1
00:00:15,430 --> 00:00:12,310
good afternoon everyone this is our

2
00:00:17,750 --> 00:00:15,440
maven atlas v pre-launch news conference

3
00:00:20,390 --> 00:00:17,760
maven scheduled for launch at

4
00:00:22,870 --> 00:00:20,400
1 28 p.m on monday

5
00:00:25,990 --> 00:00:22,880
and here to discuss the upcoming mission

6
00:00:28,870 --> 00:00:26,000
the launch vehicle and the spacecraft

7
00:00:31,349 --> 00:00:28,880
is jeffrey yoder the nasa deputy

8
00:00:33,430 --> 00:00:31,359
associate administrator of programs

9
00:00:37,590 --> 00:00:33,440
from the science mission directorate at

10
00:00:42,069 --> 00:00:40,549
omar baez the nasa launch director from

11
00:00:46,069 --> 00:00:42,079
the launch services program at the

12
00:00:54,470 --> 00:00:48,709
vernon thorpe program manager for nasa

13
00:00:58,790 --> 00:00:56,950

david mitchell the nasa maven project

14
00:01:03,029 --> 00:00:58,800
manager from the goddard space flight

15
00:01:07,990 --> 00:01:05,750
guy butelshis the lockheed martin maven

16
00:01:09,750 --> 00:01:08,000
project manager from lockheed martin

17
00:01:13,429 --> 00:01:09,760
space systems company in littleton

18
00:01:17,830 --> 00:01:15,350
and clay flynn the launch weather

19
00:01:19,830 --> 00:01:17,840
officer from the 45th weather squadron

20
00:01:21,350 --> 00:01:19,840
at cape canaveral air force station in

21
00:01:23,510 --> 00:01:21,360
florida

22
00:01:26,070 --> 00:01:23,520
and we'll begin first with our opening

23
00:01:27,270 --> 00:01:26,080
remarks from jeff yoder jeff thanks

24
00:01:29,190 --> 00:01:27,280
george

25
00:01:31,830 --> 00:01:29,200
uh of course maven is a part of as a

26
00:01:33,350 --> 00:01:31,840
list of uh ongoing and future missions

27
00:01:35,190 --> 00:01:33,360
that will continue to improve our

28
00:01:36,710 --> 00:01:35,200
understanding of mars

29
00:01:38,630 --> 00:01:36,720
and help inform us in planning for

30
00:01:40,469 --> 00:01:38,640
future human missions to mars you know

31
00:01:42,950 --> 00:01:40,479
of course human mission to mars is our

32
00:01:45,109 --> 00:01:42,960
ultimate destination in the solar system

33
00:01:46,550 --> 00:01:45,119
uh for humanity as well as a priority

34
00:01:48,630 --> 00:01:46,560
for nasa

35
00:01:50,630 --> 00:01:48,640
now maven is going to focus on the study

36
00:01:53,510 --> 00:01:50,640
of upper atmosphere the upper atmosphere

37
00:01:55,749 --> 00:01:53,520
of mars to determine the processes

38
00:01:57,350 --> 00:01:55,759

at work that that are capable of

39
00:01:59,190 --> 00:01:57,360
removing the atmosphere and we'll hear

40
00:02:02,149 --> 00:01:59,200
more about this during the the science

41
00:02:05,670 --> 00:02:02,159
portions of our discussions

42
00:02:07,190 --> 00:02:05,680
but maven also is a great example

43
00:02:09,589 --> 00:02:07,200
of nasa's commitment to strong

44
00:02:11,990 --> 00:02:09,599
public-private partnerships that will

45
00:02:15,750 --> 00:02:12,000
keep our nation in the forefront of mars

46
00:02:19,510 --> 00:02:17,510
maven's team

47
00:02:21,110 --> 00:02:19,520
includes government industry and

48
00:02:23,190 --> 00:02:21,120
universities and i'll read this so i

49
00:02:24,869 --> 00:02:23,200
don't leave anybody out the principal

50
00:02:26,390 --> 00:02:24,879
investigator

51
00:02:28,229 --> 00:02:26,400
institution is the university of

52
00:02:30,630 --> 00:02:28,239
colorado boulder's laboratory for

53
00:02:32,790 --> 00:02:30,640
atmospheric and space physics the

54
00:02:34,790 --> 00:02:32,800
project is managed by nasa's goddard

55
00:02:37,190 --> 00:02:34,800
space flight center the team also

56
00:02:39,190 --> 00:02:37,200
includes the university of uh california

57
00:02:41,589 --> 00:02:39,200
berkeley lockheed martin corp and the

58
00:02:44,309 --> 00:02:41,599
nasa jet propulsion lab

59
00:02:45,430 --> 00:02:44,319
in preparation uh for launch the team

60
00:02:49,190 --> 00:02:45,440
has handled

61
00:02:51,030 --> 00:02:49,200
numerous uh challenges and have

62
00:02:53,190 --> 00:02:51,040
taken them head on and have have

63
00:02:55,750 --> 00:02:53,200

overcome to where we are to

64
00:02:58,149 --> 00:02:55,760
to where we are today uh thus far i'm

65
00:02:59,350 --> 00:02:58,159
just completing our uh flight readiness

66
00:03:01,990 --> 00:02:59,360
review

67
00:03:04,470 --> 00:03:02,000
we're on track for our launch uh the

68
00:03:06,309 --> 00:03:04,480
vehicle and the spacecraft on track for

69
00:03:09,030 --> 00:03:06,319
our launch monday

70
00:03:11,190 --> 00:03:09,040
george all right thank you jeff

71
00:03:12,630 --> 00:03:11,200
now to omar baez the nasa launch

72
00:03:14,710 --> 00:03:12,640
director

73
00:03:16,470 --> 00:03:14,720
thank you george and good afternoon

74
00:03:19,430 --> 00:03:16,480
everyone and thank you for attending

75
00:03:20,869 --> 00:03:19,440
today's brief on maven

76
00:03:23,910 --> 00:03:20,879
i'm very fortunate to be here

77
00:03:25,910 --> 00:03:23,920
representing the men and women

78
00:03:27,830 --> 00:03:25,920
from the nasa launch services program at

79
00:03:32,149 --> 00:03:27,840
the kennedy space center and our

80
00:03:33,750 --> 00:03:32,159
partners united launch alliance

81
00:03:37,430 --> 00:03:33,760
these folks have been dedicated to

82
00:03:39,910 --> 00:03:37,440
analyzing uh fabricating assembling uh

83
00:03:41,990 --> 00:03:39,920
preparing and testing the atlas 5 and

84
00:03:44,830 --> 00:03:42,000
the maven spacecraft

85
00:03:48,309 --> 00:03:44,840
set for launch three days from now

86
00:03:56,229 --> 00:03:48,319
uh please roll a short tape i have here

87
00:04:01,350 --> 00:03:57,270
uh

88
00:04:05,190 --> 00:04:03,030

used for this mission

89
00:04:07,429 --> 00:04:05,200
the booster arrived from

90
00:04:09,350 --> 00:04:07,439
ula's decatur alabama fabrication

91
00:04:11,910 --> 00:04:09,360
facility on the

92
00:04:13,589 --> 00:04:11,920
ship the foss mariner which you see here

93
00:04:14,789 --> 00:04:13,599
and actually some of you in the audience

94
00:04:16,870 --> 00:04:14,799
here

95
00:04:18,550 --> 00:04:16,880
were able to tour that along with me for

96
00:04:21,349 --> 00:04:18,560
the first time

97
00:04:22,390 --> 00:04:21,359
uh interesting ship in that it's 312

98
00:04:26,870 --> 00:04:22,400
feet long

99
00:04:29,189 --> 00:04:26,880
84 foot wide and drafts about 8 feet

100
00:04:32,390 --> 00:04:29,199
and can hold three uh

101
00:04:34,950 --> 00:04:32,400
core sections of the delta iv

102
00:04:41,110 --> 00:04:37,510
this is the the atlas v booster being

103
00:04:43,350 --> 00:04:41,120
rolled uh out to the pad or to the

104
00:04:45,350 --> 00:04:43,360
asoc facility for its initial receive

105
00:04:47,270 --> 00:04:45,360
inspection

106
00:04:50,150 --> 00:04:47,280
um

107
00:04:53,430 --> 00:04:50,160
erection of that booster

108
00:04:54,950 --> 00:04:53,440
started on october 11th

109
00:04:56,710 --> 00:04:54,960
right smack in the middle of a

110
00:04:58,310 --> 00:04:56,720
government shutdown making this flow a

111
00:05:01,670 --> 00:04:58,320
little interesting

112
00:05:06,150 --> 00:05:03,590
the fortunate part is

113
00:05:08,550 --> 00:05:06,160

our partners ula were able to continue

114
00:05:10,950 --> 00:05:08,560
their work through that and

115
00:05:13,430 --> 00:05:10,960
able to maintain the schedule

116
00:05:15,510 --> 00:05:13,440
and here we are targeting uh november

117
00:05:16,870 --> 00:05:15,520
18th which is what we initially started

118
00:05:18,629 --> 00:05:16,880
with so uh

119
00:05:19,909 --> 00:05:18,639
we made up some time there

120
00:05:21,189 --> 00:05:19,919
um

121
00:05:22,310 --> 00:05:21,199
the atlas v

122
00:05:24,950 --> 00:05:22,320
uh

123
00:05:26,469 --> 00:05:24,960
uses rp1 as its main

124
00:05:28,870 --> 00:05:26,479
fuel

125
00:05:32,310 --> 00:05:28,880
and locks and the centaur which is right

126
00:05:35,189 --> 00:05:32,320
under that stack there which is the

127
00:05:37,510 --> 00:05:35,199
integrated encapsulated

128
00:05:41,909 --> 00:05:37,520
maven spacecraft uses

129
00:05:46,629 --> 00:05:42,790
that

130
00:05:49,350 --> 00:05:46,639
event of the

131
00:05:51,830 --> 00:05:49,360
encapsulated spacecraft going up on the

132
00:05:54,950 --> 00:05:51,840
atlas

133
00:05:57,430 --> 00:05:54,960
happened last week

134
00:05:59,029 --> 00:05:57,440
the folks completed the spacecraft

135
00:06:01,590 --> 00:05:59,039
aliveness tests

136
00:06:03,110 --> 00:06:01,600
and the integrated systems tests

137
00:06:05,350 --> 00:06:03,120
which test the flight program into

138
00:06:09,189 --> 00:06:05,360

flight sequences from the start of the

139
00:06:10,390 --> 00:06:09,199
countdown through a spacecraft sep

140
00:06:13,909 --> 00:06:10,400
this

141
00:06:15,670 --> 00:06:13,919
flight readiness review

142
00:06:18,070 --> 00:06:15,680
yesterday we held our mission dress

143
00:06:21,110 --> 00:06:18,080
rehearsal and this morning we completed

144
00:06:23,590 --> 00:06:21,120
our nasa launch readiness review uh all

145
00:06:25,670 --> 00:06:23,600
were very successful

146
00:06:27,029 --> 00:06:25,680
tomorrow we plan to roll the vehicle out

147
00:06:29,430 --> 00:06:27,039
of the

148
00:06:31,270 --> 00:06:29,440
vertical integration facility should be

149
00:06:33,430 --> 00:06:31,280
out of there at 10 in the morning we'll

150
00:06:35,350 --> 00:06:33,440
then connect the electrical fluids

151
00:06:37,749 --> 00:06:35,360
pneumatics and the elec environmental

152
00:06:39,749 --> 00:06:37,759
control system

153
00:06:41,029 --> 00:06:39,759
sunday will be a day of rest for most of

154
00:06:43,749 --> 00:06:41,039
the crew

155
00:06:45,270 --> 00:06:43,759
and then monday at approximately 6 30 in

156
00:06:46,309 --> 00:06:45,280
the morning the team will power up the

157
00:06:48,150 --> 00:06:46,319
atlas

158
00:06:50,870 --> 00:06:48,160
and the centaur and perform the flight

159
00:06:52,469 --> 00:06:50,880
control checks and facility

160
00:06:54,150 --> 00:06:52,479
chill down

161
00:06:55,189 --> 00:06:54,160
our launch management team will be in

162
00:06:58,230 --> 00:06:55,199
place

163
00:07:01,189 --> 00:06:58,240

at around 9 00 am for call the stations

164
00:07:03,270 --> 00:07:01,199
at 10 48 we have our first hold at t

165
00:07:04,790 --> 00:07:03,280
minus two hours this is a 30 minute

166
00:07:06,790 --> 00:07:04,800
built-in hold

167
00:07:08,870 --> 00:07:06,800
at the conclusion of that hold i'll pull

168
00:07:11,589 --> 00:07:08,880
the team for concurrence to proceed into

169
00:07:13,350 --> 00:07:11,599
lighting the cryogenic

170
00:07:15,350 --> 00:07:13,360
commodities on board

171
00:07:17,990 --> 00:07:15,360
and that should start about 11 20 in the

172
00:07:20,309 --> 00:07:18,000
morning approximately two hours later we

173
00:07:21,909 --> 00:07:20,319
will enter our 10-minute hold at t-minus

174
00:07:23,589 --> 00:07:21,919
four minutes

175
00:07:26,150 --> 00:07:23,599
and uh

176
00:07:27,749 --> 00:07:26,160
at 1 15 i will pull the team for

177
00:07:30,629 --> 00:07:27,759
concurrent standard terminal count and

178
00:07:32,790 --> 00:07:30,639
release the hold at four minutes after

179
00:07:34,550 --> 00:07:32,800
uh confirmation that the spacecraft is

180
00:07:36,629 --> 00:07:34,560
configured for launch at approximately

181
00:07:39,189 --> 00:07:36,639
four and a half minutes from launch

182
00:07:42,070 --> 00:07:39,199
i will inform the ula launch director

183
00:07:44,869 --> 00:07:42,080
that our at nasa's gopher launch

184
00:07:46,390 --> 00:07:44,879
for an expected t0 at 1 28

185
00:07:49,589 --> 00:07:46,400
uh p.m

186
00:07:51,749 --> 00:07:49,599
on monday our window uh is good for two

187
00:07:53,909 --> 00:07:51,759
hours starting at 1 28.

188
00:07:55,430 --> 00:07:53,919

so we are good till 3 28 in the

189
00:07:57,830 --> 00:07:55,440
afternoon

190
00:07:59,909 --> 00:07:57,840
thank you very much back to you george

191
00:08:02,309 --> 00:07:59,919
all right thank you omar hand now to

192
00:08:04,070 --> 00:08:02,319
vernon thorpe the program manager for

193
00:08:05,430 --> 00:08:04,080
nasa missions from united launch

194
00:08:07,189 --> 00:08:05,440
alliance vern

195
00:08:08,309 --> 00:08:07,199
okay thank you george and good afternoon

196
00:08:10,710 --> 00:08:08,319
everyone

197
00:08:12,469 --> 00:08:10,720
we are privileged and very happy to be

198
00:08:14,469 --> 00:08:12,479
here today just three days from the

199
00:08:16,710 --> 00:08:14,479
launch of the maven satellite

200
00:08:19,350 --> 00:08:16,720
our ula team started working with nasa

201
00:08:21,589 --> 00:08:19,360
and lockheed martin to integrate maven

202
00:08:23,670 --> 00:08:21,599
onto atlas almost three years ago early

203
00:08:24,869 --> 00:08:23,680
2011 is when we started the integration

204
00:08:26,950 --> 00:08:24,879
process

205
00:08:28,070 --> 00:08:26,960
we began building the vehicle in decatur

206
00:08:29,670 --> 00:08:28,080
alabama

207
00:08:31,510 --> 00:08:29,680
around two years ago

208
00:08:33,029 --> 00:08:31,520
and during that time and continuing

209
00:08:34,389 --> 00:08:33,039
through uh the processing of the

210
00:08:35,269 --> 00:08:34,399
satellite and the launch vehicle here at

211
00:08:37,350 --> 00:08:35,279
the cape

212
00:08:39,269 --> 00:08:37,360
uh our ula team has worked very closely

213
00:08:41,190 --> 00:08:39,279

with nasa and our other mission partners

214
00:08:42,630 --> 00:08:41,200
to get us to this day and on monday to a

215
00:08:44,710 --> 00:08:42,640
successful launch

216
00:08:45,829 --> 00:08:44,720
that's been a tremendous team effort so

217
00:08:47,910 --> 00:08:45,839
far

218
00:08:50,310 --> 00:08:47,920
ula is proud to provide nasa's ride to

219
00:08:52,790 --> 00:08:50,320
mars for this great science mission over

220
00:08:54,710 --> 00:08:52,800
the last decade ula vehicles have

221
00:08:56,550 --> 00:08:54,720
successfully launched all of nasa's

222
00:08:58,230 --> 00:08:56,560
missions to the red planet

223
00:09:00,150 --> 00:08:58,240
including the spirit and opportunity

224
00:09:02,310 --> 00:09:00,160
rovers and then most recently just a

225
00:09:04,790 --> 00:09:02,320
couple of years ago the mars science lab

226
00:09:06,790 --> 00:09:04,800
with the curiosity rover

227
00:09:09,030 --> 00:09:06,800
in fact i counted it up the other day

228
00:09:11,590 --> 00:09:09,040
maven will be our seventh uh mars

229
00:09:13,670 --> 00:09:11,600
mission since 2001

230
00:09:16,230 --> 00:09:13,680
and actually our first launches to mars

231
00:09:20,389 --> 00:09:16,240
occurred 49 years ago with the mariner 3

232
00:09:22,710 --> 00:09:20,399
and mariner 4 spacecraft in 1964.

233
00:09:24,310 --> 00:09:22,720
we use the atlas agena at the time that

234
00:09:25,509 --> 00:09:24,320
some of you might remember that upper

235
00:09:27,750 --> 00:09:25,519
stage is a little smaller than the

236
00:09:29,670 --> 00:09:27,760
centaur we use today

237
00:09:31,990 --> 00:09:29,680
so as i mentioned one of those 1964

238
00:09:34,310 --> 00:09:32,000

launches was mariner 4

239
00:09:37,030 --> 00:09:34,320
it was the earth's first successful

240
00:09:39,750 --> 00:09:37,040
mission to mars it was a flyby mission

241
00:09:42,550 --> 00:09:39,760
and if i recall correctly it returned 21

242
00:09:44,790 --> 00:09:42,560
images as it flew by and i think it's an

243
00:09:46,870 --> 00:09:44,800
amazing testament to how far

244
00:09:49,030 --> 00:09:46,880
spacecraft and instrument design has

245
00:09:50,790 --> 00:09:49,040
come when you compare that data to the

246
00:09:52,710 --> 00:09:50,800
amount of data that the maven spacecraft

247
00:09:55,190 --> 00:09:52,720
is going to return

248
00:09:56,230 --> 00:09:55,200
maven will be ula's 10th launch of the

249
00:09:58,949 --> 00:09:56,240
year

250
00:10:00,949 --> 00:09:58,959
this will also be our ferry our 41st

251
00:10:03,350 --> 00:10:00,959
atlas v mission

252
00:10:05,590 --> 00:10:03,360
and it'll be the 76th mission we've

253
00:10:07,350 --> 00:10:05,600
flown since ula was formed almost seven

254
00:10:11,190 --> 00:10:07,360
years ago

255
00:10:13,269 --> 00:10:11,200
nasa's highest and most rigorous level

256
00:10:15,590 --> 00:10:13,279
of certification what we call category 3

257
00:10:17,509 --> 00:10:15,600
certification that allows the atlas 5

258
00:10:19,670 --> 00:10:17,519
family of vehicles to fly

259
00:10:21,590 --> 00:10:19,680
nasa's most complex and valuable

260
00:10:23,990 --> 00:10:21,600
exploration missions

261
00:10:25,509 --> 00:10:24,000
and the specific atlas v configuration

262
00:10:27,670 --> 00:10:25,519
that we'll use for this mission is the

263
00:10:29,269 --> 00:10:27,680

atlas v 401

264
00:10:31,509 --> 00:10:29,279
that's the vehicle that has a four meter

265
00:10:34,870 --> 00:10:31,519
payload fairing the booster is powered

266
00:10:37,829 --> 00:10:34,880
by an rd amroth rd-180 uh engine

267
00:10:39,910 --> 00:10:37,839
the upper stage has an rl10a4

268
00:10:42,470 --> 00:10:39,920
engine and this mission will not require

269
00:10:43,590 --> 00:10:42,480
the use of any solid rocket boosters

270
00:10:45,030 --> 00:10:43,600
uh omar

271
00:10:47,030 --> 00:10:45,040
showed you some of the activities that

272
00:10:48,870 --> 00:10:47,040
got us to this point i would now like to

273
00:10:49,670 --> 00:10:48,880
roll a video and show you what we hope

274
00:10:55,430 --> 00:10:49,680
to

275
00:10:59,269 --> 00:10:56,870
so there's our vertical integration

276
00:11:00,870 --> 00:10:59,279
facility tomorrow morning

277
00:11:02,550 --> 00:11:00,880
the mobile launch platform with the

278
00:11:04,550 --> 00:11:02,560
vehicle on top will roll out to the pad

279
00:11:06,150 --> 00:11:04,560
here's a 401 on the pad from a previous

280
00:11:08,870 --> 00:11:06,160
launch

281
00:11:10,710 --> 00:11:08,880
we'll lift off this lift off will be one

282
00:11:12,470 --> 00:11:10,720
of our slower lift offs because we have

283
00:11:14,470 --> 00:11:12,480
a fairly low thrust to weight ratio on

284
00:11:16,470 --> 00:11:14,480
this vehicle without the solids

285
00:11:18,470 --> 00:11:16,480
since we don't have any srbs the first

286
00:11:20,150 --> 00:11:18,480
major event you're going to see is when

287
00:11:21,590 --> 00:11:20,160
we deplete all the propellants in the

288
00:11:24,310 --> 00:11:21,600

booster stage

289
00:11:26,150 --> 00:11:24,320
that will happen a little bit more than

290
00:11:27,509 --> 00:11:26,160
four minutes in the flight at that time

291
00:11:29,509 --> 00:11:27,519
we'll shut down the engines and we'll

292
00:11:31,750 --> 00:11:29,519
separate that booster stage from the

293
00:11:34,470 --> 00:11:31,760
centaur upper stage

294
00:11:36,710 --> 00:11:34,480
we'll begin conditioning the centaur

295
00:11:38,230 --> 00:11:36,720
engines for the first of two engine

296
00:11:39,829 --> 00:11:38,240
burns

297
00:11:41,829 --> 00:11:39,839
and around 10 seconds after that

298
00:11:43,190 --> 00:11:41,839
separation event you see there we will

299
00:11:44,630 --> 00:11:43,200
light the engine we're chilling down the

300
00:11:45,990 --> 00:11:44,640
engine right now just flowing raw

301
00:11:47,350 --> 00:11:46,000
propellants through it

302
00:11:49,590 --> 00:11:47,360
will light the engine when all the

303
00:11:51,670 --> 00:11:49,600
thermodynamic conditions are correct and

304
00:11:53,430 --> 00:11:51,680
that first engine burn will last about

305
00:11:55,350 --> 00:11:53,440
nine and a half minutes

306
00:11:56,710 --> 00:11:55,360
eight seconds into that burn will

307
00:11:58,550 --> 00:11:56,720
jettison the payload fairing like you

308
00:11:59,829 --> 00:11:58,560
just saw

309
00:12:01,750 --> 00:11:59,839
so after nine and a half minutes we'll

310
00:12:04,710 --> 00:12:01,760
shut down we'll enter a coast phase that

311
00:12:05,990 --> 00:12:04,720
coast will last about 25 minutes

312
00:12:07,670 --> 00:12:06,000
and then we'll be in the position for

313
00:12:09,350 --> 00:12:07,680

the second engine burn

314
00:12:11,430 --> 00:12:09,360
so we'll light the centaur engine again

315
00:12:13,030 --> 00:12:11,440
that second engine burn will last about

316
00:12:15,030 --> 00:12:13,040
five and a half minutes

317
00:12:16,790 --> 00:12:15,040
and at the end of that burn we are on

318
00:12:19,910 --> 00:12:16,800
our way to mars

319
00:12:21,910 --> 00:12:19,920
spacecraft separation will occur about

320
00:12:23,350 --> 00:12:21,920
six minutes after the completion of that

321
00:12:25,910 --> 00:12:23,360
after we've oriented the vehicle to the

322
00:12:27,670 --> 00:12:25,920
right separation attitude

323
00:12:29,269 --> 00:12:27,680
total duration if we launch the

324
00:12:30,790 --> 00:12:29,279
beginning of the window tomorrow will be

325
00:12:32,629 --> 00:12:30,800
about an hour

326
00:12:34,230 --> 00:12:32,639
and after we separate the spacecraft

327
00:12:35,990 --> 00:12:34,240
we'll do the usual collision and

328
00:12:37,670 --> 00:12:36,000
contamination avoidance maneuvers with

329
00:12:39,110 --> 00:12:37,680
the centaur upper stage to make sure

330
00:12:41,269 --> 00:12:39,120
that there's no chance of coming into

331
00:12:43,670 --> 00:12:41,279
contact with the spacecraft or

332
00:12:45,110 --> 00:12:43,680
with mars for that matter we want to

333
00:12:47,110 --> 00:12:45,120
make sure we don't become a source of

334
00:12:48,949 --> 00:12:47,120
contamination

335
00:12:50,710 --> 00:12:48,959
so i mentioned that

336
00:12:53,350 --> 00:12:50,720
we'll separate the spacecraft about an

337
00:12:55,110 --> 00:12:53,360
hour into flight that time could vary by

338
00:12:56,710 --> 00:12:55,120

as much as 18 minutes it depends on

339
00:12:59,269 --> 00:12:56,720
exactly when in the window we launch

340
00:13:01,670 --> 00:12:59,279
we've got a two-hour launch window

341
00:13:04,230 --> 00:13:01,680
we have opportunities to launch

342
00:13:06,710 --> 00:13:04,240
the first and last second and on every

343
00:13:09,430 --> 00:13:06,720
five-minute increment in between

344
00:13:11,269 --> 00:13:09,440
and depending on exactly which opera

345
00:13:13,829 --> 00:13:11,279
which of those opportunities we choose

346
00:13:15,670 --> 00:13:13,839
the timing could vary by up to about 18

347
00:13:17,110 --> 00:13:15,680
minutes so if we launch a little later

348
00:13:18,710 --> 00:13:17,120
into the window and the mission takes a

349
00:13:23,030 --> 00:13:18,720
little longer than an hour that's not a

350
00:13:26,310 --> 00:13:24,629
let's see spacecraft separation will

351
00:13:28,230 --> 00:13:26,320
happen near australia

352
00:13:29,590 --> 00:13:28,240
it'll take about 10 months once we're

353
00:13:31,269 --> 00:13:29,600
done with our launch vehicle phase of

354
00:13:32,550 --> 00:13:31,279
flight then for the spacecraft to get to

355
00:13:34,150 --> 00:13:32,560
mars

356
00:13:35,670 --> 00:13:34,160
the data maven provides will help

357
00:13:37,190 --> 00:13:35,680
planetary scientists understand the

358
00:13:38,870 --> 00:13:37,200
history of climate change on the red

359
00:13:40,230 --> 00:13:38,880
planet and advance our understanding of

360
00:13:42,550 --> 00:13:40,240
both the martian and our own earth

361
00:13:45,670 --> 00:13:42,560
environment and ula is is honored to be

362
00:13:47,189 --> 00:13:45,680
a part of science missions like this

363
00:13:49,030 --> 00:13:47,199

uh in fact we're proud to serve a

364
00:13:50,230 --> 00:13:49,040
critical role in delivering payloads to

365
00:13:52,069 --> 00:13:50,240
orbit for all of our government

366
00:13:53,990 --> 00:13:52,079
commercial customers you know that we do

367
00:13:56,069 --> 00:13:54,000
it one launch at a time

368
00:13:57,750 --> 00:13:56,079
and we're focused on perfect product

369
00:13:58,949 --> 00:13:57,760
delivery for this and every one of our

370
00:14:00,790 --> 00:13:58,959
launches

371
00:14:02,470 --> 00:14:00,800
so once again i'd like to say thanks to

372
00:14:04,389 --> 00:14:02,480
all of our partners out there who have

373
00:14:06,069 --> 00:14:04,399
helped us get to this point and with

374
00:14:07,990 --> 00:14:06,079
that i'll turn it back to you george all

375
00:14:10,069 --> 00:14:08,000
right thanks vern

376
00:14:11,829 --> 00:14:10,079
now to dave mitchell the nasa maven

377
00:14:14,790 --> 00:14:11,839
project manager from the goddard space

378
00:14:16,629 --> 00:14:14,800
flight center dave thank you george um

379
00:14:18,389 --> 00:14:16,639
well we're uh

380
00:14:20,230 --> 00:14:18,399
after all these years we're just a few

381
00:14:22,550 --> 00:14:20,240
days away from going to mars it's a very

382
00:14:24,629 --> 00:14:22,560
exciting time for us here um on the

383
00:14:28,150 --> 00:14:24,639
threshold there and i'm i'm

384
00:14:29,750 --> 00:14:28,160
i i can't tell you um how how incredible

385
00:14:31,430 --> 00:14:29,760
this feels and and

386
00:14:32,230 --> 00:14:31,440
when i say all these years i'm talking

387
00:14:34,470 --> 00:14:32,240
about

388
00:14:35,670 --> 00:14:34,480

uh from its inception with the principal

389
00:14:38,230 --> 00:14:35,680
investigator and a couple of the

390
00:14:41,670 --> 00:14:38,240
scientists with him uh they started this

391
00:14:43,910 --> 00:14:41,680
in 2003 so it's it's been a long journey

392
00:14:46,790 --> 00:14:43,920
and just now just days away it's very

393
00:14:48,949 --> 00:14:46,800
exciting i'll pick up on the timeline

394
00:14:50,069 --> 00:14:48,959
from vern but before i do i just wanted

395
00:14:52,310 --> 00:14:50,079
to go back

396
00:14:54,069 --> 00:14:52,320
and acknowledge the the various

397
00:14:55,829 --> 00:14:54,079
institutions that have been involved the

398
00:14:58,710 --> 00:14:55,839
university of colorado the goddard space

399
00:15:00,870 --> 00:14:58,720
flight center lockheed martin berkeley

400
00:15:02,550 --> 00:15:00,880
out at the university of california and

401
00:15:04,550 --> 00:15:02,560
the jet propulsion lab from the

402
00:15:07,750 --> 00:15:04,560
spacecraft side not even talking about

403
00:15:09,910 --> 00:15:07,760
the ula and the nasa ksc lsp and the u.s

404
00:15:12,949 --> 00:15:09,920
air force but these these five

405
00:15:15,030 --> 00:15:12,959
institutions that comprise the

406
00:15:17,590 --> 00:15:15,040
spacecraft partnership

407
00:15:19,670 --> 00:15:17,600
have been incredible i mean we were at

408
00:15:22,629 --> 00:15:19,680
this point we're poised to

409
00:15:25,189 --> 00:15:22,639
launch on day one of what we submitted

410
00:15:27,269 --> 00:15:25,199
as our final proposal five years ago we

411
00:15:29,790 --> 00:15:27,279
put in there november 18th we wanted to

412
00:15:32,150 --> 00:15:29,800
be launch ready at the opening of this

413
00:15:34,790 --> 00:15:32,160

2013 um

414
00:15:36,550 --> 00:15:34,800
period to get to mars and we're on

415
00:15:38,710 --> 00:15:36,560
threshold of getting there on that on

416
00:15:41,749 --> 00:15:38,720
that day weather and other things can

417
00:15:44,710 --> 00:15:41,759
set you back but to be there launch

418
00:15:47,350 --> 00:15:44,720
ready it gives us time to to deal with

419
00:15:50,069 --> 00:15:47,360
anything downstream so kudos to the team

420
00:15:52,150 --> 00:15:50,079
it's not only on time it's on budget it

421
00:15:54,230 --> 00:15:52,160
has the full capability that we proposed

422
00:15:55,430 --> 00:15:54,240
years ago and it's been fully checked

423
00:15:57,430 --> 00:15:55,440
out so

424
00:15:59,269 --> 00:15:57,440
just just a great job by the team so i

425
00:16:01,670 --> 00:15:59,279
wanted to mention that so picking up

426
00:16:03,990 --> 00:16:01,680
from the timeline uh from from what vern

427
00:16:06,150 --> 00:16:04,000
was talking about so

428
00:16:08,710 --> 00:16:06,160
we'll separate from the

429
00:16:11,430 --> 00:16:08,720
atlas launch vehicle about roughly about

430
00:16:13,670 --> 00:16:11,440
52 minutes after launch over western

431
00:16:16,230 --> 00:16:13,680
australia uh there's a couple of ground

432
00:16:18,069 --> 00:16:16,240
stations there that will pick up um the

433
00:16:20,230 --> 00:16:18,079
the transmissions from the spacecraft

434
00:16:21,430 --> 00:16:20,240
give us the health status that'll all as

435
00:16:23,910 --> 00:16:21,440
well

436
00:16:26,710 --> 00:16:23,920
we will deploy the solar arrays and be

437
00:16:28,949 --> 00:16:26,720
completed with the deployment sequence

438
00:16:30,790 --> 00:16:28,959

about 15 minutes after separation from

439
00:16:33,829 --> 00:16:30,800
the launch vehicle it'll spread its

440
00:16:35,269 --> 00:16:33,839
wings it's about it's 37.5

441
00:16:37,670 --> 00:16:35,279
feet

442
00:16:39,670 --> 00:16:37,680
tip to tip on the solar

443
00:16:41,509 --> 00:16:39,680
array so um

444
00:16:43,670 --> 00:16:41,519
it'll it'll be in its configuration as

445
00:16:45,990 --> 00:16:43,680
it as it needs to be as it flies to mars

446
00:16:47,749 --> 00:16:46,000
and carries out its mission um from

447
00:16:49,509 --> 00:16:47,759
there we'll do a series of checkouts of

448
00:16:51,509 --> 00:16:49,519
our of our uh

449
00:16:52,550 --> 00:16:51,519
of our spacecraft

450
00:16:55,430 --> 00:16:52,560
systems

451
00:16:58,470 --> 00:16:55,440
and on december 3rd we'll do the first

452
00:17:00,790 --> 00:16:58,480
of four trajectory correction maneuvers

453
00:17:02,230 --> 00:17:00,800
um that one will occur on december 3rd

454
00:17:03,829 --> 00:17:02,240
and the final one will occur in

455
00:17:06,150 --> 00:17:03,839
september of

456
00:17:07,750 --> 00:17:06,160
pointing us in the precise location we

457
00:17:09,750 --> 00:17:07,760
want to be as we get to mars orbit

458
00:17:11,669 --> 00:17:09,760
insertion

459
00:17:14,150 --> 00:17:11,679
from there we will start checking out

460
00:17:15,990 --> 00:17:14,160
all our instruments so there's there's a

461
00:17:17,189 --> 00:17:16,000
there's a total of eight instruments on

462
00:17:19,270 --> 00:17:17,199
board in a

463
00:17:21,029 --> 00:17:19,280

electric telecom relay package on board

464
00:17:22,150 --> 00:17:21,039
and so in the first two weeks of

465
00:17:23,110 --> 00:17:22,160
december

466
00:17:25,029 --> 00:17:23,120
we'll

467
00:17:26,630 --> 00:17:25,039
have turned on all the instruments and

468
00:17:28,870 --> 00:17:26,640
check them out

469
00:17:31,669 --> 00:17:28,880
they won't be in the condition or the

470
00:17:33,430 --> 00:17:31,679
the configuration for taking science we

471
00:17:35,510 --> 00:17:33,440
have to get to mars first and get into

472
00:17:37,110 --> 00:17:35,520
that orbit

473
00:17:38,950 --> 00:17:37,120
before we do all our deployments but

474
00:17:40,310 --> 00:17:38,960
we'll at least be able to turn on all

475
00:17:43,110 --> 00:17:40,320
the instruments and make sure that

476
00:17:45,430 --> 00:17:43,120
things are operating as we intended

477
00:17:47,270 --> 00:17:45,440
from there we continue on our chase to

478
00:17:49,350 --> 00:17:47,280
get to the red planet

479
00:17:51,590 --> 00:17:49,360
and we will

480
00:17:54,070 --> 00:17:51,600
as we're as we're proceeding in this 10

481
00:17:56,070 --> 00:17:54,080
10 month long

482
00:17:57,510 --> 00:17:56,080
journey to the red planet and to put it

483
00:17:59,190 --> 00:17:57,520
in context it took

484
00:18:01,270 --> 00:17:59,200
three days for the apollo astronauts to

485
00:18:02,630 --> 00:18:01,280
get to the moon so it's it's quite a big

486
00:18:04,789 --> 00:18:02,640
difference

487
00:18:06,310 --> 00:18:04,799
taking to get to mars but we'll we'll

488
00:18:09,430 --> 00:18:06,320

continue on the track getting there and

489
00:18:11,110 --> 00:18:09,440
as we're going we will um do additional

490
00:18:12,310 --> 00:18:11,120
calibrations and checkouts of all the

491
00:18:13,909 --> 00:18:12,320
systems

492
00:18:15,430 --> 00:18:13,919
in february i mentioned the eight

493
00:18:17,430 --> 00:18:15,440
science instruments turned on in

494
00:18:19,830 --> 00:18:17,440
december and february we'll turn on the

495
00:18:23,270 --> 00:18:19,840
electro telecom relay package and that's

496
00:18:25,430 --> 00:18:23,280
something that's used for um relaying uh

497
00:18:28,070 --> 00:18:25,440
data and uh commanding between the

498
00:18:30,310 --> 00:18:28,080
rovers at mars and back to earth we

499
00:18:31,909 --> 00:18:30,320
already have other spacecraft the mars

500
00:18:33,830 --> 00:18:31,919
program has other spacecraft up there

501
00:18:36,549 --> 00:18:33,840
with this capability so they're they're

502
00:18:38,710 --> 00:18:36,559
doing that now but um maven will will

503
00:18:41,350 --> 00:18:38,720
come in down the road to to

504
00:18:43,510 --> 00:18:41,360
manage that part of it as well

505
00:18:46,470 --> 00:18:43,520
later than the primary science we're at

506
00:18:48,549 --> 00:18:46,480
so the big event coming in september if

507
00:18:49,830 --> 00:18:48,559
we launch on monday this week this

508
00:18:51,350 --> 00:18:49,840
coming week

509
00:18:55,110 --> 00:18:51,360
we'll get to what's called mars orbit

510
00:18:57,110 --> 00:18:55,120
insertion on september 22nd of 2014.

511
00:18:59,270 --> 00:18:57,120
it's almost like another build up to a

512
00:19:00,789 --> 00:18:59,280
launch like we're we're here today

513
00:19:02,150 --> 00:19:00,799

getting ready for this big moment of

514
00:19:04,390 --> 00:19:02,160
launch now we're going to be getting

515
00:19:05,990 --> 00:19:04,400
ready and training and testing and and

516
00:19:08,310 --> 00:19:06,000
making sure every everything's in the

517
00:19:11,110 --> 00:19:08,320
right shape and we get into this mars

518
00:19:13,830 --> 00:19:11,120
orbit insertion so what happens is we'll

519
00:19:16,070 --> 00:19:13,840
we'll do a series of we'll do a a burn

520
00:19:19,990 --> 00:19:16,080
that will get us into what's called a 35

521
00:19:21,750 --> 00:19:20,000
hour capture orbit around mars and then

522
00:19:23,990 --> 00:19:21,760
over the over the period of a couple of

523
00:19:26,630 --> 00:19:24,000
weeks we'll walk down the orbit to get

524
00:19:29,110 --> 00:19:26,640
to an ultimate uh four and a half hour

525
00:19:31,669 --> 00:19:29,120
period orbit which is we'll be in an

526
00:19:33,750 --> 00:19:31,679
elliptical orbit about uh the furthest

527
00:19:35,590 --> 00:19:33,760
most point it'll be at mars is about six

528
00:19:38,870 --> 00:19:35,600
thousand kilometers and the closest

529
00:19:40,870 --> 00:19:38,880
point will be about 120 or 150

530
00:19:43,110 --> 00:19:40,880
kilometers from the surface of mars so

531
00:19:44,549 --> 00:19:43,120
every four and a half hours it will it

532
00:19:47,270 --> 00:19:44,559
will go through the farthest point for

533
00:19:48,870 --> 00:19:47,280
this point and the the closest point um

534
00:19:50,870 --> 00:19:48,880
all the way through a single uh a

535
00:19:52,390 --> 00:19:50,880
complete cycle and

536
00:19:54,710 --> 00:19:52,400
that's important from an instrument

537
00:19:56,870 --> 00:19:54,720
standpoint and what i'd like to do at

538
00:19:59,270 --> 00:19:56,880

this point is roll the first video

539
00:20:04,070 --> 00:20:01,510
okay this this shows the configuration

540
00:20:06,149 --> 00:20:04,080
as we'll be flying once we're at mars so

541
00:20:07,750 --> 00:20:06,159
all the appendages have been deployed

542
00:20:10,149 --> 00:20:07,760
not all of them will be deployed this

543
00:20:11,590 --> 00:20:10,159
coming week after we launch again we

544
00:20:14,470 --> 00:20:11,600
have to wait till we get to mars to do

545
00:20:15,990 --> 00:20:14,480
that but there's um it really is the the

546
00:20:18,149 --> 00:20:16,000
the spacecraft is bristling with

547
00:20:20,149 --> 00:20:18,159
instruments and there's a graphic here

548
00:20:21,669 --> 00:20:20,159
that points to the various instruments

549
00:20:23,909 --> 00:20:21,679
there's there's some on booms for

550
00:20:26,789 --> 00:20:23,919
various reasons uh there's there's some

551
00:20:29,510 --> 00:20:26,799
on the uh the body of the the spacecraft

552
00:20:31,750 --> 00:20:29,520
around the uh high gain antenna that

553
00:20:33,350 --> 00:20:31,760
silver circular dish you see there and

554
00:20:34,710 --> 00:20:33,360
then down at the bottom the graphic

555
00:20:36,630 --> 00:20:34,720
you'll see a

556
00:20:38,630 --> 00:20:36,640
a boom down there that has actually

557
00:20:39,669 --> 00:20:38,640
three instruments on board that allow us

558
00:20:41,990 --> 00:20:39,679
to

559
00:20:43,669 --> 00:20:42,000
slew around and observe mars in

560
00:20:46,070 --> 00:20:43,679
different ways depending on which part

561
00:20:48,549 --> 00:20:46,080
of the orbit you're in so

562
00:20:50,390 --> 00:20:48,559
the scientists really took a clean sheet

563
00:20:53,190 --> 00:20:50,400

approach when they developed the maven

564
00:20:55,029 --> 00:20:53,200
mission of uh what what kind of what are

565
00:20:57,029 --> 00:20:55,039
we going after with the science and what

566
00:20:58,950 --> 00:20:57,039
kind of instrumentation we do we need

567
00:21:01,669 --> 00:20:58,960
and so they they um you know we

568
00:21:03,909 --> 00:21:01,679
collectively as a team came up with uh

569
00:21:06,230 --> 00:21:03,919
instrumentation that uh really goes

570
00:21:08,149 --> 00:21:06,240
after uh ultimately the question that

571
00:21:10,149 --> 00:21:08,159
we're we're on which is the climate uh

572
00:21:12,710 --> 00:21:10,159
what's happened in the history of mars

573
00:21:14,630 --> 00:21:12,720
why did it go from a wetter earth-like

574
00:21:17,590 --> 00:21:14,640
environment with a thicker atmosphere to

575
00:21:20,470 --> 00:21:17,600
where it is today a much much more dry

576
00:21:22,070 --> 00:21:20,480
and thin atmosphere so they they pulled

577
00:21:23,029 --> 00:21:22,080
together a series of instruments that

578
00:21:25,110 --> 00:21:23,039
really

579
00:21:27,270 --> 00:21:25,120
will go after a

580
00:21:29,909 --> 00:21:27,280
i'll say a missing piece of the puzzle

581
00:21:32,149 --> 00:21:29,919
of the mars story which is many missions

582
00:21:33,750 --> 00:21:32,159
with rovers with other orbiters that are

583
00:21:35,590 --> 00:21:33,760
up there

584
00:21:37,430 --> 00:21:35,600
they've been more focused on the surface

585
00:21:39,830 --> 00:21:37,440
and what's going on on the surface of

586
00:21:41,750 --> 00:21:39,840
mars where this one is devoted to

587
00:21:43,110 --> 00:21:41,760
understanding the upper atmosphere at

588
00:21:44,870 --> 00:21:43,120

mars

589
00:21:46,950 --> 00:21:44,880
understanding it over a period of time

590
00:21:48,710 --> 00:21:46,960
of a year to understand how it changed

591
00:21:50,470 --> 00:21:48,720
and then be able to project back in time

592
00:21:53,110 --> 00:21:50,480
and what are the what are the drivers

593
00:21:55,110 --> 00:21:53,120
behind it um the the solar storms that

594
00:21:57,110 --> 00:21:55,120
happen and how that influences the upper

595
00:21:58,950 --> 00:21:57,120
atmosphere uh when those kind of things

596
00:22:01,669 --> 00:21:58,960
are happening so

597
00:22:03,350 --> 00:22:01,679
um so then we get into once we get

598
00:22:06,710 --> 00:22:03,360
through mars orbit insertion in in

599
00:22:08,470 --> 00:22:06,720
september of 2014 we go into a five-week

600
00:22:10,310 --> 00:22:08,480
commissioning phase and that includes

601
00:22:13,029 --> 00:22:10,320
these deployments that i was mentioning

602
00:22:15,510 --> 00:22:13,039
earlier it includes the walk down type

603
00:22:17,029 --> 00:22:15,520
orbit to get to the four and a half hour

604
00:22:20,310 --> 00:22:17,039
period orbit

605
00:22:23,430 --> 00:22:20,320
and so by late october early november of

606
00:22:24,950 --> 00:22:23,440
2014 we'll be in the science phase

607
00:22:26,710 --> 00:22:24,960
commissioning and and done with

608
00:22:29,350 --> 00:22:26,720
commissioning and into the phase we need

609
00:22:31,669 --> 00:22:29,360
to be um to take our one year of earth

610
00:22:34,149 --> 00:22:31,679
science our earth

611
00:22:36,710 --> 00:22:34,159
earth year uh science

612
00:22:39,350 --> 00:22:36,720
in this period of one year we'll also do

613
00:22:43,110 --> 00:22:39,360

five deep dip campaigns which are

614
00:22:45,510 --> 00:22:43,120
five days long um where we lower the the

615
00:22:47,830 --> 00:22:45,520
the um what's called the periapsis or

616
00:22:51,110 --> 00:22:47,840
the the closest approach to mars to go

617
00:22:53,750 --> 00:22:51,120
from roughly 150 kilometers down to 125

618
00:22:55,669 --> 00:22:53,760
kilometers um and that's that's of

619
00:22:57,909 --> 00:22:55,679
interest to the science community get

620
00:23:00,789 --> 00:22:57,919
get closer in um and then we'll we'll

621
00:23:03,270 --> 00:23:00,799
pop back out to 150 and then again uh

622
00:23:06,070 --> 00:23:03,280
with the apoapsis or furthest most point

623
00:23:06,950 --> 00:23:06,080
out to 6 000 kilometers

624
00:23:09,510 --> 00:23:06,960
so

625
00:23:10,789 --> 00:23:09,520
guy is going to pick up where um well

626
00:23:13,430 --> 00:23:10,799
he's actually going to go back a little

627
00:23:15,350 --> 00:23:13,440
bit and talk about guy butyl she's um

628
00:23:17,750 --> 00:23:15,360
who will come next he'll talk about how

629
00:23:20,149 --> 00:23:17,760
we got here how we got to the launch pad

630
00:23:23,430 --> 00:23:20,159
um and how the team executed and he'll

631
00:23:24,789 --> 00:23:23,440
show some really neat video and it it's

632
00:23:26,789 --> 00:23:24,799
it's um

633
00:23:28,870 --> 00:23:26,799
it's video of uh

634
00:23:30,390 --> 00:23:28,880
of hardware and the people that are

635
00:23:32,630 --> 00:23:30,400
doing it and it's all it really is about

636
00:23:35,350 --> 00:23:32,640
the the team and the people that have

637
00:23:37,750 --> 00:23:35,360
gotten us here there's there's i'm sure

638
00:23:39,430 --> 00:23:37,760

most know there's incredible sacrifice

639
00:23:41,750 --> 00:23:39,440
on on the people working the job and the

640
00:23:44,789 --> 00:23:41,760
families to get us to this kind of point

641
00:23:46,870 --> 00:23:44,799
and to to be ready on day one uh it

642
00:23:50,470 --> 00:23:46,880
really is a testament to what the team

643
00:23:53,029 --> 00:23:50,480
has gone through um and you know guy

644
00:23:55,190 --> 00:23:53,039
from from the the the side of the the

645
00:23:58,310 --> 00:23:55,200
partnership with lockheed martin he's

646
00:23:59,750 --> 00:23:58,320
been really a steady helm uh great

647
00:24:02,070 --> 00:23:59,760
colleague for me to work with and i

648
00:24:04,950 --> 00:24:02,080
really i really enjoyed the time working

649
00:24:06,630 --> 00:24:04,960
with him and his team um and that and

650
00:24:08,149 --> 00:24:06,640
and i've got to say

651
00:24:10,789 --> 00:24:08,159
you know all the other partner

652
00:24:12,789 --> 00:24:10,799
institutions as well across the board

653
00:24:15,110 --> 00:24:12,799
what a group we've had working together

654
00:24:17,269 --> 00:24:15,120
and just to be at this point um but

655
00:24:19,830 --> 00:24:17,279
there's a lot of heavy lifting going

656
00:24:21,110 --> 00:24:19,840
forward we've got to get there safely

657
00:24:22,710 --> 00:24:21,120
we've got to get the data that these

658
00:24:24,549 --> 00:24:22,720
scientists have been pursuing for the

659
00:24:26,630 --> 00:24:24,559
last 10 years and so

660
00:24:28,549 --> 00:24:26,640
we've got a long way to go but

661
00:24:31,750 --> 00:24:28,559
it's great to get to this point and on

662
00:24:33,029 --> 00:24:31,760
budget on schedule with full capability

663
00:24:34,310 --> 00:24:33,039

so with that i'm going to turn it back

664
00:24:36,789 --> 00:24:34,320
over to george

665
00:24:39,029 --> 00:24:36,799
all right thank you dave and now too guy

666
00:24:41,110 --> 00:24:39,039
butyl she's the lockheed martin maven

667
00:24:44,390 --> 00:24:41,120
project manager from lockheed martin

668
00:24:46,950 --> 00:24:44,400
space systems company guy thank you

669
00:24:49,669 --> 00:24:46,960
this really is the culmination of a lot

670
00:24:51,510 --> 00:24:49,679
of hard work by uh a project that is

671
00:24:53,430 --> 00:24:51,520
very passionate about what they're doing

672
00:24:57,510 --> 00:24:53,440
i mean we're going to mars getting to

673
00:24:59,190 --> 00:24:57,520
work with bruce and dave uh and see the

674
00:25:01,669 --> 00:24:59,200
you know the science side of that and

675
00:25:03,110 --> 00:25:01,679
what they're trying to do

676
00:25:05,190 --> 00:25:03,120
you know is something that's very

677
00:25:09,029 --> 00:25:05,200
gratifying to us is you know that the

678
00:25:11,110 --> 00:25:09,039
whole team has put in literally

679
00:25:13,110 --> 00:25:11,120
hundreds of thousands of hours

680
00:25:15,669 --> 00:25:13,120
literally hundreds of reviews

681
00:25:17,990 --> 00:25:15,679
um thousands of hours of testing and to

682
00:25:19,750 --> 00:25:18,000
be at this point just a couple of days

683
00:25:22,070 --> 00:25:19,760
before the opening of our launch window

684
00:25:23,750 --> 00:25:22,080
ready to send our spacecraft to mars

685
00:25:25,750 --> 00:25:23,760
it's extremely

686
00:25:28,070 --> 00:25:25,760
extremely gratifying what we've done is

687
00:25:29,669 --> 00:25:28,080
we put together a video kind of showing

688
00:25:31,029 --> 00:25:29,679

some of the some of the testing and

689
00:25:32,789 --> 00:25:31,039
operations we've done since we've

690
00:25:35,830 --> 00:25:32,799
arrived here at kennedy space center so

691
00:25:38,070 --> 00:25:35,840
let's go ahead and roll the video

692
00:25:41,430 --> 00:25:38,080
so here we are this is back on august

693
00:25:43,750 --> 00:25:41,440
2nd so we arrived on an air force c-17

694
00:25:45,669 --> 00:25:43,760
transport plane so what we have is we

695
00:25:47,750 --> 00:25:45,679
have our spacecraft safely encased in

696
00:25:51,190 --> 00:25:47,760
its shipping container

697
00:25:53,350 --> 00:25:51,200
and we use the the c-17 to get down here

698
00:25:55,190 --> 00:25:53,360
which is really a nice ride it really

699
00:25:57,029 --> 00:25:55,200
eliminates a lot of the concerns we have

700
00:25:59,190 --> 00:25:57,039
over you know putting it on a truck and

701
00:26:00,870 --> 00:25:59,200
keeping it on the on the highway for for

702
00:26:03,590 --> 00:26:00,880
days at a time we can get down here in

703
00:26:05,430 --> 00:26:03,600
one day so we arrived here we took the

704
00:26:07,590 --> 00:26:05,440
spacecraft and the shipping container

705
00:26:10,630 --> 00:26:07,600
over to our uh

706
00:26:12,149 --> 00:26:10,640
our processing building here at ksc

707
00:26:13,990 --> 00:26:12,159
we took it out of the shipping container

708
00:26:15,510 --> 00:26:14,000
you can see that kind of a protective

709
00:26:17,269 --> 00:26:15,520
enclosure to make sure that it's kept

710
00:26:18,710 --> 00:26:17,279
protected and kept clean

711
00:26:21,029 --> 00:26:18,720
and then here we are taking the

712
00:26:23,750 --> 00:26:21,039
spacecraft and we're going to put it on

713
00:26:25,350 --> 00:26:23,760

a piece of ground support equipment and

714
00:26:27,029 --> 00:26:25,360
this ground support equipment will allow

715
00:26:29,590 --> 00:26:27,039
us to do all of the checkouts and

716
00:26:31,590 --> 00:26:29,600
testing that we want to do while we're

717
00:26:33,830 --> 00:26:31,600
down here getting ready for launch

718
00:26:36,710 --> 00:26:33,840
so we had the the high gain antenna

719
00:26:38,950 --> 00:26:36,720
taken off and shipped separately

720
00:26:40,710 --> 00:26:38,960
and uh to make sure that it wasn't gonna

721
00:26:42,310 --> 00:26:40,720
get damaged and to allow us some more

722
00:26:44,789 --> 00:26:42,320
access while we finished out some

723
00:26:46,470 --> 00:26:44,799
closeout work and then we installed that

724
00:26:48,950 --> 00:26:46,480
uh that high gain antenna and you can

725
00:26:50,710 --> 00:26:48,960
see the the piece of gse it's actually a

726
00:26:53,110 --> 00:26:50,720
turnover fixture so we can actually take

727
00:26:54,070 --> 00:26:53,120
the spacecraft and not only rotate it to

728
00:26:56,710 --> 00:26:54,080
work on different sides of the

729
00:26:59,830 --> 00:26:56,720
spacecraft but to rotate it up

730
00:27:01,669 --> 00:26:59,840
and and allow access to

731
00:27:03,990 --> 00:27:01,679
areas underneath the spacecraft as well

732
00:27:05,510 --> 00:27:04,000
now i love this test this is a solar ray

733
00:27:07,350 --> 00:27:05,520
test so we're checking the solar arrays

734
00:27:09,110 --> 00:27:07,360
to make sure that all of the circuitry

735
00:27:10,630 --> 00:27:09,120
still works everybody knows that you

736
00:27:12,630 --> 00:27:10,640
shine lights on the solar array and you

737
00:27:14,230 --> 00:27:12,640
get electricity out not as many people

738
00:27:16,230 --> 00:27:14,240

know if you put electricity back in you

739
00:27:20,310 --> 00:27:16,240
can actually make solar cells glow so it

740
00:27:22,230 --> 00:27:20,320
looks like a kind of a giant led screen

741
00:27:23,830 --> 00:27:22,240
we also did a series of deployment tests

742
00:27:25,909 --> 00:27:23,840
while we were down here so this is the

743
00:27:27,669 --> 00:27:25,919
solar wind electron analyzer instrument

744
00:27:31,669 --> 00:27:27,679
which is on a boom and so we actually

745
00:27:33,750 --> 00:27:31,679
did a deployment test on it and

746
00:27:36,470 --> 00:27:33,760
we don't have the video of our

747
00:27:38,470 --> 00:27:36,480
articulated payload platform

748
00:27:40,070 --> 00:27:38,480
boom deployment test as well but we do

749
00:27:42,230 --> 00:27:40,080
have one here of the solar array so we

750
00:27:44,789 --> 00:27:42,240
put the solar arrays back on we did a

751
00:27:46,789 --> 00:27:44,799
test where we fully unfurled

752
00:27:48,149 --> 00:27:46,799
the solar rays and we're actually using

753
00:27:50,389 --> 00:27:48,159
the same commands we're going to use in

754
00:27:51,990 --> 00:27:50,399
flight so we we process the same

755
00:27:53,990 --> 00:27:52,000
commands just like the spacecraft thinks

756
00:27:56,149 --> 00:27:54,000
it's out right after separation

757
00:27:57,830 --> 00:27:56,159
unfurling those solar arrays and then we

758
00:27:59,669 --> 00:27:57,840
actually shine bright lights we actually

759
00:28:01,750 --> 00:27:59,679
call them hollywood lights

760
00:28:03,190 --> 00:28:01,760
onto the solar arrays and actually check

761
00:28:05,110 --> 00:28:03,200
each string to make sure that we're

762
00:28:06,230 --> 00:28:05,120
getting the expected amount of power out

763
00:28:07,590 --> 00:28:06,240

of that

764
00:28:09,350 --> 00:28:07,600
so here we are

765
00:28:11,430 --> 00:28:09,360
putting basically closing up the solar

766
00:28:13,590 --> 00:28:11,440
rays for the last time the next time

767
00:28:15,750 --> 00:28:13,600
it'll it'll deploy we'll be right after

768
00:28:17,750 --> 00:28:15,760
separation and then we did a test where

769
00:28:20,149 --> 00:28:17,760
we put it on a uh on a

770
00:28:21,750 --> 00:28:20,159
on a fixture that basically rotates the

771
00:28:23,269 --> 00:28:21,760
spacecraft around and the reason that we

772
00:28:25,029 --> 00:28:23,279
want to do that is that fixture is very

773
00:28:26,389 --> 00:28:25,039
sensitive and will actually give us

774
00:28:29,110 --> 00:28:26,399
information about where the center of

775
00:28:31,350 --> 00:28:29,120
mass of the vehicle is very important to

776
00:28:33,430 --> 00:28:31,360
pass along to the launch vehicle folks

777
00:28:36,070 --> 00:28:33,440
they came over and we worked with them

778
00:28:38,710 --> 00:28:36,080
to put the spacecraft inside the fairing

779
00:28:41,350 --> 00:28:38,720
so there you can see uh all buttoned up

780
00:28:44,230 --> 00:28:41,360
and then uh we uh put it over put it

781
00:28:46,310 --> 00:28:44,240
over on a on a truck and then uh drove

782
00:28:49,110 --> 00:28:46,320
the truck over to the launch pad and uh

783
00:28:51,750 --> 00:28:49,120
you saw earlier the the video of the

784
00:28:53,750 --> 00:28:51,760
entire assembly being uh being put on a

785
00:29:03,430 --> 00:28:53,760
crane and hoisted to the top of the

786
00:29:07,590 --> 00:29:05,190
we did we do this in the middle of the

787
00:29:09,830 --> 00:29:07,600
night so that uh keep traffic low and uh

788
00:29:11,750 --> 00:29:09,840

keep everybody out of our way uh so very

789
00:29:13,669 --> 00:29:11,760
successful operation

790
00:29:15,750 --> 00:29:13,679
and the spacecraft's now safely sitting

791
00:29:18,070 --> 00:29:15,760
on top of the rocket

792
00:29:20,070 --> 00:29:18,080
and yesterday we actually turned on the

793
00:29:21,909 --> 00:29:20,080
spacecraft for the very last time it

794
00:29:23,909 --> 00:29:21,919
will now remain on

795
00:29:25,590 --> 00:29:23,919
uh through launch through cruise through

796
00:29:27,590 --> 00:29:25,600
science operations hopefully several

797
00:29:29,269 --> 00:29:27,600
extended missions and get all that

798
00:29:32,470 --> 00:29:29,279
science data that the science team is

799
00:29:37,750 --> 00:29:36,070
we are currently supplying power through

800
00:29:39,510 --> 00:29:37,760
ground support equipment so the

801
00:29:41,029 --> 00:29:39,520
batteries are online but we're putting

802
00:29:42,789 --> 00:29:41,039
extra power in there so we keep the

803
00:29:44,549 --> 00:29:42,799
batteries fully charged

804
00:29:46,710 --> 00:29:44,559
at uh when we go through our terminal

805
00:29:48,310 --> 00:29:46,720
countdown at t minus four minutes

806
00:29:50,389 --> 00:29:48,320
there's a built-in hold and at that

807
00:29:52,149 --> 00:29:50,399
point we're going to transition

808
00:29:53,669 --> 00:29:52,159
to internal power so we'll basically

809
00:29:55,830 --> 00:29:53,679
take power away

810
00:29:57,510 --> 00:29:55,840
will no longer be supplied by the ground

811
00:29:59,830 --> 00:29:57,520
and the spacecraft will be operating on

812
00:30:02,149 --> 00:29:59,840
batteries and it will uh stay operating

813
00:30:04,549 --> 00:30:02,159

on batteries through the boost phase uh

814
00:30:06,549 --> 00:30:04,559
through separation and then that will

815
00:30:08,630 --> 00:30:06,559
power the deployment of the solar arrays

816
00:30:10,470 --> 00:30:08,640
and then the spacecraft will orient

817
00:30:11,590 --> 00:30:10,480
itself to get the solar rays pointed at

818
00:30:14,070 --> 00:30:11,600
the sun

819
00:30:16,470 --> 00:30:14,080
so uh and at that point

820
00:30:18,389 --> 00:30:16,480
where our job down here at ksc is done

821
00:30:20,070 --> 00:30:18,399
because we have a mission support area

822
00:30:22,230 --> 00:30:20,080
back in denver colorado that's going to

823
00:30:23,510 --> 00:30:22,240
be taking over control of the spacecraft

824
00:30:25,269 --> 00:30:23,520
so they'll be looking for the data

825
00:30:27,110 --> 00:30:25,279
coming from the deep space network and

826
00:30:28,470 --> 00:30:27,120
they'll start taking a look at that data

827
00:30:30,310 --> 00:30:28,480
coming back from the spacecraft to

828
00:30:32,470 --> 00:30:30,320
determine the health make sure

829
00:30:34,230 --> 00:30:32,480
everything survived the launch

830
00:30:35,590 --> 00:30:34,240
and start

831
00:30:37,269 --> 00:30:35,600
preparing for all the activities we're

832
00:30:39,669 --> 00:30:37,279
going to do to cruise leading up to mars

833
00:30:41,590 --> 00:30:39,679
orbit insertion next september

834
00:30:43,190 --> 00:30:41,600
also we do have a science operations

835
00:30:45,110 --> 00:30:43,200
center at the laboratory for atmospheric

836
00:30:47,990 --> 00:30:45,120
and space physics up at the university

837
00:30:50,389 --> 00:30:48,000
of colorado in boulder and that's the uh

838
00:30:52,870 --> 00:30:50,399

the place where the team is going to be

839
00:30:54,149 --> 00:30:52,880
looking at all the data coming from the

840
00:30:56,470 --> 00:30:54,159
instruments and routing it to the

841
00:30:58,549 --> 00:30:56,480
instrument home institutions and then

842
00:31:00,549 --> 00:30:58,559
also during science phase processing all

843
00:31:02,549 --> 00:31:00,559
the science data and then coordinating

844
00:31:04,470 --> 00:31:02,559
all of the all of the activities that

845
00:31:05,909 --> 00:31:04,480
the science team want to do so they'll

846
00:31:07,750 --> 00:31:05,919
be basically assembling the sets of

847
00:31:08,950 --> 00:31:07,760
commands that they want to send

848
00:31:11,350 --> 00:31:08,960
to the science instruments and then

849
00:31:12,950 --> 00:31:11,360
shipping them down to our msa

850
00:31:14,310 --> 00:31:12,960
down in littleton down in denver

851
00:31:16,870 --> 00:31:14,320
colorado

852
00:31:19,350 --> 00:31:16,880
and this msa in in

853
00:31:21,029 --> 00:31:19,360
in denver is already uh operating

854
00:31:22,630 --> 00:31:21,039
several spacecraft we have a long

855
00:31:24,070 --> 00:31:22,640
history with that msa a lot of very

856
00:31:25,750 --> 00:31:24,080
experienced people in fact mars

857
00:31:27,990 --> 00:31:25,760
reconnaissance orbiter and mars odyssey

858
00:31:30,070 --> 00:31:28,000
are being operated right now so uh and

859
00:31:31,830 --> 00:31:30,080
they're very excited to uh to get a

860
00:31:35,269 --> 00:31:31,840
third mars orbiter

861
00:31:37,590 --> 00:31:35,279
to be operating from the msa down there

862
00:31:39,909 --> 00:31:37,600
and that's kind of a theme of the entire

863
00:31:41,430 --> 00:31:39,919

maven project is a tremendous amount of

864
00:31:44,230 --> 00:31:41,440
heritage

865
00:31:46,710 --> 00:31:44,240
so the maven spacecraft design is is

866
00:31:49,029 --> 00:31:46,720
built heavily on the mro mars

867
00:31:51,110 --> 00:31:49,039
reconnaissance orbiter design uh with

868
00:31:53,430 --> 00:31:51,120
some upgrades that that we did for the

869
00:31:55,269 --> 00:31:53,440
juno spacecraft that nasa

870
00:31:56,549 --> 00:31:55,279
has launched and is on its way to

871
00:31:58,389 --> 00:31:56,559
jupiter

872
00:31:59,830 --> 00:31:58,399
the science instruments themselves have

873
00:32:02,470 --> 00:31:59,840
a tremendous amount of heritage all of

874
00:32:04,070 --> 00:32:02,480
them built are based on designs

875
00:32:05,110 --> 00:32:04,080
successfully flown on other nasa

876
00:32:07,110 --> 00:32:05,120
missions

877
00:32:08,310 --> 00:32:07,120
uh goddard and you know it's been great

878
00:32:10,389 --> 00:32:08,320
to work for them because they have such

879
00:32:12,710 --> 00:32:10,399
a rich heritage of successful science

880
00:32:14,710 --> 00:32:12,720
missions and so between all of these

881
00:32:16,470 --> 00:32:14,720
organizations all of these uh you know

882
00:32:18,310 --> 00:32:16,480
the designs of the hardware it's not

883
00:32:20,630 --> 00:32:18,320
just that it's the people

884
00:32:24,070 --> 00:32:20,640
the people really have a ton of

885
00:32:25,830 --> 00:32:24,080
background in science spacecraft and

886
00:32:27,190 --> 00:32:25,840
a ton of background frankly in mars

887
00:32:29,190 --> 00:32:27,200
spacecraft a lot of people this isn't

888
00:32:31,669 --> 00:32:29,200

their first mars spacecraft and so we're

889
00:32:33,909 --> 00:32:31,679
really building on not only the designs

890
00:32:37,029 --> 00:32:33,919
but the experience processes procedures

891
00:32:39,269 --> 00:32:37,039
that the people bring to this process

892
00:32:41,830 --> 00:32:39,279
and so we're very excited so we're a

893
00:32:43,590 --> 00:32:41,840
couple days away the team is ready the

894
00:32:45,669 --> 00:32:43,600
spacecraft is ready and we're looking

895
00:32:48,230 --> 00:32:45,679
forward to the opening of our launch

896
00:32:49,669 --> 00:32:48,240
period on monday back to you george

897
00:32:51,909 --> 00:32:49,679
thank you guy

898
00:32:54,070 --> 00:32:51,919
now we'll look at monday's weather with

899
00:32:55,909 --> 00:32:54,080
clay flynn the launch weather officer

900
00:32:57,750 --> 00:32:55,919
from the 45th weather squadron the

901
00:33:00,389 --> 00:32:57,760
department of the air force from cape

902
00:33:02,230 --> 00:33:00,399
canaveral air force station clay

903
00:33:03,830 --> 00:33:02,240
thank you thank you george the cold

904
00:33:05,269 --> 00:33:03,840
front you may recall a cold front pushed

905
00:33:07,029 --> 00:33:05,279
through earlier in the week and

906
00:33:09,430 --> 00:33:07,039
transited central florida and actually

907
00:33:11,750 --> 00:33:09,440
south of the peninsula that is actually

908
00:33:12,950 --> 00:33:11,760
migrating back up to the north now

909
00:33:14,149 --> 00:33:12,960
associated with an upper level

910
00:33:16,630 --> 00:33:14,159
disturbance in the eastern gulf of

911
00:33:18,950 --> 00:33:16,640
mexico giving us quite cloudy conditions

912
00:33:20,230 --> 00:33:18,960
if i could have the satellite picture

913
00:33:21,909 --> 00:33:20,240

if you look out

914
00:33:23,669 --> 00:33:21,919
in the eastern gulf you can see that

915
00:33:25,590 --> 00:33:23,679
disturbance were quite cloudy that

916
00:33:27,029 --> 00:33:25,600
disturbance will lift north give us

917
00:33:29,830 --> 00:33:27,039
isolated showers this afternoon and

918
00:33:31,990 --> 00:33:29,840
evening into tomorrow for tomorrow's mlp

919
00:33:33,669 --> 00:33:32,000
roll so would it look look to have some

920
00:33:36,470 --> 00:33:33,679
isolated showers in the vicinity for the

921
00:33:38,389 --> 00:33:36,480
roll that's really not a constraint for

922
00:33:40,470 --> 00:33:38,399
for rolling to the pad we've got a low

923
00:33:42,470 --> 00:33:40,480
lightning threat and winds don't look to

924
00:33:44,789 --> 00:33:42,480
be an issue should have southeast winds

925
00:33:46,310 --> 00:33:44,799
gusting in the mid to upper teens and a

926
00:33:48,630 --> 00:33:46,320
couple hundred feet so no real

927
00:33:50,230 --> 00:33:48,640
significant issue for a roll tomorrow we

928
00:33:51,909 --> 00:33:50,240
should see a gradual decrease in the

929
00:33:53,590 --> 00:33:51,919
shower threat tomorrow afternoon and

930
00:33:55,750 --> 00:33:53,600
into sunday

931
00:33:57,190 --> 00:33:55,760
moving on into launch day on launch day

932
00:33:59,590 --> 00:33:57,200
there should be a cold front the next

933
00:34:01,029 --> 00:33:59,600
cold front should be in northern florida

934
00:34:03,669 --> 00:34:01,039
i believe it will be just to the north

935
00:34:05,430 --> 00:34:03,679
of us during the afternoon hours

936
00:34:07,669 --> 00:34:05,440
with the bulk of the weather bulk of the

937
00:34:09,030 --> 00:34:07,679
shower activity staying to the north

938
00:34:11,430 --> 00:34:09,040

however in advance of the front do

939
00:34:13,349 --> 00:34:11,440
expect to see some showers develop

940
00:34:15,589 --> 00:34:13,359
monday morning we're quite moist a

941
00:34:17,909 --> 00:34:15,599
little more moist than typical for

942
00:34:19,750 --> 00:34:17,919
november around here so we're pretty

943
00:34:21,270 --> 00:34:19,760
saturated next week

944
00:34:23,030 --> 00:34:21,280
so do expect to see showers in the

945
00:34:25,349 --> 00:34:23,040
morning that would be and into

946
00:34:28,069 --> 00:34:25,359
increasing through the afternoon hours

947
00:34:30,550 --> 00:34:28,079
relatively low lightning threat

948
00:34:32,790 --> 00:34:30,560
during the count and during the window

949
00:34:35,190 --> 00:34:32,800
however with the showers and southerly

950
00:34:36,790 --> 00:34:35,200
flow and influx of moisture

951
00:34:37,990 --> 00:34:36,800
would be concerned with thick clouds

952
00:34:39,589 --> 00:34:38,000
because we do have quite a bit of

953
00:34:41,669 --> 00:34:39,599
moisture in the atmosphere cumulus

954
00:34:43,750 --> 00:34:41,679
clouds and disturbed weather associated

955
00:34:45,909 --> 00:34:43,760
with isolated showers so in general

956
00:34:47,990 --> 00:34:45,919
those will be the three three weather

957
00:34:49,030 --> 00:34:48,000
rules that we're concerned about on on

958
00:34:52,310 --> 00:34:49,040
monday

959
00:34:54,069 --> 00:34:52,320
we push on into tuesday that frontal

960
00:34:55,349 --> 00:34:54,079
boundary that should just be to the

961
00:34:56,790 --> 00:34:55,359
north of us

962
00:34:59,030 --> 00:34:56,800
monday afternoon should push through

963
00:35:00,390 --> 00:34:59,040

during the overnight hours monday night

964
00:35:02,950 --> 00:35:00,400
tuesday morning

965
00:35:04,550 --> 00:35:02,960
should be just to our south um with the

966
00:35:06,710 --> 00:35:04,560
front pushing to the south the pressure

967
00:35:08,069 --> 00:35:06,720
gradient tightens up quite a bit

968
00:35:09,910 --> 00:35:08,079
the tighter the pressure gradient the

969
00:35:11,990 --> 00:35:09,920
tighter the stronger the wind so look to

970
00:35:12,790 --> 00:35:12,000
have some gusty winds

971
00:35:15,670 --> 00:35:12,800
next

972
00:35:17,510 --> 00:35:15,680
on tuesday from the north northeast

973
00:35:20,390 --> 00:35:17,520
would look to have fairly significant

974
00:35:22,790 --> 00:35:20,400
gusts in the upper 20s to low 30s

975
00:35:24,630 --> 00:35:22,800
tuesday afternoon and whenever we get on

976
00:35:26,150 --> 00:35:24,640
strong onshore flow even though we're

977
00:35:27,990 --> 00:35:26,160
post-frontal the front doesn't move that

978
00:35:30,150 --> 00:35:28,000
far to the south with the strong onshore

979
00:35:31,430 --> 00:35:30,160
flow looking for a coastal shower threat

980
00:35:32,870 --> 00:35:31,440
and then once again that would give us

981
00:35:33,829 --> 00:35:32,880
disturbed weather associated with

982
00:35:35,430 --> 00:35:33,839
showers

983
00:35:37,109 --> 00:35:35,440
and cumulus clouds coming in off the

984
00:35:39,270 --> 00:35:37,119
water as well as we're still fairly

985
00:35:41,510 --> 00:35:39,280
moist behind that front

986
00:35:43,430 --> 00:35:41,520
so a thick cloud real concern as well in

987
00:35:45,030 --> 00:35:43,440
the event of a 48 hour delay the front

988
00:35:46,790 --> 00:35:45,040

looks like it continues to push a little

989
00:35:48,069 --> 00:35:46,800
bit further to the south

990
00:35:50,069 --> 00:35:48,079
however the pressure gradient still

991
00:35:51,750 --> 00:35:50,079
remains or looks to remain fairly tight

992
00:35:53,750 --> 00:35:51,760
through the middle of the week

993
00:35:57,349 --> 00:35:53,760
next weeks and really would look to see

994
00:35:59,190 --> 00:35:57,359
for winds gusting in the mid 30s the the

995
00:36:00,310 --> 00:35:59,200
wind constraints on or the wind gusts

996
00:36:01,510 --> 00:36:00,320
i'm giving are really at a couple

997
00:36:03,270 --> 00:36:01,520
hundred feet not necessarily at the

998
00:36:05,109 --> 00:36:03,280
surface but at a couple hundred feet

999
00:36:06,950 --> 00:36:05,119
gusting in the in the low to mid 30s on

1000
00:36:08,950 --> 00:36:06,960
wednesday which would be a concern and

1001
00:36:10,470 --> 00:36:08,960
again anytime we had those strong winds

1002
00:36:13,030 --> 00:36:10,480
from the northeast coming off the water

1003
00:36:15,109 --> 00:36:13,040
would look for isolated showers and

1004
00:36:16,470 --> 00:36:15,119
disturbed weather and potentially a

1005
00:36:18,390 --> 00:36:16,480
thick cloud although i don't think we're

1006
00:36:19,829 --> 00:36:18,400
that moist in the mid levels by that

1007
00:36:21,430 --> 00:36:19,839
time

1008
00:36:23,030 --> 00:36:21,440
and that's all i have georgeton unless

1009
00:36:25,349 --> 00:36:23,040
you have any questions

1010
00:36:26,950 --> 00:36:25,359
all right clay thank you and we're ready

1011
00:36:28,790 --> 00:36:26,960
to take questions

1012
00:36:31,190 --> 00:36:28,800
please give your name and affiliation

1013
00:36:41,270 --> 00:36:31,200

when the microphone comes to you and

1014
00:36:45,109 --> 00:36:43,270
jason ryan for space flight insider and

1015
00:36:47,750 --> 00:36:45,119
i guess this question's for dave uh on

1016
00:36:48,630 --> 00:36:47,760
mro the main instrument is high rise i

1017
00:36:50,630 --> 00:36:48,640
believe that a lot of people are

1018
00:36:54,790 --> 00:36:50,640
familiar with if you had to pick one out

1019
00:36:58,790 --> 00:36:56,950
boy that's tough it's like which kid do

1020
00:37:01,349 --> 00:36:58,800
you like the most so

1021
00:37:02,470 --> 00:37:01,359
um you know they all they're all um you

1022
00:37:05,349 --> 00:37:02,480
know there's there's eight of them

1023
00:37:06,310 --> 00:37:05,359
they're all special um they all have um

1024
00:37:07,910 --> 00:37:06,320
different

1025
00:37:09,670 --> 00:37:07,920
things they're going after with the

1026
00:37:12,870 --> 00:37:09,680
science that's why as i mentioned

1027
00:37:14,870 --> 00:37:12,880
earlier the clean sheet of uh what what

1028
00:37:17,430 --> 00:37:14,880
are we going after what is the science

1029
00:37:19,670 --> 00:37:17,440
team going after to

1030
00:37:21,109 --> 00:37:19,680
get to some of the questions about the

1031
00:37:23,750 --> 00:37:21,119
why the

1032
00:37:26,550 --> 00:37:23,760
mars changed so dramatically

1033
00:37:28,230 --> 00:37:26,560
and so some are interested in

1034
00:37:29,990 --> 00:37:28,240
um maybe i'm repeating myself a little

1035
00:37:32,790 --> 00:37:30,000
bit but some are interested in the

1036
00:37:34,790 --> 00:37:32,800
ultraviolet uh from a perspective of six

1037
00:37:37,109 --> 00:37:34,800
six thousand kilometers others like the

1038
00:37:39,750 --> 00:37:37,119

mass spectrometer are interested as we

1039
00:37:41,910 --> 00:37:39,760
are really close into the the uh surface

1040
00:37:44,710 --> 00:37:41,920
of mars and then others are looking at

1041
00:37:46,550 --> 00:37:44,720
the solar interactions um uh there's a

1042
00:37:49,190 --> 00:37:46,560
whole complement of

1043
00:37:51,109 --> 00:37:49,200
berkeley instruments that are very much

1044
00:37:52,790 --> 00:37:51,119
tuned in with what's happening with the

1045
00:37:55,430 --> 00:37:52,800
solar storms and how that impacts the

1046
00:37:57,750 --> 00:37:55,440
atmosphere so they're all they're all

1047
00:38:00,470 --> 00:37:57,760
necessary needed and and we we want them

1048
00:38:02,069 --> 00:38:00,480
all fully functioning and and again

1049
00:38:03,829 --> 00:38:02,079
we've checked them out and and we've

1050
00:38:06,470 --> 00:38:03,839
we've got a very

1051
00:38:07,910 --> 00:38:06,480
well well tested uh group of interest

1052
00:38:10,230 --> 00:38:07,920
instruments but they're all special to

1053
00:38:15,430 --> 00:38:12,150
bill

1054
00:38:17,670 --> 00:38:15,440
um

1055
00:38:19,910 --> 00:38:17,680
for for clay you got any odds on next

1056
00:38:21,589 --> 00:38:19,920
week for those of us who like odds

1057
00:38:23,589 --> 00:38:21,599
uh yes sir

1058
00:38:26,790 --> 00:38:23,599
this morning uh the forecast i put out

1059
00:38:28,710 --> 00:38:26,800
was 40 for monday afternoon i think

1060
00:38:30,630 --> 00:38:28,720
monday is the most favorable day we have

1061
00:38:31,910 --> 00:38:30,640
of the of the three days currently

1062
00:38:34,150 --> 00:38:31,920
scheduled

1063
00:38:36,710 --> 00:38:34,160

tuesday looks less favorable it's about

1064
00:38:38,310 --> 00:38:36,720
60 percent and winds become a concern as

1065
00:38:39,670 --> 00:38:38,320
well on tuesday

1066
00:38:41,510 --> 00:38:39,680
and on wednesday i think it's a little

1067
00:38:43,270 --> 00:38:41,520
bit worse principally because of the

1068
00:38:45,109 --> 00:38:43,280
stronger pressure gradient the tighter

1069
00:38:48,150 --> 00:38:45,119
pressure grading the stronger wind so i

1070
00:38:50,550 --> 00:38:48,160
went 70 for uh for wednesday afternoon

1071
00:38:52,870 --> 00:38:51,829
david or guy this may be in the press

1072
00:38:55,349 --> 00:38:52,880
get somewhere but i know there's a

1073
00:38:57,030 --> 00:38:55,359
science briefing sunday but um

1074
00:38:58,790 --> 00:38:57,040
but for the story i'm writing now when

1075
00:39:01,030 --> 00:38:58,800
it does a deep dip i'm just curious if

1076
00:39:03,190 --> 00:39:01,040
you can characterize either the heating

1077
00:39:05,270 --> 00:39:03,200
on the spacecraft whatever marginal

1078
00:39:07,030 --> 00:39:05,280
amount of extra heating there is or or

1079
00:39:09,109 --> 00:39:07,040
dynamic pressure that the

1080
00:39:10,470 --> 00:39:09,119
the spacecraft i mean i guess if i was

1081
00:39:11,990 --> 00:39:10,480
standing on the spacecraft and held my

1082
00:39:13,030 --> 00:39:12,000
hand out would i feel it would i feel

1083
00:39:15,750 --> 00:39:13,040
the breeze

1084
00:39:17,030 --> 00:39:15,760
deep dip is is kind of

1085
00:39:19,990 --> 00:39:17,040
when some people hear it they get a

1086
00:39:21,990 --> 00:39:20,000
little nervous um and really uh again

1087
00:39:23,430 --> 00:39:22,000
we're basing our spacecraft design on

1088
00:39:25,109 --> 00:39:23,440

mars reconnaissance orbiter and if you

1089
00:39:26,310 --> 00:39:25,119
remember mars reconnaissance orbiter

1090
00:39:27,990 --> 00:39:26,320
actually did a process called

1091
00:39:30,310 --> 00:39:28,000
aerobraking where they dip down in the

1092
00:39:33,190 --> 00:39:30,320
atmosphere to slow it down every

1093
00:39:34,630 --> 00:39:33,200
periapsis and pull their orbit into the

1094
00:39:36,310 --> 00:39:34,640
into the final science orbit that they

1095
00:39:38,950 --> 00:39:36,320
wanted to go and they actually went much

1096
00:39:39,670 --> 00:39:38,960
deeper than maven is going to go through

1097
00:39:40,470 --> 00:39:39,680
so

1098
00:39:43,990 --> 00:39:40,480
in

1099
00:39:45,430 --> 00:39:44,000
what would you feel i mean if you put

1100
00:39:47,030 --> 00:39:45,440
your hand out while you're going through

1101
00:39:49,670 --> 00:39:47,040
it you know you'd feel a light breeze

1102
00:39:51,349 --> 00:39:49,680
it's not something where you know like

1103
00:39:53,030 --> 00:39:51,359
the apollo is coming back where you're

1104
00:39:55,670 --> 00:39:53,040
seeing flames coming off there it's it's

1105
00:39:58,390 --> 00:39:55,680
really uh you know really a modest

1106
00:40:00,310 --> 00:39:58,400
amount of pressure out there but it is a

1107
00:40:01,829 --> 00:40:00,320
tremendous value to the scientists being

1108
00:40:05,510 --> 00:40:01,839
able to go down and get that in-situ

1109
00:40:09,910 --> 00:40:08,230
for david i think um how does relay play

1110
00:40:12,069 --> 00:40:09,920
into the mission like if you get

1111
00:40:13,910 --> 00:40:12,079
extended at some point science stops

1112
00:40:15,750 --> 00:40:13,920
relay continues does really happen while

1113
00:40:18,630 --> 00:40:15,760

you're doing science how does that that

1114
00:40:21,030 --> 00:40:18,640
play out the relationship so um

1115
00:40:23,430 --> 00:40:21,040
as i mentioned earlier um the mars

1116
00:40:25,910 --> 00:40:23,440
reconnaissance orbiter and mars odyssey

1117
00:40:28,470 --> 00:40:25,920
have that capability already

1118
00:40:29,510 --> 00:40:28,480
both those spacecraft are flying fine

1119
00:40:30,950 --> 00:40:29,520
and

1120
00:40:33,750 --> 00:40:30,960
excuse me

1121
00:40:36,150 --> 00:40:33,760
and we're we're um you know very hopeful

1122
00:40:38,309 --> 00:40:36,160
that it it continues the way it is the

1123
00:40:40,470 --> 00:40:38,319
health of those are showing that the

1124
00:40:43,349 --> 00:40:40,480
relay will continue for some time so

1125
00:40:46,069 --> 00:40:43,359
we're really a backup we're not um going

1126
00:40:47,510 --> 00:40:46,079
to mars and immediately

1127
00:40:49,270 --> 00:40:47,520
implementing that service we'll

1128
00:40:51,829 --> 00:40:49,280
certainly check it out and make sure

1129
00:40:54,230 --> 00:40:51,839
it's it's ready to support when when

1130
00:40:56,150 --> 00:40:54,240
called upon but uh we're after that

1131
00:40:58,790 --> 00:40:56,160
first year of prime science with the

1132
00:41:01,670 --> 00:40:58,800
eight uh scientific instruments and then

1133
00:41:04,710 --> 00:41:01,680
relays is for maven is just a backup at

1134
00:41:07,109 --> 00:41:04,720
this point and uh we wish as all the

1135
00:41:09,670 --> 00:41:07,119
assets there you know continued good

1136
00:41:11,910 --> 00:41:09,680
health um so we we hope they keep

1137
00:41:13,430 --> 00:41:11,920
chugging along uh for for a long time

1138
00:41:17,270 --> 00:41:13,440

and we're just focused more on the

1139
00:41:18,230 --> 00:41:17,280
science until called upon downstream

1140
00:41:26,390 --> 00:41:18,240
james

1141
00:41:28,309 --> 00:41:26,400
couple for omar um first when do you

1142
00:41:30,550 --> 00:41:28,319
load the rp1

1143
00:41:32,470 --> 00:41:30,560
the rp1 was loaded

1144
00:41:34,550 --> 00:41:32,480
about two and a half weeks ago during

1145
00:41:36,950 --> 00:41:34,560
our wet dress rehearsal and it remained

1146
00:41:39,270 --> 00:41:36,960
on board gotcha okay thanks and i know

1147
00:41:41,510 --> 00:41:39,280
uh you know you and lsp are no stranger

1148
00:41:43,430 --> 00:41:41,520
to these types of missions but just

1149
00:41:45,430 --> 00:41:43,440
wondered if you could speak to

1150
00:41:47,030 --> 00:41:45,440
again sort of the excitement of a mars

1151
00:41:49,109 --> 00:41:47,040
launch in particular and and would it be

1152
00:41:51,510 --> 00:41:49,119
correct to say that this is the the last

1153
00:41:53,670 --> 00:41:51,520
uh mars mission from from florida that

1154
00:41:57,589 --> 00:41:53,680
we'll see for some years as far as you

1155
00:41:59,990 --> 00:41:57,599
know now uh yeah uh the excitement is

1156
00:42:03,349 --> 00:42:00,000
unbelievable uh just

1157
00:42:04,230 --> 00:42:03,359
if you look around this room

1158
00:42:06,390 --> 00:42:04,240
the way

1159
00:42:09,349 --> 00:42:06,400
the media has fulfilled it

1160
00:42:10,870 --> 00:42:09,359
that's a testament to to the level that

1161
00:42:12,630 --> 00:42:10,880
of folks that are coming out and are

1162
00:42:14,790 --> 00:42:12,640
interested in the mission if you look

1163
00:42:16,230 --> 00:42:14,800

outside of the community

1164
00:42:18,230 --> 00:42:16,240
there's quite an interest in this

1165
00:42:20,309 --> 00:42:18,240
mission and uh

1166
00:42:22,550 --> 00:42:20,319
and and you wouldn't think so

1167
00:42:24,470 --> 00:42:22,560
in that it's not as sexy as the rovers

1168
00:42:26,710 --> 00:42:24,480
you know going over the planet but this

1169
00:42:28,870 --> 00:42:26,720
is this is kind of like a weather

1170
00:42:31,750 --> 00:42:28,880
satellite for mars and it's providing

1171
00:42:33,750 --> 00:42:31,760
relay and it's it's real science it's uh

1172
00:42:36,150 --> 00:42:33,760
it's an interesting mission and it's uh

1173
00:42:37,829 --> 00:42:36,160
captured the imagination of a bunch i've

1174
00:42:39,750 --> 00:42:37,839
got a nine-year-old that

1175
00:42:41,670 --> 00:42:39,760
asks me questions about it

1176
00:42:44,150 --> 00:42:41,680
and there are questions that i have to

1177
00:42:46,630 --> 00:42:44,160
think about and and look at you know the

1178
00:42:50,069 --> 00:42:46,640
literature because it's uh

1179
00:42:52,309 --> 00:42:50,079
kind of you know sets me back so super

1180
00:42:53,910 --> 00:42:52,319
interesting uh i i think there's a lot

1181
00:42:55,270 --> 00:42:53,920
of interest from from

1182
00:42:57,510 --> 00:42:55,280
all realms

1183
00:42:59,510 --> 00:42:57,520
uh as far as

1184
00:43:01,030 --> 00:42:59,520
on the books i don't have anything right

1185
00:43:05,030 --> 00:43:01,040
now

1186
00:43:05,910 --> 00:43:05,040
from the east coast or west coast

1187
00:43:07,430 --> 00:43:05,920
and

1188
00:43:09,349 --> 00:43:07,440

but i know that

1189
00:43:10,870 --> 00:43:09,359
people like the guy next to me here are

1190
00:43:13,109 --> 00:43:10,880
planning

1191
00:43:14,950 --> 00:43:13,119
and aaron are looking for fundings to to

1192
00:43:16,630 --> 00:43:14,960
generate missions uh

1193
00:43:19,349 --> 00:43:16,640
uh in the next

1194
00:43:20,950 --> 00:43:19,359
couple of five years

1195
00:43:22,950 --> 00:43:20,960
i don't know if you can

1196
00:43:25,829 --> 00:43:22,960
confirm or clarify for the would it was

1197
00:43:28,550 --> 00:43:25,839
2020 likely the next we nasa anticipates

1198
00:43:32,150 --> 00:43:28,560
from from florida to launch to mars well

1199
00:43:34,150 --> 00:43:32,160
so let me talk to the just the next uh

1200
00:43:36,550 --> 00:43:34,160
planned mars mission and so this is

1201
00:43:38,790 --> 00:43:36,560
still you know in the early phases but

1202
00:43:41,829 --> 00:43:38,800
our insight mission which is uh targeted

1203
00:43:44,630 --> 00:43:41,839
for 2016 and the mars 2020

1204
00:43:46,230 --> 00:43:44,640
rover mission so those are the two

1205
00:43:47,510 --> 00:43:46,240
the next two mars missions that are

1206
00:43:52,230 --> 00:43:47,520
targeted of course they're still going

1207
00:43:59,109 --> 00:43:52,829
all

1208
00:44:03,589 --> 00:44:01,349
dan billow from wesh tv for dave

1209
00:44:05,990 --> 00:44:03,599
mitchell um

1210
00:44:08,470 --> 00:44:06,000
could you elaborate a little bit more on

1211
00:44:11,349 --> 00:44:08,480
on that uh i guess sort of golden moment

1212
00:44:13,270 --> 00:44:11,359
when when is that when uh you acquire

1213
00:44:15,190 --> 00:44:13,280

the spacecraft and you get kind of get

1214
00:44:17,109 --> 00:44:15,200
an understanding of its health right at

1215
00:44:18,230 --> 00:44:17,119
what point does that come and you know

1216
00:44:20,790 --> 00:44:18,240
talk maybe a little bit about the

1217
00:44:22,390 --> 00:44:20,800
anxiety level before you get there um

1218
00:44:23,270 --> 00:44:22,400
sure okay so

1219
00:44:25,430 --> 00:44:23,280
um

1220
00:44:28,230 --> 00:44:25,440
shortly after separation within a minute

1221
00:44:30,870 --> 00:44:28,240
um our our communications our what's

1222
00:44:31,910 --> 00:44:30,880
called the tweet of the amplifier slash

1223
00:44:33,990 --> 00:44:31,920
radio

1224
00:44:37,829 --> 00:44:34,000
is is powered up full

1225
00:44:40,230 --> 00:44:37,839
and then um within within seconds uh we

1226
00:44:43,349 --> 00:44:40,240
have connectivity with the the ground

1227
00:44:46,470 --> 00:44:43,359
stations at at at perth and canberra in

1228
00:44:47,750 --> 00:44:46,480
australia um so we'll start flowing data

1229
00:44:50,470 --> 00:44:47,760
and getting health

1230
00:44:51,910 --> 00:44:50,480
you know at that point uh forward so

1231
00:44:52,790 --> 00:44:51,920
um

1232
00:44:58,710 --> 00:44:52,800
the

1233
00:45:01,589 --> 00:44:58,720
your anxiety that's right at separation

1234
00:45:04,950 --> 00:45:02,550
um

1235
00:45:06,790 --> 00:45:04,960
you know i mean we're we're working hard

1236
00:45:08,069 --> 00:45:06,800
at this point and we're you know there's

1237
00:45:09,910 --> 00:45:08,079
there's a build up when you're getting

1238
00:45:11,990 --> 00:45:09,920

to launch and and certainly being in the

1239
00:45:13,990 --> 00:45:12,000
control room a number of times in the

1240
00:45:15,270 --> 00:45:14,000
past there's a level of anxiety but

1241
00:45:17,670 --> 00:45:15,280
you're also

1242
00:45:19,430 --> 00:45:17,680
you're focused on what's next you know

1243
00:45:21,430 --> 00:45:19,440
and and you know focused on the

1244
00:45:24,550 --> 00:45:21,440
countdown and making sure you're hitting

1245
00:45:27,430 --> 00:45:24,560
all your marks and then uh after after

1246
00:45:29,190 --> 00:45:27,440
launch it's it's in uh you know the

1247
00:45:31,430 --> 00:45:29,200
launch vehicles hands for a while but

1248
00:45:34,309 --> 00:45:31,440
you're then you're focused on what's

1249
00:45:35,910 --> 00:45:34,319
what's coming after separation and any

1250
00:45:37,270 --> 00:45:35,920
kind of contingencies or anything but

1251
00:45:39,349 --> 00:45:37,280
you're you're

1252
00:45:42,069 --> 00:45:39,359
there's a lot going on to i'll say

1253
00:45:44,470 --> 00:45:42,079
distract the nerves a little bit and um

1254
00:45:47,030 --> 00:45:44,480
so we're yeah it's a big day for us

1255
00:45:49,829 --> 00:45:47,040
we're we're really excited but i guess

1256
00:45:53,030 --> 00:45:49,839
what calms me is is the rigor of testing

1257
00:45:55,270 --> 00:45:53,040
that's gone into this program and um so

1258
00:45:57,589 --> 00:45:55,280
it it really at a system level

1259
00:45:59,829 --> 00:45:57,599
uh really checked out well so

1260
00:46:01,190 --> 00:45:59,839
that that's what for me gives me some

1261
00:46:03,270 --> 00:46:01,200
comfort that we've got we've got a

1262
00:46:07,190 --> 00:46:03,280
system that you know should fly well

1263
00:46:14,550 --> 00:46:07,200

here and um and we're ready to roll here

1264
00:46:18,550 --> 00:46:16,390
hi marcia done associated press with a

1265
00:46:20,309 --> 00:46:18,560
couple of questions the five-minute

1266
00:46:21,670 --> 00:46:20,319
launch increments could you explain that

1267
00:46:23,109 --> 00:46:21,680
a little more is that just the first

1268
00:46:28,150 --> 00:46:23,119
second of every five minutes into the

1269
00:46:32,630 --> 00:46:30,710
yeah it's basically uh to

1270
00:46:34,150 --> 00:46:32,640
um simplify

1271
00:46:36,470 --> 00:46:34,160
the launch process in the targeting

1272
00:46:38,230 --> 00:46:36,480
process we made a decision long ago in

1273
00:46:39,589 --> 00:46:38,240
cooperation with the spacecraft with

1274
00:46:40,950 --> 00:46:39,599
nasa

1275
00:46:42,390 --> 00:46:40,960
that we would just target every five

1276
00:46:44,470 --> 00:46:42,400
minutes in the window that keeps the

1277
00:46:46,069 --> 00:46:44,480
number of trajectories we have to run

1278
00:46:47,430 --> 00:46:46,079
the amount of analysis that we have to

1279
00:46:49,270 --> 00:46:47,440
do and the amount of

1280
00:46:52,630 --> 00:46:49,280
flight computer programming that we have

1281
00:46:55,030 --> 00:46:52,640
to do down to a reasonable amount so you

1282
00:46:56,950 --> 00:46:55,040
know we're looking at how much effort we

1283
00:46:58,550 --> 00:46:56,960
want to put into the trajectory design

1284
00:47:00,550 --> 00:46:58,560
and the flight programming

1285
00:47:03,589 --> 00:47:00,560
uh and balancing that against wanting to

1286
00:47:05,109 --> 00:47:03,599
maximize our opportunity and that's the

1287
00:47:06,870 --> 00:47:05,119
solution that we came up with is we'll

1288
00:47:08,630 --> 00:47:06,880

target every five minutes that gives us

1289
00:47:11,349 --> 00:47:08,640
a reasonable number of opportunities

1290
00:47:12,710 --> 00:47:11,359
over a two two-hour period each day

1291
00:47:14,630 --> 00:47:12,720
there's a lot of ways we could have done

1292
00:47:18,230 --> 00:47:14,640
it that was the optimal approach that we

1293
00:47:23,670 --> 00:47:20,950
for mr mitchell i've the last you know

1294
00:47:26,150 --> 00:47:23,680
the last week's indian spacecraft on

1295
00:47:27,430 --> 00:47:26,160
hoping to get to mars um i've seen

1296
00:47:29,829 --> 00:47:27,440
different

1297
00:47:31,670 --> 00:47:29,839
uh arrival dates for that one do you

1298
00:47:33,910 --> 00:47:31,680
does maven get there first or does the

1299
00:47:35,670 --> 00:47:33,920
indian one or does that vary at this

1300
00:47:37,910 --> 00:47:35,680
point assuming you go on time right

1301
00:47:39,750 --> 00:47:37,920
assuming we go on time um

1302
00:47:41,510 --> 00:47:39,760
and and their burns continue the way

1303
00:47:44,549 --> 00:47:41,520
they they hope for it i think they have

1304
00:47:46,150 --> 00:47:44,559
one or two more burns in in earth orbit

1305
00:47:48,950 --> 00:47:46,160
you know getting

1306
00:47:50,710 --> 00:47:48,960
greater and greater um

1307
00:47:51,990 --> 00:47:50,720
orbits and before it takes its final

1308
00:47:54,470 --> 00:47:52,000
burn and starts heading out i think

1309
00:47:56,150 --> 00:47:54,480
that's on november 30th

1310
00:47:57,990 --> 00:47:56,160
if we launch on

1311
00:47:59,510 --> 00:47:58,000
november 18th

1312
00:48:01,670 --> 00:47:59,520
we're going to be cruising past them so

1313
00:48:04,069 --> 00:48:01,680

to speak and we'll actually get there i

1314
00:48:04,870 --> 00:48:04,079
believe two days before they get there

1315
00:48:07,030 --> 00:48:04,880
so

1316
00:48:09,109 --> 00:48:07,040
it's a it's kind of a kind of a neat

1317
00:48:11,910 --> 00:48:09,119
race and we we wish them

1318
00:48:13,109 --> 00:48:11,920
all the best um and i i think down the

1319
00:48:14,710 --> 00:48:13,119
road you know the scientists will be

1320
00:48:18,069 --> 00:48:14,720
collaborating on what they find there

1321
00:48:20,069 --> 00:48:18,079
you know between the two missions

1322
00:48:21,829 --> 00:48:20,079
i know they they're going after methane

1323
00:48:24,630 --> 00:48:21,839
but for the other rest of their mission

1324
00:48:26,230 --> 00:48:24,640
is there much overlap between the two um

1325
00:48:28,309 --> 00:48:26,240
you know i don't know a lot about the

1326
00:48:30,069 --> 00:48:28,319
mission other than um you know it's it's

1327
00:48:33,349 --> 00:48:30,079
a net it's it's a technology

1328
00:48:34,390 --> 00:48:33,359
demonstrator national pride um for india

1329
00:48:35,829 --> 00:48:34,400
it has

1330
00:48:38,069 --> 00:48:35,839
some instruments i think there's five

1331
00:48:40,230 --> 00:48:38,079
instruments on it some that are focused

1332
00:48:42,790 --> 00:48:40,240
more on the surface where ours is again

1333
00:48:44,390 --> 00:48:42,800
devoted to the upper atmosphere uh as

1334
00:48:45,670 --> 00:48:44,400
you said they do have a

1335
00:48:49,910 --> 00:48:45,680
methane

1336
00:48:51,910 --> 00:48:49,920
detection or instrument on board but

1337
00:48:52,950 --> 00:48:51,920
there's not a lot of overlap in in my

1338
00:48:56,790 --> 00:48:52,960

opinion

1339
00:49:00,470 --> 00:48:56,800
but we will share the science for sure

1340
00:49:05,750 --> 00:49:03,510
rick lasby with wfit after the one-year

1341
00:49:07,589 --> 00:49:05,760
science mission of orbiting mars are

1342
00:49:08,950 --> 00:49:07,599
there any plans for maven what happens

1343
00:49:10,150 --> 00:49:08,960
next

1344
00:49:11,430 --> 00:49:10,160
um

1345
00:49:13,910 --> 00:49:11,440
sure i'll take it

1346
00:49:15,589 --> 00:49:13,920
so with uh with any of our of our

1347
00:49:17,190 --> 00:49:15,599
missions or science missions after their

1348
00:49:19,589 --> 00:49:17,200
prime mission we go through a review

1349
00:49:21,030 --> 00:49:19,599
process to review the science and and we

1350
00:49:22,470 --> 00:49:21,040
have an independent team look do they

1351
00:49:24,870 --> 00:49:22,480
recommend going into what we call

1352
00:49:26,950 --> 00:49:24,880
extended phase so maven would certainly

1353
00:49:29,190 --> 00:49:26,960
go into a review process to see from a

1354
00:49:31,589 --> 00:49:29,200
science standpoint should we should we

1355
00:49:34,630 --> 00:49:31,599
go into the second year of of science or

1356
00:49:37,430 --> 00:49:36,470
aside from the science aspects we would

1357
00:49:39,190 --> 00:49:37,440
still

1358
00:49:41,829 --> 00:49:39,200
uh rely on maven as the backup

1359
00:49:44,390 --> 00:49:41,839
communication system that that david had

1360
00:49:46,150 --> 00:49:44,400
had talked about

1361
00:49:49,670 --> 00:49:46,160
okay let's come up here to the front to

1362
00:49:51,910 --> 00:49:49,680
ken kramer right here on the front row

1363
00:49:54,150 --> 00:49:51,920

hi ken kramer for um rocket stem and

1364
00:49:56,470 --> 00:49:54,160
universe today i have a couple questions

1365
00:49:58,309 --> 00:49:56,480
for vernon thorpe please jeff yoda you

1366
00:49:59,750 --> 00:49:58,319
mentioned you know our ultimate goal is

1367
00:50:01,510 --> 00:49:59,760
to go to mars

1368
00:50:03,589 --> 00:50:01,520
so uh vernon i'm wondering if you could

1369
00:50:05,589 --> 00:50:03,599
tell us a little bit about the human

1370
00:50:06,470 --> 00:50:05,599
rating of the atlas v that's coming up

1371
00:50:11,109 --> 00:50:06,480
for

1372
00:50:13,430 --> 00:50:11,119
sierra nevada as well as what's the

1373
00:50:15,750 --> 00:50:13,440
progress on the delta iv heavy for the

1374
00:50:18,630 --> 00:50:15,760
orion next year okay i can say a few

1375
00:50:20,790 --> 00:50:18,640
words about that yeah we are engaged in

1376
00:50:23,349 --> 00:50:20,800
working uh very closely with nasa right

1377
00:50:25,670 --> 00:50:23,359
now on human rating our vehicles

1378
00:50:27,190 --> 00:50:25,680
uh i think most folks know that we've

1379
00:50:28,710 --> 00:50:27,200
actually flown humans on our vehicles in

1380
00:50:32,230 --> 00:50:28,720
the past if you go back far enough into

1381
00:50:35,829 --> 00:50:32,240
the the 60s both atlas and titan

1382
00:50:38,790 --> 00:50:35,839
right now there are uh several programs

1383
00:50:40,549 --> 00:50:38,800
that we're engaged with nasa on outside

1384
00:50:43,109 --> 00:50:40,559
of the the traditional science mission

1385
00:50:44,150 --> 00:50:43,119
area that we're talking about here today

1386
00:50:45,990 --> 00:50:44,160
as you mentioned those are the

1387
00:50:47,190 --> 00:50:46,000
commercial crew programs

1388
00:50:49,910 --> 00:50:47,200

the

1389
00:50:52,950 --> 00:50:49,920
exploration flight test program and

1390
00:50:55,030 --> 00:50:52,960
we're also doing some work with nasa

1391
00:50:56,790 --> 00:50:55,040
through our parent companies on the sls

1392
00:50:58,790 --> 00:50:56,800
program as well

1393
00:51:01,030 --> 00:50:58,800
on the eft program the exploration

1394
00:51:03,829 --> 00:51:01,040
flight test program

1395
00:51:05,190 --> 00:51:03,839
we are targeting launch september of

1396
00:51:06,870 --> 00:51:05,200
next year

1397
00:51:08,710 --> 00:51:06,880
and everything is on track for that

1398
00:51:11,510 --> 00:51:08,720
right now working very closely with nasa

1399
00:51:13,750 --> 00:51:11,520
and lockheed martin for that flight test

1400
00:51:16,390 --> 00:51:13,760
and for commercial crew as you pointed

1401
00:51:19,510 --> 00:51:16,400
out we are supporting both boeing and

1402
00:51:23,190 --> 00:51:21,190
the

1403
00:51:24,630 --> 00:51:23,200
human rating activity that we're doing

1404
00:51:26,630 --> 00:51:24,640
is probably focused more on the

1405
00:51:28,950 --> 00:51:26,640
commercial crew activity right now i

1406
00:51:31,670 --> 00:51:28,960
think that's where we see

1407
00:51:34,549 --> 00:51:31,680
the earliest potential

1408
00:51:36,390 --> 00:51:34,559
for flying uh people on board

1409
00:51:38,069 --> 00:51:36,400
our rockets again

1410
00:51:40,309 --> 00:51:38,079
uh but those uh

1411
00:51:42,470 --> 00:51:40,319
i'll say that the the work is is moving

1412
00:51:44,069 --> 00:51:42,480
along very well there's a lot of effort

1413
00:51:45,910 --> 00:51:44,079

being put into it

1414
00:51:47,589 --> 00:51:45,920
and uh

1415
00:51:49,270 --> 00:51:47,599
we're uh we're looking forward to

1416
00:51:50,950 --> 00:51:49,280
getting through that uh in the next year

1417
00:51:52,870 --> 00:51:50,960
or so and supporting those missions in

1418
00:51:56,549 --> 00:51:52,880
the very near future eft being the first

1419
00:51:59,670 --> 00:51:58,470
can you compare a little bit the atlas

1420
00:52:01,670 --> 00:51:59,680
agena

1421
00:52:03,670 --> 00:52:01,680
at the start of the program to the atlas

1422
00:52:06,790 --> 00:52:03,680
5 that you're using now

1423
00:52:10,870 --> 00:52:08,790
you know atlas agena was a little bit

1424
00:52:12,150 --> 00:52:10,880
before my time i

1425
00:52:14,790 --> 00:52:12,160
might have been watching some of those

1426
00:52:16,150 --> 00:52:14,800
missions on tv back in the early 60s i

1427
00:52:17,829 --> 00:52:16,160
can't quite remember

1428
00:52:20,150 --> 00:52:17,839
but ajina was one of the first upper

1429
00:52:21,589 --> 00:52:20,160
stages developed for atlas and it was uh

1430
00:52:23,030 --> 00:52:21,599
it was quite a bit smaller i don't know

1431
00:52:24,870 --> 00:52:23,040
if you could quite get your arms around

1432
00:52:26,549 --> 00:52:24,880
it but if you uh

1433
00:52:28,630 --> 00:52:26,559
uh if you go on the internet and do a

1434
00:52:30,790 --> 00:52:28,640
search for say the mariner 3 or mariner

1435
00:52:32,390 --> 00:52:30,800
4 missions it's easy to find pictures of

1436
00:52:33,430 --> 00:52:32,400
those launch vehicles

1437
00:52:35,670 --> 00:52:33,440
and

1438
00:52:37,910 --> 00:52:35,680

the agena upper stage was so small that

1439
00:52:39,510 --> 00:52:37,920
by today's standards you almost wonder

1440
00:52:42,549 --> 00:52:39,520
if that's you know is that the payload

1441
00:52:44,150 --> 00:52:42,559
or is that the is that the upper stage

1442
00:52:46,390 --> 00:52:44,160
needless to say a centaur is a lot

1443
00:52:49,430 --> 00:52:46,400
bigger a lot more powerful

1444
00:52:50,390 --> 00:52:49,440
centaur was specifically developed

1445
00:52:52,870 --> 00:52:50,400
to

1446
00:52:55,030 --> 00:52:52,880
be a very high energy very accurate

1447
00:52:56,870 --> 00:52:55,040
upper stage but some of the early

1448
00:52:58,710 --> 00:52:56,880
missions even the early interplanetary

1449
00:53:00,950 --> 00:52:58,720
missions did not require that level of

1450
00:53:02,870 --> 00:53:00,960
power the flyby emissions didn't require

1451
00:53:04,470 --> 00:53:02,880
quite the level of accuracy so agena

1452
00:53:06,630 --> 00:53:04,480
worked fine for those

1453
00:53:08,470 --> 00:53:06,640
and i know that uh

1454
00:53:10,870 --> 00:53:08,480
i think in the early 70s there was

1455
00:53:12,470 --> 00:53:10,880
probably a plan to continue that program

1456
00:53:14,549 --> 00:53:12,480
continue the aegean upper stage a lot of

1457
00:53:17,430 --> 00:53:14,559
people really liked it but there just

1458
00:53:19,349 --> 00:53:17,440
really wasn't a need so

1459
00:53:21,190 --> 00:53:19,359
all the efforts really went into the

1460
00:53:23,670 --> 00:53:21,200
centaur instead

1461
00:53:24,470 --> 00:53:23,680
one thing i do remember about a gina i'm

1462
00:53:50,950 --> 00:53:24,480
a

1463
00:53:52,549 --> 00:53:50,960

you get to the

1464
00:53:53,990 --> 00:53:52,559
upper stages and payload fairings the

1465
00:53:56,549 --> 00:53:54,000
size of the ones we fly today that's

1466
00:53:57,750 --> 00:53:56,559
really not practical anymore

1467
00:53:59,349 --> 00:53:57,760
okay we're going to stop and take a

1468
00:54:01,910 --> 00:53:59,359
couple of questions we have on the phone

1469
00:54:05,990 --> 00:54:01,920
and then we'll come back here

1470
00:54:10,390 --> 00:54:09,430
hi thank you um yeah i am wondering uh

1471
00:54:11,990 --> 00:54:10,400
if if

1472
00:54:14,790 --> 00:54:12,000
maybe you could elaborate a little bit i

1473
00:54:17,430 --> 00:54:14,800
think this is uh swivern or for david um

1474
00:54:18,790 --> 00:54:17,440
about the historical context uh sort of

1475
00:54:19,829 --> 00:54:18,800
this mission so

1476
00:54:23,589 --> 00:54:19,839
um

1477
00:54:26,069 --> 00:54:23,599
what did the previous orbiters uh

1478
00:54:27,750 --> 00:54:26,079
teaches about mars and sort of what um

1479
00:54:29,109 --> 00:54:27,760
what specifically is very different

1480
00:54:31,030 --> 00:54:29,119
about maven

1481
00:54:34,549 --> 00:54:31,040
thank you

1482
00:54:36,950 --> 00:54:34,559
um sure i can start and and guy um he

1483
00:54:38,630 --> 00:54:36,960
has he has some spacecraft there flying

1484
00:54:40,470 --> 00:54:38,640
out there that i'd like him to elaborate

1485
00:54:41,510 --> 00:54:40,480
on but um

1486
00:54:44,309 --> 00:54:41,520
again

1487
00:54:47,670 --> 00:54:44,319
um there there's uh there's a heavy

1488
00:54:49,589 --> 00:54:47,680

emphasis um earlier in other missions on

1489
00:54:52,069 --> 00:54:49,599
what's happening on the surface of mars

1490
00:54:54,630 --> 00:54:52,079
you know what happened to the water and

1491
00:54:57,829 --> 00:54:54,640
you know understanding

1492
00:55:00,150 --> 00:54:57,839
topography and so on so

1493
00:55:02,789 --> 00:55:00,160
there's there's a lot of evidence of

1494
00:55:06,150 --> 00:55:02,799
liquid water flowing

1495
00:55:09,270 --> 00:55:06,160
rivers perhaps lakes perhaps oceans on

1496
00:55:11,270 --> 00:55:09,280
mars in the ancient mars environment

1497
00:55:13,109 --> 00:55:11,280
um so they were

1498
00:55:15,349 --> 00:55:13,119
they were really after that

1499
00:55:17,510 --> 00:55:15,359
that or they they are continuing to be

1500
00:55:20,230 --> 00:55:17,520
after that and they have different types

1501
00:55:21,750 --> 00:55:20,240
of instruments um

1502
00:55:23,990 --> 00:55:21,760
cameras that are

1503
00:55:26,309 --> 00:55:24,000
focused on the surface the mro with a

1504
00:55:28,390 --> 00:55:26,319
with a very large camera and high-rise

1505
00:55:30,069 --> 00:55:28,400
that really is uh

1506
00:55:33,030 --> 00:55:30,079
has an entirely different mission than

1507
00:55:35,109 --> 00:55:33,040
ours so again ours are

1508
00:55:38,069 --> 00:55:35,119
are fully focused on the the upper

1509
00:55:39,910 --> 00:55:38,079
atmosphere um research here um but i'm

1510
00:55:41,510 --> 00:55:39,920
going to turn it the guy who's um again

1511
00:55:42,950 --> 00:55:41,520
his shop is there they're flying a

1512
00:55:45,670 --> 00:55:42,960
couple other mars missions there right

1513
00:55:47,670 --> 00:55:45,680

now right and the uh maven is uh the

1514
00:55:49,750 --> 00:55:47,680
spacecraft design is based on the mars

1515
00:55:51,430 --> 00:55:49,760
reconnaissance orbiter which in turn

1516
00:55:53,270 --> 00:55:51,440
derived a lot of its heritage from mars

1517
00:55:55,030 --> 00:55:53,280
odyssey and odyssey and mro of course

1518
00:55:58,150 --> 00:55:55,040
are still in orbit around mars doing

1519
00:56:01,190 --> 00:55:58,160
their missions um and so there's a lot

1520
00:56:02,789 --> 00:56:01,200
about the design with mro that is very

1521
00:56:04,309 --> 00:56:02,799
common almost identical there are some

1522
00:56:06,150 --> 00:56:04,319
things about going to mars that don't

1523
00:56:08,710 --> 00:56:06,160
change mission to mission

1524
00:56:12,230 --> 00:56:08,720
the communication system for instance

1525
00:56:14,549 --> 00:56:12,240
the the electronics and computers uh you

1526
00:56:16,630 --> 00:56:14,559
know they become obsolete and so we've

1527
00:56:19,349 --> 00:56:16,640
done some upgrades on those that we did

1528
00:56:20,870 --> 00:56:19,359
for juno and we're driving the benefit

1529
00:56:22,470 --> 00:56:20,880
but the propulsion system and you know

1530
00:56:24,549 --> 00:56:22,480
that's another one that is that is very

1531
00:56:26,470 --> 00:56:24,559
similar so when you look at maven and

1532
00:56:28,150 --> 00:56:26,480
then you look at mro the things that

1533
00:56:29,829 --> 00:56:28,160
really pop out are the things that are

1534
00:56:31,910 --> 00:56:29,839
mission unique

1535
00:56:33,750 --> 00:56:31,920
mro is in a tight circular orbit which

1536
00:56:35,589 --> 00:56:33,760
is good for taking

1537
00:56:37,510 --> 00:56:35,599
basically doing mapping of the surface

1538
00:56:39,270 --> 00:56:37,520

of mars but we're an atmospheric

1539
00:56:40,789 --> 00:56:39,280
monitoring mission and so what we want

1540
00:56:42,390 --> 00:56:40,799
to do is we want to come close to the

1541
00:56:43,430 --> 00:56:42,400
planet and then we want to get away from

1542
00:56:45,030 --> 00:56:43,440
the planet so we can see all the

1543
00:56:46,309 --> 00:56:45,040
interactions with the solar wind and the

1544
00:56:48,789 --> 00:56:46,319
atmosphere

1545
00:56:51,270 --> 00:56:48,799
so that elliptical orbit kind of drives

1546
00:56:52,710 --> 00:56:51,280
the configuration of the spacecraft we

1547
00:56:54,789 --> 00:56:52,720
have a large number of instruments that

1548
00:56:56,710 --> 00:56:54,799
want to take a look at the solar wind so

1549
00:56:59,589 --> 00:56:56,720
they're kind of fixed looking at the sun

1550
00:57:02,150 --> 00:56:59,599
or at fixed angles off of the sun

1551
00:57:04,789 --> 00:57:02,160
and so the body of the spacecraft unlike

1552
00:57:06,069 --> 00:57:04,799
mro is uh during its orbit it stays on

1553
00:57:08,390 --> 00:57:06,079
the sun

1554
00:57:09,910 --> 00:57:08,400
and we have a smaller number of science

1555
00:57:11,750 --> 00:57:09,920
instruments and and smaller than the

1556
00:57:13,430 --> 00:57:11,760
instruments on mro that want to look the

1557
00:57:15,910 --> 00:57:13,440
atmosphere so we put those on an

1558
00:57:18,470 --> 00:57:15,920
articulated platform so that we can just

1559
00:57:20,549 --> 00:57:18,480
gimble those instruments whereas on mro

1560
00:57:21,990 --> 00:57:20,559
it basically kept the whole spacecraft

1561
00:57:23,510 --> 00:57:22,000
turning around the planet and it

1562
00:57:25,750 --> 00:57:23,520
articulated the solar arrays and the

1563
00:57:28,710 --> 00:57:25,760

hygiene antenna we're the opposite our

1564
00:57:30,309 --> 00:57:28,720
antenna and our solar arrays are fixed

1565
00:57:31,510 --> 00:57:30,319
and it's only the science instruments

1566
00:57:32,789 --> 00:57:31,520
that want to take a look at that

1567
00:57:34,789 --> 00:57:32,799
atmosphere as we're going around the

1568
00:57:36,230 --> 00:57:34,799
orbit that it's articulated so there's a

1569
00:57:38,470 --> 00:57:36,240
lot of heritage

1570
00:57:40,230 --> 00:57:38,480
going back to those other orbiters

1571
00:57:41,670 --> 00:57:40,240
and the differences are really focused

1572
00:57:43,349 --> 00:57:41,680
on the things that make maven different

1573
00:57:44,950 --> 00:57:43,359
which is we're an atmospheric monitoring

1574
00:57:47,190 --> 00:57:44,960
mission whereas all the orbiters that

1575
00:57:50,470 --> 00:57:47,200
come before us have really been surface

1576
00:57:54,150 --> 00:57:50,480
mapping surface operation uh uh surface

1577
00:57:55,829 --> 00:57:54,160
observation type uh missions okay

1578
00:57:59,030 --> 00:57:55,839
another question on the phone from

1579
00:58:00,950 --> 00:57:59,040
francie deep from popular science

1580
00:58:01,750 --> 00:58:00,960
um hi thanks for taking my question i

1581
00:58:04,950 --> 00:58:01,760
have

1582
00:58:07,030 --> 00:58:04,960
two of them the first one i wasn't um

1583
00:58:09,430 --> 00:58:07,040
i'm going to clarify what we already

1584
00:58:11,829 --> 00:58:09,440
know about the martian atmosphere now

1585
00:58:13,670 --> 00:58:11,839
and then what david's gonna find out and

1586
00:58:14,789 --> 00:58:13,680
my second one um i was actually

1587
00:58:17,270 --> 00:58:14,799
wondering

1588
00:58:20,309 --> 00:58:17,280

what will people be able to see of this

1589
00:58:21,829 --> 00:58:20,319
launch sort of from home if if anybody

1590
00:58:26,390 --> 00:58:21,839
in the u.s will see it from naked eye

1591
00:58:35,430 --> 00:58:27,109
so

1592
00:58:37,589 --> 00:58:35,440
the the previous missions um

1593
00:58:40,390 --> 00:58:37,599
there's there's a there's a puzzle piece

1594
00:58:41,829 --> 00:58:40,400
i'll say that's been missing um with

1595
00:58:44,470 --> 00:58:41,839
what's happening in that upper

1596
00:58:46,309 --> 00:58:44,480
atmosphere that the other the other

1597
00:58:48,549 --> 00:58:46,319
missions that that was not their focus

1598
00:58:51,750 --> 00:58:48,559
so that's that's really what we're going

1599
00:58:53,270 --> 00:58:51,760
after in this case

1600
00:58:55,430 --> 00:58:53,280
i'm not sure if that's

1601
00:59:00,950 --> 00:58:55,440
okay let's come back here and take a

1602
00:59:05,270 --> 00:59:03,109
darrell nailfox 35 i was wondering what

1603
00:59:06,549 --> 00:59:05,280
the puzzle piece was and then after that

1604
00:59:08,230 --> 00:59:06,559
also

1605
00:59:10,069 --> 00:59:08,240
to omar you mentioned there were

1606
00:59:11,270 --> 00:59:10,079
challenges during the government

1607
00:59:13,109 --> 00:59:11,280
shutdown

1608
00:59:14,069 --> 00:59:13,119
and you had to overcome some of them as

1609
00:59:16,390 --> 00:59:14,079
well as

1610
00:59:18,069 --> 00:59:16,400
some delays what were the biggest ones

1611
00:59:20,789 --> 00:59:18,079
and how did you overcome it how'd you

1612
00:59:25,030 --> 00:59:22,789
okay hit hitting on the government

1613
00:59:27,670 --> 00:59:25,040

shutdown it it was

1614
00:59:28,710 --> 00:59:27,680
pretty disruptive process and that here

1615
00:59:30,309 --> 00:59:28,720
we are

1616
00:59:32,390 --> 00:59:30,319
planning for a mission

1617
00:59:33,430 --> 00:59:32,400
with a very limited launch window of 20

1618
00:59:35,670 --> 00:59:33,440
days

1619
00:59:37,349 --> 00:59:35,680
and

1620
00:59:39,349 --> 00:59:37,359
we've done just about everything

1621
00:59:42,630 --> 00:59:39,359
possible to preserve that time and be

1622
00:59:44,789 --> 00:59:42,640
able to hit the beginning of that window

1623
00:59:48,630 --> 00:59:44,799
we've got all kinds of contingency plans

1624
00:59:50,470 --> 00:59:48,640
in place hurricane plans plans if you

1625
00:59:52,710 --> 00:59:50,480
have security breaches

1626
00:59:54,549 --> 00:59:52,720
you have plans for everything

1627
00:59:56,789 --> 00:59:54,559
nobody could

1628
00:59:59,430 --> 00:59:56,799
forecast this

1629
01:00:00,390 --> 00:59:59,440
need to shut down the government that's

1630
01:00:02,470 --> 01:00:00,400
actually

1631
01:00:04,630 --> 01:00:02,480
part of the processing of this uh

1632
01:00:05,510 --> 01:00:04,640
satellite that's uh launching three days

1633
01:00:07,030 --> 01:00:05,520
from now

1634
01:00:09,589 --> 01:00:07,040
so we had to

1635
01:00:11,910 --> 01:00:09,599
go through an what's called an orderly

1636
01:00:13,430 --> 01:00:11,920
shutdown

1637
01:00:15,270 --> 01:00:13,440
and and shut down the work that was

1638
01:00:16,870 --> 01:00:15,280

going because we didn't know when we

1639
01:00:20,870 --> 01:00:16,880
were coming back

1640
01:00:23,910 --> 01:00:20,880
um we were very lucky an instrumental uh

1641
01:00:25,510 --> 01:00:23,920
a a lot of folks uh working this to make

1642
01:00:27,349 --> 01:00:25,520
sure that

1643
01:00:29,430 --> 01:00:27,359
we were able to get an exception

1644
01:00:31,829 --> 01:00:29,440
although the exemption occurred

1645
01:00:33,190 --> 01:00:31,839
two or three days after the shutdown

1646
01:00:35,109 --> 01:00:33,200
took place

1647
01:00:37,589 --> 01:00:35,119
where we had to reverse course now we

1648
01:00:39,829 --> 01:00:37,599
had saved the things that we were doing

1649
01:00:42,630 --> 01:00:39,839
now we had to reverse things and keep on

1650
01:00:47,990 --> 01:00:43,990
so it

1651
01:00:49,589 --> 01:00:48,000
it was just a an unnecessary distraction

1652
01:00:51,589 --> 01:00:49,599
we overcame it

1653
01:00:53,589 --> 01:00:51,599
um but

1654
01:00:55,349 --> 01:00:53,599
you know it's something that we couldn't

1655
01:00:57,589 --> 01:00:55,359
avoid it you know

1656
01:01:01,430 --> 01:00:57,599
we can't come to work he told us not to

1657
01:01:02,789 --> 01:01:01,440
it's illegal to do that so uh we had to

1658
01:01:04,630 --> 01:01:02,799
shut down

1659
01:01:06,950 --> 01:01:04,640
there was a lot of planning that goes on

1660
01:01:09,270 --> 01:01:06,960
before one of these things

1661
01:01:10,870 --> 01:01:09,280
that was very disruptive and that you a

1662
01:01:13,430 --> 01:01:10,880
lot of people were instead of being

1663
01:01:15,589 --> 01:01:13,440

focused on their other jobs had to focus

1664
01:01:17,109 --> 01:01:15,599
on this you know what does the shutdown

1665
01:01:19,430 --> 01:01:17,119
mean and what do we have to do to get

1666
01:01:20,470 --> 01:01:19,440
there so that's the kind of thing that

1667
01:01:22,069 --> 01:01:20,480
that

1668
01:01:25,589 --> 01:01:22,079
made it disruptive

1669
01:01:27,670 --> 01:01:25,599
once we were able to get our folks in

1670
01:01:30,549 --> 01:01:27,680
it was the right folks

1671
01:01:32,630 --> 01:01:30,559
that are focused on mars then it made

1672
01:01:33,990 --> 01:01:32,640
the mission uh

1673
01:01:35,349 --> 01:01:34,000
quite

1674
01:01:37,190 --> 01:01:35,359
easy because you didn't have the

1675
01:01:39,190 --> 01:01:37,200
distraction of any other mission except

1676
01:01:41,109 --> 01:01:39,200
for maven

1677
01:01:44,870 --> 01:01:41,119
and you didn't have to feed the the

1678
01:01:50,950 --> 01:01:48,069
you just got your job done and and so

1679
01:01:54,069 --> 01:01:50,960
maven did not get shortchanged

1680
01:01:56,549 --> 01:01:54,079
we had right people the right focus uh

1681
01:01:58,549 --> 01:01:56,559
but it was a short obstacle that we had

1682
01:02:01,270 --> 01:01:58,559
to overcome it's you got tripped up in

1683
01:02:03,510 --> 01:02:01,280
the process and we couldn't predict that

1684
01:02:06,230 --> 01:02:03,520
but here we are and it's three days away

1685
01:02:07,829 --> 01:02:06,240
from launch and we're gonna make it okay

1686
01:02:11,990 --> 01:02:07,839
i think we have one last question here

1687
01:02:17,670 --> 01:02:15,589
hi don hiladiak cbc question for omar uh

1688
01:02:19,990 --> 01:02:17,680

if the launch is delayed is the window

1689
01:02:21,829 --> 01:02:20,000
continue to launch at 128 does it shift

1690
01:02:23,829 --> 01:02:21,839
is it still two hours what is the impact

1691
01:02:27,430 --> 01:02:23,839
to the window for the most part the

1692
01:02:30,069 --> 01:02:27,440
window remains about two hours um and it

1693
01:02:31,829 --> 01:02:30,079
does shift a little bit

1694
01:02:33,589 --> 01:02:31,839
over time about three four minutes a day

1695
01:02:36,150 --> 01:02:33,599
yeah three or four minutes a day is what

1696
01:02:36,160 --> 01:02:39,910
i think it was earlier yes

1697
01:02:43,589 --> 01:02:41,670
all right that's going to conclude our

1698
01:02:46,150 --> 01:02:43,599
briefing if you'd like to get more

1699
01:02:49,750 --> 01:02:46,160
information there is a website

1700
01:02:51,190 --> 01:02:49,760
which is www

1701
01:02:52,950 --> 01:02:51,200
forward slash

1702
01:02:56,230 --> 01:02:52,960
maven

1703
01:02:59,270 --> 01:02:56,240
so our next activity will be a science

1704
01:03:01,270 --> 01:02:59,280
briefing on sunday morning at 10 o'clock

1705
01:03:09,029 --> 01:03:01,280
and our launch coverage on nasa tv

1706
01:03:12,630 --> 01:03:11,670
so this will conclude our briefing for