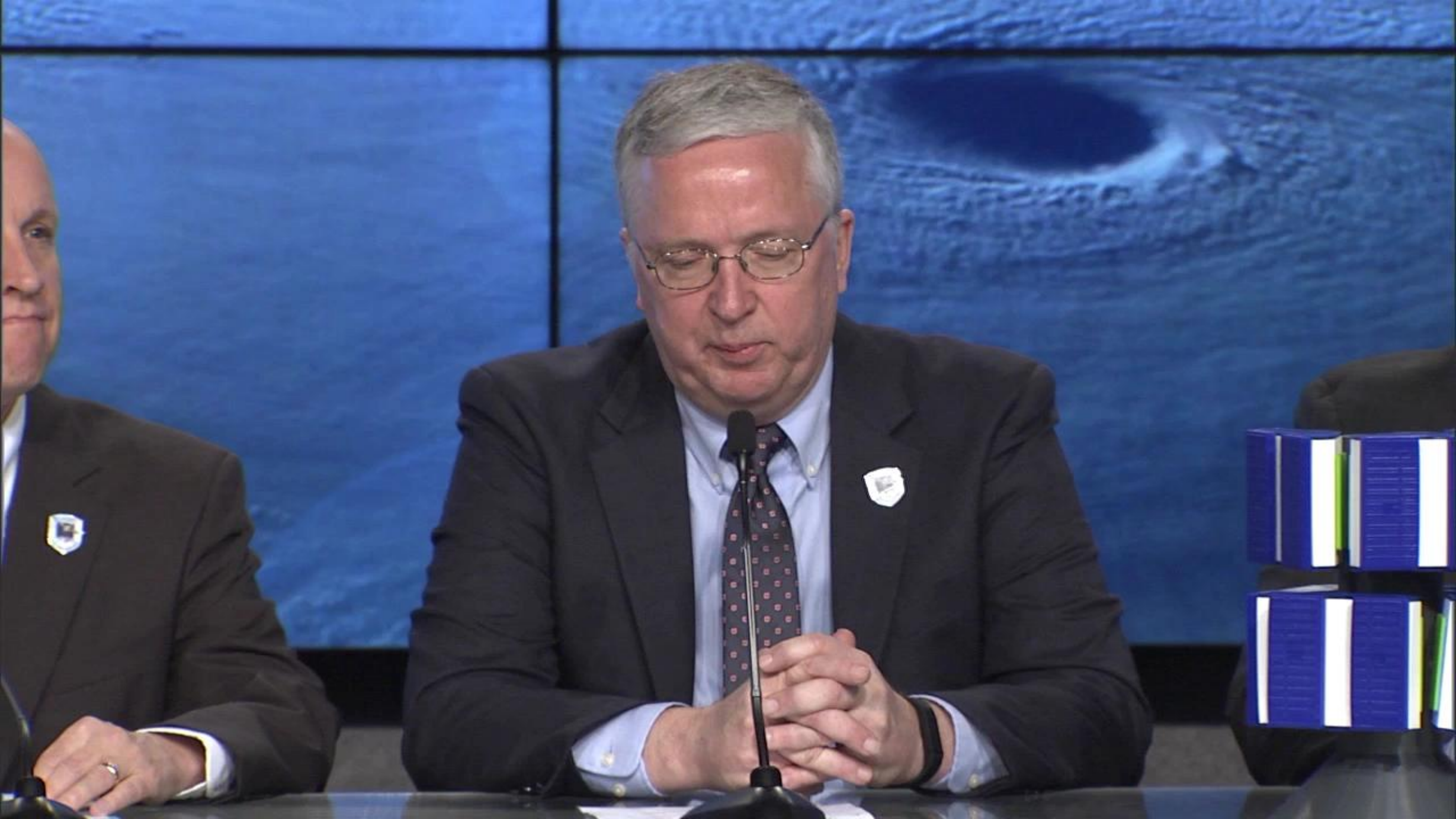

1
00:00:05,650 --> 00:00:31,750
[Music]

2
00:00:35,430 --> 00:00:34,069
hello everyone this is the pre-launch

3
00:00:38,229 --> 00:00:35,440
news conference

4
00:00:41,350 --> 00:00:38,239
for nasa's cygnus mission scheduled for

5
00:00:43,670 --> 00:00:41,360
launch on pegasus

6
00:00:46,790 --> 00:00:43,680
rocket on monday morning

7
00:00:49,270 --> 00:00:46,800
and here to discuss the upcoming mission

8
00:00:52,950 --> 00:00:49,280
the countdown and the launch

9
00:00:55,029 --> 00:00:52,960
we have with us chris bonaxen the cygnus

10
00:00:56,790 --> 00:00:55,039
program executive from the earth science

11
00:01:00,470 --> 00:00:56,800
division in the science mission

12
00:01:04,869 --> 00:01:03,270
tim dunn the nasa launch director from

13
00:01:08,550 --> 00:01:04,879

the kennedy space center's launch

14
00:01:16,630 --> 00:01:11,270
brian baldwin the pegasus launch vehicle

15
00:01:24,550 --> 00:01:19,429
john shearer the cygnus project manager

16
00:01:29,190 --> 00:01:26,630
and mike rabine the launch weather

17
00:01:31,910 --> 00:01:29,200
officer from the 45th weather squadron

18
00:01:34,069 --> 00:01:31,920
at cape canaveral air force station

19
00:01:36,069 --> 00:01:34,079
and we'll begin first with chris madison

20
00:01:38,230 --> 00:01:36,079
chris thank you george

21
00:01:40,950 --> 00:01:38,240
this is an amazing day for nasa earth

22
00:01:42,870 --> 00:01:40,960
science as you're aware nasa's earth

23
00:01:45,350 --> 00:01:42,880
science division looks at the processes

24
00:01:47,590 --> 00:01:45,360
that make our earth work whether that be

25
00:01:49,510 --> 00:01:47,600
water or air

26
00:01:52,149 --> 00:01:49,520
or the carbon cycle

27
00:01:54,069 --> 00:01:52,159
and in that area we have have an

28
00:01:55,109 --> 00:01:54,079
exciting program called the earthventure

29
00:01:57,510 --> 00:01:55,119
program

30
00:01:59,030 --> 00:01:57,520
where we look at we look for small

31
00:02:00,630 --> 00:01:59,040
low-cost missions that are doing

32
00:02:02,630 --> 00:02:00,640
innovative science

33
00:02:05,830 --> 00:02:02,640
and we you do that with balloons and

34
00:02:07,590 --> 00:02:05,840
aircraft and in this case a satellite in

35
00:02:09,990 --> 00:02:07,600
fact with the launch of cygnus this will

36
00:02:11,990 --> 00:02:10,000
be our inaugural mission

37
00:02:13,990 --> 00:02:12,000
for the orbital portion of this earth

38
00:02:15,589 --> 00:02:14,000

venture program

39
00:02:17,910 --> 00:02:15,599
and as the

40
00:02:19,670 --> 00:02:17,920
first clip here showed we are this is

41
00:02:21,589 --> 00:02:19,680
going to be looking at hurricanes it's

42
00:02:24,070 --> 00:02:21,599
going to be focusing on the surface

43
00:02:27,030 --> 00:02:24,080
winds which is the area of highest

44
00:02:29,589 --> 00:02:27,040
dynamic energy in a hurricane which

45
00:02:31,270 --> 00:02:29,599
helps influence how intense the

46
00:02:33,589 --> 00:02:31,280
hurricane's going to be

47
00:02:34,550 --> 00:02:33,599
and we're hoping to learn through this

48
00:02:36,869 --> 00:02:34,560
mission

49
00:02:39,750 --> 00:02:36,879
to information that will better

50
00:02:41,750 --> 00:02:39,760
understand how those hurricanes grow and

51
00:02:43,990 --> 00:02:41,760
intensify

52
00:02:45,270 --> 00:02:44,000
one a couple of the things that

53
00:02:47,030 --> 00:02:45,280
i want to make sure you're aware of is

54
00:02:49,670 --> 00:02:47,040
that this uses

55
00:02:52,550 --> 00:02:49,680
reflected gps signals

56
00:02:55,110 --> 00:02:52,560
and that allows us to look through the

57
00:02:57,670 --> 00:02:55,120
rain that goes on in the hurricane which

58
00:02:58,869 --> 00:02:57,680
is indicative of the frequency that

59
00:03:00,390 --> 00:02:58,879
we're using

60
00:03:03,110 --> 00:03:00,400
most of the missions that are out there

61
00:03:04,790 --> 00:03:03,120
do not are unable to look through there

62
00:03:07,190 --> 00:03:04,800
so they can only see where it isn't

63
00:03:08,710 --> 00:03:07,200

raining and cygnus will be able to see

64
00:03:13,190 --> 00:03:08,720
where it's raining what the winds are

65
00:03:17,509 --> 00:03:15,270
when cygnus launches

66
00:03:19,910 --> 00:03:17,519
this is going to be an amazing day

67
00:03:21,670 --> 00:03:19,920
because this is one of our missions

68
00:03:23,270 --> 00:03:21,680
that has come on

69
00:03:26,390 --> 00:03:23,280
on schedule

70
00:03:28,390 --> 00:03:26,400
on cost and on science

71
00:03:29,830 --> 00:03:28,400
and to me that is an exciting thing to

72
00:03:32,229 --> 00:03:29,840
see and we are looking forward to

73
00:03:33,589 --> 00:03:32,239
getting the operational data here as

74
00:03:35,589 --> 00:03:33,599
soon as our

75
00:03:37,430 --> 00:03:35,599
pegasus friends put us exactly where we

76
00:03:38,710 --> 00:03:37,440
want to go george

77
00:03:41,430 --> 00:03:38,720
thank you chris

78
00:03:43,110 --> 00:03:41,440
now to tim dunn who's our nasa launch

79
00:03:45,110 --> 00:03:43,120
director and we'll be the nasa launch

80
00:03:47,430 --> 00:03:45,120
manager on launch day in the mission

81
00:03:48,869 --> 00:03:47,440
director center tim

82
00:03:50,630 --> 00:03:48,879
thank you george

83
00:03:52,470 --> 00:03:50,640
i'm proud to be here today representing

84
00:03:53,990 --> 00:03:52,480
the men and women of nasa's launch

85
00:03:55,350 --> 00:03:54,000
services program

86
00:03:57,030 --> 00:03:55,360
and i'm thrilled to be the launch

87
00:03:58,830 --> 00:03:57,040
director for the cyclone global

88
00:04:00,470 --> 00:03:58,840

navigation system

89
00:04:02,229 --> 00:04:00,480
mission

90
00:04:03,750 --> 00:04:02,239
the data that cygnus delivers will

91
00:04:06,390 --> 00:04:03,760
advance our hurricane forecasting

92
00:04:08,309 --> 00:04:06,400
capability and as a floridian i'm

93
00:04:10,390 --> 00:04:08,319
personally grateful

94
00:04:13,589 --> 00:04:10,400
working alongside our orbital atk

95
00:04:16,310 --> 00:04:13,599
colleagues the engineers and analysts of

96
00:04:18,949 --> 00:04:16,320
nasa lsp take great great pride in

97
00:04:21,110 --> 00:04:18,959
launching this cygnus mission

98
00:04:22,870 --> 00:04:21,120
nasa has a terrific record flying on the

99
00:04:25,110 --> 00:04:22,880
pegasus xl

100
00:04:26,870 --> 00:04:25,120
we've launched 19 missions on this

101
00:04:29,110 --> 00:04:26,880
unique launch system

102
00:04:32,469 --> 00:04:29,120
cygnus will be the 20th nasa mission on

103
00:04:35,110 --> 00:04:32,479
pegasus and the 43rd overall pegasus

104
00:04:37,510 --> 00:04:35,120
orbital launch

105
00:04:39,350 --> 00:04:37,520
cygnus will launch on a pegasus xl

106
00:04:42,070 --> 00:04:39,360
vehicle dropped from the belly of the

107
00:04:43,189 --> 00:04:42,080
venerable l-1011 orbital carrier

108
00:04:45,670 --> 00:04:43,199
aircraft

109
00:04:47,990 --> 00:04:45,680
over the atlantic ocean northeast of

110
00:04:50,070 --> 00:04:48,000
kennedy space center

111
00:04:51,189 --> 00:04:50,080
cygnus is what we call a ferry flight

112
00:04:53,430 --> 00:04:51,199
mission

113
00:04:56,070 --> 00:04:53,440

we assemble the pegasus and make the

114
00:04:57,590 --> 00:04:56,080
spacecraft at vandenberg air force base

115
00:04:59,909 --> 00:04:57,600
on the west coast

116
00:05:02,230 --> 00:04:59,919
and then fly the mated configuration to

117
00:05:03,830 --> 00:05:02,240
cape canaveral air force station prior

118
00:05:05,830 --> 00:05:03,840
to launch

119
00:05:08,150 --> 00:05:05,840
now i'd like to show a video of the

120
00:05:10,230 --> 00:05:08,160
orbital atk crew building up the pegasus

121
00:05:11,909 --> 00:05:10,240
launch vehicle and the mated cygnus

122
00:05:13,510 --> 00:05:11,919
spacecraft

123
00:05:15,110 --> 00:05:13,520
please roll the tape

124
00:05:17,990 --> 00:05:15,120
here you see earlier this year the

125
00:05:19,510 --> 00:05:18,000
arrival of the pegasus

126
00:05:21,350 --> 00:05:19,520
solid stage

127
00:05:23,749 --> 00:05:21,360
launch vehicle

128
00:05:26,310 --> 00:05:23,759
build up occurs in building 1555 at

129
00:05:29,350 --> 00:05:26,320
vandenberg air force base

130
00:05:31,830 --> 00:05:29,360
there's orbital atk technicians and

131
00:05:33,350 --> 00:05:31,840
engineers working on assembling the

132
00:05:35,430 --> 00:05:33,360
rudder fins

133
00:05:38,390 --> 00:05:35,440
you'll see the wing installation taking

134
00:05:41,430 --> 00:05:38,400
place here very delicate operation

135
00:05:43,430 --> 00:05:41,440
handled expertly by our orbital atk

136
00:05:46,629 --> 00:05:43,440
friends

137
00:05:48,710 --> 00:05:46,639
this is the mating of stage two stage

138
00:05:50,390 --> 00:05:48,720

one here two solid stage of the

139
00:05:52,390 --> 00:05:50,400
three-stage vehicle

140
00:05:54,870 --> 00:05:52,400
and there's the beautiful

141
00:05:56,870 --> 00:05:54,880
cygnus spacecraft the micro satellites

142
00:05:59,590 --> 00:05:56,880
being mated to pegasus followed by

143
00:06:01,830 --> 00:05:59,600
encapsulation with the payload fairing

144
00:06:03,909 --> 00:06:01,840
that's a nice still shot of the mated

145
00:06:06,790 --> 00:06:03,919
configuration

146
00:06:10,150 --> 00:06:06,800
here we are rolling out

147
00:06:12,790 --> 00:06:10,160
just a few weeks ago from building 1555

148
00:06:16,469 --> 00:06:12,800
at vandenberg air force base rolling out

149
00:06:18,710 --> 00:06:16,479
the the completed vehicle to the runway

150
00:06:21,590 --> 00:06:18,720
the early morning hours there

151
00:06:23,590 --> 00:06:21,600
out at vandenberg air force base

152
00:06:24,870 --> 00:06:23,600
we're headed for the orbital carrier

153
00:06:27,590 --> 00:06:24,880
aircraft

154
00:06:29,510 --> 00:06:27,600
the orbital atk l-1011 affectionally

155
00:06:31,189 --> 00:06:29,520
known as stargazer

156
00:06:33,189 --> 00:06:31,199
you see the the

157
00:06:35,189 --> 00:06:33,199
launch vehicle with the mated spacecraft

158
00:06:37,990 --> 00:06:35,199
and encapsulated payload fairing rolled

159
00:06:41,110 --> 00:06:38,000
up under the belly of the aircraft

160
00:06:43,189 --> 00:06:41,120
a lot of detail work going on here

161
00:06:45,670 --> 00:06:43,199
and you see the mated configuration

162
00:06:47,670 --> 00:06:45,680
finishing up in this shot that's a shot

163
00:06:49,909 --> 00:06:47,680

early on the morning of december 2nd as

164
00:06:52,150 --> 00:06:49,919
we were leaving vandenberg air force

165
00:06:54,309 --> 00:06:52,160
base and that's a nice gopro camera view

166
00:06:56,629 --> 00:06:54,319
of the flight crew as they're flying

167
00:06:59,110 --> 00:06:56,639
into cape canaveral air force station

168
00:07:01,110 --> 00:06:59,120
skid strip where we will stage out of on

169
00:07:03,589 --> 00:07:01,120
monday morning

170
00:07:06,469 --> 00:07:03,599
nice view of the the rollout of the

171
00:07:08,550 --> 00:07:06,479
l-1011 orbital carrier aircraft

172
00:07:11,110 --> 00:07:08,560
on its way to the apron

173
00:07:14,629 --> 00:07:11,120
what we call the hot pad area where

174
00:07:17,589 --> 00:07:14,639
we've been for the last about 10 days

175
00:07:19,589 --> 00:07:17,599
completing all the activities

176
00:07:20,469 --> 00:07:19,599
the cygnus launch campaign has gone very

177
00:07:22,390 --> 00:07:20,479
well

178
00:07:24,150 --> 00:07:22,400
over the past three weeks the cygnus

179
00:07:25,589 --> 00:07:24,160
pegasus launch team has been busy with

180
00:07:27,909 --> 00:07:25,599
all of these preps

181
00:07:30,150 --> 00:07:27,919
on november 21st just prior to

182
00:07:32,790 --> 00:07:30,160
thanksgiving the combined nasa orbital

183
00:07:34,390 --> 00:07:32,800
atk and cygnus launch team held the

184
00:07:36,790 --> 00:07:34,400
flight readiness review where we

185
00:07:38,390 --> 00:07:36,800
assessed all the preps and readiness

186
00:07:40,629 --> 00:07:38,400
of the rocket

187
00:07:42,790 --> 00:07:40,639
the aircraft and range assets in

188
00:07:46,070 --> 00:07:42,800

addition to the cygnus spacecraft for

189
00:07:47,990 --> 00:07:46,080
that cost cross-country transport

190
00:07:50,390 --> 00:07:48,000
after mate to the l-1011 that occurred

191
00:07:52,469 --> 00:07:50,400
on november 28th we performed a combined

192
00:07:55,029 --> 00:07:52,479
systems test with the spacecraft and

193
00:07:57,110 --> 00:07:55,039
rocket and then we flew the l-1011 with

194
00:07:58,710 --> 00:07:57,120
the mated pegasus from vandenberg to

195
00:07:59,589 --> 00:07:58,720
cape canaveral air force station skid

196
00:08:02,309 --> 00:07:59,599
strip

197
00:08:04,629 --> 00:08:02,319
on friday december 2nd

198
00:08:06,950 --> 00:08:04,639
after arrival we performed another

199
00:08:08,070 --> 00:08:06,960
successful combined systems test last

200
00:08:09,909 --> 00:08:08,080
sunday

201
00:08:12,070 --> 00:08:09,919
followed yesterday with our mission

202
00:08:15,270 --> 00:08:12,080
dress rehearsal to exercise and prepare

203
00:08:17,589 --> 00:08:15,280
the entire pegasus team

204
00:08:20,150 --> 00:08:17,599
orbital atk participated along with

205
00:08:22,710 --> 00:08:20,160
southwest research institute nasa and

206
00:08:24,550 --> 00:08:22,720
the united states air force

207
00:08:26,309 --> 00:08:24,560
just this morning we conducted the

208
00:08:27,270 --> 00:08:26,319
launch readiness review for the cygnus

209
00:08:29,749 --> 00:08:27,280
mission

210
00:08:32,550 --> 00:08:29,759
senior managers from nasa kennedy space

211
00:08:35,509 --> 00:08:32,560
center langley research center and nasa

212
00:08:37,670 --> 00:08:35,519
headquarters as well as orbital atk and

213
00:08:39,990 --> 00:08:37,680

the air force assess the readiness of

214
00:08:42,389 --> 00:08:40,000
the rocket aircraft spacecraft and range

215
00:08:43,750 --> 00:08:42,399
assets to proceed with launch on monday

216
00:08:46,310 --> 00:08:43,760
morning

217
00:08:48,470 --> 00:08:46,320
we had a very successful lrr

218
00:08:52,790 --> 00:08:48,480
we're only tracking one minor item that

219
00:08:57,030 --> 00:08:54,870
on monday morning the crew will begin

220
00:08:59,590 --> 00:08:57,040
arriving on console very early just

221
00:09:01,509 --> 00:08:59,600
after 3 a.m eastern time we'll then

222
00:09:04,470 --> 00:09:01,519
begin all of our final launch preps to

223
00:09:08,310 --> 00:09:04,480
prepare the l-1011 orbital area

224
00:09:11,269 --> 00:09:08,320
orbital carrier aircraft for takeoff

225
00:09:14,470 --> 00:09:11,279
after pegasus power on aircraft engine

226
00:09:16,470 --> 00:09:14,480
start and ground preps are complete

227
00:09:19,509 --> 00:09:16,480
the aircraft will take off one hour

228
00:09:23,350 --> 00:09:19,519
prior to launch fly northeast toward the

229
00:09:25,750 --> 00:09:23,360
target drop zone the launch crew here at

230
00:09:28,150 --> 00:09:25,760
cape canaveral air force station as well

231
00:09:30,070 --> 00:09:28,160
as the crew on the l-1011 aircraft will

232
00:09:32,870 --> 00:09:30,080
perform all of the final preps for

233
00:09:34,710 --> 00:09:32,880
pegasus and the cygnus spacecraft

234
00:09:36,790 --> 00:09:34,720
including flight termination system

235
00:09:38,470 --> 00:09:36,800
checks and spacecraft switch to internal

236
00:09:40,550 --> 00:09:38,480
power

237
00:09:43,829 --> 00:09:40,560
once in the target dropbox over the

238
00:09:46,230 --> 00:09:43,839

atlantic ocean and after verifying our

239
00:09:47,910 --> 00:09:46,240
altitude and airspeed one final time

240
00:09:49,670 --> 00:09:47,920
we'll be ready for the pegasus release

241
00:09:53,110 --> 00:09:49,680
from the aircraft and first stage

242
00:09:54,550 --> 00:09:53,120
ignition monday morning at 8 24 a.m

243
00:09:57,829 --> 00:09:54,560
eastern time

244
00:10:00,630 --> 00:09:57,839
in our 60 minute launch window

245
00:10:02,790 --> 00:10:00,640
to summarize the pegasus xl rocket the

246
00:10:05,350 --> 00:10:02,800
cygnus payload and the aircraft are

247
00:10:08,389 --> 00:10:05,360
ready and we will assess the range red

248
00:10:09,670 --> 00:10:08,399
we assess the range readiness at our lr

249
00:10:11,350 --> 00:10:09,680
this morning

250
00:10:13,110 --> 00:10:11,360
the combined government and contractor

251
00:10:15,430 --> 00:10:13,120
launch team is prepared and excited to

252
00:10:17,350 --> 00:10:15,440
launch this important constellation of

253
00:10:18,710 --> 00:10:17,360
weather satellites

254
00:10:20,470 --> 00:10:18,720
back to you george

255
00:10:22,870 --> 00:10:20,480
thank you tim

256
00:10:24,710 --> 00:10:22,880
and now to brian baldwin the pegasus

257
00:10:27,110 --> 00:10:24,720
launch vehicle program manager from

258
00:10:28,710 --> 00:10:27,120
orbital atk ryan

259
00:10:31,509 --> 00:10:28,720
thank you george

260
00:10:33,590 --> 00:10:31,519
on behalf of orbital atk we want to let

261
00:10:36,470 --> 00:10:33,600
you know how pleased we are to be here

262
00:10:39,110 --> 00:10:36,480
at the cape and to be uh nasa's launch

263
00:10:41,990 --> 00:10:39,120

service providers for this uh upcoming

264
00:10:44,230 --> 00:10:42,000
cygnus mission it's been our uh uh our

265
00:10:45,670 --> 00:10:44,240
honor to uh to be here

266
00:10:47,829 --> 00:10:45,680
first of all i'd like to give you a

267
00:10:51,110 --> 00:10:47,839
little bit of

268
00:10:52,870 --> 00:10:51,120
what you'll see or what happens after uh

269
00:10:57,190 --> 00:10:52,880
we get to the drop point

270
00:10:57,200 --> 00:11:04,150
plt drop of my mark

271
00:11:06,870 --> 00:11:05,750
once pegasus drops away from the

272
00:11:08,470 --> 00:11:06,880
aircraft

273
00:11:11,030 --> 00:11:08,480
at about two and a half seconds we'll

274
00:11:12,790 --> 00:11:11,040
arm our flight termination system and

275
00:11:14,790 --> 00:11:12,800
then as you see at about five seconds

276
00:11:16,949 --> 00:11:14,800
we'll get motor ignition

277
00:11:18,949 --> 00:11:16,959
during this phase of the flight

278
00:11:21,670 --> 00:11:18,959
our attitude control will be

279
00:11:24,069 --> 00:11:21,680
done with our our fins

280
00:11:25,910 --> 00:11:24,079
as we uh prepare

281
00:11:28,310 --> 00:11:25,920
for this launch

282
00:11:30,949 --> 00:11:28,320
we'll reach max dynamic pressure at

283
00:11:34,470 --> 00:11:30,959
about 35 seconds and the motor will burn

284
00:11:36,710 --> 00:11:34,480
for about 73 seconds prior to

285
00:11:39,829 --> 00:11:36,720
stage one two separation

286
00:11:42,150 --> 00:11:39,839
uh after that uh we'll ignite uh the

287
00:11:43,430 --> 00:11:42,160
stage two motor

288
00:11:45,829 --> 00:11:43,440

will then

289
00:11:47,350 --> 00:11:45,839
burn for about 38 seconds before we

290
00:11:48,870 --> 00:11:47,360
separate the fairing and once the

291
00:11:50,870 --> 00:11:48,880
fairing's separated we're out of the

292
00:11:53,430 --> 00:11:50,880
atmosphere there's no

293
00:11:55,670 --> 00:11:53,440
external loads on the fairing and we'll

294
00:11:56,870 --> 00:11:55,680
continue

295
00:11:59,350 --> 00:11:56,880
to burn

296
00:12:02,389 --> 00:11:59,360
second stage motor for a total duration

297
00:12:03,910 --> 00:12:02,399
of about 73 seconds

298
00:12:06,389 --> 00:12:03,920
we'll then coast

299
00:12:08,069 --> 00:12:06,399
uh up to the the proper altitude for

300
00:12:10,629 --> 00:12:08,079
about four minutes

301
00:12:13,350 --> 00:12:10,639
uh and once that that period's up we'll

302
00:12:15,030 --> 00:12:13,360
separate the stage two

303
00:12:17,509 --> 00:12:15,040
uh from the rest of the vehicle and

304
00:12:18,629 --> 00:12:17,519
we'll ignite the stage three motor

305
00:12:23,350 --> 00:12:18,639
uh

306
00:12:24,629 --> 00:12:23,360
seconds and we use that

307
00:12:28,150 --> 00:12:24,639
portion of the mission to help

308
00:12:30,230 --> 00:12:28,160
circularize the orbit for the spacecraft

309
00:12:32,069 --> 00:12:30,240
then at that point

310
00:12:33,430 --> 00:12:32,079
again once the stage 3 burns out we'll

311
00:12:35,910 --> 00:12:33,440
then use our

312
00:12:38,069 --> 00:12:35,920
attitude control system to to begin

313
00:12:40,310 --> 00:12:38,079

orientation for separation of the

314
00:12:42,230 --> 00:12:40,320
spacecraft

315
00:12:43,590 --> 00:12:42,240
and these separations will come off in

316
00:12:47,110 --> 00:12:43,600
pairs

317
00:12:49,670 --> 00:12:47,120
the first separation will occur about 13

318
00:12:52,550 --> 00:12:49,680
and a half minutes after drop

319
00:12:55,110 --> 00:12:52,560
or 13 minutes excuse me and then every

320
00:12:57,910 --> 00:12:55,120
30 seconds after that we'll have another

321
00:13:00,150 --> 00:12:57,920
pair of separations so

322
00:13:03,430 --> 00:13:00,160
the final observatories are expected to

323
00:13:04,829 --> 00:13:03,440
be separated about 14 and a half

324
00:13:07,509 --> 00:13:04,839
minutes into the

325
00:13:09,829 --> 00:13:07,519
flight we'll then wait

326
00:13:11,430 --> 00:13:09,839
about another 10 seconds and turn off

327
00:13:13,750 --> 00:13:11,440
our transmitters and that will be the

328
00:13:15,390 --> 00:13:13,760
end of data flow

329
00:13:16,710 --> 00:13:15,400
from the vehicle and then we'll

330
00:13:18,790 --> 00:13:16,720
[Music]

331
00:13:20,949 --> 00:13:18,800
we'll look for confirmation from the

332
00:13:22,949 --> 00:13:20,959
spacecraft folks that they've uh that

333
00:13:25,670 --> 00:13:22,959
they're in orbit

334
00:13:27,590 --> 00:13:25,680
george back to you thank you brian now

335
00:13:29,750 --> 00:13:27,600
to john sheriff the cygnus project

336
00:13:31,910 --> 00:13:29,760
manager from the southwest research

337
00:13:34,389 --> 00:13:31,920
institute john yeah thank you george

338
00:13:36,870 --> 00:13:34,399

yeah as chris boningson said we take

339
00:13:38,629 --> 00:13:36,880
advantage of gps

340
00:13:40,310 --> 00:13:38,639
reflected signals off the ocean surface

341
00:13:41,829 --> 00:13:40,320
to measure surface winds and from an

342
00:13:44,550 --> 00:13:41,839
engineering standpoint that's a very

343
00:13:46,870 --> 00:13:44,560
enabling technique uh it'll since we are

344
00:13:49,269 --> 00:13:46,880
only receiving signals we're not having

345
00:13:51,030 --> 00:13:49,279
to generate the signals we're receiving

346
00:13:53,350 --> 00:13:51,040
the signals from the gps essentially

347
00:13:55,110 --> 00:13:53,360
flying radio stations it allows the

348
00:13:57,670 --> 00:13:55,120
spacecraft to be very small over here in

349
00:13:59,829 --> 00:13:57,680
the on the left-hand side it's a full

350
00:14:01,269 --> 00:13:59,839
scale model of one of the eight

351
00:14:03,269 --> 00:14:01,279
spacecraft

352
00:14:05,910 --> 00:14:03,279
and because we're so small it allows us

353
00:14:08,069 --> 00:14:05,920
to fly eight of these in a relatively

354
00:14:09,110 --> 00:14:08,079
low-cost launch vehicle that tim's

355
00:14:12,389 --> 00:14:09,120
providing

356
00:14:13,509 --> 00:14:12,399
in brian so um i have a couple of videos

357
00:14:16,389 --> 00:14:13,519
first

358
00:14:18,870 --> 00:14:16,399
one is the integration of the spacecraft

359
00:14:21,509 --> 00:14:18,880
and the flight segment at vandenberg so

360
00:14:23,030 --> 00:14:21,519
go ahead and roll that please

361
00:14:24,230 --> 00:14:23,040
so when we arrived at vandenberg we

362
00:14:26,230 --> 00:14:24,240
shipped each of the spacecraft

363
00:14:28,790 --> 00:14:26,240

separately we went through full

364
00:14:30,790 --> 00:14:28,800
comprehensive tests on each spacecraft

365
00:14:33,269 --> 00:14:30,800
we did an incoming inspection that's our

366
00:14:35,030 --> 00:14:33,279
qa guy there taking pictures of it

367
00:14:36,870 --> 00:14:35,040
you can see the relatively very small

368
00:14:38,629 --> 00:14:36,880
size of the spacecraft and that that

369
00:14:40,710 --> 00:14:38,639
photo there the the solar rays are

370
00:14:43,750 --> 00:14:40,720
deployed we also did solar array

371
00:14:45,590 --> 00:14:43,760
deployment on each of the spacecraft

372
00:14:46,550 --> 00:14:45,600
and once we did that

373
00:14:49,670 --> 00:14:46,560
we

374
00:14:51,350 --> 00:14:49,680
verify that all of our solar array

375
00:14:53,350 --> 00:14:51,360
strings were still intact didn't have

376
00:14:54,870 --> 00:14:53,360
any problems electrically

377
00:14:57,030 --> 00:14:54,880
okay so now we're into what we call the

378
00:14:58,550 --> 00:14:57,040
flight segment which is composed of the

379
00:15:00,949 --> 00:14:58,560
deployment module

380
00:15:02,550 --> 00:15:00,959
and the eight spacecraft each spacecraft

381
00:15:04,069 --> 00:15:02,560
is held onto the deployment module with

382
00:15:05,350 --> 00:15:04,079
a single bolt

383
00:15:07,189 --> 00:15:05,360
and

384
00:15:09,750 --> 00:15:07,199
we have these this trolley system that

385
00:15:12,310 --> 00:15:09,760
allows us to mate each spacecraft to the

386
00:15:14,629 --> 00:15:12,320
deployment module

387
00:15:16,470 --> 00:15:14,639
the pegasus is unique

388
00:15:19,269 --> 00:15:16,480

for most rockets in that you have to

389
00:15:20,150 --> 00:15:19,279
mate to the rocket horizontally

390
00:15:21,430 --> 00:15:20,160
i think

391
00:15:22,870 --> 00:15:21,440
we had this video earlier this is a

392
00:15:24,870 --> 00:15:22,880
picture of the flight segment being

393
00:15:27,509 --> 00:15:24,880
mated to the

394
00:15:30,069 --> 00:15:27,519
front of the pegasus rocket

395
00:15:32,069 --> 00:15:30,079
again a very delicate operation

396
00:15:34,389 --> 00:15:32,079
and you'll see the black thing in that

397
00:15:35,829 --> 00:15:34,399
picture there is the adapter cone

398
00:15:37,829 --> 00:15:35,839
the white structure there is a bridge

399
00:15:39,749 --> 00:15:37,839
that basically held everything this is

400
00:15:42,230 --> 00:15:39,759
now in our near flight configuration we

401
00:15:43,509 --> 00:15:42,240
still have solar array covers on

402
00:15:45,670 --> 00:15:43,519
we're in a clean tent again at

403
00:15:47,430 --> 00:15:45,680
vandenberg air force base in california

404
00:15:49,030 --> 00:15:47,440
again this is a picture

405
00:15:53,189 --> 00:15:49,040
when we're fully encapsulated with the

406
00:15:56,069 --> 00:15:53,199
fairing installed onto the spacecraft

407
00:15:58,550 --> 00:15:56,079
so we get launched on the pegasus and uh

408
00:16:00,870 --> 00:15:58,560
the deployment module stays attached to

409
00:16:03,030 --> 00:16:00,880
the third stage of the rocket the next

410
00:16:05,829 --> 00:16:03,040
video uh walks through how the

411
00:16:07,110 --> 00:16:05,839
separation sequence uh it will happen if

412
00:16:09,189 --> 00:16:07,120
you'd run the video

413
00:16:10,790 --> 00:16:09,199

so again here's the flight segment with

414
00:16:12,550 --> 00:16:10,800
the deployment module and underneath

415
00:16:14,150 --> 00:16:12,560
this is the third stage

416
00:16:16,550 --> 00:16:14,160
orbital is responsible for getting us

417
00:16:19,189 --> 00:16:16,560
into the right altitude as well as right

418
00:16:21,189 --> 00:16:19,199
orientation and then it sends a signal

419
00:16:22,710 --> 00:16:21,199
when we're in the right place to

420
00:16:25,110 --> 00:16:22,720
separate out

421
00:16:27,430 --> 00:16:25,120
the opposing pairs of spacecraft we do

422
00:16:30,389 --> 00:16:27,440
it in opposing pairs so that we minimize

423
00:16:32,870 --> 00:16:30,399
the disturbance on the the flight stack

424
00:16:35,189 --> 00:16:32,880
10 minutes after the microset is

425
00:16:38,069 --> 00:16:35,199
deployed the solar rays automatically

426
00:16:39,189 --> 00:16:38,079
deploy at separation the microsets turn

427
00:16:40,310 --> 00:16:39,199
on

428
00:16:43,030 --> 00:16:40,320
and then

429
00:16:45,189 --> 00:16:43,040
we're on our way and our first contact

430
00:16:47,269 --> 00:16:45,199
with the spacecraft when our job or the

431
00:16:49,509 --> 00:16:47,279
science job actually starts is about

432
00:16:51,110 --> 00:16:49,519
three hours after separation

433
00:16:53,350 --> 00:16:51,120
so george

434
00:16:56,150 --> 00:16:53,360
thank you john and now for a look at the

435
00:16:57,990 --> 00:16:56,160
weather on monday mike rabine the launch

436
00:16:59,030 --> 00:16:58,000
weather officer from the 45th weather

437
00:17:02,069 --> 00:16:59,040
squadron

438
00:17:05,429 --> 00:17:02,079

with our forecast for monday mike

439
00:17:06,549 --> 00:17:05,439
this forecast is a little bit tricky we

440
00:17:08,230 --> 00:17:06,559
just had a

441
00:17:10,470 --> 00:17:08,240
cold front move through

442
00:17:12,549 --> 00:17:10,480
the spaceport yesterday

443
00:17:14,949 --> 00:17:12,559
and it is stalled in southern parts of

444
00:17:18,549 --> 00:17:14,959
florida and will be retreating

445
00:17:19,669 --> 00:17:18,559
to the north later today and tomorrow

446
00:17:21,829 --> 00:17:19,679
and if we could go ahead and show the

447
00:17:23,429 --> 00:17:21,839
satellite loop

448
00:17:26,230 --> 00:17:23,439
you can see that

449
00:17:28,230 --> 00:17:26,240
frontal boundary as depicted by the

450
00:17:29,830 --> 00:17:28,240
cloud cover over the southern part of

451
00:17:31,270 --> 00:17:29,840
florida

452
00:17:35,270 --> 00:17:31,280
as i said it will be lifting to the

453
00:17:37,909 --> 00:17:35,280
north and as this does as this happens

454
00:17:39,909 --> 00:17:37,919
warm and moist air will begin to come

455
00:17:40,710 --> 00:17:39,919
back into the area

456
00:17:42,950 --> 00:17:40,720
and

457
00:17:45,270 --> 00:17:42,960
with it will also come a chance for

458
00:17:47,510 --> 00:17:45,280
precipitation

459
00:17:50,470 --> 00:17:47,520
and if we could take a look at the uh

460
00:17:52,710 --> 00:17:50,480
the launch forecast we're looking

461
00:17:54,390 --> 00:17:52,720
for light winds out of the southeast at

462
00:17:57,669 --> 00:17:54,400
about eight knots

463
00:18:00,549 --> 00:17:57,679

uh temperature in the low 70s

464
00:18:03,110 --> 00:18:00,559
we are looking at it at this point a 60

465
00:18:04,870 --> 00:18:03,120
percent chance for violating

466
00:18:06,630 --> 00:18:04,880
user constraints

467
00:18:08,310 --> 00:18:06,640
when the main concern will be flight

468
00:18:11,430 --> 00:18:08,320
through precipitation

469
00:18:13,510 --> 00:18:11,440
and cumulus clouds

470
00:18:16,070 --> 00:18:13,520
and in the event that we are delayed for

471
00:18:17,909 --> 00:18:16,080
24 hours

472
00:18:19,990 --> 00:18:17,919
we're expecting light and variable winds

473
00:18:22,710 --> 00:18:20,000
mainly out of the west

474
00:18:26,070 --> 00:18:22,720
again we we are looking at a chance for

475
00:18:30,390 --> 00:18:27,909
we are expecting the bulk of that

476
00:18:33,830 --> 00:18:30,400
activity to have moved on to the north

477
00:18:37,909 --> 00:18:33,840
and east so we're looking at a 20 chance

478
00:18:43,350 --> 00:18:39,990
main concern being flight through

479
00:18:44,230 --> 00:18:43,360
precipitation and cumulus clouds

480
00:18:46,150 --> 00:18:44,240
so

481
00:18:47,990 --> 00:18:46,160
we're hoping that we're able to

482
00:18:50,630 --> 00:18:48,000
to get this

483
00:18:51,909 --> 00:18:50,640
rocket launched on the first attempt and

484
00:18:54,230 --> 00:18:51,919
we're going to do everything we can with

485
00:18:55,350 --> 00:18:54,240
weather so george back to you thank you

486
00:18:57,669 --> 00:18:55,360
mike

487
00:18:58,950 --> 00:18:57,679
we're ready now to take questions we'll

488
00:19:00,760 --> 00:18:58,960

start first

489
00:19:02,390 --> 00:19:00,770
here in the newsroom then we'll go to

490
00:19:05,110 --> 00:19:02,400
[Music]

491
00:19:06,470 --> 00:19:05,120
phones for any media that we have

492
00:19:10,310 --> 00:19:06,480
calling in and then we'll take some

493
00:19:12,560 --> 00:19:10,320
social media questions so um let's start

494
00:19:15,430 --> 00:19:12,570
here first

495
00:19:17,750 --> 00:19:15,440
[Music]

496
00:19:19,190 --> 00:19:17,760
hi stephen clark from space flight now a

497
00:19:21,029 --> 00:19:19,200
couple of questions

498
00:19:23,190 --> 00:19:21,039
um first of all given the weather

499
00:19:25,590 --> 00:19:23,200
forecast i wanted to ask

500
00:19:26,710 --> 00:19:25,600
um you know are there any

501
00:19:28,390 --> 00:19:26,720
what are the differences between the

502
00:19:30,310 --> 00:19:28,400
weather constraints for the pegasus and

503
00:19:32,230 --> 00:19:30,320
let's say a ground launch vehicle

504
00:19:34,390 --> 00:19:32,240
and are there are there rules for

505
00:19:36,230 --> 00:19:34,400
takeoff of the carrier plane and the

506
00:19:38,070 --> 00:19:36,240
drop and can you walk me through those

507
00:19:40,150 --> 00:19:38,080
differences and

508
00:19:43,750 --> 00:19:40,160
also are there launch opportunities

509
00:19:45,909 --> 00:19:43,760
available each day this week thanks

510
00:19:47,990 --> 00:19:45,919
i guess i'll take that there are there

511
00:19:49,110 --> 00:19:48,000
are launch opportunities available each

512
00:19:50,549 --> 00:19:49,120
day

513
00:19:51,590 --> 00:19:50,559

until

514
00:19:53,350 --> 00:19:51,600
you know there's conflicts with the

515
00:19:55,590 --> 00:19:53,360
range other users

516
00:19:57,510 --> 00:19:55,600
uh as far as pegasus goes we do have a

517
00:20:00,870 --> 00:19:57,520
number of uh constraints that are

518
00:20:02,630 --> 00:20:00,880
associated with with our uh a vehicle

519
00:20:04,070 --> 00:20:02,640
one of those being

520
00:20:07,029 --> 00:20:04,080
precipitation

521
00:20:09,029 --> 00:20:07,039
uh we can't fly through uh rain uh the

522
00:20:11,110 --> 00:20:09,039
concern is the uh

523
00:20:13,669 --> 00:20:11,120
potential damage to the tps the thermal

524
00:20:15,510 --> 00:20:13,679
protection system uh on the vehicle we

525
00:20:17,029 --> 00:20:15,520
can't through can't fly through crack

526
00:20:19,909 --> 00:20:17,039
clouds that uh

527
00:20:21,669 --> 00:20:19,919
there may be issues with uh you know

528
00:20:22,630 --> 00:20:21,679
lightning or something like that now we

529
00:20:25,669 --> 00:20:22,640
do

530
00:20:28,950 --> 00:20:25,679
uh and the and the

531
00:20:32,230 --> 00:20:28,960
uh the the constraint is that we're you

532
00:20:33,909 --> 00:20:32,240
know at the launch point so if we are if

533
00:20:36,390 --> 00:20:33,919
you know if the pilots and crew are able

534
00:20:38,870 --> 00:20:36,400
to fly around some of these cells

535
00:20:40,310 --> 00:20:38,880
we can do that and at altitude as long

536
00:20:43,909 --> 00:20:40,320
as there's no rain

537
00:20:49,350 --> 00:20:46,630
i'll just add one thing brian on the

538
00:20:51,830 --> 00:20:49,360

range opportunities we do have monday

539
00:20:54,149 --> 00:20:51,840
and tuesday secured as a backup day on

540
00:20:55,590 --> 00:20:54,159
the range calendar in the event we

541
00:20:57,669 --> 00:20:55,600
should need additional days we'll go

542
00:20:59,510 --> 00:20:57,679
through the normal request process and

543
00:21:01,350 --> 00:20:59,520
work with our friends over at the 45th

544
00:21:03,669 --> 00:21:01,360
space wing range scheduling

545
00:21:06,789 --> 00:21:03,679
and we may have additional opportunities

546
00:21:12,390 --> 00:21:07,909
bill

547
00:21:13,830 --> 00:21:12,400
follow-up um for tim dunn

548
00:21:15,029 --> 00:21:13,840
you mentioned uh one issue you're

549
00:21:18,070 --> 00:21:15,039
tracking i was wondering what the issue

550
00:21:20,549 --> 00:21:18,080
is and two on the weather stuff um i

551
00:21:22,710 --> 00:21:20,559
assume is the precip count on climb out

552
00:21:24,310 --> 00:21:22,720
on the on your l-1011 are you talking

553
00:21:26,549 --> 00:21:24,320
about at drop altitude and i was

554
00:21:27,830 --> 00:21:26,559
wondering what is your altitude

555
00:21:29,510 --> 00:21:27,840
drop i know it's probably the press kit

556
00:21:32,390 --> 00:21:29,520
but i just hadn't seen it

557
00:21:34,789 --> 00:21:32,400
the altitude at drop is 39 000 feet

558
00:21:38,230 --> 00:21:34,799
and the the concern is not with the

559
00:21:41,110 --> 00:21:39,830
well you mean you can fly through around

560
00:21:43,350 --> 00:21:41,120
underneath the airplane and not worry

561
00:21:47,669 --> 00:21:43,360
about your time well no we don't want to

562
00:21:51,750 --> 00:21:49,590
and the first part of your question bill

563
00:21:53,750 --> 00:21:51,760

uh so yeah we're tracking one minor

564
00:21:55,270 --> 00:21:53,760
issue it has to deal with how where

565
00:21:57,909 --> 00:21:55,280
we've secured some other special

566
00:22:00,470 --> 00:21:57,919
instrumentation uh wiring

567
00:22:02,710 --> 00:22:00,480
on the pegasus launch vehicle

568
00:22:04,470 --> 00:22:02,720
it was an open non-conformance we're

569
00:22:06,149 --> 00:22:04,480
tracking that to closure i don't expect

570
00:22:08,789 --> 00:22:06,159
it to amount to anything and we'll close

571
00:22:14,710 --> 00:22:11,270
james

572
00:22:17,190 --> 00:22:14,720
tim o'brien you've referred to that

573
00:22:18,710 --> 00:22:17,200
dropbox how big of an area is that and

574
00:22:20,710 --> 00:22:18,720
you said you had some flexibility to

575
00:22:22,549 --> 00:22:20,720
kind of move around but how big of an

576
00:22:24,230 --> 00:22:22,559
area is that and um

577
00:22:27,190 --> 00:22:24,240
you're also targeting a time five

578
00:22:28,789 --> 00:22:27,200
minutes into a window why is that and

579
00:22:30,149 --> 00:22:28,799
are there

580
00:22:31,430 --> 00:22:30,159
how many opportunities within your

581
00:22:33,830 --> 00:22:31,440
window

582
00:22:35,990 --> 00:22:33,840
would you expect to have okay

583
00:22:38,310 --> 00:22:36,000
the launch box itself is 10 nautical

584
00:22:40,549 --> 00:22:38,320
miles by 40 nautical miles so as long as

585
00:22:42,390 --> 00:22:40,559
we're in the box and we've met all the

586
00:22:47,750 --> 00:22:42,400
other constraints

587
00:22:51,750 --> 00:22:49,669
so we can we can drop anywhere in that

588
00:22:53,270 --> 00:22:51,760

box now what i was referring to about

589
00:22:54,950 --> 00:22:53,280
the plane is

590
00:22:57,590 --> 00:22:54,960
we still have to drop within that box

591
00:23:00,149 --> 00:22:57,600
but if we can get to that box by flying

592
00:23:02,310 --> 00:23:00,159
around you know potential weather cells

593
00:23:05,510 --> 00:23:02,320
you know we have that capability and and

594
00:23:07,029 --> 00:23:05,520
flexibility that we can do that

595
00:23:09,350 --> 00:23:07,039
and i think your other question was how

596
00:23:11,350 --> 00:23:09,360
many attempts do we think we will we

597
00:23:12,070 --> 00:23:11,360
could get go around twice

598
00:23:13,990 --> 00:23:12,080
we

599
00:23:15,750 --> 00:23:14,000
line up for the target box for the

600
00:23:17,669 --> 00:23:15,760
initial attempt hopefully at the

601
00:23:19,590 --> 00:23:17,679
beginning of the window

602
00:23:21,909 --> 00:23:19,600
and then should we not want to drop on

603
00:23:23,350 --> 00:23:21,919
that run through the dropbox we have

604
00:23:25,669 --> 00:23:23,360
enough time to circle around the race

605
00:23:28,310 --> 00:23:25,679
track recycle and have a second attempt

606
00:23:29,909 --> 00:23:28,320
during our one hour window

607
00:23:32,549 --> 00:23:29,919
and i think you ask about why do we

608
00:23:35,110 --> 00:23:32,559
target five minutes into the window and

609
00:23:37,669 --> 00:23:35,120
that's uh that's the launch conductor's

610
00:23:39,669 --> 00:23:37,679
call on his comfort and working with the

611
00:23:42,149 --> 00:23:39,679
crew and since we have a very generous

612
00:23:44,149 --> 00:23:42,159
60-minute window and we know that we

613
00:23:46,950 --> 00:23:44,159

were only going to get two two attempts

614
00:23:49,350 --> 00:23:46,960
at it uh he just made the request that

615
00:23:51,430 --> 00:23:49,360
we go five minutes into that that

616
00:23:53,830 --> 00:23:51,440
dropbox window yeah and it gives us some

617
00:23:55,510 --> 00:23:53,840
flexibility if we have uh

618
00:23:56,950 --> 00:23:55,520
you know some issues and we want to drop

619
00:23:58,789 --> 00:23:56,960
later in the box

620
00:24:00,630 --> 00:23:58,799
the lc can call that up to the pilots

621
00:24:03,350 --> 00:24:00,640
and and we've done that in the past

622
00:24:05,510 --> 00:24:03,360
maybe delayed a minute passed our uh

623
00:24:08,070 --> 00:24:05,520
particular drop spot so

624
00:24:09,830 --> 00:24:08,080
that box gives us some flexibility

625
00:24:11,590 --> 00:24:09,840
yeah for instance the last time we did a

626
00:24:13,350 --> 00:24:11,600
pegasus launch was on the west coast at

627
00:24:15,269 --> 00:24:13,360
vandenberg about three and a half years

628
00:24:17,590 --> 00:24:15,279
ago we did the iris mission we had a

629
00:24:19,269 --> 00:24:17,600
five minute window that day and we chose

630
00:24:21,590 --> 00:24:19,279
the very middle of that window for our

631
00:24:23,430 --> 00:24:21,600
single opportunity

632
00:24:26,549 --> 00:24:23,440
at the middle of the window middle of

633
00:24:30,149 --> 00:24:28,630
all right let's uh come over here kenny

634
00:24:31,510 --> 00:24:30,159
you had a question we'll start right

635
00:24:33,190 --> 00:24:31,520
here

636
00:24:35,750 --> 00:24:33,200
in kramer universe today northeast

637
00:24:38,310 --> 00:24:35,760
astronomy forum i'm i'm curious why are

638
00:24:39,669 --> 00:24:38,320

we launching now what what what is the

639
00:24:41,750 --> 00:24:39,679
the dictates for launching this

640
00:24:43,669 --> 00:24:41,760
spacecraft this uh this constellation

641
00:24:45,510 --> 00:24:43,679
like right now we don't have a hurricane

642
00:24:47,590 --> 00:24:45,520
right now so how do you how do you pick

643
00:24:50,630 --> 00:24:47,600
that launch window how long do these

644
00:24:52,549 --> 00:24:50,640
spacecraft last what is their lifetime

645
00:24:54,549 --> 00:24:52,559
and are there plans for follow-up since

646
00:24:56,230 --> 00:24:54,559
it's a very low-cost mission

647
00:24:59,110 --> 00:24:56,240
thanks

648
00:25:01,350 --> 00:24:59,120
um i'll i'll start um

649
00:25:03,510 --> 00:25:01,360
we're launching now because that way we

650
00:25:04,630 --> 00:25:03,520
can get the satellite up calibrated and

651
00:25:06,549 --> 00:25:04,640
ready for the start of the next

652
00:25:07,909 --> 00:25:06,559
hurricane season it takes us a little

653
00:25:10,549 --> 00:25:07,919
bit of time to make sure that it's up

654
00:25:12,710 --> 00:25:10,559
and working right

655
00:25:14,710 --> 00:25:12,720
as far as follow-ons this is a research

656
00:25:16,630 --> 00:25:14,720
mission and the decision for follow-ons

657
00:25:18,710 --> 00:25:16,640
will be made once we know that the data

658
00:25:21,110 --> 00:25:18,720
does what we believe it will

659
00:25:23,510 --> 00:25:21,120
and that will be worked between nasa and

660
00:25:26,070 --> 00:25:23,520
noaa since nasa's the research side know

661
00:25:28,470 --> 00:25:26,080
as the operational side

662
00:25:30,470 --> 00:25:28,480
and you asked me how you asked how long

663
00:25:32,549 --> 00:25:30,480

they were going to live

664
00:25:35,350 --> 00:25:32,559
uh the prime mission which is what the

665
00:25:37,350 --> 00:25:35,360
pi was funded for is two years

666
00:25:39,190 --> 00:25:37,360
after that it will go into our standard

667
00:25:40,390 --> 00:25:39,200
senior review that we look at all of our

668
00:25:41,350 --> 00:25:40,400
missions that have gone through their

669
00:25:43,830 --> 00:25:41,360
prime

670
00:25:46,710 --> 00:25:43,840
to determine whether the the science is

671
00:25:48,630 --> 00:25:46,720
valid and whether or not we believe that

672
00:25:50,070 --> 00:25:48,640
the spacecraft will live long enough to

673
00:25:51,990 --> 00:25:50,080
make it worthwhile to continue to

674
00:25:53,510 --> 00:25:52,000
operate them or whether we need to shut

675
00:25:56,149 --> 00:25:53,520
them down so that they come back with a

676
00:25:57,830 --> 00:25:56,159
controlled reentry to meet all the or

677
00:26:00,230 --> 00:25:57,840
all the deorbit normal debris

678
00:26:01,269 --> 00:26:00,240
requirements

679
00:26:03,029 --> 00:26:01,279
john do you have something to add to

680
00:26:04,950 --> 00:26:03,039
that um i was just thinking a lifetime

681
00:26:07,350 --> 00:26:04,960
of the mission our baseline mission is

682
00:26:09,430 --> 00:26:07,360
two years but uh

683
00:26:12,470 --> 00:26:09,440
everything on board the the each

684
00:26:14,390 --> 00:26:12,480
microsat is built to last about five

685
00:26:15,830 --> 00:26:14,400
years or more and that's that's with

686
00:26:17,909 --> 00:26:15,840
margin so

687
00:26:20,549 --> 00:26:17,919
uh yes we are really hoping for extended

688
00:26:20,559 --> 00:26:26,310

all right another question right here

689
00:26:30,390 --> 00:26:28,549
jason ryan from spaceflightinsider.com

690
00:26:32,470 --> 00:26:30,400
i'm curious given the turbulent uh

691
00:26:36,149 --> 00:26:32,480
florida weather we're so familiar with

692
00:26:38,710 --> 00:26:36,159
uh why not vandy or maybe uh kwajalein

693
00:26:41,110 --> 00:26:38,720
for a launch site

694
00:26:43,669 --> 00:26:41,120
yeah so uh vandenberg is basically too

695
00:26:45,510 --> 00:26:43,679
high of uh inclination for us um we

696
00:26:47,669 --> 00:26:45,520
could have gone out of kwajalein um

697
00:26:49,990 --> 00:26:47,679
actually i was on a pegasus mission that

698
00:26:51,830 --> 00:26:50,000
launched out of kwajalein but it's uh

699
00:26:54,390 --> 00:26:51,840
much more expensive to launch out of

700
00:26:56,630 --> 00:26:54,400
quadrants out in the middle of nowhere

701
00:26:57,990 --> 00:26:56,640
and uh you know so it's a lot more

702
00:26:59,909 --> 00:26:58,000
convenient to come out of the cape and

703
00:27:04,070 --> 00:26:59,919
it gets us our orbit that we need which

704
00:27:04,080 --> 00:27:09,269
all right down here on the end

705
00:27:13,510 --> 00:27:11,350
jim siegel i'm with celebration news and

706
00:27:16,630 --> 00:27:13,520
space flight insider thank you for being

707
00:27:19,110 --> 00:27:16,640
here today uh this is an exciting um

708
00:27:20,470 --> 00:27:19,120
mission and i'm particularly interested

709
00:27:23,510 --> 00:27:20,480
in the

710
00:27:25,029 --> 00:27:23,520
l-1011

711
00:27:26,630 --> 00:27:25,039
stargazer

712
00:27:28,950 --> 00:27:26,640
maybe perhaps you can provide a little

713
00:27:31,350 --> 00:27:28,960

bit of background about that

714
00:27:36,230 --> 00:27:31,360
aircraft for example why was it chosen

715
00:27:41,110 --> 00:27:38,870
talking about launching rockets from

716
00:27:43,269 --> 00:27:41,120
from an aircraft and how many other

717
00:27:44,950 --> 00:27:43,279
missions has could you describe some of

718
00:27:47,190 --> 00:27:44,960
the other missions that it's been used

719
00:27:48,389 --> 00:27:47,200
on and i'm also interested in the

720
00:27:49,430 --> 00:27:48,399
airframe

721
00:27:50,870 --> 00:27:49,440
life of

722
00:27:53,350 --> 00:27:50,880
this this

723
00:27:56,710 --> 00:27:53,360
this craft because i believe it was

724
00:27:58,310 --> 00:27:56,720
built in 1972 or something like that so

725
00:27:59,590 --> 00:27:58,320
could you could you comment a little bit

726
00:28:00,389 --> 00:27:59,600
on those issues

727
00:28:02,549 --> 00:28:00,399
sure

728
00:28:04,310 --> 00:28:02,559
i'm not the spacecraft or the airplane

729
00:28:06,149 --> 00:28:04,320
manager but i'll give you what i know

730
00:28:08,830 --> 00:28:06,159
you're right it was uh

731
00:28:11,830 --> 00:28:08,840
it's one of about

732
00:28:13,029 --> 00:28:11,840
260 or so l-1011s that were built by

733
00:28:15,990 --> 00:28:13,039
lockheed

734
00:28:18,470 --> 00:28:16,000
um the unique feature about it that we

735
00:28:21,510 --> 00:28:18,480
went through quite a trade study in in

736
00:28:25,190 --> 00:28:21,520
the early 90s on on aircraft to use and

737
00:28:27,430 --> 00:28:25,200
the l-1011 has a twin hole

738
00:28:29,590 --> 00:28:27,440

which allows us to

739
00:28:32,389 --> 00:28:29,600
fit the rocket up snug against the body

740
00:28:34,630 --> 00:28:32,399
of the plane and we have actually uh

741
00:28:36,870 --> 00:28:34,640
a box that we're allowed you know that

742
00:28:40,389 --> 00:28:36,880
we are able to put that rudder uh in

743
00:28:43,350 --> 00:28:40,399
there so it's perfectly suited for that

744
00:28:45,990 --> 00:28:43,360
um and it's it's a great it's a great

745
00:28:48,789 --> 00:28:46,000
vehicle we're about uh

746
00:28:51,190 --> 00:28:48,799
about the last l-1011 flying in in the

747
00:28:54,310 --> 00:28:51,200
world today there there may be a couple

748
00:28:55,830 --> 00:28:54,320
others in the in the middle east but uh

749
00:28:57,110 --> 00:28:55,840
certainly the only one in the united

750
00:28:58,389 --> 00:28:57,120
states

751
00:29:02,710 --> 00:28:58,399
um

752
00:29:05,110 --> 00:29:02,720
very capable vehicle so we've been on a

753
00:29:07,990 --> 00:29:05,120
number of uh missions with it we've been

754
00:29:09,590 --> 00:29:08,000
to uh spain we launched for the the

755
00:29:12,470 --> 00:29:09,600
government of spain

756
00:29:14,710 --> 00:29:12,480
uh as mentioned we've been to kwaj

757
00:29:17,350 --> 00:29:14,720
so we have to when we go to kwaj we we

758
00:29:18,389 --> 00:29:17,360
make a stop in hawaii and then over to

759
00:29:20,470 --> 00:29:18,399
kwaj

760
00:29:22,310 --> 00:29:20,480
uh we've we've launched out of wallops

761
00:29:24,710 --> 00:29:22,320
we've launched here at the cape

762
00:29:27,190 --> 00:29:24,720
uh and also at vandenberg so it's a it's

763
00:29:30,070 --> 00:29:27,200

a very flexible uh

764
00:29:31,750 --> 00:29:30,080
very flexible vehicle has good range

765
00:29:36,310 --> 00:29:31,760
and it's been a

766
00:29:38,830 --> 00:29:37,830
all right any further questions here in

767
00:29:41,510 --> 00:29:38,840
the

768
00:29:43,190 --> 00:29:41,520
room bill follow

769
00:29:44,549 --> 00:29:43,200
bill again uh just one more i heard you

770
00:29:45,830 --> 00:29:44,559
guys talking before this started about

771
00:29:47,430 --> 00:29:45,840
whether or not to mention a battery

772
00:29:49,510 --> 00:29:47,440
issue and since you all didn't i assume

773
00:29:52,149 --> 00:29:49,520
it's minor but i'll ask you what if what

774
00:29:55,590 --> 00:29:52,159
it was anyway thanks

775
00:29:58,549 --> 00:29:55,600
okay so um we had uh what

776
00:30:00,549 --> 00:29:58,559
was termed a soft short on uh one of the

777
00:30:03,669 --> 00:30:00,559
uh fm batteries again there's eight

778
00:30:05,909 --> 00:30:03,679
spacecraft it amounted to about a 3.2

779
00:30:08,630 --> 00:30:05,919
watt uh load

780
00:30:12,230 --> 00:30:08,640
nominally we're about a 60 watt

781
00:30:14,950 --> 00:30:12,240
when we're on orbit so relatively small

782
00:30:17,110 --> 00:30:14,960
the short one away

783
00:30:19,669 --> 00:30:17,120
and we've tested the batteries since it

784
00:30:23,029 --> 00:30:19,679
went away i think three days now done

785
00:30:24,630 --> 00:30:23,039
discharge charge discharge charge and uh

786
00:30:27,510 --> 00:30:24,640
everything seems to be

787
00:30:30,230 --> 00:30:27,520
full capacity uh and ready

788
00:30:31,510 --> 00:30:30,240

so and and another i think key thing is

789
00:30:33,669 --> 00:30:31,520
to meet our baseline science

790
00:30:35,510 --> 00:30:33,679
requirements we really only need six of

791
00:30:37,430 --> 00:30:35,520
the microsats to function so we have

792
00:30:38,950 --> 00:30:37,440
functional redundancy

793
00:30:40,789 --> 00:30:38,960
in the constellation they don't talk to

794
00:30:42,549 --> 00:30:40,799
each other but to get the coverage

795
00:30:45,830 --> 00:30:42,559
requirement that we have we only need

796
00:30:48,549 --> 00:30:46,789
all right

797
00:30:51,029 --> 00:30:48,559
any other questions one more follow up

798
00:30:57,509 --> 00:30:51,039
here

799
00:31:01,830 --> 00:30:59,509
hi jim siegel again

800
00:31:05,110 --> 00:31:01,840
i'm i'm curious about why this

801
00:31:07,509 --> 00:31:05,120
particular mission is appropriate for

802
00:31:09,990 --> 00:31:07,519
launch from an airplane as opposed to

803
00:31:12,310 --> 00:31:10,000
just a standard launch is this just

804
00:31:14,870 --> 00:31:12,320
a way of saving money so you don't have

805
00:31:16,149 --> 00:31:14,880
a first stage to to get it up to 40 000

806
00:31:18,070 --> 00:31:16,159
feet or wherever

807
00:31:20,470 --> 00:31:18,080
could you talk a little bit about that

808
00:31:22,070 --> 00:31:20,480
oh let me let me say something and then

809
00:31:22,870 --> 00:31:22,080
i'll turn it over to you tim

810
00:31:25,029 --> 00:31:22,880
uh

811
00:31:27,430 --> 00:31:25,039
when earth science was looking at this

812
00:31:29,190 --> 00:31:27,440
we had it had a budget for our launch

813
00:31:30,950 --> 00:31:29,200

vehicle and we actually since this was

814
00:31:33,669 --> 00:31:30,960
competitive selected

815
00:31:36,310 --> 00:31:33,679
we gave a weight class

816
00:31:39,590 --> 00:31:36,320
as to what people could propose to

817
00:31:41,830 --> 00:31:39,600
and pegasus is a solid low-cost mission

818
00:31:43,990 --> 00:31:41,840
and it fits with the overall tenants of

819
00:31:46,710 --> 00:31:44,000
earth venture that we want to get

820
00:31:48,310 --> 00:31:46,720
innovative science up for the least

821
00:31:50,710 --> 00:31:48,320
amount of uh

822
00:31:52,470 --> 00:31:50,720
coinage of the realm

823
00:31:53,269 --> 00:31:52,480
uh tim do you want to say anything about

824
00:32:04,070 --> 00:31:53,279
the

825
00:32:07,350 --> 00:32:04,080
launch vehicles in our portfolio of of

826
00:32:10,149 --> 00:32:07,360
capable rockets that we have

827
00:32:12,630 --> 00:32:10,159
okay uh james did you have a follow-up

828
00:32:14,870 --> 00:32:12,640
uh thanks james dan floor today um

829
00:32:16,549 --> 00:32:14,880
tim or mike maybe uh is there any chance

830
00:32:17,909 --> 00:32:16,559
i know the weather's not looking that

831
00:32:19,990 --> 00:32:17,919
great on monday but is there any chance

832
00:32:21,830 --> 00:32:20,000
people could actually see something uh

833
00:32:24,389 --> 00:32:21,840
off the coast and then of course you

834
00:32:25,909 --> 00:32:24,399
have the chase plane how unique or

835
00:32:27,990 --> 00:32:25,919
common is that

836
00:32:30,230 --> 00:32:28,000
to get the views that those will provide

837
00:32:31,909 --> 00:32:30,240
or that the chase plan will provide and

838
00:32:32,710 --> 00:32:31,919

um finally just wonder if he could speak

839
00:32:35,190 --> 00:32:32,720
to the

840
00:32:36,870 --> 00:32:35,200
kind of mechanics of launch is it just a

841
00:32:38,630 --> 00:32:36,880
push of a button to

842
00:32:41,190 --> 00:32:38,640
to drop the vehicle and then is it sort

843
00:32:43,750 --> 00:32:41,200
of autonomous from there or

844
00:32:48,630 --> 00:32:43,760
is there another step to light the

845
00:32:52,149 --> 00:32:50,389
okay

846
00:32:53,669 --> 00:32:52,159
so as far as what are we going to see

847
00:32:56,389 --> 00:32:53,679
from the coast

848
00:32:57,990 --> 00:32:56,399
maybe on a perfect weather morning you

849
00:33:01,029 --> 00:32:58,000
might see a glimpse of something but we

850
00:33:05,029 --> 00:33:01,039
are going to be about 100 miles offshore

851
00:33:06,950 --> 00:33:05,039
almost due east of the daytona area

852
00:33:09,590 --> 00:33:06,960
so a little bit north of here

853
00:33:12,870 --> 00:33:09,600
so low likelihood to see anything

854
00:33:15,110 --> 00:33:12,880
we will have coverage on nasa tv and in

855
00:33:18,070 --> 00:33:15,120
addition you mentioned the chase plane

856
00:33:20,070 --> 00:33:18,080
we've brought in the nasa f18 to do a

857
00:33:22,470 --> 00:33:20,080
chase video for us

858
00:33:24,870 --> 00:33:22,480
and when that is when we're capable of

859
00:33:26,789 --> 00:33:24,880
bringing assets like that along on

860
00:33:28,389 --> 00:33:26,799
pegasus missions three years ago from

861
00:33:31,269 --> 00:33:28,399
vandenberg we had that

862
00:33:34,549 --> 00:33:31,279
opportunity you get beautiful uh video

863
00:33:36,789 --> 00:33:34,559

there so plan to put that out on nasa tv

864
00:33:39,350 --> 00:33:36,799
and broadcast that to the world

865
00:33:41,190 --> 00:33:39,360
as far as uh how do we actually release

866
00:33:43,990 --> 00:33:41,200
pegasus from the the plane i'll let

867
00:33:45,430 --> 00:33:44,000
brian take that okay there is uh

868
00:33:48,310 --> 00:33:45,440
you know being air launched it is a

869
00:33:49,990 --> 00:33:48,320
unique uh system so there is no auto

870
00:33:51,669 --> 00:33:50,000
sequencer like you'll see on some of the

871
00:33:53,269 --> 00:33:51,679
ground launch vehicles so it's all man

872
00:33:54,470 --> 00:33:53,279
in the loop

873
00:33:57,110 --> 00:33:54,480
we do

874
00:34:00,070 --> 00:33:57,120
a couple of things at the very end

875
00:34:01,590 --> 00:34:00,080
45 seconds prior to drop we'll activate

876
00:34:03,190 --> 00:34:01,600
our fin batteries

877
00:34:05,509 --> 00:34:03,200
and then we'll pull the fin pins and

878
00:34:07,909 --> 00:34:05,519
then we actually do a fin sweep

879
00:34:10,069 --> 00:34:07,919
to make sure that everything's

880
00:34:11,510 --> 00:34:10,079
operational so it's a number of things

881
00:34:13,589 --> 00:34:11,520
we check we make sure the launch

882
00:34:16,149 --> 00:34:13,599
pressures on the release system are

883
00:34:18,710 --> 00:34:16,159
correct that we've got the right heading

884
00:34:20,869 --> 00:34:18,720
the right altitude and then

885
00:34:22,950 --> 00:34:20,879
the lc once we're in the box and met all

886
00:34:25,190 --> 00:34:22,960
the requirements the lc will

887
00:34:27,109 --> 00:34:25,200
uh send up a message to the pilot that

888
00:34:29,510 --> 00:34:27,119

that he can drop and as you as you saw

889
00:34:31,270 --> 00:34:29,520
on the uh the video it's the lc that

890
00:34:34,470 --> 00:34:31,280
does the countdown it's a pilot that

891
00:34:40,230 --> 00:34:34,480
actually pushes the button to release it

892
00:34:44,550 --> 00:34:42,310
yeah bill jelen from we report space so

893
00:34:47,030 --> 00:34:44,560
when it drops from the l-1011 does the

894
00:34:49,430 --> 00:34:47,040
l-1011 turn away i mean five seconds

895
00:34:52,790 --> 00:34:49,440
later they're actually really close

896
00:34:55,589 --> 00:34:52,800
what is there an invasive maneuver

897
00:34:56,550 --> 00:34:55,599
they're uh part of their procedure is to

898
00:34:57,829 --> 00:34:56,560
uh

899
00:34:59,030 --> 00:34:57,839
to veer off

900
00:35:01,190 --> 00:34:59,040
and so

901
00:35:02,710 --> 00:35:01,200
they're about eight or nine hundred

902
00:35:04,310 --> 00:35:02,720
feet i believe

903
00:35:05,109 --> 00:35:04,320
lower than the aircraft we've done all

904
00:35:08,150 --> 00:35:05,119
the

905
00:35:09,589 --> 00:35:08,160
quote me on that one some of my some of

906
00:35:12,150 --> 00:35:09,599
my guys will give me a hard time if i

907
00:35:14,790 --> 00:35:12,160
miss the number but uh

908
00:35:17,670 --> 00:35:14,800
they are instructed to uh to veer off

909
00:35:19,349 --> 00:35:17,680
and clear the area

910
00:35:21,190 --> 00:35:19,359
all right do we have any questions on

911
00:35:23,109 --> 00:35:21,200
social media

912
00:35:24,710 --> 00:35:23,119
all right

913
00:35:26,390 --> 00:35:24,720

yeah i got a few questions from social

914
00:35:28,310 --> 00:35:26,400
media here for you

915
00:35:29,910 --> 00:35:28,320
uh the first is kind of a follow-on

916
00:35:31,349 --> 00:35:29,920
question to a question that was asked

917
00:35:33,589 --> 00:35:31,359
earlier which is

918
00:35:37,829 --> 00:35:33,599
how much does the pegasus in the cygnus

919
00:35:41,990 --> 00:35:39,670
i can tell you what the

920
00:35:44,390 --> 00:35:42,000
the airplane or the rocket weighs about

921
00:35:46,390 --> 00:35:44,400
50 000 pounds

922
00:35:50,069 --> 00:35:46,400
and cygnus the whole flight stack is

923
00:35:52,950 --> 00:35:51,750
all right got a got another one here for

924
00:35:55,430 --> 00:35:52,960
you um

925
00:35:57,750 --> 00:35:55,440
how can you translate ocean temperatures

926
00:35:59,910 --> 00:35:57,760
by reflecting a radio signal that tells

927
00:36:01,910 --> 00:35:59,920
time gps

928
00:36:03,750 --> 00:36:01,920
well my recommendation to you as you

929
00:36:05,510 --> 00:36:03,760
wait for the follow-on science briefing

930
00:36:06,870 --> 00:36:05,520
and we've got three amazing scientists

931
00:36:09,190 --> 00:36:06,880
that will tell you exactly how that

932
00:36:10,829 --> 00:36:09,200
works

933
00:36:13,109 --> 00:36:10,839
sounds logical all

934
00:36:15,190 --> 00:36:13,119
right the third and final question we

935
00:36:17,589 --> 00:36:15,200
have from social media is how close

936
00:36:19,430 --> 00:36:17,599
together will the satellites fly during

937
00:36:21,270 --> 00:36:19,440
their mission

938
00:36:22,550 --> 00:36:21,280

yeah so um

939
00:36:24,230 --> 00:36:22,560
they are

940
00:36:26,550 --> 00:36:24,240
as you saw in the video they're deployed

941
00:36:28,069 --> 00:36:26,560
in opposing pairs uh the closest time

942
00:36:28,950 --> 00:36:28,079
they ever come together is half an orbit

943
00:36:31,670 --> 00:36:28,960
later

944
00:36:34,470 --> 00:36:31,680
and i think our our nominal requirement

945
00:36:36,710 --> 00:36:34,480
was something like 400 meters

946
00:36:38,069 --> 00:36:36,720
i think on the shuttle it's 100 meters

947
00:36:40,150 --> 00:36:38,079
something like anyway it was a very

948
00:36:41,910 --> 00:36:40,160
conservative number

949
00:36:44,230 --> 00:36:41,920
once we get on orbit though one of the

950
00:36:46,710 --> 00:36:44,240
things we're going to do is uh do what

951
00:36:48,790 --> 00:36:46,720
we call a drag maneuver

952
00:36:50,870 --> 00:36:48,800
as you can see from the model we

953
00:36:52,230 --> 00:36:50,880
typically are flying in that orientation

954
00:36:55,430 --> 00:36:52,240
there where the

955
00:36:56,390 --> 00:36:55,440
where the two antennas are pointing down

956
00:36:59,270 --> 00:36:56,400
and so if you look at the

957
00:37:00,950 --> 00:36:59,280
cross-sectional area it's fairly small

958
00:37:04,230 --> 00:37:00,960
uh so one thing's even though you're in

959
00:37:06,230 --> 00:37:04,240
space in vacuum there still is

960
00:37:08,150 --> 00:37:06,240
stuff there's still drag and so what

961
00:37:11,190 --> 00:37:08,160
we're going to do periodically is take a

962
00:37:13,750 --> 00:37:11,200
spacecraft tilt it forward so the solar

963
00:37:15,829 --> 00:37:13,760

rays are facing ram our surface area

964
00:37:18,230 --> 00:37:15,839
goes up by about a factor of seven and

965
00:37:20,150 --> 00:37:18,240
so what we can then do is

966
00:37:23,190 --> 00:37:20,160
orient the eight spacecraft around the

967
00:37:25,030 --> 00:37:23,200
orbit plane loosely every 45 degrees i

968
00:37:27,190 --> 00:37:25,040
mean we're basically plus or minus 10

969
00:37:31,349 --> 00:37:27,200
degrees and that way we enhance our

970
00:37:35,190 --> 00:37:33,109
all right we're going to pause now just

971
00:37:36,950 --> 00:37:35,200
long enough to change our participants

972
00:37:39,190 --> 00:37:36,960
on the diocese and then we'll come back