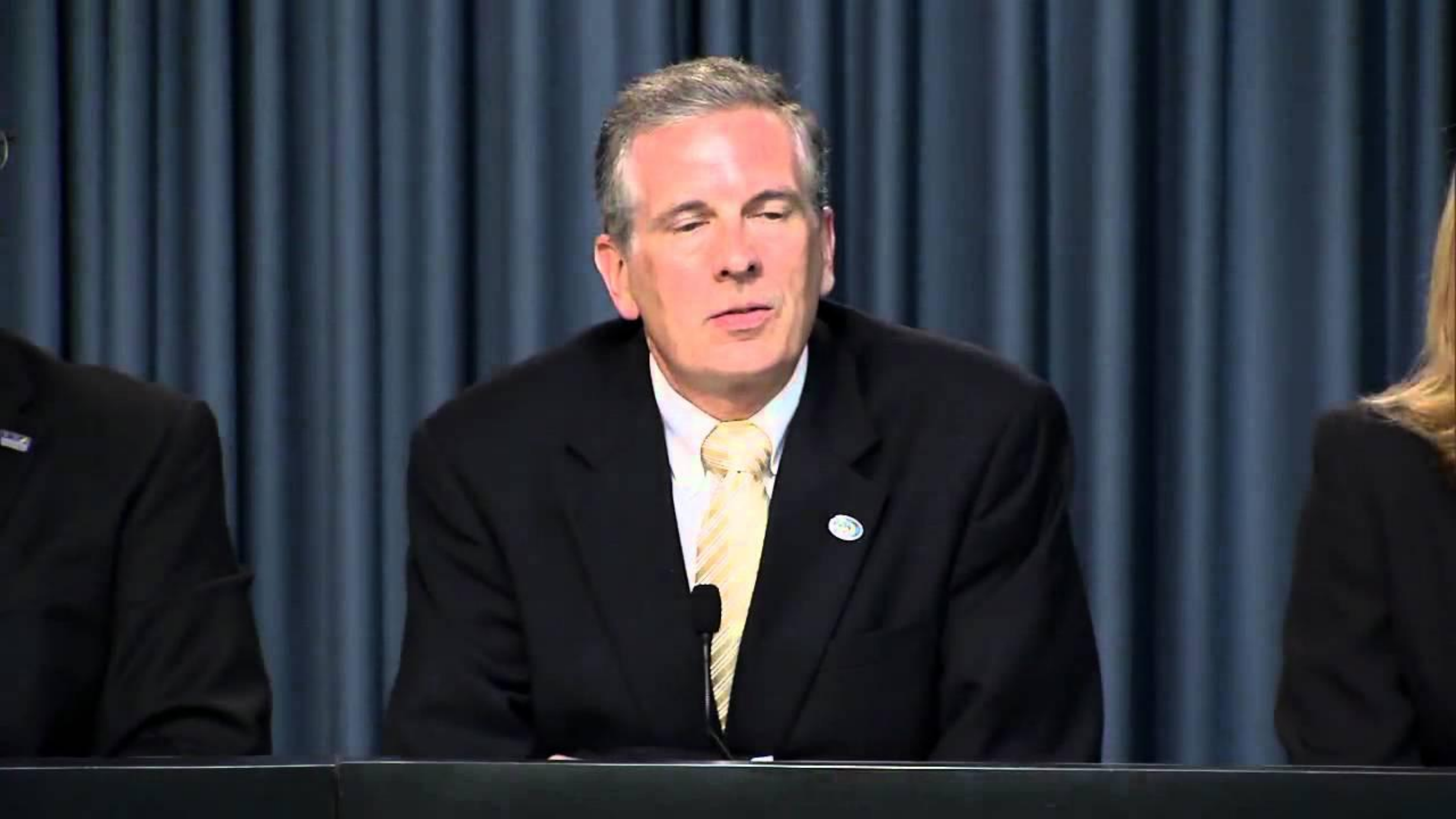

1
00:00:08,790 --> 00:00:06,869
good afternoon everyone this is the

2
00:00:10,950 --> 00:00:08,800
pre-launch news conference for the

3
00:00:12,390 --> 00:00:10,960
radiation belt storm probes to be

4
00:00:14,709 --> 00:00:12,400
launched for

5
00:00:16,790 --> 00:00:14,719
nasa and the applied physics laboratory

6
00:00:19,189 --> 00:00:16,800
later this week on a united launch

7
00:00:22,870 --> 00:00:19,199
alliance atlas v rocket

8
00:00:25,029 --> 00:00:22,880
here to talk about the upcoming launch

9
00:00:26,630 --> 00:00:25,039
is mike luther the deputy associate

10
00:00:28,230 --> 00:00:26,640
administrator for the science mission

11
00:00:31,830 --> 00:00:28,240
directed directorate at nasa

12
00:00:34,870 --> 00:00:31,840
headquarters in washington

13
00:00:38,630 --> 00:00:34,880

tim dunn the nasa launch director from

14
00:00:46,389 --> 00:00:41,670
fern thorpe the program manager for nasa

15
00:00:51,350 --> 00:00:49,430
rick fitzgerald the rbsp project manager

16
00:00:53,910 --> 00:00:51,360
from the johns hopkins applied physics

17
00:00:55,750 --> 00:00:53,920
laboratory

18
00:00:58,549 --> 00:00:55,760
and kathy winters the launch weather

19
00:01:00,950 --> 00:00:58,559
officer from the 45th weather squadron

20
00:01:02,630 --> 00:01:00,960
at cape canaveral air force station

21
00:01:05,830 --> 00:01:02,640
and we'll begin first with our opening

22
00:01:07,109 --> 00:01:05,840
remarks from mike luther mike

23
00:01:08,469 --> 00:01:07,119
thanks george

24
00:01:11,109 --> 00:01:08,479
good afternoon

25
00:01:12,950 --> 00:01:11,119
on behalf of nasa's science mission

26
00:01:15,910 --> 00:01:12,960
directorate i'm

27
00:01:17,749 --> 00:01:15,920
pleased to welcome everybody to the

28
00:01:19,590 --> 00:01:17,759
pre-launch and launch activities

29
00:01:21,350 --> 00:01:19,600
associated with the

30
00:01:25,030 --> 00:01:21,360
rbsp

31
00:01:29,429 --> 00:01:25,040
our radiation storm belt probes

32
00:01:32,789 --> 00:01:30,630
the

33
00:01:35,910 --> 00:01:32,799
we're all excited to be here today and

34
00:01:36,950 --> 00:01:35,920
looking forward to a successful

35
00:01:39,270 --> 00:01:36,960
mission

36
00:01:41,030 --> 00:01:39,280
our bsp is a

37
00:01:42,550 --> 00:01:41,040
element of

38
00:01:46,149 --> 00:01:42,560

the science mission directorate's

39
00:01:47,590 --> 00:01:46,159
program under the heliophysics division

40
00:01:49,910 --> 00:01:47,600
it is

41
00:01:52,069 --> 00:01:49,920
under that division an element of the

42
00:01:54,550 --> 00:01:52,079
living with the star program

43
00:01:57,830 --> 00:01:54,560
which is specifically designed to better

44
00:02:00,149 --> 00:01:57,840
understand the relationship between

45
00:02:01,590 --> 00:02:00,159
the earth and its environment and and

46
00:02:04,310 --> 00:02:01,600
the sun

47
00:02:05,350 --> 00:02:04,320
the twin spacecraft

48
00:02:06,709 --> 00:02:05,360
for

49
00:02:08,869 --> 00:02:06,719
rbsp

50
00:02:12,390 --> 00:02:08,879
will add a significant element and

51
00:02:14,229 --> 00:02:12,400
capability to the overall cadre of

52
00:02:16,150 --> 00:02:14,239
missions that the science mission

53
00:02:19,430 --> 00:02:16,160
directorate flies

54
00:02:22,710 --> 00:02:19,440
across four scientific disciplines

55
00:02:24,710 --> 00:02:22,720
our bsp in itself will focus

56
00:02:27,350 --> 00:02:24,720
its investigation

57
00:02:29,510 --> 00:02:27,360
on under better understanding and

58
00:02:30,790 --> 00:02:29,520
ultimately predicting

59
00:02:36,309 --> 00:02:30,800
the

60
00:02:40,150 --> 00:02:36,319
earth's radiation belt or van allen

61
00:02:45,910 --> 00:02:43,509
the the twin spacecraft will fly in

62
00:02:47,110 --> 00:02:45,920
highly elliptical but slightly different

63
00:02:50,470 --> 00:02:47,120

orbits

64
00:02:53,270 --> 00:02:50,480
thus enabling for the first time the

65
00:02:56,470 --> 00:02:53,280
kind of spatial and temporal sampling

66
00:02:57,830 --> 00:02:56,480
that will allow us to in fact

67
00:03:00,070 --> 00:02:57,840
do better

68
00:03:02,869 --> 00:03:00,080
scientific investigations and improve

69
00:03:06,229 --> 00:03:02,879
our modeling capability of the belts and

70
00:03:09,030 --> 00:03:06,239
their response to solar input

71
00:03:11,350 --> 00:03:09,040
that spatial and temporal data

72
00:03:14,070 --> 00:03:11,360
can be combined with the data from

73
00:03:15,509 --> 00:03:14,080
another spacecraft also an element of

74
00:03:17,589 --> 00:03:15,519
living with a star

75
00:03:20,149 --> 00:03:17,599
called the the solar dynamics

76
00:03:21,990 --> 00:03:20,159
observatory which was launched in early

77
00:03:25,030 --> 00:03:22,000
2010

78
00:03:26,550 --> 00:03:25,040
so that we can at one time see

79
00:03:28,949 --> 00:03:26,560
the solar

80
00:03:30,949 --> 00:03:28,959
impulse into the

81
00:03:33,830 --> 00:03:30,959
the earth's environment and

82
00:03:36,470 --> 00:03:33,840
the radiation belts and then watch over

83
00:03:40,229 --> 00:03:36,480
time and space how those belts

84
00:03:42,390 --> 00:03:40,239
morph or change and respond

85
00:03:43,110 --> 00:03:42,400
at the same time

86
00:03:51,910 --> 00:03:43,120
the

87
00:03:54,470 --> 00:03:51,920
delivered in near real time

88
00:03:55,750 --> 00:03:54,480

to users all over the world

89
00:03:57,750 --> 00:03:55,760
so that

90
00:03:59,589 --> 00:03:57,760
those users can

91
00:04:02,470 --> 00:03:59,599
can use the space weather data to

92
00:04:05,270 --> 00:04:02,480
protect protect sensitive

93
00:04:08,630 --> 00:04:05,280
ground-based as well as space-based

94
00:04:11,910 --> 00:04:08,640
assets that may reside out there

95
00:04:13,589 --> 00:04:11,920
all in all rbsp represents a giant step

96
00:04:15,429 --> 00:04:13,599
forward for

97
00:04:17,749 --> 00:04:15,439
the science mission directorate and

98
00:04:19,430 --> 00:04:17,759
certainly for the heliophysics community

99
00:04:21,030 --> 00:04:19,440
and we look forward to a successful

100
00:04:23,990 --> 00:04:21,040
launch thank you

101
00:04:25,749 --> 00:04:24,000
thank you mike and now to tim dunn the

102
00:04:27,350 --> 00:04:25,759
nasa launch director from the kennedy

103
00:04:28,950 --> 00:04:27,360
space center tim

104
00:04:30,710 --> 00:04:28,960
thank you george

105
00:04:32,870 --> 00:04:30,720
i'm proud to be here today representing

106
00:04:35,350 --> 00:04:32,880
the men and women of the launch services

107
00:04:38,230 --> 00:04:35,360
program here at kennedy space center

108
00:04:40,950 --> 00:04:38,240
the radiation belt storm probes or rbsp

109
00:04:43,189 --> 00:04:40,960
mission will be my third as nasa launch

110
00:04:44,870 --> 00:04:43,199
manager and i'm thrilled to continue my

111
00:04:47,670 --> 00:04:44,880
launch director duties with the twin

112
00:04:49,510 --> 00:04:47,680
spacecraft launched on an atlas v that

113
00:04:51,350 --> 00:04:49,520

will serve as the baseline for all

114
00:04:52,950 --> 00:04:51,360
radiation belt science for the next

115
00:04:54,469 --> 00:04:52,960
generation

116
00:04:56,629 --> 00:04:54,479
this truly is a mission that would have

117
00:04:58,710 --> 00:04:56,639
thrilled my high school physics teacher

118
00:05:01,430 --> 00:04:58,720
mr skelton

119
00:05:04,790 --> 00:05:01,440
yesterday we decided to delay the rbsp

120
00:05:07,350 --> 00:05:04,800
launch one day from thursday to friday

121
00:05:10,390 --> 00:05:07,360
a test anomaly occurred saturday night

122
00:05:11,830 --> 00:05:10,400
on another first stage atlas engine the

123
00:05:14,150 --> 00:05:11,840
rd180

124
00:05:16,950 --> 00:05:14,160
at the united launch alliance rocket

125
00:05:19,270 --> 00:05:16,960
factory in decatur alabama

126
00:05:21,350 --> 00:05:19,280
the rd180 under test at decatur

127
00:05:22,950 --> 00:05:21,360
experienced an anomaly in the actuator

128
00:05:25,029 --> 00:05:22,960
system that moves the engine for

129
00:05:28,230 --> 00:05:25,039
steering in flight

130
00:05:30,469 --> 00:05:28,240
the combined nasa and ula technical team

131
00:05:32,870 --> 00:05:30,479
jointly agreed yesterday that additional

132
00:05:35,270 --> 00:05:32,880
testing and assessment is required to

133
00:05:38,070 --> 00:05:35,280
verify the same anomalous condition is

134
00:05:40,230 --> 00:05:38,080
not present on rbsp's launch vehicle

135
00:05:42,150 --> 00:05:40,240
engine hardware

136
00:05:45,029 --> 00:05:42,160
due to this one-day delay

137
00:05:47,350 --> 00:05:45,039
the launch readiness review or lrr

138
00:05:48,870 --> 00:05:47,360

was moved from this morning to tomorrow

139
00:05:50,469 --> 00:05:48,880
afternoon

140
00:05:52,870 --> 00:05:50,479
this allows our engineering and

141
00:05:56,790 --> 00:05:52,880
analytical teams adequate time to clear

142
00:06:00,150 --> 00:05:58,710
nasa has a great record flying on the

143
00:06:02,309 --> 00:06:00,160
atlas v

144
00:06:03,830 --> 00:06:02,319
we've successfully launched six missions

145
00:06:05,590 --> 00:06:03,840
on this rocket

146
00:06:06,790 --> 00:06:05,600
missions to pluto

147
00:06:08,710 --> 00:06:06,800
jupiter

148
00:06:11,189 --> 00:06:08,720
the moon the sun

149
00:06:14,150 --> 00:06:11,199
and two spacecraft to mars most recently

150
00:06:17,189 --> 00:06:14,160
the mars curiosity rover

151
00:06:18,629 --> 00:06:17,199
rbsp will be our seventh nasa mission on

152
00:06:21,670 --> 00:06:18,639
an atlas v

153
00:06:23,830 --> 00:06:21,680
the 28th atlas 5 to be launched from

154
00:06:27,510 --> 00:06:23,840
cape canaveral air force station

155
00:06:30,629 --> 00:06:27,520
and the 32nd atlas 5 overall

156
00:06:34,230 --> 00:06:30,639
rbsp will launch on an atlas 5 401

157
00:06:37,350 --> 00:06:34,240
vehicle from space launch complex 41

158
00:06:39,510 --> 00:06:37,360
also known as slick 41.

159
00:06:41,430 --> 00:06:39,520
the 401 configuration has a 4 meter

160
00:06:43,189 --> 00:06:41,440
diameter payload fairing and no solid

161
00:06:46,550 --> 00:06:43,199
rocket boosters

162
00:06:49,189 --> 00:06:46,560
slick 41 is proud to have hosted 27

163
00:06:51,189 --> 00:06:49,199

atlas 5 launches to date

164
00:06:53,430 --> 00:06:51,199
now i'd like to show you a video of the

165
00:06:55,430 --> 00:06:53,440
ula crew building up the atlas 5 launch

166
00:06:57,430 --> 00:06:55,440
vehicle at the pad

167
00:06:59,830 --> 00:06:57,440
please roll the tape

168
00:07:02,469 --> 00:06:59,840
here we see the rbsp first stage after

169
00:07:04,870 --> 00:07:02,479
it was offloaded at port canaveral on

170
00:07:07,670 --> 00:07:04,880
its way to the atlas space flight

171
00:07:10,230 --> 00:07:07,680
operations center or asoc

172
00:07:12,870 --> 00:07:10,240
made in decatur alabama the first stage

173
00:07:15,830 --> 00:07:12,880
is transported to cape canaveral via the

174
00:07:17,830 --> 00:07:15,840
ship the mariner

175
00:07:20,950 --> 00:07:17,840
offload and transport happened in the

176
00:07:22,629 --> 00:07:20,960
middle of june on june 16th

177
00:07:25,350 --> 00:07:22,639
here we see the second stage of the

178
00:07:28,070 --> 00:07:25,360
atlas v the centaur

179
00:07:30,550 --> 00:07:28,080
this offload occurred at the end of may

180
00:07:32,150 --> 00:07:30,560
this year on may 24th

181
00:07:34,070 --> 00:07:32,160
it's being transported to the same

182
00:07:36,950 --> 00:07:34,080
facility the asoc

183
00:07:39,830 --> 00:07:36,960
on cape canaveral air force station

184
00:07:41,430 --> 00:07:39,840
where it will be electrically connected

185
00:07:44,309 --> 00:07:41,440
to the first stage

186
00:07:46,390 --> 00:07:44,319
for horizontal checkout that checkout

187
00:07:48,790 --> 00:07:46,400
occurred during the last two weeks in

188
00:07:50,469 --> 00:07:48,800

june and the first week in july

189
00:07:52,790 --> 00:07:50,479
after that checkout you see the first

190
00:07:55,029 --> 00:07:52,800
stage booster being transported from the

191
00:07:56,629 --> 00:07:55,039
asoc out to the vif

192
00:07:59,749 --> 00:07:56,639
which is the vertical integration

193
00:08:02,869 --> 00:07:59,759
facility shown here

194
00:08:05,830 --> 00:08:02,879
the vif is located near complex 41 and

195
00:08:08,469 --> 00:08:05,840
is where we build up and process all of

196
00:08:10,710 --> 00:08:08,479
the atlas v vehicles

197
00:08:12,790 --> 00:08:10,720
you'll see here the erection sequence

198
00:08:15,510 --> 00:08:12,800
using the vif crane

199
00:08:16,629 --> 00:08:15,520
the overhead crane lifts the first stage

200
00:08:17,589 --> 00:08:16,639
booster

201
00:08:23,670 --> 00:08:17,599
and

202
00:08:25,350 --> 00:08:23,680
on the mlp or mobile launch platform

203
00:08:28,309 --> 00:08:25,360
this is a nice view

204
00:08:32,310 --> 00:08:28,319
from the the tail side looking up seeing

205
00:08:33,909 --> 00:08:32,320
the power plant rd-180 engine there

206
00:08:35,990 --> 00:08:33,919
three days later in the middle of july

207
00:08:37,269 --> 00:08:36,000
we transported the centaur second stage

208
00:08:40,310 --> 00:08:37,279
out to the vif

209
00:08:42,070 --> 00:08:40,320
for its sequence of erection and mate to

210
00:08:43,509 --> 00:08:42,080
the top of the first stage of the atlas

211
00:08:46,070 --> 00:08:43,519
v

212
00:08:49,350 --> 00:08:46,080
the power plant for the second stage is

213
00:08:51,509 --> 00:08:49,360

the pratt whitney rocketdyne rl10

214
00:08:54,550 --> 00:08:51,519
so you'll see the erection sequence here

215
00:08:57,990 --> 00:08:54,560
using the same vif overhead crane

216
00:09:01,190 --> 00:08:58,000
under the watchful eye of ula employees

217
00:09:04,230 --> 00:09:01,200
we erect the second stage centaur

218
00:09:07,990 --> 00:09:04,240
and bring it in and set it down

219
00:09:11,509 --> 00:09:08,000
on top of the first stage

220
00:09:16,949 --> 00:09:11,519
nice view there of the rl 10 on the aft

221
00:09:21,750 --> 00:09:18,949
the next shot you'll see is of the

222
00:09:25,990 --> 00:09:21,760
completed first and second stage in the

223
00:09:27,990 --> 00:09:26,000
vif just days before spacecraft arrival

224
00:09:28,870 --> 00:09:28,000
in the early morning hours of august

225
00:09:31,110 --> 00:09:28,880
10th

226
00:09:31,910 --> 00:09:31,120
we transported the spacecraft out to the

227
00:09:34,949 --> 00:09:31,920
vif

228
00:09:37,990 --> 00:09:34,959
here you see the twin rbsp spacecraft

229
00:09:40,070 --> 00:09:38,000
encapsulated by the four meter fairing

230
00:09:43,110 --> 00:09:40,080
after roll out from the spacecraft

231
00:09:45,030 --> 00:09:43,120
processing facility we erected

232
00:09:47,190 --> 00:09:45,040
the encapsulated assembly and mated it

233
00:09:49,509 --> 00:09:47,200
to the top of centaur and there you see

234
00:09:51,670 --> 00:09:49,519
the completed atlas v vehicle as it sits

235
00:09:53,910 --> 00:09:51,680
today

236
00:09:54,949 --> 00:09:53,920
the rbsp launch campaign has gone very

237
00:09:58,470 --> 00:09:54,959
well

238
00:10:00,230 --> 00:09:58,480

over the past 10 days since rbsp mate

239
00:10:02,230 --> 00:10:00,240
the atlas v team has been busy with

240
00:10:04,310 --> 00:10:02,240
launch preparations

241
00:10:06,069 --> 00:10:04,320
last tuesday we performed the final

242
00:10:08,150 --> 00:10:06,079
integrated systems test with the

243
00:10:11,350 --> 00:10:08,160
spacecraft and rocket

244
00:10:13,509 --> 00:10:11,360
last thursday the combined nasa and ula

245
00:10:15,110 --> 00:10:13,519
launch team held the flight readiness

246
00:10:17,269 --> 00:10:15,120
review where we assessed the

247
00:10:19,750 --> 00:10:17,279
preparations of the launch vehicle

248
00:10:23,590 --> 00:10:19,760
range and facility assets and the

249
00:10:26,470 --> 00:10:23,600
readiness of the twin rbsp spacecraft

250
00:10:29,030 --> 00:10:26,480
then on friday we performed a successful

251
00:10:32,630 --> 00:10:29,040
mission dress rehearsal to exercise and

252
00:10:35,509 --> 00:10:32,640
prepare the entire ula nasa and air

253
00:10:37,350 --> 00:10:35,519
force atlas 5 launch team

254
00:10:39,590 --> 00:10:37,360
tomorrow we will conduct the launch

255
00:10:42,310 --> 00:10:39,600
readiness review for the mission where

256
00:10:44,470 --> 00:10:42,320
senior nasa ula and air force management

257
00:10:46,949 --> 00:10:44,480
will assess readiness of the rocket

258
00:10:49,590 --> 00:10:46,959
spacecraft and range to proceed with

259
00:10:52,230 --> 00:10:49,600
launch on friday morning

260
00:10:54,389 --> 00:10:52,240
on wednesday we will begin final launch

261
00:10:57,350 --> 00:10:54,399
preparations at approximately 10 a.m

262
00:10:59,750 --> 00:10:57,360
eastern time by rolling the atlas v on

263
00:11:02,389 --> 00:10:59,760

its mobile launch platform approximately

264
00:11:05,190 --> 00:11:02,399
one quarter mile from the fifth to slick

265
00:11:07,670 --> 00:11:05,200
41 and then loading the highly refined

266
00:11:09,670 --> 00:11:07,680
kerosene rp-1 fuel in the first stage

267
00:11:11,590 --> 00:11:09,680
fuel tank

268
00:11:13,190 --> 00:11:11,600
thursday will serve as a crew

269
00:11:16,230 --> 00:11:13,200
synchronization day to prepare the

270
00:11:19,269 --> 00:11:16,240
launch team for arrival on console just

271
00:11:21,269 --> 00:11:19,279
after 10 30 pm thursday night

272
00:11:23,350 --> 00:11:21,279
the crew will perform final preparations

273
00:11:24,230 --> 00:11:23,360
of vehicle power on and electrical

274
00:11:26,550 --> 00:11:24,240
checks

275
00:11:29,509 --> 00:11:26,560
followed by cryogenic tanking of the

276
00:11:32,150 --> 00:11:29,519
first stage liquid oxygen and second

277
00:11:35,190 --> 00:11:32,160
stage centaur liquid oxygen and liquid

278
00:11:36,710 --> 00:11:35,200
hydrogen beginning at 1 40 am friday

279
00:11:38,389 --> 00:11:36,720
morning

280
00:11:40,710 --> 00:11:38,399
final engine sloughs will then be

281
00:11:43,350 --> 00:11:40,720
performed after tanking and we will be

282
00:11:47,269 --> 00:11:43,360
ready for launch early friday morning at

283
00:11:49,350 --> 00:11:47,279
4 07 a.m eastern time with a 20-minute

284
00:11:52,310 --> 00:11:49,360
window

285
00:11:54,550 --> 00:11:52,320
in summary after lrr tomorrow the atlas

286
00:11:56,790 --> 00:11:54,560
v rocket will be ready and the launch

287
00:11:59,990 --> 00:11:56,800
team is prepared and excited to launch

288
00:12:02,470 --> 00:12:00,000

these radiation belt storm probes

289
00:12:04,470 --> 00:12:02,480
back to you george thank you tim

290
00:12:06,870 --> 00:12:04,480
and now to fern thorpe the program

291
00:12:08,550 --> 00:12:06,880
manager for nasa missions from united

292
00:12:11,430 --> 00:12:08,560
launch alliance to

293
00:12:13,670 --> 00:12:11,440
talk about the ula role and the flight

294
00:12:16,069 --> 00:12:13,680
of the atlas v fern

295
00:12:18,629 --> 00:12:16,079
hey thank you george good afternoon

296
00:12:21,190 --> 00:12:18,639
on behalf of michael gass our president

297
00:12:23,509 --> 00:12:21,200
and chief executive officer and the 3

298
00:12:25,030 --> 00:12:23,519
600 men and women of united launch

299
00:12:27,990 --> 00:12:25,040
alliance i'm honored to be part of the

300
00:12:30,150 --> 00:12:28,000
team that will launch rbsp

301
00:12:33,110 --> 00:12:30,160
this will be ula's seventh launch of the

302
00:12:35,670 --> 00:12:33,120
year uh tim mentioned it's also the 32nd

303
00:12:38,550 --> 00:12:35,680
atlas v launch and it'll be the 63rd

304
00:12:42,629 --> 00:12:38,560
launch for ula overall since the

305
00:12:44,629 --> 00:12:42,639
inaugural eelb flights in 2002 atlas 5

306
00:12:47,190 --> 00:12:44,639
and delta 4 vehicles have launched more

307
00:12:49,190 --> 00:12:47,200
than 50 times delivering vital national

308
00:12:51,269 --> 00:12:49,200
security missions for the u.s air force

309
00:12:53,269 --> 00:12:51,279
and the national reconnaissance office

310
00:12:54,310 --> 00:12:53,279
science and exploration payloads for

311
00:12:55,910 --> 00:12:54,320
nasa

312
00:12:58,710 --> 00:12:55,920
and imaging and communications

313
00:13:01,110 --> 00:12:58,720

satellites for commercial companies

314
00:13:02,790 --> 00:13:01,120
we've worked together with our nas nasa

315
00:13:05,110 --> 00:13:02,800
launch services program customer on

316
00:13:07,350 --> 00:13:05,120
numerous missions including the recent

317
00:13:09,110 --> 00:13:07,360
mars science lab which was launched

318
00:13:11,350 --> 00:13:09,120
launched on an atlas v

319
00:13:13,509 --> 00:13:11,360
here from the cape just last november

320
00:13:15,910 --> 00:13:13,519
and of course had a spectacular landing

321
00:13:17,910 --> 00:13:15,920
recently on the surface of mars

322
00:13:19,509 --> 00:13:17,920
as for all of our missions the team has

323
00:13:21,910 --> 00:13:19,519
worked tremendously hard to get us to

324
00:13:23,990 --> 00:13:21,920
this point and we are almost ready to

325
00:13:25,990 --> 00:13:24,000
launch our bsp on its mission to help us

326
00:13:29,430 --> 00:13:26,000
better understand the effect of solar

327
00:13:31,030 --> 00:13:29,440
activity on our near-earth environment

328
00:13:33,190 --> 00:13:31,040
this mentioned this mission will be

329
00:13:36,310 --> 00:13:33,200
launched on an atlas v 401 with the 4

330
00:13:38,629 --> 00:13:36,320
meter fairing and no srbs

331
00:13:42,230 --> 00:13:38,639
and the booster stage will be powered by

332
00:13:43,350 --> 00:13:42,240
the rd-180 engine provided by rd amros

333
00:13:45,990 --> 00:13:43,360
and we'll have a pratt whitney

334
00:13:48,629 --> 00:13:46,000
rocketdyne rl10a-4

335
00:13:50,550 --> 00:13:48,639
engine on the centaur upper stage

336
00:13:52,069 --> 00:13:50,560
and now i'd like to show some animation

337
00:13:53,670 --> 00:13:52,079
of the launch sequence to give you a

338
00:13:57,110 --> 00:13:53,680

preview of what to expect on friday

339
00:14:00,710 --> 00:13:59,829
okay the vehicle stands about 190 feet

340
00:14:03,910 --> 00:14:00,720
tall

341
00:14:05,350 --> 00:14:03,920
on the pad and when we light the rd-180

342
00:14:06,870 --> 00:14:05,360
engine it'll be putting out about eight

343
00:14:10,150 --> 00:14:06,880
hundred and sixty thousand pounds of

344
00:14:12,629 --> 00:14:10,160
thrust at liftoff at sea level

345
00:14:14,310 --> 00:14:12,639
the first major event that you'll see

346
00:14:16,550 --> 00:14:14,320
during this flight since we don't have

347
00:14:18,550 --> 00:14:16,560
any srbs to jettison will be the

348
00:14:19,430 --> 00:14:18,560
depletion of fuels in the main booster

349
00:14:21,269 --> 00:14:19,440
tank

350
00:14:22,949 --> 00:14:21,279
the shutdown of the the main engine and

351
00:14:25,590 --> 00:14:22,959
the separation of that atlas booster

352
00:14:30,310 --> 00:14:25,600
stage that will occur roughly four

353
00:14:34,310 --> 00:14:32,629
we separate that booster stage

354
00:14:35,430 --> 00:14:34,320
we'll prepare the centaur engines for

355
00:14:37,990 --> 00:14:35,440
ignition

356
00:14:40,629 --> 00:14:38,000
and we'll light them for the

357
00:14:42,629 --> 00:14:40,639
first of two engine burns there you see

358
00:14:45,110 --> 00:14:42,639
the retro rockets firing to separate the

359
00:14:47,670 --> 00:14:45,120
booster stage that's the chill down

360
00:14:50,710 --> 00:14:47,680
sequence for the rl10 engines and then

361
00:14:53,990 --> 00:14:52,310
about eight seconds into that first

362
00:14:56,230 --> 00:14:54,000
engine burn we will also jettison the

363
00:14:58,629 --> 00:14:56,240

payload fairing

364
00:15:00,629 --> 00:14:58,639
the total duration for this first engine

365
00:15:01,910 --> 00:15:00,639
burn will be about 9 minutes and 15

366
00:15:03,910 --> 00:15:01,920
seconds

367
00:15:05,910 --> 00:15:03,920
and that will place us into a parking

368
00:15:08,150 --> 00:15:05,920
orbit coast which is a pretty typical

369
00:15:09,829 --> 00:15:08,160
mission profile for an atlas vehicle

370
00:15:12,069 --> 00:15:09,839
that coast is almost an hour it's about

371
00:15:13,350 --> 00:15:12,079
55 minutes at the end of that coast

372
00:15:15,590 --> 00:15:13,360
we'll be in position for the second

373
00:15:17,110 --> 00:15:15,600
engine burn so we'll light the

374
00:15:18,550 --> 00:15:17,120
centaur engine again

375
00:15:20,629 --> 00:15:18,560
that'll be a shorter burn about four

376
00:15:22,629 --> 00:15:20,639
minutes and 40 seconds

377
00:15:23,670 --> 00:15:22,639
and after that we will orient the

378
00:15:25,350 --> 00:15:23,680
vehicle

379
00:15:27,509 --> 00:15:25,360
do a spin up and separate the first of

380
00:15:29,990 --> 00:15:27,519
the two spacecraft

381
00:15:32,150 --> 00:15:30,000
we will then

382
00:15:33,590 --> 00:15:32,160
reorient again use the settling

383
00:15:35,269 --> 00:15:33,600
thrusters to change the orbit just

384
00:15:37,590 --> 00:15:35,279
slightly for that second spacecraft and

385
00:15:39,509 --> 00:15:37,600
we'll separate it about 12 minutes later

386
00:15:41,269 --> 00:15:39,519
and then following separation of the

387
00:15:43,910 --> 00:15:41,279
second spacecraft

388
00:15:46,389 --> 00:15:43,920

will do the usual contamination and

389
00:15:48,389 --> 00:15:46,399
collision avoidance maneuver to

390
00:15:50,230 --> 00:15:48,399
prevent any potent any possibility of

391
00:15:52,389 --> 00:15:50,240
re-contact of the centaur upper stage

392
00:15:54,470 --> 00:15:52,399
with the spacecraft

393
00:15:56,230 --> 00:15:54,480
we are proud to serve a critical role in

394
00:15:57,829 --> 00:15:56,240
delivering one-of-a-kind nasa payloads

395
00:15:59,189 --> 00:15:57,839
to orbit in support of the global

396
00:16:00,949 --> 00:15:59,199
science community

397
00:16:03,189 --> 00:16:00,959
ula is focused on perfect product

398
00:16:05,110 --> 00:16:03,199
delivery for rbsp and for every mission

399
00:16:06,470 --> 00:16:05,120
we launch for nasa and for all of our

400
00:16:08,150 --> 00:16:06,480
other customers

401
00:16:10,470 --> 00:16:08,160
perfect product delivery includes a

402
00:16:12,870 --> 00:16:10,480
relentless focus on mission success a

403
00:16:15,030 --> 00:16:12,880
focus on one launch at a time and

404
00:16:17,030 --> 00:16:15,040
continuous improvement in meeting all of

405
00:16:19,110 --> 00:16:17,040
the needs of our customers

406
00:16:21,430 --> 00:16:19,120
this mission is the culmination of years

407
00:16:23,430 --> 00:16:21,440
of hard work by nasa's launch services

408
00:16:25,670 --> 00:16:23,440
program nasa's goddard space flight

409
00:16:28,069 --> 00:16:25,680
center the johns hopkins university

410
00:16:28,870 --> 00:16:28,079
applied physics lab and the ula launch

411
00:16:30,550 --> 00:16:28,880
team

412
00:16:32,230 --> 00:16:30,560
once again i want to thank all of our

413
00:16:34,790 --> 00:16:32,240

mission partners who've worked with us

414
00:16:37,350 --> 00:16:34,800
tirelessly to make this launch a success

415
00:16:40,069 --> 00:16:37,360
back to you george thank you vern

416
00:16:42,470 --> 00:16:40,079
and now to rick fitzgerald the rbsp

417
00:16:44,389 --> 00:16:42,480
project manager from the johns hopkins

418
00:16:45,590 --> 00:16:44,399
applied physics laboratory

419
00:16:47,910 --> 00:16:45,600
rick

420
00:16:49,670 --> 00:16:47,920
thank you george well i'm pleased and

421
00:16:52,470 --> 00:16:49,680
honored to be here today to represent

422
00:16:53,829 --> 00:16:52,480
the rbsp project

423
00:16:55,509 --> 00:16:53,839
which is

424
00:16:58,310 --> 00:16:55,519
considered to be

425
00:17:01,189 --> 00:16:58,320
part of the program that mike described

426
00:17:03,350 --> 00:17:01,199
the living with the star program

427
00:17:05,429 --> 00:17:03,360
our team members

428
00:17:06,710 --> 00:17:05,439
are include the applied physics

429
00:17:08,470 --> 00:17:06,720
laboratory

430
00:17:10,949 --> 00:17:08,480
which is my home institution but all of

431
00:17:12,549 --> 00:17:10,959
our instrument providers so we have

432
00:17:14,069 --> 00:17:12,559
principal investigators from the

433
00:17:15,909 --> 00:17:14,079
university of iowa

434
00:17:18,630 --> 00:17:15,919
the university of new hampshire the new

435
00:17:20,230 --> 00:17:18,640
jersey institute of technology and the

436
00:17:21,669 --> 00:17:20,240
university of minnesota

437
00:17:23,429 --> 00:17:21,679
and we are

438
00:17:25,750 --> 00:17:23,439

also partnered with the goddard space

439
00:17:27,590 --> 00:17:25,760
flight center which is where the lws

440
00:17:28,549 --> 00:17:27,600
program office resides

441
00:17:30,470 --> 00:17:28,559
and

442
00:17:32,710 --> 00:17:30,480
also a contributed instrument from the

443
00:17:34,789 --> 00:17:32,720
national reconnaissance office so

444
00:17:37,270 --> 00:17:34,799
without all these instrument partners

445
00:17:38,789 --> 00:17:37,280
and teaming arrangements today wouldn't

446
00:17:40,789 --> 00:17:38,799
be possible so

447
00:17:43,270 --> 00:17:40,799
i'm really happy to be here to represent

448
00:17:44,789 --> 00:17:43,280
that entire group

449
00:17:47,190 --> 00:17:44,799
what i'd like to do is talk a little bit

450
00:17:49,669 --> 00:17:47,200
about picking up with the um the

451
00:17:51,430 --> 00:17:49,679
sequence uh after launch that that vern

452
00:17:52,789 --> 00:17:51,440
just described and then come back and

453
00:17:54,070 --> 00:17:52,799
talk a little bit more about the science

454
00:17:55,510 --> 00:17:54,080
of the mission

455
00:17:57,830 --> 00:17:55,520
and i have some video about our

456
00:18:01,669 --> 00:17:57,840
processing that we've undergone uh while

457
00:18:03,350 --> 00:18:01,679
we're down here after shipping from apl

458
00:18:05,669 --> 00:18:03,360
so the first thing is the launch

459
00:18:07,110 --> 00:18:05,679
sequence so you saw that we have two

460
00:18:09,750 --> 00:18:07,120
spacecraft

461
00:18:11,510 --> 00:18:09,760
we get dropped off after a spin-up of

462
00:18:13,350 --> 00:18:11,520
the centaur stage

463
00:18:14,470 --> 00:18:13,360

the a-spacecraft

464
00:18:17,029 --> 00:18:14,480
will separate

465
00:18:19,830 --> 00:18:17,039
at approximately 80 minutes after launch

466
00:18:21,669 --> 00:18:19,840
over hawaii and the second spacecraft b

467
00:18:23,430 --> 00:18:21,679
will separate just a few minutes after

468
00:18:24,870 --> 00:18:23,440
that

469
00:18:26,789 --> 00:18:24,880
and as

470
00:18:28,950 --> 00:18:26,799
mike pointed out

471
00:18:30,630 --> 00:18:28,960
we will be in slightly different orbits

472
00:18:32,549 --> 00:18:30,640
and that's by design

473
00:18:36,470 --> 00:18:32,559
so that we can achieve the science that

474
00:18:41,669 --> 00:18:39,430
after we separate spacecraft

475
00:18:44,150 --> 00:18:41,679
maintain a spin rate

476
00:18:47,190 --> 00:18:44,160
the first actuation that really occurs

477
00:18:49,029 --> 00:18:47,200
is we open up our solar panels

478
00:18:50,710 --> 00:18:49,039
and go power positive by getting

479
00:18:53,190 --> 00:18:50,720
sunlight on our solar panels and start

480
00:18:55,590 --> 00:18:53,200
charging our batteries again

481
00:18:57,350 --> 00:18:55,600
following that we deploy

482
00:18:59,590 --> 00:18:57,360
some booms on the end of two of those

483
00:19:01,110 --> 00:18:59,600
panels which are the

484
00:19:03,270 --> 00:19:01,120
the emphasis instrument their

485
00:19:05,430 --> 00:19:03,280
magnetometer which is also

486
00:19:07,430 --> 00:19:05,440
critical to not only the science but

487
00:19:10,310 --> 00:19:07,440
also our spacecraft operations so those

488
00:19:12,070 --> 00:19:10,320

things happen early on in the sequence

489
00:19:14,310 --> 00:19:12,080
we launch with

490
00:19:15,110 --> 00:19:14,320
our sub spacecraft subsystems partially

491
00:19:17,029 --> 00:19:15,120
on

492
00:19:19,270 --> 00:19:17,039
and the first thing we do is we check

493
00:19:20,710 --> 00:19:19,280
out the rf subsystem

494
00:19:23,430 --> 00:19:20,720
and make sure that we're seeing all the

495
00:19:25,350 --> 00:19:23,440
link margins that we expect to see

496
00:19:27,430 --> 00:19:25,360
as we pass over

497
00:19:29,510 --> 00:19:27,440
the various ground stations

498
00:19:31,590 --> 00:19:29,520
we also have our spacecraft processor

499
00:19:33,510 --> 00:19:31,600
partially on and of course our power

500
00:19:35,669 --> 00:19:33,520
subsystems

501
00:19:38,310 --> 00:19:35,679
we will then check out our guidance

502
00:19:40,390 --> 00:19:38,320
navigation and control and then there's

503
00:19:42,789 --> 00:19:40,400
a carefully sequenced 60-day

504
00:19:44,630 --> 00:19:42,799
commissioning period where

505
00:19:46,789 --> 00:19:44,640
in this choreographed

506
00:19:48,710 --> 00:19:46,799
activity we carefully turn on each

507
00:19:50,710 --> 00:19:48,720
instrument one by one

508
00:19:52,710 --> 00:19:50,720
and all this has been

509
00:19:55,350 --> 00:19:52,720
very carefully coordinated with all the

510
00:19:57,430 --> 00:19:55,360
the pis on the mission

511
00:19:59,430 --> 00:19:57,440
at the end of 60 days all the

512
00:20:01,430 --> 00:19:59,440
deployments will have happened all the

513
00:20:03,510 --> 00:20:01,440

instruments will be turned on

514
00:20:05,510 --> 00:20:03,520
and we will be ready to start the

515
00:20:07,590 --> 00:20:05,520
science of the mission

516
00:20:10,310 --> 00:20:07,600
one thing to point out is uh

517
00:20:12,470 --> 00:20:10,320
2012 is an important year for us because

518
00:20:14,710 --> 00:20:12,480
we're we're launching in a

519
00:20:16,870 --> 00:20:14,720
a period of high solar activity so we're

520
00:20:18,630 --> 00:20:16,880
we're nearing solar max

521
00:20:20,630 --> 00:20:18,640
which means we stand the best chance of

522
00:20:22,230 --> 00:20:20,640
seeing a lot of solar activity excite

523
00:20:24,630 --> 00:20:22,240
the radiation belts and that's exactly

524
00:20:26,710 --> 00:20:24,640
what we want to see happen

525
00:20:28,470 --> 00:20:26,720
so a little bit about the science and

526
00:20:29,990 --> 00:20:28,480
you will get a full science briefing

527
00:20:31,669 --> 00:20:30,000
later on um

528
00:20:33,110 --> 00:20:31,679
but you will hear that

529
00:20:35,110 --> 00:20:33,120
that we've been waiting for this mission

530
00:20:39,270 --> 00:20:35,120
for decades the van allen belts were

531
00:20:41,270 --> 00:20:39,280
discovered in 1958 and since that time

532
00:20:42,390 --> 00:20:41,280
we know something about the radiation

533
00:20:45,350 --> 00:20:42,400
belts but

534
00:20:48,149 --> 00:20:45,360
not enough this mission is is designed

535
00:20:49,909 --> 00:20:48,159
to really understand the whole solar

536
00:20:52,310 --> 00:20:49,919
interaction with radiation belts and

537
00:20:54,149 --> 00:20:52,320
understand why they are excited and

538
00:20:57,110 --> 00:20:54,159

sometimes why they're not

539
00:20:59,510 --> 00:20:57,120
and the mission design itself is

540
00:21:01,190 --> 00:20:59,520
is part of that equation so we we're at

541
00:21:03,270 --> 00:21:01,200
10 degrees inclination and a highly

542
00:21:05,350 --> 00:21:03,280
elliptical orbit so that we

543
00:21:07,270 --> 00:21:05,360
cruise in and out of both radiation

544
00:21:08,870 --> 00:21:07,280
belts throughout the mission

545
00:21:10,950 --> 00:21:08,880
the satellites lap each other and you'll

546
00:21:12,390 --> 00:21:10,960
hear more about that about why that's

547
00:21:13,909 --> 00:21:12,400
important for the measurement that we're

548
00:21:16,390 --> 00:21:13,919
making

549
00:21:18,390 --> 00:21:16,400
and the two-year mission life allows us

550
00:21:20,310 --> 00:21:18,400
a full cycle of um

551
00:21:21,990 --> 00:21:20,320
of these lapping rates and allowing us

552
00:21:23,750 --> 00:21:22,000
to precess around back to the place

553
00:21:26,710 --> 00:21:23,760
where we injected into orbit so that we

554
00:21:29,669 --> 00:21:26,720
see kind of a full season of

555
00:21:31,510 --> 00:21:29,679
of activity in a sense

556
00:21:33,350 --> 00:21:31,520
what i'd like to do next is talk about

557
00:21:36,149 --> 00:21:33,360
the processing that we've we've

558
00:21:38,789 --> 00:21:36,159
undertaken since we've come down

559
00:21:41,750 --> 00:21:38,799
here to the cape and if you'll start the

560
00:21:43,590 --> 00:21:41,760
video i'll walk you through that

561
00:21:45,669 --> 00:21:43,600
this is the

562
00:21:47,830 --> 00:21:45,679
air force plane that

563
00:21:49,590 --> 00:21:47,840

brought us safely down to the cape so we

564
00:21:51,510 --> 00:21:49,600
trucked from

565
00:21:53,430 --> 00:21:51,520
the applied physics laboratory over in

566
00:21:54,710 --> 00:21:53,440
laurel maryland over to andrews air

567
00:21:57,110 --> 00:21:54,720
force base

568
00:21:59,270 --> 00:21:57,120
loaded onto the c-17 in the wee hours of

569
00:22:01,110 --> 00:21:59,280
the morning and arrived here at the cape

570
00:22:02,630 --> 00:22:01,120
you can see there the two satellite

571
00:22:04,470 --> 00:22:02,640
canisters

572
00:22:06,870 --> 00:22:04,480
under purge to keep them protected from

573
00:22:09,350 --> 00:22:06,880
the environment we arrived at astrotech

574
00:22:11,029 --> 00:22:09,360
just outside the ksc gates here this

575
00:22:13,350 --> 00:22:11,039
happened on may 1st

576
00:22:15,830 --> 00:22:13,360
you can see our technicians carefully

577
00:22:16,710 --> 00:22:15,840
unwrapping both spacecraft

578
00:22:21,830 --> 00:22:16,720
and

579
00:22:23,430 --> 00:22:21,840
so we need to make sure after we arrive

580
00:22:25,430 --> 00:22:23,440
that we didn't have any disruption to

581
00:22:27,750 --> 00:22:25,440
the spacecraft due to the ride

582
00:22:29,510 --> 00:22:27,760
here's some black light cleaning

583
00:22:31,510 --> 00:22:29,520
black light allows us to see all dust

584
00:22:33,510 --> 00:22:31,520
particles all over the spacecraft and

585
00:22:35,110 --> 00:22:33,520
and clean those appropriately

586
00:22:37,029 --> 00:22:35,120
this is one of our tests we perform the

587
00:22:39,110 --> 00:22:37,039
magnetic swing test where we actually

588
00:22:40,070 --> 00:22:39,120

swing the spacecraft through a magnetic

589
00:22:42,070 --> 00:22:40,080
field to make sure that it's

590
00:22:43,669 --> 00:22:42,080
magnetically silent

591
00:22:45,350 --> 00:22:43,679
we also went through a spin test i

592
00:22:47,350 --> 00:22:45,360
mentioned that we spin on orbit at about

593
00:22:49,110 --> 00:22:47,360
5 rpm so we have to make sure we're

594
00:22:50,789 --> 00:22:49,120
still well balanced

595
00:22:52,230 --> 00:22:50,799
here's some more cleaning in the black

596
00:22:53,830 --> 00:22:52,240
light

597
00:22:55,190 --> 00:22:53,840
here we are with some of the panels

598
00:22:57,270 --> 00:22:55,200
raised and getting ready for a

599
00:22:59,029 --> 00:22:57,280
deployment test with the uh the solar

600
00:23:00,390 --> 00:22:59,039
panels and you can see the emphasis

601
00:23:02,310 --> 00:23:00,400
instruments there

602
00:23:04,630 --> 00:23:02,320
and there's a gene negated test of the

603
00:23:05,510 --> 00:23:04,640
solar array deployment uh with the booms

604
00:23:08,710 --> 00:23:05,520
for the

605
00:23:10,310 --> 00:23:08,720
the emphasis instrument

606
00:23:12,710 --> 00:23:10,320
the high bay that we're in is tremendous

607
00:23:14,549 --> 00:23:12,720
it's a great facility there at astrotech

608
00:23:16,390 --> 00:23:14,559
you can see all of our techs in clean

609
00:23:18,789 --> 00:23:16,400
room guard plenty of space to work on

610
00:23:21,110 --> 00:23:18,799
two spacecraft here's the emphasis

611
00:23:22,470 --> 00:23:21,120
deployment g negated

612
00:23:24,549 --> 00:23:22,480
so it gives you an idea of what that

613
00:23:28,470 --> 00:23:24,559

looks like when we deploy that boom

614
00:23:33,190 --> 00:23:30,870
and uh here here we are with

615
00:23:34,310 --> 00:23:33,200
some of our final closeout activities

616
00:23:36,390 --> 00:23:34,320
and our

617
00:23:38,070 --> 00:23:36,400
mission assurance folks taking a careful

618
00:23:39,430 --> 00:23:38,080
look at the spacecraft as we move from

619
00:23:41,750 --> 00:23:39,440
step to step

620
00:23:43,110 --> 00:23:41,760
all the the scripts that they have on

621
00:23:47,830 --> 00:23:43,120
their

622
00:23:50,549 --> 00:23:47,840
and also all of the the motion tests

623
00:23:52,310 --> 00:23:50,559
that have to be measured and compared

624
00:23:54,230 --> 00:23:52,320
against what we expected

625
00:23:55,909 --> 00:23:54,240
this is a spacecraft stack being moved

626
00:23:57,909 --> 00:23:55,919
on the dolly to get ready for

627
00:23:59,350 --> 00:23:57,919
encapsulation into the fairing and there

628
00:24:00,630 --> 00:23:59,360
you can see the second half of the

629
00:24:03,269 --> 00:24:00,640
fairing

630
00:24:04,870 --> 00:24:03,279
closing us up for the last time

631
00:24:06,630 --> 00:24:04,880
right there

632
00:24:08,230 --> 00:24:06,640
that was a big day for us that happened

633
00:24:10,230 --> 00:24:08,240
last week

634
00:24:12,390 --> 00:24:10,240
the team is assessing to make sure that

635
00:24:13,510 --> 00:24:12,400
we're all in good condition and we're

636
00:24:15,190 --> 00:24:13,520
backing up

637
00:24:16,950 --> 00:24:15,200
getting ready to be transported from

638
00:24:18,630 --> 00:24:16,960

astrotech over

639
00:24:19,510 --> 00:24:18,640
to the vif

640
00:24:21,110 --> 00:24:19,520
there's

641
00:24:22,630 --> 00:24:21,120
our team carefully loading onto the

642
00:24:24,230 --> 00:24:22,640
truck and again in the middle of the

643
00:24:26,549 --> 00:24:24,240
night

644
00:24:28,390 --> 00:24:26,559
moving uh over toward the vif so that we

645
00:24:29,510 --> 00:24:28,400
don't have any vehicular traffic to

646
00:24:31,350 --> 00:24:29,520
worry about

647
00:24:33,590 --> 00:24:31,360
and the caravan that's carefully

648
00:24:36,390 --> 00:24:33,600
motoring us at a safe seven miles per

649
00:24:39,029 --> 00:24:36,400
hour over to the vif

650
00:24:40,789 --> 00:24:39,039
so uh again i'd like to say um how

651
00:24:42,630 --> 00:24:40,799
excited we are about this mission this

652
00:24:45,190 --> 00:24:42,640
uh culminates more than five years of

653
00:24:47,350 --> 00:24:45,200
effort and in fact

654
00:24:50,070 --> 00:24:47,360
the first planning stages from from the

655
00:24:52,149 --> 00:24:50,080
science uh happened in 2001 there was a

656
00:24:54,310 --> 00:24:52,159
meeting to uh to talk about what the

657
00:24:55,909 --> 00:24:54,320
science would be and uh what we wanted

658
00:24:56,950 --> 00:24:55,919
to to measure and how we wanted to do

659
00:24:59,350 --> 00:24:56,960
that so

660
00:25:01,269 --> 00:24:59,360
many many years of activity uh preparing

661
00:25:02,470 --> 00:25:01,279
for this this day

662
00:25:04,789 --> 00:25:02,480
and um

663
00:25:06,310 --> 00:25:04,799

and in fact since the 50s to try to

664
00:25:07,830 --> 00:25:06,320
unlock some of the mysteries of the van

665
00:25:08,630 --> 00:25:07,840
allen belts

666
00:25:11,110 --> 00:25:08,640
so

667
00:25:13,190 --> 00:25:11,120
again on behalf of the team

668
00:25:15,110 --> 00:25:13,200
thanks for everyone's support to get us

669
00:25:17,110 --> 00:25:15,120
to here and we're looking forward to

670
00:25:19,350 --> 00:25:17,120
launch day on friday when we're going to

671
00:25:21,029 --> 00:25:19,360
see all this work finally come to

672
00:25:23,269 --> 00:25:21,039
fruition on orbit

673
00:25:25,350 --> 00:25:23,279
george thank you rick

674
00:25:27,830 --> 00:25:25,360
now to kathy winters our launch weather

675
00:25:30,630 --> 00:25:27,840
officer for the 45th weather squadron at

676
00:25:33,190 --> 00:25:30,640
cape canaveral air force station kathy

677
00:25:34,710 --> 00:25:33,200
thank you george well we are looking for

678
00:25:36,470 --> 00:25:34,720
afternoon thunderstorms like we've been

679
00:25:38,310 --> 00:25:36,480
seeing each day here in florida it's

680
00:25:39,669 --> 00:25:38,320
pretty typical for this time of year we

681
00:25:41,110 --> 00:25:39,679
do have a strong upper level trough

682
00:25:42,789 --> 00:25:41,120
that's been digging down in the eastern

683
00:25:45,909 --> 00:25:42,799
u.s and it's actually going to dig a

684
00:25:47,110 --> 00:25:45,919
deep a bit further in the next few days

685
00:25:48,549 --> 00:25:47,120
and so we expect for all the

686
00:25:50,710 --> 00:25:48,559
thunderstorm activity that does occur in

687
00:25:52,950 --> 00:25:50,720
florida to migrate towards the east

688
00:25:55,110 --> 00:25:52,960

coast here towards us so we continue to

689
00:25:58,390 --> 00:25:55,120
expect to see afternoon storms in the

690
00:25:59,190 --> 00:25:58,400
area and on um as we get into uh launch

691
00:26:02,310 --> 00:25:59,200
day

692
00:26:04,630 --> 00:26:02,320
we'll be seeing those storms and then

693
00:26:06,549 --> 00:26:04,640
we'll have some residual cloud

694
00:26:08,630 --> 00:26:06,559
cover that will linger in the area in

695
00:26:10,070 --> 00:26:08,640
the overnight hours and that just causes

696
00:26:11,590 --> 00:26:10,080
us some concern that we could violate

697
00:26:13,430 --> 00:26:11,600
the thick cloud rule

698
00:26:14,870 --> 00:26:13,440
for launch the other area that we're

699
00:26:16,230 --> 00:26:14,880
watching there's an air in the tropics

700
00:26:17,430 --> 00:26:16,240
that we're keeping an eye on as well

701
00:26:19,029 --> 00:26:17,440
it's a couple hundred miles east of the

702
00:26:20,310 --> 00:26:19,039
lesser antilles let me go ahead and show

703
00:26:22,549 --> 00:26:20,320
you a satellite picture to kind of

704
00:26:24,630 --> 00:26:22,559
explain where that is you can see on the

705
00:26:26,310 --> 00:26:24,640
satellite picture a few hundred miles

706
00:26:27,830 --> 00:26:26,320
east of the western antilles there is a

707
00:26:30,230 --> 00:26:27,840
wave that's developing

708
00:26:32,070 --> 00:26:30,240
this is right now has a 80 percent

709
00:26:33,669 --> 00:26:32,080
chance of tropical cyclone development

710
00:26:35,909 --> 00:26:33,679
within the next 48 hours according to

711
00:26:38,630 --> 00:26:35,919
the hurricane center so it does pose a

712
00:26:40,310 --> 00:26:38,640
risk for the lesser antilles and antigua

713
00:26:41,430 --> 00:26:40,320

but it should move through that area on

714
00:26:42,789 --> 00:26:41,440
wednesday

715
00:26:44,950 --> 00:26:42,799
be off to the west and still have

716
00:26:46,549 --> 00:26:44,960
another day to recover there and and

717
00:26:48,549 --> 00:26:46,559
they may stow the antennas if they need

718
00:26:50,390 --> 00:26:48,559
to but then they can redeploy them and

719
00:26:52,630 --> 00:26:50,400
be ready for launch

720
00:26:53,909 --> 00:26:52,640
for the eastern u.s there is that trough

721
00:26:55,830 --> 00:26:53,919
there so we'll be watching for that

722
00:26:56,950 --> 00:26:55,840
residual cloud cover you can see it on

723
00:26:58,630 --> 00:26:56,960
the satellite picture and there's a

724
00:27:00,390 --> 00:26:58,640
boundary associated with that as well in

725
00:27:03,269 --> 00:27:00,400
northern georgia that is going to sag

726
00:27:04,390 --> 00:27:03,279
down on thursday into the area and so

727
00:27:06,390 --> 00:27:04,400
with that we have a little bit more

728
00:27:08,470 --> 00:27:06,400
concern for cloud cover for friday

729
00:27:10,390 --> 00:27:08,480
morning than we typically do this time

730
00:27:11,830 --> 00:27:10,400
of year just because that additional

731
00:27:14,310 --> 00:27:11,840
boundary that's going to be lingering in

732
00:27:15,830 --> 00:27:14,320
the area so right now our main concern

733
00:27:18,389 --> 00:27:15,840
for launch is a violation of the thick

734
00:27:20,389 --> 00:27:18,399
cloud rule we have a 40 chance of that

735
00:27:21,590 --> 00:27:20,399
launch commit criteria violation and the

736
00:27:23,750 --> 00:27:21,600
thick cloud will

737
00:27:25,750 --> 00:27:23,760
we have that rule to prevent triggered

738
00:27:27,029 --> 00:27:25,760

lightning it's not natural lightning

739
00:27:29,110 --> 00:27:27,039
created by a thunderstorm but lightning

740
00:27:30,789 --> 00:27:29,120
that can be triggered due to a rocket

741
00:27:31,830 --> 00:27:30,799
launching through elevated electrical

742
00:27:34,549 --> 00:27:31,840
fields

743
00:27:36,230 --> 00:27:34,559
now if we happen to delay 24 hours the

744
00:27:38,230 --> 00:27:36,240
big question mark will be what is that

745
00:27:40,230 --> 00:27:38,240
tropical wave going to do right now

746
00:27:42,470 --> 00:27:40,240
some of the models bring it most models

747
00:27:43,909 --> 00:27:42,480
bring it actually straight west but then

748
00:27:45,909 --> 00:27:43,919
some of the models actually bring it a

749
00:27:48,389 --> 00:27:45,919
little bit more towards the north and

750
00:27:51,750 --> 00:27:48,399
headed into hispaniola and then just

751
00:27:52,549 --> 00:27:51,760
southeast of south eastern cuba

752
00:27:54,149 --> 00:27:52,559
by

753
00:27:56,389 --> 00:27:54,159
as we get into saturday morning what

754
00:27:58,070 --> 00:27:56,399
that means for us is that the ridge

755
00:27:59,830 --> 00:27:58,080
actually migrates back up to the north

756
00:28:01,990 --> 00:27:59,840
and we get into more of an easterly flow

757
00:28:04,549 --> 00:28:02,000
pattern and that can cause some isolated

758
00:28:06,070 --> 00:28:04,559
showers to occur on saturday morning so

759
00:28:08,470 --> 00:28:06,080
our main concern if we happen to delay

760
00:28:10,870 --> 00:28:08,480
24 hours would be a cumulus cloud rule

761
00:28:12,710 --> 00:28:10,880
violation that's associated with these

762
00:28:14,389 --> 00:28:12,720
isolated showers and we'd be mainly

763
00:28:16,470 --> 00:28:14,399

watching for any cumulus clouds within

764
00:28:18,230 --> 00:28:16,480
10 nautical miles of the launch pad and

765
00:28:20,070 --> 00:28:18,240
looking at how tall those clouds are to

766
00:28:21,669 --> 00:28:20,080
see if they violate the rule and and we

767
00:28:23,269 --> 00:28:21,679
don't expect any lightning with those

768
00:28:25,110 --> 00:28:23,279
but again it's a more of a triggered

769
00:28:26,710 --> 00:28:25,120
lightning concern and that's what a lot

770
00:28:28,870 --> 00:28:26,720
of our lightning launch make criteria

771
00:28:30,789 --> 00:28:28,880
rules are about is triggered lightning

772
00:28:32,950 --> 00:28:30,799
so overall still a better chance than

773
00:28:35,669 --> 00:28:32,960
not when it comes to weather still 60

774
00:28:37,110 --> 00:28:35,679
chance of having go weather for launch

775
00:28:39,830 --> 00:28:37,120
but there is some concern for thick

776
00:28:41,909 --> 00:28:39,840
clouds on the morning of launch

777
00:28:44,389 --> 00:28:41,919
all right thank you kathy and we're

778
00:28:45,990 --> 00:28:44,399
ready now to take questions please give

779
00:28:48,470 --> 00:28:46,000
your name an affiliation when the

780
00:28:51,750 --> 00:28:48,480
microphone comes to you and we'll start

781
00:28:53,750 --> 00:28:51,760
here in the front with marcia

782
00:28:55,830 --> 00:28:53,760
marcia done associated press probably

783
00:28:58,470 --> 00:28:55,840
for mr fitzgerald

784
00:29:00,950 --> 00:28:58,480
why has it taken so long to

785
00:29:02,389 --> 00:29:00,960
launch a spacecraft to the radiation

786
00:29:05,350 --> 00:29:02,399
belts to get a good handle on what's

787
00:29:06,549 --> 00:29:05,360
going over going on there and

788
00:29:08,149 --> 00:29:06,559

if you could give a little history of

789
00:29:09,909 --> 00:29:08,159
perhaps other craft that have done

790
00:29:12,070 --> 00:29:09,919
research in this area and how are you

791
00:29:15,269 --> 00:29:12,080
going to be protecting these two craft

792
00:29:18,070 --> 00:29:15,279
from a pretty hazardous environment

793
00:29:20,070 --> 00:29:18,080
thank you some of the details about the

794
00:29:22,149 --> 00:29:20,080
the history i think some of our science

795
00:29:23,669 --> 00:29:22,159
folks could could give you better

796
00:29:25,750 --> 00:29:23,679
but i will say that there was a mission

797
00:29:27,750 --> 00:29:25,760
called cress that did

798
00:29:30,470 --> 00:29:27,760
go to the radiation belts it was a

799
00:29:32,149 --> 00:29:30,480
single spacecraft and

800
00:29:34,070 --> 00:29:32,159
and it unlocked some of the mysteries of

801
00:29:36,070 --> 00:29:34,080
the radiation belts but left additional

802
00:29:38,070 --> 00:29:36,080
questions for instance this this issue

803
00:29:39,909 --> 00:29:38,080
about seeing a lot of solar activity

804
00:29:42,549 --> 00:29:39,919
that you would expect may excite the

805
00:29:44,149 --> 00:29:42,559
radiation belts but in fact did not

806
00:29:45,909 --> 00:29:44,159
why did that happen uh we don't

807
00:29:47,510 --> 00:29:45,919
understand that

808
00:29:49,430 --> 00:29:47,520
so

809
00:29:52,230 --> 00:29:49,440
the the radiation belt storm probes

810
00:29:54,230 --> 00:29:52,240
mission this twin satellite mission is

811
00:29:55,430 --> 00:29:54,240
supremely equipped to make the

812
00:29:56,710 --> 00:29:55,440
measurements that would help us

813
00:29:58,310 --> 00:29:56,720

understand

814
00:30:00,549 --> 00:29:58,320
what those um

815
00:30:02,630 --> 00:30:00,559
what the processes are that are going on

816
00:30:04,389 --> 00:30:02,640
within the belts and um and due to

817
00:30:06,870 --> 00:30:04,399
coronal mass ejection

818
00:30:08,070 --> 00:30:06,880
um with respect to how do we protect the

819
00:30:10,389 --> 00:30:08,080
the mission

820
00:30:11,269 --> 00:30:10,399
so that's a great question too

821
00:30:13,830 --> 00:30:11,279
so

822
00:30:16,310 --> 00:30:13,840
i started off with an analogy i'm a

823
00:30:18,630 --> 00:30:16,320
runner and as a runner there's this

824
00:30:21,510 --> 00:30:18,640
slogan you see at track events that says

825
00:30:23,990 --> 00:30:21,520
my sport is your sports punishment

826
00:30:25,590 --> 00:30:24,000
and on this mission our mission is other

827
00:30:26,950 --> 00:30:25,600
missions punishment

828
00:30:28,789 --> 00:30:26,960
we're going to a place that other

829
00:30:30,630 --> 00:30:28,799
missions try to avoid and we need to

830
00:30:32,630 --> 00:30:30,640
live there for two years that's one of

831
00:30:34,389 --> 00:30:32,640
our biggest technical challenges

832
00:30:37,830 --> 00:30:34,399
and so we did that

833
00:30:39,430 --> 00:30:37,840
on many different uh levels um the first

834
00:30:43,190 --> 00:30:39,440
is we have a lot of shielding of all

835
00:30:45,430 --> 00:30:43,200
electronic boxes so um we have uh three

836
00:30:47,029 --> 00:30:45,440
uh 350 mils of aluminum shielding around

837
00:30:48,950 --> 00:30:47,039
our electronics that's about a third of

838
00:30:50,470 --> 00:30:48,960

an inch to give you a better feel for

839
00:30:54,470 --> 00:30:50,480
that

840
00:30:56,950 --> 00:30:54,480
these highly charged particles from

841
00:31:00,230 --> 00:30:56,960
penetrating our sensitive electronics in

842
00:31:02,230 --> 00:31:00,240
addition the electronics themselves we

843
00:31:03,110 --> 00:31:02,240
selected a lot of radiation hardened

844
00:31:05,990 --> 00:31:03,120
parts

845
00:31:07,830 --> 00:31:06,000
so you can purchase those they are more

846
00:31:09,269 --> 00:31:07,840
expensive than standard parts and they

847
00:31:11,029 --> 00:31:09,279
they also give you some level of

848
00:31:13,430 --> 00:31:11,039
protection against

849
00:31:16,710 --> 00:31:13,440
both single event upset and cumulative

850
00:31:18,950 --> 00:31:16,720
radiation over time

851
00:31:21,430 --> 00:31:18,960
and and so those things are the primary

852
00:31:23,190 --> 00:31:21,440
mechanism mechanisms for us to protect

853
00:31:24,789 --> 00:31:23,200
against the environment that we're going

854
00:31:27,350 --> 00:31:24,799
to fly in

855
00:31:28,870 --> 00:31:27,360
we also have uh some other specialized

856
00:31:30,389 --> 00:31:28,880
things that we've done to help with the

857
00:31:32,389 --> 00:31:30,399
science measurements so we need to be

858
00:31:34,470 --> 00:31:32,399
magnetically quiet as you saw in that

859
00:31:36,389 --> 00:31:34,480
magnetic swing test so basically that

860
00:31:38,710 --> 00:31:36,399
was kind of like walking through a

861
00:31:40,710 --> 00:31:38,720
magnetometer at the airport if you had

862
00:31:43,509 --> 00:31:40,720
no metal in your pockets the it doesn't

863
00:31:45,350 --> 00:31:43,519

go off in that test we're also trying to

864
00:31:47,509 --> 00:31:45,360
make sure that the spacecraft itself is

865
00:31:50,470 --> 00:31:47,519
not inducing a magnetic field that would

866
00:31:52,870 --> 00:31:50,480
be picked up by our emphasis instrument

867
00:31:53,990 --> 00:31:52,880
um and and therefore cause noise on that

868
00:31:56,389 --> 00:31:54,000
measurement

869
00:31:57,909 --> 00:31:56,399
uh so there are a lot of uh unique

870
00:32:00,549 --> 00:31:57,919
things about the mission that we had to

871
00:32:02,149 --> 00:32:00,559
think about and design into in order to

872
00:32:06,310 --> 00:32:02,159
make the the sensitive measurements that

873
00:32:13,590 --> 00:32:08,549
any other questions for our pre-launch

874
00:32:19,350 --> 00:32:15,990
hi justin wright with spaceflightnow.com

875
00:32:21,350 --> 00:32:19,360
twofer for tim uh um are you visit

876
00:32:23,909 --> 00:32:21,360
physically doing anything on the rd180

877
00:32:26,710 --> 00:32:23,919
here on the vehicle here or is it more

878
00:32:28,470 --> 00:32:26,720
of a paperwork analysis type of effort

879
00:32:31,269 --> 00:32:28,480
and uh would you expect this issue is

880
00:32:33,430 --> 00:32:31,279
going to be resolved by tomorrow's lrr

881
00:32:35,509 --> 00:32:33,440
yeah let me uh answer that and i'll let

882
00:32:36,710 --> 00:32:35,519
vern add a little more we're doing both

883
00:32:39,430 --> 00:32:36,720
justin

884
00:32:41,110 --> 00:32:39,440
we are doing testing on the rbsp

885
00:32:43,110 --> 00:32:41,120
hardware today

886
00:32:44,470 --> 00:32:43,120
we are doing engine

887
00:32:47,190 --> 00:32:44,480
cycling tests

888
00:32:49,909 --> 00:32:47,200

and as well as data review we're doing a

889
00:32:52,470 --> 00:32:49,919
combination data review from the decatur

890
00:32:53,669 --> 00:32:52,480
anomaly that occurred over the weekend

891
00:32:56,549 --> 00:32:53,679
through the joint

892
00:32:58,149 --> 00:32:56,559
team the ula team nasa as well as pratt

893
00:32:59,430 --> 00:32:58,159
whitney rocketdyne

894
00:33:01,509 --> 00:32:59,440
and uh

895
00:33:03,029 --> 00:33:01,519
when the technical team met yesterday

896
00:33:05,830 --> 00:33:03,039
afternoon

897
00:33:07,509 --> 00:33:05,840
i would categorize it as we did have a

898
00:33:08,950 --> 00:33:07,519
high confidence that we would be able to

899
00:33:10,549 --> 00:33:08,960
get through this

900
00:33:12,710 --> 00:33:10,559
but we did want to perform today's

901
00:33:13,909 --> 00:33:12,720
confidence testing as well as completed

902
00:33:16,310 --> 00:33:13,919
data review

903
00:33:18,470 --> 00:33:16,320
fern anything to add no i think tim

904
00:33:20,630 --> 00:33:18,480
provided a good summary we think we

905
00:33:21,990 --> 00:33:20,640
understand what the issue is the testing

906
00:33:23,590 --> 00:33:22,000
that we're doing today will build up

907
00:33:25,190 --> 00:33:23,600
some separation between this engine and

908
00:33:27,110 --> 00:33:25,200
the engine in the factory where we saw

909
00:33:28,470 --> 00:33:27,120
the issue

910
00:33:30,470 --> 00:33:28,480
even though we think we know what the

911
00:33:32,870 --> 00:33:30,480
issue is we're going to move very slowly

912
00:33:34,549 --> 00:33:32,880
very carefully today the testing itself

913
00:33:36,230 --> 00:33:34,559

that we're going to be performing on the

914
00:33:37,909 --> 00:33:36,240
engine lasts about four hours but some

915
00:33:40,149 --> 00:33:37,919
of our folks have about a 14-hour day

916
00:33:42,070 --> 00:33:40,159
ahead of them because of all the uh all

917
00:33:44,149 --> 00:33:42,080
of the review and and thought and

918
00:33:46,389 --> 00:33:44,159
preparation that goes into that to make

919
00:33:48,230 --> 00:33:46,399
sure uh that we that we're really on the

920
00:33:49,990 --> 00:33:48,240
right track but i would say overall

921
00:33:54,149 --> 00:33:50,000
we're pretty optimistic that we know

922
00:33:58,230 --> 00:33:55,990
quick spacecraft question are you

923
00:33:59,669 --> 00:33:58,240
actually going into your final orbit

924
00:34:01,190 --> 00:33:59,679
when you come off of the centaur or do

925
00:34:03,750 --> 00:34:01,200
you have to do any sort of raising burns

926
00:34:05,269 --> 00:34:03,760
in your initial 60-day period

927
00:34:07,909 --> 00:34:05,279
essentially we're injecting into the

928
00:34:09,589 --> 00:34:07,919
orbit that we want to be into of course

929
00:34:11,909 --> 00:34:09,599
you know we'll assess that after we get

930
00:34:15,190 --> 00:34:11,919
dropped off and uh and find out where

931
00:34:16,550 --> 00:34:15,200
exactly uh we are but um we the intent

932
00:34:18,629 --> 00:34:16,560
is that we'll we'll begin our

933
00:34:20,869 --> 00:34:18,639
deployments that we're in where we want

934
00:34:23,589 --> 00:34:20,879
to be and as i said over the next 60

935
00:34:25,589 --> 00:34:23,599
days we will be turning on the science

936
00:34:27,430 --> 00:34:25,599
instruments and assessing what we have

937
00:34:29,030 --> 00:34:27,440
and and where we are but the direct

938
00:34:30,470 --> 00:34:29,040

answer question is yes we're essentially

939
00:34:32,829 --> 00:34:30,480
where we want to be when we get dropped

940
00:34:38,310 --> 00:34:36,069
james james dean of florida today for

941
00:34:40,470 --> 00:34:38,320
kathy and and tim i think isn't space

942
00:34:41,750 --> 00:34:40,480
weather part of the the launch forecast

943
00:34:42,790 --> 00:34:41,760
that you provide

944
00:34:45,589 --> 00:34:42,800
um

945
00:34:47,510 --> 00:34:45,599
you know what can you provide

946
00:34:49,349 --> 00:34:47,520
why do you need it and and you know

947
00:34:50,710 --> 00:34:49,359
assuming the goal here is eventually to

948
00:34:53,190 --> 00:34:50,720
do that better you know how helpful

949
00:34:55,510 --> 00:34:53,200
would that be for you

950
00:34:57,430 --> 00:34:55,520
it is uh we do look at proton flux units

951
00:34:59,190 --> 00:34:57,440
and right now it seems that this week so

952
00:35:00,790 --> 00:34:59,200
far is looking relatively quiet there's

953
00:35:02,069 --> 00:35:00,800
a couple of sunspots that are rotating

954
00:35:04,150 --> 00:35:02,079
around the side of the sun that we're

955
00:35:06,630 --> 00:35:04,160
going to be watching for solar flare

956
00:35:08,150 --> 00:35:06,640
activity but so far it's a little bit

957
00:35:10,230 --> 00:35:08,160
far out to tell if those are going to be

958
00:35:11,510 --> 00:35:10,240
active enough to generate a flare and

959
00:35:13,990 --> 00:35:11,520
we'll get a better feel for that as we

960
00:35:16,150 --> 00:35:14,000
get a couple days before launch but we

961
00:35:18,950 --> 00:35:16,160
will be watching pro for proton flux

962
00:35:21,829 --> 00:35:18,960
activity associated with solar flares

963
00:35:24,630 --> 00:35:21,839

and you can give the y i guess

964
00:35:27,190 --> 00:35:24,640
yeah we do monitor uh the proton flux it

965
00:35:29,670 --> 00:35:27,200
is a critical launch constraint for us

966
00:35:31,589 --> 00:35:29,680
highly energized particles

967
00:35:34,790 --> 00:35:31,599
would tend to cause

968
00:35:37,030 --> 00:35:34,800
single event upsets or bit hits in

969
00:35:39,030 --> 00:35:37,040
flight computers on launch vehicles

970
00:35:43,190 --> 00:35:39,040
so we do have a constraint for that and

971
00:35:47,990 --> 00:35:45,910
just just following up can you speak um

972
00:35:48,950 --> 00:35:48,000
just in general about the the frequency

973
00:35:51,349 --> 00:35:48,960
of

974
00:35:52,710 --> 00:35:51,359
um you know space weather events

975
00:35:55,270 --> 00:35:52,720
affecting

976
00:35:57,510 --> 00:35:55,280
spacecraft base based assets i guess

977
00:35:59,349 --> 00:35:57,520
obviously again that's a goal of

978
00:36:02,150 --> 00:35:59,359
better prediction is to protect those

979
00:36:03,589 --> 00:36:02,160
types of of uh assets and and um but

980
00:36:05,990 --> 00:36:03,599
it's not doesn't seem very often that

981
00:36:08,470 --> 00:36:06,000
i've that that i've heard of um you know

982
00:36:10,390 --> 00:36:08,480
a spacecraft being damaged or disabled

983
00:36:11,990 --> 00:36:10,400
from that sort of thing just just trying

984
00:36:13,510 --> 00:36:12,000
to get a feel for how common this is and

985
00:36:15,829 --> 00:36:13,520
you know

986
00:36:17,910 --> 00:36:15,839
yeah i could speak from the launch

987
00:36:21,190 --> 00:36:17,920
vehicle side of it uh because we do

988
00:36:23,589 --> 00:36:21,200

monitor for that type of uh activity in

989
00:36:25,349 --> 00:36:23,599
the atmosphere we're generally protected

990
00:36:27,109 --> 00:36:25,359
on the launch vehicle so we don't tend

991
00:36:29,750 --> 00:36:27,119
to experience very much during the

992
00:36:32,310 --> 00:36:29,760
launch phase of operations

993
00:36:35,030 --> 00:36:32,320
for the spacecraft side rick you may

994
00:36:38,790 --> 00:36:36,710
knowledge of past

995
00:36:40,870 --> 00:36:38,800
upsets of spacecraft on orbit and how

996
00:36:42,150 --> 00:36:40,880
that affects them

997
00:36:43,510 --> 00:36:42,160
it's a bit of a conundrum so we're

998
00:36:45,510 --> 00:36:43,520
worried about space weather when we're

999
00:36:47,109 --> 00:36:45,520
launching a mission to give a space

1000
00:36:48,550 --> 00:36:47,119
weather it's kind of like

1001
00:36:50,870 --> 00:36:48,560
being worried about driving through snow

1002
00:36:52,710 --> 00:36:50,880
to go skiing right so

1003
00:36:55,589 --> 00:36:52,720
we are going to

1004
00:36:57,510 --> 00:36:55,599
to uh watch the forecast um we're a

1005
00:36:59,829 --> 00:36:57,520
little bit more resilient

1006
00:37:01,750 --> 00:36:59,839
than the the launch vehicle is uh for

1007
00:37:02,790 --> 00:37:01,760
the space weather uh because of the way

1008
00:37:05,030 --> 00:37:02,800
we're built

1009
00:37:06,710 --> 00:37:05,040
um with respect to uh space weather

1010
00:37:09,750 --> 00:37:06,720
events sometimes you don't hear about

1011
00:37:11,190 --> 00:37:09,760
them because on orbit assets try as best

1012
00:37:13,589 --> 00:37:11,200
they can with the space weather

1013
00:37:16,390 --> 00:37:13,599

predictions that we have they can turn

1014
00:37:17,750 --> 00:37:16,400
off some sensitive electronics

1015
00:37:19,829 --> 00:37:17,760
in order to

1016
00:37:20,950 --> 00:37:19,839
avoid single event upsets and actual

1017
00:37:22,710 --> 00:37:20,960
failure

1018
00:37:24,710 --> 00:37:22,720
and that's another part of our mission

1019
00:37:26,790 --> 00:37:24,720
is to be able to

1020
00:37:28,630 --> 00:37:26,800
give better space weather

1021
00:37:30,710 --> 00:37:28,640
information that other

1022
00:37:32,630 --> 00:37:30,720
agencies and and other spacecraft

1023
00:37:34,870 --> 00:37:32,640
providers can use for their own orbit

1024
00:37:36,630 --> 00:37:34,880
assets as far as

1025
00:37:39,190 --> 00:37:36,640
making the news um

1026
00:37:42,150 --> 00:37:39,200
it makes the news when it affects the

1027
00:37:45,430 --> 00:37:42,160
general population the most uh so

1028
00:37:47,510 --> 00:37:45,440
when gps is affected um that that it can

1029
00:37:50,069 --> 00:37:47,520
affect so many people in so many ways it

1030
00:37:51,670 --> 00:37:50,079
can affect airliners it can affect uh

1031
00:37:53,670 --> 00:37:51,680
communication it can affect a lot of

1032
00:37:55,510 --> 00:37:53,680
things and so when those kinds of things

1033
00:37:58,230 --> 00:37:55,520
happen you hear more about it or a

1034
00:38:00,069 --> 00:37:58,240
communication satellite when when a com

1035
00:38:02,390 --> 00:38:00,079
link is interrupted

1036
00:38:04,710 --> 00:38:02,400
in in the middle of an important event

1037
00:38:05,990 --> 00:38:04,720
that kind of stuff makes the news um a

1038
00:38:07,030 --> 00:38:06,000

lot of things a lot of science

1039
00:38:09,190 --> 00:38:07,040
measurement

1040
00:38:11,430 --> 00:38:09,200
um spacecraft don't necessarily make the

1041
00:38:13,430 --> 00:38:11,440
news if they have an event that they are

1042
00:38:14,790 --> 00:38:13,440
dealing with

1043
00:38:16,310 --> 00:38:14,800
so that's that's something i can't

1044
00:38:17,670 --> 00:38:16,320
really answer about when you hear about

1045
00:38:20,150 --> 00:38:17,680
it when you don't that's more or less

1046
00:38:21,670 --> 00:38:20,160
controlled by the media but it is a real

1047
00:38:23,190 --> 00:38:21,680
thing that you have to worry about and

1048
00:38:24,870 --> 00:38:23,200
this mission is all about helping

1049
00:38:27,270 --> 00:38:24,880
everybody understand what's really out

1050
00:38:29,670 --> 00:38:27,280
there that they need to deal with

1051
00:38:32,230 --> 00:38:29,680
maybe i could um

1052
00:38:34,710 --> 00:38:32,240
contribute a little something there

1053
00:38:37,750 --> 00:38:34,720
just so you you understand we

1054
00:38:40,710 --> 00:38:37,760
the science mission directorate operates

1055
00:38:42,390 --> 00:38:40,720
some 50-odd missions

1056
00:38:44,390 --> 00:38:42,400
across our four

1057
00:38:47,430 --> 00:38:44,400
disciplines

1058
00:38:49,589 --> 00:38:47,440
i get a report anytime one of those

1059
00:38:52,630 --> 00:38:49,599
missions

1060
00:38:55,990 --> 00:38:52,640
operations is disrupted

1061
00:38:59,589 --> 00:38:56,000
anecdotally i will tell you that

1062
00:39:02,069 --> 00:39:01,190
about once a month

1063
00:39:05,510 --> 00:39:02,079

um

1064
00:39:07,829 --> 00:39:05,520
a mission will uh so one not not not the

1065
00:39:09,670 --> 00:39:07,839
same mission every month obviously but

1066
00:39:11,430 --> 00:39:09,680
of those that collective group of

1067
00:39:14,790 --> 00:39:11,440
missions

1068
00:39:18,230 --> 00:39:14,800
uh probably 10 12 times a year

1069
00:39:21,030 --> 00:39:18,240
we'll have a satellite either have a

1070
00:39:26,870 --> 00:39:23,910
we refer to them as single event upsets

1071
00:39:28,790 --> 00:39:26,880
or we do have some missions who as rick

1072
00:39:31,510 --> 00:39:28,800
said take

1073
00:39:34,630 --> 00:39:31,520
proactive action if we understand that

1074
00:39:35,910 --> 00:39:34,640
there's a a solar event that's taking

1075
00:39:39,349 --> 00:39:35,920
place

1076
00:39:41,990 --> 00:39:39,359
in order to avoid a problem

1077
00:39:43,910 --> 00:39:42,000
the the impact of that may not make the

1078
00:39:47,030 --> 00:39:43,920
press because it doesn't impact people

1079
00:39:49,030 --> 00:39:47,040
day to day but we're talking about space

1080
00:39:50,710 --> 00:39:49,040
assets that cost

1081
00:39:52,390 --> 00:39:50,720
hundreds of millions of dollars to

1082
00:39:57,109 --> 00:39:52,400
collect science

1083
00:39:59,430 --> 00:39:57,119
data we don't like losing one bit

1084
00:40:02,310 --> 00:39:59,440
i mean that literally bit

1085
00:40:04,550 --> 00:40:02,320
of science data and so

1086
00:40:06,309 --> 00:40:04,560
it's it's a very disturbing event when

1087
00:40:08,230 --> 00:40:06,319
we have to uh

1088
00:40:10,870 --> 00:40:08,240

shut up an instrument down or a

1089
00:40:13,109 --> 00:40:10,880
spacecraft down bring it back up again

1090
00:40:16,150 --> 00:40:13,119
we can recover from those we we we

1091
00:40:17,030 --> 00:40:16,160
always do and or almost always do

1092
00:40:19,349 --> 00:40:17,040
but

1093
00:40:20,870 --> 00:40:19,359
the recovery means that you've lost some

1094
00:40:23,750 --> 00:40:20,880
time period

1095
00:40:25,030 --> 00:40:23,760
of data so it's not an insignificant

1096
00:40:26,150 --> 00:40:25,040
impact to

1097
00:40:29,430 --> 00:40:26,160
um

1098
00:40:31,349 --> 00:40:29,440
to the on-orbit assets

1099
00:40:35,030 --> 00:40:31,359
marsha follow-up yes two quick

1100
00:40:36,710 --> 00:40:35,040
follow-ups um the 386 million dollar

1101
00:40:38,390 --> 00:40:36,720
cost of the mission does that that

1102
00:40:40,870 --> 00:40:38,400
includes the launch costs

1103
00:40:42,470 --> 00:40:40,880
the total nas emission cost is 686

1104
00:40:44,870 --> 00:40:42,480
million dollars and that does include

1105
00:40:47,349 --> 00:40:44,880
the launch vehicle and all phases of the

1106
00:40:50,150 --> 00:40:47,359
mission and and do you have any plans

1107
00:40:52,230 --> 00:40:50,160
after launch to name a and b

1108
00:40:53,829 --> 00:40:52,240
or will they always be a and b there are

1109
00:40:55,270 --> 00:40:53,839
some plans under discussion from nasa

1110
00:40:56,710 --> 00:40:55,280
headquarters i don't know mike if you

1111
00:40:58,790 --> 00:40:56,720
want to address that

1112
00:41:01,190 --> 00:40:58,800
uh well uh

1113
00:41:03,589 --> 00:41:01,200

we there we have a process that we have

1114
00:41:06,630 --> 00:41:03,599
to go through there is there's been a

1115
00:41:08,790 --> 00:41:06,640
proposal it has to be vetted before we

1116
00:41:11,109 --> 00:41:08,800
can make an announcement

1117
00:41:12,630 --> 00:41:11,119
so i am not prepared to to make that

1118
00:41:14,630 --> 00:41:12,640
announcement here

1119
00:41:16,309 --> 00:41:14,640
but there are some some proposals that

1120
00:41:19,430 --> 00:41:16,319
are being considered for names that have

1121
00:41:21,430 --> 00:41:19,440
to go go through a process

1122
00:41:23,829 --> 00:41:21,440
definitely after launch

1123
00:41:26,870 --> 00:41:23,839
yeah right after the successful launch

1124
00:41:30,470 --> 00:41:28,950
all right i think we have someone

1125
00:41:32,309 --> 00:41:30,480
following on the

1126
00:41:34,230 --> 00:41:32,319
phone as well michael wall did you have

1127
00:41:39,670 --> 00:41:34,240
a question and if you do if you can give

1128
00:41:45,030 --> 00:41:41,670
oh yeah hi this is mike wahl from from

1129
00:41:48,630 --> 00:41:46,470
we can hear you

1130
00:41:49,910 --> 00:41:48,640
okay thanks sorry um

1131
00:41:51,670 --> 00:41:49,920
yeah yeah i just like a little more

1132
00:41:53,510 --> 00:41:51,680
information about the anomaly i mean is

1133
00:41:56,069 --> 00:41:53,520
this something that that you guys have

1134
00:41:57,430 --> 00:41:56,079
seen before i mean the rocket and um

1135
00:41:59,109 --> 00:41:57,440
yeah i mean what are some of the steps

1136
00:42:00,309 --> 00:41:59,119
that that you're taking i know you sort

1137
00:42:01,510 --> 00:42:00,319
of outlined them

1138
00:42:03,190 --> 00:42:01,520

could you go into a little bit more

1139
00:42:05,910 --> 00:42:03,200
detail about sort of how you're like

1140
00:42:07,030 --> 00:42:05,920
going about fixing this

1141
00:42:08,950 --> 00:42:07,040
you want me to take that yeah i'll let

1142
00:42:10,950 --> 00:42:08,960
you take that okay this is vern thorpe

1143
00:42:13,510 --> 00:42:10,960
with united launch alliance

1144
00:42:16,150 --> 00:42:13,520
uh we can tell you that the uh

1145
00:42:18,630 --> 00:42:16,160
anomaly that we saw was on a hydraulic

1146
00:42:21,670 --> 00:42:18,640
system actuator essentially

1147
00:42:24,470 --> 00:42:21,680
and uh we've seen uh similar similar

1148
00:42:25,910 --> 00:42:24,480
data signatures before on on similar

1149
00:42:27,750 --> 00:42:25,920
actuators

1150
00:42:30,069 --> 00:42:27,760
and that's the primary reason why we

1151
00:42:32,150 --> 00:42:30,079
think we understand what's going on that

1152
00:42:34,309 --> 00:42:32,160
that data signature combined with a

1153
00:42:36,950 --> 00:42:34,319
detailed understanding of

1154
00:42:38,390 --> 00:42:36,960
the internal workings of this hydraulic

1155
00:42:40,069 --> 00:42:38,400
system

1156
00:42:42,550 --> 00:42:40,079
i'm really not a liberty to go into too

1157
00:42:44,790 --> 00:42:42,560
much more detail than that

1158
00:42:46,390 --> 00:42:44,800
other than to say that uh you know even

1159
00:42:48,630 --> 00:42:46,400
though we we think we understand it we

1160
00:42:51,270 --> 00:42:48,640
think we've got a good hydraulic system

1161
00:42:53,430 --> 00:42:51,280
on the engine for the rbsp mission

1162
00:42:54,950 --> 00:42:53,440
uh we're not gonna take anything for

1163
00:42:56,710 --> 00:42:54,960

granted or make any assumptions we don't

1164
00:42:58,230 --> 00:42:56,720
have to we're gonna go in and do this

1165
00:43:01,510 --> 00:42:58,240
screening test today that will give us

1166
00:43:03,990 --> 00:43:01,520
confidence that the engine for our bsp

1167
00:43:06,309 --> 00:43:04,000
is not susceptible to the same type of

1168
00:43:10,550 --> 00:43:06,319
anomalous data signature that we saw

1169
00:43:10,560 --> 00:43:14,309
thank you

1170
00:43:19,750 --> 00:43:16,790
all right back here for any last

1171
00:43:24,309 --> 00:43:21,589
all right in that event we're going to

1172
00:43:26,230 --> 00:43:24,319
pause long enough just to change our

1173
00:43:30,630 --> 00:43:26,240
players here on the dice and we'll go