
GOES
NOAA – NASA
NOAA
NASA

1
00:02:20,150 --> 00:02:17,430
live from the space coast of florida

2
00:02:28,130 --> 00:02:20,160
this is nasa's launch coverage of noaa's

3
00:03:07,910 --> 00:02:37,750
[Music]

4
00:03:09,990 --> 00:03:07,920
in just about 40 minutes this united

5
00:03:13,190 --> 00:03:10,000
launch alliance atlas v rocket will

6
00:03:15,350 --> 00:03:13,200
launch goes-t into space the satellite

7
00:03:17,509 --> 00:03:15,360
will continue nearly 50 years of

8
00:03:21,270 --> 00:03:17,519
protecting people and property from

9
00:03:22,630 --> 00:03:21,280
severe and potentially deadly storms

10
00:03:24,630 --> 00:03:22,640
welcome and thank you for joining us

11
00:03:26,869 --> 00:03:24,640
here at kennedy space center in florida

12
00:03:28,949 --> 00:03:26,879
i'm nasa's megan cruz the rocket's right

13
00:03:31,350 --> 00:03:28,959

there on the pad behind me and this is

14
00:03:33,750 --> 00:03:31,360
kevin fryer he's with noah the national

15
00:03:35,430 --> 00:03:33,760
oceanic and atmospheric administration

16
00:03:36,869 --> 00:03:35,440
great to have you here kevin great to be

17
00:03:38,710 --> 00:03:36,879
here thank you for having me it's kind

18
00:03:40,630 --> 00:03:38,720
of cold though a little windy a little

19
00:03:42,070 --> 00:03:40,640
windy absolutely i think that's going to

20
00:03:44,869 --> 00:03:42,080
be the biggest concern for the launch

21
00:03:46,390 --> 00:03:44,879
today but so far we are 80 percent go so

22
00:03:48,550 --> 00:03:46,400
i hope that we can see this thing

23
00:03:50,630 --> 00:03:48,560
launched yeah that's great news kevin is

24
00:03:52,309 --> 00:03:50,640
here because ghost t is a noaa mission

25
00:03:55,110 --> 00:03:52,319
nasa and noaa have been launching goes

26
00:03:56,470 --> 00:03:55,120
satellites since 1975 right yeah it's an

27
00:03:59,270 --> 00:03:56,480
amazing relationship that we've been

28
00:04:00,949 --> 00:03:59,280
able to have with nasa um over the past

29
00:04:02,550 --> 00:04:00,959
50 years the one thing we can say is

30
00:04:04,789 --> 00:04:02,560
that we've actually saved lives as a

31
00:04:06,869 --> 00:04:04,799
result of that we've also obviously

32
00:04:08,710 --> 00:04:06,879
moved the science forward with with

33
00:04:10,070 --> 00:04:08,720
advanced satellites but for the most

34
00:04:12,630 --> 00:04:10,080
part what we'd like to hang our hat on

35
00:04:15,429 --> 00:04:12,640
is that we save lives yeah ghosty is the

36
00:04:16,789 --> 00:04:15,439
third in a series called goes-r you know

37
00:04:18,069 --> 00:04:16,799
you're the chief of staff of that

38
00:04:19,830 --> 00:04:18,079

program can you tell us a little bit

39
00:04:21,509 --> 00:04:19,840
about that series sure within the

40
00:04:22,870 --> 00:04:21,519
program we like to say that not only can

41
00:04:25,350 --> 00:04:22,880
we provide you with a big picture but we

42
00:04:27,030 --> 00:04:25,360
can also read the fine print again being

43
00:04:28,790 --> 00:04:27,040
one of the most sophisticated satellites

44
00:04:30,870 --> 00:04:28,800
in the geostationary orbit our

45
00:04:33,189 --> 00:04:30,880
capabilities are basically to provide

46
00:04:34,550 --> 00:04:33,199
you with a constant view of the earth in

47
00:04:35,670 --> 00:04:34,560
our case we're able to look at half of

48
00:04:37,670 --> 00:04:35,680
the globe

49
00:04:39,270 --> 00:04:37,680
and in doing so we're also able to

50
00:04:41,430 --> 00:04:39,280
inform you on the environmental changes

51
00:04:43,189 --> 00:04:41,440
over time so we're so ghosty is going to

52
00:04:44,790 --> 00:04:43,199
be looking at what happens here on earth

53
00:04:46,390 --> 00:04:44,800
in terms of terrestrial weather but also

54
00:04:47,830 --> 00:04:46,400
space weather right that's another

55
00:04:49,430 --> 00:04:47,840
reason why we're incredibly excited

56
00:04:51,830 --> 00:04:49,440
about this package that we'll be able to

57
00:04:53,909 --> 00:04:51,840
launch today not only are we improving

58
00:04:55,990 --> 00:04:53,919
what we can see on earth but also what

59
00:04:57,270 --> 00:04:56,000
affects us from space and space weather

60
00:04:59,270 --> 00:04:57,280
does really affect us i learned that

61
00:05:00,710 --> 00:04:59,280
while i was researching this mission so

62
00:05:02,469 --> 00:05:00,720
i'm interested to hear more about that

63
00:05:05,029 --> 00:05:02,479

and we will learn more about it later in

64
00:05:07,670 --> 00:05:05,039
this broadcast plus how you benefit from

65
00:05:09,670 --> 00:05:07,680
goes data every single day also if you

66
00:05:12,469 --> 00:05:09,680
have a flight to catch goes satellites

67
00:05:13,830 --> 00:05:12,479
play a crucial role in deciding if it's

68
00:05:15,590 --> 00:05:13,840
safe to fly

69
00:05:17,430 --> 00:05:15,600
and we also have a fun game for you to

70
00:05:20,230 --> 00:05:17,440
play while you watch the broadcast and

71
00:05:21,909 --> 00:05:20,240
the launch this here is a bingo card

72
00:05:23,909 --> 00:05:21,919
that you can print out by just scanning

73
00:05:26,150 --> 00:05:23,919
this qr code you see on the bottom right

74
00:05:27,749 --> 00:05:26,160
hand corner of your screen we also have

75
00:05:30,550 --> 00:05:27,759
the website there if that's easier

76
00:05:34,629 --> 00:05:30,560
that's cyjinx.gov

77
00:05:36,310 --> 00:05:34,639
goes hyphen t hyphen launch noaa has a

78
00:05:37,990 --> 00:05:36,320
list of words that we've incorporated

79
00:05:40,070 --> 00:05:38,000
into this show so be sure to listen for

80
00:05:41,990 --> 00:05:40,080
those words and see which family member

81
00:05:44,070 --> 00:05:42,000
or friend wins

82
00:05:45,670 --> 00:05:44,080
but first let's meet the talented team

83
00:05:47,430 --> 00:05:45,680
of people helping to cover today's

84
00:05:49,830 --> 00:05:47,440
launch we have meteorologist arlena

85
00:05:51,830 --> 00:05:49,840
moses monitoring the launch weather

86
00:05:54,070 --> 00:05:51,840
nasa's leah martin will introduce us to

87
00:05:55,670 --> 00:05:54,080
key players in the goes team mission and

88
00:05:58,150 --> 00:05:55,680

we also have our nasa launch

89
00:05:59,670 --> 00:05:58,160
commentators daryl nail and mick waltman

90
00:06:01,909 --> 00:05:59,680
inside with the launch team there you

91
00:06:03,430 --> 00:06:01,919
know mick is an engineer with nasa's

92
00:06:05,270 --> 00:06:03,440
launch services program which is

93
00:06:07,990 --> 00:06:05,280
managing today's launch so guys the

94
00:06:10,150 --> 00:06:08,000
two-hour launch window opens at 4 38 p.m

95
00:06:12,150 --> 00:06:10,160
eastern time how are we looking we're

96
00:06:14,230 --> 00:06:12,160
looking great so far megan and thank you

97
00:06:15,430 --> 00:06:14,240
uh welcome into the atlas space flight

98
00:06:17,510 --> 00:06:15,440
operations center here at the cape

99
00:06:19,670 --> 00:06:17,520
canaveral space force station mick will

100
00:06:21,909 --> 00:06:19,680
woltman as you mentioned lsp engineer

101
00:06:23,990 --> 00:06:21,919
extraordinaire and rocket guru

102
00:06:25,430 --> 00:06:24,000
appreciate that daryl so far it's good

103
00:06:27,590 --> 00:06:25,440
to have you back into the broadcast

104
00:06:29,670 --> 00:06:27,600
booth for another launch and so far so

105
00:06:31,670 --> 00:06:29,680
good so far so good we just entered the

106
00:06:33,670 --> 00:06:31,680
t minus four and holding this is a 30

107
00:06:35,189 --> 00:06:33,680
minute built-in hold where the team is

108
00:06:37,350 --> 00:06:35,199
going to you know look at the vehicle

109
00:06:39,510 --> 00:06:37,360
and finalize last-minute preparations as

110
00:06:41,110 --> 00:06:39,520
we head down to t-zero this morning so

111
00:06:43,590 --> 00:06:41,120
the team's done a great job been on

112
00:06:45,029 --> 00:06:43,600
console for several hours and uh has

113
00:06:46,550 --> 00:06:45,039

gotten this rocket ready to go so

114
00:06:47,749 --> 00:06:46,560
looking forward to this that shot from

115
00:06:49,830 --> 00:06:47,759
the ground there looking up at the

116
00:06:51,670 --> 00:06:49,840
rocket you can see the skies are blue

117
00:06:53,830 --> 00:06:51,680
we've got some clearing throughout the

118
00:06:55,909 --> 00:06:53,840
day started off windy and a little

119
00:06:58,870 --> 00:06:55,919
overcast but there you see the the

120
00:07:00,950 --> 00:06:58,880
clouds moving across the pad very light

121
00:07:03,029 --> 00:07:00,960
very scattered now we want to tell you

122
00:07:04,629 --> 00:07:03,039
where we are we are in the nerve center

123
00:07:06,550 --> 00:07:04,639
of where launch is happening we're going

124
00:07:08,870 --> 00:07:06,560
to turn around in our seats and wave at

125
00:07:11,909 --> 00:07:08,880
the camera we're up here on this second

126
00:07:13,990 --> 00:07:11,919
level but down below on the first level

127
00:07:16,550 --> 00:07:14,000
is the launch team and you can see the

128
00:07:18,469 --> 00:07:16,560
three levels there the three rows this

129
00:07:19,990 --> 00:07:18,479
is where all the action is happening

130
00:07:21,670 --> 00:07:20,000
yeah this is the united launch alliance

131
00:07:23,350 --> 00:07:21,680
team this is their launch control center

132
00:07:25,430 --> 00:07:23,360
and daryl as you said this back row

133
00:07:27,830 --> 00:07:25,440
that's closest to us this is where the

134
00:07:30,390 --> 00:07:27,840
launch conductor dylan rice is sitting

135
00:07:33,270 --> 00:07:30,400
along with his uh assistant launch

136
00:07:35,270 --> 00:07:33,280
manager the anomaly chief dave mcfarlane

137
00:07:36,710 --> 00:07:35,280
and our red line monitors who are

138
00:07:38,150 --> 00:07:36,720

monitoring all the telemetry and

139
00:07:40,469 --> 00:07:38,160
everything on the vehicle and on the

140
00:07:42,469 --> 00:07:40,479
ground in the middle row you have the

141
00:07:45,670 --> 00:07:42,479
team that is working both the first

142
00:07:47,909 --> 00:07:45,680
stage booster and the second stage

143
00:07:49,270 --> 00:07:47,919
centaur propulsion teams there and in

144
00:07:50,869 --> 00:07:49,280
the front row you have flight control

145
00:07:52,869 --> 00:07:50,879
and electrical systems that are

146
00:07:54,710 --> 00:07:52,879
monitoring the guidance nav avionics and

147
00:07:56,790 --> 00:07:54,720
all the electrical systems on the rocket

148
00:07:58,390 --> 00:07:56,800
so as you can see a lot of team members

149
00:07:59,990 --> 00:07:58,400
from united launch alliance to to work

150
00:08:02,070 --> 00:08:00,000
this atlas 5. and they've been quite

151
00:08:03,830 --> 00:08:02,080
busy for the past few hours making sure

152
00:08:05,029 --> 00:08:03,840
that the fueling operation has gone

153
00:08:07,430 --> 00:08:05,039
smoothly

154
00:08:09,430 --> 00:08:07,440
and they were also on console yesterday

155
00:08:11,909 --> 00:08:09,440
mick when we rolled this rocket from the

156
00:08:13,510 --> 00:08:11,919
vertical integration facility to the pad

157
00:08:14,309 --> 00:08:13,520
we got a little video there and you can

158
00:08:16,390 --> 00:08:14,319
see

159
00:08:17,510 --> 00:08:16,400
there it is the atlas 5 coming out all

160
00:08:19,270 --> 00:08:17,520
200

161
00:08:21,029 --> 00:08:19,280
feet tall rocket

162
00:08:23,350 --> 00:08:21,039
coming out of the vertical integration

163
00:08:25,830 --> 00:08:23,360

facility and rolling about a third of a

164
00:08:27,990 --> 00:08:25,840
mile out to the launch pad nick you were

165
00:08:29,830 --> 00:08:28,000
out there pretty smooth operation yeah

166
00:08:31,990 --> 00:08:29,840
it was team did a great job traveling

167
00:08:34,149 --> 00:08:32,000
that making that uh trip about 1800 feet

168
00:08:35,990 --> 00:08:34,159
to the pad traveled about a half mile an

169
00:08:38,949 --> 00:08:36,000
hour with on the mobile launch platform

170
00:08:41,190 --> 00:08:38,959
and everything there and team did great

171
00:08:43,350 --> 00:08:41,200
getting that out there and ready for rp1

172
00:08:44,870 --> 00:08:43,360
tanking and then launched today you look

173
00:08:47,750 --> 00:08:44,880
at the rocket there and it carries a

174
00:08:51,110 --> 00:08:47,760
special dedication today

175
00:08:53,670 --> 00:08:51,120
mick it holds the name of a former ula

176
00:08:55,670 --> 00:08:53,680
employee by the name of mark tim

177
00:08:58,790 --> 00:08:55,680
mark started his long aerospace career

178
00:09:00,790 --> 00:08:58,800
with the boeing team in 1987 but after a

179
00:09:03,509 --> 00:09:00,800
decade in denver colorado he transferred

180
00:09:05,590 --> 00:09:03,519
to ula's facility in decatur alabama

181
00:09:07,750 --> 00:09:05,600
that's where mark timm supported the

182
00:09:10,870 --> 00:09:07,760
ula's fleet of rockets including the

183
00:09:12,070 --> 00:09:10,880
delta ii delta iv atlas v and vulcan

184
00:09:14,870 --> 00:09:12,080
there you see him in the middle

185
00:09:16,870 --> 00:09:14,880
surrounded by nasa astronauts mark 10

186
00:09:18,230 --> 00:09:16,880
passed away in 2020 and he is missed by

187
00:09:19,670 --> 00:09:18,240
all those who had the pleasure of

188
00:09:21,750 --> 00:09:19,680

working with him during his 30-year

189
00:09:23,269 --> 00:09:21,760
career in aerospace and mick you knew

190
00:09:24,870 --> 00:09:23,279
him yeah i got to know mark when he was

191
00:09:27,110 --> 00:09:24,880
in the decatur facility and i'll tell

192
00:09:29,110 --> 00:09:27,120
you he was an extraordinary person the

193
00:09:30,870 --> 00:09:29,120
team will miss him and our heart goes

194
00:09:32,790 --> 00:09:30,880
out to the family and everyone that

195
00:09:35,509 --> 00:09:32,800
worked with mark he was a great guy

196
00:09:38,470 --> 00:09:35,519
and just wrapping up we are on time and

197
00:09:40,550 --> 00:09:38,480
on schedule for a 4 38 p.m eastern time

198
00:09:42,949 --> 00:09:40,560
launch of this atlas v rocket a

199
00:09:45,110 --> 00:09:42,959
beautiful shot from a drone there

200
00:09:47,829 --> 00:09:45,120
we are ready to roll we'll have uh the

201
00:09:49,590 --> 00:09:47,839
lsp nasa launch manager poll here in

202
00:09:51,910 --> 00:09:49,600
just a few minutes but for now back to

203
00:09:53,430 --> 00:09:51,920
megan

204
00:09:55,350 --> 00:09:53,440
thank you both and now for a check on

205
00:09:57,350 --> 00:09:55,360
the weather here's lunch weather officer

206
00:09:59,829 --> 00:09:57,360
arlena moses from cape canaveral space

207
00:10:01,670 --> 00:09:59,839
for station's 45th weather squadron

208
00:10:04,310 --> 00:10:01,680
arlena this launch weather you're about

209
00:10:06,230 --> 00:10:04,320
to report out forecasted with data from

210
00:10:08,150 --> 00:10:06,240
satellites right yes that's correct

211
00:10:10,310 --> 00:10:08,160
megan in fact right behind me is a great

212
00:10:12,069 --> 00:10:10,320
example of the type of imagery that we

213
00:10:14,069 --> 00:10:12,079

get from the ghost satellites in this

214
00:10:16,150 --> 00:10:14,079
case because we're here in florida this

215
00:10:18,389 --> 00:10:16,160
is from the goes east satellite giving

216
00:10:20,550 --> 00:10:18,399
us a great view of what's going on

217
00:10:22,630 --> 00:10:20,560
across the cape and east east central

218
00:10:24,389 --> 00:10:22,640
florida this afternoon now as mentioned

219
00:10:26,069 --> 00:10:24,399
earlier we did have quite a bit of

220
00:10:27,110 --> 00:10:26,079
overcast clouds

221
00:10:29,590 --> 00:10:27,120
and some

222
00:10:31,350 --> 00:10:29,600
low clouds out there earlier today but

223
00:10:33,190 --> 00:10:31,360
as our satellite imagery is showing

224
00:10:35,829 --> 00:10:33,200
we've scattered out pretty nicely with

225
00:10:37,190 --> 00:10:35,839
only a few clouds as a concern as we go

226
00:10:39,590 --> 00:10:37,200
through the remainder of the launch

227
00:10:42,150 --> 00:10:39,600
countdown the trade-off however for

228
00:10:44,389 --> 00:10:42,160
those clearer skies and some in partly

229
00:10:46,870 --> 00:10:44,399
sunny conditions is that we do have

230
00:10:49,670 --> 00:10:46,880
pretty breezy conditions out there sure

231
00:10:52,150 --> 00:10:49,680
anybody who's outside across the cape

232
00:10:54,710 --> 00:10:52,160
this afternoon is experiencing and those

233
00:10:56,230 --> 00:10:54,720
are going to be our primary concerns as

234
00:10:58,710 --> 00:10:56,240
we go forth into the count for the

235
00:11:00,630 --> 00:10:58,720
remainder into the launch now if we take

236
00:11:02,550 --> 00:11:00,640
a look at the forecast here we're going

237
00:11:05,829 --> 00:11:02,560
to be looking at those pretty gusty

238
00:11:08,470 --> 00:11:05,839

northerly winds from about 26 to in a 26

239
00:11:10,870 --> 00:11:08,480
to 32 mile per hour range temperatures

240
00:11:14,069 --> 00:11:10,880
about on point for this time of year

241
00:11:14,949 --> 00:11:14,079
here in central florida where highs are

242
00:11:17,509 --> 00:11:14,959
temperatures are going to be in the

243
00:11:18,710 --> 00:11:17,519
upper 60s to around 70 which will feel a

244
00:11:21,030 --> 00:11:18,720
little bit cool if you're outside with

245
00:11:23,269 --> 00:11:21,040
that but for launch concerns not a big

246
00:11:24,630 --> 00:11:23,279
deal as i mentioned earlier liftoff

247
00:11:27,110 --> 00:11:24,640
winds are going to be our primary

248
00:11:29,190 --> 00:11:27,120
concern with a smaller concern for some

249
00:11:32,150 --> 00:11:29,200
of those passing cumulus clouds but

250
00:11:33,990 --> 00:11:32,160
overall we have an 80 go for weather and

251
00:11:35,590 --> 00:11:34,000
things are looking good and so

252
00:11:37,350 --> 00:11:35,600
hopefully good luck to keep our fingers

253
00:11:38,630 --> 00:11:37,360
closed back to you guys megan and kevin

254
00:11:40,949 --> 00:11:38,640
all right you said fingers crossed we're

255
00:11:42,470 --> 00:11:40,959
doing it hey where are your fingers okay

256
00:11:44,710 --> 00:11:42,480
arlena thank you again quick check of

257
00:11:47,430 --> 00:11:44,720
the clock we are now at l minus about 28

258
00:11:49,670 --> 00:11:47,440
minutes to go before we launch goes t

259
00:11:52,069 --> 00:11:49,680
now goes stands for geostationary

260
00:11:54,629 --> 00:11:52,079
operational environmental satellites

261
00:11:56,629 --> 00:11:54,639
geostationary refers to where and how

262
00:11:57,829 --> 00:11:56,639
the satellite will orbit the earth so

263
00:11:59,829 --> 00:11:57,839

this might be a little difficult to

264
00:12:01,190 --> 00:11:59,839
understand unless you see it right so

265
00:12:02,949 --> 00:12:01,200
this is why we brought some props here

266
00:12:04,870 --> 00:12:02,959
today kevin let's start off by just

267
00:12:06,710 --> 00:12:04,880
talking about how you determine a

268
00:12:08,550 --> 00:12:06,720
satellite orbit so it's really

269
00:12:10,069 --> 00:12:08,560
determined by its overall role right

270
00:12:11,910 --> 00:12:10,079
what is the job of that particular

271
00:12:15,030 --> 00:12:11,920
satellite so in the case of polar

272
00:12:17,269 --> 00:12:15,040
orbiters they typically will rotate

273
00:12:19,829 --> 00:12:17,279
along the poles and their job is

274
00:12:21,509 --> 00:12:19,839
basically to image the entire planet as

275
00:12:23,430 --> 00:12:21,519
it planet rotates underneath it so there

276
00:12:25,350 --> 00:12:23,440
is a there is a time frame for which

277
00:12:27,590 --> 00:12:25,360
they can provide you a global image and

278
00:12:29,269 --> 00:12:27,600
so again in a low earth orbit that is

279
00:12:31,509 --> 00:12:29,279
why you'll see those particular

280
00:12:34,629 --> 00:12:31,519
satellites used but the geostationary

281
00:12:37,269 --> 00:12:34,639
orbit it has to be in a fixed place

282
00:12:38,949 --> 00:12:37,279
so in the sky at all times right correct

283
00:12:40,790 --> 00:12:38,959
and actually to achieve that you have to

284
00:12:43,030 --> 00:12:40,800
be 22 000

285
00:12:45,750 --> 00:12:43,040
miles above the planet and as a result

286
00:12:48,150 --> 00:12:45,760
so it can actually spin with the earth

287
00:12:50,230 --> 00:12:48,160
as it continues to rotate so relative to

288
00:12:52,069 --> 00:12:50,240

your position on earth you will always

289
00:12:53,910 --> 00:12:52,079
see this particular satellite in its

290
00:12:55,990 --> 00:12:53,920
place so that's why we say it will keep

291
00:12:57,829 --> 00:12:56,000
continuous watch over the western

292
00:12:59,430 --> 00:12:57,839
hemisphere with a second go satellite

293
00:13:00,870 --> 00:12:59,440
right absolutely so between the two of

294
00:13:02,710 --> 00:13:00,880
them they'll be able to cover this

295
00:13:03,829 --> 00:13:02,720
portion of the hemisphere we're talking

296
00:13:05,269 --> 00:13:03,839
about from

297
00:13:06,710 --> 00:13:05,279
western africa all the way to new

298
00:13:09,590 --> 00:13:06,720
zealand all right and ghost tea will

299
00:13:11,670 --> 00:13:09,600
reach that geostationary orbit on march

300
00:13:13,990 --> 00:13:11,680
12th and now let's take a closer look at

301
00:13:17,829 --> 00:13:14,000
the satellite goes tea is the size of a

302
00:13:20,710 --> 00:13:17,839
small school bus and weighs over 6 000

303
00:13:21,990 --> 00:13:20,720
pounds it has a five panel solar array

304
00:13:24,230 --> 00:13:22,000
which you see there it's the one that's

305
00:13:26,870 --> 00:13:24,240
kind of swinging out they'll produce

306
00:13:29,269 --> 00:13:26,880
more than 5 000 watts of energy which is

307
00:13:31,829 --> 00:13:29,279
the same amount needed to power your

308
00:13:34,550 --> 00:13:31,839
home's central ac system

309
00:13:36,470 --> 00:13:34,560
goes t has six advanced instruments that

310
00:13:39,189 --> 00:13:36,480
can analyze weather hazards and

311
00:13:41,350 --> 00:13:39,199
environmental conditions

312
00:13:43,430 --> 00:13:41,360
the plan is for goes-t to replace one of

313
00:13:46,069 --> 00:13:43,440

two goes satellites already in orbit

314
00:13:49,189 --> 00:13:46,079
that together protect more than one

315
00:13:50,310 --> 00:13:49,199
billion people in the western hemisphere

316
00:13:51,350 --> 00:13:50,320
three

317
00:13:52,150 --> 00:13:51,360
two

318
00:13:54,790 --> 00:13:52,160
one

319
00:13:56,790 --> 00:13:54,800
noah is about to launch a new satellite

320
00:13:58,870 --> 00:13:56,800
into orbit above the earth this

321
00:14:00,870 --> 00:13:58,880
satellite will be the third in a fleet

322
00:14:03,670 --> 00:14:00,880
of noaa's latest generation of

323
00:14:06,470 --> 00:14:03,680
geostationary operational environmental

324
00:14:08,150 --> 00:14:06,480
satellites called goes the most advanced

325
00:14:09,990 --> 00:14:08,160
weather observing and environmental

326
00:14:11,509 --> 00:14:10,000
monitoring system in the western

327
00:14:14,269 --> 00:14:11,519
hemisphere

328
00:14:17,350 --> 00:14:14,279
goes satellites orbit 22

329
00:14:20,150 --> 00:14:17,360
236 miles above the earth's equator at

330
00:14:22,470 --> 00:14:20,160
speeds equal to earth's rotation

331
00:14:24,230 --> 00:14:22,480
this allows for continuous coverage of

332
00:14:26,389 --> 00:14:24,240
weather systems as they move throughout

333
00:14:28,470 --> 00:14:26,399
the atmosphere the ghost satellite

334
00:14:29,590 --> 00:14:28,480
system keeps watch over more than half

335
00:14:31,590 --> 00:14:29,600
the globe

336
00:14:34,230 --> 00:14:31,600
from the west coast of africa to new

337
00:14:36,230 --> 00:14:34,240
zealand and from the arctic circle to

338
00:14:38,230 --> 00:14:36,240

the antarctic circle

339
00:14:40,470 --> 00:14:38,240
each satellite in the series provides

340
00:14:42,949 --> 00:14:40,480
high resolution imagery and near real

341
00:14:44,870 --> 00:14:42,959
time to provide critical information for

342
00:14:47,990 --> 00:14:44,880
weather forecasts severe weather

343
00:14:49,509 --> 00:14:48,000
prediction lightning detection and solar

344
00:14:52,150 --> 00:14:49,519
activity

345
00:14:54,310 --> 00:14:52,160
the latest satellite is goes-t which

346
00:14:55,750 --> 00:14:54,320
will be renamed to goes-18 when it

347
00:14:57,910 --> 00:14:55,760
reaches orbit

348
00:15:00,069 --> 00:14:57,920
ghost t will be the third satellite in

349
00:15:02,949 --> 00:15:00,079
the series and is expected to replace

350
00:15:05,350 --> 00:15:02,959
the current go 17 satellite in the goes

351
00:15:07,269 --> 00:15:05,360
west orbit in this position the

352
00:15:09,590 --> 00:15:07,279
satellite will continue goes west's

353
00:15:12,389 --> 00:15:09,600
legacy of keeping watch over the pacific

354
00:15:14,230 --> 00:15:12,399
ocean the western u.s and the u.s

355
00:15:16,069 --> 00:15:14,240
territories

356
00:15:17,750 --> 00:15:16,079
it will provide complete satellite

357
00:15:20,710 --> 00:15:17,760
coverage for the weather systems that

358
00:15:22,870 --> 00:15:20,720
impact hawaii and alaska

359
00:15:25,030 --> 00:15:22,880
it will provide critical data over the

360
00:15:26,389 --> 00:15:25,040
northeastern pacific where many of the

361
00:15:28,949 --> 00:15:26,399
weather systems affecting the

362
00:15:30,949 --> 00:15:28,959
continental us originate

363
00:15:33,110 --> 00:15:30,959

it will monitor and track tropical

364
00:15:34,550 --> 00:15:33,120
storms and hurricanes in the pacific

365
00:15:36,629 --> 00:15:34,560
ocean

366
00:15:40,310 --> 00:15:36,639
it will help identify and track

367
00:15:42,470 --> 00:15:40,320
wildfires across the western u.s it will

368
00:15:44,949 --> 00:15:42,480
assist in search and rescue efforts

369
00:15:48,629 --> 00:15:44,959
around the us and its surrounding waters

370
00:15:50,389 --> 00:15:48,639
as part of noaa's sarsat system

371
00:15:52,150 --> 00:15:50,399
and it will help monitor and track

372
00:15:54,790 --> 00:15:52,160
weather phenomena that impact the

373
00:15:56,069 --> 00:15:54,800
western u.s like dust storms

374
00:15:57,829 --> 00:15:56,079
monsoons

375
00:16:01,030 --> 00:15:57,839
marine fog

376
00:16:03,350 --> 00:16:01,040
atmospheric rivers and more

377
00:16:05,749 --> 00:16:03,360
the go series of satellites supports

378
00:16:08,470 --> 00:16:05,759
noaa's mission to provide secure and

379
00:16:10,790 --> 00:16:08,480
timely access to global environmental

380
00:16:13,269 --> 00:16:10,800
data and information from satellites and

381
00:16:16,150 --> 00:16:13,279
other sources to promote and protect the

382
00:16:17,430 --> 00:16:16,160
nation's security environment

383
00:16:24,290 --> 00:16:17,440
economy

384
00:16:28,389 --> 00:16:26,389
[Music]

385
00:16:30,230 --> 00:16:28,399
goes tease instruments will gather data

386
00:16:32,389 --> 00:16:30,240
that can help in so many different ways

387
00:16:35,269 --> 00:16:32,399
as you just saw for more on that let's

388
00:16:37,910 --> 00:16:35,279

hear from nasa's leo martin

389
00:16:40,870 --> 00:16:37,920
thanks megan i'm here with pam sullivan

390
00:16:42,230 --> 00:16:40,880
noah goes our program manager pam thanks

391
00:16:44,470 --> 00:16:42,240
for joining us today to give some

392
00:16:46,150 --> 00:16:44,480
insight onto this mission oh it's great

393
00:16:48,150 --> 00:16:46,160
to be here thanks for having me

394
00:16:50,310 --> 00:16:48,160
so we've heard that there are six

395
00:16:52,230 --> 00:16:50,320
advanced instruments on board goes t can

396
00:16:53,430 --> 00:16:52,240
you tell us a little bit about them sure

397
00:16:54,790 --> 00:16:53,440
let me tell you about our most

398
00:16:56,710 --> 00:16:54,800
revolutionary instrument the

399
00:16:58,069 --> 00:16:56,720
geostationary lightning mapper is

400
00:17:00,150 --> 00:16:58,079
actually the first time we've had this

401
00:17:02,069 --> 00:17:00,160
capability on orbit and this instrument

402
00:17:04,789 --> 00:17:02,079
is watching the earth taking pictures

403
00:17:06,630 --> 00:17:04,799
500 times a second to look at lightning

404
00:17:08,470 --> 00:17:06,640
and because it is a new instrument we're

405
00:17:10,470 --> 00:17:08,480
actually learning new and interesting

406
00:17:12,549 --> 00:17:10,480
things about lightning as a phenomena

407
00:17:14,309 --> 00:17:12,559
for instance we've seen that large

408
00:17:15,350 --> 00:17:14,319
wildfires can generate their own

409
00:17:17,669 --> 00:17:15,360
lightning

410
00:17:19,270 --> 00:17:17,679
and the glm has also shown us that

411
00:17:21,909 --> 00:17:19,280
lightning strikes can be really really

412
00:17:23,230 --> 00:17:21,919
long for instance glm recently measured

413
00:17:26,470 --> 00:17:23,240

a lightning strike that was more than

414
00:17:27,829 --> 00:17:26,480
470 miles long stretched from texas over

415
00:17:28,950 --> 00:17:27,839
to mississippi

416
00:17:30,549 --> 00:17:28,960
wow and so

417
00:17:32,630 --> 00:17:30,559
having that type of information you know

418
00:17:34,950 --> 00:17:32,640
500 images per second that's almost like

419
00:17:36,630 --> 00:17:34,960
having maybe like a stop-motion film

420
00:17:38,549 --> 00:17:36,640
what can we do with that information

421
00:17:39,909 --> 00:17:38,559
once we have it yeah well the important

422
00:17:42,470 --> 00:17:39,919
thing of course is what the forecasters

423
00:17:43,990 --> 00:17:42,480
can do with it and they use the glm data

424
00:17:46,390 --> 00:17:44,000
in conjunction with our advanced

425
00:17:48,789 --> 00:17:46,400
baseline imager data and some other data

426
00:17:50,950 --> 00:17:48,799
but they look um when they're wanting to

427
00:17:52,549 --> 00:17:50,960
see if a storm is intensifying they're

428
00:17:53,750 --> 00:17:52,559
looking at that lightning signature and

429
00:17:55,669 --> 00:17:53,760
they're looking for what they call a

430
00:17:57,669 --> 00:17:55,679
lightning jump when the amount of

431
00:17:59,590 --> 00:17:57,679
lightning strikes increased or mass

432
00:18:02,230 --> 00:17:59,600
dramatically because that indicates that

433
00:18:04,549 --> 00:18:02,240
the storm is likely to be becoming more

434
00:18:06,230 --> 00:18:04,559
severe and may spawn dangerous tornadoes

435
00:18:07,430 --> 00:18:06,240
oh wow so

436
00:18:09,909 --> 00:18:07,440
we talked a little bit about the

437
00:18:11,590 --> 00:18:09,919
location that this will become a

438
00:18:13,830 --> 00:18:11,600

satellite that observes the western

439
00:18:16,390 --> 00:18:13,840
hemisphere what part why is that

440
00:18:18,390 --> 00:18:16,400
location significant well specifically

441
00:18:20,150 --> 00:18:18,400
ghost t is going to go into service as

442
00:18:22,070 --> 00:18:20,160
our goes west spacecraft so it'll be

443
00:18:24,310 --> 00:18:22,080
stationed over the equator a little bit

444
00:18:25,830 --> 00:18:24,320
off of the west coast of the u.s

445
00:18:27,830 --> 00:18:25,840
and as you know most of the weather in

446
00:18:29,990 --> 00:18:27,840
the u.s moves from west to east so that

447
00:18:31,830 --> 00:18:30,000
western satellite is really important as

448
00:18:33,029 --> 00:18:31,840
giving us an upstream view of what's

449
00:18:35,270 --> 00:18:33,039
coming

450
00:18:37,510 --> 00:18:35,280
so that's a big part of it but the other

451
00:18:39,270 --> 00:18:37,520
thing those two will also see dangerous

452
00:18:41,669 --> 00:18:39,280
conditions uh they're particularly in

453
00:18:44,150 --> 00:18:41,679
the west like wildfires and smoke

454
00:18:46,789 --> 00:18:44,160
dangerous dust storms and also that the

455
00:18:48,950 --> 00:18:46,799
phenomena of atmospheric rivers

456
00:18:50,630 --> 00:18:48,960
that's incredible and so

457
00:18:53,350 --> 00:18:50,640
some of these instruments that are on

458
00:18:55,110 --> 00:18:53,360
board that are advanced they're actually

459
00:18:57,190 --> 00:18:55,120
an advancement from current satellites

460
00:18:59,110 --> 00:18:57,200
that are in orbit now is that correct

461
00:19:00,870 --> 00:18:59,120
so um the goes-r series compared to the

462
00:19:03,110 --> 00:19:00,880
previous generation yeah is much more

463
00:19:05,909 --> 00:19:03,120

advanced the advanced baseline imager

464
00:19:07,110 --> 00:19:05,919
generates 60 times more imagery and then

465
00:19:09,190 --> 00:19:07,120
the lightning mapper as i said is a

466
00:19:11,029 --> 00:19:09,200
brand new capability thank you so much

467
00:19:12,549 --> 00:19:11,039
man for giving us some insight into this

468
00:19:15,110 --> 00:19:12,559
mission we're excited to see the launch

469
00:19:16,710 --> 00:19:15,120
and megan we're going to go back to you

470
00:19:19,190 --> 00:19:16,720
perfect thank you so much guys you know

471
00:19:20,950 --> 00:19:19,200
one agency actually uses goes satellite

472
00:19:22,789 --> 00:19:20,960
data more than anyone else and that's

473
00:19:24,070 --> 00:19:22,799
the national weather service so joining

474
00:19:25,669 --> 00:19:24,080
us now is chrissy hurley who's a

475
00:19:27,909 --> 00:19:25,679
meteorologist there for the nashville

476
00:19:30,230 --> 00:19:27,919
area hey hello good to have you thank

477
00:19:31,510 --> 00:19:30,240
you for having me so excited yeah and i

478
00:19:33,270 --> 00:19:31,520
know that your job is a warning

479
00:19:35,430 --> 00:19:33,280
coordination meteorologist that means

480
00:19:36,870 --> 00:19:35,440
that you need to coordinate with people

481
00:19:39,110 --> 00:19:36,880
public safety officials if there's

482
00:19:41,430 --> 00:19:39,120
severe uh weather headed that way right

483
00:19:43,750 --> 00:19:41,440
yes that's my main job is outreach with

484
00:19:46,070 --> 00:19:43,760
the public tv meteorologists and

485
00:19:47,990 --> 00:19:46,080
emergency managers and safety personnel

486
00:19:50,070 --> 00:19:48,000
we just heard pam say that go satellite

487
00:19:51,830 --> 00:19:50,080
data you know or go satellites look for

488
00:19:53,190 --> 00:19:51,840

things like atmospheric rivers can you

489
00:19:55,190 --> 00:19:53,200
talk to me about what that is yeah

490
00:19:58,230 --> 00:19:55,200
atmospheric river is very similar to a

491
00:20:00,549 --> 00:19:58,240
river on land it's taking moisture from

492
00:20:03,590 --> 00:20:00,559
a tropical region and transporting it in

493
00:20:06,310 --> 00:20:03,600
the sky to cooler drier regions over

494
00:20:08,870 --> 00:20:06,320
land and so this can be a sign for

495
00:20:11,190 --> 00:20:08,880
heavier precipitation or snowfall or

496
00:20:12,870 --> 00:20:11,200
rain which could lead to flash flooding

497
00:20:14,390 --> 00:20:12,880
so it's a it's a flooding event there

498
00:20:17,590 --> 00:20:14,400
are many different kinds of flooding

499
00:20:18,870 --> 00:20:17,600
event right right yes and so last year i

500
00:20:20,630 --> 00:20:18,880
remember you and i were talking there

501
00:20:22,149 --> 00:20:20,640
was a major flooding event it was

502
00:20:23,909 --> 00:20:22,159
actually a deadly flooding event in

503
00:20:26,070 --> 00:20:23,919
august in that middle tennessee area

504
00:20:28,950 --> 00:20:26,080
right waverly tennessee experienced a

505
00:20:31,110 --> 00:20:28,960
catastrophic flooding where we had over

506
00:20:33,830 --> 00:20:31,120
20 inches of rain that occurred in

507
00:20:36,710 --> 00:20:33,840
mcewen tennessee that

508
00:20:39,190 --> 00:20:36,720
less than 12 hours and so we were able

509
00:20:42,230 --> 00:20:39,200
to use go satellite imagery to monitor

510
00:20:43,990 --> 00:20:42,240
the intensity of these storms and watch

511
00:20:46,390 --> 00:20:44,000
how they just trained over the same

512
00:20:48,390 --> 00:20:46,400
locations over and over and over and

513
00:20:50,310 --> 00:20:48,400

able to you know alert emergency

514
00:20:51,350 --> 00:20:50,320
officials that that rain wasn't going

515
00:20:53,110 --> 00:20:51,360
anywhere

516
00:20:54,549 --> 00:20:53,120
wow and the last time that tennessee had

517
00:20:57,350 --> 00:20:54,559
an extreme flooding event like that was

518
00:20:59,029 --> 00:20:57,360
2010 so that was a whole series ago yes

519
00:21:02,070 --> 00:20:59,039
you know big differences would go

520
00:21:03,990 --> 00:21:02,080
satellite imagery between 2010 and 2021

521
00:21:06,310 --> 00:21:04,000
is a meteorologist forecaster in

522
00:21:08,870 --> 00:21:06,320
national weather service office you know

523
00:21:11,110 --> 00:21:08,880
data coming in much quicker better

524
00:21:12,710 --> 00:21:11,120
resolution and this is really going to

525
00:21:15,830 --> 00:21:12,720
help us you know

526
00:21:17,590 --> 00:21:15,840
predict forecasts better and save lives

527
00:21:19,590 --> 00:21:17,600
when we say much quicker what does it

528
00:21:21,750 --> 00:21:19,600
mean you know how often were we getting

529
00:21:24,789 --> 00:21:21,760
images in 2010 versus now you know in

530
00:21:26,310 --> 00:21:24,799
2010 we were getting images every 15 30

531
00:21:27,909 --> 00:21:26,320
minutes if you think your internet's

532
00:21:29,110 --> 00:21:27,919
slow now it's like hitting the refresh

533
00:21:31,510 --> 00:21:29,120
button right

534
00:21:34,149 --> 00:21:31,520
now we're getting them as quick as 30 to

535
00:21:36,470 --> 00:21:34,159
60 seconds wow and so that is really

536
00:21:38,310 --> 00:21:36,480
making a huge difference for any

537
00:21:39,590 --> 00:21:38,320
operational forecaster chrissy thank you

538
00:21:41,270 --> 00:21:39,600

so much for joining us and giving us

539
00:21:43,669 --> 00:21:41,280
that insight because that is really

540
00:21:45,029 --> 00:21:43,679
something to think about minutes versus

541
00:21:46,630 --> 00:21:45,039
seconds and seconds really matter in

542
00:21:47,750 --> 00:21:46,640
severe weather absolutely thank you

543
00:21:49,190 --> 00:21:47,760
chrissy

544
00:21:51,190 --> 00:21:49,200
now goes he also has the latest

545
00:21:53,990 --> 00:21:51,200
technology in detecting and tracking

546
00:21:56,390 --> 00:21:54,000
wildfires a few years ago one wildfire

547
00:22:01,029 --> 00:21:56,400
tore through california at an estimated

548
00:22:04,310 --> 00:22:01,039
rate of 100 football fields a minute

549
00:22:07,350 --> 00:22:04,320
the 2020 western u.s wildfire season was

550
00:22:10,230 --> 00:22:07,360
historic both for the record 59 000

551
00:22:12,789 --> 00:22:10,240
wildfires that formed and the 10.1

552
00:22:16,630 --> 00:22:12,799
million acres they scorched but right on

553
00:22:19,110 --> 00:22:16,640
its heels was 2021 in which nearly 52

554
00:22:21,750 --> 00:22:19,120
300 fires were recorded with more than

555
00:22:24,230 --> 00:22:21,760
7.8 million acres burned through

556
00:22:26,549 --> 00:22:24,240
december 24th of that year

557
00:22:28,950 --> 00:22:26,559
since launching in 2016

558
00:22:31,110 --> 00:22:28,960
noaa's most advanced geostationary

559
00:22:33,830 --> 00:22:31,120
satellites are improving fire weather

560
00:22:36,470 --> 00:22:33,840
forecasts wildfire detection and fire

561
00:22:39,590 --> 00:22:36,480
hazard tracking in near real time

562
00:22:42,230 --> 00:22:39,600
with lives and property at stake timely

563
00:22:45,110 --> 00:22:42,240

high quality data is critical for

564
00:22:48,390 --> 00:22:45,120
firefighting efforts on the ground

565
00:22:50,710 --> 00:22:48,400
noaa's go 17 operating in the goes-west

566
00:22:53,029 --> 00:22:50,720
orbit has shown its metal detecting and

567
00:22:55,029 --> 00:22:53,039
monitoring wildfires and the hazardous

568
00:22:56,870 --> 00:22:55,039
smoke they emit there's two instruments

569
00:22:58,789 --> 00:22:56,880
on the go series of satellites which are

570
00:23:00,789 --> 00:22:58,799
helpful for wildfire detection and

571
00:23:03,350 --> 00:23:00,799
monitoring the first is the advanced

572
00:23:05,350 --> 00:23:03,360
baseline imager or the avi we're able to

573
00:23:07,110 --> 00:23:05,360
detect hot spots from the thermal

574
00:23:09,110 --> 00:23:07,120
signatures from the fires and we're also

575
00:23:11,350 --> 00:23:09,120
able to detect the smoke and track the

576
00:23:13,190 --> 00:23:11,360
smoke with time in order to issue

577
00:23:14,630 --> 00:23:13,200
notifications and warnings to the public

578
00:23:16,549 --> 00:23:14,640
the second instrument is called the

579
00:23:19,590 --> 00:23:16,559
geostationary lightning mapper or the

580
00:23:21,909 --> 00:23:19,600
glm glm is important because oftentimes

581
00:23:24,549 --> 00:23:21,919
lightning is the cause of the start of

582
00:23:26,230 --> 00:23:24,559
wildfires and so forecasters can monitor

583
00:23:27,990 --> 00:23:26,240
the glm to see where lightning has

584
00:23:29,590 --> 00:23:28,000
occurred to decide whether or not they

585
00:23:30,549 --> 00:23:29,600
think some lightning may have started a

586
00:23:32,950 --> 00:23:30,559
fire

587
00:23:35,669 --> 00:23:32,960
but a new satellite called goes-t is

588
00:23:38,230 --> 00:23:35,679

poised to replace goes-17 in the goes

589
00:23:41,110 --> 00:23:38,240
west position once it reaches orbit

590
00:23:43,350 --> 00:23:41,120
ghosty will be renamed goes 18 and it

591
00:23:45,590 --> 00:23:43,360
will provide the same sophisticated

592
00:23:47,990 --> 00:23:45,600
technology to track wildfires in the

593
00:23:50,070 --> 00:23:48,000
western us as well as detect lightning

594
00:23:51,510 --> 00:23:50,080
that can ignite a wildfire and parched

595
00:23:54,149 --> 00:23:51,520
vegetation

596
00:23:56,630 --> 00:23:54,159
this current capability of goes

597
00:23:58,310 --> 00:23:56,640
is the fact that we can do rapid scans

598
00:24:00,630 --> 00:23:58,320
higher resolution with higher

599
00:24:03,430 --> 00:24:00,640
sensitivity and include things for the

600
00:24:05,350 --> 00:24:03,440
first time like lightning mapper and the

601
00:24:07,029 --> 00:24:05,360
abi instruments

602
00:24:09,830 --> 00:24:07,039
i don't think we could imagine not

603
00:24:12,630 --> 00:24:09,840
having goes capability we absolutely

604
00:24:17,510 --> 00:24:15,110
the national interagency fire center is

605
00:24:19,510 --> 00:24:17,520
the nation's support center for wildland

606
00:24:22,070 --> 00:24:19,520
firefighting

607
00:24:24,549 --> 00:24:22,080
goes is an eye in the sky it's giving us

608
00:24:26,630 --> 00:24:24,559
a hemispheric perspective with those 16

609
00:24:28,549 --> 00:24:26,640
and 17 without having those two

610
00:24:29,990 --> 00:24:28,559
satellites up there constantly staring

611
00:24:32,310 --> 00:24:30,000
constantly monitoring constantly

612
00:24:34,390 --> 00:24:32,320
providing us with information we really

613
00:24:36,149 --> 00:24:34,400

have just a big gap we would lose a lot

614
00:24:37,830 --> 00:24:36,159
of our capability to understand the

615
00:24:39,750 --> 00:24:37,840
environment to see the interaction of

616
00:24:41,350 --> 00:24:39,760
the fires with the atmosphere and see

617
00:24:43,430 --> 00:24:41,360
how the atmosphere is impacting the

618
00:24:45,350 --> 00:24:43,440
behavior of the fires with those being

619
00:24:47,029 --> 00:24:45,360
able to look at the united states every

620
00:24:47,909 --> 00:24:47,039
five to ten minutes we're getting a much

621
00:24:50,390 --> 00:24:47,919
more

622
00:24:52,549 --> 00:24:50,400
real-time appreciation for how fires are

623
00:24:54,310 --> 00:24:52,559
behaving because of the ability of the

624
00:25:00,870 --> 00:24:54,320
ghost satellites to detect the heat from

625
00:25:05,110 --> 00:25:02,390
kevin we were talking earlier and you

626
00:25:07,909 --> 00:25:05,120
told me that oftentimes goes satellites

627
00:25:10,070 --> 00:25:07,919
even at 22 000 miles above the earth's

628
00:25:12,070 --> 00:25:10,080
surface they can sometimes detect fires

629
00:25:13,990 --> 00:25:12,080
before people on the ground even know

630
00:25:15,750 --> 00:25:14,000
that they're there absolutely that's so

631
00:25:17,350 --> 00:25:15,760
impressive it's an amazing capability

632
00:25:19,110 --> 00:25:17,360
absolutely and we heard from our

633
00:25:21,029 --> 00:25:19,120
national weather service rep i mean

634
00:25:22,630 --> 00:25:21,039
right there that's a great example of

635
00:25:25,350 --> 00:25:22,640
how it happens national weather service

636
00:25:27,750 --> 00:25:25,360
meteorologists are able to view an area

637
00:25:29,750 --> 00:25:27,760
that's not populated but they could see

638
00:25:31,990 --> 00:25:29,760

a heat signature and actually detect

639
00:25:33,430 --> 00:25:32,000
that fire and we found out to the tune

640
00:25:35,669 --> 00:25:33,440
of eighty percent of the time they're

641
00:25:37,990 --> 00:25:35,679
the one the first ones actually call and

642
00:25:40,789 --> 00:25:38,000
let fire responders know that there's a

643
00:25:42,789 --> 00:25:40,799
fire that has just started or is is

644
00:25:44,310 --> 00:25:42,799
ongoing so we know goes satellites can

645
00:25:46,230 --> 00:25:44,320
help national weather service fire

646
00:25:48,149 --> 00:25:46,240
officials as we've said but i didn't

647
00:25:50,710 --> 00:25:48,159
know this that we use ghost satellite

648
00:25:52,070 --> 00:25:50,720
data every day every single day anytime

649
00:25:53,669 --> 00:25:52,080
you open up your phone and you want to

650
00:25:55,750 --> 00:25:53,679
see the forecast and you're opening up

651
00:25:57,430 --> 00:25:55,760
an app a weather app that's exactly what

652
00:25:59,590 --> 00:25:57,440
you're doing you're actually using goes

653
00:26:01,750 --> 00:25:59,600
information that goes data is going

654
00:26:03,430 --> 00:26:01,760
directly into the models that inform you

655
00:26:05,990 --> 00:26:03,440
on what the conditions are going to be

656
00:26:07,750 --> 00:26:06,000
fascinating i can't i i had no idea here

657
00:26:09,110 --> 00:26:07,760
i am just look at it you never think

658
00:26:10,789 --> 00:26:09,120
about where it came from so thank you so

659
00:26:13,110 --> 00:26:10,799
much for telling us about that

660
00:26:15,269 --> 00:26:13,120
we're now l minus about 14 minutes away

661
00:26:16,710 --> 00:26:15,279
from launching goes t daryl and mick

662
00:26:18,390 --> 00:26:16,720
it's about time for that launch manager

663
00:26:20,230 --> 00:26:18,400

paul you talked about

664
00:26:22,710 --> 00:26:20,240
it sure is and uh before we get to that

665
00:26:24,950 --> 00:26:22,720
poll which is happening at l minus 13 so

666
00:26:26,470 --> 00:26:24,960
just about 50 seconds from now we got an

667
00:26:27,909 --> 00:26:26,480
update from the launch weather officer

668
00:26:31,110 --> 00:26:27,919
you can see on the bottom of your screen

669
00:26:32,950 --> 00:26:31,120
the weather briefing there right there

670
00:26:34,870 --> 00:26:32,960
they talked about the winds they're

671
00:26:37,830 --> 00:26:34,880
still pretty up but the clouds have

672
00:26:38,630 --> 00:26:37,840
dissipated so we are now at 90 percent

673
00:26:41,269 --> 00:26:38,640
go

674
00:26:43,909 --> 00:26:41,279
for launch improving from that 80

675
00:26:45,750 --> 00:26:43,919
earlier that you heard reported but mick

676
00:26:47,669 --> 00:26:45,760
still down at 10 because we are watching

677
00:26:50,310 --> 00:26:47,679
those wins yeah as you can see in the uh

678
00:26:52,149 --> 00:26:50,320
forecast uh there uh where where megan

679
00:26:54,149 --> 00:26:52,159
and kevin are the winds are still here

680
00:26:55,990 --> 00:26:54,159
on the ground blowing pretty good

681
00:26:57,510 --> 00:26:56,000
the team is continuing to monitor those

682
00:27:00,230 --> 00:26:57,520
but yeah i'm glad to hear that 90

683
00:27:06,310 --> 00:27:02,710
winds for upper level and they will

684
00:27:08,310 --> 00:27:06,320
remain green through 22-18 zulu so

685
00:27:09,669 --> 00:27:08,320
significantly into the window

686
00:27:10,950 --> 00:27:09,679
and then we could get a later update

687
00:27:13,269 --> 00:27:10,960
should we need it

688
00:27:16,070 --> 00:27:13,279

listening to it looks like we have very

689
00:27:18,870 --> 00:27:16,080
improved ground winds additionally

690
00:27:21,590 --> 00:27:18,880
so we look great for weather

691
00:27:23,269 --> 00:27:21,600
we've had a really good uh ground

692
00:27:26,310 --> 00:27:23,279
propellant load today

693
00:27:28,549 --> 00:27:26,320
and uh very very little activity on the

694
00:27:30,870 --> 00:27:28,559
range instrumentation so with that i

695
00:27:32,470 --> 00:27:30,880
would like to now conduct the goes-t

696
00:27:36,789 --> 00:27:32,480
launch poll

697
00:27:50,549 --> 00:27:36,799
nasa ce nasa ce is go

698
00:27:54,389 --> 00:27:52,870
sma is go

699
00:27:55,669 --> 00:27:54,399
copy sma

700
00:27:57,669 --> 00:27:55,679
smd

701
00:28:00,230 --> 00:27:57,679
smg is go

702
00:28:03,269 --> 00:28:00,240
copy smd nasa mim

703
00:28:05,029 --> 00:28:03,279
now submit let's go copy nasa mem

704
00:28:07,430 --> 00:28:05,039
and lsp

705
00:28:09,510 --> 00:28:07,440
lsbs go

706
00:28:11,590 --> 00:28:09,520
copy lsp

707
00:28:13,510 --> 00:28:11,600
nlm copies

708
00:28:16,389 --> 00:28:13,520
the nasa launch team is ready for the

709
00:28:18,230 --> 00:28:16,399
launch of goes-t spacecraft

710
00:28:19,669 --> 00:28:18,240
and that was nasa launch manager tim

711
00:28:21,269 --> 00:28:19,679
dunn that you saw at the bottom of the

712
00:28:23,669 --> 00:28:21,279
screen uh there towards the weather

713
00:28:25,750 --> 00:28:23,679

briefing milestone and so now

714
00:28:28,230 --> 00:28:25,760
we're good to go yeah chuck that was a

715
00:28:30,549 --> 00:28:28,240
very important uh sorry daryl i'm

716
00:28:32,470 --> 00:28:30,559
thinking of that because i did hear

717
00:28:34,470 --> 00:28:32,480
chuck nasa lsp what i was going to say

718
00:28:37,590 --> 00:28:34,480
there is tim paused at the end there

719
00:28:39,190 --> 00:28:37,600
because chuck duvall nasa lsb uh this

720
00:28:40,870 --> 00:28:39,200
will be his last mission as he just

721
00:28:42,310 --> 00:28:40,880
announced his retirement from nasa after

722
00:28:44,470 --> 00:28:42,320
40 years so

723
00:28:46,470 --> 00:28:44,480
this mission shock goes t thanks for

724
00:28:48,470 --> 00:28:46,480
everything you've done and uh thanks for

725
00:28:50,870 --> 00:28:48,480
that go been here a long time did he

726
00:28:52,549 --> 00:28:50,880
start as an intern he did he did that's

727
00:28:53,269 --> 00:28:52,559
a long career well congratulations to

728
00:28:54,789 --> 00:28:53,279
him

729
00:28:57,190 --> 00:28:54,799
and uh here we are with the rocket on

730
00:28:58,470 --> 00:28:57,200
the pad ready to go we're gonna pick up

731
00:29:00,789 --> 00:28:58,480
this countdown we're also going to have

732
00:29:03,750 --> 00:29:00,799
a special message from somebody you may

733
00:29:05,190 --> 00:29:03,760
know a very popular and somewhat famous

734
00:29:06,470 --> 00:29:05,200
meteorologist we're going to get to that

735
00:29:08,789 --> 00:29:06,480
in a second but we'll send it back to

736
00:29:11,029 --> 00:29:08,799
megan for now

737
00:29:12,470 --> 00:29:11,039
and goes-t is one of many nasa science

738
00:29:16,470 --> 00:29:12,480

missions underway right now let's head

739
00:29:21,029 --> 00:29:18,710
hi megan i'm here with dr thomas

740
00:29:23,110 --> 00:29:21,039
zurbukin nasa's associate administrator

741
00:29:24,789 --> 00:29:23,120
for the science missions directorate and

742
00:29:25,590 --> 00:29:24,799
this is a huge year for you and your

743
00:29:27,590 --> 00:29:25,600
team

744
00:29:29,190 --> 00:29:27,600
absolutely it's a year of science every

745
00:29:31,830 --> 00:29:29,200
year is a year of science we say you

746
00:29:34,470 --> 00:29:31,840
know like we have an amazing number of

747
00:29:36,950 --> 00:29:34,480
launches ahead of us in fact tropics

748
00:29:41,269 --> 00:29:36,960
which is three launches we have maya we

749
00:29:43,510 --> 00:29:41,279
have uh emit we have jpss and you see

750
00:29:45,830 --> 00:29:43,520
the theme it's all

751
00:29:48,310 --> 00:29:45,840
earth science related launches uh some

752
00:29:50,389 --> 00:29:48,320
of them partnership we also have psyche

753
00:29:52,389 --> 00:29:50,399
and then first light of uh the james

754
00:29:55,190 --> 00:29:52,399
webb space telescope as many as well as

755
00:29:57,350 --> 00:29:55,200
many other you know highlights this year

756
00:29:58,789 --> 00:29:57,360
alone yes and so many of the missions

757
00:30:00,630 --> 00:29:58,799
that you just mentioned are actually

758
00:30:02,789 --> 00:30:00,640
tied in to both weather and the

759
00:30:04,710 --> 00:30:02,799
environment why is that important for

760
00:30:07,110 --> 00:30:04,720
nasa and the work that we're doing from

761
00:30:09,110 --> 00:30:07,120
the beginning nasa was about exploring

762
00:30:11,190 --> 00:30:09,120
the universe but also exploring and

763
00:30:13,510 --> 00:30:11,200

understanding our own earth and

764
00:30:15,350 --> 00:30:13,520
providing service for that and and

765
00:30:16,950 --> 00:30:15,360
launch today as well as many of the

766
00:30:18,870 --> 00:30:16,960
launches in the future are precisely

767
00:30:21,350 --> 00:30:18,880
about that understanding our changing

768
00:30:22,470 --> 00:30:21,360
planet the system of systems everybody

769
00:30:24,710 --> 00:30:22,480
we love

770
00:30:26,310 --> 00:30:24,720
is right here our entire history is

771
00:30:28,789 --> 00:30:26,320
right here on that planet so we want to

772
00:30:30,870 --> 00:30:28,799
understand and help protect it as we go

773
00:30:33,590 --> 00:30:30,880
forward and so the information that we

774
00:30:37,110 --> 00:30:33,600
get from these launches how

775
00:30:38,870 --> 00:30:37,120
how will we use that so the information

776
00:30:41,029 --> 00:30:38,880
we get from these launches we used to

777
00:30:42,389 --> 00:30:41,039
get a better understanding in many areas

778
00:30:43,830 --> 00:30:42,399
of course understanding for example

779
00:30:45,669 --> 00:30:43,840
emmett about

780
00:30:47,590 --> 00:30:45,679
the aerosols that are in the air where

781
00:30:50,310 --> 00:30:47,600
do they come from we know they relate to

782
00:30:53,350 --> 00:30:50,320
precipitation in many areas like how do

783
00:30:56,070 --> 00:30:53,360
they get transported globally maya you

784
00:30:58,549 --> 00:30:56,080
know my daughter has asthma it's about

785
00:31:00,789 --> 00:30:58,559
pollutants learning from space how to

786
00:31:03,190 --> 00:31:00,799
predict those and provide

787
00:31:05,669 --> 00:31:03,200
information for my daughter and the many

788
00:31:07,909 --> 00:31:05,679

others that suffer from asthma and so

789
00:31:10,630 --> 00:31:07,919
forth that's precisely each of them has

790
00:31:12,070 --> 00:31:10,640
an application like that a

791
00:31:13,509 --> 00:31:12,080
set of understandings that we want to

792
00:31:15,269 --> 00:31:13,519
bring to the table

793
00:31:18,149 --> 00:31:15,279
complex science has a very simple

794
00:31:20,230 --> 00:31:18,159
application here on life on earth for

795
00:31:21,830 --> 00:31:20,240
life on earth so we also heard that the

796
00:31:23,590 --> 00:31:21,840
information that we're going to be

797
00:31:26,149 --> 00:31:23,600
capturing from these satellites is going

798
00:31:27,990 --> 00:31:26,159
to be available to the public as well

799
00:31:30,149 --> 00:31:28,000
absolutely everything we do here in

800
00:31:32,789 --> 00:31:30,159
earth signs and all over the science

801
00:31:35,590 --> 00:31:32,799
portfolio is information that is made

802
00:31:38,070 --> 00:31:35,600
public we want scientists of all

803
00:31:39,750 --> 00:31:38,080
training levels learners of all ages to

804
00:31:41,750 --> 00:31:39,760
be able to look at this but we also

805
00:31:43,669 --> 00:31:41,760
believe it's really important to trust

806
00:31:45,830 --> 00:31:43,679
the science you should be able to look

807
00:31:47,269 --> 00:31:45,840
it up yourself and understand it we

808
00:31:49,269 --> 00:31:47,279
think that's a really important part and

809
00:31:51,509 --> 00:31:49,279
be flat that we're actually moving from

810
00:31:53,509 --> 00:31:51,519
open data to open signs so we actually

811
00:31:55,990 --> 00:31:53,519
even make in the future the quotes

812
00:31:57,830 --> 00:31:56,000
available that provide the actual

813
00:31:58,789 --> 00:31:57,840

predictions and the information that is

814
00:32:00,870 --> 00:31:58,799
there

815
00:32:02,310 --> 00:32:00,880
it's incredible using this information

816
00:32:04,870 --> 00:32:02,320
in conjunction with other information to

817
00:32:06,549 --> 00:32:04,880
give us the best picture possible dr

818
00:32:08,149 --> 00:32:06,559
zurbukin thank you so much for joining

819
00:32:09,990 --> 00:32:08,159
us today we're looking forward to this

820
00:32:11,430 --> 00:32:10,000
launch i'm sure that you are as well and

821
00:32:13,190 --> 00:32:11,440
we really appreciate you being here

822
00:32:14,549 --> 00:32:13,200
thanks so much absolutely megan we'll

823
00:32:16,070 --> 00:32:14,559
send it back to you

824
00:32:17,830 --> 00:32:16,080
thank you both and now taking us the

825
00:32:20,070 --> 00:32:17,840
rest of the way of the launch countdown

826
00:32:22,470 --> 00:32:20,080
is darrell admit guys take it away all

827
00:32:25,110 --> 00:32:22,480
right thank you megan l minus 7 minutes

828
00:32:27,350 --> 00:32:25,120
and 50 seconds until liftoff welcome

829
00:32:29,430 --> 00:32:27,360
back inside the atlas space flight

830
00:32:32,310 --> 00:32:29,440
operations center the launch team right

831
00:32:34,070 --> 00:32:32,320
behind us working this launch and so far

832
00:32:36,070 --> 00:32:34,080
things have looked really good and

833
00:32:38,389 --> 00:32:36,080
sounded good over the nets yeah

834
00:32:40,230 --> 00:32:38,399
everything sounded great the team is uh

835
00:32:41,909 --> 00:32:40,240
continuing to finalize their work as we

836
00:32:43,590 --> 00:32:41,919
get ready to pick up the count at t

837
00:32:45,990 --> 00:32:43,600
minus four and sync up the l clock and

838
00:32:49,029 --> 00:32:46,000

the t clock uh we're coming up on that

839
00:32:51,430 --> 00:32:49,039
launch conductor poll at uh l minus

840
00:32:53,509 --> 00:32:51,440
seven minutes with dylan rice so i'm

841
00:32:55,029 --> 00:32:53,519
looking forward to hearing all goes from

842
00:32:57,430 --> 00:32:55,039
the the team

843
00:32:59,430 --> 00:32:57,440
to get goes-t on its way you can look at

844
00:33:02,310 --> 00:32:59,440
the bottom of our screen you can see the

845
00:33:04,870 --> 00:33:02,320
milestones as we count down to liftoff

846
00:33:06,789 --> 00:33:04,880
we are coming up on polling which is at

847
00:33:08,470 --> 00:33:06,799
l minus seven minutes in just a few

848
00:33:10,310 --> 00:33:08,480
seconds we're going to pull up the poll

849
00:33:13,350 --> 00:33:10,320
on the right side of the screen and

850
00:33:17,830 --> 00:33:14,950
status check to proceed with terminal

851
00:33:20,630 --> 00:33:17,840
count atlas systems propulsion go

852
00:33:24,870 --> 00:33:20,640
hydraulics go pneumatics

853
00:33:27,430 --> 00:33:24,880
go lo2 go water go centaur systems

854
00:33:32,710 --> 00:33:27,440
propulsion go pneumatics

855
00:33:35,509 --> 00:33:32,720
go lo2 go lh2 go as gap go electrical

856
00:33:40,310 --> 00:33:35,519
systems airborne go ground

857
00:33:41,990 --> 00:33:40,320
go facility go rffts go flight control

858
00:33:45,509 --> 00:33:42,000
go gcq

859
00:33:47,110 --> 00:33:45,519
go operation support go on

860
00:33:52,549 --> 00:33:47,120
go umbilical

861
00:33:55,990 --> 00:33:52,559
go ecs go redline monitor go quality go

862
00:33:56,950 --> 00:33:56,000
up safety manager go ula safety officer

863
00:34:04,710 --> 00:33:56,960

go

864
00:34:06,710 --> 00:34:04,720
the proceed launch director

865
00:34:08,950 --> 00:34:06,720
you have permission to launch

866
00:34:12,470 --> 00:34:08,960
proceeding with account alc verify

867
00:34:14,790 --> 00:34:12,480
t-zero is set for 2138 tulu

868
00:34:16,950 --> 00:34:14,800
verified

869
00:34:19,270 --> 00:34:16,960
ula launch conductor dylan rice getting

870
00:34:21,829 --> 00:34:19,280
uh green across the board yeah that was

871
00:34:22,790 --> 00:34:21,839
great to see dylan choreograph that to

872
00:34:25,109 --> 00:34:22,800
pole

873
00:34:27,750 --> 00:34:25,119
the culmination of several hours of work

874
00:34:29,510 --> 00:34:27,760
by this launch team and then hearing uh

875
00:34:31,109 --> 00:34:29,520
launch director tom heater from united

876
00:34:33,190 --> 00:34:31,119
launch alliance giving that ready to

877
00:34:35,349 --> 00:34:33,200
proceed for launch today so

878
00:34:37,669 --> 00:34:35,359
very excited and happy here to hear that

879
00:34:39,909 --> 00:34:37,679
as we get ready to pick up the count

880
00:34:42,389 --> 00:34:39,919
as we look outside at the rocket we can

881
00:34:44,629 --> 00:34:42,399
see those blue skies the clouds are

882
00:34:46,710 --> 00:34:44,639
moving a little bit very very slight

883
00:34:48,389 --> 00:34:46,720
amount of clouds you don't see it here

884
00:34:50,069 --> 00:34:48,399
but we're looking at blue skies you can

885
00:34:52,230 --> 00:34:50,079
see some of them there they're moving

886
00:34:54,389 --> 00:34:52,240
that's representative of those winds but

887
00:34:57,430 --> 00:34:54,399
as we know here in florida such a

888
00:34:59,190 --> 00:34:57,440

beautiful time of year in march but mick

889
00:35:01,190 --> 00:34:59,200
three months from now it'll be the start

890
00:35:03,030 --> 00:35:01,200
of hurricane season which is a concern

891
00:35:05,109 --> 00:35:03,040
for florida and everyone along the

892
00:35:06,630 --> 00:35:05,119
atlantic seaboard and in the gulf states

893
00:35:08,710 --> 00:35:06,640
yeah and i'll be very happy to have

894
00:35:10,230 --> 00:35:08,720
ghost tea up there uh in the west as

895
00:35:12,790 --> 00:35:10,240
kevin was saying you know all weather

896
00:35:15,030 --> 00:35:12,800
moving west to east so getting goes-t

897
00:35:17,510 --> 00:35:15,040
into proper position to follow those

898
00:35:19,670 --> 00:35:17,520
weather activities will be a

899
00:35:21,829 --> 00:35:19,680
great asset for everybody from a

900
00:35:24,470 --> 00:35:21,839
personnel safety standpoint and the

901
00:35:27,750 --> 00:35:24,480
public really relies on the

902
00:35:29,750 --> 00:35:27,760
public broadcasters who come out and

903
00:35:31,829 --> 00:35:29,760
give us that information about what's

904
00:35:34,230 --> 00:35:31,839
going on and we have one of the more

905
00:35:37,190 --> 00:35:34,240
popular meteorologists that you may have

906
00:35:39,589 --> 00:35:37,200
heard of sent us a pre-launch message

907
00:35:40,950 --> 00:35:39,599
take a look at it now

908
00:35:42,390 --> 00:35:40,960
hello everyone i'm meteorologist jim

909
00:35:44,630 --> 00:35:42,400
cantori from the weather channel

910
00:35:46,790 --> 00:35:44,640
television network and i am so excited

911
00:35:48,390 --> 00:35:46,800
for the ghost tee launch meteorologists

912
00:35:50,790 --> 00:35:48,400
and weather anchors like me across the

913
00:35:53,109 --> 00:35:50,800

country depend on go's data to bring you

914
00:35:55,990 --> 00:35:53,119
your daily weather forecast but also to

915
00:35:58,390 --> 00:35:56,000
keep you and first responders safe

916
00:36:00,950 --> 00:35:58,400
during severe weather events accurate

917
00:36:03,349 --> 00:36:00,960
and timely forecasts are crucial and

918
00:36:04,550 --> 00:36:03,359
that's not possible without satellites

919
00:36:08,790 --> 00:36:04,560
like this one

920
00:36:10,829 --> 00:36:09,829
three

921
00:36:14,150 --> 00:36:10,839
two

922
00:36:18,150 --> 00:36:15,829
and there you have the sinking up of the

923
00:36:19,190 --> 00:36:18,160
l clock to the left top

924
00:36:21,670 --> 00:36:19,200
and the

925
00:36:24,710 --> 00:36:21,680
t clock on the right hand side they are

926
00:36:26,710 --> 00:36:24,720
in sync mic and that means we are

927
00:36:28,230 --> 00:36:26,720
starting up and really close ready to go

928
00:36:29,990 --> 00:36:28,240
yes this is a

929
00:36:31,910 --> 00:36:30,000
very thrilling time for us daryl as we

930
00:36:33,829 --> 00:36:31,920
get ready to perform a lot of activities

931
00:36:35,270 --> 00:36:33,839
here the team's going to finish tanking

932
00:36:36,630 --> 00:36:35,280
and topping the vehicles securing

933
00:36:38,550 --> 00:36:36,640
everything getting things to flight

934
00:36:40,790 --> 00:36:38,560
pressure getting the ordinance control

935
00:36:42,870 --> 00:36:40,800
unit armed the flight termination system

936
00:36:45,030 --> 00:36:42,880
armed getting the vehicle on internal

937
00:36:47,109 --> 00:36:45,040
power which we heard a little while ago

938
00:36:49,510 --> 00:36:47,119

that the spacecraft goes t is configured

939
00:36:51,349 --> 00:36:49,520
and on internal power ready for today's

940
00:36:53,270 --> 00:36:51,359
launch so we'll be finalizing all these

941
00:36:55,030 --> 00:36:53,280
steps the united launch alliance team

942
00:36:56,950 --> 00:36:55,040
that we talked about earlier and they

943
00:36:59,589 --> 00:36:56,960
will get ghost tee ready for a lift off

944
00:37:01,670 --> 00:36:59,599
at 4 38 p.m and there you can see from

945
00:37:03,910 --> 00:37:01,680
that shot of the pad out over the

946
00:37:05,990 --> 00:37:03,920
atlantic ocean you see down towards the

947
00:37:08,069 --> 00:37:06,000
bottom of the rocket those two solid

948
00:37:10,950 --> 00:37:08,079
rocket motors there's two on this side

949
00:37:13,430 --> 00:37:10,960
two on the other this is an atlas

950
00:37:15,430 --> 00:37:13,440
541 configuration

951
00:37:17,190 --> 00:37:15,440
which we know is going to provide a lot

952
00:37:19,829 --> 00:37:17,200
of performance with those

953
00:37:23,430 --> 00:37:19,839
new gem 63s

954
00:37:24,950 --> 00:37:23,440
yeah daryl the 541 as tory bruno ceo of

955
00:37:26,150 --> 00:37:24,960
uoa likes to refer to it as the

956
00:37:28,310 --> 00:37:26,160
dominator

957
00:37:29,990 --> 00:37:28,320
those uh four solids will provide a lot

958
00:37:32,790 --> 00:37:30,000
of thrust as we get ghost tee off this

959
00:37:34,950 --> 00:37:32,800
morning using those new gem 63s from

960
00:37:37,109 --> 00:37:34,960
northrop grumman will provide a little

961
00:37:39,510 --> 00:37:37,119
extra performance and get ghost tea on

962
00:37:40,950 --> 00:37:39,520
her way

963
00:37:42,790 --> 00:37:40,960

they can hear the team really picking up

964
00:37:44,150 --> 00:37:42,800
the chatter here as we get down to the

965
00:37:46,230 --> 00:37:44,160
final minutes

966
00:37:48,950 --> 00:37:46,240
for the launch of goes-t on board an

967
00:37:51,109 --> 00:37:48,960
atlas v rocket from right here at the

968
00:37:52,550 --> 00:37:51,119
cape canaveral space force station

969
00:37:55,109 --> 00:37:52,560
yeah daryl we heard the team they

970
00:37:57,670 --> 00:37:55,119
secured the atlas tanks to flight

971
00:37:59,430 --> 00:37:57,680
pressures secured that topping so we see

972
00:38:01,990 --> 00:37:59,440
that the liquid oxygen on board that

973
00:38:03,750 --> 00:38:02,000
first stage is uh secure and ready to go

974
00:38:05,510 --> 00:38:03,760
we should be hearing them

975
00:38:08,390 --> 00:38:05,520
at about a minute 50 securing the

976
00:38:10,310 --> 00:38:08,400
centaur uh tanks and getting that tank

977
00:38:12,390 --> 00:38:10,320
up to flight pressures getting ready for

978
00:38:24,150 --> 00:38:12,400
launch spacecraft is on internal getting

979
00:38:28,870 --> 00:38:27,430
lh2 securing centaur lo2

980
00:38:31,109 --> 00:38:28,880
so there we hear darryl vehicles on

981
00:38:32,630 --> 00:38:31,119
internal the auto sequencer is taken

982
00:38:35,510 --> 00:38:32,640
over and started

983
00:38:37,670 --> 00:38:35,520
count and centaur lh2 and locks 30

984
00:38:40,630 --> 00:38:37,680
sequences are done launch has been

985
00:38:43,190 --> 00:38:40,640
enabled by the launch conductor

986
00:38:44,829 --> 00:38:43,200
fcs armed the flight termination system

987
00:38:47,829 --> 00:38:44,839
has been

988
00:38:49,910 --> 00:38:47,839

armed the team is continuing to finalize

989
00:38:55,910 --> 00:38:49,920
all preps as the vehicle is getting

990
00:39:01,829 --> 00:38:59,510
fcs count started 115 reduce ecs for

991
00:39:03,190 --> 00:39:01,839
launch roger

992
00:39:05,270 --> 00:39:03,200
110

993
00:39:06,710 --> 00:39:05,280
bent valve's lock

994
00:39:08,790 --> 00:39:06,720
and there we hear the vent valves lock

995
00:39:10,630 --> 00:39:08,800
securing everything to secure that boil

996
00:39:12,950 --> 00:39:10,640
off we should now be coming up on the

997
00:39:16,390 --> 00:39:12,960
last call for the range one minute

998
00:39:18,310 --> 00:39:16,400
rock report range status range green

999
00:39:19,990 --> 00:39:18,320
and there we have a green range daryl so

1000
00:39:21,270 --> 00:39:20,000
everything looks good this morning last

1001
00:39:22,710 --> 00:39:21,280
but not least we will bring everything

1002
00:39:25,190 --> 00:39:22,720
to flight pressures and then hear that

1003
00:39:26,870 --> 00:39:25,200
last status check from dylan rice and

1004
00:39:29,589 --> 00:39:26,880
that'll be an exciting moment indeed as

1005
00:39:30,870 --> 00:39:29,599
we look across the river there to a shot

1006
00:39:32,550 --> 00:39:30,880
of the rocket

1007
00:39:34,710 --> 00:39:32,560
just four seconds left

1008
00:39:36,630 --> 00:39:34,720
stable at step three

1009
00:39:39,349 --> 00:39:36,640
and there we verified that all uh

1010
00:39:41,109 --> 00:39:39,359
pressures are are good and we are stable

1011
00:39:43,750 --> 00:39:41,119
at step three ready for liftoff this

1012
00:39:46,390 --> 00:39:43,760
morning

1013
00:39:49,349 --> 00:39:46,400

28 verify ecs reduced for launch

1014
00:39:53,510 --> 00:39:49,359
verified 25 status check

1015
00:40:00,950 --> 00:39:53,520
go atlas go centaur go goes t

1016
00:40:04,309 --> 00:40:03,349
the final seconds now 10

1017
00:40:05,109 --> 00:40:04,319
9

1018
00:40:05,990 --> 00:40:05,119
8

1019
00:40:06,950 --> 00:40:06,000
7

1020
00:40:07,829 --> 00:40:06,960
6

1021
00:40:08,870 --> 00:40:07,839
5

1022
00:40:09,829 --> 00:40:08,880
4

1023
00:40:11,030 --> 00:40:09,839
3

1024
00:40:14,390 --> 00:40:11,040
two

1025
00:40:18,950 --> 00:40:15,829
and liftoff

1026
00:40:21,349 --> 00:40:18,960
liftoff of noah's go's teeth our newest

1027
00:40:25,510 --> 00:40:21,359
weather symbol in the sky to help keep

1028
00:40:27,349 --> 00:40:25,520
us safe here on the ground

1029
00:40:29,109 --> 00:40:27,359
let's listen in as we listen to the

1030
00:40:31,910 --> 00:40:29,119
united launch of my instagram that's

1031
00:40:31,920 --> 00:40:41,190
if you have gone to close with control

1032
00:40:45,510 --> 00:40:42,870
the rd180 is now throttling down as

1033
00:40:47,829 --> 00:40:45,520
expected engine response looks good

1034
00:40:49,990 --> 00:40:47,839
we are now 33 seconds into flight

1035
00:40:52,710 --> 00:40:50,000
atlas is

1036
00:40:56,140 --> 00:40:52,720
three miles in altitude point nine miles

1037
00:41:02,309 --> 00:40:58,309
[Music]

1038
00:41:03,990 --> 00:41:02,319

we have bathroom rock one

1039
00:41:08,470 --> 00:41:04,000
vehicle is now passing through max q

1040
00:41:12,870 --> 00:41:10,870
now 55 seconds right atlas is seven

1041
00:41:15,190 --> 00:41:12,880
miles in altitude four miles downrange

1042
00:41:21,190 --> 00:41:15,200
distance traveling at 1900 miles per

1043
00:41:21,200 --> 00:41:27,270
rd180 is now throttling back up

1044
00:41:30,950 --> 00:41:29,990
it backed off the throttle to redoubt it

1045
00:41:33,510 --> 00:41:30,960
to flight

1046
00:41:35,430 --> 00:41:33,520
atlas is 13 miles in altitude 10 miles

1047
00:41:43,109 --> 00:41:35,440
downrange distance traveling at 2 700

1048
00:41:47,030 --> 00:41:45,030
now at 90 seconds into flight ula's

1049
00:41:48,309 --> 00:41:47,040
atlas 5 rocket weighs now just one half

1050
00:41:50,150 --> 00:41:48,319
of what it did at launch burning

1051
00:41:51,990 --> 00:41:50,160
propellant at a rate of more than 2 600

1052
00:41:54,630 --> 00:41:52,000
pounds per second

1053
00:41:59,190 --> 00:41:54,640
in 10 seconds those solid rocket motors

1054
00:41:59,200 --> 00:42:05,510
beautiful shot from space

1055
00:42:12,630 --> 00:42:08,230
srbs have burned out as expected

1056
00:42:15,109 --> 00:42:13,990
clear shot of those vehicles now

1057
00:42:23,349 --> 00:42:15,119
executing

1058
00:42:25,910 --> 00:42:24,470
here in a few seconds they're going to

1059
00:42:27,510 --> 00:42:25,920
throttle back up vehicle performance

1060
00:42:39,990 --> 00:42:27,520
looks good at this time

1061
00:42:40,000 --> 00:42:47,030
the rd-180 has throttled down slightly

1062
00:42:49,910 --> 00:42:48,390
vehicle performance continues to look

1063
00:42:51,430 --> 00:42:49,920

good at this time

1064
00:42:52,950 --> 00:42:51,440
tank pressures are stable and atlas

1065
00:42:58,950 --> 00:42:52,960
booster battery voltages and rain in

1066
00:43:02,470 --> 00:43:00,710
now the upper stage is preparing for its

1067
00:43:14,710 --> 00:43:02,480
use centaur reaction control system is

1068
00:43:17,670 --> 00:43:16,710
another jettison the payload fairing

1069
00:43:20,870 --> 00:43:17,680
which

1070
00:43:28,150 --> 00:43:20,880
protects goes-t at three minutes and 30

1071
00:43:28,160 --> 00:43:33,030
we have just over one minute until biko

1072
00:43:37,589 --> 00:43:35,270
we're now seeing the rd180 throttle

1073
00:43:40,390 --> 00:43:37,599
limiting to maintain a 2.5 g

1074
00:43:50,710 --> 00:43:40,400
acceleration limit

1075
00:43:55,349 --> 00:43:52,309
we've seen a successful pay with fern

1076
00:43:55,359 --> 00:44:01,190
good shot of those fairings

1077
00:44:01,200 --> 00:44:11,030
are you 180 straddle back up now

1078
00:44:15,829 --> 00:44:14,150
the vehicle has reached a 4.3 4.6 d

1079
00:44:18,950 --> 00:44:15,839
acceleration limit and will maintain

1080
00:44:22,630 --> 00:44:21,109
and you're looking at animation now

1081
00:44:35,670 --> 00:44:22,640
we've seen that the centaur has begun

1082
00:44:35,680 --> 00:44:38,790
loose we're about to cut off

1083
00:44:44,309 --> 00:44:42,309
and eco booster engine cut off

1084
00:44:48,950 --> 00:44:44,319
standing by for state separation

1085
00:44:48,960 --> 00:44:56,390
we've seen pre-start on the ro10

1086
00:45:01,270 --> 00:44:58,550
and mass 1 we have ignition for the

1087
00:45:05,109 --> 00:45:03,270
this first burn of ula's since our upper

1088
00:45:06,790 --> 00:45:05,119

stage will place the goes-t spacecraft

1089
00:45:08,390 --> 00:45:06,800
into a parking orbit around the earth

1090
00:45:13,510 --> 00:45:08,400
this burn will last just over seven

1091
00:45:17,109 --> 00:45:15,589
what a shot there huh mick yeah that was

1092
00:45:19,910 --> 00:45:17,119
great daryl to see all that and listen

1093
00:45:21,990 --> 00:45:19,920
to rob kesselman call that flight to the

1094
00:45:23,829 --> 00:45:22,000
first stage performed very well this

1095
00:45:25,829 --> 00:45:23,839
morning this afternoon and everything's

1096
00:45:27,829 --> 00:45:25,839
looking good those gyms

1097
00:45:29,670 --> 00:45:27,839
control system as it begins its periodic

1098
00:45:32,150 --> 00:45:29,680
firings to maintain thermal control

1099
00:45:34,309 --> 00:45:32,160
conditioning

1100
00:45:36,710 --> 00:45:34,319
yeah those jim 63s performed well solid

1101
00:45:38,470 --> 00:45:36,720
rocket boosters and rd 180 performance

1102
00:45:40,230 --> 00:45:38,480
well what i really liked was when we saw

1103
00:45:42,069 --> 00:45:40,240
the payload fairing come off that was a

1104
00:45:43,670 --> 00:45:42,079
great shot from the camera saw the

1105
00:45:45,589 --> 00:45:43,680
payload fairing come off and then most

1106
00:45:47,430 --> 00:45:45,599
people probably noticed that little

1107
00:45:49,109 --> 00:45:47,440
half cylindrical come off after payload

1108
00:45:51,670 --> 00:45:49,119
fairings that was what we call the

1109
00:45:53,270 --> 00:45:51,680
centaur ford load reaction deck

1110
00:45:57,270 --> 00:45:53,280
because the fairing the five meter

1111
00:46:02,150 --> 00:46:00,230
and the goes-t satellite there's a load

1112
00:46:03,829 --> 00:46:02,160
ring that's inside the fairing around

1113
00:46:05,589 --> 00:46:03,839

centaur to help keep that five meter

1114
00:46:06,710 --> 00:46:05,599
fairing from flexing so that's what you

1115
00:46:07,990 --> 00:46:06,720
saw when you came off there i was

1116
00:46:12,069 --> 00:46:08,000
wondering and the engine response

1117
00:46:16,069 --> 00:46:13,270
from the trajectory and performance

1118
00:46:18,069 --> 00:46:16,079
group that boosted performance was

1119
00:46:19,349 --> 00:46:18,079
as expected for the booster phase of

1120
00:46:20,710 --> 00:46:19,359
flight

1121
00:46:23,109 --> 00:46:20,720
all right we're going to keep an eye on

1122
00:46:25,109 --> 00:46:23,119
this burn and listen in

1123
00:46:28,790 --> 00:46:25,119
but in the meantime we'll send it back

1124
00:46:30,470 --> 00:46:28,800
to megan out the host desk

1125
00:46:32,630 --> 00:46:30,480
if you're just joining us welcome live

1126
00:46:34,950 --> 00:46:32,640
to kennedy space center in florida where

1127
00:46:36,550 --> 00:46:34,960
we just saw ghost tea launch from just

1128
00:46:38,390 --> 00:46:36,560
behind us at cape canaveral space force

1129
00:46:40,550 --> 00:46:38,400
station and guess what everyone i just

1130
00:46:43,190 --> 00:46:40,560
found out that this was kevin's first

1131
00:46:45,270 --> 00:46:43,200
launch it was how was it it was super

1132
00:46:47,190 --> 00:46:45,280
exciting uh almost a proud moment as an

1133
00:46:49,670 --> 00:46:47,200
american you know 20-year

1134
00:46:50,470 --> 00:46:49,680
air force vet and to be able to see this

1135
00:46:57,030 --> 00:46:50,480
was

1136
00:46:58,390 --> 00:46:57,040
watch you react like you were like i i

1137
00:47:00,790 --> 00:46:58,400
you were like a kid like

1138
00:47:02,230 --> 00:47:00,800

this oh wow that was great absolutely it

1139
00:47:03,670 --> 00:47:02,240
was great so what's next for this

1140
00:47:05,589 --> 00:47:03,680
mission well the wonderful thing about

1141
00:47:07,510 --> 00:47:05,599
this now that we've had a successful

1142
00:47:09,270 --> 00:47:07,520
launch we have about 12 days before it

1143
00:47:11,109 --> 00:47:09,280
actually reached geostationary orbit so

1144
00:47:12,950 --> 00:47:11,119
at that point that's when we'll start

1145
00:47:14,550 --> 00:47:12,960
our checkout phase we'll be looking for

1146
00:47:15,829 --> 00:47:14,560
the data to come down from the from the

1147
00:47:17,750 --> 00:47:15,839
spacecraft to make sure everything

1148
00:47:19,270 --> 00:47:17,760
checks out that the imagers that the

1149
00:47:21,349 --> 00:47:19,280
images are correct all that kind of

1150
00:47:23,030 --> 00:47:21,359
stuff has to work work its way through

1151
00:47:24,630 --> 00:47:23,040
and you know goes is noaa's latest

1152
00:47:26,710 --> 00:47:24,640
weather satellite as we've said you know

1153
00:47:28,390 --> 00:47:26,720
we've been launching goes satellites

1154
00:47:30,230 --> 00:47:28,400
together for nearly 50 years i mean

1155
00:47:31,750 --> 00:47:30,240
there's been so many advancements made

1156
00:47:33,349 --> 00:47:31,760
in between those times there have and

1157
00:47:34,870 --> 00:47:33,359
you know i like to remind people that

1158
00:47:37,349 --> 00:47:34,880
you know this particular satellite in

1159
00:47:39,670 --> 00:47:37,359
the series is really an evolutionary

1160
00:47:41,430 --> 00:47:39,680
step much like cell phones or when we

1161
00:47:43,589 --> 00:47:41,440
talk about hey do you remember when we

1162
00:47:45,829 --> 00:47:43,599
used to use land lines and rotary phones

1163
00:47:47,589 --> 00:47:45,839

well think about the leap we've taken

1164
00:47:49,510 --> 00:47:47,599
from then to the cell phones and the

1165
00:47:51,109 --> 00:47:49,520
capabilities that we have much like that

1166
00:47:52,870 --> 00:47:51,119
with our satellites yeah i know i know i

1167
00:47:54,470 --> 00:47:52,880
know i feel safer knowing that goes

1168
00:47:56,230 --> 00:47:54,480
satellites are up there and now i'd like

1169
00:47:58,870 --> 00:47:56,240
to bring in nasa's leah martin who got

1170
00:48:01,750 --> 00:47:58,880
to watch the launch with our agency's

1171
00:48:03,510 --> 00:48:01,760
deputy administrator leah

1172
00:48:06,309 --> 00:48:03,520
hi megan like you said i am here with

1173
00:48:08,230 --> 00:48:06,319
pam milroy nasa's deputy administrator

1174
00:48:09,270 --> 00:48:08,240
and what did you think of that launch so

1175
00:48:13,829 --> 00:48:09,280
exciting

1176
00:48:15,589 --> 00:48:13,839
it was i don't know i always just feel

1177
00:48:17,670 --> 00:48:15,599
this electricity

1178
00:48:20,549 --> 00:48:17,680
when a launch goes up you're like

1179
00:48:23,510 --> 00:48:20,559
wow people can do this this is just the

1180
00:48:25,270 --> 00:48:23,520
power and the majesty of it as you see

1181
00:48:27,910 --> 00:48:25,280
it lifting into the heavens it's always

1182
00:48:29,510 --> 00:48:27,920
exciting and you know hours and hours

1183
00:48:32,790 --> 00:48:29,520
and months and months of work that go

1184
00:48:34,390 --> 00:48:32,800
into it absolutely so you know nasa's

1185
00:48:37,190 --> 00:48:34,400
vision is to expand

1186
00:48:39,030 --> 00:48:37,200
uh knowledge for the benefit of people

1187
00:48:40,950 --> 00:48:39,040
here on earth that's the heart behind

1188
00:48:43,510 --> 00:48:40,960

everything that we do how does this

1189
00:48:46,790 --> 00:48:43,520
mission fit into that this mission is a

1190
00:48:49,030 --> 00:48:46,800
great example of our mission in a lot of

1191
00:48:51,510 --> 00:48:49,040
different ways i think one of the most

1192
00:48:53,750 --> 00:48:51,520
uh powerful things that we do at nasa is

1193
00:48:56,470 --> 00:48:53,760
we partner with others to maximize the

1194
00:48:59,030 --> 00:48:56,480
benefit of the things that we do so this

1195
00:49:01,990 --> 00:48:59,040
mission uh to launch the goes-t

1196
00:49:04,630 --> 00:49:02,000
satellite will enable us to have

1197
00:49:07,349 --> 00:49:04,640
cutting-edge capabilities that are

1198
00:49:09,670 --> 00:49:07,359
looking down on the western hemisphere

1199
00:49:12,870 --> 00:49:09,680
the western part of the united states

1200
00:49:16,790 --> 00:49:12,880
to ensure that the data that goes into

1201
00:49:19,750 --> 00:49:16,800
the noaa models around weather are

1202
00:49:21,430 --> 00:49:19,760
optimized they're up-to-date they will

1203
00:49:24,069 --> 00:49:21,440
affect people's lives whether it's

1204
00:49:25,829 --> 00:49:24,079
farmers or protecting from wildfires but

1205
00:49:28,470 --> 00:49:25,839
what's interesting is we're also going

1206
00:49:31,430 --> 00:49:28,480
to take that data because we have earth

1207
00:49:33,349 --> 00:49:31,440
scientists who are modeling

1208
00:49:35,109 --> 00:49:33,359
our earth as a system

1209
00:49:37,430 --> 00:49:35,119
and climate

1210
00:49:40,069 --> 00:49:37,440
far out into the future this isn't an

1211
00:49:43,109 --> 00:49:40,079
operational weather which is what noah's

1212
00:49:45,750 --> 00:49:43,119
mission is they do it very well but we

1213
00:49:47,910 --> 00:49:45,760

take this data and we also use it for

1214
00:49:50,069 --> 00:49:47,920
the benefit of science so it's a really

1215
00:49:52,309 --> 00:49:50,079
synergistic partnership and you just

1216
00:49:54,069 --> 00:49:52,319
mentioned climate change and monitoring

1217
00:49:55,270 --> 00:49:54,079
the changes because that is a priority

1218
00:49:58,150 --> 00:49:55,280
for nasa

1219
00:50:00,630 --> 00:49:58,160
it is it's one of our top priorities we

1220
00:50:02,790 --> 00:50:00,640
are already doing a significant amount

1221
00:50:05,190 --> 00:50:02,800
in this area earth science and looking

1222
00:50:07,510 --> 00:50:05,200
at our own earth has always been an

1223
00:50:09,589 --> 00:50:07,520
important part of our science mission

1224
00:50:12,549 --> 00:50:09,599
interestingly we also study other

1225
00:50:15,030 --> 00:50:12,559
planets in the solar system such as mars

1226
00:50:17,190 --> 00:50:15,040
which we believe was once wet and had

1227
00:50:19,510 --> 00:50:17,200
more of an atmosphere and so the

1228
00:50:21,670 --> 00:50:19,520
question is how did it get the way that

1229
00:50:24,390 --> 00:50:21,680
it did and how do we make sure that does

1230
00:50:27,109 --> 00:50:24,400
not happen to our planet so it's a

1231
00:50:28,630 --> 00:50:27,119
critical part of our our mission

1232
00:50:30,549 --> 00:50:28,640
well we're hoping that the information

1233
00:50:32,309 --> 00:50:30,559
that we get today can feed into the

1234
00:50:34,230 --> 00:50:32,319
future missions of tomorrow if nothing

1235
00:50:35,829 --> 00:50:34,240
else we'll certainly know the weather

1236
00:50:37,510 --> 00:50:35,839
pam thank you so much for joining us

1237
00:50:38,470 --> 00:50:37,520
today we really appreciate it and we

1238
00:50:43,510 --> 00:50:38,480

thank you

1239
00:50:44,950 --> 00:50:43,520
liam pam and kevin go see doesn't just

1240
00:50:46,150 --> 00:50:44,960
forecast the weather we've talked about

1241
00:50:48,470 --> 00:50:46,160
this a little bit you know we've talked

1242
00:50:52,069 --> 00:50:48,480
about how it monitors the atmosphere uh

1243
00:50:54,230 --> 00:50:52,079
for fog dust storms and smoke and and uh

1244
00:50:56,230 --> 00:50:54,240
you know especially for wildfires but

1245
00:50:58,630 --> 00:50:56,240
what about like smoke and ash for

1246
00:51:00,870 --> 00:50:58,640
volcanic eruptions yeah absolutely this

1247
00:51:03,349 --> 00:51:00,880
past year's been kind of a revelation in

1248
00:51:05,270 --> 00:51:03,359
our capabilities uh to view volcanic

1249
00:51:06,710 --> 00:51:05,280
eruptions in particular probably the

1250
00:51:08,710 --> 00:51:06,720
most spectacular example would be the

1251
00:51:10,470 --> 00:51:08,720
tongan what but what we also have is

1252
00:51:12,870 --> 00:51:10,480
another example in the caribbean where

1253
00:51:14,870 --> 00:51:12,880
you can see not only the amount of ash

1254
00:51:17,510 --> 00:51:14,880
that goes up but the the area that it

1255
00:51:19,190 --> 00:51:17,520
covers and and as a result of that that

1256
00:51:21,829 --> 00:51:19,200
that particular hazard becomes an

1257
00:51:23,829 --> 00:51:21,839
aviation hazard in particular yeah you

1258
00:51:25,349 --> 00:51:23,839
can see all the smoke there you know i

1259
00:51:26,950 --> 00:51:25,359
weirdly enough two years ago i was

1260
00:51:29,030 --> 00:51:26,960
traveling in the philippines and there

1261
00:51:31,430 --> 00:51:29,040
was a volcanic eruption there and we had

1262
00:51:33,750 --> 00:51:31,440
to ground hundreds of flights because of

1263
00:51:35,990 --> 00:51:33,760

it so so really goes helps decide

1264
00:51:37,910 --> 00:51:36,000
whether or not it's safe to fly they do

1265
00:51:39,589 --> 00:51:37,920
again noaa's partner with the faa and

1266
00:51:41,510 --> 00:51:39,599
they provide them with those volcanic

1267
00:51:43,270 --> 00:51:41,520
ash both forecasts and projections for

1268
00:51:44,950 --> 00:51:43,280
where that ash could go all right we're

1269
00:51:46,470 --> 00:51:44,960
now approaching another milestone in the

1270
00:51:48,790 --> 00:51:46,480
ascent daryl and mick

1271
00:51:50,309 --> 00:51:48,800
back to you

1272
00:51:52,230 --> 00:51:50,319
thank you very much megan and we

1273
00:51:54,150 --> 00:51:52,240
continue to burn continue to get good

1274
00:51:56,390 --> 00:51:54,160
numbers as we monitor the flight of the

1275
00:51:58,230 --> 00:51:56,400
centaur and those teams

1276
00:52:01,190 --> 00:51:58,240
yeah things are looking really great uh

1277
00:52:03,349 --> 00:52:01,200
on this flight and uh coming up on uh

1278
00:52:05,349 --> 00:52:03,359
mikko one of that centaur engine as

1279
00:52:06,309 --> 00:52:05,359
centaur continues to perform normally

1280
00:52:07,589 --> 00:52:06,319
we've heard pressures and everything

1281
00:52:09,670 --> 00:52:07,599
with the pressure system has gone open

1282
00:52:11,670 --> 00:52:09,680
loop

1283
00:52:13,510 --> 00:52:11,680
here in about 10 seconds we'll have the

1284
00:52:16,470 --> 00:52:13,520
standby for the end of the burn and we

1285
00:52:18,790 --> 00:52:16,480
have miko main engine has cut off

1286
00:52:21,990 --> 00:52:18,800
there you go that completes that first

1287
00:52:24,390 --> 00:52:22,000
burn and so now we go into about an 11

1288
00:52:26,790 --> 00:52:24,400

minute coast phase at this time the goes

1289
00:52:28,790 --> 00:52:26,800
t spacecraft and ula centaur upper stage

1290
00:52:31,109 --> 00:52:28,800
are in an unpowered coast phase that

1291
00:52:32,549 --> 00:52:31,119
will last approximately 11 minutes the

1292
00:52:34,710 --> 00:52:32,559
coast allows the vehicle to move to

1293
00:52:38,069 --> 00:52:34,720
optimal orbital position in orbit prior

1294
00:52:40,069 --> 00:52:38,079
to beginning the second main engine burn

1295
00:52:42,950 --> 00:52:40,079
and what you're looking at is animation

1296
00:52:45,349 --> 00:52:42,960
that is tied directly to the telemetry

1297
00:52:47,030 --> 00:52:45,359
we are receiving from the rocket yeah

1298
00:52:50,870 --> 00:52:47,040
the team is using all the all the

1299
00:52:52,549 --> 00:52:50,880
vehicle telemetry to uh look at and uh

1300
00:52:54,069 --> 00:52:52,559
power this system is operating at the

1301
00:52:55,349 --> 00:52:54,079
hundred percent settling mode at this

1302
00:52:56,710 --> 00:52:55,359
time

1303
00:52:58,630 --> 00:52:56,720
power this animation that we're seeing

1304
00:53:00,630 --> 00:52:58,640
which is is really good and as we heard

1305
00:53:02,549 --> 00:53:00,640
rob kesselman say a minute ago this

1306
00:53:04,870 --> 00:53:02,559
approximate 10-minute coast uh we're in

1307
00:53:06,790 --> 00:53:04,880
this park orbit around earth right now

1308
00:53:09,109 --> 00:53:06,800
as we coast around to get into the

1309
00:53:11,270 --> 00:53:09,119
proper uh trajectory we want to be for

1310
00:53:12,710 --> 00:53:11,280
that second burn which will then

1311
00:53:15,190 --> 00:53:12,720
send us on our way towards that

1312
00:53:17,510 --> 00:53:15,200
geostationary spot we want to be

1313
00:53:18,950 --> 00:53:17,520

it'll be a longer burn and and then

1314
00:53:21,589 --> 00:53:18,960
we've got daryl

1315
00:53:23,190 --> 00:53:21,599
that long long three-hour coast that

1316
00:53:26,390 --> 00:53:23,200
we're going to wait around for three

1317
00:53:28,950 --> 00:53:26,400
hours folks between the points on the

1318
00:53:31,829 --> 00:53:28,960
bottom of your milestone list between

1319
00:53:34,150 --> 00:53:31,839
miko 2 and mess three that's three hours

1320
00:53:35,750 --> 00:53:34,160
it's short there on your screen but it's

1321
00:53:38,630 --> 00:53:35,760
a long one as you're looking at the

1322
00:53:40,230 --> 00:53:38,640
animation we are in uh orbital darkness

1323
00:53:42,230 --> 00:53:40,240
the sun is blocked out and so the

1324
00:53:43,109 --> 00:53:42,240
animation is reflecting that at this

1325
00:53:45,589 --> 00:53:43,119
time

1326
00:53:47,510 --> 00:53:45,599
so we can't see the earth behind it they

1327
00:53:50,069 --> 00:53:47,520
give it that kind of accuracy in terms

1328
00:53:52,150 --> 00:53:50,079
of its look so the spacecraft is in uh

1329
00:53:55,109 --> 00:53:52,160
total darkness but when it comes out and

1330
00:53:58,069 --> 00:53:55,119
those uh solar rays unfurl it'll have

1331
00:53:59,990 --> 00:53:58,079
some power all right we're going to

1332
00:54:01,829 --> 00:54:00,000
send it back to megan for now and while

1333
00:54:03,190 --> 00:54:01,839
we coast but we'll be back for that

1334
00:54:05,030 --> 00:54:03,200
second burn

1335
00:54:06,870 --> 00:54:05,040
thank you both now goes to will warn us

1336
00:54:09,109 --> 00:54:06,880
about weather here on earth but also

1337
00:54:10,950 --> 00:54:09,119
space weather but what is that and how

1338
00:54:14,630 --> 00:54:10,960

does it impact us here on the ground

1339
00:54:19,190 --> 00:54:16,870
so the sun looking here from the ground

1340
00:54:20,710 --> 00:54:19,200
seems very constant and quiet but

1341
00:54:22,470 --> 00:54:20,720
actually when we look at it from space

1342
00:54:25,670 --> 00:54:22,480
we can see it's quite turbulent and

1343
00:54:29,829 --> 00:54:28,309
space weather is activity on the sun and

1344
00:54:32,260 --> 00:54:29,839
in a near-earth space that can affect

1345
00:54:37,510 --> 00:54:32,270
our technological infrastructure in

1346
00:54:40,069 --> 00:54:37,520
[Music]

1347
00:54:41,990 --> 00:54:40,079
the society is constantly spewing out a

1348
00:54:44,710 --> 00:54:42,000
stream of particles called the solar

1349
00:54:46,710 --> 00:54:44,720
wind that goes out into the solar system

1350
00:54:48,309 --> 00:54:46,720
and it affects us here near earth to

1351
00:54:49,670 --> 00:54:48,319
where we're protected by a magnetic

1352
00:54:51,910 --> 00:54:49,680
field

1353
00:54:53,750 --> 00:54:51,920
the interaction between the solar wind

1354
00:54:54,660 --> 00:54:53,760
and the magnetic field can cause space

1355
00:54:58,549 --> 00:54:54,670
weather

1356
00:55:00,710 --> 00:54:58,559
[Music]

1357
00:55:02,870 --> 00:55:00,720
the carrington event is the largest

1358
00:55:05,349 --> 00:55:02,880
storm we've seen in recorded history

1359
00:55:07,349 --> 00:55:05,359
when we're looking at space weather but

1360
00:55:09,589 --> 00:55:07,359
every solar cycle which repeats about

1361
00:55:11,589 --> 00:55:09,599
every every 11 years one estimate

1362
00:55:13,190 --> 00:55:11,599
estimates that there's a 10 chance of

1363
00:55:15,109 --> 00:55:13,200

getting a large storm like the

1364
00:55:21,349 --> 00:55:15,119
carrington event that could impact us

1365
00:55:25,510 --> 00:55:23,990
but we see solar storms almost all the

1366
00:55:27,510 --> 00:55:25,520
time

1367
00:55:31,510 --> 00:55:27,520
and these storm of storms have an effect

1368
00:55:33,190 --> 00:55:31,520
on our technological infrastructure

1369
00:55:37,510 --> 00:55:33,200
solar storms can cause activity in

1370
00:55:43,349 --> 00:55:39,430
that can damage electrical power grids

1371
00:55:43,359 --> 00:55:46,829
interrupt radio and satellite

1372
00:55:53,510 --> 00:55:49,510
communications and can cause our gps

1373
00:55:56,710 --> 00:55:55,109
noaa is working with its international

1374
00:55:58,150 --> 00:55:56,720
partners to ensure that we have

1375
00:56:01,190 --> 00:55:58,160
different vantage points where we can

1376
00:56:02,470 --> 00:56:01,200
observe space weather

1377
00:56:04,390 --> 00:56:02,480
our space weather observing

1378
00:56:07,270 --> 00:56:04,400
infrastructure from space

1379
00:56:08,870 --> 00:56:07,280
includes the the noaa discover satellite

1380
00:56:11,430 --> 00:56:08,880
and the nasa a satellite that are

1381
00:56:15,109 --> 00:56:11,440
stationed upstream of earth to give us a

1382
00:56:17,910 --> 00:56:15,119
first buoy measurement of the solar wind

1383
00:56:20,870 --> 00:56:17,920
it also includes the esa nasa

1384
00:56:23,030 --> 00:56:20,880
soho satellite and this nasa stereo

1385
00:56:25,349 --> 00:56:23,040
satellite that image the sun and also

1386
00:56:27,510 --> 00:56:25,359
make chronograph measurements of the

1387
00:56:29,510 --> 00:56:27,520
outer atmosphere of the sun the corona

1388
00:56:35,109 --> 00:56:29,520

that can tell us when a large explosions

1389
00:56:39,829 --> 00:56:37,910
we also observe the sun and the earth's

1390
00:56:43,900 --> 00:56:39,839
magnetic field from the geostationary

1391
00:56:47,910 --> 00:56:43,910
location with noah's goes

1392
00:56:51,829 --> 00:56:49,829
so the way we use the space weather

1393
00:56:54,870 --> 00:56:51,839
information

1394
00:56:56,789 --> 00:56:54,880
from satellites and from the ground

1395
00:56:58,789 --> 00:56:56,799
is to be able to make forecasts and

1396
00:57:02,710 --> 00:56:58,799
predictions just like we do with with

1397
00:57:07,230 --> 00:57:05,430
we observe the sun and look for activity

1398
00:57:11,030 --> 00:57:07,240
and see how it develops

1399
00:57:14,549 --> 00:57:12,950
and see if it's going to culminate into

1400
00:57:18,549 --> 00:57:14,559
a large explosion that can affect us

1401
00:57:22,390 --> 00:57:20,230
noah is working with his international

1402
00:57:26,789 --> 00:57:22,400
partners to expand our observing

1403
00:57:31,109 --> 00:57:29,109
we're committed to observing along the

1404
00:57:33,750 --> 00:57:31,119
sun earth line so we're going to do the

1405
00:57:36,470 --> 00:57:33,760
imaging of the sun and the upstream buoy

1406
00:57:43,910 --> 00:57:36,480
measurements of the solar wind along the

1407
00:57:48,230 --> 00:57:45,910
more we understand about the sun the

1408
00:57:50,069 --> 00:57:48,240
more we can prepare for it and become

1409
00:57:55,030 --> 00:57:50,079
just like we are a weather ready nation

1410
00:57:59,670 --> 00:57:56,870
and as we look forward to humans

1411
00:58:05,349 --> 00:57:59,680
exploring out into the solar system and

1412
00:58:11,850 --> 00:58:06,870
space weather becomes more and more

1413
00:58:15,750 --> 00:58:13,430

[Music]

1414
00:58:18,390 --> 00:58:15,760
go see is one of many satellite programs

1415
00:58:21,510 --> 00:58:18,400
operating right now leah is standing by

1416
00:58:23,829 --> 00:58:21,520
with someone you know very well kevin

1417
00:58:25,190 --> 00:58:23,839
dr spinrad our administrator yeah noah's

1418
00:58:25,990 --> 00:58:25,200
administrator all right take it away

1419
00:58:27,990 --> 00:58:26,000
guys

1420
00:58:29,750 --> 00:58:28,000
hi dr spinbrad thank you so much for

1421
00:58:32,150 --> 00:58:29,760
joining us today for the ghost tea

1422
00:58:34,549 --> 00:58:32,160
launch we really appreciate it so this

1423
00:58:36,870 --> 00:58:34,559
launch is actually not the only nasa

1424
00:58:38,390 --> 00:58:36,880
noaa watch that we have a collaborative

1425
00:58:40,150 --> 00:58:38,400
effort with this year we have another

1426
00:58:41,589 --> 00:58:40,160
one coming up as well

1427
00:58:44,150 --> 00:58:41,599
yeah that's right thanks for having me

1428
00:58:45,510 --> 00:58:44,160
and in fact this next launch will be a

1429
00:58:46,950 --> 00:58:45,520
polar orbiter

1430
00:58:48,789 --> 00:58:46,960
which is fundamentally different from

1431
00:58:51,030 --> 00:58:48,799
what we launched here today so this we

1432
00:58:53,270 --> 00:58:51,040
call it a geostationary satellite as the

1433
00:58:55,670 --> 00:58:53,280
name implies it's earth synchronous it

1434
00:58:57,589 --> 00:58:55,680
actually follows around and looks at one

1435
00:59:00,470 --> 00:58:57,599
uh one spot on the earth if you will and

1436
00:59:02,390 --> 00:59:00,480
then the jpss launch is a we call it a

1437
00:59:03,430 --> 00:59:02,400
sun synchronous so it actually stays at

1438
00:59:05,430 --> 00:59:03,440

a certain

1439
00:59:07,829 --> 00:59:05,440
sun illumination and does orbits around

1440
00:59:10,069 --> 00:59:07,839
the pole many times to give us a

1441
00:59:12,390 --> 00:59:10,079
different look at the earth as it's

1442
00:59:14,950 --> 00:59:12,400
spinning on its axis and you take the

1443
00:59:17,990 --> 00:59:14,960
jpss satellite data and the

1444
00:59:20,230 --> 00:59:18,000
geostationary data together and it's

1445
00:59:21,750 --> 00:59:20,240
like taking pictures at multiple angles

1446
00:59:23,349 --> 00:59:21,760
to get a much better idea of what's

1447
00:59:25,030 --> 00:59:23,359
happening on the planet

1448
00:59:26,870 --> 00:59:25,040
so that's information that we can use

1449
00:59:28,390 --> 00:59:26,880
independently but we can also use them

1450
00:59:30,630 --> 00:59:28,400
together just to get a better picture of

1451
00:59:33,190 --> 00:59:30,640
what's happening absolutely think of it

1452
00:59:35,510 --> 00:59:33,200
in terms of being able to

1453
00:59:37,589 --> 00:59:35,520
forecast whether say two days ahead

1454
00:59:40,230 --> 00:59:37,599
versus a week ahead and if you've got

1455
00:59:42,150 --> 00:59:40,240
multiple views of the planet you can

1456
00:59:43,910 --> 00:59:42,160
start getting a much better handle on

1457
00:59:45,990 --> 00:59:43,920
when hurricanes are forming where

1458
00:59:48,390 --> 00:59:46,000
they're forming how intense they are or

1459
00:59:50,069 --> 00:59:48,400
things like atmospheric rivers forming

1460
00:59:51,750 --> 00:59:50,079
way out in the middle of the pacific

1461
00:59:54,309 --> 00:59:51,760
when will it arrive in the pacific

1462
00:59:56,309 --> 00:59:54,319
northwest so having these multiple ways

1463
00:59:58,710 --> 00:59:56,319

of looking at the earth gives us a lot

1464
01:00:01,349 --> 00:59:58,720
more and a lot better information for

1465
01:00:04,789 --> 01:00:01,359
these critical forecasts to save lives

1466
01:00:06,870 --> 01:00:04,799
protect property and basically uh

1467
01:00:08,549 --> 01:00:06,880
protect our american public from these

1468
01:00:10,789 --> 01:00:08,559
natural phenomena

1469
01:00:12,309 --> 01:00:10,799
now and the system that is currently on

1470
01:00:15,349 --> 01:00:12,319
orbit is that i believe to go through

1471
01:00:17,470 --> 01:00:15,359
the 2030s what comes after this so we've

1472
01:00:19,670 --> 01:00:17,480
called this series the goes-r the

1473
01:00:21,510 --> 01:00:19,680
geostationary operational environmental

1474
01:00:23,670 --> 01:00:21,520
satellite r series there are four of

1475
01:00:25,430 --> 01:00:23,680
them we've launched the three here today

1476
01:00:28,069 --> 01:00:25,440
and after this series we're looking at

1477
01:00:29,910 --> 01:00:28,079
what we call geo exo extended

1478
01:00:32,549 --> 01:00:29,920
observation so what is the next

1479
01:00:34,309 --> 01:00:32,559
generation of geostationary satellites

1480
01:00:35,990 --> 01:00:34,319
look like what's the newest technology

1481
01:00:38,150 --> 01:00:36,000
we can put on there are there different

1482
01:00:40,069 --> 01:00:38,160
phenomena that we can look at in the

1483
01:00:42,069 --> 01:00:40,079
earth system but also

1484
01:00:44,309 --> 01:00:42,079
out at the sun for example to understand

1485
01:00:46,549 --> 01:00:44,319
what's happening with solar storms that

1486
01:00:48,549 --> 01:00:46,559
impact us here on earth as well

1487
01:00:51,030 --> 01:00:48,559
so really science for today while we're

1488
01:00:52,630 --> 01:00:51,040

facing forward to sites for tomorrow it

1489
01:00:55,349 --> 01:00:52,640
absolutely is you think about how many

1490
01:00:57,349 --> 01:00:55,359
years it takes to build a satellite like

1491
01:00:58,549 --> 01:00:57,359
the goes series and you want to make

1492
01:01:00,470 --> 01:00:58,559
sure that you're putting the

1493
01:01:03,589 --> 01:01:00,480
state-of-the-art science and technology

1494
01:01:05,510 --> 01:01:03,599
in the satellite that may not launch for

1495
01:01:07,990 --> 01:01:05,520
five ten years so what do we think the

1496
01:01:09,990 --> 01:01:08,000
scientific capabilities will be in five

1497
01:01:11,990 --> 01:01:10,000
or ten years and let's start working in

1498
01:01:14,870 --> 01:01:12,000
the laboratory now to build those new

1499
01:01:16,710 --> 01:01:14,880
sensors and those new operating systems

1500
01:01:18,870 --> 01:01:16,720
it's incredible to think that you know

1501
01:01:20,390 --> 01:01:18,880
in just another decade or more that we

1502
01:01:22,390 --> 01:01:20,400
could be here talking about a completely

1503
01:01:24,549 --> 01:01:22,400
different system thank you so much for

1504
01:01:26,309 --> 01:01:24,559
joining us today we really appreciate it

1505
01:01:27,990 --> 01:01:26,319
megan

1506
01:01:29,829 --> 01:01:28,000
really interesting to hear about

1507
01:01:32,390 --> 01:01:29,839
everything that's happening that we can

1508
01:01:34,069 --> 01:01:32,400
really all learn from it's been about 21

1509
01:01:36,950 --> 01:01:34,079
minutes since launch dale remick we're

1510
01:01:39,190 --> 01:01:36,960
coming up on that second burn now

1511
01:01:40,870 --> 01:01:39,200
yeah we sure are and uh thank you megan

1512
01:01:42,789 --> 01:01:40,880
back inside the atlas space flight

1513
01:01:46,069 --> 01:01:42,799

operations center mick woltman here with

1514
01:01:48,390 --> 01:01:46,079
us lsp engineer um we're heading towards

1515
01:01:51,670 --> 01:01:48,400
orbital sunrise we've been in a coast

1516
01:01:52,710 --> 01:01:51,680
phase right now heading over africa west

1517
01:01:54,870 --> 01:01:52,720
africa

1518
01:01:56,549 --> 01:01:54,880
across the southern coast there and

1519
01:01:58,309 --> 01:01:56,559
we've got a burn coming up in just about

1520
01:01:59,510 --> 01:01:58,319
a minute yeah this second burn is very

1521
01:02:01,430 --> 01:01:59,520
important is it'll get us out of this

1522
01:02:02,670 --> 01:02:01,440
park orbit around earth and

1523
01:02:05,109 --> 01:02:02,680
get us on our way towards that

1524
01:02:07,430 --> 01:02:05,119
geostationary orbit we want to head for

1525
01:02:09,270 --> 01:02:07,440
goes-t to allow them to do their science

1526
01:02:10,710 --> 01:02:09,280
and and protect us with all those

1527
01:02:12,789 --> 01:02:10,720
instruments they've got for weather

1528
01:02:16,309 --> 01:02:12,799
realization you're looking at animation

1529
01:02:18,950 --> 01:02:16,319
now tied to real-time telemetry uh the

1530
01:02:21,750 --> 01:02:18,960
centaur on the left part and goes-t on

1531
01:02:23,829 --> 01:02:21,760
the right part as it uh chases the sun

1532
01:02:27,349 --> 01:02:23,839
nick chasing orbital sunrise here in

1533
01:02:29,910 --> 01:02:27,359
just a few seconds and uh ula kind of uh

1534
01:02:32,710 --> 01:02:29,920
basically simulating that with a more

1535
01:02:34,230 --> 01:02:32,720
lighted landscape

1536
01:02:36,549 --> 01:02:34,240
and there we hear a pre-start on the

1537
01:02:38,549 --> 01:02:36,559
rl-10 coming up from rob kesselman

1538
01:02:42,870 --> 01:02:38,559

data's showing that rl10 is getting

1539
01:02:42,880 --> 01:02:52,870
locks pre-start on the r10

1540
01:02:58,390 --> 01:02:56,230
we have ignition s2

1541
01:03:00,549 --> 01:02:58,400
all right main engine start number two

1542
01:03:02,069 --> 01:03:00,559
we have advanced across the bottom of

1543
01:03:04,390 --> 01:03:02,079
your screen where we have all the

1544
01:03:06,710 --> 01:03:04,400
milestones listed we're going to burn

1545
01:03:08,630 --> 01:03:06,720
for about six minutes as you mentioned

1546
01:03:09,589 --> 01:03:08,640
mick this is really hitting the gas you

1547
01:03:11,349 --> 01:03:09,599
have gone

1548
01:03:13,990 --> 01:03:11,359
into space yeah absolutely this is going

1549
01:03:16,549 --> 01:03:14,000
to be the burn where we uh get goes t

1550
01:03:19,190 --> 01:03:16,559
headed out where it needs to be and then

1551
01:03:21,589 --> 01:03:19,200
we'll coast for that three hour period

1552
01:03:24,390 --> 01:03:21,599
to get where we need to uh go and then

1553
01:03:26,710 --> 01:03:24,400
get ready for separation so uh still a

1554
01:03:28,710 --> 01:03:26,720
lot to go from here but this is a very

1555
01:03:31,349 --> 01:03:28,720
important burn for the mission going

1556
01:03:34,549 --> 01:03:31,359
deeper into space approximately 22 000

1557
01:03:36,230 --> 01:03:34,559
miles away from the surface of the earth

1558
01:03:38,630 --> 01:03:36,240
make i want to take you back of course

1559
01:03:41,430 --> 01:03:38,640
we know that this satellite here can

1560
01:03:43,349 --> 01:03:41,440
have uh ability to map lightning it's

1561
01:03:45,829 --> 01:03:43,359
got high technology on there that's very

1562
01:03:47,990 --> 01:03:45,839
valuable um but also when it was on the

1563
01:03:50,549 --> 01:03:48,000

ground flush chamber it could have been

1564
01:03:52,630 --> 01:03:50,559
suspect uh it could have been suspect

1565
01:03:54,710 --> 01:03:52,640
rather i should say susceptible sorry

1566
01:03:56,230 --> 01:03:54,720
susceptible susceptible to lightning

1567
01:03:58,230 --> 01:03:56,240
when it was on the ground but launch

1568
01:04:01,109 --> 01:03:58,240
services program developed some

1569
01:04:02,950 --> 01:04:01,119
technology to help protect it and i was

1570
01:04:05,029 --> 01:04:02,960
fortunate to go out to the pad this is

1571
01:04:07,349 --> 01:04:05,039
something that you do a lot go out there

1572
01:04:09,750 --> 01:04:07,359
to the launch pad but i was invited to

1573
01:04:11,109 --> 01:04:09,760
go out with one of uh lsp's young

1574
01:04:14,470 --> 01:04:11,119
engineers

1575
01:04:17,430 --> 01:04:14,480
to share and install this equipment that

1576
01:04:21,100 --> 01:04:17,440
helps protect against delays let's check

1577
01:04:28,069 --> 01:04:25,589
[Music]

1578
01:04:29,670 --> 01:04:28,079
hey alex hey daryl good to see you good

1579
01:04:31,990 --> 01:04:29,680
to see you too hey thanks for having me

1580
01:04:34,870 --> 01:04:32,000
out so this is it this is it this is the

1581
01:04:36,710 --> 01:04:34,880
pli the nasa portable lightning

1582
01:04:37,910 --> 01:04:36,720
instrumentation i see it right here

1583
01:04:40,230 --> 01:04:37,920
you're gonna take it up there all the

1584
01:04:41,829 --> 01:04:40,240
way where the top of the rocket is yeah

1585
01:04:43,750 --> 01:04:41,839
right right around where the payload

1586
01:04:45,750 --> 01:04:43,760
fairing is level five all right that's

1587
01:04:52,789 --> 01:04:45,760
where we're going well you need a hand

1588
01:04:56,710 --> 01:04:54,710

now that we're inside the vif and we're

1589
01:04:59,109 --> 01:04:56,720
about 13 stories up

1590
01:05:00,950 --> 01:04:59,119
tell me a little bit about this box

1591
01:05:02,710 --> 01:05:00,960
you've got some looks like some sensors

1592
01:05:04,950 --> 01:05:02,720
here that's right so we got the current

1593
01:05:07,190 --> 01:05:04,960
probe which is over near the rocket and

1594
01:05:09,990 --> 01:05:07,200
we have three more sensors over here

1595
01:05:11,829 --> 01:05:10,000
this one is an electric field sensor

1596
01:05:14,150 --> 01:05:11,839
this one up here is a magnetic field

1597
01:05:16,549 --> 01:05:14,160
sensor and this little one over here

1598
01:05:18,710 --> 01:05:16,559
that's a gps antenna that's how we we

1599
01:05:21,029 --> 01:05:18,720
get it make sure our data stays uh

1600
01:05:23,190 --> 01:05:21,039
synchronized in time so that we can

1601
01:05:25,589 --> 01:05:23,200
correlate that data to all the other

1602
01:05:27,430 --> 01:05:25,599
lightning detection networks in the area

1603
01:05:29,990 --> 01:05:27,440
so what happens if there's a lightning

1604
01:05:30,870 --> 01:05:30,000
strike somewhere nearby what does this

1605
01:05:33,750 --> 01:05:30,880
do

1606
01:05:36,150 --> 01:05:33,760
so if it's close enough to cause any uh

1607
01:05:38,230 --> 01:05:36,160
interference in this area these field

1608
01:05:40,789 --> 01:05:38,240
sensors will pick it up first

1609
01:05:42,870 --> 01:05:40,799
and they'll cause the entire system to

1610
01:05:43,589 --> 01:05:42,880
take a snapshot of that data and record

1611
01:05:45,910 --> 01:05:43,599
it

1612
01:05:47,829 --> 01:05:45,920
and how is that helpful we'll know what

1613
01:05:49,750 --> 01:05:47,839

the peak of it was we'll know how long

1614
01:05:51,589 --> 01:05:49,760
the transient lasted we'll be able to

1615
01:05:53,270 --> 01:05:51,599
calculate how much energy traveled

1616
01:05:55,270 --> 01:05:53,280
through there we'll have a lot more

1617
01:05:58,390 --> 01:05:55,280
information to work on

1618
01:06:00,069 --> 01:05:58,400
small box big rocket but it's got a big

1619
01:06:03,430 --> 01:06:00,079
role in the whole scheme of things it's

1620
01:06:07,510 --> 01:06:03,440
got a big job that's for sure

1621
01:06:09,670 --> 01:06:07,520
[Music]

1622
01:06:11,910 --> 01:06:09,680
so we can see those lightning towers out

1623
01:06:14,069 --> 01:06:11,920
there and ula tells me that that

1624
01:06:16,630 --> 01:06:14,079
protects the rocket when the lightning

1625
01:06:18,789 --> 01:06:16,640
strikes so why do we need the pli yeah

1626
01:06:20,630 --> 01:06:18,799
so this system over here we call that

1627
01:06:22,390 --> 01:06:20,640
the lightning protection system that's

1628
01:06:24,230 --> 01:06:22,400
designed to protect it from a direct

1629
01:06:26,069 --> 01:06:24,240
lightning strike that means the the

1630
01:06:28,150 --> 01:06:26,079
lightning is attaching directly to the

1631
01:06:29,670 --> 01:06:28,160
rocket and we're concerned about you

1632
01:06:32,309 --> 01:06:29,680
know a lightning strike out there in the

1633
01:06:33,990 --> 01:06:32,319
ocean maybe just a mile away and the

1634
01:06:36,470 --> 01:06:34,000
energy in a lightning strike is so

1635
01:06:39,029 --> 01:06:36,480
intense it creates these very powerful

1636
01:06:40,630 --> 01:06:39,039
magnetic and electric fields and those

1637
01:06:42,630 --> 01:06:40,640
are the things we're concerned about

1638
01:06:45,109 --> 01:06:42,640

because that magnetic field can come

1639
01:06:47,750 --> 01:06:45,119
through and couple into the umbilical

1640
01:06:49,670 --> 01:06:47,760
cable it's a huge loop it makes a big

1641
01:06:52,470 --> 01:06:49,680
old loop and that's the current we're

1642
01:06:54,630 --> 01:06:52,480
looking for with the pli has the pli

1643
01:06:56,549 --> 01:06:54,640
ever prevented a long launch delay for a

1644
01:06:59,109 --> 01:06:56,559
previous mission march 2020 was where

1645
01:07:00,950 --> 01:06:59,119
the data from the pli gave the

1646
01:07:02,150 --> 01:07:00,960
spacecraft team the confidence to go

1647
01:07:04,150 --> 01:07:02,160
ahead and launch so there was a

1648
01:07:06,950 --> 01:07:04,160
lightning strike around the mars

1649
01:07:09,430 --> 01:07:06,960
perseverance rocket that's right and you

1650
01:07:11,190 --> 01:07:09,440
saw it and we gathered that data yep and

1651
01:07:12,710 --> 01:07:11,200
it lost on time it did

1652
01:07:15,240 --> 01:07:12,720
and it's up there now

1653
01:07:20,950 --> 01:07:15,250
that's right on mars that's right

1654
01:07:22,069 --> 01:07:20,960
[Music]

1655
01:07:23,829 --> 01:07:22,079
well that was a lot of fun to go out

1656
01:07:25,990 --> 01:07:23,839
there and alex of course was great to

1657
01:07:28,309 --> 01:07:26,000
have me out there at the pad but this

1658
01:07:29,670 --> 01:07:28,319
technology i mean really helpful when

1659
01:07:32,470 --> 01:07:29,680
you have a lightning strike it was

1660
01:07:34,309 --> 01:07:32,480
connected up inside the vif when goes

1661
01:07:35,990 --> 01:07:34,319
was inside yeah alex and the team have

1662
01:07:37,430 --> 01:07:36,000
done a great job with that they they've

1663
01:07:39,750 --> 01:07:37,440

been studying this for years and they

1664
01:07:41,430 --> 01:07:39,760
came up with this pli work

1665
01:07:43,029 --> 01:07:41,440
and working with our commercial partners

1666
01:07:45,109 --> 01:07:43,039
they've been able to install it like you

1667
01:07:46,870 --> 01:07:45,119
said on the vip for the atlas v mission

1668
01:07:49,190 --> 01:07:46,880
and as alex mentioned we actually used

1669
01:07:50,950 --> 01:07:49,200
it during march 2020 to help us verify

1670
01:07:52,870 --> 01:07:50,960
some information so we didn't have to go

1671
01:07:55,349 --> 01:07:52,880
back and retest anything and it actually

1672
01:07:58,470 --> 01:07:55,359
saved the launch from delaying so uh you

1673
01:08:00,630 --> 01:07:58,480
know the the the uh hardware is is great

1674
01:08:02,309 --> 01:08:00,640
for what uh what we have involved in it

1675
01:08:04,870 --> 01:08:02,319
especially important for a planetary

1676
01:08:07,670 --> 01:08:04,880
window like mars where you only had so

1677
01:08:10,150 --> 01:08:07,680
much time to launch to make it uh to the

1678
01:08:12,470 --> 01:08:10,160
planet but we are in the midst of a

1679
01:08:14,309 --> 01:08:12,480
six-minute burn we're about to wrap that

1680
01:08:16,149 --> 01:08:14,319
burn up and just you have open loop

1681
01:08:17,669 --> 01:08:16,159
control

1682
01:08:18,709 --> 01:08:17,679
you're looking at animation of the

1683
01:08:21,189 --> 01:08:18,719
centaur

1684
01:08:23,749 --> 01:08:21,199
upper stage and also looking at goes-t

1685
01:08:26,309 --> 01:08:23,759
spacecraft as represented by animation

1686
01:08:28,309 --> 01:08:26,319
just a few seconds left in this burn

1687
01:08:29,749 --> 01:08:28,319
and we have miko 2 second stage main

1688
01:08:31,829 --> 01:08:29,759

engine cutoff

1689
01:08:34,550 --> 01:08:31,839
and there you go we have completed the

1690
01:08:37,110 --> 01:08:34,560
second burn really is now operating at

1691
01:08:38,950 --> 01:08:37,120
100 settling level

1692
01:08:41,349 --> 01:08:38,960
really got away from the earth and now

1693
01:08:43,030 --> 01:08:41,359
we're cruising uh pretty good speed now

1694
01:08:44,309 --> 01:08:43,040
way towards that

1695
01:08:46,229 --> 01:08:44,319
stationary point where they want to get

1696
01:08:47,910 --> 01:08:46,239
that geostationary orbit yeah this is

1697
01:08:49,269 --> 01:08:47,920
the moment we've been talking about a

1698
01:08:52,309 --> 01:08:49,279
little bit right is this is that three

1699
01:08:53,669 --> 01:08:52,319
hour coach that uh we're to have centaur

1700
01:08:55,189 --> 01:08:53,679
and ghost tea

1701
01:08:56,870 --> 01:08:55,199
do their thing head out towards that

1702
01:08:58,870 --> 01:08:56,880
geostationary where they want to where

1703
01:09:01,269 --> 01:08:58,880
they want to get to so we can

1704
01:09:02,789 --> 01:09:01,279
have that third burn of the centaur and

1705
01:09:04,630 --> 01:09:02,799
what we'll see on that third burn

1706
01:09:06,550 --> 01:09:04,640
darrell is is that after that three-hour

1707
01:09:08,870 --> 01:09:06,560
coast centaur will go through its

1708
01:09:10,470 --> 01:09:08,880
process again of pre-chilling the engine

1709
01:09:12,229 --> 01:09:10,480
uh doing some things to get ready for

1710
01:09:14,630 --> 01:09:12,239
that centaur is now entering an extended

1711
01:09:17,749 --> 01:09:14,640
duration coast phase this coast phase

1712
01:09:21,990 --> 01:09:17,759
will last approximately 180 minutes

1713
01:09:27,110 --> 01:09:23,829

yeah so we've now flipped the bottom of

1714
01:09:29,510 --> 01:09:27,120
our progress bar to a countdown clock to

1715
01:09:32,470 --> 01:09:29,520
show you and represent that three hours

1716
01:09:35,349 --> 01:09:32,480
uh when we return we should be out of

1717
01:09:37,030 --> 01:09:35,359
africa and near the coast of australia

1718
01:09:38,470 --> 01:09:37,040
so we're going to do some cruising yes

1719
01:09:39,990 --> 01:09:38,480
we are this uh

1720
01:09:40,789 --> 01:09:40,000
like i said longest part of the mission

1721
01:09:42,630 --> 01:09:40,799
but

1722
01:09:44,709 --> 01:09:42,640
uh very much needed to get ghosty where

1723
01:09:46,870 --> 01:09:44,719
she needs to be all right for now that's

1724
01:09:49,110 --> 01:09:46,880
going to wrap up our coverage for this

1725
01:09:51,349 --> 01:09:49,120
initial part of the mission we will be

1726
01:09:53,749 --> 01:09:51,359
here throughout listening to the loops

1727
01:09:55,590 --> 01:09:53,759
monitoring the launch team uh mick's not

1728
01:09:57,189 --> 01:09:55,600
going anywhere either he's going to lock

1729
01:09:59,669 --> 01:09:57,199
it down and of course we'll give you all

1730
01:10:02,229 --> 01:09:59,679
the updates as we go along and then

1731
01:10:03,990 --> 01:10:02,239
rejoin you finally after three hours but

1732
01:10:06,310 --> 01:10:04,000
for now we'll send it back to megan and

1733
01:10:08,070 --> 01:10:06,320
kevin yeah as i just mentioned goes tea

1734
01:10:10,550 --> 01:10:08,080
will now coast for about three hours

1735
01:10:13,350 --> 01:10:10,560
before spacecraft separation we will

1736
01:10:15,030 --> 01:10:13,360
stay on air for this coast face to bring

1737
01:10:16,870 --> 01:10:15,040
you those live animations you've been

1738
01:10:18,870 --> 01:10:16,880

watching as well as commentary from

1739
01:10:20,790 --> 01:10:18,880
daryl and mick you can expect those hits

1740
01:10:23,189 --> 01:10:20,800
at the top of every hour at six and

1741
01:10:25,430 --> 01:10:23,199
seven pm eastern time in the meantime we

1742
01:10:27,750 --> 01:10:25,440
have some fantastic art to show you from

1743
01:10:30,149 --> 01:10:27,760
kids around the world as part of nasa's

1744
01:10:32,310 --> 01:10:30,159
space place art challenge where every

1745
01:10:34,790 --> 01:10:32,320
month we invite kids to draw something

1746
01:10:36,790 --> 01:10:34,800
space related and in honor of ghost

1747
01:10:39,189 --> 01:10:36,800
tea's launch today we asked kids to draw

1748
01:10:40,310 --> 01:10:39,199
ghost tea observing the weather where

1749
01:10:42,070 --> 01:10:40,320
they live

1750
01:10:43,510 --> 01:10:42,080
and then at 8 p.m eastern kevin and i

1751
01:10:45,590 --> 01:10:43,520
will be back to cover the rest of the

1752
01:10:47,270 --> 01:10:45,600
mission so set your alarms and we'll see

1753
01:10:53,510 --> 01:10:47,280
you back here soon

1754
01:10:53,520 --> 01:11:00,130
he forgot i did