1
00:00:15,560 --> 00:00:11,330
t-minus 10 9 8 7 6 5 4 3 2 1 main engine

2
00:00:18,560 --> 00:00:15,570
start zero and liftoff of the Atlas 5

3
00:00:30,210 --> 00:00:18,570
with curiosity seeking clues to the

4
00:00:30,220 --> 00:00:36,650
180 operator perspective

5
00:00:36,660 --> 00:00:46,920
bottling down to 76

6
00:00:52,890 --> 00:00:49,620
good afternoon everyone this is our post

7
00:00:55,530 --> 00:00:52,900
launch news conference for Mars Science

8
00:00:58,740 --> 00:00:55,540
Laboratory and curiosity launched this

9
00:01:01,710 --> 00:00:58,750
morning on an atlas 5 rocket and here to

10
00:01:03,660 --> 00:01:01,720
talk about curiosity and its state of

11
00:01:06,080 --> 00:01:03,670
health on the way to Mars and the

12
00:01:09,300 --> 00:01:06,090
agency's reaction to this launch is

13
00:01:12,030 --> 00:01:09,310

piqued eisinger the Mars Science

14
00:01:15,570 --> 00:01:12,040
Laboratory project manager from the Jet

15
00:01:18,690 --> 00:01:15,580
Propulsion Laboratory John grotzinger

16
00:01:22,310 --> 00:01:18,700
the MSL project scientist from the

17
00:01:25,350 --> 00:01:22,320
California Institute of Technology and

18
00:01:27,450 --> 00:01:25,360
dugme question the director of the Mars

19
00:01:31,499 --> 00:01:27,460
exploration program at NASA headquarters

20
00:01:34,109 --> 00:01:31,509
and we'll start first with the commensal

21
00:01:36,510 --> 00:01:34,119
project manager Pete eisinger Pete good

22
00:01:39,420 --> 00:01:36,520
afternoon our spacecraft is an excellent

23
00:01:50,730 --> 00:01:39,430
health and it's on its way to Mars okay

24
00:01:52,260 --> 00:01:50,740
and questions I'm sorry I'll talk about

25
00:01:54,719 --> 00:01:52,270
the spacecraft health in a second but I

26
00:01:58,440 --> 00:01:54,729
want to give a tremendous thanks to the

27
00:02:00,030 --> 00:01:58,450
to the launch team ula and into the

28
00:02:02,609 --> 00:02:00,040
launch service provider organization

29
00:02:05,880 --> 00:02:02,619
here at Kennedy and to Kennedy Space

30
00:02:09,000 --> 00:02:05,890
Center who's been our hosted us since

31
00:02:11,009 --> 00:02:09,010
since we arrived in may and june and and

32
00:02:12,479 --> 00:02:11,019
built up the spacecraft and did final

33
00:02:13,470 --> 00:02:12,489
testing here and finally a capsule

34
00:02:15,000 --> 00:02:13,480
leaders were flight they did a

35
00:02:16,560 --> 00:02:15,010
tremendous job today they've done a

36
00:02:20,520 --> 00:02:16,570
tremendous job for all these months and

37
00:02:22,380 --> 00:02:20,530
it was a fantastic and smooth operation

38
00:02:25,560 --> 00:02:22,390

today religious first-rate and

39
00:02:27,570 --> 00:02:25,570
tremendously professional as i said the

40
00:02:29,070 --> 00:02:27,580
spacecraft is in excellent health you

41
00:02:30,300 --> 00:02:29,080
may have gotten seen pictures of the

42
00:02:34,020 --> 00:02:30,310
separation with those fantastic

43
00:02:36,750 --> 00:02:34,030
photographs and we separated and

44
00:02:39,180 --> 00:02:36,760
perfectly on time of course and and the

45
00:02:43,590 --> 00:02:39,190
acquisition of signal was as expected

46
00:02:47,220 --> 00:02:43,600
about six minutes later 1552 27 if if

47
00:02:48,960 --> 00:02:47,230
you want to know zulu the power we r

48
00:02:50,250 --> 00:02:48,970
power positive so we charging the

49
00:02:51,600 --> 00:02:50,260
batteries we did not lose that much

50
00:02:54,000 --> 00:02:51,610
state of charge in fact during the

51
00:02:56,909 --> 00:02:54,010
ascent profile we're thermally as

52
00:02:58,440 --> 00:02:56,919
expected the cat bed heaters for

53
00:03:00,120 --> 00:02:58,450
propulsion are on the temperatures are

54
00:03:00,570 --> 00:03:00,130
as we expect them on the key pieces of

55
00:03:02,640 --> 00:03:00,580
equip

56
00:03:04,050 --> 00:03:02,650
it and we're changing slowly as you'd

57
00:03:07,230 --> 00:03:04,060
expect as we transition from

58
00:03:10,470 --> 00:03:07,240
ground-based space operations we are in

59
00:03:13,260 --> 00:03:10,480
cruise mode we have commanded the

60
00:03:15,390 --> 00:03:13,270
spacecraft and we have art therefore

61
00:03:19,050 --> 00:03:15,400
into way and are getting navigation data

62
00:03:21,420 --> 00:03:19,060
the injection was first-rate much less

63
00:03:23,430 --> 00:03:21,430

than a tenth of a sigma is both both ula

64
00:03:26,220 --> 00:03:23,440
and our navigation estimate so it was a

65
00:03:28,500 --> 00:03:26,230
fantastic fantastic accurate with the

66
00:03:33,180 --> 00:03:28,510
injection and that's about it for me

67
00:03:34,950 --> 00:03:33,190
very happy guy Thank You Pete and now

68
00:03:36,750 --> 00:03:34,960
John grotzinger the project scientist

69
00:03:40,199 --> 00:03:36,760
from the California Institute of

70
00:03:42,660 --> 00:03:40,209
Technology John well I'm also really

71
00:03:45,060 --> 00:03:42,670
excited I think on behalf of every

72
00:03:48,150 --> 00:03:45,070
scientist on this missive mission and

73
00:03:51,390 --> 00:03:48,160
there are about 250 of us I would like

74
00:03:54,360 --> 00:03:51,400
to thank every engineer at JPL everybody

75
00:03:56,850 --> 00:03:54,370
that has worked so hard for almost ten

76
00:03:59,460 --> 00:03:56,860
years to build the spacecraft put it

77
00:04:01,050 --> 00:03:59,470
together all the principal investigators

78
00:04:04,350 --> 00:04:01,060
who have dedicated their lives to

79
00:04:06,210 --> 00:04:04,360
building the instruments for just as

80
00:04:07,890 --> 00:04:06,220
much time and all their team members

81
00:04:11,100 --> 00:04:07,900
that have helped with getting surface

82
00:04:13,110 --> 00:04:11,110
operations we are ready to go for

83
00:04:15,600 --> 00:04:13,120
landing on the surface of Mars and and

84
00:04:18,500 --> 00:04:15,610
we couldn't be happier I think this

85
00:04:21,780 --> 00:04:18,510
mission will be a great one it is a

86
00:04:25,500 --> 00:04:21,790
important next step and NASA's overall

87
00:04:28,050 --> 00:04:25,510
goal to address the issue of life in the

88
00:04:30,180 --> 00:04:28,060

universe we are not a life detection

89
00:04:32,190 --> 00:04:30,190
mission we have no ability to detect

90
00:04:35,070 --> 00:04:32,200
life present on the surface of Mars and

91
00:04:37,170 --> 00:04:35,080
it is important to distinguish that as

92
00:04:39,270 --> 00:04:37,180
an intermediate mission between mer

93
00:04:42,030 --> 00:04:39,280
which was the search for water and

94
00:04:44,430 --> 00:04:42,040
future missions which may undertake life

95
00:04:47,310 --> 00:04:44,440
detection our mission is about looking

96
00:04:49,710 --> 00:04:47,320
for ancient habitable environments and a

97
00:04:51,420 --> 00:04:49,720
time in the history of Mars that is very

98
00:04:52,890 --> 00:04:51,430
different from the time from the

99
00:04:54,840 --> 00:04:52,900
conditions that you see today on the

100
00:04:56,820 --> 00:04:54,850
surface of Mars we have a lot of

101
00:04:59,370 --> 00:04:56,830
evidence that has brought us to a single

102
00:05:02,100 --> 00:04:59,380
landing site the result of six years of

103
00:05:05,310 --> 00:05:02,110
deliberation over more than 50 potential

104
00:05:06,690 --> 00:05:05,320
landing sites the engineering system on

105
00:05:08,400 --> 00:05:06,700
this mission that will land us on the

106
00:05:10,920 --> 00:05:08,410
surface of Mars for the first time in

107
00:05:13,200 --> 00:05:10,930
the history of any landed mission to

108
00:05:15,300 --> 00:05:13,210
Mars gets the scientists to exact

109
00:05:17,610 --> 00:05:15,310
where they wanted to go there's no

110
00:05:20,610 --> 00:05:17,620
compromise we are going to the very best

111
00:05:22,820 --> 00:05:20,620
place that we could find to go to and I

112
00:05:26,370 --> 00:05:22,830
kiss can't wait to get on the ground

113
00:05:29,010 --> 00:05:26,380

thanks John now dugme question the

114
00:05:32,300 --> 00:05:29,020
director for NASA's Mars exploration

115
00:05:36,480 --> 00:05:32,310
program at NASA headquarters doc

116
00:05:38,279 --> 00:05:36,490
ecstatic is the word I mean the agency

117
00:05:41,430 --> 00:05:38,289
has been working this mission hard with

118
00:05:42,900 --> 00:05:41,440
JPL and all the the other organizations

119
00:05:45,870 --> 00:05:42,910
such as Department of Energy our

120
00:05:48,180 --> 00:05:45,880
international partners and now KSC and

121
00:05:51,810 --> 00:05:48,190
ula have put us right where we want it

122
00:05:54,990 --> 00:05:51,820
to be moving fast cruising to cruising

123
00:05:57,600 --> 00:05:55,000
to Mars hot straight normal right in

124
00:06:00,120 --> 00:05:57,610
good shape so the agency is ecstatic I

125
00:06:01,589 --> 00:06:00,130
mean we have started an era a new era of

126
00:06:03,300 --> 00:06:01,599
exploration of Mars with this mission

127
00:06:06,029 --> 00:06:03,310
not just technologically but

128
00:06:08,790 --> 00:06:06,039
scientifically as John said I hope we

129
00:06:11,279 --> 00:06:08,800
have more work than the scientists can

130
00:06:13,379 --> 00:06:11,289
actually handle once we get to the

131
00:06:15,170 --> 00:06:13,389
surface I expect them all to be overrun

132
00:06:18,270 --> 00:06:15,180
with data that they've never seen before

133
00:06:20,399 --> 00:06:18,280
I expect the public to have images

134
00:06:22,649 --> 00:06:20,409
vistas that we've never seen before

135
00:06:24,749 --> 00:06:22,659
either down in the bottom of Gale Crater

136
00:06:27,120 --> 00:06:24,759
when we land those first images are

137
00:06:28,980 --> 00:06:27,130
going to just be stunning I believe

138
00:06:31,740 --> 00:06:28,990

it'll be like sitting at the bottom of

139
00:06:33,089 --> 00:06:31,750
the Grand Canyon I think so we are we

140
00:06:35,790 --> 00:06:33,099
are absolutely ecstatic can't wait to

141
00:06:38,700 --> 00:06:35,800
get to Mars also need to thank the JPL

142
00:06:41,070 --> 00:06:38,710
team you and your guys John for

143
00:06:43,469 --> 00:06:41,080
forgetting us to this point it's an

144
00:06:46,020 --> 00:06:43,479
enormous mission it's an equivalent of

145
00:06:47,760 --> 00:06:46,030
three missions frankly and quite an

146
00:06:49,740 --> 00:06:47,770
undertaking science fiction is now

147
00:06:51,959 --> 00:06:49,750
science fact we're flying to Mars we get

148
00:06:54,839 --> 00:06:51,969
him on that get it on the ground and see

149
00:06:57,089 --> 00:06:54,849
what we find thank you Doug we're ready

150
00:06:58,560 --> 00:06:57,099
now to take questions please give your

151
00:07:00,209 --> 00:06:58,570
name and your affiliation when the

152
00:07:02,189 --> 00:07:00,219
microphone comes to you let's start here

153
00:07:03,930 --> 00:07:02,199
the front with Marcia Marcia Dunn

154
00:07:06,209 --> 00:07:03,940
Associated Press probably for mr. thigh

155
00:07:09,420 --> 00:07:06,219
singer but you know we've heard that the

156
00:07:11,600 --> 00:07:09,430
Bermuda Triangle awaits you how is that

157
00:07:13,890 --> 00:07:11,610
even on your mind today I mean are you

158
00:07:15,870 --> 00:07:13,900
quickly putting the launch behind as a

159
00:07:19,999 --> 00:07:15,880
success in now looking forward to this

160
00:07:23,850 --> 00:07:20,009
eight-month cruise or launch what lunch

161
00:07:25,679 --> 00:07:23,860
exactly exactly um well you can't you

162
00:07:27,959 --> 00:07:25,689
know we've clearly been thinking about

163
00:07:29,249 --> 00:07:27,969

entry sent landing for for quite a while

164
00:07:30,749 --> 00:07:29,259
as well as thinking about the surface

165
00:07:33,509 --> 00:07:30,759
mission for a while but you gotta you

166
00:07:35,999 --> 00:07:33,519
know today's today and we've me feel

167
00:07:37,769 --> 00:07:36,009
everybody enjoy the moment we all

168
00:07:40,709 --> 00:07:37,779
recognize this as a prologue for the

169
00:07:43,709 --> 00:07:40,719
mission necessary but not I mean but not

170
00:07:44,939 --> 00:07:43,719
sufficient and and we all have our work

171
00:07:47,069 --> 00:07:44,949
cut out for us in the next eight and a

172
00:07:49,859 --> 00:07:47,079
half months to prepare for a surface

173
00:07:51,809 --> 00:07:49,869
mission and do the final I totting it

174
00:07:56,100 --> 00:07:51,819
and T crossing for you yell but but

175
00:07:58,109 --> 00:07:56,110
today is a great day I do Jim Siegel

176
00:08:00,799 --> 00:07:58,119
celebration independent newspaper I

177
00:08:03,959 --> 00:08:00,809
believe this one might be for Doug I

178
00:08:06,029 --> 00:08:03,969
noticed in some of the press materials

179
00:08:08,189 --> 00:08:06,039
that we receive their been maybe 20 or

180
00:08:11,549 --> 00:08:08,199
30 different missions that have been to

181
00:08:14,309 --> 00:08:11,559
send to Mars or less attempted since

182
00:08:17,519 --> 00:08:14,319
nineteen sixty and there are several

183
00:08:18,869 --> 00:08:17,529
that are planned or perhaps not budgeted

184
00:08:21,059 --> 00:08:18,879
but at least planned and I wonder if you

185
00:08:24,689 --> 00:08:21,069
could tell us a little bit about what's

186
00:08:28,350 --> 00:08:24,699
the next step is after after curiosity

187
00:08:30,659 --> 00:08:28,360
and the Mars Science Laboratory sure the

188
00:08:32,790 --> 00:08:30,669

next mission is an orbiter the Maven

189
00:08:35,670 --> 00:08:32,800
mission so we'll be back in twenty six

190
00:08:38,249 --> 00:08:35,680
months so we told the ula guys and the

191
00:08:39,659 --> 00:08:38,259
lucky or the Kennedy Space Center folks

192
00:08:42,540 --> 00:08:39,669
this morning to be prepared we are

193
00:08:44,159 --> 00:08:42,550
coming back so maven mission is an

194
00:08:47,670 --> 00:08:44,169
exciting mission it is an orbiter as I

195
00:08:50,369 --> 00:08:47,680
mentioned but it's also an atmospheric

196
00:08:52,769 --> 00:08:50,379
xscape rate mission so one of the keys

197
00:08:54,720 --> 00:08:52,779
to what's happened to Mars and moving it

198
00:08:57,230 --> 00:08:54,730
from me I'm talking about your category

199
00:09:00,360 --> 00:08:57,240
now here's poked me when I say it wrong

200
00:09:02,280 --> 00:09:00,370
moving from from a wet planet in a warm

201
00:09:03,749 --> 00:09:02,290
and wet planet in the past to a cold dry

202
00:09:05,519 --> 00:09:03,759
planet that we know now with water

203
00:09:08,069 --> 00:09:05,529
that's significantly under the surface

204
00:09:10,710 --> 00:09:08,079
but at the poles is what happened to the

205
00:09:13,019 --> 00:09:10,720
atmosphere and mavens mission is called

206
00:09:14,910 --> 00:09:13,029
arana me and the job is to try to help

207
00:09:17,040 --> 00:09:14,920
understand what the escape rates of the

208
00:09:18,990 --> 00:09:17,050
atmosphere are now the interaction with

209
00:09:20,910 --> 00:09:19,000
the solar wind and if we can try to

210
00:09:23,009 --> 00:09:20,920
understand the history of the atmosphere

211
00:09:24,749 --> 00:09:23,019
that actually helped change the planet

212
00:09:27,439 --> 00:09:24,759
so it's a planetary evolution in a way

213
00:09:31,980 --> 00:09:27,449

mission that's the next exciting mission

214
00:09:33,300 --> 00:09:31,990
that's a 2013 launch and after that

215
00:09:35,460 --> 00:09:33,310
we're still in disgust

216
00:09:36,390 --> 00:09:35,470
with the Europeans we're looking at as

217
00:09:38,040 --> 00:09:36,400
you said there's a number of different

218
00:09:39,330 --> 00:09:38,050
missions that were planning potentially

219
00:09:41,820 --> 00:09:39,340
trace gas emissions which is what we'd

220
00:09:44,490 --> 00:09:41,830
like to do hopefully another Lander in

221
00:09:46,170 --> 00:09:44,500
18 that will continue moving the science

222
00:09:50,700 --> 00:09:46,180
forward that ms l will start in that new

223
00:09:53,040 --> 00:09:50,710
era of seeking the signs of life just a

224
00:09:55,530 --> 00:09:53,050
quick follow-up how many additional

225
00:09:58,500 --> 00:09:55,540
missions would you envision then between

226
00:10:03,480 --> 00:09:58,510
now and when we might actually try

227
00:10:05,579 --> 00:10:03,490
manned exploration of the planet there's

228
00:10:07,650 --> 00:10:05,589
a series of precursor measurements that

229
00:10:10,079 --> 00:10:07,660
need to be done better understanding of

230
00:10:12,530 --> 00:10:10,089
the dust and of the regolith and how it

231
00:10:16,890 --> 00:10:12,540
interacts with hardware and equipment

232
00:10:19,890 --> 00:10:16,900
toxicity of the soils how easy it is to

233
00:10:21,540 --> 00:10:19,900
extract water and things from from from

234
00:10:23,730 --> 00:10:21,550
the materials that we have on the

235
00:10:25,800 --> 00:10:23,740
surface and maybe other materials it

236
00:10:27,329 --> 00:10:25,810
could be useful that's a series of

237
00:10:29,850 --> 00:10:27,339
precursor missions that we actually

238
00:10:31,800 --> 00:10:29,860

don't have on the books quite yet we've

239
00:10:33,269 --> 00:10:31,810
had years of discussion about what those

240
00:10:35,760 --> 00:10:33,279
might be and how to go about those

241
00:10:37,260 --> 00:10:35,770
things but there's a balance of

242
00:10:39,150 --> 00:10:37,270
scientific missions and human

243
00:10:41,940 --> 00:10:39,160
exploration precursor missions that have

244
00:10:45,090 --> 00:10:41,950
yet to be discerned what that balance is

245
00:10:46,800 --> 00:10:45,100
going to be the big the big issue with

246
00:10:49,440 --> 00:10:46,810
getting humans to Mars frankly is

247
00:10:51,540 --> 00:10:49,450
entered descent and landing ptin the

248
00:10:53,340 --> 00:10:51,550
team the Mars exploration program are

249
00:10:56,040 --> 00:10:53,350
about to put the largest vehicle on the

250
00:10:59,130 --> 00:10:56,050
surface ever put down a metric ton well

251
00:11:00,480 --> 00:10:59,140
900 kilograms to be exact when you're

252
00:11:02,310 --> 00:11:00,490
talking about humans tomorrow's you're

253
00:11:04,410 --> 00:11:02,320
talking an order of magnitude almost

254
00:11:06,180 --> 00:11:04,420
more than that you're talking well

255
00:11:08,970 --> 00:11:06,190
couple of orders magnitude in some cases

256
00:11:12,360 --> 00:11:08,980
you're talkin 40 50 60 killer kilotons

257
00:11:13,980 --> 00:11:12,370
and metric tons excuse me we don't know

258
00:11:16,440 --> 00:11:13,990
how to do that yet we actually don't

259
00:11:17,940 --> 00:11:16,450
know how to do that yet that's more of

260
00:11:20,610 --> 00:11:17,950
the technology tall pole than the

261
00:11:26,910 --> 00:11:20,620
scientific precursor missions are mm-hmm

262
00:11:29,730 --> 00:11:26,920
re i'm irene klotz with Reuters in one

263
00:11:31,560 --> 00:11:29,740

of the earlier briefings on this week i

264
00:11:34,230 --> 00:11:31,570
guess it's still mike mainland was

265
00:11:36,570 --> 00:11:34,240
talking about the huge amounts of data

266
00:11:39,870 --> 00:11:36,580
that will need to be coming back just

267
00:11:41,370 --> 00:11:39,880
from the images and if any of you could

268
00:11:44,340 --> 00:11:41,380
just talk a little bit about what your

269
00:11:46,630 --> 00:11:44,350
plan is for managing the communications

270
00:11:48,730 --> 00:11:46,640
and if there's a backup in case

271
00:11:52,960 --> 00:11:48,740
mro something happens with it and that's

272
00:11:57,190 --> 00:11:52,970
not available they seem both to be

273
00:11:59,410 --> 00:11:57,200
looking at me don't date well we we have

274
00:12:03,340 --> 00:11:59,420
a UHF relay communications plan through

275
00:12:05,320 --> 00:12:03,350
both Odyssey and mro & and we do have a

276
00:12:09,850 --> 00:12:05,330
very very limited expand communication

277
00:12:12,670 --> 00:12:09,860
with the ground so I think that you know

278
00:12:15,010 --> 00:12:12,680
we will prioritize the data and send it

279
00:12:16,360 --> 00:12:15,020
down in the priorities that both the

280
00:12:21,250 --> 00:12:16,370
engineers and the scientists want to

281
00:12:22,720 --> 00:12:21,260
have is it is likely that the with the

282
00:12:24,400 --> 00:12:22,730
cameras being able to take so many

283
00:12:25,510 --> 00:12:24,410
pictures that we are going to have data

284
00:12:27,520 --> 00:12:25,520
that we're not going to be able to ever

285
00:12:29,830 --> 00:12:27,530
return I think that we will have to

286
00:12:31,900 --> 00:12:29,840
prioritize and send send it send it back

287
00:12:33,580 --> 00:12:31,910
and that's just the fact that our

288
00:12:36,540 --> 00:12:33,590

telemetry link is not as good as our

289
00:12:42,190 --> 00:12:36,550
data acquisition process on the planet I

290
00:12:43,720 --> 00:12:42,200
think that we firmly expect mro there's

291
00:12:45,340 --> 00:12:43,730
no reason not to believe that mro will

292
00:12:46,600 --> 00:12:45,350
be there for the entire mission and it's

293
00:12:48,910 --> 00:12:46,610
doing the extended mission I think

294
00:12:50,410 --> 00:12:48,920
Odyssey is a little bit more of a

295
00:12:51,700 --> 00:12:50,420
question mark although the latest eight

296
00:12:53,890 --> 00:12:51,710
as I've had on its gas utilization

297
00:12:56,080 --> 00:12:53,900
indicate that it will it is still quite

298
00:12:59,650 --> 00:12:56,090
an expected life so so that's where we

299
00:13:02,860 --> 00:12:59,660
are I can inject on that also maven is

300
00:13:04,840 --> 00:13:02,870
carrying electra radios also so electra

301
00:13:07,630 --> 00:13:04,850
radios are a software reprogrammable

302
00:13:09,700 --> 00:13:07,640
radio that that it does the primary

303
00:13:11,410 --> 00:13:09,710
uplink downlink from the surface and so

304
00:13:13,630 --> 00:13:11,420
as we go through orbiters that's why

305
00:13:15,430 --> 00:13:13,640
this program is set up as a program and

306
00:13:17,260 --> 00:13:15,440
it's not just individual random missions

307
00:13:19,030 --> 00:13:17,270
that's one of the reasons so we will

308
00:13:21,280 --> 00:13:19,040
refresh that telecom capability of

309
00:13:23,650 --> 00:13:21,290
Odyssey and mro when maven flies because

310
00:13:27,310 --> 00:13:23,660
it'll take an electro radio to the

311
00:13:30,490 --> 00:13:27,320
planet as well science question maybe

312
00:13:32,470 --> 00:13:30,500
for you John on the I was just kind of

313
00:13:35,140 --> 00:13:32,480

curious if the if this suite of

314
00:13:37,390 --> 00:13:35,150
instruments that are on curiosity was on

315
00:13:40,060 --> 00:13:37,400
the Viking landers do you think that the

316
00:13:41,590 --> 00:13:40,070
results would be any different or do you

317
00:13:44,500 --> 00:13:41,600
think that the place where the Vikings

318
00:13:48,160 --> 00:13:44,510
Landers touched down is just completely

319
00:13:51,100 --> 00:13:48,170
kind of antithesis to any any search for

320
00:13:53,950 --> 00:13:51,110
organics yeah I you know I think if you

321
00:13:56,680 --> 00:13:53,960
had the Viking Lander 1 in Viking Lander

322
00:13:57,940 --> 00:13:56,690
two sites on the list today they

323
00:13:59,630 --> 00:13:57,950
wouldn't have made it past the first

324
00:14:01,550 --> 00:13:59,640
landing site workshop

325
00:14:03,560 --> 00:14:01,560
and you know you saw it in those days

326
00:14:05,480 --> 00:14:03,570
you get you get what you can get to and

327
00:14:07,400 --> 00:14:05,490
hope that make the most out of it the

328
00:14:09,830 --> 00:14:07,410
big difference we've got now is with the

329
00:14:11,990 --> 00:14:09,840
rover's capability is that we are a

330
00:14:13,370 --> 00:14:12,000
mobile and be with all the

331
00:14:15,110 --> 00:14:13,380
instrumentation and all the people

332
00:14:16,820 --> 00:14:15,120
working on the mission we have a much

333
00:14:19,340 --> 00:14:16,830
better chance to focus in on areas that

334
00:14:24,170 --> 00:14:19,350
we think are promising for the the goals

335
00:14:28,840 --> 00:14:24,180
of investigating past habitability okay

336
00:14:32,960 --> 00:14:28,850
Craig thanks Craig gevalt with aerospace

337
00:14:35,510 --> 00:14:32,970
America kind of a lessons learned to

338
00:14:38,840 --> 00:14:35,520

this point question on development I

339
00:14:43,190 --> 00:14:38,850
think you'd agree that the the

340
00:14:45,980 --> 00:14:43,200
development of msl was perhaps a bigger

341
00:14:48,920 --> 00:14:45,990
cast and NASA believed it would be at

342
00:14:53,270 --> 00:14:48,930
the start if you had it to do over again

343
00:14:59,240 --> 00:14:53,280
what would you do differently let me

344
00:15:01,400 --> 00:14:59,250
take that one yes I do you know NASA is

345
00:15:03,620 --> 00:15:01,410
here to do the hard stuff if we were

346
00:15:06,020 --> 00:15:03,630
doing the easy stuff we wouldn't be NASA

347
00:15:09,230 --> 00:15:06,030
I don't believe have we learned lessons

348
00:15:10,790 --> 00:15:09,240
yeah we sure have we've learned lessons

349
00:15:12,380 --> 00:15:10,800
about how to manage certain things we've

350
00:15:13,790 --> 00:15:12,390
learned lessons technically what works

351
00:15:17,990 --> 00:15:13,800
what doesn't work we've learned lessons

352
00:15:20,480 --> 00:15:18,000
about lead times I we really needed

353
00:15:22,490 --> 00:15:20,490
those two years that we took and it was

354
00:15:24,470 --> 00:15:22,500
important that we did that it was money

355
00:15:27,740 --> 00:15:24,480
that's we're going to see real shortly

356
00:15:28,720 --> 00:15:27,750
is well invested but you know whenever

357
00:15:31,580 --> 00:15:28,730
you're pushing the envelope

358
00:15:33,950 --> 00:15:31,590
scientifically or technically it's going

359
00:15:35,360 --> 00:15:33,960
to be harder than you think it is so I

360
00:15:37,100 --> 00:15:35,370
think the length of time we have for

361
00:15:38,600 --> 00:15:37,110
development is one of the key lessons

362
00:15:40,010 --> 00:15:38,610
that we've learned and our intent as we

363
00:15:42,590 --> 00:15:40,020

go forward is to make sure that we

364
00:15:45,230 --> 00:15:42,600
aren't aren't compressing the different

365
00:15:46,430 --> 00:15:45,240
phases of design and development when

366
00:15:51,730 --> 00:15:46,440
we're actually trying to do something

367
00:15:55,240 --> 00:15:51,740
new and challenging yes right back here

368
00:15:57,740 --> 00:15:55,250
hi Robert Pearlman with collectspace.com

369
00:16:00,170 --> 00:15:57,750
sort of working off of Irene's question

370
00:16:02,210 --> 00:16:00,180
earlier about communication management

371
00:16:05,320 --> 00:16:02,220
how will curiosity's arrival on the

372
00:16:08,420 --> 00:16:05,330
planet affect opportunities mission will

373
00:16:11,220 --> 00:16:08,430
priority be given to curiosity in terms

374
00:16:13,650 --> 00:16:11,230
of communicating with earth

375
00:16:18,150 --> 00:16:13,660
I don't necessarily think that that's

376
00:16:21,750 --> 00:16:18,160
that that's an issue the we have the two

377
00:16:23,880 --> 00:16:21,760
orbiters they we are able to track both

378
00:16:26,190 --> 00:16:23,890
orbiters at once with multiple aperture

379
00:16:28,830 --> 00:16:26,200
/ multiple spacecraft were actually

380
00:16:30,690 --> 00:16:28,840
capability for DSN so so right now I

381
00:16:33,960 --> 00:16:30,700
don't see a tremendous conflict in terms

382
00:16:37,560 --> 00:16:33,970
of our data needs and opportunities data

383
00:16:39,180 --> 00:16:37,570
needs as we go forward certainly hope

384
00:16:43,310 --> 00:16:39,190
that opportunity is there so we have

385
00:16:48,840 --> 00:16:46,800
okay okay hi mike wall from space com um

386
00:16:51,390 --> 00:16:48,850
so so you guys are going to be gathering

387
00:16:52,770 --> 00:16:51,400
a ton of data and it's there's going to

388
00:16:54,450 --> 00:16:52,780

be a real bottleneck in terms of sending

389
00:16:55,680 --> 00:16:54,460
at home can you just just kind of talk

390
00:16:57,480 --> 00:16:55,690
about what that's going to mean for

391
00:16:58,680 --> 00:16:57,490
folks who are not necessarily scientists

392
00:17:00,090 --> 00:16:58,690
but interested in what you guys are

393
00:17:02,250 --> 00:17:00,100
discovering like the views in the videos

394
00:17:04,680 --> 00:17:02,260
how fast are you going to be able to get

395
00:17:06,390 --> 00:17:04,690
that stuff down and I mean how how much

396
00:17:07,800 --> 00:17:06,400
are we like that kind of going to be

397
00:17:12,030 --> 00:17:07,810
able to see of these vistas that

398
00:17:14,220 --> 00:17:12,040
curiosity is see I think John may

399
00:17:17,130 --> 00:17:14,230
correct me but I think our current data

400
00:17:19,890 --> 00:17:17,140
rate is around is 250 megabytes per day

401
00:17:22,650 --> 00:17:19,900
that we should get down so that that

402
00:17:24,420 --> 00:17:22,660
allows quite a rich amount of data I

403
00:17:25,980 --> 00:17:24,430
don't don't you know in my caution

404
00:17:27,300 --> 00:17:25,990
before I certainly even want to indicate

405
00:17:29,190 --> 00:17:27,310
that we're going to get one tenth or

406
00:17:31,170 --> 00:17:29,200
100th of the pictures down I don't think

407
00:17:32,130 --> 00:17:31,180
that's the case but certainly we're not

408
00:17:33,960 --> 00:17:32,140
going to get a hundred percent of the

409
00:17:36,060 --> 00:17:33,970
pictures down and we will pick and

410
00:17:37,410 --> 00:17:36,070
choose because we will the scientists

411
00:17:39,810 --> 00:17:37,420
will want very much to get the right

412
00:17:41,790 --> 00:17:39,820
context camera right context pictures to

413
00:17:43,950 --> 00:17:41,800

do the the rest of science investigation

414
00:17:46,500 --> 00:17:43,960
that they need to do well you just add

415
00:17:47,820 --> 00:17:46,510
to that a little bit the principal

416
00:17:50,220 --> 00:17:47,830
investigator Mike male and when he

417
00:17:54,120 --> 00:17:50,230
designed the cameras each camera has its

418
00:17:56,280 --> 00:17:54,130
own buffer which is eight gigs and the

419
00:17:57,540 --> 00:17:56,290
the science plan this time around is

420
00:17:59,880 --> 00:17:57,550
going to be a little bit different than

421
00:18:01,470 --> 00:17:59,890
what happened with mer on mer the

422
00:18:04,440 --> 00:18:01,480
science team would look at the nav cam

423
00:18:07,530 --> 00:18:04,450
images and then based on those select

424
00:18:09,780 --> 00:18:07,540
some sub set of images to then shoot

425
00:18:11,310 --> 00:18:09,790
with the pan camp this time around what

426
00:18:13,410 --> 00:18:11,320
the P I would like to do is shoot a

427
00:18:15,630 --> 00:18:13,420
broader vista right away and return

428
00:18:17,880 --> 00:18:15,640
thumbnails all thumbnails will come back

429
00:18:20,400 --> 00:18:17,890
when the size team will actually look at

430
00:18:22,230 --> 00:18:20,410
those color thumbnails and from that be

431
00:18:24,790 --> 00:18:22,240
able to select what subset you would

432
00:18:27,400 --> 00:18:24,800
actually downlink so the buffers exist

433
00:18:29,770 --> 00:18:27,410
as a date of management process to allow

434
00:18:32,200 --> 00:18:29,780
much bigger data sets to be acquired

435
00:18:33,850 --> 00:18:32,210
with the full intention that some some

436
00:18:39,100 --> 00:18:33,860
subset of it will never be returned

437
00:18:43,290 --> 00:18:39,110
probably scott powers me orlando

438
00:18:45,550 --> 00:18:43,300

sentinel Pete are there any upcoming

439
00:18:47,230 --> 00:18:45,560
significant milestones or challenges

440
00:18:48,760 --> 00:18:47,240
between now and August for this

441
00:18:51,970 --> 00:18:48,770
flighters it could be nice cruise for

442
00:18:54,340 --> 00:18:51,980
eight and a half months yes we've got an

443
00:18:57,010 --> 00:18:54,350
engineering check out that will occur in

444
00:18:59,040 --> 00:18:57,020
a few weeks and a scientist remit check

445
00:19:01,960 --> 00:18:59,050
out that will occur sometime thereafter

446
00:19:04,870 --> 00:19:01,970
we have of course sixty to eject

447
00:19:06,490 --> 00:19:04,880
reconnection maneuvers to engage in the

448
00:19:10,720 --> 00:19:06,500
first one will be about 15 days out from

449
00:19:14,620 --> 00:19:10,730
today the second one approximately two

450
00:19:16,810 --> 00:19:14,630
months out and and the third one about a

451
00:19:18,700 --> 00:19:16,820
month or so before we get to Mars in the

452
00:19:21,220 --> 00:19:18,710
last three or four fine-tuning the entry

453
00:19:24,610 --> 00:19:21,230
descent and landing corridor we are also

454
00:19:27,670 --> 00:19:24,620
planning to software loads one in May to

455
00:19:30,760 --> 00:19:27,680
to be the final update of the software

456
00:19:33,940 --> 00:19:30,770
for edl and in the last phase of the

457
00:19:35,860 --> 00:19:33,950
mission and and one in June for surface

458
00:19:37,690 --> 00:19:35,870
mission so those are the key kind of

459
00:19:40,030 --> 00:19:37,700
major events that that will be engaged

460
00:19:41,800 --> 00:19:40,040
on the spacecraft on the ground will be

461
00:19:43,870 --> 00:19:41,810
engaging and operational readiness test

462
00:19:45,730 --> 00:19:43,880
and we have about ten plan between now

463
00:19:47,170 --> 00:19:45,740

and August solar we're going to be

464
00:19:48,850 --> 00:19:47,180
clipping often more than one a month

465
00:19:50,050 --> 00:19:48,860
three of them for entry descent landing

466
00:19:55,030 --> 00:19:50,060
and some of them for the surface

467
00:19:56,950 --> 00:19:55,040
operations between now and when it

468
00:19:59,380 --> 00:19:56,960
reaches Mars right the first one the

469
00:20:01,000 --> 00:19:59,390
first there's a major aim bias that

470
00:20:02,680 --> 00:20:01,010
takes place when you go to Mars because

471
00:20:04,750 --> 00:20:02,690
the third state excuse me the second

472
00:20:07,300 --> 00:20:04,760
stage the Centaurs also going to Mars

473
00:20:09,040 --> 00:20:07,310
and it's not treated from a planetary

474
00:20:11,590 --> 00:20:09,050
protection standpoint the same way the

475
00:20:13,420 --> 00:20:11,600
spacecraft is treated so the aim point

476
00:20:14,740 --> 00:20:13,430
right now is quite a bit away from Mars

477
00:20:16,480 --> 00:20:14,750
and so the first directory correction

478
00:20:18,490 --> 00:20:16,490
maneuver will be the to correct the

479
00:20:23,460 --> 00:20:18,500
aimpoint for what we want the entry

480
00:20:25,810 --> 00:20:23,470
point to be all the entry all the

481
00:20:27,460 --> 00:20:25,820
treasury collection maneuvers after that

482
00:20:30,270 --> 00:20:27,470
are basically take out the errors of

483
00:20:34,990 --> 00:20:30,280
that first temporary protection over

484
00:20:36,520 --> 00:20:35,000
okay you can hi ken kremer for

485
00:20:39,850 --> 00:20:36,530
spaceflight magazine

486
00:20:41,350 --> 00:20:39,860
question for John he said the other day

487
00:20:43,120 --> 00:20:41,360
in today also this is not a life

488
00:20:44,530 --> 00:20:43,130

detection mission I wonder if he could

489
00:20:46,600 --> 00:20:44,540
describe a little bit what kind of

490
00:20:49,270 --> 00:20:46,610
instruments you'd like to have to make

491
00:20:52,330 --> 00:20:49,280
it a life detection mission in in the

492
00:20:53,470 --> 00:20:52,340
future and a question for Pete when you

493
00:20:55,030 --> 00:20:53,480
do get to Mars you're going to be

494
00:20:57,430 --> 00:20:55,040
monitoring the weather so you can make

495
00:21:00,120 --> 00:20:57,440
last-minute changes in the entry descent

496
00:21:04,360 --> 00:21:00,130
and landing profile at all and other

497
00:21:07,120 --> 00:21:04,370
atmospheric data tube Thanks your

498
00:21:09,340 --> 00:21:07,130
personal all right so I you know what i

499
00:21:12,970 --> 00:21:09,350
would want is is Watson Watson Watson

500
00:21:14,830 --> 00:21:12,980
lots and lots and lots of Rovers because

501
00:21:16,450 --> 00:21:14,840
what we learn on earth is that you need

502
00:21:18,160 --> 00:21:16,460
lots of humans to go out in the field

503
00:21:20,860 --> 00:21:18,170
and rocks that are three and a half

504
00:21:22,510 --> 00:21:20,870
billion years old to to actually find

505
00:21:24,100 --> 00:21:22,520
something that you can look at and hold

506
00:21:26,620 --> 00:21:24,110
up and hold a press conference like this

507
00:21:29,800 --> 00:21:26,630
and and say you know I've found evidence

508
00:21:31,900 --> 00:21:29,810
of life on the early Earth and and again

509
00:21:33,940 --> 00:21:31,910
I'll emphasize this throughout the

510
00:21:35,770 --> 00:21:33,950
mission the great paradox here is that

511
00:21:38,110 --> 00:21:35,780
water the very thing that enables life

512
00:21:40,270 --> 00:21:38,120
when you convert loose sediment that

513
00:21:42,400 --> 00:21:40,280

might have microorganisms in it and you

514
00:21:45,010 --> 00:21:42,410
convert that to solid rock that requires

515
00:21:47,710 --> 00:21:45,020
circulation of many many pore volumes of

516
00:21:49,860 --> 00:21:47,720
water and water is an oxidant so the

517
00:21:54,310 --> 00:21:49,870
water actually oxidizes the organics and

518
00:21:56,410 --> 00:21:54,320
on earth the exploration for for fossils

519
00:21:59,890 --> 00:21:56,420
that might be President ancient rocks is

520
00:22:01,900 --> 00:21:59,900
is is quite serendipitous you have to

521
00:22:04,030 --> 00:22:01,910
sort of learn how to get to get to a

522
00:22:07,030 --> 00:22:04,040
good spot that looks promising in terms

523
00:22:09,190 --> 00:22:07,040
of kind of cementing the material in

524
00:22:11,380 --> 00:22:09,200
very early on if it happens later on

525
00:22:13,660 --> 00:22:11,390
that's no good you want to get it early

526
00:22:15,640 --> 00:22:13,670
on because most microorganisms degrade

527
00:22:17,740 --> 00:22:15,650
within hours or days so you got to get

528
00:22:19,510 --> 00:22:17,750
them walked in early and with that

529
00:22:21,460 --> 00:22:19,520
paradigm then you begin to just poke

530
00:22:23,140 --> 00:22:21,470
around and it's just really just

531
00:22:26,140 --> 00:22:23,150
collecting many different kinds of rocks

532
00:22:28,240 --> 00:22:26,150
so I would imagine that what we could do

533
00:22:31,060 --> 00:22:28,250
as far as exploring ancient Mars is

534
00:22:32,830 --> 00:22:31,070
concerned as you do need to explore

535
00:22:34,660 --> 00:22:32,840
probably a couple of different of these

536
00:22:38,110 --> 00:22:34,670
landing sites and learn to become

537
00:22:41,170 --> 00:22:38,120
familiar with the the patterns by which

538
00:22:44,650 --> 00:22:41,180

water converted materials including

539
00:22:46,240 --> 00:22:44,660
potential organics into rocks so and

540
00:22:48,610 --> 00:22:46,250
then in addition to that you would need

541
00:22:49,810 --> 00:22:48,620
very specialized microscopes that that

542
00:22:52,720 --> 00:22:49,820
you could you

543
00:22:54,520 --> 00:22:52,730
used to take rocks on earth we cut them

544
00:22:56,980 --> 00:22:54,530
so thin you can pass light through them

545
00:22:58,390 --> 00:22:56,990
and then you can see actually cellular

546
00:23:02,050 --> 00:22:58,400
structure and distinguish that from

547
00:23:04,030 --> 00:23:02,060
abiotic processes the other option is to

548
00:23:05,890 --> 00:23:04,040
find what you think really is the it's

549
00:23:09,190 --> 00:23:05,900
sort of the glory hole and get a piece

550
00:23:10,930 --> 00:23:09,200
of and return it back to earth so you

551
00:23:12,310 --> 00:23:10,940
know I think that latter option is the

552
00:23:20,380 --> 00:23:12,320
direction that the Mars program is

553
00:23:23,590 --> 00:23:20,390
headed in okay yeah the the the current

554
00:23:25,410 --> 00:23:23,600
instruments on mro and an odyssey and

555
00:23:28,420 --> 00:23:25,420
Mars Express will in fact look at the

556
00:23:29,890 --> 00:23:28,430
atmosphere and give us data on any

557
00:23:31,930 --> 00:23:29,900
changes in the atmosphere that we might

558
00:23:33,100 --> 00:23:31,940
see we don't expect to this to be to

559
00:23:35,260 --> 00:23:33,110
have a dust storm because this is not

560
00:23:37,270 --> 00:23:35,270
the storm season but there could be

561
00:23:39,280 --> 00:23:37,280
inflation in the atmosphere as a result

562
00:23:41,680 --> 00:23:39,290
of other processes our entry descent and

563
00:23:43,650 --> 00:23:41,690

landing simulations and testing has

564
00:23:46,330 --> 00:23:43,660
taken a look at extremely broad

565
00:23:48,820 --> 00:23:46,340
atmospheric distribution in terms of

566
00:23:51,010 --> 00:23:48,830
pressure and density profiles so so I

567
00:23:52,780 --> 00:23:51,020
don't expect any surprises there but

568
00:23:54,400 --> 00:23:52,790
will of course fine tune the entry

569
00:23:58,990 --> 00:23:54,410
descent landing timeline based upon what

570
00:24:02,140 --> 00:23:59,000
we see Jean michalka with talking space

571
00:24:03,640 --> 00:24:02,150
question for John we got a good idea of

572
00:24:06,010 --> 00:24:03,650
what the engineering side is doing on

573
00:24:07,240 --> 00:24:06,020
the cruise out what is the science side

574
00:24:10,600 --> 00:24:07,250
going to be doing on the cruise out

575
00:24:13,210 --> 00:24:10,610
right so Pete mentioned operational

576
00:24:15,040 --> 00:24:13,220
readiness test and we have several of

577
00:24:17,800 --> 00:24:15,050
those planned for the sides team and

578
00:24:20,170 --> 00:24:17,810
what we do is we work with curiosity's

579
00:24:23,050 --> 00:24:20,180
twin which is back at JPL on the testbed

580
00:24:25,720 --> 00:24:23,060
there and it has a high degree of

581
00:24:28,120 --> 00:24:25,730
fidelity compared to what the spacecraft

582
00:24:30,490 --> 00:24:28,130
is it's on its way to Mars and and with

583
00:24:32,740 --> 00:24:30,500
that then we undergo tests where the

584
00:24:34,750 --> 00:24:32,750
team actually thinks about what kind of

585
00:24:38,290 --> 00:24:34,760
sequences they would like to acquire on

586
00:24:39,940 --> 00:24:38,300
the surface of Mars as it were they get

587
00:24:42,220 --> 00:24:39,950
implemented they get built they get

588
00:24:44,440 --> 00:24:42,230

radiated to Mars the data gets returned

589
00:24:46,720 --> 00:24:44,450
back to earth and in this simulation

590
00:24:49,120 --> 00:24:46,730
then the science team gets to practice

591
00:24:52,480 --> 00:24:49,130
with for example how you would do triage

592
00:24:54,040 --> 00:24:52,490
between the amount of data that's

593
00:24:55,840 --> 00:24:54,050
available the amount of power that's

594
00:24:57,460 --> 00:24:55,850
available the amount of time that's a

595
00:24:59,500 --> 00:24:57,470
variable basically the three fundamental

596
00:25:02,830 --> 00:24:59,510
resources that allow us to do the

597
00:25:04,540 --> 00:25:02,840
science experiments and so then you know

598
00:25:06,910 --> 00:25:04,550
help them with the 10 instruments to be

599
00:25:09,550 --> 00:25:06,920
able to learn how to efficiently do

600
00:25:11,620 --> 00:25:09,560
trade offs and and work with this flight

601
00:25:13,540 --> 00:25:11,630
software and will interact with the

602
00:25:16,590 --> 00:25:13,550
engineers it will be required to help us

603
00:25:22,530 --> 00:25:16,600
do everything and lots of training there

604
00:25:26,710 --> 00:25:22,540
yep I'm malankara of Swiss engineering

605
00:25:31,620 --> 00:25:26,720
after this beautiful flight I would like

606
00:25:36,180 --> 00:25:31,630
to know if what do you think about the

607
00:25:43,300 --> 00:25:36,190
international international cooperation

608
00:25:47,560 --> 00:25:43,310
after the program XO marks I think I

609
00:25:49,840 --> 00:25:47,570
have to answer them you know we've been

610
00:25:52,780 --> 00:25:49,850
working with European Space Agency for

611
00:25:55,300 --> 00:25:52,790
several years now and you know we are

612
00:25:58,240 --> 00:25:55,310
continuing to do that I we met last

613
00:26:01,230 --> 00:25:58,250

night to continue discussions it's a

614
00:26:04,060 --> 00:26:01,240
very important partnership for us NASA

615
00:26:07,260 --> 00:26:04,070
with both the 16 mission in the 2018

616
00:26:10,180 --> 00:26:07,270
mission we continue to pursue those and

617
00:26:12,310 --> 00:26:10,190
my 2012 budget that was just passed by

618
00:26:15,280 --> 00:26:12,320
Congress recently supports that activity

619
00:26:17,620 --> 00:26:15,290
and we will continue pressing that as

620
00:26:21,760 --> 00:26:17,630
you know we have excellent international

621
00:26:26,350 --> 00:26:21,770
participation on MSL I hope I get them

622
00:26:29,590 --> 00:26:26,360
all Canada Russia France Germany are all

623
00:26:33,340 --> 00:26:29,600
aboard and Spain thank you and Spain or

624
00:26:36,490 --> 00:26:33,350
all aboard I knew I'd miss one it's been

625
00:26:38,230 --> 00:26:36,500
a long day and so you know we work with

626
00:26:40,900 --> 00:26:38,240
the international community all the time

627
00:26:42,730 --> 00:26:40,910
and this is expanding that with exomars

628
00:26:46,080 --> 00:26:42,740
and we intend to continue to pursue that

629
00:26:50,920 --> 00:26:46,090
so we want that to happen todd todd

630
00:26:54,070 --> 00:26:50,930
halvorson Florida today I was wondering

631
00:26:57,790 --> 00:26:54,080
if you could tell us what you anticipate

632
00:27:00,840 --> 00:26:57,800
to get out of the descent camera what we

633
00:27:05,560 --> 00:27:00,850
will actually see as a product of that

634
00:27:07,870 --> 00:27:05,570
instrument and when we might see it so

635
00:27:10,180 --> 00:27:07,880
the the descent camera turns on just

636
00:27:12,520 --> 00:27:10,190
moments before separation of the of the

637
00:27:14,890 --> 00:27:12,530
heat shield and it acquires all the way

638
00:27:15,480 --> 00:27:14,900

to the surface at about five frames per

639
00:27:19,260 --> 00:27:15,490
second

640
00:27:21,810 --> 00:27:19,270
full color HD resolution and then after

641
00:27:24,000 --> 00:27:21,820
after we touch down it shuts off

642
00:27:27,630 --> 00:27:24,010
nominally with that camera is available

643
00:27:29,910 --> 00:27:27,640
to use throughout the mission on a best

644
00:27:32,460 --> 00:27:29,920
efforts basis after that so that that

645
00:27:34,620 --> 00:27:32,470
data set will be a very large one and

646
00:27:38,100 --> 00:27:34,630
and given the fact that we will want

647
00:27:40,290 --> 00:27:38,110
other critical engineering data to come

648
00:27:43,290 --> 00:27:40,300
down and also some other initial science

649
00:27:45,960 --> 00:27:43,300
products to come down our guess is that

650
00:27:48,000 --> 00:27:45,970
probably initially within a within a

651
00:27:49,290 --> 00:27:48,010
week or two there will be a subset of

652
00:27:50,669 --> 00:27:49,300
the frames that will be a pretty

653
00:27:52,710 --> 00:27:50,679
nice-looking movie that will be

654
00:27:54,870 --> 00:27:52,720
available and probably within a few

655
00:27:56,610 --> 00:27:54,880
months it will be required to down like

656
00:27:58,530 --> 00:27:56,620
all of the frames that would give you

657
00:28:03,450 --> 00:27:58,540
the complete sequence something like

658
00:28:08,549 --> 00:28:03,460
that any further questions yes we have

659
00:28:10,470 --> 00:28:08,559
one over here Thank You Jackie got out

660
00:28:13,110 --> 00:28:10,480
for the sunday telegraph of London and

661
00:28:15,990 --> 00:28:13,120
already our Lord coverage online is

662
00:28:18,480 --> 00:28:16,000
generating the usual array of reader

663
00:28:19,919 --> 00:28:18,490

comments that say that question the

664
00:28:22,380 --> 00:28:19,929
amount of spending on a mission like

665
00:28:24,960 --> 00:28:22,390
this and why are we feeding the world

666
00:28:27,020 --> 00:28:24,970
starving and frivolous and waste of

667
00:28:29,630 --> 00:28:27,030
money do you find that kind of attitude

668
00:28:32,130 --> 00:28:29,640
demoralizing and how do you redress that

669
00:28:33,720 --> 00:28:32,140
that lack of understanding of the

670
00:28:37,500 --> 00:28:33,730
importance of this science that you're

671
00:28:40,140 --> 00:28:37,510
doing yeah I think any one of us could

672
00:28:42,960 --> 00:28:40,150
could take that but people I've often

673
00:28:44,970 --> 00:28:42,970
discussed this especially in the context

674
00:28:46,620 --> 00:28:44,980
of the two years slip you asked in

675
00:28:49,799 --> 00:28:46,630
retrospect you know what what does it

676
00:28:51,780 --> 00:28:49,809
mean that we've done that I think you

677
00:28:54,900 --> 00:28:51,790
look back and at least for this country

678
00:28:56,669 --> 00:28:54,910
you take every child woman and man and

679
00:28:58,919 --> 00:28:56,679
you divide the total price tag by the

680
00:29:01,350 --> 00:28:58,929
number of people and it comes out to

681
00:29:02,700 --> 00:29:01,360
about the cost of a movie so you know

682
00:29:04,169 --> 00:29:02,710
I'll leave you to judge for yourself

683
00:29:05,850 --> 00:29:04,179
whether or not that's a that's a movie

684
00:29:09,840 --> 00:29:05,860
you'd like to see I know that's why I

685
00:29:12,150 --> 00:29:09,850
would I think the cost is a bargain for

686
00:29:13,710 --> 00:29:12,160
education for all the science team

687
00:29:16,380 --> 00:29:13,720
members that represent other countries

688
00:29:18,780 --> 00:29:16,390

as well that this is the stuff that

689
00:29:21,360 --> 00:29:18,790
fuels kids imaginations to go into

690
00:29:23,370 --> 00:29:21,370
science and engineering I can't think of

691
00:29:24,870 --> 00:29:23,380
anything better I have a lot of friends

692
00:29:27,510 --> 00:29:24,880
of mine whose kids were watching early

693
00:29:28,910 --> 00:29:27,520
this morning at JPL and it's about as

694
00:29:32,840 --> 00:29:28,920
good as it gets and I think that's a

695
00:29:34,670 --> 00:29:32,850
investment like to add the standard

696
00:29:37,460 --> 00:29:34,680
cliched of that however which is we

697
00:29:40,630 --> 00:29:37,470
don't spend any money on Mars right we

698
00:29:43,900 --> 00:29:40,640
spend it all here these are high tech

699
00:29:46,490 --> 00:29:43,910
good-paying jobs across the country that

700
00:29:48,290 --> 00:29:46,500
are created when you do something like

701
00:29:49,610 --> 00:29:48,300
this I've not actually counted it up and

702
00:29:51,740 --> 00:29:49,620
I know that there are thousands of

703
00:29:54,950 --> 00:29:51,750
individuals across the country anyway

704
00:29:58,130 --> 00:29:54,960
from high school education to phd's that

705
00:30:00,560 --> 00:29:58,140
are gainfully employed exciting other

706
00:30:03,650 --> 00:30:00,570
people as you said to bring more kids

707
00:30:05,420 --> 00:30:03,660
into the engineering and sciences and

708
00:30:10,820 --> 00:30:05,430
frankly that's what moves society

709
00:30:13,010 --> 00:30:10,830
forward very important all right if

710
00:30:15,380 --> 00:30:13,020
there are no other questions we're going

711
00:30:17,420 --> 00:30:15,390
to conclude but as we go out we're going

712
00:30:19,730 --> 00:30:17,430
to show some video of the spacecraft

713
00:30:22,760 --> 00:30:19,740

separation today which everyone agrees

714
00:30:24,830 --> 00:30:22,770
was quite mind-blowing we're going to go

715
00:30:26,270 --> 00:30:24,840
ahead will show that and then that will

716
00:30:41,020 --> 00:30:26,280
conclude this briefing thank you very

717
00:30:46,820 --> 00:30:41,030
much I have seconds spacecraft snap

718
00:30:52,370 --> 00:30:46,830
achieved our targeted roll rate be a