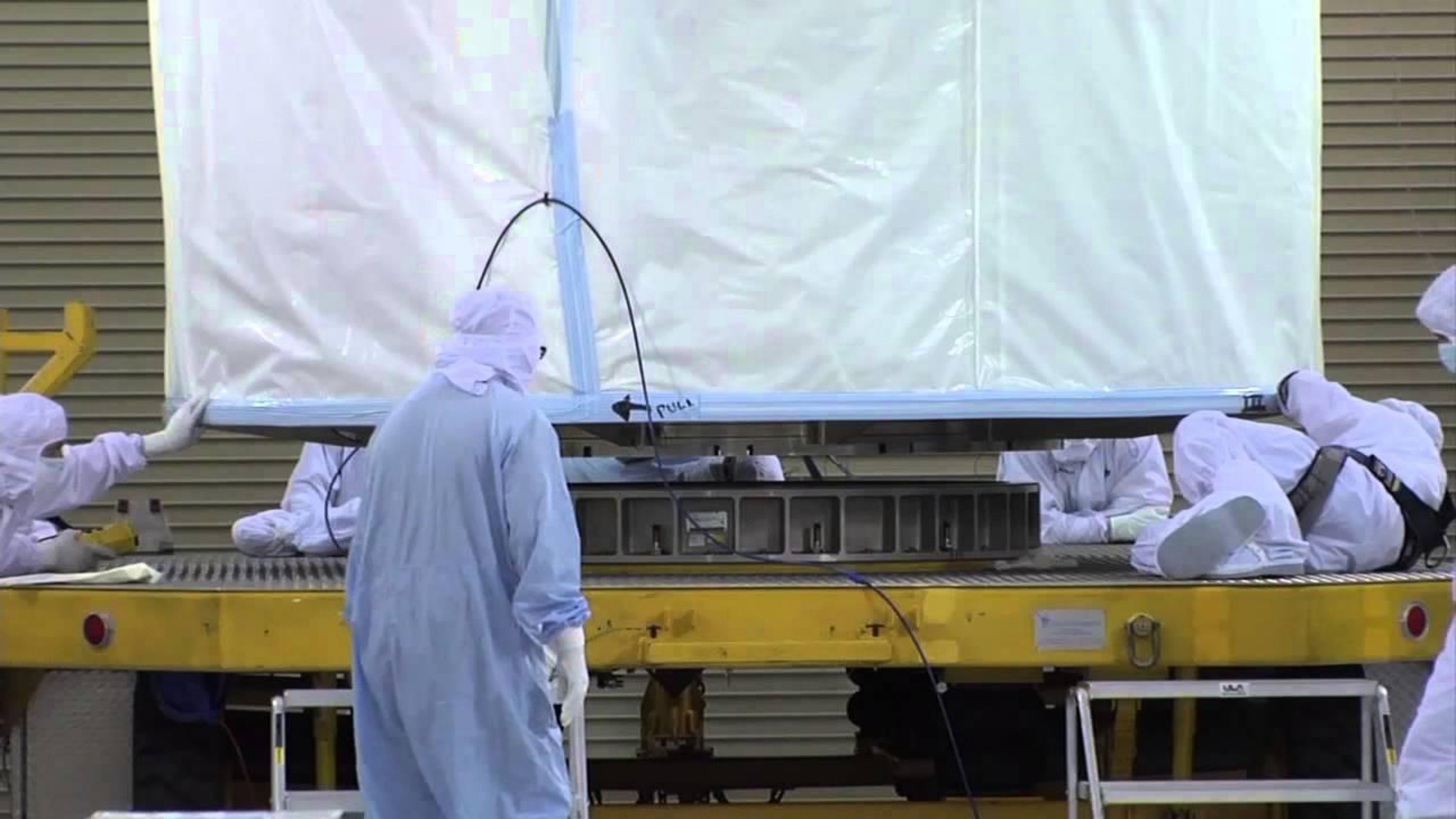
PULL

1
00:00:09,270 --> 00:00:07,110
hello everyone this is the pre-launch

2
00:00:11,190 --> 00:00:09,280
news conference for the orbiting carbon

3
00:00:13,669 --> 00:00:11,200
observatory 2.

4
00:00:15,430 --> 00:00:13,679
to be launched for nasa by united launch

5
00:00:18,790 --> 00:00:15,440
alliance aboard a

6
00:00:20,710 --> 00:00:18,800
delta ii rocket on tuesday morning

7
00:00:23,509 --> 00:00:20,720
we'll begin with

8
00:00:26,870 --> 00:00:23,519
our opening remarks from betsy edwards

9
00:00:29,669 --> 00:00:26,880
the oco-2 program executive from nasa

10
00:00:33,990 --> 00:00:31,830
next we'll hear from tim dunn who's the

11
00:00:35,750 --> 00:00:34,000
nasa launch manager during the countdown

12
00:00:40,150 --> 00:00:35,760
from the kennedy space center and the

13
00:00:44,310 --> 00:00:42,470

vernon thorpe the program manager for

14
00:00:47,750 --> 00:00:44,320
nasa missions from united launch

15
00:00:55,670 --> 00:00:51,270
ralph basilio the oco2 project manager

16
00:00:59,990 --> 00:00:57,750
and lieutenant joseph round the launch

17
00:01:02,229 --> 00:01:00,000
weather officer from the 30th operation

18
00:01:03,430 --> 00:01:02,239
support squadron at vandenberg air force

19
00:01:05,830 --> 00:01:03,440
base

20
00:01:08,149 --> 00:01:05,840
and we'll begin first with betsy edwards

21
00:01:09,830 --> 00:01:08,159
our oco2 program executive from nasa

22
00:01:11,350 --> 00:01:09,840
headquarters betsy

23
00:01:13,190 --> 00:01:11,360
thank you george

24
00:01:16,149 --> 00:01:13,200
good afternoon

25
00:01:18,710 --> 00:01:16,159
the orbiting carbon observatory 2 or

26
00:01:20,710 --> 00:01:18,720
oco-2 as we call it

27
00:01:24,390 --> 00:01:20,720
will launch from the vandenberg air

28
00:01:27,590 --> 00:01:24,400
force base very early tuesday morning

29
00:01:29,350 --> 00:01:27,600
joining many other 17 specifically other

30
00:01:30,310 --> 00:01:29,360
earth science missions

31
00:01:38,469 --> 00:01:30,320
in

32
00:01:40,310 --> 00:01:38,479
there are currently 17 spacecraft

33
00:01:42,469 --> 00:01:40,320
studying various elements about the

34
00:01:45,830 --> 00:01:42,479
earth as a system

35
00:01:47,190 --> 00:01:45,840
and oco2 will join these in measuring

36
00:01:49,910 --> 00:01:47,200
the global

37
00:01:52,389 --> 00:01:49,920
carbon dioxide concentrations carbon

38
00:01:55,510 --> 00:01:52,399

dioxide being the greenhouse gas that

39
00:01:57,510 --> 00:01:55,520
drives climate change

40
00:01:59,749 --> 00:01:57,520
this is an auspicious year for earth

41
00:02:02,709 --> 00:01:59,759
science as it will see five mission

42
00:02:05,270 --> 00:02:02,719
launches that together with our existing

43
00:02:06,069 --> 00:02:05,280
operational missions

44
00:02:10,550 --> 00:02:06,079
will

45
00:02:14,070 --> 00:02:10,560
issues facing our planet today

46
00:02:16,229 --> 00:02:14,080
issues like sea level rise

47
00:02:18,550 --> 00:02:16,239
extreme weather events

48
00:02:20,150 --> 00:02:18,560
fresh water resources and of course

49
00:02:24,550 --> 00:02:20,160
climate change

50
00:02:27,190 --> 00:02:24,560
facing our generation

51
00:02:29,270 --> 00:02:27,200
and nasa is uniquely positioned to take

52
00:02:31,350 --> 00:02:29,280
on the challenge of documenting and

53
00:02:34,550 --> 00:02:31,360
understanding climate change

54
00:02:36,229 --> 00:02:34,560
predicting its impacts

55
00:02:38,309 --> 00:02:36,239
and sharing the information about

56
00:02:40,470 --> 00:02:38,319
climate change for the benefit of all of

57
00:02:43,030 --> 00:02:40,480
society

58
00:02:45,589 --> 00:02:43,040
with the launch of oco2 if we could see

59
00:02:47,509 --> 00:02:45,599
our next video

60
00:02:49,430 --> 00:02:47,519
with the launch of this spacecraft

61
00:02:52,550 --> 00:02:49,440
decision makers and scientists will get

62
00:02:55,670 --> 00:02:52,560
a much better idea of the role of carbon

63
00:02:58,710 --> 00:02:55,680

dioxide in climate change

64
00:03:00,550 --> 00:02:58,720
as oco 2 measures this greenhouse gas

65
00:03:03,670 --> 00:03:00,560
globally

66
00:03:06,949 --> 00:03:03,680
and provides incredibly new insights

67
00:03:08,309 --> 00:03:06,959
into where and how carbon dioxide is

68
00:03:12,710 --> 00:03:08,319
moving into

69
00:03:17,110 --> 00:03:15,910
the oco2 spacecraft consists of a single

70
00:03:22,229 --> 00:03:17,120
instrument

71
00:03:25,110 --> 00:03:22,239
oco-2 will collect hundreds of thousands

72
00:03:26,710 --> 00:03:25,120
of measurements each day

73
00:03:28,869 --> 00:03:26,720
and these measurements will provide us

74
00:03:31,270 --> 00:03:28,879
with a global description of carbon

75
00:03:32,949 --> 00:03:31,280
dioxide levels

76
00:03:35,509 --> 00:03:32,959
with an unprecedented coverage and

77
00:03:37,509 --> 00:03:35,519
resolution that we've never had before

78
00:03:39,910 --> 00:03:37,519
because this is our first mission

79
00:03:42,309 --> 00:03:39,920
dedicated to studying carbon dioxide in

80
00:03:45,270 --> 00:03:42,319
the earth's atmosphere

81
00:03:48,710 --> 00:03:45,280
in our next video we can see how

82
00:03:51,670 --> 00:03:48,720
oco-2 is in a polar orbit and with this

83
00:03:54,229 --> 00:03:51,680
orbit it will see locations on the earth

84
00:03:57,910 --> 00:03:54,239
at the same time of day approximately

85
00:04:00,229 --> 00:03:57,920
every 16 days and across all the seasons

86
00:04:02,630 --> 00:04:00,239
providing us more insight into the

87
00:04:03,589 --> 00:04:02,640
changes in carbon dioxide levels over

88
00:04:06,149 --> 00:04:03,599

time

89
00:04:08,070 --> 00:04:06,159
and ultimately scientists predict that

90
00:04:10,390 --> 00:04:08,080
looking at these changes over time will

91
00:04:12,470 --> 00:04:10,400
give us patterns that are weeks or

92
00:04:14,470 --> 00:04:12,480
months or years long

93
00:04:18,229 --> 00:04:14,480
that will help them to unravel

94
00:04:21,270 --> 00:04:18,239
the mysteries of the carbon cycle

95
00:04:23,909 --> 00:04:21,280
and the oco-2 mission came into being

96
00:04:25,830 --> 00:04:23,919
because of the 2009 launch vehicle

97
00:04:28,150 --> 00:04:25,840
failure of the

98
00:04:29,749 --> 00:04:28,160
that was carrying the original oco

99
00:04:31,510 --> 00:04:29,759
spacecraft

100
00:04:32,550 --> 00:04:31,520
but because of the importance of this

101
00:04:35,270 --> 00:04:32,560
measurement

102
00:04:38,469 --> 00:04:35,280
nasa was given permission to rebuild the

103
00:04:39,350 --> 00:04:38,479
spacecraft and launch

104
00:04:42,150 --> 00:04:39,360
now

105
00:04:44,150 --> 00:04:42,160
right after the launch failure the

106
00:04:46,790 --> 00:04:44,160
japanese science team for their

107
00:04:48,390 --> 00:04:46,800
greenhouse gases observing mission

108
00:04:50,870 --> 00:04:48,400
satellite sorry

109
00:04:53,749 --> 00:04:50,880
the gosat satellite the science team

110
00:04:56,469 --> 00:04:53,759
reached out to nasa and invited the oco

111
00:04:59,110 --> 00:04:56,479
science team to participate with them in

112
00:05:00,629 --> 00:04:59,120
analyzing the gosat data

113
00:05:02,710 --> 00:05:00,639

and by doing this

114
00:05:05,670 --> 00:05:02,720
we are sharing our information we're

115
00:05:08,150 --> 00:05:05,680
sharing processes the oco science team

116
00:05:10,150 --> 00:05:08,160
has really refined their data processing

117
00:05:12,310 --> 00:05:10,160
algorithms because they've had a chance

118
00:05:14,629 --> 00:05:12,320
to work with some real data

119
00:05:16,230 --> 00:05:14,639
and of course this collaboration is only

120
00:05:19,670 --> 00:05:16,240
going to be strengthened when we offer

121
00:05:20,950 --> 00:05:19,680
them the oco2 science data at the at the

122
00:05:22,390 --> 00:05:20,960
end of the year

123
00:05:24,629 --> 00:05:22,400
and the scientists are eagerly

124
00:05:27,350 --> 00:05:24,639
anticipating the opportunity

125
00:05:29,749 --> 00:05:27,360
to merge the oco2 science data with the

126
00:05:31,430 --> 00:05:29,759
gosat science data and help to

127
00:05:33,430 --> 00:05:31,440
understand the

128
00:05:35,909 --> 00:05:33,440
improve their knowledge of the global

129
00:05:39,029 --> 00:05:35,919
carbon cycle

130
00:05:41,830 --> 00:05:39,039
the oco-2 mission will join nasa's very

131
00:05:44,390 --> 00:05:41,840
robust earth science program consisting

132
00:05:45,830 --> 00:05:44,400
of both space-based and airborne

133
00:05:48,150 --> 00:05:45,840
observations

134
00:05:50,950 --> 00:05:48,160
ground-based measurements and of course

135
00:05:54,230 --> 00:05:50,960
our data analysis capabilities

136
00:05:57,029 --> 00:05:54,240
in yielding unprecedented unparalleled

137
00:05:58,710 --> 00:05:57,039
new knowledge about the earth as a

138
00:06:01,270 --> 00:05:58,720

system

139
00:06:02,950 --> 00:06:01,280
we're all anxiously awaiting the launch

140
00:06:04,469 --> 00:06:02,960
of oco2

141
00:06:08,469 --> 00:06:04,479
tuesday morning

142
00:06:11,110 --> 00:06:08,479
as we all wait to see the earth breathe

143
00:06:13,670 --> 00:06:11,120
back to you george thank you betsy

144
00:06:15,749 --> 00:06:13,680
and now to tim dunn from the kennedy

145
00:06:18,950 --> 00:06:15,759
space center who is the nasa launch

146
00:06:21,270 --> 00:06:18,960
manager during the countdown tim

147
00:06:23,270 --> 00:06:21,280
thank you george i'm proud to be here

148
00:06:25,990 --> 00:06:23,280
today representing the men and women of

149
00:06:28,390 --> 00:06:26,000
nasa's launch services program

150
00:06:30,469 --> 00:06:28,400
i'm the nasa launch manager for the oco2

151
00:06:32,550 --> 00:06:30,479
mission and i'm thrilled to serve as

152
00:06:35,029 --> 00:06:32,560
launch director for a delta ii launched

153
00:06:37,749 --> 00:06:35,039
spacecraft that will be nasa's first

154
00:06:40,629 --> 00:06:37,759
earth remote sensing satellite to study

155
00:06:42,550 --> 00:06:40,639
carbon dioxide in our atmosphere

156
00:06:46,550 --> 00:06:42,560
my high school chemistry teacher mrs

157
00:06:50,790 --> 00:06:48,390
after almost three years

158
00:06:53,189 --> 00:06:50,800
since the last delta ii launch

159
00:06:56,230 --> 00:06:53,199
i'm here today to tell you that the

160
00:06:58,670 --> 00:06:56,240
delta ii launch team is back

161
00:07:02,870 --> 00:06:58,680
oc02 will launch on a delta ii

162
00:07:05,510 --> 00:07:02,880
7320 vehicle from space launch complex 2

163
00:07:09,110 --> 00:07:05,520

affectionately known as slick 2

164
00:07:13,270 --> 00:07:09,120
the oco 2 mission will be the 367th

165
00:07:16,150 --> 00:07:13,280
delta rocket to launch since may of 1960

166
00:07:18,710 --> 00:07:16,160
and slick 2 is proud to have hosted 81

167
00:07:21,189 --> 00:07:18,720
of those delta launches

168
00:07:24,550 --> 00:07:21,199
over the past week the delta ii team has

169
00:07:27,189 --> 00:07:24,560
been busy with many launch preparations

170
00:07:29,510 --> 00:07:27,199
last tuesday the combined nasa and

171
00:07:31,430 --> 00:07:29,520
united launch alliance launch team held

172
00:07:33,350 --> 00:07:31,440
the flight readiness review

173
00:07:35,270 --> 00:07:33,360
we assessed the preparations of the

174
00:07:37,589 --> 00:07:35,280
delta ii launch vehicle

175
00:07:41,589 --> 00:07:37,599
range and facility assets and the

176
00:07:44,150 --> 00:07:41,599
readiness of the oco-2 spacecraft

177
00:07:46,390 --> 00:07:44,160
a day later last wednesday we performed

178
00:07:48,710 --> 00:07:46,400
a successful mission dress rehearsal of

179
00:07:51,589 --> 00:07:48,720
the entire team

180
00:07:53,830 --> 00:07:51,599
that same day the ula crew loaded the

181
00:07:56,950 --> 00:07:53,840
hypergolic propellant of nitrogen

182
00:08:00,070 --> 00:07:56,960
tetroxide on the second stage followed a

183
00:08:02,710 --> 00:08:00,080
day later by the arizine 50 which is the

184
00:08:04,710 --> 00:08:02,720
fuel for the second stage

185
00:08:06,469 --> 00:08:04,720
now i'd like to show a video of the ula

186
00:08:08,469 --> 00:08:06,479
crew building up the delta ii launch

187
00:08:12,390 --> 00:08:08,479
vehicle that will launch our spacecraft

188
00:08:14,469 --> 00:08:12,400

from slick 2. please roll the tape

189
00:08:17,110 --> 00:08:14,479
here we have a view of the first stage

190
00:08:19,029 --> 00:08:17,120
for oc02 being transported up to slick 2

191
00:08:20,469 --> 00:08:19,039
and put in the horizontal processing

192
00:08:22,390 --> 00:08:20,479
facility

193
00:08:23,830 --> 00:08:22,400
this is a nice view of the payload

194
00:08:26,230 --> 00:08:23,840
fairing that will encapsulate the

195
00:08:29,029 --> 00:08:26,240
spacecraft at the top of the delta ii

196
00:08:31,510 --> 00:08:29,039
atk in iuca mississippi makes our

197
00:08:33,670 --> 00:08:31,520
payload fairing its 10-foot diameter

198
00:08:36,550 --> 00:08:33,680
composite payload fairing

199
00:08:38,870 --> 00:08:36,560
this occurred toward the end of march

200
00:08:40,310 --> 00:08:38,880
this is a nice view of the first stage

201
00:08:42,949 --> 00:08:40,320
after it had received horizontal

202
00:08:45,910 --> 00:08:42,959
processing at vandenberg being erected

203
00:08:47,750 --> 00:08:45,920
onto the launch mount at slick 2.

204
00:08:50,070 --> 00:08:47,760
you'll see it's being raised up by the

205
00:08:52,150 --> 00:08:50,080
crane on the mobile service tower and

206
00:08:54,870 --> 00:08:52,160
then it'll be translated over onto the

207
00:08:58,310 --> 00:08:54,880
launch mount and mated that's a nice

208
00:08:59,470 --> 00:08:58,320
view of the aerojet rocketdyne rs27a

209
00:09:02,310 --> 00:08:59,480
engine

210
00:09:05,509 --> 00:09:02,320
237 thousand pounds of thrust coming off

211
00:09:10,790 --> 00:09:08,070
next we move into the solid rocket motor

212
00:09:13,910 --> 00:09:10,800
erection sequence oco-2 will have three

213
00:09:17,590 --> 00:09:13,920

srms attached to the first stage

214
00:09:19,269 --> 00:09:17,600
atk makes these gem 40 40 inch diameter

215
00:09:21,110 --> 00:09:19,279
srm motors

216
00:09:23,269 --> 00:09:21,120
each of them have a thrust of a hundred

217
00:09:26,389 --> 00:09:23,279
and eleven thousand pounds

218
00:09:28,310 --> 00:09:26,399
again we use the mst crane to mate them

219
00:09:30,949 --> 00:09:28,320
to the first stage

220
00:09:34,230 --> 00:09:30,959
this is a view in the middle of april of

221
00:09:37,350 --> 00:09:34,240
moving the second stage out to slick two

222
00:09:40,710 --> 00:09:37,360
uh that occurred uh on yeah the 15th of

223
00:09:42,310 --> 00:09:40,720
april aerojet rocketdyne makes the power

224
00:09:44,070 --> 00:09:42,320
plant for the second stage that's the

225
00:09:47,190 --> 00:09:44,080
aj10 motor

226
00:09:49,829 --> 00:09:47,200
thrust of 9 300 pounds

227
00:09:51,350 --> 00:09:49,839
and then about uh just a few weeks ago

228
00:09:54,389 --> 00:09:51,360
the middle of june

229
00:09:56,470 --> 00:09:54,399
we erected and mated the oco2 spacecraft

230
00:09:57,509 --> 00:09:56,480
you see it here in its transportation

231
00:10:00,070 --> 00:09:57,519
can

232
00:10:02,310 --> 00:10:00,080
moving out to slick 2 being erected and

233
00:10:04,630 --> 00:10:02,320
then it'll be gently set down and mated

234
00:10:06,790 --> 00:10:04,640
to the top of the second stage

235
00:10:08,949 --> 00:10:06,800
you see the ula team working there very

236
00:10:11,030 --> 00:10:08,959
carefully it's a very delicate operation

237
00:10:13,910 --> 00:10:11,040
and that's a beautiful shot revealing

238
00:10:16,310 --> 00:10:13,920

the oco-2 spacecraft an even better shot

239
00:10:18,550 --> 00:10:16,320
there during payload fairing mate

240
00:10:21,030 --> 00:10:18,560
the spacecraft was unbagged you see one

241
00:10:22,710 --> 00:10:21,040
half of the composite payload fairing

242
00:10:23,990 --> 00:10:22,720
around the vehicle and here you see the

243
00:10:26,150 --> 00:10:24,000
second half

244
00:10:28,710 --> 00:10:26,160
being positioned into place

245
00:10:32,310 --> 00:10:28,720
this activity occurred on the 21st of

246
00:10:34,470 --> 00:10:32,320
june and then you'll see the launch crew

247
00:10:36,790 --> 00:10:34,480
doing final inspections of the

248
00:10:38,550 --> 00:10:36,800
separation seam

249
00:10:40,710 --> 00:10:38,560
and that's just a

250
00:10:44,069 --> 00:10:40,720
nice view inside the clean room at slick

251
00:10:51,509 --> 00:10:44,079
2 of the fully mated payload fairing

252
00:10:55,350 --> 00:10:53,430
this afternoon we held a successful

253
00:10:57,829 --> 00:10:55,360
launch readiness review where we

254
00:11:00,790 --> 00:10:57,839
received approval from senior nasa and

255
00:11:03,030 --> 00:11:00,800
ula management as well as spacecraft and

256
00:11:05,590 --> 00:11:03,040
range agencies to proceed and to launch

257
00:11:08,230 --> 00:11:05,600
countdown tomorrow night

258
00:11:09,829 --> 00:11:08,240
at slick 2 today on the rocket we

259
00:11:12,069 --> 00:11:09,839
perform the range safety and beacon

260
00:11:14,310 --> 00:11:12,079
checks along with the first and second

261
00:11:16,630 --> 00:11:14,320
stage engine slewing checkout and the

262
00:11:18,310 --> 00:11:16,640
final azimuth alignment update for the

263
00:11:20,310 --> 00:11:18,320

flight computer

264
00:11:22,710 --> 00:11:20,320
tomorrow afternoon we will begin final

265
00:11:25,910 --> 00:11:22,720
launch pad preparations at approximately

266
00:11:29,030 --> 00:11:25,920
3 pm pacific time when we load refined

267
00:11:30,069 --> 00:11:29,040
kerosene or rp-1 fuel onto the first

268
00:11:32,470 --> 00:11:30,079
stage

269
00:11:34,870 --> 00:11:32,480
and then we'll move the mobile service

270
00:11:36,790 --> 00:11:34,880
tower away from the rocket to the launch

271
00:11:39,269 --> 00:11:36,800
position

272
00:11:42,470 --> 00:11:39,279
the launch team will arrive on console

273
00:11:43,269 --> 00:11:42,480
just after 10 pm pacific time monday

274
00:11:45,430 --> 00:11:43,279
night

275
00:11:47,350 --> 00:11:45,440
and we will perform final preparations

276
00:11:49,670 --> 00:11:47,360
of flight computer power on and

277
00:11:51,670 --> 00:11:49,680
pressurization about midnight

278
00:11:54,829 --> 00:11:51,680
followed by first stage liquid oxygen

279
00:11:57,269 --> 00:11:54,839
loading at 1 am tuesday

280
00:11:59,350 --> 00:11:57,279
morning final engine sloughs will be

281
00:12:01,670 --> 00:11:59,360
performed at 2 a.m

282
00:12:06,389 --> 00:12:01,680
and then we'll be ready for launch

283
00:12:09,590 --> 00:12:06,399
at a t-0 of 2 56 and 44 seconds

284
00:12:11,750 --> 00:12:09,600
am pacific time with a 30-second launch

285
00:12:14,550 --> 00:12:11,760
window

286
00:12:16,710 --> 00:12:14,560
in summary the rocket is ready and the

287
00:12:19,590 --> 00:12:16,720
launch team is prepared and excited to

288
00:12:21,190 --> 00:12:19,600

be back in business with delta ii and

289
00:12:22,829 --> 00:12:21,200
poised to launch this important

290
00:12:26,470 --> 00:12:22,839
spacecraft for our

291
00:12:28,949 --> 00:12:26,480
nation back to you george thank you tim

292
00:12:31,269 --> 00:12:28,959
and now to vernon thorpe the program

293
00:12:33,829 --> 00:12:31,279
manager for nasa missions from united

294
00:12:35,590 --> 00:12:33,839
launch alliance to discuss the delta 2's

295
00:12:36,790 --> 00:12:35,600
flight events

296
00:12:38,629 --> 00:12:36,800
vern

297
00:12:41,190 --> 00:12:38,639
okay thank you george

298
00:12:44,069 --> 00:12:41,200
united launch alliance uh our entire

299
00:12:45,910 --> 00:12:44,079
team is honored once again to be here at

300
00:12:48,150 --> 00:12:45,920
vandenberg two days before the launch of

301
00:12:50,470 --> 00:12:48,160
the oco2 satellite

302
00:12:53,910 --> 00:12:50,480
ula started working with nasa to

303
00:12:55,750 --> 00:12:53,920
integrate the oco2 spacecraft onto delta

304
00:12:57,030 --> 00:12:55,760
ii about two years ago in the summer of

305
00:12:58,790 --> 00:12:57,040
2012.

306
00:13:00,710 --> 00:12:58,800
we also began building the vehicle for

307
00:13:02,230 --> 00:13:00,720
this mission in decatur alabama at about

308
00:13:04,389 --> 00:13:02,240
that same time

309
00:13:07,110 --> 00:13:04,399
as always our ula team has worked very

310
00:13:08,870 --> 00:13:07,120
closely with nasa the spacecraft team

311
00:13:10,069 --> 00:13:08,880
and our other mission partners to get us

312
00:13:12,310 --> 00:13:10,079
to this day

313
00:13:13,590 --> 00:13:12,320

and it's been a tremendously successful

314
00:13:15,030 --> 00:13:13,600
team effort

315
00:13:16,550 --> 00:13:15,040
we look forward to a great launch on

316
00:13:19,829 --> 00:13:16,560
tuesday morning

317
00:13:20,790 --> 00:13:19,839
oco2 will be ula's seventh launch of the

318
00:13:24,310 --> 00:13:20,800
year

319
00:13:26,629 --> 00:13:24,320
in addition to being nasa's 51st delta

320
00:13:28,150 --> 00:13:26,639
ii mission it will also be ula's 84th

321
00:13:29,350 --> 00:13:28,160
mission over the last seven and a half

322
00:13:31,430 --> 00:13:29,360
years

323
00:13:34,550 --> 00:13:31,440
we currently have a very busy manifest

324
00:13:35,829 --> 00:13:34,560
with 15 missions scheduled in 2014 i

325
00:13:37,590 --> 00:13:35,839
mentioned that this will be our seventh

326
00:13:39,829 --> 00:13:37,600
of those 15.

327
00:13:42,389 --> 00:13:39,839
those 15 include five launches from

328
00:13:44,310 --> 00:13:42,399
vandenberg air force base and i'd like

329
00:13:46,790 --> 00:13:44,320
to note that we actually have four

330
00:13:48,629 --> 00:13:46,800
vehicles on four different launch pads

331
00:13:50,790 --> 00:13:48,639
right now and we're prepping all those

332
00:13:54,949 --> 00:13:50,800
vehicles for launch in about a six week

333
00:13:57,110 --> 00:13:54,959
period uh coming up beginning with oco2

334
00:13:59,509 --> 00:13:57,120
uh our 15 missions this year include

335
00:14:01,269 --> 00:13:59,519
three launches for nasa oco2 is the

336
00:14:02,389 --> 00:14:01,279
second of those three and we've actually

337
00:14:04,230 --> 00:14:02,399
got a fourth

338
00:14:05,750 --> 00:14:04,240

launch for nasa planned later this year

339
00:14:07,829 --> 00:14:05,760
we're going to be launching a delta iv

340
00:14:10,150 --> 00:14:07,839
heavy out of cape canaveral

341
00:14:11,430 --> 00:14:10,160
uh in support of nasa's exploration

342
00:14:14,230 --> 00:14:11,440
program

343
00:14:16,310 --> 00:14:14,240
the oco2 mission marks delta's 2 return

344
00:14:18,790 --> 00:14:16,320
to flight after a three three year

345
00:14:20,710 --> 00:14:18,800
hiatus it's the first of two planned

346
00:14:23,670 --> 00:14:20,720
delta ii missions scheduled to fly this

347
00:14:26,069 --> 00:14:23,680
year for nasa the soil solar moisture

348
00:14:28,870 --> 00:14:26,079
active passive or smap mission will also

349
00:14:30,949 --> 00:14:28,880
be launching on delta ii this fall

350
00:14:33,189 --> 00:14:30,959
nasa also selected delta ii at about the

351
00:14:35,670 --> 00:14:33,199
same time to launch the joint polar

352
00:14:37,590 --> 00:14:35,680
satellite system satellite and also the

353
00:14:39,829 --> 00:14:37,600
ice cloud and land elevation satellite

354
00:14:41,990 --> 00:14:39,839
those missions will be in 2016.

355
00:14:45,750 --> 00:14:42,000
the specific delta ii we're using for

356
00:14:47,590 --> 00:14:45,760
oco2 is a 7320 configuration that

357
00:14:51,829 --> 00:14:47,600
features the first stage booster powered

358
00:14:53,990 --> 00:14:51,839
by an aerojet rocketdyne rs27a engine

359
00:14:55,670 --> 00:14:54,000
three alliant tech systems strap-on

360
00:14:58,230 --> 00:14:55,680
solid rocket motors

361
00:15:00,230 --> 00:14:58,240
and an aerojet rocketdyne aj10 engine

362
00:15:01,990 --> 00:15:00,240
will power the second stage

363
00:15:03,670 --> 00:15:02,000

the payload is protected by the 10 foot

364
00:15:05,430 --> 00:15:03,680
diameter composite payload fairing as

365
00:15:06,949 --> 00:15:05,440
you heard tim mentioned

366
00:15:08,949 --> 00:15:06,959
now i'd like to show a video of the

367
00:15:10,389 --> 00:15:08,959
launch seek launch sequence for this

368
00:15:13,110 --> 00:15:10,399
mission and that'll give you a preview

369
00:15:15,110 --> 00:15:13,120
of what you can expect to see

370
00:15:17,030 --> 00:15:15,120
during or just after the countdown

371
00:15:18,550 --> 00:15:17,040
so here's the delta ii on the pad same

372
00:15:20,230 --> 00:15:18,560
configuration that we'll be using for

373
00:15:21,990 --> 00:15:20,240
oc02

374
00:15:25,030 --> 00:15:22,000
and there you see liftoff

375
00:15:26,550 --> 00:15:25,040
the next major event that you'll see on

376
00:15:28,150 --> 00:15:26,560
july 1st

377
00:15:30,790 --> 00:15:28,160
will come

378
00:15:32,470 --> 00:15:30,800
just after a minute into flight will

379
00:15:33,749 --> 00:15:32,480
burn out or the solid rocket motors will

380
00:15:34,949 --> 00:15:33,759
burn out and

381
00:15:36,790 --> 00:15:34,959
at

382
00:15:38,710 --> 00:15:36,800
99 seconds in the flight you'll see

383
00:15:42,069 --> 00:15:38,720
those jettison we'll jettison all three

384
00:15:46,150 --> 00:15:44,389
and after we jettison those three motors

385
00:15:48,230 --> 00:15:46,160
which you'll see here in just a second

386
00:15:53,509 --> 00:15:48,240
that core stage will continue to burn

387
00:15:57,350 --> 00:15:55,670
we hang on to the solid rocket motors

388
00:15:59,509 --> 00:15:57,360

for about 30 seconds after they burn out

389
00:16:02,310 --> 00:15:59,519
for range safety reasons so they uh

390
00:16:04,470 --> 00:16:02,320
splash down in a safe spot in the ocean

391
00:16:06,470 --> 00:16:04,480
so there you see the core uh continuing

392
00:16:09,590 --> 00:16:06,480
to burn that will burn for a little over

393
00:16:11,829 --> 00:16:09,600
four minutes from lift off

394
00:16:13,430 --> 00:16:11,839
at that point we'll shut down the engine

395
00:16:15,110 --> 00:16:13,440
about eight seconds later the second

396
00:16:17,110 --> 00:16:15,120
stage will separate and we'll begin the

397
00:16:19,030 --> 00:16:17,120
first of two engine burns required to

398
00:16:19,990 --> 00:16:19,040
place the satellite into its required

399
00:16:22,470 --> 00:16:20,000
orbit

400
00:16:23,990 --> 00:16:22,480
about 23 seconds into that first burn

401
00:16:25,509 --> 00:16:24,000
will jettison the payload fairing as you

402
00:16:27,269 --> 00:16:25,519
just saw

403
00:16:29,430 --> 00:16:27,279
and that first burn will last about 5

404
00:16:31,670 --> 00:16:29,440
minutes and 42 seconds we go into a

405
00:16:34,069 --> 00:16:31,680
40-minute parking orbit then that puts

406
00:16:36,550 --> 00:16:34,079
us into the proper position for the

407
00:16:38,550 --> 00:16:36,560
second of the two burns required that's

408
00:16:40,310 --> 00:16:38,560
a short 12 second burn and five minutes

409
00:16:41,350 --> 00:16:40,320
later we separate the spacecraft as you

410
00:16:44,230 --> 00:16:41,360
saw there

411
00:16:45,670 --> 00:16:44,240
now once we're done uh with the primary

412
00:16:47,670 --> 00:16:45,680
mission and that takes about an hour

413
00:16:49,030 --> 00:16:47,680

it's about 56 minutes and 15 seconds

414
00:16:51,189 --> 00:16:49,040
after liftoff is when we plan to

415
00:16:53,110 --> 00:16:51,199
separate the satellite

416
00:16:55,110 --> 00:16:53,120
the delta ii upper stage will actually

417
00:16:57,269 --> 00:16:55,120
continue on we've got two more burns

418
00:16:59,590 --> 00:16:57,279
planned after separation those will

419
00:17:01,590 --> 00:16:59,600
occur over the the following hour and

420
00:17:03,910 --> 00:17:01,600
that will put the second stage into a

421
00:17:08,549 --> 00:17:03,920
safe storage orbit where it won't pose a

422
00:17:12,710 --> 00:17:10,949
so ula is proud to serve a critical role

423
00:17:14,150 --> 00:17:12,720
in delivering payloads to orbit for all

424
00:17:15,350 --> 00:17:14,160
of our government and commercial

425
00:17:16,949 --> 00:17:15,360
customers

426
00:17:18,870 --> 00:17:16,959
and we're focused on perfect product

427
00:17:20,630 --> 00:17:18,880
delivery for this and every mission we

428
00:17:21,590 --> 00:17:20,640
launch and we do that one launch at a

429
00:17:23,909 --> 00:17:21,600
time

430
00:17:25,270 --> 00:17:23,919
ula maintains a relentless focus on

431
00:17:27,029 --> 00:17:25,280
successfully delivering critical

432
00:17:29,190 --> 00:17:27,039
capabilities to orbit and mission

433
00:17:29,830 --> 00:17:29,200
success for our customers is what drives

434
00:17:31,590 --> 00:17:29,840
us

435
00:17:33,830 --> 00:17:31,600
it's always an honor and it's always

436
00:17:36,070 --> 00:17:33,840
exciting to be part of these unique nasa

437
00:17:38,230 --> 00:17:36,080
missions so i'd like to just say thank

438
00:17:40,870 --> 00:17:38,240

you once again to all of our mission

439
00:17:43,270 --> 00:17:40,880
partners the entire ula team looks

440
00:17:44,630 --> 00:17:43,280
forward to a great launch

441
00:17:46,230 --> 00:17:44,640
starting with the countdown tomorrow

442
00:17:48,070 --> 00:17:46,240
night and with that i'll turn it back

443
00:17:49,190 --> 00:17:48,080
over to you george all right thank you

444
00:17:52,310 --> 00:17:49,200
fern

445
00:17:54,150 --> 00:17:52,320
now to ralph basilio the oco2 project

446
00:17:57,669 --> 00:17:54,160
manager from the jet propulsion

447
00:17:59,270 --> 00:17:57,679
laboratory ralph yeah thank you george

448
00:18:02,310 --> 00:17:59,280
it's indeed an honor and pleasure to be

449
00:18:04,630 --> 00:18:02,320
here this afternoon early evening

450
00:18:06,950 --> 00:18:04,640
nasa's jet propulsion laboratory and

451
00:18:09,270 --> 00:18:06,960
orbital sciences corporation have been

452
00:18:10,710 --> 00:18:09,280
very working very hard since march of

453
00:18:13,190 --> 00:18:10,720
2010

454
00:18:14,950 --> 00:18:13,200
for the oco2 mission

455
00:18:17,350 --> 00:18:14,960
we want to be able to deliver on the

456
00:18:20,870 --> 00:18:17,360
promises that were made on the original

457
00:18:23,110 --> 00:18:20,880
oco mission basically to obtain carbon

458
00:18:24,390 --> 00:18:23,120
dioxide measurements from space with the

459
00:18:26,789 --> 00:18:24,400
precision

460
00:18:28,950 --> 00:18:26,799
resolution and coverage needed to

461
00:18:30,870 --> 00:18:28,960
improve our understanding of the carbon

462
00:18:32,470 --> 00:18:30,880
cycle and the global climate change

463
00:18:35,430 --> 00:18:32,480

processes

464
00:18:37,430 --> 00:18:35,440
now the oco-2 observatory is not an

465
00:18:39,830 --> 00:18:37,440
identical twin of the original

466
00:18:42,549 --> 00:18:39,840
observatory but sometimes it's referred

467
00:18:45,029 --> 00:18:42,559
to as a carbon copy now we took

468
00:18:48,230 --> 00:18:45,039
advantage full advantage of all of the

469
00:18:50,150 --> 00:18:48,240
existing designs and the documentation

470
00:18:52,870 --> 00:18:50,160
from the original oco mission to

471
00:18:55,669 --> 00:18:52,880
mitigate risk with this implementation

472
00:18:58,470 --> 00:18:55,679
i am proud to say that we fully expect

473
00:19:00,230 --> 00:18:58,480
to meet our technical our schedule and

474
00:19:01,990 --> 00:19:00,240
cost commitments that we made to our

475
00:19:06,070 --> 00:19:02,000
nasa sponsors

476
00:19:11,029 --> 00:19:08,710
so the observatory itself is made up of

477
00:19:14,230 --> 00:19:11,039
a standard spacecraft bus that was

478
00:19:16,470 --> 00:19:14,240
adapted for use on the oco 2 mission

479
00:19:19,270 --> 00:19:16,480
and we have a single instrument it's a

480
00:19:21,510 --> 00:19:19,280
three-channel grading spectrometer

481
00:19:24,549 --> 00:19:21,520
and we subjected the observatory to a

482
00:19:25,430 --> 00:19:24,559
series a comprehensive series of ground

483
00:19:31,669 --> 00:19:25,440
tests

484
00:19:33,830 --> 00:19:31,679
observatory to the simulated

485
00:19:35,990 --> 00:19:33,840
environments of space

486
00:19:39,669 --> 00:19:36,000
so the cold and hot temperatures

487
00:19:41,430 --> 00:19:39,679
extremes as well as the vacuum of space

488
00:19:43,190 --> 00:19:41,440

we also simulated the environments that

489
00:19:45,830 --> 00:19:43,200
the observatory would expect during

490
00:19:47,669 --> 00:19:45,840
launch operations now after we completed

491
00:19:49,590 --> 00:19:47,679
all of our observatory testing at the

492
00:19:51,350 --> 00:19:49,600
orbital facility we shipped here to

493
00:19:53,430 --> 00:19:51,360
vandenberg air force base and you can

494
00:19:56,230 --> 00:19:53,440
see footage here of the shipping

495
00:19:57,750 --> 00:19:56,240
container lid being moved away from the

496
00:20:00,310 --> 00:19:57,760
observatory

497
00:20:01,669 --> 00:20:00,320
and the unbagging process the bag is

498
00:20:03,990 --> 00:20:01,679
there basically to protect the

499
00:20:06,070 --> 00:20:04,000
observatory from any contaminants as

500
00:20:07,510 --> 00:20:06,080
well as to provide some humidity and

501
00:20:09,669 --> 00:20:07,520
temperature control

502
00:20:12,310 --> 00:20:09,679
now technicians here are now preparing

503
00:20:15,510 --> 00:20:12,320
the observatory for what we call mating

504
00:20:17,750 --> 00:20:15,520
operations with the payload stack

505
00:20:19,510 --> 00:20:17,760
and the mating operations

506
00:20:22,710 --> 00:20:19,520
was completed after we fueled the

507
00:20:24,789 --> 00:20:22,720
observatory and this is a a nice image

508
00:20:26,630 --> 00:20:24,799
of the observatory being lowered and you

509
00:20:29,029 --> 00:20:26,640
can see the compression springs that

510
00:20:31,430 --> 00:20:29,039
will actually push the observatory off

511
00:20:33,750 --> 00:20:31,440
of the launch vehicle at the designated

512
00:20:36,710 --> 00:20:33,760
time and the payload stack includes what

513
00:20:39,669 --> 00:20:36,720

we call a soft ride vibration isolation

514
00:20:41,830 --> 00:20:39,679
system due to relatively low mass of the

515
00:20:43,669 --> 00:20:41,840
observatory we basically need a shock

516
00:20:45,909 --> 00:20:43,679
absorber if you will

517
00:20:47,750 --> 00:20:45,919
to make sure that the loads are at the

518
00:20:50,149 --> 00:20:47,760
required or

519
00:20:52,070 --> 00:20:50,159
required states and you can see here the

520
00:20:53,110 --> 00:20:52,080
technicians are now preparing what we

521
00:20:56,310 --> 00:20:53,120
call the

522
00:20:58,630 --> 00:20:56,320
container or the can the can is used to

523
00:21:00,390 --> 00:20:58,640
protect the observatory

524
00:21:03,190 --> 00:21:00,400
from the outside environment so

525
00:21:06,070 --> 00:21:03,200
temperature humidity contaminants

526
00:21:07,830 --> 00:21:06,080
you can see here that the completed can

527
00:21:10,549 --> 00:21:07,840
is now being hoisted above the

528
00:21:13,270 --> 00:21:10,559
observatory and being moved over to the

529
00:21:16,549 --> 00:21:13,280
proper location and then gently lowered

530
00:21:18,710 --> 00:21:16,559
and that process took a little bit more

531
00:21:20,630 --> 00:21:18,720
than about half a day to complete and

532
00:21:22,789 --> 00:21:20,640
you can see the can itself now being

533
00:21:24,070 --> 00:21:22,799
lowered into place and bolted into

534
00:21:27,430 --> 00:21:24,080
position

535
00:21:30,470 --> 00:21:27,440
and after the can was fully assembled

536
00:21:33,830 --> 00:21:30,480
the technicians in the clean room move

537
00:21:37,510 --> 00:21:33,840
the completed observatory located inside

538
00:21:39,830 --> 00:21:37,520

the can over to the transportation cart

539
00:21:43,029 --> 00:21:39,840
and the payload processing facility is

540
00:21:45,430 --> 00:21:43,039
located only about two miles

541
00:21:47,350 --> 00:21:45,440
from what we call slick ii or space

542
00:21:49,510 --> 00:21:47,360
launch complex ii

543
00:21:51,510 --> 00:21:49,520
and the transportation took place in the

544
00:21:53,190 --> 00:21:51,520
early morning hours with the low wind

545
00:21:55,669 --> 00:21:53,200
conditions we wanted to make sure we

546
00:21:58,230 --> 00:21:55,679
didn't have any kind of a situation to

547
00:21:59,510 --> 00:21:58,240
contend with and it was actually a

548
00:22:01,270 --> 00:21:59,520
perfect

549
00:22:03,590 --> 00:22:01,280
transportation with no issues you can

550
00:22:05,270 --> 00:22:03,600
see here the observatory now mated

551
00:22:07,510 --> 00:22:05,280
with the rest of the launch vehicle this

552
00:22:09,750 --> 00:22:07,520
is the clean room inside of the mobile

553
00:22:11,350 --> 00:22:09,760
service tower

554
00:22:13,510 --> 00:22:11,360
now i'd like to go ahead and speak to

555
00:22:17,430 --> 00:22:13,520
you a little bit about what to expect

556
00:22:19,830 --> 00:22:17,440
after the 2 56 a.m launch on tuesday the

557
00:22:21,669 --> 00:22:19,840
1st of july so let's go ahead and roll

558
00:22:22,870 --> 00:22:21,679
the next video clip it's actually an

559
00:22:24,549 --> 00:22:22,880
animation

560
00:22:26,789 --> 00:22:24,559
and i want to direct your attention here

561
00:22:28,950 --> 00:22:26,799
so about five minutes after the launch

562
00:22:31,350 --> 00:22:28,960
itself the payload fairing which

563
00:22:33,190 --> 00:22:31,360

protects the observatory will separate

564
00:22:35,190 --> 00:22:33,200
and be jettisoned away exposing the

565
00:22:36,710 --> 00:22:35,200
observatory to the cold

566
00:22:39,190 --> 00:22:36,720
vacuum of space

567
00:22:41,750 --> 00:22:39,200
now after a relatively long unpowered

568
00:22:42,710 --> 00:22:41,760
flight the observatory will separate

569
00:22:45,190 --> 00:22:42,720
from the

570
00:22:46,870 --> 00:22:45,200
launch vehicle second stage

571
00:22:49,270 --> 00:22:46,880
and we hope to be able to capture this

572
00:22:51,190 --> 00:22:49,280
separation event with a forward-facing

573
00:22:53,510 --> 00:22:51,200
camera that's mounted on the launch

574
00:22:56,070 --> 00:22:53,520
vehicle second stage so about three

575
00:22:58,710 --> 00:22:56,080
minutes after the separation event the

576
00:23:00,390 --> 00:22:58,720
observatory will begin a series of what

577
00:23:03,029 --> 00:23:00,400
we call autonomous commands or

578
00:23:05,110 --> 00:23:03,039
pre-programmed commands and one of the

579
00:23:07,190 --> 00:23:05,120
most important commands is to begin the

580
00:23:09,430 --> 00:23:07,200
solar ray deployment sequence so again

581
00:23:10,870 --> 00:23:09,440
about three minutes after separation

582
00:23:12,549 --> 00:23:10,880
this 10-minute

583
00:23:13,830 --> 00:23:12,559
solar array deployment sequence will

584
00:23:18,710 --> 00:23:13,840
begin

585
00:23:20,870 --> 00:23:18,720
power that's needed to operate all of

586
00:23:23,430 --> 00:23:20,880
the spacecraft components that are on at

587
00:23:26,070 --> 00:23:23,440
that time and we'll be making our first

588
00:23:28,630 --> 00:23:26,080

first health status check about two and

589
00:23:31,350 --> 00:23:28,640
a half hours after launch so about 5 30

590
00:23:34,870 --> 00:23:31,360
a.m pacific daylight time

591
00:23:37,190 --> 00:23:34,880
so after we complete the health checkout

592
00:23:39,110 --> 00:23:37,200
we will begin to go ahead and configure

593
00:23:41,269 --> 00:23:39,120
the spacecraft bus

594
00:23:43,590 --> 00:23:41,279
for in-flight operations now that's

595
00:23:46,070 --> 00:23:43,600
going to take on the order about one to

596
00:23:48,870 --> 00:23:46,080
two weeks we want to be diligent we want

597
00:23:51,430 --> 00:23:48,880
to make sure that everything is good and

598
00:23:53,830 --> 00:23:51,440
let's bring up the still

599
00:23:55,190 --> 00:23:53,840
and this is a artist rendition of what

600
00:23:58,230 --> 00:23:55,200
we call the

601
00:24:00,390 --> 00:23:58,240
a train or afternoon constellation

602
00:24:02,789 --> 00:24:00,400
it's a series of earth observing

603
00:24:05,830 --> 00:24:02,799
satellites that are actually flying

604
00:24:07,590 --> 00:24:05,840
in loose formation above the earth

605
00:24:09,350 --> 00:24:07,600
now after the spacecraft checkout

606
00:24:11,350 --> 00:24:09,360
that'll take on the order about one to

607
00:24:13,750 --> 00:24:11,360
two weeks we'll begin a series of

608
00:24:15,830 --> 00:24:13,760
propulsive maneuvers to raise the

609
00:24:19,110 --> 00:24:15,840
altitude of the observatory to the

610
00:24:21,350 --> 00:24:19,120
requisite 705 kilometers and that's

611
00:24:24,230 --> 00:24:21,360
where the oco-2 observatory will take

612
00:24:26,630 --> 00:24:24,240
its rightful place as the lead satellite

613
00:24:28,630 --> 00:24:26,640

in this a-train constellation

614
00:24:30,870 --> 00:24:28,640
so this constellation is actually there

615
00:24:33,190 --> 00:24:30,880
because it provides a very useful

616
00:24:35,750 --> 00:24:33,200
virtual platform in space there are a

617
00:24:37,669 --> 00:24:35,760
number of different science instruments

618
00:24:39,510 --> 00:24:37,679
on each of those satellites and

619
00:24:41,909 --> 00:24:39,520
collectively they're going to create a

620
00:24:44,149 --> 00:24:41,919
superset of information we will have

621
00:24:45,430 --> 00:24:44,159
basically a set of scientific

622
00:24:47,750 --> 00:24:45,440
information

623
00:24:50,870 --> 00:24:47,760
that complement one another by allowing

624
00:24:52,789 --> 00:24:50,880
the oco2 observatory to be operating

625
00:24:54,230 --> 00:24:52,799
excuse me as part of the a train

626
00:24:56,710 --> 00:24:54,240
constellation

627
00:24:57,990 --> 00:24:56,720
so once we're in the right orbit and fly

628
00:24:59,909 --> 00:24:58,000
in formation

629
00:25:01,830 --> 00:24:59,919
we will take on the order about another

630
00:25:02,789 --> 00:25:01,840
week or two to fully check out the

631
00:25:04,310 --> 00:25:02,799
instrument

632
00:25:06,549 --> 00:25:04,320
we're going to take a very slow

633
00:25:08,950 --> 00:25:06,559
systematic methodical approach to make

634
00:25:11,110 --> 00:25:08,960
sure that the instrument behaves in

635
00:25:13,590 --> 00:25:11,120
space as it did on the ground with our

636
00:25:15,590 --> 00:25:13,600
comprehensive ground validation

637
00:25:18,230 --> 00:25:15,600
test program as well as the calibration

638
00:25:20,390 --> 00:25:18,240

activities that we completed here

639
00:25:22,149 --> 00:25:20,400
on earth and as far as nominal

640
00:25:24,310 --> 00:25:22,159
operations go

641
00:25:26,310 --> 00:25:24,320
every 16 days the

642
00:25:29,269 --> 00:25:26,320
observatory is going to transition from

643
00:25:31,190 --> 00:25:29,279
what we call nader mode operations

644
00:25:33,510 --> 00:25:31,200
so nader mode is basically where the

645
00:25:35,590 --> 00:25:33,520
instrument is just pointed straight down

646
00:25:38,470 --> 00:25:35,600
towards the earth and we'll do that for

647
00:25:40,710 --> 00:25:38,480
16 days but on the 17th day we will

648
00:25:43,750 --> 00:25:40,720
transition to what we call glint mode

649
00:25:46,390 --> 00:25:43,760
operations in order to get meaningful

650
00:25:48,470 --> 00:25:46,400
scientific measurements over the oceans

651
00:25:50,549 --> 00:25:48,480
we have to look at the sun's glint spot

652
00:25:53,269 --> 00:25:50,559
on the globe so we'll do that for the

653
00:25:55,669 --> 00:25:53,279
next 16 days and then we'll repeat that

654
00:25:57,510 --> 00:25:55,679
process we'll alternate between the

655
00:26:00,630 --> 00:25:57,520
nader mode operations and glint mode

656
00:26:03,830 --> 00:26:00,640
operations now on top of that every day

657
00:26:05,909 --> 00:26:03,840
we will look at one target on the planet

658
00:26:08,310 --> 00:26:05,919
earth this these targets that we're

659
00:26:10,549 --> 00:26:08,320
looking at are what we call our

660
00:26:12,549 --> 00:26:10,559
observing network

661
00:26:14,950 --> 00:26:12,559
so there are target sites for example in

662
00:26:16,070 --> 00:26:14,960
lamont oklahoma or maybe even in darwin

663
00:26:17,990 --> 00:26:16,080

australia

664
00:26:20,149 --> 00:26:18,000
those sites will provide us the ground

665
00:26:22,390 --> 00:26:20,159
truth data so that we can do a data

666
00:26:24,390 --> 00:26:22,400
comparison and make sure that the

667
00:26:28,230 --> 00:26:24,400
scientific information that we receive

668
00:26:29,990 --> 00:26:28,240
from space is truly accurate as can be

669
00:26:31,590 --> 00:26:30,000
now i wanted to go ahead and close here

670
00:26:34,549 --> 00:26:31,600
by saying that

671
00:26:36,310 --> 00:26:34,559
the loss of the original oco mission

672
00:26:38,470 --> 00:26:36,320
was a tremendous heartbreak for all of

673
00:26:41,190 --> 00:26:38,480
us it was truly devastating

674
00:26:43,350 --> 00:26:41,200
it was a true sense of loss

675
00:26:45,269 --> 00:26:43,360
but as a member of that original oco

676
00:26:47,110 --> 00:26:45,279
team i want to speak on behalf of

677
00:26:48,789 --> 00:26:47,120
everyone that contributed there that we

678
00:26:51,669 --> 00:26:48,799
are excited

679
00:26:53,750 --> 00:26:51,679
about this golden opportunity to be able

680
00:26:55,990 --> 00:26:53,760
to finally complete some unfinished

681
00:26:58,310 --> 00:26:56,000
business and this launch

682
00:27:01,110 --> 00:26:58,320
doesn't signal the end of a road but

683
00:27:02,230 --> 00:27:01,120
it's the next step to a very important

684
00:27:03,190 --> 00:27:02,240
mission

685
00:27:07,110 --> 00:27:03,200
thank you

686
00:27:09,430 --> 00:27:07,120
and now for a look at tuesday morning's

687
00:27:11,510 --> 00:27:09,440
weather forecast with lieutenant joseph

688
00:27:13,990 --> 00:27:11,520

round the launch weather officer from

689
00:27:15,830 --> 00:27:14,000
the 30th operation support squadron at

690
00:27:16,789 --> 00:27:15,840
vandenberg air force base lieutenant

691
00:27:18,310 --> 00:27:16,799
round

692
00:27:19,909 --> 00:27:18,320
thank you george

693
00:27:21,990 --> 00:27:19,919
late june early july on the central

694
00:27:23,669 --> 00:27:22,000
california coast is marked by pacific

695
00:27:25,430 --> 00:27:23,679
high pressure with low level moisture

696
00:27:26,870 --> 00:27:25,440
trapped beneath the high in a pronounced

697
00:27:28,630 --> 00:27:26,880
marine layer

698
00:27:30,389 --> 00:27:28,640
currently california is under the

699
00:27:31,830 --> 00:27:30,399
dominance of this high pressure while an

700
00:27:33,830 --> 00:27:31,840
upper level perturbation that passed

701
00:27:35,990 --> 00:27:33,840
through yesterday has helped to break up

702
00:27:39,029 --> 00:27:36,000
the typical marine layer

703
00:27:40,789 --> 00:27:39,039
looking at the satellite

704
00:27:42,310 --> 00:27:40,799
you can see clear skies over the range

705
00:27:44,310 --> 00:27:42,320
with some evidence of the marine layer

706
00:27:45,990 --> 00:27:44,320
to the south there's also a frontal

707
00:27:47,590 --> 00:27:46,000
system well off to the northwest that

708
00:27:49,430 --> 00:27:47,600
will ride over the high pressure ridge

709
00:27:50,870 --> 00:27:49,440
and will not impact vandenberg through

710
00:27:52,549 --> 00:27:50,880
the launch window

711
00:27:54,310 --> 00:27:52,559
as the high moves back over the region

712
00:27:56,549 --> 00:27:54,320
the marine layer will re-establish

713
00:27:58,470 --> 00:27:56,559

itself over the western coast causing

714
00:28:00,310 --> 00:27:58,480
some lower visibilities and clouds

715
00:28:01,909 --> 00:28:00,320
through the launch window

716
00:28:04,789 --> 00:28:01,919
moving on to the day of launch forecast

717
00:28:08,789 --> 00:28:06,470
high pressure will continue to dominate

718
00:28:10,789 --> 00:28:08,799
tuesday evening with a weak upper level

719
00:28:12,310 --> 00:28:10,799
feature helping to destabilize the

720
00:28:14,630 --> 00:28:12,320
typical marine layer

721
00:28:16,389 --> 00:28:14,640
for t minus zero patchy fog and stratus

722
00:28:17,750 --> 00:28:16,399
are forecast along with thin cirrus

723
00:28:18,870 --> 00:28:17,760
associated with the weak upper level

724
00:28:20,789 --> 00:28:18,880
feature

725
00:28:22,710 --> 00:28:20,799
visibility will drop to one to two miles

726
00:28:25,029 --> 00:28:22,720
in fog and surface winds will be from

727
00:28:26,710 --> 00:28:25,039
the northwest at five to eight knots

728
00:28:29,029 --> 00:28:26,720
temperatures will drop to the lower 50s

729
00:28:31,110 --> 00:28:29,039
at t minus zero for the t minus zero

730
00:28:34,389 --> 00:28:31,120
forecast the probability of violation is

731
00:28:37,830 --> 00:28:34,399
zero percent with no areas of concern

732
00:28:39,190 --> 00:28:37,840
moving on to the scrub forecast

733
00:28:41,110 --> 00:28:39,200
a weakening of the high will cause the

734
00:28:43,269 --> 00:28:41,120
marine layer to slightly lift tuesday

735
00:28:45,510 --> 00:28:43,279
evening through wednesday morning the

736
00:28:47,430 --> 00:28:45,520
resulting fog and stratus will be

737
00:28:49,590 --> 00:28:47,440
elevated and thicker creating some light

738
00:28:51,510 --> 00:28:49,600

drizzle over the range visibility will

739
00:28:53,110 --> 00:28:51,520
increase to two to three miles in fog

740
00:28:55,190 --> 00:28:53,120
and surface winds will increase to six

741
00:28:56,870 --> 00:28:55,200
to 12 knots from the northwest

742
00:28:58,470 --> 00:28:56,880
temperatures will remain steady with the

743
00:29:00,549 --> 00:28:58,480
probability of violation for the scrub

744
00:29:02,789 --> 00:29:00,559
forecast at zero percent

745
00:29:04,710 --> 00:29:02,799
with no areas of concern

746
00:29:06,230 --> 00:29:04,720
and that is all for weather back to you

747
00:29:08,389 --> 00:29:06,240
george

748
00:29:11,110 --> 00:29:08,399
thank you and we're ready now to take

749
00:29:15,029 --> 00:29:11,120
questions we'll start first

750
00:29:17,110 --> 00:29:15,039
here in the audience and also media can

751
00:29:19,830 --> 00:29:17,120
post questions via twitter by using the

752
00:29:21,830 --> 00:29:19,840
hashtag poundastnasa during the

753
00:29:24,070 --> 00:29:21,840
briefings and while we're doing the

754
00:29:27,029 --> 00:29:24,080
questions and answers uh here at

755
00:29:29,830 --> 00:29:27,039
vandenberg so we'll start uh here in the

756
00:29:31,389 --> 00:29:29,840
front with justin

757
00:29:34,389 --> 00:29:31,399
thanks justin wright with

758
00:29:37,110 --> 00:29:34,399
spaceflightnow.com for tim dunn with the

759
00:29:37,909 --> 00:29:37,120
delta ii back what does it represent to

760
00:29:41,590 --> 00:29:37,919
you

761
00:29:43,590 --> 00:29:41,600
uh as a launch vehicle thanks

762
00:29:45,909 --> 00:29:43,600
well justin uh you know i have a little

763
00:29:48,710 --> 00:29:45,919

bit of a history with delta ii i do

764
00:29:50,950 --> 00:29:48,720
dearly love this rocket so uh when it

765
00:29:53,350 --> 00:29:50,960
appeared uh three years ago that we had

766
00:29:55,750 --> 00:29:53,360
flown our final manifested mission with

767
00:29:58,950 --> 00:29:55,760
mpp from vandenberg here in the fall of

768
00:30:00,870 --> 00:29:58,960
2011 it was a bit of a sad time for me

769
00:30:03,750 --> 00:30:00,880
but i did know that ula had five

770
00:30:05,669 --> 00:30:03,760
whitetails uh delta twos that they had

771
00:30:08,389 --> 00:30:05,679
manufactured and i knew there was some

772
00:30:10,789 --> 00:30:08,399
hope for the future so

773
00:30:14,070 --> 00:30:10,799
we our agency did take advantage of

774
00:30:16,870 --> 00:30:14,080
those whitetails and have since procured

775
00:30:19,750 --> 00:30:16,880
four of them and so knowing that we now

776
00:30:21,590 --> 00:30:19,760
have four delta ii launches ahead of us

777
00:30:22,389 --> 00:30:21,600
i'm thrilled

778
00:30:23,510 --> 00:30:22,399
i've

779
00:30:25,350 --> 00:30:23,520
worked this

780
00:30:28,470 --> 00:30:25,360
particular rocket

781
00:30:31,029 --> 00:30:28,480
since the mid 1990s and i've worked on

782
00:30:33,909 --> 00:30:31,039
both sides i've worked on both the

783
00:30:36,549 --> 00:30:33,919
the business side of it from

784
00:30:38,389 --> 00:30:36,559
the ula previous ula side which was

785
00:30:39,990 --> 00:30:38,399
mcdonald douglas and now i'm for the

786
00:30:41,110 --> 00:30:40,000
last 13 and a half years i've been with

787
00:30:42,470 --> 00:30:41,120
the government

788
00:30:45,029 --> 00:30:42,480

so i've worked

789
00:30:46,870 --> 00:30:45,039
various aspects and it's a wonderful

790
00:30:50,710 --> 00:30:46,880
program

791
00:30:54,470 --> 00:30:50,720
what lsp is able to bring to delta ii

792
00:30:57,990 --> 00:30:54,480
is an amazing amount of skilled analysts

793
00:31:00,630 --> 00:30:58,000
and engineers with just an incredible

794
00:31:01,509 --> 00:31:00,640
amount of delta ii knowledge

795
00:31:03,430 --> 00:31:01,519
so

796
00:31:05,669 --> 00:31:03,440
as a program i know i speak for our

797
00:31:07,590 --> 00:31:05,679
program manager amanda mitscavic when i

798
00:31:10,950 --> 00:31:07,600
say we couldn't be happier to be back in

799
00:31:14,710 --> 00:31:12,389
okay janine

800
00:31:15,509 --> 00:31:14,720
janine scullynewshawk.com

801
00:31:16,630 --> 00:31:15,519
what

802
00:31:19,509 --> 00:31:16,640
exactly

803
00:31:23,190 --> 00:31:19,519
how long after launch do you expect to

804
00:31:24,870 --> 00:31:23,200
put oco2 into operations

805
00:31:26,710 --> 00:31:24,880
okay so

806
00:31:27,430 --> 00:31:26,720
we have to again complete what we call

807
00:31:29,430 --> 00:31:27,440
the

808
00:31:31,669 --> 00:31:29,440
in orbit checkout phase that's going to

809
00:31:34,710 --> 00:31:31,679
take on the order about six to seven

810
00:31:36,470 --> 00:31:34,720
weeks so the first phase or sub phase

811
00:31:38,710 --> 00:31:36,480
would be basically to check out the

812
00:31:40,950 --> 00:31:38,720
spacecraft and configure the spacecraft

813
00:31:42,630 --> 00:31:40,960

for in-flight operations and then we'll

814
00:31:44,389 --> 00:31:42,640
take on the order about three weeks to

815
00:31:46,470 --> 00:31:44,399
go ahead and complete those series of

816
00:31:49,190 --> 00:31:46,480
maneuvers that are needed to get the

817
00:31:52,149 --> 00:31:49,200
observatory up into the operational

818
00:31:53,750 --> 00:31:52,159
a-train altitude and then finally we'll

819
00:31:55,750 --> 00:31:53,760
take on the order about seven to ten

820
00:31:58,310 --> 00:31:55,760
days to complete the checkout of the

821
00:32:00,149 --> 00:31:58,320
instrument so if you add all up those

822
00:32:03,110 --> 00:32:00,159
times we're looking at about six to

823
00:32:06,070 --> 00:32:03,120
seven weeks nominally in order for us to

824
00:32:07,990 --> 00:32:06,080
begin the science data taking portion of

825
00:32:10,070 --> 00:32:08,000
the mission now we still have to go

826
00:32:12,830 --> 00:32:10,080
through an intensive period of making

827
00:32:14,950 --> 00:32:12,840
sure that the science data meet our

828
00:32:16,710 --> 00:32:14,960
requirements and

829
00:32:19,509 --> 00:32:16,720
we'll be doing our best to try to go

830
00:32:20,549 --> 00:32:19,519
ahead and expedite that process we are

831
00:32:23,110 --> 00:32:20,559
committed

832
00:32:24,549 --> 00:32:23,120
to going ahead and producing data that

833
00:32:27,029 --> 00:32:24,559
anybody throughout the world will be

834
00:32:32,149 --> 00:32:27,039
able to get from the oco2 mission in

835
00:32:37,110 --> 00:32:34,230
yes right here

836
00:32:38,070 --> 00:32:37,120
eva blaisdell representing express

837
00:32:40,789 --> 00:32:38,080
veteran

838
00:32:43,190 --> 00:32:40,799

poland central eastern europe

839
00:32:44,630 --> 00:32:43,200
first of all congratulations to the

840
00:32:47,430 --> 00:32:44,640
entire team

841
00:32:49,430 --> 00:32:47,440
as a citizen of earth citizen of the

842
00:32:50,389 --> 00:32:49,440
united states

843
00:32:54,710 --> 00:32:50,399
and

844
00:32:56,470 --> 00:32:54,720
in a joy

845
00:32:58,230 --> 00:32:56,480
to see the effort

846
00:32:59,909 --> 00:32:58,240
and the results

847
00:33:02,149 --> 00:32:59,919
and also

848
00:33:04,149 --> 00:33:02,159
i am delighted to see nasa

849
00:33:06,950 --> 00:33:04,159
leading an effort our

850
00:33:09,750 --> 00:33:06,960
readers and viewers

851
00:33:11,750 --> 00:33:09,760
would be very much interested in

852
00:33:13,509 --> 00:33:11,760
hearing something that you just

853
00:33:16,549 --> 00:33:13,519
concluded your

854
00:33:18,389 --> 00:33:16,559
answer with which is how will you use

855
00:33:20,389 --> 00:33:18,399
rich data

856
00:33:24,310 --> 00:33:20,399
and you mentioned that a lot of people

857
00:33:26,710 --> 00:33:24,320
can access oco2 data but specifically

858
00:33:28,630 --> 00:33:26,720
could you share with our readers

859
00:33:31,110 --> 00:33:28,640
how could people all over the world

860
00:33:32,870 --> 00:33:31,120
benefit and support you also

861
00:33:35,190 --> 00:33:32,880
in in your efforts

862
00:33:36,950 --> 00:33:35,200
well maybe i can start and then betsy as

863
00:33:39,350 --> 00:33:36,960

a representative of the nasa

864
00:33:42,310 --> 00:33:39,360
headquarters can go ahead and follow up

865
00:33:44,230 --> 00:33:42,320
here so we are first and foremost a

866
00:33:46,549 --> 00:33:44,240
scientific mission

867
00:33:50,070 --> 00:33:46,559
our number one priority is to make sure

868
00:33:52,310 --> 00:33:50,080
that we complete our objectives here and

869
00:33:54,310 --> 00:33:52,320
that's to get the carbon dioxide

870
00:33:56,870 --> 00:33:54,320
measurements with the precision

871
00:33:59,110 --> 00:33:56,880
resolution and coverage needed in order

872
00:34:02,070 --> 00:33:59,120
to better understand the global carbon

873
00:34:03,750 --> 00:34:02,080
cycle process as well as the climate

874
00:34:05,590 --> 00:34:03,760
change processes

875
00:34:07,830 --> 00:34:05,600
as i stated earlier the data is

876
00:34:11,030 --> 00:34:07,840
available to anyone will be freely

877
00:34:11,909 --> 00:34:11,040
available to anyone and we are working

878
00:34:14,310 --> 00:34:11,919
with

879
00:34:16,310 --> 00:34:14,320
potential users out there through what

880
00:34:18,470 --> 00:34:16,320
we call a series of science data

881
00:34:20,550 --> 00:34:18,480
application workshops we want to reach

882
00:34:22,550 --> 00:34:20,560
out to the greater community because in

883
00:34:25,510 --> 00:34:22,560
the end we want to be able to provide

884
00:34:27,669 --> 00:34:25,520
data so that people can make better

885
00:34:29,990 --> 00:34:27,679
informed decisions we're not targeting a

886
00:34:32,149 --> 00:34:30,000
specific set of people but we want to

887
00:34:34,790 --> 00:34:32,159
maximize this investment that the

888
00:34:35,669 --> 00:34:34,800

american people have made with the oco-2

889
00:34:37,909 --> 00:34:35,679
mission

890
00:34:40,230 --> 00:34:37,919
so corporations for example can access

891
00:34:41,909 --> 00:34:40,240
also the data in order to

892
00:34:44,230 --> 00:34:41,919
help understand

893
00:34:45,430 --> 00:34:44,240
our good or bad behavior

894
00:34:48,389 --> 00:34:45,440
on earth

895
00:34:51,030 --> 00:34:48,399
the the data will be freely available it

896
00:34:53,829 --> 00:34:51,040
uh will be stored at the goddard space

897
00:34:56,470 --> 00:34:53,839
flight center and as i mentioned uh

898
00:34:59,190 --> 00:34:56,480
we're looking to not meet but hopefully

899
00:35:01,190 --> 00:34:59,200
be able to beat our schedule of being

900
00:35:03,190 --> 00:35:01,200
able to start producing data so that

901
00:35:04,710 --> 00:35:03,200
people can take the data from the

902
00:35:07,670 --> 00:35:04,720
archive

903
00:35:09,270 --> 00:35:07,680
in early calendar 2015.

904
00:35:11,829 --> 00:35:09,280
do you want to add to that i just would

905
00:35:12,550 --> 00:35:11,839
like to add that after after this panel

906
00:35:13,829 --> 00:35:12,560
of

907
00:35:15,430 --> 00:35:13,839
folks are done

908
00:35:17,510 --> 00:35:15,440
we will have our scientists up here to

909
00:35:19,270 --> 00:35:17,520
also talk about some of the scientific

910
00:35:23,430 --> 00:35:19,280
advances that they're looking forward to

911
00:35:26,470 --> 00:35:24,870
all right

912
00:35:28,950 --> 00:35:26,480
steve cole from headquarters has been

913
00:35:30,390 --> 00:35:28,960

monitoring the twitter feed so he think

914
00:35:32,069 --> 00:35:30,400
he may have some questions right george

915
00:35:34,310 --> 00:35:32,079
we've got one question from twitter at

916
00:35:36,950 --> 00:35:34,320
this point uh how large is the carbon

917
00:35:38,550 --> 00:35:36,960
footprint for the oco-2 launch and in

918
00:35:40,630 --> 00:35:38,560
your view is the mission worth this

919
00:35:43,510 --> 00:35:40,640
additional carbon burden on the

920
00:35:48,069 --> 00:35:45,589
well it's a two-part question maybe my

921
00:35:50,470 --> 00:35:48,079
colleagues on the right can answer the

922
00:35:51,910 --> 00:35:50,480
investment because that really is

923
00:35:53,670 --> 00:35:51,920
an investment

924
00:35:55,430 --> 00:35:53,680
we need to take a look at

925
00:35:57,430 --> 00:35:55,440
anything that we do always comes with

926
00:36:00,150 --> 00:35:57,440
the price but we also need to take a

927
00:36:02,230 --> 00:36:00,160
look at the maximum benefit of that

928
00:36:04,470 --> 00:36:02,240
investment so i don't have any specific

929
00:36:08,150 --> 00:36:04,480
numbers about what it takes to get a

930
00:36:10,150 --> 00:36:08,160
satellite up into orbit so maybe vernon

931
00:36:13,030 --> 00:36:10,160
or maybe tim can ask address that

932
00:36:14,470 --> 00:36:13,040
question but from an oco-2 project

933
00:36:16,870 --> 00:36:14,480
perspective

934
00:36:19,190 --> 00:36:16,880
we feel that a price like that is a

935
00:36:21,109 --> 00:36:19,200
small one to pay

936
00:36:24,150 --> 00:36:21,119
for the wealth of information that we

937
00:36:25,910 --> 00:36:24,160
expect from this mission we hope right

938
00:36:27,030 --> 00:36:25,920

now it's a two-year mission and we hope

939
00:36:29,109 --> 00:36:27,040
we're going to be able to get an

940
00:36:30,710 --> 00:36:29,119
opportunity to fly an extended mission

941
00:36:34,069 --> 00:36:30,720
again maximize the benefit to the

942
00:36:38,230 --> 00:36:34,870
all right

943
00:36:40,950 --> 00:36:38,240
steve any other questions on twitter

944
00:36:43,030 --> 00:36:40,960
not not at the moment george all right

945
00:36:45,030 --> 00:36:43,040
well in that event that's going to wrap

946
00:36:47,109 --> 00:36:45,040
up this briefing we'll pause uh just

947
00:36:49,750 --> 00:36:47,119
long enough to change our participants

948
00:36:51,829 --> 00:36:49,760
on the dies so that we can now talk

949
00:36:54,310 --> 00:36:51,839
more directly about the science that