



1
00:00:51,260 --> 00:01:10,830
[Music]

2
00:01:45,830 --> 00:01:13,490
do

3
00:02:15,750 --> 00:01:55,380
t-minus one minute

4
00:02:22,570 --> 00:02:15,760
[Music]

5
00:02:29,270 --> 00:02:22,580
t-minus 30 seconds

6
00:02:34,949 --> 00:02:31,040
we are go for launch

7
00:02:38,869 --> 00:02:34,959
[Music]

8
00:02:42,710 --> 00:02:38,879
t-minus 10 9 8

9
00:02:46,309 --> 00:02:42,720
7 6 5 4

10
00:02:48,390 --> 00:02:46,319
3 2 1.

11
00:02:49,670 --> 00:02:48,400
welcome to the nasa social for the mars

12
00:03:06,350 --> 00:02:49,680
2020 mission

13
00:03:33,430 --> 00:03:15,430

[Music]

14

00:03:37,830 --> 00:03:35,589

welcome to the second ever virtual

15

00:03:40,390 --> 00:03:37,840

international nasa social here

16

00:03:41,910 --> 00:03:40,400

supporting the mars 2020 mission with

17

00:03:43,670 --> 00:03:41,920

the perseverance of robots

18

00:03:45,910 --> 00:03:43,680

which we have a beautiful 1 10th scale

19

00:03:47,270 --> 00:03:45,920

model here and the ingenuity helicopter

20

00:03:50,070 --> 00:03:47,280

the first ever helicopter

21

00:03:52,390 --> 00:03:50,080

designed for another world thank you so

22

00:03:54,229 --> 00:03:52,400

much for joining us we are so excited

23

00:03:56,630 --> 00:03:54,239

and i'm joshua santora with nasa

24

00:03:57,830 --> 00:03:56,640

communication and i am just

25

00:03:59,750 --> 00:03:57,840

thrilled you're with us i wish you could

26

00:04:00,710 --> 00:03:59,760

be here with us face to face

27

00:04:02,470 --> 00:04:00,720

but we're glad that you're joining us

28

00:04:04,309 --> 00:04:02,480

virtually for this opportunity i want to

29

00:04:04,789 --> 00:04:04,319

introduce my co-host for this morning's

30

00:04:06,229 --> 00:04:04,799

show

31

00:04:08,550 --> 00:04:06,239

stephanie placinski stephanie are you

32

00:04:10,229 --> 00:04:08,560

excited to go to mars i'm so excited

33

00:04:11,589 --> 00:04:10,239

joshua and we're so excited that you

34

00:04:12,869 --> 00:04:11,599

could join us here today for the

35

00:04:15,429 --> 00:04:12,879

countdown to mars

36

00:04:17,670 --> 00:04:15,439

virtual nasa social for our first video

37

00:04:20,710 --> 00:04:17,680

we're going to take you inside hangar ae

38

00:04:22,150 --> 00:04:20,720

the telemetry center of the universe

39

00:04:23,670 --> 00:04:22,160

if you have a question feel free to

40

00:04:25,430 --> 00:04:23,680

leave it in the comment section below

41

00:04:27,350 --> 00:04:25,440

and we may just answer it live during

42

00:04:28,629 --> 00:04:27,360

this segment

43

00:04:31,110 --> 00:04:28,639

yeah i want to make sure you guys know

44

00:04:32,070 --> 00:04:31,120

uh use the hashtag countdown to mars and

45

00:04:33,350 --> 00:04:32,080

also

46

00:04:35,270 --> 00:04:33,360

follow that as we go through the next

47

00:04:36,870 --> 00:04:35,280

couple days it's really exciting i want

48

00:04:37,670 --> 00:04:36,880

to give you a preview of what's ahead

49

00:04:39,350 --> 00:04:37,680

today

50

00:04:41,670 --> 00:04:39,360

uh for our schedule so we do have this

51
00:04:44,790 --> 00:04:41,680
tour we're taking you inside hanger ae

52
00:04:46,230 --> 00:04:44,800
and then we will be uh having some

53
00:04:47,830 --> 00:04:46,240
amazing guests where we're gonna be

54
00:04:50,150 --> 00:04:47,840
heavy on q a today so

55
00:04:51,510 --> 00:04:50,160
please tune in be asking questions um

56
00:04:53,830 --> 00:04:51,520
really fast here

57
00:04:54,950 --> 00:04:53,840
dr zurbukin and dr glaze coming from

58
00:04:57,189 --> 00:04:54,960
nasa's headquarters

59
00:04:58,070 --> 00:04:57,199
um heavily involved with the management

60
00:04:59,590 --> 00:04:58,080
and kind of

61
00:05:01,670 --> 00:04:59,600
the big picture of what we're doing on

62
00:05:04,070 --> 00:05:01,680
mars and then at 1 15

63
00:05:05,350 --> 00:05:04,080

these all these are in eastern times q a

64

00:05:07,430 --> 00:05:05,360

featuring the administrator

65

00:05:09,430 --> 00:05:07,440

jim bridenstine and the ksc director bob

66

00:05:11,029 --> 00:05:09,440

cabana as well as the actual nasa deputy

67

00:05:12,550 --> 00:05:11,039

administrator jim orhard

68

00:05:14,390 --> 00:05:12,560

so that list might grow as we go

69

00:05:15,830 --> 00:05:14,400

throughout the day always a good time

70

00:05:18,469 --> 00:05:15,840

we'll look at the space launch complex

71

00:05:19,430 --> 00:05:18,479

41 where the atlas 5 will fly from with

72

00:05:21,110 --> 00:05:19,440

perseverance

73

00:05:23,430 --> 00:05:21,120

and the jet propulsion laboratory will

74

00:05:24,950 --> 00:05:23,440

be picking up the 3 30 show today

75

00:05:26,710 --> 00:05:24,960

they will actually be bringing you live

76

00:05:27,510 --> 00:05:26,720

i think steph is that actually on site

77

00:05:29,510 --> 00:05:27,520

at jpl

78

00:05:31,029 --> 00:05:29,520

that's correct joshua so yeah it's a

79

00:05:32,710 --> 00:05:31,039

special opportunity so usually when you

80

00:05:33,430 --> 00:05:32,720

come to our socials you just get the ksc

81

00:05:35,189 --> 00:05:33,440

experience

82

00:05:36,710 --> 00:05:35,199

but you kind of get a twofer there with

83

00:05:38,310 --> 00:05:36,720

the jet propulsion laboratory

84

00:05:40,710 --> 00:05:38,320

and then we'll be rounding out our day

85

00:05:44,310 --> 00:05:40,720

talking about the multi-mission

86

00:05:46,629 --> 00:05:44,320

radio isotope thermoelectric generator

87

00:05:47,430 --> 00:05:46,639

or we like to call it the mm-rtg it's a

88

00:05:49,350 --> 00:05:47,440

mouthful

89

00:05:50,790 --> 00:05:49,360

but that is the power system for

90

00:05:53,189 --> 00:05:50,800

perseverance

91

00:05:54,230 --> 00:05:53,199

it is a nuclear battery and we have a

92

00:05:56,309 --> 00:05:54,240

special guest

93

00:05:58,390 --> 00:05:56,319

greg hula i think is his name um he will

94

00:06:01,430 --> 00:05:58,400

be on to answer questions about that

95

00:06:03,189 --> 00:06:01,440

um a very exciting time so much going on

96

00:06:04,710 --> 00:06:03,199

but let's dive right in now to the tour

97

00:06:06,390 --> 00:06:04,720

of this hanger video

98

00:06:08,150 --> 00:06:06,400

for those that joined us for the demo 2

99

00:06:09,430 --> 00:06:08,160

social you'll see some things that look

100

00:06:10,469 --> 00:06:09,440

familiar but we got to go a little

101
00:06:12,309 --> 00:06:10,479
deeper this time

102
00:06:18,070 --> 00:06:12,319
and see more of the behind the scenes of

103
00:06:21,990 --> 00:06:20,070
we're here now at nasa's launch services

104
00:06:24,710 --> 00:06:22,000
programs hangar ae

105
00:06:25,990 --> 00:06:24,720
at the cape canaveral air force station

106
00:06:28,790 --> 00:06:26,000
launch services program

107
00:06:29,749 --> 00:06:28,800
or lsp for short is responsible for

108
00:06:31,990 --> 00:06:29,759
launching nasa's

109
00:06:33,830 --> 00:06:32,000
science missions and robotic explorers

110
00:06:35,350 --> 00:06:33,840
and the mars perseverance rover is no

111
00:06:36,950 --> 00:06:35,360
exception

112
00:06:38,469 --> 00:06:36,960
in collaboration with colleagues at the

113
00:06:40,390 --> 00:06:38,479

jet propulsion laboratory

114

00:06:42,550 --> 00:06:40,400

and united launch alliance we are

115

00:06:44,629 --> 00:06:42,560

counting down to the next evolution in

116

00:06:46,710 --> 00:06:44,639

mars exploration

117

00:06:48,150 --> 00:06:46,720

lsp shares their technical insight of

118

00:06:49,990 --> 00:06:48,160

the atlas v rocket

119

00:06:51,510 --> 00:06:50,000

performs launch vehicle engineering and

120

00:06:54,150 --> 00:06:51,520

analytical assessments

121

00:06:55,749 --> 00:06:54,160

and provides operational insight for

122

00:06:57,430 --> 00:06:55,759

launch sites as well as

123

00:06:59,990 --> 00:06:57,440

at the launch vehicle provider design

124

00:07:02,950 --> 00:07:00,000

and production facilities

125

00:07:04,230 --> 00:07:02,960

inside hangar ae on launch day lsp

126
00:07:06,230 --> 00:07:04,240
engineers and analysts

127
00:07:07,830 --> 00:07:06,240
are also on console working alongside

128
00:07:10,629 --> 00:07:07,840
the teams from jpl

129
00:07:11,350 --> 00:07:10,639
and ula to provide real-time technical

130
00:07:14,550 --> 00:07:11,360
advice

131
00:07:17,189 --> 00:07:14,560
when required here at hanger ae

132
00:07:18,870 --> 00:07:17,199
lsp has hosted pre-launch simulations

133
00:07:20,629 --> 00:07:18,880
for the mars 2020 mission

134
00:07:22,629 --> 00:07:20,639
and will also provide their world-class

135
00:07:24,150 --> 00:07:22,639
telemetry and communication services on

136
00:07:27,350 --> 00:07:24,160
the day of launch

137
00:07:31,029 --> 00:07:28,710
all right so jessica tell us a little

138
00:07:32,950 --> 00:07:31,039

bit more about this facility that we're

139

00:07:35,270 --> 00:07:32,960

at and kind of what lsp's role is

140

00:07:36,710 --> 00:07:35,280

in rocketry my name is jessica cotter i

141

00:07:37,670 --> 00:07:36,720

am the mission commons here for mars

142

00:07:39,350 --> 00:07:37,680

2020

143

00:07:40,870 --> 00:07:39,360

and we are at kangaroo e which is

144

00:07:41,510 --> 00:07:40,880

located at cape canaveral air force

145

00:07:44,790 --> 00:07:41,520

station

146

00:07:46,550 --> 00:07:44,800

since the 60s

147

00:07:48,150 --> 00:07:46,560

and then launch services program took it

148

00:07:50,070 --> 00:07:48,160

over in 1998.

149

00:07:51,990 --> 00:07:50,080

so the launch services program role is

150

00:07:53,990 --> 00:07:52,000

to essentially match the spacecraft

151
00:07:55,990 --> 00:07:54,000
with the proper rocket and also provide

152
00:07:58,390 --> 00:07:56,000
assurance that it is going to need

153
00:07:59,670 --> 00:07:58,400
its intended locations including jpl who

154
00:08:02,869 --> 00:07:59,680
actually created

155
00:08:04,710 --> 00:08:02,879
the rover in this case and so we provide

156
00:08:07,270 --> 00:08:04,720
voice out to those locations

157
00:08:08,230 --> 00:08:07,280
we also provide video including through

158
00:08:09,909 --> 00:08:08,240
processing

159
00:08:11,990 --> 00:08:09,919
and so i've actually been working with

160
00:08:13,670 --> 00:08:12,000
the spacecraft for about two years now

161
00:08:14,309 --> 00:08:13,680
to go ahead and get all their video

162
00:08:17,270 --> 00:08:14,319
voice

163
00:08:19,909 --> 00:08:17,280

and telemetry requirements so let's go

164

00:08:21,990 --> 00:08:19,919

ahead and take a behind the scenes tour

165

00:08:23,430 --> 00:08:22,000

cool and so tell me about the sites that

166

00:08:24,790 --> 00:08:23,440

we're supporting because

167

00:08:26,950 --> 00:08:24,800

every mission is different especially

168

00:08:29,110 --> 00:08:26,960

based on who your rocket provider is

169

00:08:30,390 --> 00:08:29,120

who your spacecraft customer is so for

170

00:08:32,310 --> 00:08:30,400

this one

171

00:08:34,949 --> 00:08:32,320

geographically what are we talking about

172

00:08:37,509 --> 00:08:34,959

so jpl out in california jet propulsion

173

00:08:39,029 --> 00:08:37,519

laboratory we also have ula with

174

00:08:40,949 --> 00:08:39,039

facilities out here

175

00:08:42,790 --> 00:08:40,959

and also they have a location out in

176
00:08:44,949 --> 00:08:42,800
colorado in denver

177
00:08:46,630 --> 00:08:44,959
so there's several different players we

178
00:08:47,829 --> 00:08:46,640
also have people listening in at

179
00:08:49,829 --> 00:08:47,839
headquarters

180
00:08:50,870 --> 00:08:49,839
and also we are supporting some folks

181
00:08:53,030 --> 00:08:50,880
remotely

182
00:08:54,070 --> 00:08:53,040
so there's just people from all over the

183
00:08:56,150 --> 00:08:54,080
country participating

184
00:08:57,110 --> 00:08:56,160
in this lunch sure yeah definitely a

185
00:08:58,790 --> 00:08:57,120
team effort

186
00:09:00,790 --> 00:08:58,800
a lot happening uh let's head inside now

187
00:09:02,870 --> 00:09:00,800
this is the mission director center

188
00:09:04,470 --> 00:09:02,880

and this is i i think of this as being

189

00:09:05,509 --> 00:09:04,480

like the head control room here is that

190

00:09:07,190 --> 00:09:05,519

a fair assessment

191

00:09:08,790 --> 00:09:07,200

so this is actually where management

192

00:09:11,990 --> 00:09:08,800

typically sits for a launch so there's a

193

00:09:13,910 --> 00:09:12,000

director center part of that

194

00:09:15,350 --> 00:09:13,920

all right so this is a console we have

195

00:09:16,389 --> 00:09:15,360

set up it's uh

196

00:09:17,750 --> 00:09:16,399

i don't know that there's a typical

197

00:09:19,110 --> 00:09:17,760

console set up is it pretty different

198

00:09:20,150 --> 00:09:19,120

based on who's actually sitting at the

199

00:09:21,750 --> 00:09:20,160

computer

200

00:09:23,269 --> 00:09:21,760

so managers are typically going to be

201
00:09:24,870 --> 00:09:23,279
listening to more of the voice nets

202
00:09:26,230 --> 00:09:24,880
they're going to be looking at video

203
00:09:28,389 --> 00:09:26,240
they're going to be like basically

204
00:09:29,750 --> 00:09:28,399
taking the inputs of their teams versus

205
00:09:30,790 --> 00:09:29,760
the engineers they're typically going to

206
00:09:33,190 --> 00:09:30,800
be looking at whatever

207
00:09:34,310 --> 00:09:33,200
system data they have so like if they're

208
00:09:36,389 --> 00:09:34,320
propulsion they're going to be looking

209
00:09:39,030 --> 00:09:36,399
at actual schematics of propulsion

210
00:09:39,430 --> 00:09:39,040
of the wind plot files that we have for

211
00:09:42,389 --> 00:09:39,440
them

212
00:09:43,829 --> 00:09:42,399
so it varies a little bit based on kind

213
00:09:44,310 --> 00:09:43,839

of the role of that person's day of

214

00:09:47,350 --> 00:09:44,320

launch

215

00:09:48,389 --> 00:09:47,360

actually be doing will you be sitting at

216

00:09:49,430 --> 00:09:48,399

a console like this

217

00:09:51,750 --> 00:09:49,440

or what's your job i'm actually gonna be

218

00:09:53,750 --> 00:09:51,760

sitting right back there um so typically

219

00:09:54,710 --> 00:09:53,760

my role is a mission com engineer on day

220

00:09:56,710 --> 00:09:54,720

of launch i'm a

221

00:09:58,070 --> 00:09:56,720

mission operations director so

222

00:09:59,910 --> 00:09:58,080

essentially the role of mission

223

00:10:01,670 --> 00:09:59,920

operations director is to go ahead and

224

00:10:03,190 --> 00:10:01,680

ensure everything's working properly

225

00:10:04,790 --> 00:10:03,200

if we did it our jobs right there

226

00:10:05,430 --> 00:10:04,800

shouldn't be anything for us to do day

227

00:10:07,030 --> 00:10:05,440

of launch

228

00:10:08,870 --> 00:10:07,040

but typically you'll get people who need

229

00:10:10,710 --> 00:10:08,880

some extra voice nets or like if the

230

00:10:11,590 --> 00:10:10,720

console has some issues then we'll go

231

00:10:13,269 --> 00:10:11,600

ahead and

232

00:10:15,110 --> 00:10:13,279

resolve those issues for them so that

233

00:10:15,910 --> 00:10:15,120

they get the proper experience day of

234

00:10:17,590 --> 00:10:15,920

life

235

00:10:19,350 --> 00:10:17,600

all right so there's kind of an overview

236

00:10:23,190 --> 00:10:19,360

of the console operation let's head down

237

00:10:26,710 --> 00:10:24,870

so welcome to hangar and e so here's a

238

00:10:29,190 --> 00:10:26,720

little bit of history lesson about

239

00:10:30,949 --> 00:10:29,200

so skip mackie was what i was a long

240

00:10:32,150 --> 00:10:30,959

long time ago he was one of the first

241

00:10:34,949 --> 00:10:32,160

chiefs of hangry

242

00:10:36,389 --> 00:10:34,959

and one of the traditions he started was

243

00:10:37,350 --> 00:10:36,399

stickers of the missions he was

244

00:10:39,350 --> 00:10:37,360

supporting

245

00:10:40,630 --> 00:10:39,360

so here is viking this was one of the

246

00:10:43,829 --> 00:10:40,640

oldest missions

247

00:10:45,670 --> 00:10:43,839

the hangar supported so as you can see

248

00:10:47,670 --> 00:10:45,680

we've filled up the front of this door

249

00:10:51,110 --> 00:10:47,680

this is the door that used to be

250

00:10:52,389 --> 00:10:51,120

the front of the mdc so now we got the

251

00:10:54,389 --> 00:10:52,399

back of the door you'll have to come

252

00:10:56,310 --> 00:10:54,399

back around here

253

00:10:58,069 --> 00:10:56,320

because one of my favorite stickers to

254

00:10:59,590 --> 00:10:58,079

show was my first mission as a

255

00:11:00,069 --> 00:10:59,600

communications engineer just what

256

00:11:02,790 --> 00:11:00,079

jessica

257

00:11:05,269 --> 00:11:02,800

was was the curiosity rover so this was

258

00:11:08,069 --> 00:11:05,279

my sticker i got to put this on the door

259

00:11:09,590 --> 00:11:08,079

and as we continue to work lsp missions

260

00:11:11,030 --> 00:11:09,600

all the different missions hangar at e

261

00:11:13,190 --> 00:11:11,040

supports we've slowly

262

00:11:15,590 --> 00:11:13,200

filled up this door with all different

263

00:11:18,550 --> 00:11:15,600

missions we not only work lsp missions

264

00:11:21,110 --> 00:11:18,560

we work air force missions nro missions

265

00:11:23,430 --> 00:11:21,120

we work the ccp mission for demo two

266

00:11:25,350 --> 00:11:23,440

and so we're really busy and we continue

267

00:11:30,710 --> 00:11:25,360

to get busy and that's because our team

268

00:11:34,710 --> 00:11:33,829

20 years worth of patches here that lsp

269

00:11:36,389 --> 00:11:34,720

has supported

270

00:11:38,310 --> 00:11:36,399

and has insight they not only have

271

00:11:41,110 --> 00:11:38,320

insight for ula launch

272

00:11:42,870 --> 00:11:41,120

but spacex pegasus all the commercial

273

00:11:45,190 --> 00:11:42,880

launch vehicles we have 20 years of

274

00:11:48,710 --> 00:11:45,200

experience so the team here has

275

00:11:49,590 --> 00:11:48,720

an exceptional experience all the launch

276
00:11:52,389 --> 00:11:49,600
industry

277
00:11:53,269 --> 00:11:52,399
and so the best way to use lsp and the

278
00:11:55,670 --> 00:11:53,279
reason we exist

279
00:11:56,710 --> 00:11:55,680
is to lower the risk in a curiosity

280
00:11:58,629 --> 00:11:56,720
rover right

281
00:12:00,949 --> 00:11:58,639
billions of dollars worth of robots so

282
00:12:01,430 --> 00:12:00,959
we as a taxpayer we want to lower our

283
00:12:04,710 --> 00:12:01,440
risk

284
00:12:06,550 --> 00:12:04,720
of that you know causing an anomaly

285
00:12:08,949 --> 00:12:06,560
and so that's what this team does is

286
00:12:11,990 --> 00:12:08,959
make sure that we lower the risk to

287
00:12:12,949 --> 00:12:12,000
these cool can you show us kind of the

288
00:12:14,790 --> 00:12:12,959

guts of the building

289

00:12:16,629 --> 00:12:14,800

let's take a look inside so the guts of

290

00:12:17,750 --> 00:12:16,639

the building here is the telemetry lab

291

00:12:22,829 --> 00:12:17,760

it's the heart

292

00:12:25,829 --> 00:12:24,069

data

293

00:12:27,110 --> 00:12:25,839

so the cool part about the hanger is we

294

00:12:30,389 --> 00:12:27,120

can support five

295

00:12:33,590 --> 00:12:30,399

launch vehicles all at the same time and

296

00:12:36,230 --> 00:12:33,600

how we do that is this hatch tank

297

00:12:36,629 --> 00:12:36,240

this patch panel is all that telemetry

298

00:12:38,629 --> 00:12:36,639

so

299

00:12:39,910 --> 00:12:38,639

when we talk about telemetry it's

300

00:12:42,550 --> 00:12:39,920

getting measurements

301
00:12:44,949 --> 00:12:42,560
from a distance so just like you would

302
00:12:47,350 --> 00:12:44,959
at the doctor's office a nursing station

303
00:12:49,190 --> 00:12:47,360
in the middle of the hospital sees your

304
00:12:52,550 --> 00:12:49,200
telemetry your heart rate

305
00:12:53,670 --> 00:12:52,560
at your bed so just like that a rocket

306
00:12:55,590 --> 00:12:53,680
has telemetry

307
00:12:57,990 --> 00:12:55,600
they have measurements as it goes

308
00:12:59,670 --> 00:12:58,000
downrange so as you go downrange you

309
00:13:03,670 --> 00:12:59,680
have to have tracking stations

310
00:13:07,350 --> 00:13:03,680
so they're either ground assets so a big

311
00:13:09,670 --> 00:13:07,360
dish looking up or in space tdrs

312
00:13:11,590 --> 00:13:09,680
so nasa has a tracking satellite down in

313
00:13:15,190 --> 00:13:11,600

space that looks at the rocket

314

00:13:17,670 --> 00:13:15,200

so all those different sources all come

315

00:13:20,150 --> 00:13:17,680

straight into this patch panel and then

316

00:13:22,790 --> 00:13:20,160

we go along here we record this

317

00:13:24,550 --> 00:13:22,800

live we record this as raw as possible

318

00:13:25,430 --> 00:13:24,560

to be able to play back if we have an

319

00:13:27,910 --> 00:13:25,440

anomaly

320

00:13:28,790 --> 00:13:27,920

and then as you go down this panel you

321

00:13:31,269 --> 00:13:28,800

can see that

322

00:13:32,629 --> 00:13:31,279

it processes that data so it starts as

323

00:13:34,470 --> 00:13:32,639

ones and zeros

324

00:13:37,030 --> 00:13:34,480

and by the end when an engineer sitting

325

00:13:40,389 --> 00:13:37,040

on console it is a temperature

326

00:13:41,750 --> 00:13:40,399

or a pressure or a gauge so that's what

327

00:13:44,230 --> 00:13:41,760

my team does

328

00:13:45,750 --> 00:13:44,240

jessica helps get the information here

329

00:13:49,509 --> 00:13:45,760

and then my telemetry team

330

00:13:52,550 --> 00:13:49,519

takes this telemetry and turns it into

331

00:13:54,550 --> 00:13:52,560

the engineering units so that is the

332

00:13:56,150 --> 00:13:54,560

heart of the hangar

333

00:13:59,750 --> 00:13:56,160

so why don't we come over here and we

334

00:14:00,949 --> 00:13:59,760

can talk more about telemetry

335

00:14:02,389 --> 00:14:00,959

i know you guys are really proud of the

336

00:14:04,230 --> 00:14:02,399

fact that you can handle five launches

337

00:14:05,829 --> 00:14:04,240

at a time

338

00:14:07,750 --> 00:14:05,839

i don't think we've ever had two happen

339

00:14:09,030 --> 00:14:07,760

at the same time so certainly like i

340

00:14:09,670 --> 00:14:09,040

think the day is coming when we're gonna

341

00:14:11,269 --> 00:14:09,680

need that

342

00:14:12,870 --> 00:14:11,279

or what's the motivation behind that so

343

00:14:13,990 --> 00:14:12,880

when we talk about launches i really

344

00:14:17,189 --> 00:14:14,000

talk about

345

00:14:20,629 --> 00:14:17,199

power of the vehicle so just

346

00:14:21,430 --> 00:14:20,639

tomorrow we have nroil mission up in

347

00:14:23,110 --> 00:14:21,440

wallops

348

00:14:25,110 --> 00:14:23,120

we are getting that data they're

349

00:14:27,750 --> 00:14:25,120

powering on doing data flows

350

00:14:29,110 --> 00:14:27,760

we have sentinel the pad that vanderberg

351

00:14:31,110 --> 00:14:29,120

is actually powering on

352

00:14:32,949 --> 00:14:31,120

we're getting the data for that and then

353

00:14:34,470 --> 00:14:32,959

obviously mars so there's three right

354

00:14:35,350 --> 00:14:34,480

there that we are processing and

355

00:14:37,430 --> 00:14:35,360

recording

356

00:14:39,509 --> 00:14:37,440

all at the same time and then obviously

357

00:14:40,389 --> 00:14:39,519

you can think easily there's a delta iv

358

00:14:41,990 --> 00:14:40,399

on the pad

359

00:14:43,189 --> 00:14:42,000

and then our pegasus coming up there's a

360

00:14:44,790 --> 00:14:43,199

thousand on the pad right now there's a

361

00:14:46,790 --> 00:14:44,800

falcon on the pad right now so as they

362

00:14:48,870 --> 00:14:46,800

power on they're getting that data

363

00:14:50,949 --> 00:14:48,880

so it might not be the launch but it

364

00:14:52,629 --> 00:14:50,959

might be the vehicles power on doing any

365

00:14:55,189 --> 00:14:52,639

testing because again our

366

00:14:56,629 --> 00:14:55,199

our vehicle experts want to know

367

00:14:59,269 --> 00:14:56,639

independently from the

368

00:14:59,750 --> 00:14:59,279

space the launch vehicle team uh how

369

00:15:01,670 --> 00:14:59,760

that is

370

00:15:03,110 --> 00:15:01,680

going so that's that's kind of what i

371

00:15:04,710 --> 00:15:03,120

mean by five launches

372

00:15:06,629 --> 00:15:04,720

it's really five vehicles could be

373

00:15:08,310 --> 00:15:06,639

powered on awesome read so

374

00:15:10,069 --> 00:15:08,320

are you guys ready i mean we're just a

375

00:15:13,030 --> 00:15:10,079

few weeks away now from launch

376

00:15:19,750 --> 00:15:13,040

yep ae good to go ae is good to go ready

377

00:15:23,269 --> 00:15:21,990

i think every time i end up at the

378

00:15:24,629 --> 00:15:23,279

hangar i'm always

379

00:15:26,550 --> 00:15:24,639

just amazed because i don't understand

380

00:15:27,430 --> 00:15:26,560

all the details of what goes on but reid

381

00:15:28,790 --> 00:15:27,440

diverty

382

00:15:29,990 --> 00:15:28,800

you do you got a pretty good feeling

383

00:15:31,509 --> 00:15:30,000

what's going on thanks for joining us

384

00:15:32,310 --> 00:15:31,519

today thank you for having me thank you

385

00:15:33,910 --> 00:15:32,320

for having me

386

00:15:35,670 --> 00:15:33,920

and reid while we were filming you told

387

00:15:37,269 --> 00:15:35,680

us a really awesome story about your

388

00:15:38,550 --> 00:15:37,279

first mission at the hangar can you tell

389

00:15:41,269 --> 00:15:38,560

us a little bit more about that

390

00:15:43,030 --> 00:15:41,279

yeah sure so my first mission as a the

391

00:15:43,670 --> 00:15:43,040

mission comm engineer like jessica was

392

00:15:47,269 --> 00:15:43,680

in the uh

393

00:15:48,230 --> 00:15:47,279

the thing was a comm engineer for

394

00:15:54,230 --> 00:15:48,240

curiosity

395

00:15:55,590 --> 00:15:54,240

and it was about 11 years ago i got to

396

00:15:58,069 --> 00:15:55,600

sign that mission

397

00:15:58,870 --> 00:15:58,079

and uh one of the requirements for this

398

00:16:00,949 --> 00:15:58,880

mission too

399

00:16:01,990 --> 00:16:00,959

is we call it de-interleaved data so the

400

00:16:04,629 --> 00:16:02,000

spacecraft

401
00:16:05,749 --> 00:16:04,639
puts the information uh about the

402
00:16:08,310 --> 00:16:05,759
spacecraft's health

403
00:16:09,829 --> 00:16:08,320
inside the launch vehicle telemetry and

404
00:16:11,910 --> 00:16:09,839
then our team actually

405
00:16:13,430 --> 00:16:11,920
takes that spacecraft data and send it

406
00:16:14,310 --> 00:16:13,440
to the spacecraft so that gives the

407
00:16:18,389 --> 00:16:14,320
spacecraft

408
00:16:20,550 --> 00:16:18,399
properly before launch

409
00:16:22,069 --> 00:16:20,560
and so our system is transporting that

410
00:16:23,509 --> 00:16:22,079
information so when i was the comm

411
00:16:27,829 --> 00:16:23,519
engineer for curiosity

412
00:16:30,550 --> 00:16:27,839
i designed a new system uh serial of vip

413
00:16:31,910 --> 00:16:30,560

and that system i tested and and tested

414

00:16:32,870 --> 00:16:31,920

in the lab and then tested with the

415

00:16:35,269 --> 00:16:32,880

spacecraft

416

00:16:37,110 --> 00:16:35,279

all up leading up to launch and it was

417

00:16:38,629 --> 00:16:37,120

the backup

418

00:16:40,790 --> 00:16:38,639

because just like anything you want

419

00:16:43,110 --> 00:16:40,800

prime and backup so the prime went down

420

00:16:45,110 --> 00:16:43,120

about 20 minutes before launch and the

421

00:16:47,189 --> 00:16:45,120

spacecraft came to me and said

422

00:16:48,230 --> 00:16:47,199

hey our prime went down what happened

423

00:16:50,470 --> 00:16:48,240

and

424

00:16:52,470 --> 00:16:50,480

the nasa launch manager also came to me

425

00:16:54,069 --> 00:16:52,480

and was getting nervous about it

426

00:16:55,990 --> 00:16:54,079

and this because this was a requirement

427

00:16:57,990 --> 00:16:56,000

for launch and uh

428

00:16:59,350 --> 00:16:58,000

i said hey the backup is i know it's

429

00:17:02,389 --> 00:16:59,360

really good we've tested it

430

00:17:04,470 --> 00:17:02,399

and uh we're good and so the nlm and the

431

00:17:06,230 --> 00:17:04,480

spacecraft were like okay we're good

432

00:17:08,309 --> 00:17:06,240

and so that was like the most

433

00:17:10,470 --> 00:17:08,319

nerve-wracking and you know 20 minutes

434

00:17:13,510 --> 00:17:10,480

before launch something goes down is

435

00:17:15,029 --> 00:17:13,520

is not ideal and so that's why you build

436

00:17:17,829 --> 00:17:15,039

as a comm engineer you build prime and

437

00:17:19,350 --> 00:17:17,839

backups and so that's a great story and

438

00:17:21,590 --> 00:17:19,360

really got me hooked

439

00:17:22,630 --> 00:17:21,600

um in being in hangar ie and why i'm

440

00:17:24,309 --> 00:17:22,640

still there now

441

00:17:27,429 --> 00:17:24,319

so i think when you told us that story

442

00:17:29,029 --> 00:17:27,439

the first time um you said that

443

00:17:30,549 --> 00:17:29,039

so the comm engineer doesn't really talk

444

00:17:32,390 --> 00:17:30,559

much in

445

00:17:33,830 --> 00:17:32,400

in a public setting they're kind of

446

00:17:35,350 --> 00:17:33,840

behind the scenes but i

447

00:17:37,029 --> 00:17:35,360

understand you did get called on to

448

00:17:38,150 --> 00:17:37,039

actually like speak up and kind of

449

00:17:40,390 --> 00:17:38,160

verify that you were good

450

00:17:41,590 --> 00:17:40,400

to proceed is that true yeah so as a

451
00:17:43,830 --> 00:17:41,600
comm engineer your goal

452
00:17:45,909 --> 00:17:43,840
is to set everything up and then the

453
00:17:47,510 --> 00:17:45,919
engineers are using your systems so

454
00:17:48,950 --> 00:17:47,520
you really don't want to be talking at

455
00:17:51,270 --> 00:17:48,960
all on the count

456
00:17:53,270 --> 00:17:51,280
down but in this instance you know one

457
00:17:55,270 --> 00:17:53,280
of our systems was being

458
00:17:57,350 --> 00:17:55,280
you know a big a big thing so i had to

459
00:17:59,110 --> 00:17:57,360
go talk on a lot of nets that are

460
00:18:00,630 --> 00:17:59,120
very public and you'll probably hear

461
00:18:01,750 --> 00:18:00,640
you'll probably hear tomorrow right

462
00:18:03,590 --> 00:18:01,760
countdown one and

463
00:18:04,870 --> 00:18:03,600

and a lot of the important nets that uh

464

00:18:07,350 --> 00:18:04,880

that get publicized

465

00:18:08,549 --> 00:18:07,360

so awesome that's incredible reid thanks

466

00:18:09,830 --> 00:18:08,559

for sharing that story

467

00:18:11,669 --> 00:18:09,840

so we're going to take a few questions

468

00:18:13,669 --> 00:18:11,679

from social media we have one from

469

00:18:14,789 --> 00:18:13,679

youtube they want to know is hanger ae

470

00:18:17,350 --> 00:18:14,799

an actual hanger

471

00:18:17,830 --> 00:18:17,360

or is it just the name of the facility

472

00:18:21,190 --> 00:18:17,840

so

473

00:18:23,990 --> 00:18:21,200

define a hanger i guess

474

00:18:26,310 --> 00:18:24,000

there is a big door in the back that we

475

00:18:28,310 --> 00:18:26,320

they used to actually use hangar ae as a

476

00:18:31,430 --> 00:18:28,320

spacecraft processing facility

477

00:18:33,190 --> 00:18:31,440

it's not used that way anymore since

478

00:18:35,029 --> 00:18:33,200

i think the 90s was when the last time

479

00:18:36,870 --> 00:18:35,039

or even before that

480

00:18:38,150 --> 00:18:36,880

but now we're basically a control room

481

00:18:41,590 --> 00:18:38,160

and a telemetry

482

00:18:41,990 --> 00:18:41,600

station for lsp thanks reid and we have

483

00:18:43,510 --> 00:18:42,000

another

484

00:18:45,430 --> 00:18:43,520

question here they want to know why is

485

00:18:47,990 --> 00:18:45,440

it so important to monitor and analyze

486

00:18:50,310 --> 00:18:48,000

the data coming into hangar ae

487

00:18:51,750 --> 00:18:50,320

so there's kind of two folds for that so

488

00:18:53,750 --> 00:18:51,760

first is right you're making sure the

489

00:18:54,710 --> 00:18:53,760

launch vehicle the spacecraft is ready

490

00:18:58,070 --> 00:18:54,720

for launch

491

00:18:58,310 --> 00:18:58,080

right so uh then the the other part of

492

00:19:02,150 --> 00:18:58,320

it

493

00:19:05,669 --> 00:19:02,160

is uh other launches happening before

494

00:19:06,549 --> 00:19:05,679

this this launch tomorrow um so the last

495

00:19:09,270 --> 00:19:06,559

atlas launch

496

00:19:10,230 --> 00:19:09,280

we were recording that launch vehicle

497

00:19:12,549 --> 00:19:10,240

and and

498

00:19:13,990 --> 00:19:12,559

noting any issues the lsp engineering

499

00:19:16,870 --> 00:19:14,000

team was noting any issues

500

00:19:18,390 --> 00:19:16,880

that we might dig into for our launch so

501
00:19:20,070 --> 00:19:18,400
it's twofold one is

502
00:19:21,750 --> 00:19:20,080
is making sure the launch is ready that

503
00:19:24,950 --> 00:19:21,760
day but then also

504
00:19:26,150 --> 00:19:24,960
having the data from past launches to

505
00:19:27,909 --> 00:19:26,160
verify that

506
00:19:29,430 --> 00:19:27,919
if there's a sensor or anything that

507
00:19:31,430 --> 00:19:29,440
looks out of family

508
00:19:32,870 --> 00:19:31,440
you can kind of relate successful

509
00:19:35,270 --> 00:19:32,880
launches

510
00:19:37,590 --> 00:19:35,280
and we go back every single launch that

511
00:19:38,950 --> 00:19:37,600
ula in this instance uses we have that

512
00:19:40,710 --> 00:19:38,960
data and we can go back and

513
00:19:42,070 --> 00:19:40,720

and relate other launches that could

514

00:19:44,150 --> 00:19:42,080

have had an issue and we

515

00:19:45,510 --> 00:19:44,160

we can verify that you know hey this is

516

00:19:46,310 --> 00:19:45,520

not going to be an issue or it is an

517

00:19:49,350 --> 00:19:46,320

issue

518

00:19:50,630 --> 00:19:49,360

so that's that's the hangers job as we

519

00:19:53,110 --> 00:19:50,640

get the data for

520

00:19:54,470 --> 00:19:53,120

every launch every launch that lsp could

521

00:19:57,350 --> 00:19:54,480

launch spacex

522

00:19:59,590 --> 00:19:57,360

pegasus ula you know we get that data

523

00:20:02,149 --> 00:19:59,600

and it gives that independent analysis

524

00:20:03,510 --> 00:20:02,159

to make sure that lsp and nasa is ready

525

00:20:05,510 --> 00:20:03,520

for launch

526
00:20:06,950 --> 00:20:05,520
definitely so we have two questions here

527
00:20:08,230 --> 00:20:06,960
that i'm going to combine into one

528
00:20:10,149 --> 00:20:08,240
someone wants to know what's the best

529
00:20:11,669 --> 00:20:10,159
part about working at hanger ae

530
00:20:13,510 --> 00:20:11,679
and can you share parts of your work

531
00:20:15,270 --> 00:20:13,520
that you find exciting rewarding or

532
00:20:17,270 --> 00:20:15,280
challenging

533
00:20:18,470 --> 00:20:17,280
yeah so hangar ae is awesome because we

534
00:20:20,950 --> 00:20:18,480
get to work

535
00:20:22,470 --> 00:20:20,960
every launch on the east or the west

536
00:20:25,350 --> 00:20:22,480
coast in the us

537
00:20:27,350 --> 00:20:25,360
so you get to be involved in launches

538
00:20:29,190 --> 00:20:27,360

from space force to lsp

539

00:20:31,350 --> 00:20:29,200

to commercial crew so that's the

540

00:20:33,430 --> 00:20:31,360

exciting part you get to be involved in

541

00:20:34,630 --> 00:20:33,440

history i mean in this instance you know

542

00:20:36,390 --> 00:20:34,640

going to mars

543

00:20:38,230 --> 00:20:36,400

and we're trying to find life on mars i

544

00:20:38,549 --> 00:20:38,240

mean you can't get more exciting than

545

00:20:42,310 --> 00:20:38,559

that

546

00:20:45,750 --> 00:20:42,320

about working in the hangar

547

00:20:47,990 --> 00:20:45,760

absolutely reid and uh i know tomorrow

548

00:20:50,470 --> 00:20:48,000

is not only a historic day but it's

549

00:20:51,990 --> 00:20:50,480

also a very special celebration i heard

550

00:20:55,029 --> 00:20:52,000

it's your birthday tomorrow

551
00:20:56,310 --> 00:20:55,039
it is it is my birthday tomorrow so yeah

552
00:20:58,870 --> 00:20:56,320
that's exciting too

553
00:21:00,149 --> 00:20:58,880
obviously in theory we have a nice a

554
00:21:02,310 --> 00:21:00,159
firework of sorts

555
00:21:03,430 --> 00:21:02,320
taken off for you a rocket launcher yeah

556
00:21:04,149 --> 00:21:03,440
can't get better than that fingers

557
00:21:06,260 --> 00:21:04,159
crossed right

558
00:21:07,590 --> 00:21:06,270
that's right ready to light that candle

559
00:21:09,590 --> 00:21:07,600
[Laughter]

560
00:21:11,110 --> 00:21:09,600
well that's it from social media thank

561
00:21:12,870 --> 00:21:11,120
you so much for joining us reed you were

562
00:21:14,870 --> 00:21:12,880
absolutely incredible as always

563
00:21:16,390 --> 00:21:14,880

thank you so much for having me and go

564

00:21:18,230 --> 00:21:16,400

mars yeah appreciate you

565

00:21:19,110 --> 00:21:18,240

um i'll ask you one last question just

566

00:21:19,830 --> 00:21:19,120

because i think people find it

567

00:21:22,149 --> 00:21:19,840

interesting

568

00:21:23,350 --> 00:21:22,159

sure um just not taking for granted

569

00:21:23,750 --> 00:21:23,360

what's happening behind the scenes

570

00:21:25,990 --> 00:21:23,760

because

571

00:21:27,909 --> 00:21:26,000

people love to see the rockets launch

572

00:21:30,149 --> 00:21:27,919

but rockets scheduled for 7

573

00:21:31,830 --> 00:21:30,159

50 a.m eastern time tomorrow morning

574

00:21:33,990 --> 00:21:31,840

what time will you be arriving

575

00:21:35,350 --> 00:21:34,000

uh to be ready for an almost eight

576

00:21:37,990 --> 00:21:35,360

o'clock launch yeah so

577

00:21:40,149 --> 00:21:38,000

my my team gets in at midnight so i'll

578

00:21:42,310 --> 00:21:40,159

be getting in around 11 30

579

00:21:43,909 --> 00:21:42,320

we do our checkouts our polls to make

580

00:21:45,750 --> 00:21:43,919

sure that our team is ready for the

581

00:21:48,310 --> 00:21:45,760

engineering and spacecraft team

582

00:21:49,029 --> 00:21:48,320

to get on console so yeah it's a long

583

00:21:52,230 --> 00:21:49,039

long night

584

00:21:54,230 --> 00:21:52,240

in this instance uh for for all of us

585

00:21:55,350 --> 00:21:54,240

all right awesome read appreciate you go

586

00:21:56,710 --> 00:21:55,360

get some sleep

587

00:21:57,909 --> 00:21:56,720

have a good night and i will i don't

588

00:21:59,029 --> 00:21:57,919

know if i'll see you tomorrow i'll be

589

00:22:00,390 --> 00:21:59,039

somewhere else in the morning

590

00:22:01,909 --> 00:22:00,400

um but i know you guys will be doing a

591

00:22:02,950 --> 00:22:01,919

great job and making all of the things

592

00:22:04,789 --> 00:22:02,960

come together for us

593

00:22:06,789 --> 00:22:04,799

great thanks for having me i want to

594

00:22:08,230 --> 00:22:06,799

preview again of the schedule for today

595

00:22:11,270 --> 00:22:08,240

take a quick look here

596

00:22:13,350 --> 00:22:11,280

at uh what's coming up so our next show

597

00:22:15,669 --> 00:22:13,360

is happening at 11 30 a.m eastern time

598

00:22:17,909 --> 00:22:15,679

so just about 35 minutes from now

599

00:22:19,270 --> 00:22:17,919

this will be a q a featuring dr zarbukin

600

00:22:21,510 --> 00:22:19,280

and dr lori glaze

601
00:22:23,190 --> 00:22:21,520
so get your questions ready answering

602
00:22:24,470 --> 00:22:23,200
those and also

603
00:22:26,149 --> 00:22:24,480
be looking out for more acronyms

604
00:22:26,870 --> 00:22:26,159
throughout the day as we saw the chat

605
00:22:28,149 --> 00:22:26,880
happening there

606
00:22:30,070 --> 00:22:28,159
yeah we've got a lot of acronyms that's

607
00:22:31,190 --> 00:22:30,080
okay and tune in for

608
00:22:32,470 --> 00:22:31,200
all the rest of the shows you see here

609
00:22:33,350 --> 00:22:32,480
you can find those on our facebook page

610
00:22:35,029 --> 00:22:33,360
as well

611
00:22:37,590 --> 00:22:35,039
and that's going to do it for us today

612
00:22:40,390 --> 00:22:37,600
make sure to follow the hashtag

613
00:22:41,909 --> 00:22:40,400

countdown to mars excuse me um and

614

00:22:44,390 --> 00:22:41,919

follow on twitter and facebook

615

00:22:45,029 --> 00:22:44,400

nasa persevere um that's actually a

616

00:22:46,470 --> 00:22:45,039

mission

617

00:22:48,070 --> 00:22:46,480

handle that we'll be tracking through

618

00:22:49,270 --> 00:22:48,080

the mission as we proceed launch

619

00:22:49,990 --> 00:22:49,280

tomorrow morning and then we have a

620

00:22:51,750 --> 00:22:50,000

seven minute

621

00:22:53,830 --> 00:22:51,760

seven month trip to get to the red

622

00:22:54,230 --> 00:22:53,840

planet and that's when the countdown is

623

00:22:57,190 --> 00:22:54,240

over

624

00:22:57,830 --> 00:22:57,200

when we're on the on mars and we're

625

00:23:01,350 --> 00:22:57,840

roving

626

00:23:02,630 --> 00:23:01,360

with this car-sized rover and the first

627

00:23:04,149 --> 00:23:02,640

of its kind helicopter