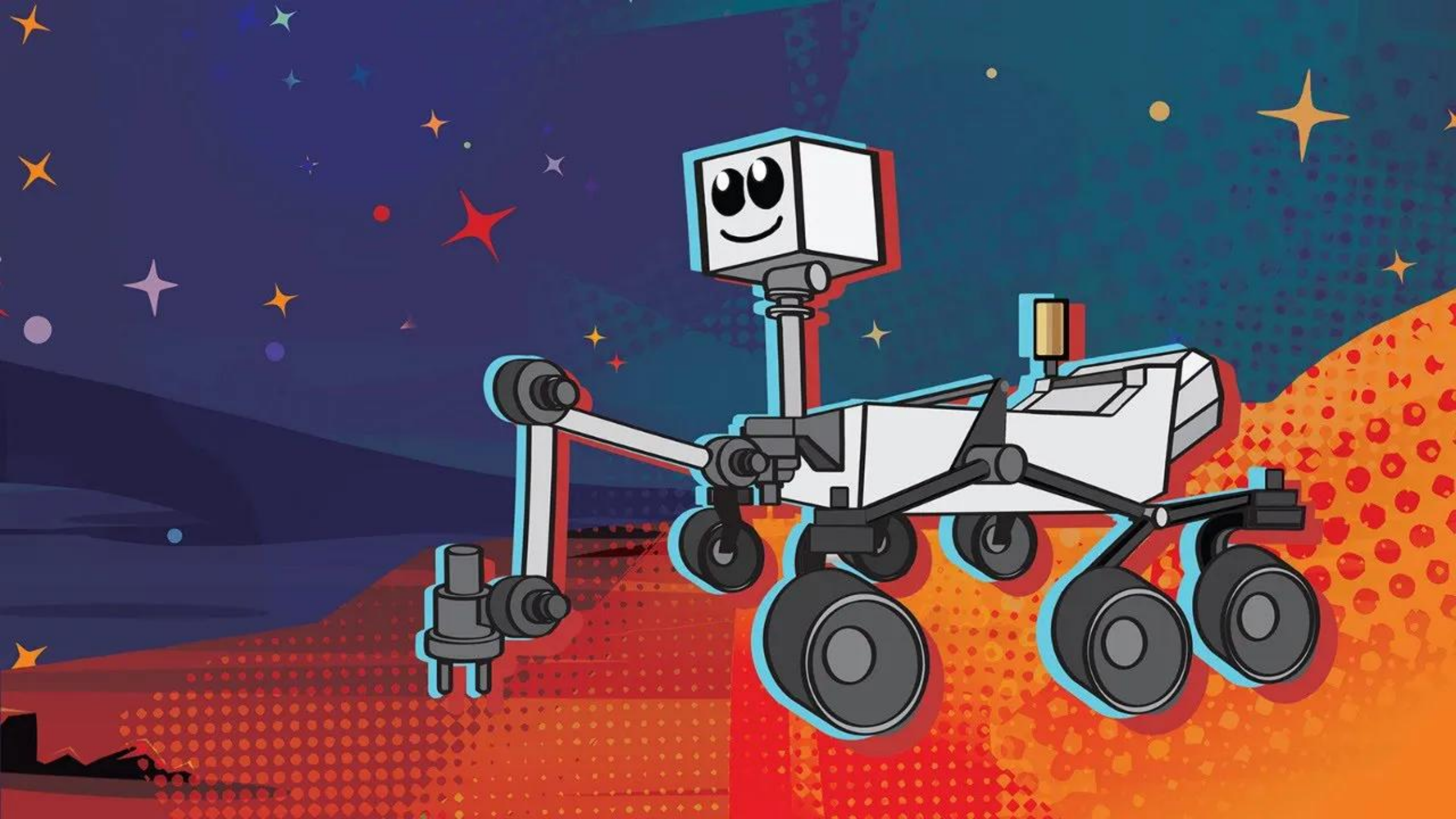

1
00:00:04,400 --> 00:00:02,169
welcome and thank you for standing by

2
00:00:05,749 --> 00:00:04,410
today's call is being recorded

3
00:00:08,570 --> 00:00:05,759
if you have any objections you may

4
00:00:09,890 --> 00:00:08,580
disconnect at this time participants are

5
00:00:11,600 --> 00:00:09,900
in a listen-only mode until the

6
00:00:13,759 --> 00:00:11,610
question-and-answer portion of today's

7
00:00:16,129 --> 00:00:13,769
conference at that time you may press

8
00:00:17,720 --> 00:00:16,139
star 1 on your phone to ask a question I

9
00:00:20,689 --> 00:00:17,730
would now like to turn the conference

10
00:00:24,349 --> 00:00:20,699
over to your host gray Hana luma thank

11
00:00:25,460 --> 00:00:24,359
you you may begin thank you well hello

12
00:00:27,170 --> 00:00:25,470
everyone and welcome to our

13
00:00:29,540 --> 00:00:27,180

teleconference about the newest named

14
00:00:30,769 --> 00:00:29,550
member of NASA's science fleet we've

15
00:00:32,359 --> 00:00:30,779
just announced the name of the Mars

16
00:00:34,400 --> 00:00:32,369
rover that will launch this summer and

17
00:00:36,470 --> 00:00:34,410
today we're celebrating that Rover named

18
00:00:37,310 --> 00:00:36,480
perseverance and the young man who came

19
00:00:39,680 --> 00:00:37,320
up with that name

20
00:00:41,810 --> 00:00:39,690
with us today to answer questions about

21
00:00:43,520 --> 00:00:41,820
the rover and the naming are dr. Thomas

22
00:00:46,220 --> 00:00:43,530
sir Lucan head of NASA's science Mission

23
00:00:49,040 --> 00:00:46,230
Directorate dr. Laurie glaze head of

24
00:00:51,350 --> 00:00:49,050
NASA's Planetary Science Division matt

25
00:00:52,939 --> 00:00:51,360
wallace perseverance mission deputy

26
00:00:56,270 --> 00:00:52,949
project manager at NASA's Jet Propulsion

27
00:00:57,740 --> 00:00:56,280
Laboratory and Alex Mather winner of the

28
00:00:59,510 --> 00:00:57,750
rover naming contest here at Lake

29
00:01:02,270 --> 00:00:59,520
Braddock secondary school in Burke

30
00:01:04,219 --> 00:01:02,280
Virginia before we get to questions a

31
00:01:06,469 --> 00:01:04,229
few quick housekeeping things be sure to

32
00:01:09,740 --> 00:01:06,479
press star 1 to get into question queue

33
00:01:11,480 --> 00:01:09,750
we'll get to as many as we can and there

34
00:01:13,820 --> 00:01:11,490
will be a replay of this call available

35
00:01:17,030 --> 00:01:13,830
for one month from today the replay

36
00:01:20,120 --> 00:01:17,040
number is eight eight eight four three

37
00:01:21,950 --> 00:01:20,130
three two two zero five

38
00:01:24,440 --> 00:01:21,960

I'll repeat that at the end of the call

39
00:01:25,940 --> 00:01:24,450
in case you didn't get that so without

40
00:01:27,560 --> 00:01:25,950
further ado let me turn it over to

41
00:01:29,210 --> 00:01:27,570
Thomas to buchan and Laurie glaze for a

42
00:01:32,300 --> 00:01:29,220
couple of quick comments before we get

43
00:01:34,929 --> 00:01:32,310
started thanks so much great and I just

44
00:01:37,910 --> 00:01:34,939
really I'm so excited to be part of this

45
00:01:39,880 --> 00:01:37,920
but what I lost about this event today

46
00:01:43,490 --> 00:01:39,890
and I what I love about the entire

47
00:01:45,880 --> 00:01:43,500
naming is that what comes together is

48
00:01:49,190 --> 00:01:45,890
the generation of achievers who are

49
00:01:50,810 --> 00:01:49,200
doing the amazing work that actually

50
00:01:53,030 --> 00:01:50,820
built that roller and the next

51
00:01:56,450 --> 00:01:53,040
generation that in many ways will

52
00:01:59,569 --> 00:01:56,460
benefit from it and at the confluence of

53
00:02:03,410 --> 00:01:59,579
those two things that next Artemus

54
00:02:04,160 --> 00:02:03,420
generation and and amazing experts who

55
00:02:07,459 --> 00:02:04,170
are doing this

56
00:02:09,139 --> 00:02:07,469
it's that name perseverance for me what

57
00:02:10,580 --> 00:02:09,149
I love about it from us from an

58
00:02:13,010 --> 00:02:10,590
engineering point of view it's like

59
00:02:13,940 --> 00:02:13,020
having build space instruments that went

60
00:02:16,400 --> 00:02:13,950
to planetary

61
00:02:18,890 --> 00:02:16,410
places and you know having known how

62
00:02:20,930 --> 00:02:18,900
hard that is it is exactly how I feel

63
00:02:22,850 --> 00:02:20,940

yes that's dr. yaste death pulls us out

64
00:02:26,510 --> 00:02:22,860
there but it's the perseverance that

65
00:02:28,220 --> 00:02:26,520
does not let us if there's no

66
00:02:30,590 --> 00:02:28,230
exploration without perseverance and I

67
00:02:32,390 --> 00:02:30,600
really agree with Alex Oren that is

68
00:02:34,580 --> 00:02:32,400
together with the other names that are

69
00:02:36,440 --> 00:02:34,590
there the other thing that as a

70
00:02:39,080 --> 00:02:36,450
scientist the way I think about it is an

71
00:02:42,620 --> 00:02:39,090
another a word which is astrobiology

72
00:02:45,500 --> 00:02:42,630
it's just really a field that in many

73
00:02:48,350 --> 00:02:45,510
ways is a field that like few others is

74
00:02:52,039 --> 00:02:48,360
defined by what our work is at NASA and

75
00:02:55,000 --> 00:02:52,049
it is descriptive for so many missions

76
00:02:58,490 --> 00:02:55,010
that were currently working on including

77
00:03:02,809 --> 00:02:58,500
perseverance or Mars 2020 and so so for

78
00:03:05,000 --> 00:03:02,819
me that really finding life elsewhere

79
00:03:08,270 --> 00:03:05,010
it's just one of those things that of

80
00:03:10,759 --> 00:03:08,280
course we've puzzled over for many

81
00:03:14,330 --> 00:03:10,769
generations I'm just so excited that

82
00:03:18,880 --> 00:03:14,340
with Alex and his generation to be

83
00:03:21,470 --> 00:03:18,890
really opening up that exploration with

84
00:03:22,729 --> 00:03:21,480
perseverance bizarro dad will get there

85
00:03:24,920 --> 00:03:22,739
early next year

86
00:03:27,110 --> 00:03:24,930
and I couldn't be more excited to be

87
00:03:29,360 --> 00:03:27,120
part of that and get the energy of that

88
00:03:32,000 --> 00:03:29,370

next generation of explorers that

89
00:03:33,830 --> 00:03:32,010
hopefully will of course join us and

90
00:03:35,900 --> 00:03:33,840
actually make us even better than we are

91
00:03:40,370 --> 00:03:35,910
today and I want to turn it over to you

92
00:03:44,210 --> 00:03:40,380
Laurie great Thank You Thomas as Thomas

93
00:03:46,759 --> 00:03:44,220
says the perseverance Rover one of its

94
00:03:49,370 --> 00:03:46,769
main goals is does have to do with

95
00:03:50,870 --> 00:03:49,380
astrobiology which is understanding the

96
00:03:53,890 --> 00:03:50,880
types of environments that could have

97
00:03:57,920 --> 00:03:53,900
possibly been places where life to form

98
00:04:00,349 --> 00:03:57,930
many many billions of years ago three

99
00:04:02,210 --> 00:04:00,359
and a half billion years ago on Mars and

100
00:04:04,640 --> 00:04:02,220
the important part about the

101
00:04:06,920 --> 00:04:04,650
perseverance Rover is that it's the

102
00:04:09,530 --> 00:04:06,930
first leg of the first round trip to

103
00:04:11,930 --> 00:04:09,540
Mars the perseverance Rover will be

104
00:04:13,550 --> 00:04:11,940
collecting samples that will be stored

105
00:04:15,559 --> 00:04:13,560
on the surface of Mars until we can go

106
00:04:17,569 --> 00:04:15,569
back and collect those and bring them

107
00:04:19,789 --> 00:04:17,579
back to earth to answer these really

108
00:04:21,860 --> 00:04:19,799
important questions about was that

109
00:04:23,839 --> 00:04:21,870
environment a place that that life could

110
00:04:27,110 --> 00:04:23,849
have taken hold or was there in fact

111
00:04:27,690 --> 00:04:27,120
even some some remnants or fossil

112
00:04:30,090 --> 00:04:27,700
evidence

113
00:04:32,430 --> 00:04:30,100

that of some early life that that might

114
00:04:36,750 --> 00:04:32,440
still be preserved in the surface of

115
00:04:39,360 --> 00:04:36,760
Mars but today is as a really exciting

116
00:04:41,480 --> 00:04:39,370
day where we got to spend a lot of time

117
00:04:44,100 --> 00:04:41,490
here at Lake Braddock secondary school

118
00:04:45,360 --> 00:04:44,110
and I was one of the ones that was

119
00:04:47,490 --> 00:04:45,370
really lucky enough to be on the

120
00:04:49,200 --> 00:04:47,500
interview panel of defiance the nine

121
00:04:52,350 --> 00:04:49,210
finalists and got to talk with Alex

122
00:04:53,970 --> 00:04:52,360
virtually and today I got to meet him in

123
00:04:57,570 --> 00:04:53,980
person and meet many of his classmates

124
00:04:59,100 --> 00:04:57,580
here at the secondary school again all

125
00:05:02,340 --> 00:04:59,110
of these students here are part of that

126
00:05:04,170 --> 00:05:02,350
Artemis generation as NASA with all of

127
00:05:06,060 --> 00:05:04,180
our international and commercial

128
00:05:08,520 --> 00:05:06,070
partners we're we're all going back to

129
00:05:11,220 --> 00:05:08,530
the moon with eyes to getting to Mars

130
00:05:15,470 --> 00:05:11,230
with humans in the future and as a

131
00:05:18,120 --> 00:05:15,480
planetary scientist we're developing and

132
00:05:20,490 --> 00:05:18,130
operating many robotic missions

133
00:05:23,810 --> 00:05:20,500
throughout the solar system leading the

134
00:05:26,730 --> 00:05:23,820
way for future human exploration and

135
00:05:28,680 --> 00:05:26,740
it's all of that work that we do now

136
00:05:30,230 --> 00:05:28,690
that will help us help the artists

137
00:05:32,790 --> 00:05:30,240
monogamous generation in the future

138
00:05:35,450 --> 00:05:32,800

figure out where we're going to go next

139
00:05:37,650 --> 00:05:35,460
what those next destinations will be

140
00:05:40,890 --> 00:05:37,660
with that I'm going to hand it over to

141
00:05:46,080 --> 00:05:40,900
Matt to say a few words about the

142
00:05:49,250 --> 00:05:46,090
perseverance thanks for yeah the

143
00:05:51,450 --> 00:05:49,260
spacecraft is essentially all the

144
00:05:54,030 --> 00:05:51,460
components are now down at Kennedy Space

145
00:05:56,340 --> 00:05:54,040
Center we're going to spend the next few

146
00:05:59,820 --> 00:05:56,350
weeks doing the final assembly and

147
00:06:02,130 --> 00:05:59,830
testing on the individual vehicles and

148
00:06:05,880 --> 00:06:02,140
then we'll start stacking up this

149
00:06:08,220 --> 00:06:05,890
spacecraft that'll take a couple months

150
00:06:11,790 --> 00:06:08,230
and then we'll be ready to integrate it

151
00:06:15,300 --> 00:06:11,800
on to the launch vehicle and get it out

152
00:06:17,490 --> 00:06:15,310
to the pad for our July 17th opening of

153
00:06:20,960 --> 00:06:17,500
the launch window so things are going

154
00:06:23,520 --> 00:06:20,970
well on on the mission on the project

155
00:06:26,880 --> 00:06:23,530
and we're super excited to have a name

156
00:06:30,630 --> 00:06:26,890
the team was participating in all of the

157
00:06:33,390 --> 00:06:30,640
activities today at the event and and we

158
00:06:38,280 --> 00:06:33,400
love Alex's selection of a name for our

159
00:06:39,930 --> 00:06:38,290
Rover all right thanks Matt we have been

160
00:06:41,070 --> 00:06:39,940
asking for questions on social media

161
00:06:42,719 --> 00:06:41,080
with hash tag ask

162
00:06:46,649 --> 00:06:42,729
so I'm gonna start with a couple of

163
00:06:48,659 --> 00:06:46,659

those obvious on Twitter asks what was

164
00:06:50,670 --> 00:06:48,669
the biggest challenge faced by the team

165
00:06:55,170 --> 00:06:50,680
I think that's probably one for you Matt

166
00:06:57,270 --> 00:06:55,180
I mean the perseverance team well

167
00:06:59,969 --> 00:06:57,280
whenever you're putting the spacecraft

168
00:07:01,800 --> 00:06:59,979
together you're gonna run up against

169
00:07:05,879 --> 00:07:01,810
some obstacles and some challenges

170
00:07:07,679 --> 00:07:05,889
they're just very complex vehicles you

171
00:07:10,230 --> 00:07:07,689
know we start started with the concept

172
00:07:13,439 --> 00:07:10,240
development on this almost 10 years ago

173
00:07:17,010 --> 00:07:13,449
and these missions come with a number of

174
00:07:19,200 --> 00:07:17,020
particularly difficult aspects to them

175
00:07:21,149 --> 00:07:19,210
getting down on to the surface is one of

176
00:07:21,629 --> 00:07:21,159
them so we call entry descent and

177
00:07:24,260 --> 00:07:21,639
landing

178
00:07:28,860 --> 00:07:24,270
we call it the seven minutes of Terror

179
00:07:32,999 --> 00:07:28,870
and the systems that get us from from

180
00:07:35,070 --> 00:07:33,009
the approach to Mars all the way down to

181
00:07:38,519 --> 00:07:35,080
jezero crater which is our targeted

182
00:07:40,320 --> 00:07:38,529
landing site our critical the space

183
00:07:42,749 --> 00:07:40,330
because that has to perform all those

184
00:07:44,610 --> 00:07:42,759
functions perfectly and it has to do it

185
00:07:46,909 --> 00:07:44,620
autonomously there's no interaction with

186
00:07:48,930 --> 00:07:46,919
the operators during that period of time

187
00:07:51,420 --> 00:07:48,940
that's always one of the biggest

188
00:07:54,629 --> 00:07:51,430

challenges for for a system like this

189
00:07:57,689 --> 00:07:54,639
and then I'll also mention that our our

190
00:08:02,490 --> 00:07:57,699
Mars rovers are a little unique in that

191
00:08:05,939 --> 00:08:02,500
they have a lot of mechanisms onboard

192
00:08:09,209 --> 00:08:05,949
and mechanisms are difficult things to

193
00:08:12,300 --> 00:08:09,219
develop because they have to operate in

194
00:08:15,450 --> 00:08:12,310
a very harsh Martian environment one

195
00:08:16,769 --> 00:08:15,460
that cycles from minus 180 degrees

196
00:08:18,469 --> 00:08:16,779
Fahrenheit all the way up to room

197
00:08:21,209 --> 00:08:18,479
temperature pretty much every single day

198
00:08:23,610 --> 00:08:21,219
they have to deal with very fine dust

199
00:08:26,339 --> 00:08:23,620
you know almost all compounder and you

200
00:08:27,510 --> 00:08:26,349
have to protect your mechanisms from

201
00:08:29,219 --> 00:08:27,520
those things and we have a lot of

202
00:08:30,990 --> 00:08:29,229
mechanisms on the vehicle not just

203
00:08:33,389 --> 00:08:31,000
mobility and mass but our sampling

204
00:08:36,209 --> 00:08:33,399
system and so those are always big big

205
00:08:40,019 --> 00:08:36,219
challenges so the team knows a lot about

206
00:08:42,360 --> 00:08:40,029
perseverance and and those are a couple

207
00:08:45,590 --> 00:08:42,370
of the things we we worked our way

208
00:08:48,810 --> 00:08:45,600
through the last eight nine years

209
00:08:51,059 --> 00:08:48,820
okay thanks Matt alright operator we're

210
00:08:54,449 --> 00:08:51,069
ready for our next question from one of

211
00:08:55,170 --> 00:08:54,459
the online participants certainly

212
00:08:56,850 --> 00:08:55,180
another my

213
00:09:00,030 --> 00:08:56,860

if you'd like to ask a question please

214
00:09:02,280 --> 00:09:00,040
press star followed by one and make sure

215
00:09:03,870 --> 00:09:02,290
that your line is unmuted our first

216
00:09:07,579 --> 00:09:03,880
question comes from Mike wall with

217
00:09:13,410 --> 00:09:07,589
space.com your line is open

218
00:09:14,820 --> 00:09:13,420
thank you all and yes like um can like I

219
00:09:16,949 --> 00:09:14,830
just like to ask a quick question of dr.

220
00:09:18,990 --> 00:09:16,959
Z um could you just say a little bit

221
00:09:21,780 --> 00:09:19,000
about how important like a rover

222
00:09:23,370 --> 00:09:21,790
missions name is to the overall be tied

223
00:09:24,990 --> 00:09:23,380
to the mission and to the outreach just

224
00:09:27,449 --> 00:09:25,000
what would it mean in terms of being

225
00:09:29,310 --> 00:09:27,459
able to connect like with the public and

226
00:09:30,900 --> 00:09:29,320
kind of follow on that it seems like

227
00:09:32,040 --> 00:09:30,910
everybody is already calling it I mean

228
00:09:33,900 --> 00:09:32,050
we already have a nickname and that's

229
00:09:36,510 --> 00:09:33,910
Percy and and how do you guys feel about

230
00:09:40,230 --> 00:09:36,520
Percy as a nickname for this thing thank

231
00:09:43,650 --> 00:09:40,240
you I think so much for a question I

232
00:09:46,320 --> 00:09:43,660
don't know how you feel yourself kind of

233
00:09:50,340 --> 00:09:46,330
a person but I do think of rowers as

234
00:09:53,120 --> 00:09:50,350
these robotic the these robotic

235
00:09:55,620 --> 00:09:53,130
personalities tooth out there and our

236
00:09:57,540 --> 00:09:55,630
really making the missions I think of

237
00:09:59,250 --> 00:09:57,550
opportunity I think of spirit you know

238
00:10:03,630 --> 00:09:59,260

first opportunity also with the next

239
00:10:05,730 --> 00:10:03,640
name RP that it's very very soon people

240
00:10:09,900 --> 00:10:05,740
were use and just because it's a multi

241
00:10:12,180 --> 00:10:09,910
symbol work for me the name whether it's

242
00:10:15,870 --> 00:10:12,190
perseverance or courtesy people call it

243
00:10:20,310 --> 00:10:15,880
that way is is really part of that

244
00:10:23,040 --> 00:10:20,320
character of that of that mission that

245
00:10:25,230 --> 00:10:23,050
we will relate to as we go forward it

246
00:10:29,070 --> 00:10:25,240
will be in a news I many times and we

247
00:10:31,530 --> 00:10:29,080
will don't think of it again and not

248
00:10:33,600 --> 00:10:31,540
only us as researchers and engineers but

249
00:10:35,610 --> 00:10:33,610
people all over the world will connect

250
00:10:38,100 --> 00:10:35,620
to it and in a direct fashion so is it

251
00:10:41,069 --> 00:10:38,110
important I think it really is important

252
00:10:44,940 --> 00:10:41,079
for us especially in our Mars program in

253
00:10:47,970 --> 00:10:44,950
our with it with our with our Rovers

254
00:10:49,710 --> 00:10:47,980
that is it's just a really important

255
00:10:52,199 --> 00:10:49,720
part and it has helped us to also

256
00:10:55,319 --> 00:10:52,209
explain the importance of science and

257
00:10:57,569 --> 00:10:55,329
and the excitement of engineering do so

258
00:10:59,900 --> 00:10:57,579
many as a result of that I love it

259
00:11:03,390 --> 00:10:59,910
absolutely love it

260
00:11:06,329 --> 00:11:03,400
okay thanks next question

261
00:11:07,950 --> 00:11:06,339
our next question comes from Ken Kramer

262
00:11:10,950 --> 00:11:07,960
with space up-close

263
00:11:13,740 --> 00:11:10,960

your line is open hi thank you for doing

264
00:11:16,110 --> 00:11:13,750
this and congratulations to all of you

265
00:11:18,180 --> 00:11:16,120
especially Alex I think it's a I think

266
00:11:20,760 --> 00:11:18,190
it's great name I listen to your essay I

267
00:11:22,650 --> 00:11:20,770
get a couple of questions as well

268
00:11:25,829 --> 00:11:22,660
curious how long did you work on this

269
00:11:28,890 --> 00:11:25,839
essay I want to know do you want to be

270
00:11:33,630 --> 00:11:28,900
an astronaut going to Mars and about the

271
00:11:35,070 --> 00:11:33,640
name itself opportunity actually died

272
00:11:39,150 --> 00:11:35,080
from the dust storm there and

273
00:11:41,130 --> 00:11:39,160
perseverance in a gully and where was

274
00:11:46,260 --> 00:11:41,140
water carved gully did that play a role

275
00:11:48,690 --> 00:11:46,270
in your naming of this Rover at all so

276
00:11:52,470 --> 00:11:48,700
starting with the first question

277
00:11:56,130 --> 00:11:52,480
typing up the essay and drafting ago I

278
00:11:59,310 --> 00:11:56,140
think I spent about of days work on that

279
00:12:01,260 --> 00:11:59,320
but actually getting the name took about

280
00:12:03,630 --> 00:12:01,270
two weeks of solid research and

281
00:12:12,150 --> 00:12:03,640
brainstorming and seeing more of the

282
00:12:14,820 --> 00:12:12,160
space in RDR I am oh yeah so I would

283
00:12:17,040 --> 00:12:14,830
like to be an astronaut it's approaching

284
00:12:18,750 --> 00:12:17,050
the frontiers of space exploration and I

285
00:12:22,019 --> 00:12:18,760
would like to be on the very edge of

286
00:12:24,180 --> 00:12:22,029
that but if I don't make it sense it's a

287
00:12:25,769 --> 00:12:24,190
very hard job to get engineering at NASA

288
00:12:32,400 --> 00:12:25,779

would be a job I could have the same

289
00:12:36,360 --> 00:12:32,410
amount of fulfillment with definitely

290
00:12:42,510 --> 00:12:36,370
right it did okay yeah talk a little bit

291
00:12:44,310 --> 00:12:42,520
about that then so opportunity and there

292
00:12:48,390 --> 00:12:44,320
was one other missions called Vikram to

293
00:12:50,519 --> 00:12:48,400
which India launched that failed and I

294
00:12:52,650 --> 00:12:50,529
mentioned those in my essay because

295
00:12:54,960 --> 00:12:52,660
those were proof of how hard Mars

296
00:12:59,160 --> 00:12:54,970
missions are and how much perseverance

297
00:13:01,019 --> 00:12:59,170
it takes and they were big reasons for

298
00:13:07,680 --> 00:13:01,029
me choosing perseverance as the finer

299
00:13:10,620 --> 00:13:07,690
men great thank you okay ready for our

300
00:13:13,230 --> 00:13:10,630
next question and next we have Keith

301
00:13:17,129 --> 00:13:13,240
Cowen from NASA watch comm your lines

302
00:13:19,499 --> 00:13:17,139
open hi thanks for doing this today

303
00:13:21,929 --> 00:13:19,509
Thomasson to Lori it was good to hear

304
00:13:23,759 --> 00:13:21,939
the word astrobiology in Mars 2020 now

305
00:13:25,799 --> 00:13:23,769
for severance and perseverance in the

306
00:13:28,410 --> 00:13:25,809
same sentences this is an overt

307
00:13:30,509 --> 00:13:28,420
astrobiology mission and astrobiology is

308
00:13:33,030 --> 00:13:30,519
really an emergent disciplines of a 21st

309
00:13:34,499 --> 00:13:33,040
century that you know people like Alex

310
00:13:35,999 --> 00:13:34,509
are going to be studying as they prepare

311
00:13:37,979 --> 00:13:36,009
that you know as part of the others part

312
00:13:39,629 --> 00:13:37,989
of Miss generations go to Mars and this

313
00:13:41,129 --> 00:13:39,639

word is used in many textbooks and

314
00:13:43,109 --> 00:13:41,139
classes and so forth now and I'm just

315
00:13:45,569 --> 00:13:43,119
wondering now that we're talking about

316
00:13:47,699 --> 00:13:45,579
astrobiology is a thing that propels

317
00:13:50,159 --> 00:13:47,709
missions are you going to use the Mars

318
00:13:53,369 --> 00:13:50,169
2020 mission to enhance the visibility

319
00:13:55,229 --> 00:13:53,379
of astrobiology and also you know it's

320
00:13:57,269 --> 00:13:55,239
possible we may have as many as four

321
00:13:59,819 --> 00:13:57,279
Rovers on Mars in the next year and a

322
00:14:01,590 --> 00:13:59,829
half or so all of which are doing one

323
00:14:03,929 --> 00:14:01,600
sort or another astrobiology

324
00:14:06,299 --> 00:14:03,939
are there any ways being contemplated to

325
00:14:08,970 --> 00:14:06,309
have an outreach effort that brings all

326
00:14:10,889 --> 00:14:08,980
four of them together and also it's a

327
00:14:13,349 --> 00:14:10,899
couple this with people like Alex

328
00:14:16,049 --> 00:14:13,359
inspiring them for you know future

329
00:14:19,379 --> 00:14:16,059
careers in studying Mars and

330
00:14:21,710 --> 00:14:19,389
astrobiology I hate that this is Laurie

331
00:14:25,350 --> 00:14:21,720
thank you for the question and

332
00:14:30,150 --> 00:14:25,360
absolutely we intend to use the Mars

333
00:14:33,090 --> 00:14:30,160
2020 as we go forward here to bring much

334
00:14:34,829 --> 00:14:33,100
more visibility to to the the word

335
00:14:37,019 --> 00:14:34,839
astrobiology into the field of

336
00:14:39,150 --> 00:14:37,029
astrobiology I mean clearly this is a

337
00:14:40,829 --> 00:14:39,160
main focus as you know with the mission

338
00:14:42,449 --> 00:14:40,839

to to try and better understand those

339
00:14:45,210 --> 00:14:42,459
environments and understand whether life

340
00:14:46,710 --> 00:14:45,220
could have or did actually take hold

341
00:14:48,780 --> 00:14:46,720
there and to collect those samples and

342
00:14:52,189 --> 00:14:48,790
bring them back and really you know test

343
00:14:55,439 --> 00:14:52,199
those and see what what was really there

344
00:14:57,509 --> 00:14:55,449
and I think you know even in some of the

345
00:14:59,400 --> 00:14:57,519
other missions that we have as well as

346
00:15:01,499 --> 00:14:59,410
we start talking about dragonfly for

347
00:15:03,509 --> 00:15:01,509
example in Europa clipper we intend to

348
00:15:05,369 --> 00:15:03,519
to bring astrobiology much more

349
00:15:08,460 --> 00:15:05,379
visibility to the astrobiology aspects

350
00:15:10,619 --> 00:15:08,470
of those missions as well they all carry

351
00:15:12,509 --> 00:15:10,629
different types of payloads and

352
00:15:13,829 --> 00:15:12,519
different types of experiments that that

353
00:15:15,179 --> 00:15:13,839
all contribute to our better

354
00:15:16,769 --> 00:15:15,189
understanding of what types of

355
00:15:19,679 --> 00:15:16,779
environments could could host life

356
00:15:22,609 --> 00:15:19,689
throughout the solar system as far as

357
00:15:25,169 --> 00:15:22,619
the the multiple Mars launches and the

358
00:15:28,529 --> 00:15:25,179
multiple missions are going to be at

359
00:15:30,090 --> 00:15:28,539
Mars very soon we are working hopefully

360
00:15:30,850 --> 00:15:30,100
to bring all those together I think it's

361
00:15:33,640 --> 00:15:30,860
a fantastic

362
00:15:38,830 --> 00:15:33,650
International Year for Mars where we're

363
00:15:40,090 --> 00:15:38,840

all all working side by side sometimes

364
00:15:42,640 --> 00:15:40,100
together as partners sometimes

365
00:15:44,350 --> 00:15:42,650
independently but I think it's going to

366
00:15:46,450 --> 00:15:44,360
be really exciting to have that many new

367
00:15:48,220 --> 00:15:46,460
missions arriving at the same time and

368
00:15:50,050 --> 00:15:48,230
we are looking to again try and bring

369
00:15:52,690 --> 00:15:50,060
more visibility to to those partnerships

370
00:15:54,940 --> 00:15:52,700
and to the to the significant interest

371
00:16:01,290 --> 00:15:54,950
in trying to do more robotic exploration

372
00:16:03,790 --> 00:16:01,300
at Mars alright thanks for next question

373
00:16:06,040 --> 00:16:03,800
alright next question comes from Robert

374
00:16:06,750 --> 00:16:06,050
Perlman with collect space your line is

375
00:16:12,760 --> 00:16:06,760
open

376
00:16:15,750 --> 00:16:12,770
thank you I guess first for Laurie out

377
00:16:19,030 --> 00:16:15,760
of the 28,000 entries that were received

378
00:16:21,790 --> 00:16:19,040
how unique was perseverance do you know

379
00:16:25,840 --> 00:16:21,800
how many others suggested the name if if

380
00:16:29,470 --> 00:16:25,850
they did or was Alex's entry good alone

381
00:16:33,280 --> 00:16:29,480
on that and for Alex congratulations if

382
00:16:38,200 --> 00:16:33,290
I can if I can ask if you could confirm

383
00:16:40,540 --> 00:16:38,210
with your ages and also have you I know

384
00:16:43,050 --> 00:16:40,550
it's early but have you heard from Clara

385
00:16:45,700 --> 00:16:43,060
MA or for and from any of the other

386
00:16:48,700 --> 00:16:45,710
students who have named some of the

387
00:16:50,050 --> 00:16:48,710
Rovers in the past so I'll take the

388
00:16:51,760 --> 00:16:50,060

first part first

389
00:16:53,020 --> 00:16:51,770
and then we'll let Alex answer the

390
00:16:56,350 --> 00:16:53,030
second part

391
00:16:59,080 --> 00:16:56,360
so certainly perseverance was this was

392
00:17:00,100 --> 00:16:59,090
not the only submission of perseverance

393
00:17:04,300 --> 00:17:00,110
there was certainly more than one I

394
00:17:05,890 --> 00:17:04,310
don't I don't know the total number of

395
00:17:10,420 --> 00:17:05,900
perseverance --is that were in the

396
00:17:12,670 --> 00:17:10,430
28,000 but it really boiled down to the

397
00:17:14,560 --> 00:17:12,680
essay the certainly the name is a big

398
00:17:16,360 --> 00:17:14,570
part and understanding and getting a

399
00:17:19,770 --> 00:17:16,370
sense of how that personality is going

400
00:17:22,270 --> 00:17:19,780
to relate to the robotic mission but the

401
00:17:24,910 --> 00:17:22,280
most of the evaluation was based on the

402
00:17:26,740 --> 00:17:24,920
content of the essay and so even though

403
00:17:29,800 --> 00:17:26,750
there were multiple submissions of that

404
00:17:32,080 --> 00:17:29,810
word it was it really boils down to the

405
00:17:34,990 --> 00:17:32,090
outstanding essay that that Alex put

406
00:17:37,810 --> 00:17:35,000
forward that really was in my mind very

407
00:17:40,270 --> 00:17:37,820
moving and and really captured the

408
00:17:42,340 --> 00:17:40,280
spirit of the exploration that we're

409
00:17:44,290 --> 00:17:42,350
attempting to do with the perseverance

410
00:17:46,120 --> 00:17:44,300
mission

411
00:17:48,430 --> 00:17:46,130
thanks Lloyd I think you want a question

412
00:17:52,900 --> 00:17:48,440
if you want to repeat your questions for

413
00:17:54,780 --> 00:17:52,910

Alex short one just quickly I know the

414
00:17:58,720 --> 00:17:54,790
release said you were in seventh grade

415
00:18:01,420 --> 00:17:58,730
how old are you and also have you I know

416
00:18:01,960 --> 00:18:01,430
it's early but have you heard from Clara

417
00:18:03,610 --> 00:18:01,970
MA

418
00:18:08,770 --> 00:18:03,620
or any of the other students who have

419
00:18:13,060 --> 00:18:08,780
named NASA's past Mars rovers thank you

420
00:18:16,060 --> 00:18:13,070
I am 13 years old and while I met Clara

421
00:18:19,240 --> 00:18:16,070
ma in the finalist interview I have not

422
00:18:21,880 --> 00:18:19,250
heard from her son to be honest this is

423
00:18:23,770 --> 00:18:21,890
Laurie again Clara learned about the

424
00:18:25,720 --> 00:18:23,780
selection at the same time the rest of

425
00:18:28,540 --> 00:18:25,730
the world did at 1:30 Eastern this

426
00:18:30,820 --> 00:18:28,550
afternoon so she probably just found out

427
00:18:38,620 --> 00:18:30,830
she lives in London and she lives in

428
00:18:40,090 --> 00:18:38,630
London by the way we did get to meet

429
00:18:44,020 --> 00:18:40,100
Clara she was one of the panelists in

430
00:18:46,990 --> 00:18:44,030
the final interview okay thanks meaning

431
00:18:50,740 --> 00:18:47,000
taking a couple more asknasa questions

432
00:18:51,970 --> 00:18:50,750
here and water on twitter asked how much

433
00:18:55,270 --> 00:18:51,980
time will it take for the rover to

434
00:18:58,480 --> 00:18:55,280
arrive on Mars and how will it enter the

435
00:19:03,820 --> 00:18:58,490
atmosphere Matt do you want to try that

436
00:19:05,170 --> 00:19:03,830
one sure we launched on July 17th or at

437
00:19:06,460 --> 00:19:05,180
least that's when the window opens we

438
00:19:09,190 --> 00:19:06,470

should launch pretty close to the

439
00:19:12,700 --> 00:19:09,200
opening of the window and we land on

440
00:19:15,730 --> 00:19:12,710
February 18th so that's that's a period

441
00:19:18,790 --> 00:19:15,740
of time it takes on the trajectory we're

442
00:19:21,220 --> 00:19:18,800
on when we get to Mars we'll be

443
00:19:25,270 --> 00:19:21,230
traveling about twelve or thirteen

444
00:19:27,690 --> 00:19:25,280
thousand miles an hour and so we have to

445
00:19:30,430 --> 00:19:27,700
go through a number of different

446
00:19:33,040 --> 00:19:30,440
activities to get to a point where we

447
00:19:35,590 --> 00:19:33,050
can safely touchdown the first thing

448
00:19:38,020 --> 00:19:35,600
that happens is we slow down as the

449
00:19:40,900 --> 00:19:38,030
heatshield enters the outer atmosphere

450
00:19:44,440 --> 00:19:40,910
that gets us down to about a thousand

451
00:19:47,080 --> 00:19:44,450
miles an hour or so then we deploy an

452
00:19:50,560 --> 00:19:47,090
enormous supersonic parachute and

453
00:19:52,900 --> 00:19:50,570
that'll slow us down to 150 years miles

454
00:19:55,750 --> 00:19:52,910
an hour or so and eventually then we

455
00:19:56,940 --> 00:19:55,760
drop out of the the Aero shell which

456
00:20:00,780 --> 00:19:56,950
protected us during

457
00:20:03,810 --> 00:20:00,790
tree and we use rocket engines on our

458
00:20:05,370 --> 00:20:03,820
descent stage to take us most of the

459
00:20:06,720 --> 00:20:05,380
rest of the way as we approach the

460
00:20:09,510 --> 00:20:06,730
ground

461
00:20:12,120 --> 00:20:09,520
the rover deploys down on a tether and

462
00:20:14,790 --> 00:20:12,130
the wheels come down the wheels will

463
00:20:17,250 --> 00:20:14,800

touch the surface at jezero will cut the

464
00:20:19,620 --> 00:20:17,260
tether the descent stage is done it will

465
00:20:24,810 --> 00:20:19,630
fly away and and we're on the ground

466
00:20:26,700 --> 00:20:24,820
it's pretty simple but that whole

467
00:20:29,370 --> 00:20:26,710
process is called entry descent and

468
00:20:31,620 --> 00:20:29,380
landing and the technique that's used

469
00:20:35,850 --> 00:20:31,630
for that terminal descent is a technique

470
00:20:38,280 --> 00:20:35,860
we call sky crane after the big heavy

471
00:20:42,000 --> 00:20:38,290
lift military helicopters that carry

472
00:20:44,850 --> 00:20:42,010
cargo below them on on tethers it's the

473
00:20:47,250 --> 00:20:44,860
same the same fundamental approach that

474
00:20:49,710 --> 00:20:47,260
we used on curiosity although we've

475
00:20:55,680 --> 00:20:49,720
added a couple additional capabilities

476
00:20:59,280 --> 00:20:55,690
to make the landing safer at jezero okay

477
00:21:03,110 --> 00:20:59,290
thanks Matt another one that might be

478
00:21:07,710 --> 00:21:03,120
for you and or any of our scientists

479
00:21:10,110 --> 00:21:07,720
what HP sure on Twitter has how will the

480
00:21:12,090 --> 00:21:10,120
science how well perseverance advanced

481
00:21:14,400 --> 00:21:12,100
the science beyond what curiosity has

482
00:21:17,070 --> 00:21:14,410
been doing I'll take that one this is

483
00:21:19,590 --> 00:21:17,080
Laurie great question

484
00:21:21,720 --> 00:21:19,600
so the Curiosity rover of course landed

485
00:21:23,460 --> 00:21:21,730
in in Gale Crater which is a place where

486
00:21:26,190 --> 00:21:23,470
they discovered there had been standing

487
00:21:28,320 --> 00:21:26,200
water certainly looks like you know

488
00:21:31,560 --> 00:21:28,330

confirmation of a much warmer and wetter

489
00:21:33,330 --> 00:21:31,570
Mars in the distant past they were able

490
00:21:35,400 --> 00:21:33,340
to identify that the water that was

491
00:21:38,550 --> 00:21:35,410
present in that crater

492
00:21:40,770 --> 00:21:38,560
was at a pH level or an acidity that was

493
00:21:43,650 --> 00:21:40,780
actually you know something that would

494
00:21:45,060 --> 00:21:43,660
be conducive to to life here on earth as

495
00:21:47,670 --> 00:21:45,070
opposed to some of the other places we'd

496
00:21:49,200 --> 00:21:47,680
found previously they had very acidic

497
00:21:51,120 --> 00:21:49,210
water where we don't think life could

498
00:21:53,010 --> 00:21:51,130
have formed so we know that there were

499
00:21:55,590 --> 00:21:53,020
conditions there and water available

500
00:21:59,000 --> 00:21:55,600
where where life could have potentially

501
00:22:02,370 --> 00:21:59,010
been been hosted they also identified

502
00:22:03,990 --> 00:22:02,380
complex organic molecules that could

503
00:22:05,430 --> 00:22:04,000
have been the early building blocks of

504
00:22:08,850 --> 00:22:05,440
life so we've learned an enormous amount

505
00:22:10,860 --> 00:22:08,860
from curiosity but what perseverance is

506
00:22:13,290 --> 00:22:10,870
going to do to push things forward

507
00:22:15,270 --> 00:22:13,300
well beyond what what curiosity was able

508
00:22:17,940 --> 00:22:15,280
to do it is going to carry some

509
00:22:22,380 --> 00:22:17,950
specialized instrumentation that will be

510
00:22:25,110 --> 00:22:22,390
able to detect potentially if biomarkers

511
00:22:27,630 --> 00:22:25,120
are presence in the soil that could give

512
00:22:30,150 --> 00:22:27,640
us some indicators that perhaps there

513
00:22:32,549 --> 00:22:30,160

might be the right molecules there that

514
00:22:35,040 --> 00:22:32,559
could be life sparing and then we'd do

515
00:22:37,080 --> 00:22:35,050
one thing that perseverance can do that

516
00:22:39,090 --> 00:22:37,090
we've never tried before to push things

517
00:22:43,440 --> 00:22:39,100
way beyond is to collect the samples to

518
00:22:45,960 --> 00:22:43,450
cor take cores of the soil there at

519
00:22:47,610 --> 00:22:45,970
jezero crater and give us the ability to

520
00:22:49,830 --> 00:22:47,620
bring those back to earth where we can

521
00:22:53,430 --> 00:22:49,840
now study them in our own laboratories

522
00:22:56,880 --> 00:22:53,440
here we have tremendous capabilities on

523
00:22:59,460 --> 00:22:56,890
earth that we can you know only only try

524
00:23:01,049 --> 00:22:59,470
to do in a small way on the surface of

525
00:23:04,080 --> 00:23:01,059
Mars so the ability to bring those

526
00:23:06,419 --> 00:23:04,090
samples back here really is going to

527
00:23:09,870 --> 00:23:06,429
open the open the floodgates of

528
00:23:11,210 --> 00:23:09,880
discovery not only initially when we

529
00:23:13,590 --> 00:23:11,220
bring them back with our

530
00:23:14,490 --> 00:23:13,600
state-of-the-art instrumentation but

531
00:23:19,820 --> 00:23:14,500
going forward

532
00:23:22,560 --> 00:23:19,830
saving those samples for posterity and

533
00:23:23,820 --> 00:23:22,570
so that we can use future

534
00:23:27,000 --> 00:23:23,830
instrumentation we haven't even thought

535
00:23:28,500 --> 00:23:27,010
of and to develop you know to test new

536
00:23:35,030 --> 00:23:28,510
hypotheses that we haven't even thought

537
00:23:37,530 --> 00:23:35,040
about yet we're also going to be testing

538
00:23:41,220 --> 00:23:37,540

oxygen production from the from the

539
00:23:43,430 --> 00:23:41,230
martian act atmosphere as when we're

540
00:23:46,770 --> 00:23:43,440
there as well

541
00:23:48,780 --> 00:23:46,780
okay thank you everybody remind

542
00:23:50,580 --> 00:23:48,790
everybody that you can press star 1 for

543
00:23:52,380 --> 00:23:50,590
a question if there are no more

544
00:23:53,640 --> 00:23:52,390
questions we'll wrap up in just a minute

545
00:23:54,720 --> 00:23:53,650
here but just want to give people one

546
00:24:05,020 --> 00:23:54,730
more chance to ask any more questions

547
00:24:09,380 --> 00:24:07,400
all right well thank you everybody for

548
00:24:11,930 --> 00:24:09,390
participating in our call today and

549
00:24:13,820 --> 00:24:11,940
please be sure to follow the

550
00:24:16,910 --> 00:24:13,830
perseverance Rover at its new social

551
00:24:19,430 --> 00:24:16,920
account at NASA persevere and I will

552
00:24:22,340 --> 00:24:19,440
repeat the replay call number one more

553
00:24:25,970 --> 00:24:22,350
time it's eight eight eight four three

554
00:24:27,500 --> 00:24:25,980
three two two zero five that'll be

555
00:24:31,280 --> 00:24:27,510
available for one month after this call

556
00:24:31,940 --> 00:24:31,290
thank you this concludes today's

557
00:24:46,770 --> 00:24:31,950
conference