1
00:00:05,829 --> 00:00:04,150
good afternoon

2
00:00:07,190 --> 00:00:05,839
welcome to nasa headquarters my name is

3
00:00:09,509 --> 00:00:07,200
dwayne brown

4
00:00:11,110 --> 00:00:09,519
with the office of communications

5
00:00:13,030 --> 00:00:11,120
today you will hear about final

6
00:00:15,190 --> 00:00:13,040
preparations and ongoing mission

7
00:00:18,790 --> 00:00:15,200
activities for the scheduled september

8
00:00:21,029 --> 00:00:18,800
21 mars orbit insertion of nasa's

9
00:00:23,670 --> 00:00:21,039
mars atmosphere and volatile in

10
00:00:26,150 --> 00:00:23,680
evolution or maven spacecraft we'll have

11
00:00:27,990 --> 00:00:26,160
brief presentations and then open up for

12
00:00:29,509 --> 00:00:28,000
questions on our phone lines and on

13
00:00:31,750 --> 00:00:29,519

social media

14
00:00:33,990 --> 00:00:31,760
before we start with the presentations

15
00:00:36,630 --> 00:00:34,000
to set the stage for the mission and its

16
00:00:39,590 --> 00:00:36,640
role in nasa's overall planetary

17
00:00:41,590 --> 00:00:39,600
activities please welcome jim green

18
00:00:49,830 --> 00:00:41,600
director of nasa's planetary science

19
00:00:54,069 --> 00:00:51,670
thank you very much dwayne

20
00:00:56,389 --> 00:00:54,079
you know maven has a critical event this

21
00:00:57,590 --> 00:00:56,399
weekend i don't know about you

22
00:01:00,389 --> 00:00:57,600
but i'm sure this is true of the

23
00:01:03,110 --> 00:01:00,399
panelists i'm all on pins and needles

24
00:01:04,950 --> 00:01:03,120
this is a critical event and we're all

25
00:01:07,030 --> 00:01:04,960
pointing uh towards a successful

26
00:01:09,990 --> 00:01:07,040
insertion of orbit

27
00:01:12,550 --> 00:01:10,000
maven is arriving at mars at a time when

28
00:01:14,950 --> 00:01:12,560
we have a number of missions there now

29
00:01:16,310 --> 00:01:14,960
this is our next big step on our journey

30
00:01:20,550 --> 00:01:16,320
to mars

31
00:01:22,789 --> 00:01:20,560
not like star trek it's not like go

32
00:01:24,710 --> 00:01:22,799
where no man has gone before it's really

33
00:01:27,190 --> 00:01:24,720
the planetary scientists that are

34
00:01:29,910 --> 00:01:27,200
blazing the trail for us to understand

35
00:01:32,310 --> 00:01:29,920
everything about mars that we need to

36
00:01:33,270 --> 00:01:32,320
for humans to be able to land safely on

37
00:01:34,310 --> 00:01:33,280
mars

38
00:01:37,109 --> 00:01:34,320

and and

39
00:01:39,590 --> 00:01:37,119
explore and journey around the planet

40
00:01:41,910 --> 00:01:39,600
this is an exciting time

41
00:01:44,230 --> 00:01:41,920
maven is just as i mentioned part of our

42
00:01:46,710 --> 00:01:44,240
fleet we have several nasa orbiting

43
00:01:48,950 --> 00:01:46,720
spacecraft and of course the very famous

44
00:01:50,389 --> 00:01:48,960
curiosity and opportunity on the surface

45
00:01:53,429 --> 00:01:50,399
roving around

46
00:01:55,510 --> 00:01:53,439
maven fits a unique niche

47
00:01:57,830 --> 00:01:55,520
we've needed to know number of things

48
00:01:59,910 --> 00:01:57,840
that maven is going to discover for many

49
00:02:02,149 --> 00:01:59,920
many years and now i'm excited to see

50
00:02:04,469 --> 00:02:02,159
that it's going to become a reality

51
00:02:06,069 --> 00:02:04,479
so without further ado let's get on with

52
00:02:12,630 --> 00:02:06,079
the show and find out what's happening

53
00:02:12,640 --> 00:02:16,150
thank you jim

54
00:02:20,830 --> 00:02:18,150
of course there's a lot of conversation

55
00:02:23,589 --> 00:02:20,840
on social media and for those who are

56
00:02:25,830 --> 00:02:23,599
watching send your questions in to

57
00:02:27,910 --> 00:02:25,840
hashtag ask nasa

58
00:02:30,550 --> 00:02:27,920
join the conversation

59
00:02:32,470 --> 00:02:30,560
and learn more about what's going on as

60
00:02:34,869 --> 00:02:32,480
we go back to mars and continue the

61
00:02:36,790 --> 00:02:34,879
journey to mars also

62
00:02:38,470 --> 00:02:36,800
updated on the information

63
00:02:40,390 --> 00:02:38,480

on this briefing

64
00:02:45,830 --> 00:02:40,400
and the latest developments for the

65
00:02:48,790 --> 00:02:47,509
maven

66
00:02:51,270 --> 00:02:48,800
well ladies and gentlemen you know this

67
00:02:51,990 --> 00:02:51,280
mission is is going very well and you'll

68
00:02:53,670 --> 00:02:52,000
hear

69
00:02:55,830 --> 00:02:53,680
more about that later

70
00:02:58,550 --> 00:02:55,840
and i think for my

71
00:03:00,869 --> 00:02:58,560
biggest challenge is going to be

72
00:03:02,550 --> 00:03:00,879
making sure i pronounce the team's names

73
00:03:03,990 --> 00:03:02,560
correctly

74
00:03:05,350 --> 00:03:04,000
but they promised me they wouldn't put

75
00:03:07,270 --> 00:03:05,360
me in time out

76
00:03:08,309 --> 00:03:07,280
uh if i got it wrong but uh we're gonna

77
00:03:10,949 --> 00:03:08,319
we're gonna get started and they're

78
00:03:14,550 --> 00:03:10,959
gonna help me out here

79
00:03:16,949 --> 00:03:14,560
the team maven participants are

80
00:03:18,869 --> 00:03:16,959
lisa may

81
00:03:21,030 --> 00:03:18,879
lead program executive

82
00:03:26,229 --> 00:03:21,040
mars exploration program nasa

83
00:03:30,830 --> 00:03:28,630
bruce jakovsky

84
00:03:33,589 --> 00:03:30,840
maven principal investigator

85
00:03:41,110 --> 00:03:33,599
laboratory for atmospheric and space

86
00:03:45,509 --> 00:03:42,710
david mitchell

87
00:03:47,670 --> 00:03:45,519
maven project manager

88
00:03:52,309 --> 00:03:47,680

nasa's goddess space flight center

89
00:03:57,830 --> 00:03:55,110
and guide butterscheis

90
00:03:59,589 --> 00:03:57,840
lockheed martin maven program manager

91
00:04:00,390 --> 00:03:59,599
the lockheed martin space systems

92
00:04:02,470 --> 00:04:00,400
company

93
00:04:04,470 --> 00:04:02,480
in littleton colorado

94
00:04:06,789 --> 00:04:04,480
and with that i'll toss it to lisa to

95
00:04:09,910 --> 00:04:06,799
kick us off thank you dwayne hello

96
00:04:12,149 --> 00:04:09,920
everyone and welcome to the even uh pre

97
00:04:15,270 --> 00:04:12,159
mars orbit insertion

98
00:04:16,789 --> 00:04:15,280
press event here as part of nasa's

99
00:04:19,270 --> 00:04:16,799
journey to mars

100
00:04:21,670 --> 00:04:19,280
the mars exploration program itself is a

101
00:04:23,909 --> 00:04:21,680
discovery driven science program

102
00:04:26,950 --> 00:04:23,919
its missions are all linked not only by

103
00:04:29,110 --> 00:04:26,960
science but also by technology advances

104
00:04:31,189 --> 00:04:29,120
and providing infrastructure for other

105
00:04:33,350 --> 00:04:31,199
missions such as orbiters providing data

106
00:04:35,270 --> 00:04:33,360
relay for surface missions

107
00:04:37,670 --> 00:04:35,280
in this graphic

108
00:04:40,710 --> 00:04:37,680
we see current and upcoming missions to

109
00:04:43,110 --> 00:04:40,720
mars both ours here at nasa and those of

110
00:04:45,830 --> 00:04:43,120
our international partners to which nasa

111
00:04:46,790 --> 00:04:45,840
has made significant contributions

112
00:04:49,270 --> 00:04:46,800
soon

113
00:04:51,909 --> 00:04:49,280

mars reconnaissance orbiter odyssey and

114
00:04:55,030 --> 00:04:51,919
the european space agency mars express

115
00:04:57,030 --> 00:04:55,040
will be joined by maven in mars orbit

116
00:04:58,950 --> 00:04:57,040
and not long after that they'll also be

117
00:05:01,590 --> 00:04:58,960
joined by the indian space research

118
00:05:03,430 --> 00:05:01,600
organization's mom mission only a few

119
00:05:06,310 --> 00:05:03,440
days later

120
00:05:08,310 --> 00:05:06,320
maven is part of nasa's overall mars

121
00:05:10,629 --> 00:05:08,320
exploration strategy

122
00:05:13,189 --> 00:05:10,639
it is the first nasa mission dedicated

123
00:05:14,950 --> 00:05:13,199
to studying mars upper atmosphere

124
00:05:17,510 --> 00:05:14,960
science that was called out in our very

125
00:05:19,350 --> 00:05:17,520
first planetary decadal survey as well

126
00:05:21,830 --> 00:05:19,360
as having been part of the heliophysics

127
00:05:23,749 --> 00:05:21,840
roadmap it will build on atmospheric

128
00:05:26,790 --> 00:05:23,759
measurements made by curiosity mars

129
00:05:29,590 --> 00:05:26,800
reconnaissance orbiter and mars mars

130
00:05:30,790 --> 00:05:29,600
global surveyor to explore mars climate

131
00:05:32,950 --> 00:05:30,800
history

132
00:05:35,590 --> 00:05:32,960
like odyssey mars express and mars

133
00:05:38,710 --> 00:05:35,600
reconnaissance orbiter the up and the

134
00:05:42,310 --> 00:05:38,720
upcoming european exomars orbiter in

135
00:05:45,029 --> 00:05:42,320
2016 maven also carries a communications

136
00:05:47,029 --> 00:05:45,039
payload to provide relay services for

137
00:05:49,189 --> 00:05:47,039
surface missions after its primary

138
00:05:51,909 --> 00:05:49,199

science mission is done

139
00:05:53,590 --> 00:05:51,919
maven continues to be a tremendously

140
00:05:55,909 --> 00:05:53,600
successful partnership between

141
00:05:58,710 --> 00:05:55,919
universities industry

142
00:06:00,790 --> 00:05:58,720
and the government nasa the team

143
00:06:03,749 --> 00:06:00,800
university of colorado goddard space

144
00:06:05,510 --> 00:06:03,759
flight center lockheed martin berkeley

145
00:06:07,270 --> 00:06:05,520
jet propulsion laboratory launch

146
00:06:09,990 --> 00:06:07,280
services program and the united launch

147
00:06:13,749 --> 00:06:10,000
alliance have hit all of their marks

148
00:06:15,670 --> 00:06:13,759
exactly as proposed to nasa back in 2008

149
00:06:17,749 --> 00:06:15,680
they are on schedule and they're ready

150
00:06:19,670 --> 00:06:17,759
to get to work at mars

151
00:06:21,029 --> 00:06:19,680
we're very excited about maven's arrival

152
00:06:23,830 --> 00:06:21,039
and their transition to science

153
00:06:26,629 --> 00:06:23,840
operations and solving the mystery of

154
00:06:28,550 --> 00:06:26,639
what happened to mars atmosphere

155
00:06:30,469 --> 00:06:28,560
to tell you how maven will solve that

156
00:06:33,029 --> 00:06:30,479
mystery and make other science

157
00:06:34,790 --> 00:06:33,039
discoveries i now give you dr bruce

158
00:06:37,110 --> 00:06:34,800
jakovsky

159
00:06:37,990 --> 00:06:37,120
thank you lisa the maven mission is

160
00:06:39,909 --> 00:06:38,000
about

161
00:06:42,150 --> 00:06:39,919
understanding the history of the climate

162
00:06:44,950 --> 00:06:42,160
on mars we're going to be exploring an

163
00:06:47,029 --> 00:06:44,960

aspect of the martian atmosphere and

164
00:06:48,710 --> 00:06:47,039
upper atmosphere that really has not

165
00:06:50,629 --> 00:06:48,720
been explored in detail by any

166
00:06:52,790 --> 00:06:50,639
spacecraft to date

167
00:06:55,110 --> 00:06:52,800
if we can go to that first graphic the

168
00:06:57,670 --> 00:06:55,120
evidence shows that the mars atmosphere

169
00:06:59,830 --> 00:06:57,680
today is a cold dry environment one

170
00:07:01,430 --> 00:06:59,840
where liquid water really can't exist in

171
00:07:03,350 --> 00:07:01,440
a stable state

172
00:07:04,950 --> 00:07:03,360
but it also tells us when we look at

173
00:07:07,189 --> 00:07:04,960
older surfaces

174
00:07:09,029 --> 00:07:07,199
that the ancient surfaces had liquid

175
00:07:11,430 --> 00:07:09,039
water flowing over it

176
00:07:12,710 --> 00:07:11,440
shown in this

177
00:07:15,589 --> 00:07:12,720
video

178
00:07:16,550 --> 00:07:15,599
and we see evidence for for

179
00:07:18,469 --> 00:07:16,560
lakes

180
00:07:20,230 --> 00:07:18,479
for river channels

181
00:07:22,309 --> 00:07:20,240
a lot of evidence for liquid water that

182
00:07:25,510 --> 00:07:22,319
required a very different climate than

183
00:07:27,189 --> 00:07:25,520
the wind than the one we have today

184
00:07:29,350 --> 00:07:27,199
what that

185
00:07:32,230 --> 00:07:29,360
leads us to ask is where did the water

186
00:07:34,469 --> 00:07:32,240
go where did the co2 go from that early

187
00:07:36,230 --> 00:07:34,479
environment and it can go to two places

188
00:07:37,990 --> 00:07:36,240

it can go down into the crust or it can

189
00:07:39,990 --> 00:07:38,000
go up to the top of the atmosphere where

190
00:07:41,749 --> 00:07:40,000
it can be lost to space

191
00:07:43,749 --> 00:07:41,759
what we're going to be doing is studying

192
00:07:45,350 --> 00:07:43,759
the top of the atmosphere as a way of

193
00:07:48,230 --> 00:07:45,360
understanding

194
00:07:50,869 --> 00:07:48,240
the extent to which stripping of gas out

195
00:07:53,430 --> 00:07:50,879
of the atmosphere to space may have been

196
00:07:54,390 --> 00:07:53,440
the the driving mechanism behind climate

197
00:07:56,150 --> 00:07:54,400
change

198
00:07:58,550 --> 00:07:56,160
we study the top of the atmosphere

199
00:08:00,550 --> 00:07:58,560
because that's the place where the gas

200
00:08:02,950 --> 00:08:00,560
that is escaping resides and it's a

201
00:08:04,550 --> 00:08:02,960
conduit through which the gas has to

202
00:08:06,550 --> 00:08:04,560
traverse as it goes from the lower

203
00:08:09,270 --> 00:08:06,560
atmosphere to the top where it can be

204
00:08:10,830 --> 00:08:09,280
stripped away by the solar wind or by

205
00:08:13,670 --> 00:08:10,840
other

206
00:08:15,990 --> 00:08:13,680
processes we think we understand a lot

207
00:08:18,469 --> 00:08:16,000
about processes that may have occurred

208
00:08:21,510 --> 00:08:18,479
on mars to remove the gas but we really

209
00:08:23,909 --> 00:08:21,520
don't know we think we have an idea of

210
00:08:26,869 --> 00:08:23,919
many processes that may have operated

211
00:08:29,270 --> 00:08:26,879
and this next video shows one example of

212
00:08:32,149 --> 00:08:29,280
the ability of the solar wind to strip

213
00:08:34,389 --> 00:08:32,159

gas away the colors represent the top of

214
00:08:36,230 --> 00:08:34,399
the atmosphere the arrows represent the

215
00:08:38,709 --> 00:08:36,240
solar wind and you can see the gas

216
00:08:40,870 --> 00:08:38,719
dynamically being stripped off and

217
00:08:43,110 --> 00:08:40,880
removed from the mars environment the

218
00:08:43,909 --> 00:08:43,120
question is whether over long periods of

219
00:08:45,670 --> 00:08:43,919
time

220
00:08:48,389 --> 00:08:45,680
this process or any of the other

221
00:08:50,389 --> 00:08:48,399
processes that are operating

222
00:08:51,910 --> 00:08:50,399
have been responsible for removing a lot

223
00:08:54,389 --> 00:08:51,920
of the gas

224
00:08:56,150 --> 00:08:54,399
this is is the major question

225
00:08:58,550 --> 00:08:56,160
that we want to address

226
00:09:01,509 --> 00:08:58,560
in order to do this science we want to

227
00:09:03,829 --> 00:09:01,519
understand the driving forces that is

228
00:09:06,150 --> 00:09:03,839
the energy that comes in from the sun

229
00:09:08,790 --> 00:09:06,160
from the solar wind and how the upper

230
00:09:11,829 --> 00:09:08,800
atmosphere responds and how the response

231
00:09:13,990 --> 00:09:11,839
leads to escape of gas out the top

232
00:09:15,750 --> 00:09:14,000
we measure these things today

233
00:09:17,990 --> 00:09:15,760
even though the processes we're

234
00:09:18,790 --> 00:09:18,000
interested in operated billions of years

235
00:09:20,790 --> 00:09:18,800
ago

236
00:09:23,030 --> 00:09:20,800
by looking today we can understand the

237
00:09:25,750 --> 00:09:23,040
processes and how they operated and

238
00:09:28,230 --> 00:09:25,760

extrapolate backwards in time

239
00:09:29,750 --> 00:09:28,240
this next graphic shows the

240
00:09:32,470 --> 00:09:29,760
instruments that will be making the

241
00:09:34,150 --> 00:09:32,480
measurements on the maven spacecraft the

242
00:09:35,750 --> 00:09:34,160
ones in the upper left and the yellow

243
00:09:37,190 --> 00:09:35,760
box make the measurements that are

244
00:09:40,150 --> 00:09:37,200
relevant to

245
00:09:42,070 --> 00:09:40,160
the energy input from the sun the energy

246
00:09:44,070 --> 00:09:42,080
that's driving the system

247
00:09:47,430 --> 00:09:44,080
the ones in the red box in the lower

248
00:09:50,389 --> 00:09:47,440
left tell us about ion related processes

249
00:09:52,389 --> 00:09:50,399
and escape processes the two instruments

250
00:09:55,509 --> 00:09:52,399
in the lower right in the blue box tell

251
00:09:58,150 --> 00:09:55,519
us about neutrals and ions plus they

252
00:10:00,389 --> 00:09:58,160
give us clues to the long-term evolution

253
00:10:02,630 --> 00:10:00,399
with these instruments we should be able

254
00:10:04,949 --> 00:10:02,640
to get enough measurements to

255
00:10:08,550 --> 00:10:04,959
tell us what happened to the water what

256
00:10:11,350 --> 00:10:08,560
happened to the carbon dioxide

257
00:10:13,990 --> 00:10:11,360
now since nothing is never easy

258
00:10:16,949 --> 00:10:14,000
we have our own cross to bear here

259
00:10:19,110 --> 00:10:16,959
comet siding spring arrives at mars

260
00:10:21,269 --> 00:10:19,120
about four weeks after maven arrives at

261
00:10:23,750 --> 00:10:21,279
mars and if we can look at this next

262
00:10:26,870 --> 00:10:23,760
graphic this video shows the path of

263
00:10:29,269 --> 00:10:26,880

maven seen in the top part of the screen

264
00:10:31,670 --> 00:10:29,279
on its approach to mars coming in from

265
00:10:34,310 --> 00:10:31,680
the lower left you can see siding spring

266
00:10:36,790 --> 00:10:34,320
it was discovered early last year

267
00:10:41,990 --> 00:10:36,800
it's going to miss

268
00:10:43,829 --> 00:10:42,000
130 000 kilometers i'm told that the

269
00:10:48,150 --> 00:10:43,839
odds of having uh

270
00:10:50,710 --> 00:10:48,160
an approach that close to mars are about

271
00:10:53,590 --> 00:10:50,720
one in a million years so it's really

272
00:10:54,790 --> 00:10:53,600
luck that we get the opportunity here

273
00:10:57,190 --> 00:10:54,800
we thought that there might be a

274
00:10:59,750 --> 00:10:57,200
significant risk to the spacecraft from

275
00:11:01,670 --> 00:10:59,760
dust released from the comet detailed

276
00:11:04,310 --> 00:11:01,680
modeling shows us that the risk is

277
00:11:06,630 --> 00:11:04,320
relatively minimal though so we'll be

278
00:11:09,750 --> 00:11:06,640
although we'll be taking precautions to

279
00:11:12,310 --> 00:11:09,760
make sure that we minimize the risk even

280
00:11:14,790 --> 00:11:12,320
from what it is we don't think that that

281
00:11:16,550 --> 00:11:14,800
there's any real significant risk

282
00:11:19,590 --> 00:11:16,560
however we are going to take advantage

283
00:11:21,910 --> 00:11:19,600
of this bonus opportunity to do science

284
00:11:24,389 --> 00:11:21,920
and we'll be making observations of the

285
00:11:26,710 --> 00:11:24,399
comet itself and of the mars upper

286
00:11:27,750 --> 00:11:26,720
atmosphere before and after the comet

287
00:11:29,910 --> 00:11:27,760
arrives

288
00:11:32,949 --> 00:11:29,920

we have the the

289
00:11:35,110 --> 00:11:32,959
uh the delight if you will that

290
00:11:37,030 --> 00:11:35,120
that the upper atmosphere is where the

291
00:11:37,910 --> 00:11:37,040
effects of the comet have the greatest

292
00:11:40,470 --> 00:11:37,920
effect

293
00:11:42,949 --> 00:11:40,480
where where we'll see what happens as

294
00:11:45,590 --> 00:11:42,959
gas and dust hits the

295
00:11:46,790 --> 00:11:45,600
upper atmosphere if there is any dust to

296
00:11:49,350 --> 00:11:46,800
hit it

297
00:11:51,110 --> 00:11:49,360
so we should learn a lot about the

298
00:11:52,949 --> 00:11:51,120
upper atmosphere from this natural

299
00:11:55,269 --> 00:11:52,959
experiment watching the perturbation

300
00:11:57,509 --> 00:11:55,279
from the impact of gas and dust and

301
00:11:58,310 --> 00:11:57,519
we're hoping to learn about the comet as

302
00:12:00,230 --> 00:11:58,320
well

303
00:12:03,509 --> 00:12:00,240
now this requires

304
00:12:06,949 --> 00:12:03,519
us to to first make sure that we can do

305
00:12:10,310 --> 00:12:06,959
the observations in a safe manner after

306
00:12:11,829 --> 00:12:10,320
all this is a mars mission and the mars

307
00:12:13,829 --> 00:12:11,839
science to come

308
00:12:16,150 --> 00:12:13,839
has to come first we're going to make

309
00:12:18,310 --> 00:12:16,160
sure we can do this and

310
00:12:21,190 --> 00:12:18,320
maintain the spacecraft

311
00:12:23,030 --> 00:12:21,200
and the instruments in a safe and

312
00:12:26,230 --> 00:12:23,040
healthy state

313
00:12:28,150 --> 00:12:26,240

uh the maven mission is a mission of

314
00:12:30,710 --> 00:12:28,160
discovery trying to learn about the

315
00:12:33,990 --> 00:12:30,720
upper atmosphere of mars the history of

316
00:12:36,790 --> 00:12:34,000
the climate and the potential for life

317
00:12:38,629 --> 00:12:36,800
we're almost there we have one big step

318
00:12:39,670 --> 00:12:38,639
ahead of us and then we can get on with

319
00:12:41,829 --> 00:12:39,680
this

320
00:12:43,910 --> 00:12:41,839
in order to tell you about the process

321
00:12:46,150 --> 00:12:43,920
of getting there i'll turn this over to

322
00:12:48,629 --> 00:12:46,160
david mitchell the project manager thank

323
00:12:50,150 --> 00:12:48,639
you bruce it's really a great week as we

324
00:12:51,590 --> 00:12:50,160
we're approaching mars but i'm actually

325
00:12:53,430 --> 00:12:51,600
going to take you back in time a little

326
00:12:56,310 --> 00:12:53,440
bit we're going to go back to november

327
00:12:59,430 --> 00:12:56,320
18th of 2013

328
00:13:01,350 --> 00:12:59,440
where uh we we launched on board an

329
00:13:02,710 --> 00:13:01,360
atlas v it asked that the video roll

330
00:13:04,150 --> 00:13:02,720
police

331
00:13:06,790 --> 00:13:04,160
and we actually launched on the very

332
00:13:08,629 --> 00:13:06,800
first day at the opening of the window

333
00:13:10,629 --> 00:13:08,639
and it's critically important given the

334
00:13:14,389 --> 00:13:10,639
20-day launch period that we have for

335
00:13:16,629 --> 00:13:14,399
such a mission so beautiful liftoff

336
00:13:18,310 --> 00:13:16,639
great delivery by the united launch

337
00:13:20,949 --> 00:13:18,320
alliance and kennedy space center in the

338
00:13:23,030 --> 00:13:20,959

u.s air force and their partnerships um

339
00:13:25,509 --> 00:13:23,040
to get us to where we're headed right

340
00:13:27,269 --> 00:13:25,519
now so what you're seeing now is uh

341
00:13:29,509 --> 00:13:27,279
first stage separation and the fairing

342
00:13:31,670 --> 00:13:29,519
separation and then about an hour after

343
00:13:33,350 --> 00:13:31,680
liftoff we separated from the centaur

344
00:13:35,590 --> 00:13:33,360
second stage

345
00:13:37,350 --> 00:13:35,600
a big moment at that point in time was

346
00:13:38,310 --> 00:13:37,360
deploying the solar arrays as you see

347
00:13:40,470 --> 00:13:38,320
here

348
00:13:43,189 --> 00:13:40,480
when we could confirm power positive and

349
00:13:45,189 --> 00:13:43,199
we were on our way to mars in fact all

350
00:13:47,509 --> 00:13:45,199
the all the energy we needed to get to

351
00:13:50,870 --> 00:13:47,519
mars was done by virtue of the launch

352
00:13:52,550 --> 00:13:50,880
vehicle so um it was just a great ride

353
00:13:54,790 --> 00:13:52,560
as we went and you'll see here again

354
00:13:57,030 --> 00:13:54,800
another as we're showing the the path

355
00:14:00,230 --> 00:13:57,040
that maven has been taking the past 10

356
00:14:01,590 --> 00:14:00,240
months on its way to mars and then

357
00:14:03,430 --> 00:14:01,600
in a couple of minutes i'll turn it over

358
00:14:06,150 --> 00:14:03,440
to guy beetlejuice and we'll talk about

359
00:14:08,790 --> 00:14:06,160
um the next few days ahead but this just

360
00:14:10,389 --> 00:14:08,800
shows the uh the approach getting to

361
00:14:12,870 --> 00:14:10,399
mars um

362
00:14:14,949 --> 00:14:12,880
so that that all went very smoothly but

363
00:14:17,509 --> 00:14:14,959

um again going back in time over the

364
00:14:19,110 --> 00:14:17,519
last 10 months what we've been up to

365
00:14:21,590 --> 00:14:19,120
there's there's been a number of things

366
00:14:23,350 --> 00:14:21,600
so um certainly we we checked out all

367
00:14:26,870 --> 00:14:23,360
the spacecraft systems we checked out

368
00:14:30,389 --> 00:14:26,880
all the payloads um about 60 days or so

369
00:14:32,629 --> 00:14:30,399
ago we we turned off all the payloads in

370
00:14:34,710 --> 00:14:32,639
advance of the mars orbit insertion

371
00:14:36,230 --> 00:14:34,720
what's called a moratorium so the system

372
00:14:38,790 --> 00:14:36,240
is very quiet at this point and it's

373
00:14:41,030 --> 00:14:38,800
just the essential systems that are

374
00:14:42,710 --> 00:14:41,040
operating right now and

375
00:14:44,710 --> 00:14:42,720
everything is checked out in it i'll say

376
00:14:46,230 --> 00:14:44,720
in its pre-deployed state um guy will

377
00:14:49,030 --> 00:14:46,240
talk about some of the deployments to

378
00:14:51,750 --> 00:14:49,040
come in october but um real happy with

379
00:14:53,350 --> 00:14:51,760
how the overall spacecraft and payload

380
00:14:56,150 --> 00:14:53,360
systems have been operating and it's

381
00:14:58,629 --> 00:14:56,160
really you know kudos to all to the the

382
00:15:00,710 --> 00:14:58,639
design build and the test that was done

383
00:15:01,990 --> 00:15:00,720
in advance of the launch and the journey

384
00:15:02,790 --> 00:15:02,000
along the way

385
00:15:04,870 --> 00:15:02,800
um

386
00:15:07,509 --> 00:15:04,880
so at this point we're about

387
00:15:10,389 --> 00:15:07,519
218 million kilometers from earth about

388
00:15:13,269 --> 00:15:10,399

1.2 million kilometers from mars

389
00:15:14,949 --> 00:15:13,279
and uh traveling at a velocity of 81 000

390
00:15:15,829 --> 00:15:14,959
kilometers per hour

391
00:15:18,629 --> 00:15:15,839
uh

392
00:15:22,389 --> 00:15:18,639
the as maven is approaching mars as of

393
00:15:24,949 --> 00:15:22,399
today the view of uh mars from maven if

394
00:15:28,069 --> 00:15:24,959
it was it was looking at it would be

395
00:15:31,350 --> 00:15:28,079
roughly the size of a baseball about 52

396
00:15:33,590 --> 00:15:31,360
feet away so essentially as a pitcher is

397
00:15:36,150 --> 00:15:33,600
uh throwing his baseball from the mound

398
00:15:38,470 --> 00:15:36,160
at a major league baseball ballpark to

399
00:15:41,110 --> 00:15:38,480
home plate about that distance

400
00:15:43,189 --> 00:15:41,120
and and so mars is really growing um

401
00:15:46,310 --> 00:15:43,199
right now as we we approached just just

402
00:15:48,230 --> 00:15:46,320
four days away so uh so far so good on

403
00:15:50,069 --> 00:15:48,240
that front what we also

404
00:15:52,550 --> 00:15:50,079
uh want to mention that there was a

405
00:15:54,550 --> 00:15:52,560
series of uh planned trajectory

406
00:15:57,350 --> 00:15:54,560
correction maneuvers that

407
00:15:59,509 --> 00:15:57,360
we we did get a really nice departure

408
00:16:01,749 --> 00:15:59,519
with the the atlas vehicle

409
00:16:04,230 --> 00:16:01,759
but then we have four planned trajectory

410
00:16:07,030 --> 00:16:04,240
correction maneuvers on its way to mars

411
00:16:10,790 --> 00:16:07,040
the first one was conducted december 3rd

412
00:16:13,829 --> 00:16:10,800
and it was a 37.8 second burn um

413
00:16:16,470 --> 00:16:13,839

using importantly the six main engines

414
00:16:17,829 --> 00:16:16,480
and these engines are the ones that are

415
00:16:21,110 --> 00:16:17,839
going to be used sunday night for the

416
00:16:24,069 --> 00:16:21,120
mars orbit insertion so it was not only

417
00:16:26,310 --> 00:16:24,079
essential to use for that first tcm but

418
00:16:28,550 --> 00:16:26,320
also a a great check and confidence

419
00:16:32,069 --> 00:16:28,560
builder that the the engines and the

420
00:16:35,829 --> 00:16:32,079
whole system is behaving as as expected

421
00:16:38,069 --> 00:16:35,839
then on february 26 we had a second uh

422
00:16:40,629 --> 00:16:38,079
smaller burn which was um

423
00:16:42,710 --> 00:16:40,639
approximately 18.7 seconds and these

424
00:16:45,110 --> 00:16:42,720
were with the smaller thrusters and and

425
00:16:47,749 --> 00:16:45,120
to really align it um right on its path

426
00:16:50,470 --> 00:16:47,759
to mars and we had over the summer

427
00:16:51,749 --> 00:16:50,480
scheduled a tcm three and four that were

428
00:16:53,430 --> 00:16:51,759
both cancelled

429
00:16:55,910 --> 00:16:53,440
cancelled because we're on such a good

430
00:16:59,030 --> 00:16:55,920
track flight path to mars that they

431
00:17:00,629 --> 00:16:59,040
weren't necessary now we did

432
00:17:02,310 --> 00:17:00,639
in addition to the spacecraft team and

433
00:17:05,429 --> 00:17:02,320
the project we worked closely with the

434
00:17:07,110 --> 00:17:05,439
navigation team with the an independent

435
00:17:09,510 --> 00:17:07,120
group called the navigation advisory

436
00:17:11,029 --> 00:17:09,520
group out at the jet propulsion lab to

437
00:17:13,510 --> 00:17:11,039
make sure looking at all the data and

438
00:17:15,110 --> 00:17:13,520

the different models that yes in fact

439
00:17:17,189 --> 00:17:15,120
we're on the right path and there was no

440
00:17:20,549 --> 00:17:17,199
need for additional correction maneuvers

441
00:17:22,949 --> 00:17:20,559
so really going well at this point

442
00:17:24,630 --> 00:17:22,959
i'll also say that in these 10 months of

443
00:17:26,390 --> 00:17:24,640
flying

444
00:17:28,549 --> 00:17:26,400
the flight ops team has been doing great

445
00:17:31,029 --> 00:17:28,559
but we've also had series of

446
00:17:32,789 --> 00:17:31,039
rehearsals and readiness reviews

447
00:17:33,909 --> 00:17:32,799
for the big event this coming sunday

448
00:17:36,070 --> 00:17:33,919
night so

449
00:17:38,630 --> 00:17:36,080
we've had a series of those and the team

450
00:17:40,390 --> 00:17:38,640
executed very well so it's it's been

451
00:17:41,510 --> 00:17:40,400
it's been great i'm really

452
00:17:43,750 --> 00:17:41,520
happy

453
00:17:45,270 --> 00:17:43,760
how everything is coming together the

454
00:17:46,950 --> 00:17:45,280
team and all the elements and when i say

455
00:17:48,710 --> 00:17:46,960
all the elements we're talking literally

456
00:17:51,110 --> 00:17:48,720
around the world when you count the deep

457
00:17:54,310 --> 00:17:51,120
space network that will be communicating

458
00:17:55,669 --> 00:17:54,320
with um maven on the day of the mars

459
00:17:58,310 --> 00:17:55,679
orbit insertion

460
00:18:01,029 --> 00:17:58,320
we're all ready for september 21st and

461
00:18:02,870 --> 00:18:01,039
everybody's excited and ready to go

462
00:18:04,630 --> 00:18:02,880
the last thing i want to say is as we

463
00:18:06,230 --> 00:18:04,640

approach we're on the verge of science

464
00:18:07,590 --> 00:18:06,240
the real the science phase and the

465
00:18:10,150 --> 00:18:07,600
mission

466
00:18:12,070 --> 00:18:10,160
and it's been an 11-year journey when i

467
00:18:13,909 --> 00:18:12,080
when i consider

468
00:18:15,669 --> 00:18:13,919
the folks like the gentleman to my right

469
00:18:16,950 --> 00:18:15,679
uh bruce chakoski from the university of

470
00:18:19,510 --> 00:18:16,960
colorado

471
00:18:20,950 --> 00:18:19,520
having hatched this idea of a maven with

472
00:18:23,430 --> 00:18:20,960
a couple of other

473
00:18:24,950 --> 00:18:23,440
scientists from berkeley um way back in

474
00:18:27,350 --> 00:18:24,960
2003

475
00:18:28,870 --> 00:18:27,360
and then the growing team as we as we

476
00:18:31,350 --> 00:18:28,880
moved along through the development to

477
00:18:34,070 --> 00:18:31,360
the point we are today um and i'm i'm

478
00:18:36,549 --> 00:18:34,080
really excited to be um us collectively

479
00:18:37,510 --> 00:18:36,559
delivering here um for for the science

480
00:18:40,150 --> 00:18:37,520
to come

481
00:18:42,390 --> 00:18:40,160
so i know lisa mentioned the partnership

482
00:18:44,150 --> 00:18:42,400
but i want to say it one more time kudos

483
00:18:45,669 --> 00:18:44,160
to the team university of colorado

484
00:18:49,110 --> 00:18:45,679
goddard space flight center lockheed

485
00:18:50,870 --> 00:18:49,120
martin berkeley and jeff propulsion lab

486
00:18:53,430 --> 00:18:50,880
on the journey so far

487
00:18:56,310 --> 00:18:53,440
and there's big events to come no doubt

488
00:18:58,310 --> 00:18:56,320

but um the team has executed well and i

489
00:19:00,630 --> 00:18:58,320
i believe we're well prepared for sunday

490
00:19:01,590 --> 00:19:00,640
night so uh with that i'll turn it over

491
00:19:03,430 --> 00:19:01,600
to guy

492
00:19:05,830 --> 00:19:03,440
thanks dave

493
00:19:07,909 --> 00:19:05,840
it's pretty exciting uh after all the

494
00:19:09,510 --> 00:19:07,919
team rehearsals after all the hundreds

495
00:19:11,430 --> 00:19:09,520
of tests that we've run

496
00:19:12,950 --> 00:19:11,440
after all the reviews we've sat through

497
00:19:15,510 --> 00:19:12,960
we're finally going to go into orbit

498
00:19:17,510 --> 00:19:15,520
around mars we're conducting operations

499
00:19:19,110 --> 00:19:17,520
from our mission support area at the

500
00:19:21,669 --> 00:19:19,120
lockheed martin facility in denver

501
00:19:23,430 --> 00:19:21,679
colorado while the navigation team at

502
00:19:24,470 --> 00:19:23,440
the jet propulsion lab in pasadena

503
00:19:25,990 --> 00:19:24,480
california

504
00:19:28,470 --> 00:19:26,000
is tracking the trajectory of the

505
00:19:30,470 --> 00:19:28,480
spacecraft monitoring its position and

506
00:19:31,990 --> 00:19:30,480
its velocity to make sure that the

507
00:19:34,230 --> 00:19:32,000
spacecraft is headed to the exact

508
00:19:35,909 --> 00:19:34,240
position it needs to for us to safely go

509
00:19:38,070 --> 00:19:35,919
into orbit

510
00:19:40,150 --> 00:19:38,080
we loaded the final moi instructions

511
00:19:42,789 --> 00:19:40,160
yesterday all of this

512
00:19:44,789 --> 00:19:42,799
all of the files are now on board and

513
00:19:46,710 --> 00:19:44,799

the commands will execute according to

514
00:19:48,310 --> 00:19:46,720
the onboard clock so there's actually

515
00:19:50,390 --> 00:19:48,320
nothing that the team needs to do the

516
00:19:51,750 --> 00:19:50,400
spacecraft will execute all of those on

517
00:19:53,909 --> 00:19:51,760
its own

518
00:19:56,950 --> 00:19:53,919
the burn itself will start sunday night

519
00:19:59,350 --> 00:19:56,960
at 9 37 eastern time now keep in mind it

520
00:20:01,190 --> 00:19:59,360
takes 12 and a half minutes for the

521
00:20:03,430 --> 00:20:01,200
radio signals to travel all the way from

522
00:20:05,029 --> 00:20:03,440
mars to the earth so we won't actually

523
00:20:07,190 --> 00:20:05,039
see the start of the burn until

524
00:20:09,270 --> 00:20:07,200
approximately 9 50.

525
00:20:10,549 --> 00:20:09,280
so let's go ahead and roll the video

526
00:20:12,149 --> 00:20:10,559
so here you see the spacecraft

527
00:20:14,149 --> 00:20:12,159
approaching mars it's going to orient

528
00:20:15,909 --> 00:20:14,159
itself to get the main engines pointing

529
00:20:19,350 --> 00:20:15,919
the right direction and at the right

530
00:20:21,029 --> 00:20:19,360
time we will light up the 670 newton

531
00:20:23,350 --> 00:20:21,039
main engines

532
00:20:26,230 --> 00:20:23,360
now we're coming in at

533
00:20:28,149 --> 00:20:26,240
4 700 meters per second and we've got

534
00:20:31,029 --> 00:20:28,159
accelerometers on board that will detect

535
00:20:33,029 --> 00:20:31,039
when we've changed our velocity by 1230

536
00:20:34,230 --> 00:20:33,039
meters per second at that point they'll

537
00:20:36,310 --> 00:20:34,240
shut off the burn and that'll be

538
00:20:37,190 --> 00:20:36,320

approximately 33 minutes after the burns

539
00:20:38,950 --> 00:20:37,200
start

540
00:20:42,630 --> 00:20:38,960
that should capture us into the mars

541
00:20:45,510 --> 00:20:42,640
gravity well into a 35-hour elliptical

542
00:20:47,909 --> 00:20:45,520
orbit with a periapsis altitude of 380

543
00:20:49,190 --> 00:20:47,919
kilometers and an appalapsis altitude of

544
00:20:50,390 --> 00:20:49,200
forty four thousand six hundred

545
00:20:52,470 --> 00:20:50,400
kilometers

546
00:20:54,149 --> 00:20:52,480
at that point we'll be ready to go into

547
00:20:56,870 --> 00:20:54,159
our next phase we call this our

548
00:20:58,870 --> 00:20:56,880
transition phase because it'll be a a

549
00:21:01,029 --> 00:20:58,880
six week period where we we will be

550
00:21:03,430 --> 00:21:01,039
getting the spacecraft all configured

551
00:21:05,510 --> 00:21:03,440
and ready to start science mapping a

552
00:21:08,230 --> 00:21:05,520
major portion of this time will be

553
00:21:10,390 --> 00:21:08,240
devoted to taking this large capture

554
00:21:13,830 --> 00:21:10,400
orbit and reducing it down to our

555
00:21:15,909 --> 00:21:13,840
science orbit so this 35 hour

556
00:21:18,230 --> 00:21:15,919
capture orbit will be reduced down to

557
00:21:21,270 --> 00:21:18,240
four and a half hours with an apple axis

558
00:21:23,669 --> 00:21:21,280
altitude of 6200 kilometers and a

559
00:21:24,950 --> 00:21:23,679
periapsis altitude of approximately 150

560
00:21:27,029 --> 00:21:24,960
kilometers

561
00:21:27,990 --> 00:21:27,039
we will also then do a series of

562
00:21:29,830 --> 00:21:28,000
instrument

563
00:21:32,549 --> 00:21:29,840

deployments so let's go ahead and roll

564
00:21:34,549 --> 00:21:32,559
the next video

565
00:21:37,270 --> 00:21:34,559
so here you see the first one we're

566
00:21:39,909 --> 00:21:37,280
going to do is we're going to deploy our

567
00:21:41,990 --> 00:21:39,919
seven meter long twin lane mirror probe

568
00:21:44,230 --> 00:21:42,000
and waves antennas and then we're going

569
00:21:46,710 --> 00:21:44,240
to deploy a boom that contains our solar

570
00:21:48,789 --> 00:21:46,720
wind electron analyzer instrument and

571
00:21:51,430 --> 00:21:48,799
then the final deployment is our

572
00:21:53,430 --> 00:21:51,440
articulated payload platform

573
00:21:56,070 --> 00:21:53,440
basically this is a platform that

574
00:21:58,390 --> 00:21:56,080
contains the static engines and iuvs

575
00:22:00,470 --> 00:21:58,400
instruments and it's set with gimbal so

576
00:22:02,630 --> 00:22:00,480
we can actually articulate this platform

577
00:22:05,510 --> 00:22:02,640
to point those instruments into desired

578
00:22:07,350 --> 00:22:05,520
directions as we travel around our orbit

579
00:22:09,669 --> 00:22:07,360
around the planet

580
00:22:12,549 --> 00:22:09,679
another activity we're going to do is as

581
00:22:14,549 --> 00:22:12,559
lisa mentioned we do contain a relay

582
00:22:15,909 --> 00:22:14,559
communications package on board and so

583
00:22:17,830 --> 00:22:15,919
we're going to test that

584
00:22:21,669 --> 00:22:17,840
test this out by actually talking to the

585
00:22:23,510 --> 00:22:21,679
curiosity rover on the surface of mars

586
00:22:24,630 --> 00:22:23,520
as part of the transition phase we will

587
00:22:27,110 --> 00:22:24,640
make sure that all the science

588
00:22:28,789 --> 00:22:27,120

instruments are turned back on and

589
00:22:30,549 --> 00:22:28,799
checked out to make sure that they're

590
00:22:31,830 --> 00:22:30,559
all good to go to start returning

591
00:22:33,990 --> 00:22:31,840
science data

592
00:22:36,390 --> 00:22:34,000
we're anxious to get everything going

593
00:22:37,830 --> 00:22:36,400
as dave said it's been a long road from

594
00:22:41,029 --> 00:22:37,840
the very start

595
00:22:43,190 --> 00:22:41,039
of considering this and now we're very

596
00:22:45,510 --> 00:22:43,200
close to actually getting in and

597
00:22:46,950 --> 00:22:45,520
returning the science data that bruce

598
00:22:48,789 --> 00:22:46,960
and the rest of the science team are

599
00:22:50,549 --> 00:22:48,799
anxiously waiting for so now i'm going

600
00:22:51,990 --> 00:22:50,559
to turn it back to bruce

601
00:22:54,390 --> 00:22:52,000
thanks guy

602
00:22:56,310 --> 00:22:54,400
maven is a science mission and

603
00:22:57,990 --> 00:22:56,320
we're we're really excited about the

604
00:22:59,510 --> 00:22:58,000
science we're gonna do

605
00:23:01,430 --> 00:22:59,520
uh it's been

606
00:23:03,110 --> 00:23:01,440
a lot of effort from hundreds of people

607
00:23:06,070 --> 00:23:03,120
to get here to

608
00:23:08,470 --> 00:23:06,080
propose the mission to design it build

609
00:23:10,630 --> 00:23:08,480
it test it test it

610
00:23:12,149 --> 00:23:10,640
and did i say test it

611
00:23:14,310 --> 00:23:12,159
to make sure that we're going to be

612
00:23:16,870 --> 00:23:14,320
successful when we get to mars

613
00:23:19,190 --> 00:23:16,880

the team is ready the spacecraft is

614
00:23:21,510 --> 00:23:19,200
ready we're go for mars orbit insertion

615
00:23:23,270 --> 00:23:21,520
and then on to science

616
00:23:24,549 --> 00:23:23,280
dwayne back to you

617
00:23:26,630 --> 00:23:24,559
thank you bruce

618
00:23:29,350 --> 00:23:26,640
okay what we're going to do here um

619
00:23:31,270 --> 00:23:29,360
there are there's a lot of buzz world

620
00:23:31,990 --> 00:23:31,280
worldwide on social media so we're going

621
00:23:35,350 --> 00:23:32,000
to

622
00:23:36,950 --> 00:23:35,360
and uh we'll see

623
00:23:38,549 --> 00:23:36,960
we have some folks on the phone lines

624
00:23:40,710 --> 00:23:38,559
and then before we close out we'll go

625
00:23:43,590 --> 00:23:40,720
back to social media so i want to

626
00:23:45,269 --> 00:23:43,600
welcome a new member to the nasa team

627
00:23:47,909 --> 00:23:45,279
that's going to tell us what's on the

628
00:23:50,149 --> 00:23:47,919
twitter verse here uh kyle nero who's

629
00:23:51,110 --> 00:23:50,159
joined us kyle what's going on on

630
00:23:52,549 --> 00:23:51,120
twitter

631
00:23:54,230 --> 00:23:52,559
thank you duane

632
00:23:55,990 --> 00:23:54,240
the first question is from north

633
00:23:57,669 --> 00:23:56,000
carolina space grant

634
00:23:59,750 --> 00:23:57,679
and they would like to know

635
00:24:01,909 --> 00:23:59,760
what education outreach opportunities

636
00:24:02,870 --> 00:24:01,919
are planned for the maven project to

637
00:24:05,190 --> 00:24:02,880
share

638
00:24:06,789 --> 00:24:05,200

science results with the public such as

639
00:24:08,950 --> 00:24:06,799
schools

640
00:24:10,549 --> 00:24:08,960
we have a vigorous education and

641
00:24:12,310 --> 00:24:10,559
outreach program

642
00:24:14,549 --> 00:24:12,320
uh we're trying to get the word out as

643
00:24:17,110 --> 00:24:14,559
best we can through a lot of different

644
00:24:19,430 --> 00:24:17,120
channels including social media

645
00:24:22,149 --> 00:24:19,440
uh the the web

646
00:24:25,190 --> 00:24:22,159
we're also engaging directly into

647
00:24:27,510 --> 00:24:25,200
schools through k to 12 programs uh

648
00:24:29,190 --> 00:24:27,520
we're working with planetariums

649
00:24:32,549 --> 00:24:29,200
uh

650
00:24:34,310 --> 00:24:32,559
we're trying to get the word out if if

651
00:24:35,590 --> 00:24:34,320
there are ways that

652
00:24:38,310 --> 00:24:35,600
that

653
00:24:41,269 --> 00:24:38,320
we're missing please let us know and we

654
00:24:44,390 --> 00:24:41,279
will add on to those

655
00:24:47,830 --> 00:24:44,400
okay and again submit your questions on

656
00:24:50,149 --> 00:24:47,840
ask nasa and kyle let's uh got another

657
00:24:53,110 --> 00:24:50,159
one for us yes i do

658
00:24:55,510 --> 00:24:53,120
it is from harrison royce

659
00:24:58,470 --> 00:24:55,520
he wants to know when will the outcome

660
00:25:01,269 --> 00:24:58,480
or success be known

661
00:25:03,430 --> 00:25:01,279
very quickly after the orbit insertion

662
00:25:05,750 --> 00:25:03,440
burn we'll know if we've been successful

663
00:25:07,190 --> 00:25:05,760

in getting into orbit we should have a

664
00:25:09,909 --> 00:25:07,200
preliminary

665
00:25:11,669 --> 00:25:09,919
uh answer within just a few minutes

666
00:25:12,710 --> 00:25:11,679
after the end of the burn so that will

667
00:25:14,470 --> 00:25:12,720
be

668
00:25:17,430 --> 00:25:14,480
uh

669
00:25:19,350 --> 00:25:17,440
close to 10 30 pm eastern time it'll

670
00:25:21,590 --> 00:25:19,360
take a couple of hours of tracking in

671
00:25:23,590 --> 00:25:21,600
order to get the final orbit to really

672
00:25:25,510 --> 00:25:23,600
understand what orbit we're in

673
00:25:27,750 --> 00:25:25,520
and what we need to do to ensure the

674
00:25:30,310 --> 00:25:27,760
safety of the spacecraft

675
00:25:32,070 --> 00:25:30,320
if we need to we can do

676
00:25:34,630 --> 00:25:32,080
off our first

677
00:25:36,789 --> 00:25:34,640
orbit trim maneuver

678
00:25:38,470 --> 00:25:36,799
early monday morning but we should know

679
00:25:40,630 --> 00:25:38,480
within just a few minutes of the end of

680
00:25:44,230 --> 00:25:40,640
the burn

681
00:25:45,590 --> 00:25:44,240
okay um let's see would go back and see

682
00:25:47,110 --> 00:25:45,600
if we have any on the phone but i do

683
00:25:50,070 --> 00:25:47,120
have a question here from one of the

684
00:25:52,549 --> 00:25:50,080
space.com folks uh to talk about the

685
00:25:54,149 --> 00:25:52,559
science or why is it important to

686
00:25:56,710 --> 00:25:54,159
understand what has happened to the

687
00:25:58,390 --> 00:25:56,720
martian atmosphere

688
00:26:01,110 --> 00:25:58,400

one of the the

689
00:26:03,269 --> 00:26:01,120
really overarching questions about mars

690
00:26:05,190 --> 00:26:03,279
is whether there was ever life what the

691
00:26:08,230 --> 00:26:05,200
history of life has been

692
00:26:10,630 --> 00:26:08,240
life by itself is not easy to identify

693
00:26:12,710 --> 00:26:10,640
is not easy to understand and we're

694
00:26:15,190 --> 00:26:12,720
trying to understand the context in

695
00:26:17,350 --> 00:26:15,200
which life might have existed

696
00:26:19,750 --> 00:26:17,360
any life on mars interacts with its

697
00:26:22,310 --> 00:26:19,760
planetary environment we need to know

698
00:26:24,789 --> 00:26:22,320
the the what that environment is and how

699
00:26:26,710 --> 00:26:24,799
it's evolved over time maven is about

700
00:26:28,390 --> 00:26:26,720
looking at the history of the atmosphere

701
00:26:30,549 --> 00:26:28,400
in order to understand the history of

702
00:26:33,190 --> 00:26:30,559
that environment so it's really telling

703
00:26:35,830 --> 00:26:33,200
us the boundary conditions that surround

704
00:26:38,070 --> 00:26:35,840
the potential for life by understanding

705
00:26:40,230 --> 00:26:38,080
the processes by which the atmosphere

706
00:26:42,549 --> 00:26:40,240
changed we're learning about the history

707
00:26:45,350 --> 00:26:42,559
of the habitability of mars

708
00:26:47,590 --> 00:26:45,360
and by looking at mars relative to earth

709
00:26:49,669 --> 00:26:47,600
and venus we're learning about the

710
00:26:51,830 --> 00:26:49,679
nature of planets and the history of

711
00:26:54,310 --> 00:26:51,840
atmospheres in general with the

712
00:26:56,789 --> 00:26:54,320
discovery of of

713
00:26:58,870 --> 00:26:56,799

uh planets around other stars this lets

714
00:27:01,990 --> 00:26:58,880
us extrapolate beyond our own solar

715
00:27:03,830 --> 00:27:02,000
system to the the

716
00:27:06,950 --> 00:27:03,840
history of planets the potential for

717
00:27:09,590 --> 00:27:06,960
life in the galaxy at large

718
00:27:12,870 --> 00:27:09,600
okay we're going to take a a few calls

719
00:27:14,390 --> 00:27:12,880
uh now on the phone line and uh let's

720
00:27:19,430 --> 00:27:14,400
start with

721
00:27:23,029 --> 00:27:20,549
hi there thanks for having this

722
00:27:25,510 --> 00:27:23,039
conference i'm wondering what advantage

723
00:27:28,789 --> 00:27:25,520
the relay function will provide for

724
00:27:33,830 --> 00:27:31,350
thanks that's a great question so

725
00:27:36,630 --> 00:27:33,840
are rovers and landers on the surface of

726
00:27:38,870 --> 00:27:36,640
mars actually send nearly all of their

727
00:27:41,110 --> 00:27:38,880
data back through the orbiters that are

728
00:27:42,710 --> 00:27:41,120
going around mars they send the data to

729
00:27:45,190 --> 00:27:42,720
the orbiters and the orbiters use their

730
00:27:46,389 --> 00:27:45,200
larger antennas to relay that data back

731
00:27:48,710 --> 00:27:46,399
to earth

732
00:27:50,310 --> 00:27:48,720
and in fact every nasa orbiter that goes

733
00:27:52,470 --> 00:27:50,320
to mars will carry some sort of

734
00:27:53,830 --> 00:27:52,480
communications payload to provide that

735
00:27:56,310 --> 00:27:53,840
capability

736
00:27:57,190 --> 00:27:56,320
maven has a relay payload on it as we

737
00:28:00,149 --> 00:27:57,200
noted

738
00:28:02,070 --> 00:28:00,159

and would be a an emergency backup if

739
00:28:04,549 --> 00:28:02,080
needed but is intended to provide more

740
00:28:10,310 --> 00:28:04,559
regularly relay services later after its

741
00:28:20,470 --> 00:28:12,070
okay um

742
00:28:20,480 --> 00:28:27,029
joe paco from npr are we there

743
00:28:30,710 --> 00:28:28,789
okay what is the

744
00:28:32,310 --> 00:28:30,720
low hanging fruit from this mission is

745
00:28:34,470 --> 00:28:32,320
there something that the you're going to

746
00:28:36,230 --> 00:28:34,480
be able to pick up fairly quickly or is

747
00:28:38,389 --> 00:28:36,240
it going to be something that you that

748
00:28:40,389 --> 00:28:38,399
the scientific results will emerge over

749
00:28:41,990 --> 00:28:40,399
time and approximately how long will it

750
00:28:44,230 --> 00:28:42,000
take to start seeing some of the first

751
00:28:46,149 --> 00:28:44,240
scientific results

752
00:28:48,310 --> 00:28:46,159
we're going to begin taking science

753
00:28:50,470 --> 00:28:48,320
measurements uh right away once the

754
00:28:51,750 --> 00:28:50,480
spacecraft is commissioned so early

755
00:28:53,510 --> 00:28:51,760
november

756
00:28:55,750 --> 00:28:53,520
at that time though it'll still take us

757
00:28:57,110 --> 00:28:55,760
a while to understand the calibration of

758
00:28:59,190 --> 00:28:57,120
the instruments

759
00:29:00,789 --> 00:28:59,200
and to build up enough measurements from

760
00:29:02,870 --> 00:29:00,799
the instruments to understand what's

761
00:29:04,389 --> 00:29:02,880
going on in the atmosphere

762
00:29:06,630 --> 00:29:04,399
this is different from some of the

763
00:29:08,549 --> 00:29:06,640

rovers and some of the orbiters where

764
00:29:09,430 --> 00:29:08,559
images start to come out right away that

765
00:29:14,230 --> 00:29:09,440
can be

766
00:29:16,470 --> 00:29:14,240
interpretation we think that it'll take

767
00:29:18,070 --> 00:29:16,480
about several months before we really

768
00:29:20,070 --> 00:29:18,080
begin to understand

769
00:29:22,950 --> 00:29:20,080
what the data are telling us and what

770
00:29:25,510 --> 00:29:22,960
the preliminary conclusions will be

771
00:29:27,430 --> 00:29:25,520
our plan is to get some of the the early

772
00:29:29,909 --> 00:29:27,440
data out as quickly as possible and

773
00:29:32,070 --> 00:29:29,919
begin talking about the characteristics

774
00:29:34,789 --> 00:29:32,080
of the upper atmosphere the ionosphere

775
00:29:37,750 --> 00:29:34,799
the interactions with the solar wind

776
00:29:39,029 --> 00:29:37,760
but in terms of beginning to get results

777
00:29:41,269 --> 00:29:39,039
on

778
00:29:43,830 --> 00:29:41,279
how has the atmosphere evolved how much

779
00:29:46,389 --> 00:29:43,840
gas has been lost through the atmosphere

780
00:29:47,830 --> 00:29:46,399
over time we think about the three-month

781
00:29:49,830 --> 00:29:47,840
mark is

782
00:29:51,029 --> 00:29:49,840
when we'll be able to to start getting

783
00:29:55,909 --> 00:29:51,039
those

784
00:29:57,190 --> 00:29:55,919
before we uh take another question or

785
00:29:58,630 --> 00:29:57,200
two from the phone we're gonna go back

786
00:30:02,389 --> 00:29:58,640
to social media again keep those

787
00:30:05,029 --> 00:30:02,399
questions coming in at hashtag ask nasa

788
00:30:08,070 --> 00:30:05,039

and kyle i got another one for us

789
00:30:09,830 --> 00:30:08,080
yes uh this is from seven on six you

790
00:30:11,590 --> 00:30:09,840
would like to know what happens to maven

791
00:30:14,630 --> 00:30:11,600
in the long run and how long does it

792
00:30:18,789 --> 00:30:16,789
sure the maven mission is designed to be

793
00:30:19,990 --> 00:30:18,799
in one earth year primary science

794
00:30:22,070 --> 00:30:20,000
mission

795
00:30:23,909 --> 00:30:22,080
however all things going well we should

796
00:30:26,630 --> 00:30:23,919
have enough fuel on board to last many

797
00:30:29,029 --> 00:30:26,640
years beyond that and so at that point

798
00:30:30,789 --> 00:30:29,039
uh we'll uh turn it back to lisa and

799
00:30:33,110 --> 00:30:30,799
nasa assuming things are going well

800
00:30:38,389 --> 00:30:33,120
after one year and politely come back

801
00:30:42,789 --> 00:30:39,909
okay

802
00:30:46,950 --> 00:30:42,799
next on the phone line irene

803
00:30:50,470 --> 00:30:48,710
students for a jam green just was

804
00:30:51,269 --> 00:30:50,480
wondering if you could tell us anything

805
00:30:53,269 --> 00:30:51,279
about

806
00:30:56,310 --> 00:30:53,279
efforts to

807
00:30:58,470 --> 00:30:56,320
coordinate any science studies between

808
00:31:01,990 --> 00:30:58,480
maven and the rest of the

809
00:31:06,070 --> 00:31:02,000
mars orbiters and landers with india's

810
00:31:11,269 --> 00:31:07,909
yeah so that's a great question and

811
00:31:13,909 --> 00:31:11,279
indeed uh both um india and the indian

812
00:31:17,350 --> 00:31:13,919
space research organization and nasa are

813
00:31:18,389 --> 00:31:17,360

really quite interested in cooperating

814
00:31:21,350 --> 00:31:18,399
and

815
00:31:22,230 --> 00:31:21,360
correlating data sets so i think we'll

816
00:31:24,389 --> 00:31:22,240
see

817
00:31:25,990 --> 00:31:24,399
as both spacecraft get into orbit and

818
00:31:27,430 --> 00:31:26,000
and the science teams begin to

819
00:31:29,669 --> 00:31:27,440
understand their data those

820
00:31:32,070 --> 00:31:29,679
opportunities will open up

821
00:31:34,070 --> 00:31:32,080
so our plan is to pursue those at the

822
00:31:36,149 --> 00:31:34,080
right time and we've started that

823
00:31:38,070 --> 00:31:36,159
discussion now

824
00:31:41,029 --> 00:31:38,080
let me add on to that

825
00:31:42,389 --> 00:31:41,039
briefly that the european space agency

826
00:31:44,630 --> 00:31:42,399
mars express

827
00:31:46,789 --> 00:31:44,640
mission is also making measurements that

828
00:31:48,789 --> 00:31:46,799
are relevant to the upper atmosphere

829
00:31:50,789 --> 00:31:48,799
we've begun discussions with them about

830
00:31:53,430 --> 00:31:50,799
how to

831
00:31:56,070 --> 00:31:53,440
coordinate collection of data and to

832
00:31:58,310 --> 00:31:56,080
jointly analyze data in order to bring

833
00:32:00,470 --> 00:31:58,320
all of the instruments together

834
00:32:02,630 --> 00:32:00,480
and since we've begun talking with the

835
00:32:04,389 --> 00:32:02,640
international partners we've also

836
00:32:06,389 --> 00:32:04,399
actually started talking with the u.s

837
00:32:08,470 --> 00:32:06,399
partners with the mars reconnaissance

838
00:32:11,110 --> 00:32:08,480

orbiter uh to make sure that we bring

839
00:32:12,630 --> 00:32:11,120
their data into this and really can get

840
00:32:15,830 --> 00:32:12,640
the best benefit from all of the

841
00:32:18,389 --> 00:32:15,840
measurements we're making at mars

842
00:32:21,190 --> 00:32:18,399
the next call is from pete spots from

843
00:32:22,630 --> 00:32:21,200
the christian science monitor pete

844
00:32:24,870 --> 00:32:22,640
thank you very much thanks for doing

845
00:32:26,549 --> 00:32:24,880
this uh this i think is for bruce

846
00:32:29,110 --> 00:32:26,559
with the

847
00:32:30,389 --> 00:32:29,120
comment flyby um what are you folks

848
00:32:32,310 --> 00:32:30,399
going to be looking for if you could be

849
00:32:33,750 --> 00:32:32,320
a little more more specific about that i

850
00:32:34,789 --> 00:32:33,760
don't know if any modeling studies have

851
00:32:36,549 --> 00:32:34,799
given you

852
00:32:37,990 --> 00:32:36,559
you know leads on what to look for or

853
00:32:39,430 --> 00:32:38,000
just but it would be interesting to see

854
00:32:41,029 --> 00:32:39,440
what you folks will be keeping your eye

855
00:32:42,630 --> 00:32:41,039
out

856
00:32:44,230 --> 00:32:42,640
uh we'll we'll be doing a couple of

857
00:32:46,470 --> 00:32:44,240
things the

858
00:32:49,590 --> 00:32:46,480
we we've got five days of observations

859
00:32:51,430 --> 00:32:49,600
planned uh basically three before and

860
00:32:53,830 --> 00:32:51,440
two after the closest approach of the

861
00:32:54,789 --> 00:32:53,840
comment prior to the comment we'll be

862
00:32:56,389 --> 00:32:54,799
looking

863
00:32:58,230 --> 00:32:56,399

first at the

864
00:33:00,789 --> 00:32:58,240
comet itself using our imaging

865
00:33:02,870 --> 00:33:00,799
ultraviolet spectrograph this allows us

866
00:33:06,149 --> 00:33:02,880
to map the composition of the coma by

867
00:33:07,990 --> 00:33:06,159
looking at emission lines from different

868
00:33:10,230 --> 00:33:08,000
elements

869
00:33:12,549 --> 00:33:10,240
the ultraviolet is the right wavelength

870
00:33:15,830 --> 00:33:12,559
to be making these observations

871
00:33:16,870 --> 00:33:15,840
so with the ability to image the whole

872
00:33:18,549 --> 00:33:16,880
comet

873
00:33:21,110 --> 00:33:18,559
as it's getting closer we should have

874
00:33:22,950 --> 00:33:21,120
some pretty spectacular results in terms

875
00:33:24,630 --> 00:33:22,960
of looking at the upper atmosphere we'll

876
00:33:26,789 --> 00:33:24,640
do two days before

877
00:33:28,310 --> 00:33:26,799
two days afterwards

878
00:33:30,389 --> 00:33:28,320
beforehand we're

879
00:33:31,990 --> 00:33:30,399
looking to just see what the composition

880
00:33:33,190 --> 00:33:32,000
and structure are and then see what the

881
00:33:35,669 --> 00:33:33,200
effects are

882
00:33:38,070 --> 00:33:35,679
we expect that two things can happen if

883
00:33:39,750 --> 00:33:38,080
there's a significant amount of dust

884
00:33:42,230 --> 00:33:39,760
hits the upper atmosphere we'll see

885
00:33:44,070 --> 00:33:42,240
increases in the temperature of the

886
00:33:45,430 --> 00:33:44,080
upper atmosphere and that will manifest

887
00:33:47,990 --> 00:33:45,440
itself

888
00:33:49,669 --> 00:33:48,000

among other ways as an extension of the

889
00:33:50,870 --> 00:33:49,679
atmosphere you heat it up and it'll

890
00:33:53,669 --> 00:33:50,880
expand

891
00:33:55,509 --> 00:33:53,679
in addition the water from the comet

892
00:33:57,430 --> 00:33:55,519
that hits the upper atmosphere will

893
00:34:00,389 --> 00:33:57,440
begin to populate it with an extra set

894
00:34:02,950 --> 00:34:00,399
of molecules and we might see that as an

895
00:34:04,630 --> 00:34:02,960
increase in the hydrogen abundance

896
00:34:06,230 --> 00:34:04,640
in the upper atmosphere

897
00:34:07,909 --> 00:34:06,240
what we're going to do is look at this

898
00:34:08,950 --> 00:34:07,919
perturbation

899
00:34:11,750 --> 00:34:08,960
uh

900
00:34:13,990 --> 00:34:11,760
with the addition of energy and and

901
00:34:16,310 --> 00:34:14,000
matter and then see how long it takes to

902
00:34:18,310 --> 00:34:16,320
decay away and that'll tell us about the

903
00:34:21,909 --> 00:34:18,320
physical processes that are operating in

904
00:34:26,069 --> 00:34:24,230
okay um it's my understanding there no

905
00:34:27,829 --> 00:34:26,079
no more questions on on the phone line

906
00:34:29,909 --> 00:34:27,839
and what that tells me after doing so

907
00:34:32,550 --> 00:34:29,919
many press conferences over the years

908
00:34:34,790 --> 00:34:32,560
that all systems are go

909
00:34:37,430 --> 00:34:34,800
and that the participants here have

910
00:34:39,030 --> 00:34:37,440
explained things so well that it is just

911
00:34:41,190 --> 00:34:39,040
fantastic well so what i'm going to do

912
00:34:43,349 --> 00:34:41,200
for the television audience here is i'm

913
00:34:44,869 --> 00:34:43,359

going to ask uh each participant to give

914
00:34:48,869 --> 00:34:44,879
some personal thoughts on what this

915
00:34:50,389 --> 00:34:48,879
mission means and its impact and its

916
00:34:52,470 --> 00:34:50,399
purpose and

917
00:34:54,550 --> 00:34:52,480
how it's going to be a part of the

918
00:34:56,869 --> 00:34:54,560
agency's journey to mars

919
00:34:59,190 --> 00:34:56,879
lisa first well thank you duane for that

920
00:35:01,589 --> 00:34:59,200
opportunity to give my own

921
00:35:03,990 --> 00:35:01,599
view on what maven means to nasa to the

922
00:35:05,190 --> 00:35:04,000
mars program and to those folks who are

923
00:35:09,030 --> 00:35:05,200
watching

924
00:35:11,910 --> 00:35:09,040
maven as bruce alluded to is part of a

925
00:35:13,910 --> 00:35:11,920
long-term strategy we started

926
00:35:16,630 --> 00:35:13,920
in the early 2000s with a follow the

927
00:35:18,710 --> 00:35:16,640
water strategy and and there's there

928
00:35:21,589 --> 00:35:18,720
have been jokes over time about

929
00:35:23,510 --> 00:35:21,599
nasa has found water on mars again but

930
00:35:26,230 --> 00:35:23,520
in fact it has been a very short time

931
00:35:28,630 --> 00:35:26,240
that we understood there was persistent

932
00:35:30,550 --> 00:35:28,640
liquid water on the surface of mars and

933
00:35:32,870 --> 00:35:30,560
we have found ample evidence with our

934
00:35:34,870 --> 00:35:32,880
orbiters and our rovers and the phoenix

935
00:35:36,310 --> 00:35:34,880
lander that that was the case all over

936
00:35:38,790 --> 00:35:36,320
the planet

937
00:35:40,710 --> 00:35:38,800
well as bruce mentioned if the water is

938
00:35:42,550 --> 00:35:40,720

gone where did it go

939
00:35:44,630 --> 00:35:42,560
and the atmosphere at mars now is less

940
00:35:47,190 --> 00:35:44,640
than one percent of that of earth

941
00:35:48,310 --> 00:35:47,200
where did that go and the ability to

942
00:35:50,230 --> 00:35:48,320
understand

943
00:35:53,349 --> 00:35:50,240
how that potentially habitable

944
00:35:55,510 --> 00:35:53,359
environment as evidenced by curiosities

945
00:35:57,109 --> 00:35:55,520
discoveries and ancient stream beds at

946
00:35:59,190 --> 00:35:57,119
gale craner

947
00:36:00,870 --> 00:35:59,200
the the implications for habitable

948
00:36:03,510 --> 00:36:00,880
environments and their evolution are

949
00:36:05,990 --> 00:36:03,520
enormous and require this piece of

950
00:36:08,550 --> 00:36:06,000
information to put that story together

951
00:36:11,109 --> 00:36:08,560
so i'm extremely excited

952
00:36:13,190 --> 00:36:11,119
to uh keep turning pages in the mystery

953
00:36:14,870 --> 00:36:13,200
novel that is mars

954
00:36:16,710 --> 00:36:14,880
bruce

955
00:36:19,190 --> 00:36:16,720
i've been working on

956
00:36:21,990 --> 00:36:19,200
mars research for my entire career going

957
00:36:23,670 --> 00:36:22,000
back to the mid-1970s with the viking

958
00:36:25,990 --> 00:36:23,680
spacecraft

959
00:36:28,390 --> 00:36:26,000
and one of the things i've observed is

960
00:36:30,470 --> 00:36:28,400
every time we send a spacecraft

961
00:36:32,710 --> 00:36:30,480
to mars with new instruments that are

962
00:36:34,870 --> 00:36:32,720
making measurements we haven't made

963
00:36:37,750 --> 00:36:34,880

we discover a new planet we're making

964
00:36:39,589 --> 00:36:37,760
fundamental discoveries every time we go

965
00:36:41,190 --> 00:36:39,599
and i'm hoping that that maven will

966
00:36:42,390 --> 00:36:41,200
continue that trend

967
00:36:44,390 --> 00:36:42,400
we're really

968
00:36:46,550 --> 00:36:44,400
looking at a part of the

969
00:36:49,349 --> 00:36:46,560
mars environment system

970
00:36:50,710 --> 00:36:49,359
that we haven't explored in detail

971
00:36:52,470 --> 00:36:50,720
previous spacecraft have made

972
00:36:55,270 --> 00:36:52,480
measurements we've learned a lot about

973
00:36:57,190 --> 00:36:55,280
the upper atmosphere but we haven't

974
00:37:00,150 --> 00:36:57,200
been able to put the whole end-to-end

975
00:37:02,710 --> 00:37:00,160
picture together so i'm hoping that that

976
00:37:04,870 --> 00:37:02,720
maven will be a mission of discovery

977
00:37:07,510 --> 00:37:04,880
that almost everything we observe will

978
00:37:08,630 --> 00:37:07,520
lead us to to fundamental new insights

979
00:37:11,190 --> 00:37:08,640
about the

980
00:37:14,310 --> 00:37:11,200
mars environment today and how it's

981
00:37:15,589 --> 00:37:14,320
evolved over time

982
00:37:17,990 --> 00:37:15,599
as we

983
00:37:21,109 --> 00:37:18,000
do this

984
00:37:22,790 --> 00:37:21,119
i've been focused for the last 11 years

985
00:37:25,030 --> 00:37:22,800
as dave said

986
00:37:26,470 --> 00:37:25,040
on maven and i'll be honest i've sort of

987
00:37:28,150 --> 00:37:26,480
lost track of where the rest of the

988
00:37:29,589 --> 00:37:28,160

program is going so i'm not even going

989
00:37:31,829 --> 00:37:29,599
to try to

990
00:37:34,790 --> 00:37:31,839
to integrate it i've had my head down

991
00:37:37,270 --> 00:37:34,800
narrowly focused on the maven mission

992
00:37:39,430 --> 00:37:37,280
roger that david yeah um

993
00:37:41,750 --> 00:37:39,440
i'm gonna give a response that's more

994
00:37:43,589 --> 00:37:41,760
personal and that is um

995
00:37:46,230 --> 00:37:43,599
it's it's a great journey working with a

996
00:37:49,510 --> 00:37:46,240
team um that we've been a part of all

997
00:37:52,069 --> 00:37:49,520
these years and um it's the people it's

998
00:37:53,750 --> 00:37:52,079
the families um and and to be there you

999
00:37:55,190 --> 00:37:53,760
know everybody working together and i

1000
00:37:57,910 --> 00:37:55,200
really mean that with that the the

1001
00:37:59,990 --> 00:37:57,920
partnership we've had um you know i wake

1002
00:38:01,750 --> 00:38:00,000
up on a monday morning and it's not

1003
00:38:03,430 --> 00:38:01,760
a monday a typical monday morning i'm

1004
00:38:04,470 --> 00:38:03,440
excited to come into work work with this

1005
00:38:06,630 --> 00:38:04,480
group

1006
00:38:08,790 --> 00:38:06,640
i feel really lucky to be a part of this

1007
00:38:10,950 --> 00:38:08,800
it's really been special um

1008
00:38:13,589 --> 00:38:10,960
i'll also say you know

1009
00:38:15,750 --> 00:38:13,599
all of us and and many out there we go

1010
00:38:17,109 --> 00:38:15,760
out to the classrooms and you know talk

1011
00:38:19,589 --> 00:38:17,119
about maven and talk about other

1012
00:38:21,990 --> 00:38:19,599
missions that we've been working on and

1013
00:38:23,990 --> 00:38:22,000

to to see the the look in the kids eyes

1014
00:38:25,430 --> 00:38:24,000
and and inspire the next generation

1015
00:38:27,670 --> 00:38:25,440
truly i mean that's

1016
00:38:29,990 --> 00:38:27,680
that's a big part to me personally and

1017
00:38:31,190 --> 00:38:30,000
and so i'm i'm excited about that and of

1018
00:38:33,109 --> 00:38:31,200
course

1019
00:38:35,670 --> 00:38:33,119
going to mars i mean you think about

1020
00:38:37,670 --> 00:38:35,680
that as a kid and just um how cool is

1021
00:38:39,510 --> 00:38:37,680
that to work on something that

1022
00:38:42,790 --> 00:38:39,520
eventually is flying to mars and is now

1023
00:38:44,230 --> 00:38:42,800
four days away so um it's it's just a

1024
00:38:46,550 --> 00:38:44,240
it's just such a great thing to work

1025
00:38:48,150 --> 00:38:46,560
with this team and and uh be at the

1026
00:38:50,230 --> 00:38:48,160
place we're at right now

1027
00:38:51,670 --> 00:38:50,240
guy well i'm an echo that i mean i

1028
00:38:53,270 --> 00:38:51,680
remember being seven years old and

1029
00:38:54,150 --> 00:38:53,280
running around the yard and pretending i

1030
00:38:57,589 --> 00:38:54,160
was

1031
00:38:59,510 --> 00:38:57,599
to go explore it

1032
00:39:00,790 --> 00:38:59,520
this is why i got into engineering is

1033
00:39:02,069 --> 00:39:00,800
these kind of things i mean we're going

1034
00:39:03,510 --> 00:39:02,079
to mars

1035
00:39:06,470 --> 00:39:03,520
and we're continuing

1036
00:39:08,310 --> 00:39:06,480
an investigation and i think that really

1037
00:39:09,589 --> 00:39:08,320
uh kind of

1038
00:39:11,670 --> 00:39:09,599

you know it's something kind of special

1039
00:39:14,710 --> 00:39:11,680
a lot of people don't realize this is is

1040
00:39:16,390 --> 00:39:14,720
how this mission really builds on all

1041
00:39:19,109 --> 00:39:16,400
the investigations that have come before

1042
00:39:20,310 --> 00:39:19,119
it um this there's been a series of mars

1043
00:39:21,670 --> 00:39:20,320
spacecraft and

1044
00:39:24,310 --> 00:39:21,680
uh at lockheed martin we've been

1045
00:39:25,030 --> 00:39:24,320
fortunate enough to partner with nasa uh

1046
00:39:29,030 --> 00:39:25,040
in

1047
00:39:31,109 --> 00:39:29,040
been able to use that um we've got mars

1048
00:39:33,190 --> 00:39:31,119
odyssey around or uh

1049
00:39:34,870 --> 00:39:33,200
around orbit and mars right now and we

1050
00:39:37,349 --> 00:39:34,880
based the design on mars reconnaissance

1051
00:39:39,190 --> 00:39:37,359
orbiter on mars odyssey and then we

1052
00:39:40,790 --> 00:39:39,200
based the design of maven on mars

1053
00:39:42,790 --> 00:39:40,800
reconnaissance orbiter and so we're

1054
00:39:44,710 --> 00:39:42,800
really not only able to build on the

1055
00:39:46,870 --> 00:39:44,720
science but we're able to build on the

1056
00:39:49,109 --> 00:39:46,880
engineering as well and so kind of that

1057
00:39:51,190 --> 00:39:49,119
wealth of experiences it's really given

1058
00:39:53,670 --> 00:39:51,200
us a lot of confidence going forward

1059
00:39:55,750 --> 00:39:53,680
into what i expect to be a a very

1060
00:39:57,910 --> 00:39:55,760
successful mission

1061
00:39:59,270 --> 00:39:57,920
well thank you all for your comments and

1062
00:40:01,990 --> 00:39:59,280
that's going to do it for us i want to

1063
00:40:07,430 --> 00:40:02,000

remind folks that you can get all of the

1064
00:40:11,109 --> 00:40:08,550
maven

1065
00:40:15,430 --> 00:40:11,119
live coverage on nasa television will

1066
00:40:16,790 --> 00:40:15,440
begin at 9 30 eastern time

1067
00:40:17,829 --> 00:40:16,800
live coverage

1068
00:40:20,069 --> 00:40:17,839
sunday

1069
00:40:24,309 --> 00:40:20,079
september 21st

1070
00:40:27,670 --> 00:40:24,319
also on the nasa website at www.nasa.gov

1071
00:40:30,230 --> 00:40:27,680
ladies and gentlemen all systems are go

1072
00:40:32,790 --> 00:40:30,240
for marvin from mavens

1073
00:40:35,190 --> 00:40:32,800
orbit insertion september 21 join us

1074
00:40:36,550 --> 00:40:35,200
join the conversation thanks for joining