come

1181
00:43:18,390 --> 00:43:17,200
back to earth for further study or how

1182
00:43:21,190 --> 00:43:18,400
does that work

1183
00:43:23,270 --> 00:43:21,200
okay so the unique parts about the

1184
00:43:26,309 --> 00:43:23,280
advanced plant habitat is it will be the

1185
00:43:28,230 --> 00:43:26,319
largest production facility for plants

1186
00:43:30,710 --> 00:43:28,240
ever on the space station so it's going

1187
00:43:32,550 --> 00:43:30,720
to be able to grow larger plants and

1188
00:43:33,589 --> 00:43:32,560

larger plants lead to

1189
00:43:35,030 --> 00:43:33,599
things like

1190
00:43:37,430 --> 00:43:35,040
food production

1191
00:43:39,030 --> 00:43:37,440
kind of crops initially

1192
00:43:41,030 --> 00:43:39,040
this will be used for science because we

1193
00:43:43,430 --> 00:43:41,040
want to evaluate the efficacy of the

1194
00:43:45,190 --> 00:43:43,440
hardware so

1195
00:43:47,349 --> 00:43:45,200
let's see aph

1196
00:43:49,030 --> 00:43:47,359
the advanced plan habitat can control

1197
00:43:52,470 --> 00:43:49,040
different lighting conditions it can

1198
00:43:55,589 --> 00:43:52,480
control relative humidity temperature

1199
00:43:57,510 --> 00:43:55,599
carbon dioxide exchange

1200
00:43:59,349 --> 00:43:57,520
let's see lots of other things i'm sure

1201
00:44:00,710 --> 00:43:59,359
that the scientists know at a very

1202
00:44:02,870 --> 00:44:00,720
detailed level

1203
00:44:05,670 --> 00:44:02,880
the watering system is controllable and

1204
00:44:08,069 --> 00:44:05,680
that's really important and again being

1205
00:44:09,990 --> 00:44:08,079
able to grow large crops now initially

1206
00:44:11,670 --> 00:44:10,000
with the wheat and the arabidopsis we

1207
00:44:13,109 --> 00:44:11,680
were we're going to look at them from a

1208
00:44:15,430 --> 00:44:13,119
scientific standpoint we'll want to

1209
00:44:16,950 --> 00:44:15,440
return the samples uh so that we can

1210
00:44:19,190 --> 00:44:16,960
study them and make sure that there's

1211
00:44:20,630 --> 00:44:19,200
nothing interestingly different going on

1212
00:44:22,470 --> 00:44:20,640
there with that habitat making sure it's

1213
00:44:25,349 --> 00:44:22,480

supposed to do what it's supposed to do

1214
00:44:27,349 --> 00:44:25,359
and then um i and then the first science

1215
00:44:29,030 --> 00:44:27,359
that's going to happen in november

1216
00:44:31,190 --> 00:44:29,040
that's been awarded will be again a

1217
00:44:33,670 --> 00:44:31,200
scientific study i believe using

1218
00:44:36,069 --> 00:44:33,680
arabidopsis which is a model organism

1219
00:44:38,309 --> 00:44:36,079
and eventually as we

1220
00:44:41,109 --> 00:44:38,319
learn to understand how this habitat

1221
00:44:42,069 --> 00:44:41,119
functions i'd imagine we will evolve

1222
00:44:44,470 --> 00:44:42,079
into

1223
00:44:46,390 --> 00:44:44,480
crops i don't know and kind of edible

1224
00:44:48,230 --> 00:44:46,400
foods i don't know what the schedule is

1225
00:44:49,829 --> 00:44:48,240
for this yet though and so i'm not quite

1226
00:44:51,910 --> 00:44:49,839
sure when the crew is going to be

1227
00:44:53,670 --> 00:44:51,920
allowed to sample them i know when we

1228
00:44:55,430 --> 00:44:53,680
went through the veggie system the

1229
00:44:57,430 --> 00:44:55,440
hardware system the crew was not allowed

1230
00:44:59,510 --> 00:44:57,440
to sample the first crop it was supposed

1231
00:45:01,109 --> 00:44:59,520
to return home and it did so that we can

1232
00:45:03,589 --> 00:45:01,119
ensure you know there's microbial

1233
00:45:05,349 --> 00:45:03,599
communities that are part of plants and

1234
00:45:07,270 --> 00:45:05,359
could be affected by microgravity the

1235
00:45:08,870 --> 00:45:07,280
nutrition levels scientists want to

1236
00:45:11,349 --> 00:45:08,880
figure all that out before we let the

1237
00:45:12,630 --> 00:45:11,359
they just let the crew eat it so i i

1238
00:45:15,430 --> 00:45:12,640

imagine it's going to be a little bit of

1239
00:45:17,030 --> 00:45:15,440
an evolution on this hardware before but

1240
00:45:19,910 --> 00:45:17,040
i know when the crew eats it it's going

1241
00:45:21,109 --> 00:45:19,920
to be big news because it always is

1242
00:45:23,349 --> 00:45:21,119
lots of photos

1243
00:45:27,750 --> 00:45:23,359
no free range astronauts nah i mean and

1244
00:45:30,550 --> 00:45:29,190
all right we have a follow-up question

1245
00:45:32,309 --> 00:45:30,560
right here left

1246
00:45:33,990 --> 00:45:32,319
um chris got with nasa space flight

1247
00:45:36,309 --> 00:45:34,000
again uh for joel and i think maybe

1248
00:45:37,910 --> 00:45:36,319
frank too um the first question is i

1249
00:45:39,270 --> 00:45:37,920
think there was an eva earlier this

1250
00:45:40,950 --> 00:45:39,280
month that had to be delayed because

1251
00:45:42,710 --> 00:45:40,960
there's a component on cygnus that was

1252
00:45:44,790 --> 00:45:42,720
needed for it so i'm wondering what the

1253
00:45:46,710 --> 00:45:44,800
preliminary timeline is for that eva

1254
00:45:48,870 --> 00:45:46,720
assuming nominal

1255
00:45:50,309 --> 00:45:48,880
birthing this weekend and

1256
00:45:52,870 --> 00:45:50,319
how much additional up mass were you

1257
00:45:55,109 --> 00:45:52,880
able to get on oa7 by switching it to

1258
00:45:56,950 --> 00:45:55,119
the atlas v

1259
00:45:58,790 --> 00:45:56,960
so let's see on the first

1260
00:46:00,470 --> 00:45:58,800
question it was the express pellet

1261
00:46:03,190 --> 00:46:00,480
controller assembly that was in this

1262
00:46:05,109 --> 00:46:03,200
vehicle and so we're going to right now

1263
00:46:07,750 --> 00:46:05,119

we're targeting may 12th

1264
00:46:10,390 --> 00:46:07,760
for the next eva with jack fisher and

1265
00:46:12,950 --> 00:46:10,400
peggy whitson going outside

1266
00:46:14,470 --> 00:46:12,960
this was you know a risk that we had

1267
00:46:17,990 --> 00:46:14,480
discussed when we were planning the

1268
00:46:20,550 --> 00:46:18,000
triple evas from a uh a crew standpoint

1269
00:46:23,030 --> 00:46:20,560
not not really an issue we'll just wait

1270
00:46:24,630 --> 00:46:23,040
for the the oa7 hardware give the crew

1271
00:46:27,190 --> 00:46:24,640
some time to get on board get the new

1272
00:46:30,150 --> 00:46:27,200
soyuz crew on board and uh but right now

1273
00:46:31,750 --> 00:46:30,160
we're targeting for may 12th

1274
00:46:33,430 --> 00:46:31,760
and i'm sure peggy's really complaining

1275
00:46:36,309 --> 00:46:33,440
about that yes

1276
00:46:38,230 --> 00:46:36,319
the extra time but uh in terms of uh

1277
00:46:39,829 --> 00:46:38,240
additional up mass on this one we added

1278
00:46:41,349 --> 00:46:39,839
about 300 kilograms to what we had

1279
00:46:43,190 --> 00:46:41,359
originally been planning

1280
00:46:45,270 --> 00:46:43,200
on this one and we're continuing to

1281
00:46:47,510 --> 00:46:45,280
increase our up mass that we can carry

1282
00:46:49,190 --> 00:46:47,520
on both antares and atlas going forward

1283
00:46:50,630 --> 00:46:49,200
so that we can keep up with the demand

1284
00:46:52,230 --> 00:46:50,640
on the station

1285
00:46:54,069 --> 00:46:52,240
i also want to say i really appreciate

1286
00:46:55,270 --> 00:46:54,079
all of you being here

1287
00:46:57,030 --> 00:46:55,280
being able to

1288
00:46:58,630 --> 00:46:57,040

continue to show what we're doing in

1289
00:47:00,790 --> 00:46:58,640
space is really important and you all

1290
00:47:02,230 --> 00:47:00,800
make it happen and i really appreciate

1291
00:47:03,829 --> 00:47:02,240
the fact that you're asking questions

1292
00:47:05,030 --> 00:47:03,839
about what they're doing in space and

1293
00:47:06,870 --> 00:47:05,040
not just how we're getting there and

1294
00:47:09,510 --> 00:47:06,880
getting back because that's what really

1295
00:47:10,790 --> 00:47:09,520
really counts and i also appreciate dr

1296
00:47:13,510 --> 00:47:10,800
rutley being here to answer all those

1297
00:47:16,390 --> 00:47:13,520
questions so thanks tara

1298
00:47:18,950 --> 00:47:16,400
marsha a follow-up yes marsha done ap

1299
00:47:21,670 --> 00:47:18,960
probably for you frank um besides the

1300
00:47:24,549 --> 00:47:21,680
banner with john glenn's uh

1301
00:47:27,190 --> 00:47:24,559
portrait um do you have any other glenn

1302
00:47:28,790 --> 00:47:27,200
things going up that might you know pay

1303
00:47:31,190 --> 00:47:28,800
tribute to him

1304
00:47:33,190 --> 00:47:31,200
uh we have some some memorabilia for his

1305
00:47:35,270 --> 00:47:33,200
family and uh

1306
00:47:36,549 --> 00:47:35,280
as as we normally do and i do want to

1307
00:47:39,109 --> 00:47:36,559
say that

1308
00:47:41,109 --> 00:47:39,119
i really annie glenn is is an amazing

1309
00:47:42,790 --> 00:47:41,119
person very gracious very strong and i

1310
00:47:45,190 --> 00:47:42,800
really appreciate her giving us

1311
00:47:47,270 --> 00:47:45,200
permission to use john's uh

1312
00:47:49,030 --> 00:47:47,280
name on this this mission it meant a lot

1313
00:47:52,390 --> 00:47:49,040

to us to be able to our team was very

1314
00:47:54,470 --> 00:47:52,400
honored to be able to do that

1315
00:47:56,710 --> 00:47:54,480
by chance are any family members coming

1316
00:47:58,069 --> 00:47:56,720
for the launch uh with the delay i don't

1317
00:47:59,270 --> 00:47:58,079
believe any of them are able to come

1318
00:48:00,549 --> 00:47:59,280
unfortunately

1319
00:48:02,549 --> 00:48:00,559
they're always welcome though we'll get

1320
00:48:03,349 --> 00:48:02,559
them a ticket somehow

1321
00:48:06,549 --> 00:48:03,359
bill

1322
00:48:09,990 --> 00:48:06,559
you give us an update on when you think

1323
00:48:12,790 --> 00:48:10,000
crs 11 might be going for spacex uh

1324
00:48:15,109 --> 00:48:12,800
ballpark uh right now late may so uh

1325
00:48:19,270 --> 00:48:15,119
we're looking at a may 31st launch and a

1326
00:48:23,589 --> 00:48:20,549
all right

1327
00:48:25,349 --> 00:48:23,599
james uh james dean florida today uh for

1328
00:48:27,190 --> 00:48:25,359
either frank or joel perhaps i just

1329
00:48:29,109 --> 00:48:27,200
wonder if he could remind us why atlas

1330
00:48:31,670 --> 00:48:29,119
is the right vehicle for this mission or

1331
00:48:34,470 --> 00:48:31,680
or what the the for for any that that

1332
00:48:37,109 --> 00:48:34,480
you will choose atlas for why why you

1333
00:48:40,870 --> 00:48:37,119
do that and moving looking ahead through

1334
00:48:42,549 --> 00:48:40,880
crs-2 do you think we can expect to see

1335
00:48:44,549 --> 00:48:42,559
roughly the similar breakdown between

1336
00:48:46,069 --> 00:48:44,559
the vehicles or or

1337
00:48:47,910 --> 00:48:46,079
no idea yet

1338
00:48:49,750 --> 00:48:47,920

for this one because there was a

1339
00:48:52,549 --> 00:48:49,760
slightly increased demand for cargo to

1340
00:48:54,069 --> 00:48:52,559
the station sooner rather than later and

1341
00:48:56,069 --> 00:48:54,079
atlas had a

1342
00:48:57,589 --> 00:48:56,079
vehicle available and additional up mass

1343
00:48:59,589 --> 00:48:57,599
available

1344
00:49:01,589 --> 00:48:59,599
we talked to nasa and decided jointly to

1345
00:49:03,109 --> 00:49:01,599
go ahead with the atlas in early spring

1346
00:49:05,430 --> 00:49:03,119
for this one

1347
00:49:07,430 --> 00:49:05,440
antares is being readied right now for

1348
00:49:09,030 --> 00:49:07,440
another launch at wallops

1349
00:49:11,829 --> 00:49:09,040
it could go as early as this summer

1350
00:49:13,430 --> 00:49:11,839
depending on nasa's demand and we as i

1351
00:49:15,829 --> 00:49:13,440
said are continuing to increase the up

1352
00:49:17,829 --> 00:49:15,839
mass capability on that so we can go

1353
00:49:19,510 --> 00:49:17,839
either way depending on uh

1354
00:49:22,630 --> 00:49:19,520
what the pace of the

1355
00:49:25,030 --> 00:49:22,640
of the cargo resupply demand is and and

1356
00:49:26,870 --> 00:49:25,040
the availability of vehicles

1357
00:49:29,910 --> 00:49:26,880
we we're comfortable going either way

1358
00:49:31,750 --> 00:49:29,920
and tyrese of course is is a normal atk

1359
00:49:33,589 --> 00:49:31,760
vehicle so we like flying on that but we

1360
00:49:36,790 --> 00:49:33,599
certainly appreciate the partnership

1361
00:49:39,109 --> 00:49:36,800
with ula on crs 2 uh nasa hasn't

1362
00:49:40,790 --> 00:49:39,119
actually told us exactly which missions

1363
00:49:43,030 --> 00:49:40,800

they'll want on which vehicles and

1364
00:49:44,870 --> 00:49:43,040
that's part of the contract proposal we

1365
00:49:46,790 --> 00:49:44,880
made to them and so we're waiting to see

1366
00:49:48,309 --> 00:49:46,800
which way they'd like for us to to go

1367
00:49:50,710 --> 00:49:48,319
whether it's a mix or

1368
00:49:53,589 --> 00:49:50,720
or all one or the other and we hope to

1369
00:49:55,030 --> 00:49:53,599
hear that pretty soon right joel yes and

1370
00:49:56,390 --> 00:49:55,040
and i'll just add you know have an

1371
00:49:58,870 --> 00:49:56,400
opportunity to launch on different

1372
00:50:00,150 --> 00:49:58,880
vehicles keeps our program robust i mean

1373
00:50:02,069 --> 00:50:00,160
that's

1374
00:50:04,309 --> 00:50:02,079
the ability to keep space station

1375
00:50:06,470 --> 00:50:04,319
utilized keep our crews busy keep the

1376
00:50:08,230 --> 00:50:06,480
science coming keep the research coming

1377
00:50:10,069 --> 00:50:08,240
that having the multiple launch

1378
00:50:11,510 --> 00:50:10,079
opportunities and the more multiple

1379
00:50:13,030 --> 00:50:11,520
launch rockets

1380
00:50:16,790 --> 00:50:13,040
enhances that capability so it's

1381
00:50:20,570 --> 00:50:16,800
something we we like seeing all the time

1382
00:50:26,390 --> 00:50:23,670
[Music]

1383
00:50:27,190 --> 00:50:26,400
um for joel also and maybe for the

1384
00:50:29,349 --> 00:50:27,200
others

1385
00:50:30,870 --> 00:50:29,359
um peggy whitson's missions has been

1386
00:50:33,109 --> 00:50:30,880
extended i wonder if you could talk a

1387
00:50:34,870 --> 00:50:33,119
little bit about that and is there any

1388
00:50:37,270 --> 00:50:34,880

cargo for her

1389
00:50:38,309 --> 00:50:37,280
uh science or otherwise that's going up

1390
00:50:41,430 --> 00:50:38,319
thanks

1391
00:50:43,349 --> 00:50:41,440
okay so um you know when

1392
00:50:45,670 --> 00:50:43,359
as you're well aware that the russians

1393
00:50:47,670 --> 00:50:45,680
had the progress anomaly late last year

1394
00:50:49,190 --> 00:50:47,680
when they sorted out and recovered from

1395
00:50:51,190 --> 00:50:49,200
the anomaly and you laid out all the

1396
00:50:53,990 --> 00:50:51,200
missions there was going to be a

1397
00:50:55,270 --> 00:50:54,000
two-month gap this summer that's partly

1398
00:50:57,030 --> 00:50:55,280
due well

1399
00:50:58,710 --> 00:50:57,040
when the russians also they went to two

1400
00:51:00,150 --> 00:50:58,720
russian crew members from three the two

1401
00:51:02,309 --> 00:51:00,160
russian crew members starting with this

1402
00:51:05,270 --> 00:51:02,319
upcoming soyuz so we worked with our

1403
00:51:07,270 --> 00:51:05,280
russian colleagues to look at

1404
00:51:08,870 --> 00:51:07,280
having the extension of one of the us os

1405
00:51:10,630 --> 00:51:08,880
crew members

1406
00:51:12,790 --> 00:51:10,640
talking you know the benefits of the

1407
00:51:15,430 --> 00:51:12,800
increased research in science the fact

1408
00:51:17,750 --> 00:51:15,440
that gives maintains eva capability on

1409
00:51:18,710 --> 00:51:17,760
the us segment maintains our ability to

1410
00:51:21,910 --> 00:51:18,720
capture

1411
00:51:24,790 --> 00:51:21,920
and unbirth vehicles it was just a

1412
00:51:26,470 --> 00:51:24,800
win-win across the board peggy also has

1413
00:51:28,790 --> 00:51:26,480

well respected by the russian community

1414
00:51:30,790 --> 00:51:28,800
has a lot of experience it's another set

1415
00:51:32,069 --> 00:51:30,800
of hands for them and working with the

1416
00:51:35,829 --> 00:51:32,079
russian colleagues we were able to

1417
00:51:37,829 --> 00:51:35,839
extend her to september so we're excited

1418
00:51:39,829 --> 00:51:37,839
you can't imagine how excited she is i

1419
00:51:41,510 --> 00:51:39,839
think the conversation although i went

1420
00:51:43,109 --> 00:51:41,520
there i'm sure when they didn't get the

1421
00:51:44,790 --> 00:51:43,119
words out of their mouth talking about

1422
00:51:49,990 --> 00:51:44,800
the extension and peggy was i'm ready to

1423
00:51:53,349 --> 00:51:51,990
it looks like you had one more he said

1424
00:51:54,470 --> 00:51:53,359
we'll have a follow you're done all

1425
00:51:56,870 --> 00:51:54,480
right

1426
00:51:58,790 --> 00:51:56,880
any further questions

1427
00:52:01,190 --> 00:51:58,800
all right in that event uh just one

1428
00:52:03,030 --> 00:52:01,200
programming note for uh tomorrow our

1429
00:52:05,829 --> 00:52:03,040
post-launch news conference is now going

1430
00:52:06,790 --> 00:52:05,839
to be scheduled for 2 30 p.m eastern

1431
00:52:08,950 --> 00:52:06,800
time

1432
00:52:10,549 --> 00:52:08,960
and then our launch coverage tomorrow

1433
00:52:12,230 --> 00:52:10,559
starts at

1434
00:52:14,630 --> 00:52:12,240
10 a.m eastern

1435
00:52:17,910 --> 00:52:14,640
and you can also watch that online by

1436
00:52:19,670 --> 00:52:17,920
going to www.nasa.gov

1437
00:52:21,109 --> 00:52:19,680
in tv

1438
00:52:25,950 --> 00:52:21,119

and that will conclude our press