1
00:00:10,070 --> 00:00:07,110
good morning from nasa's jet propulsion

2
00:00:12,709 --> 00:00:10,080
laboratory in pasadena california it's

3
00:00:15,829 --> 00:00:12,719
hard to believe it's been less than 36

4
00:00:18,230 --> 00:00:15,839
hours since nasa's mars curiosity rover

5
00:00:20,470 --> 00:00:18,240
landed on the red planet already it's

6
00:00:23,189 --> 00:00:20,480
wowing us with its images and data

7
00:00:24,710 --> 00:00:23,199
that's being beamed back to earth and

8
00:00:27,029 --> 00:00:24,720
we're going to hear more about what's

9
00:00:29,669 --> 00:00:27,039
coming down already and what's coming up

10
00:00:31,509 --> 00:00:29,679
in the weeks and days ahead from our

11
00:00:33,350 --> 00:00:31,519
panelists let's go ahead and introduce

12
00:00:35,110 --> 00:00:33,360
today's speaker

13
00:00:37,670 --> 00:00:35,120

we're going to hear first from michael

14
00:00:39,910 --> 00:00:37,680
watkins he's the mars science laboratory

15
00:00:41,910 --> 00:00:39,920
mission manager at the jet propulsion

16
00:00:44,069 --> 00:00:41,920
laboratory

17
00:00:46,150 --> 00:00:44,079
ken edgett is the mali principal

18
00:00:48,869 --> 00:00:46,160
investigator with mail in space science

19
00:00:51,590 --> 00:00:48,879
systems in san diego

20
00:00:53,430 --> 00:00:51,600
and sarah milkovich is the high-rise

21
00:00:55,350 --> 00:00:53,440
investigation scientist

22
00:00:56,709 --> 00:00:55,360
also from here at jpl

23
00:00:58,470 --> 00:00:56,719
we're going to start this morning with

24
00:01:00,709 --> 00:00:58,480
mike watkins

25
00:01:02,869 --> 00:01:00,719
okay good morning

26
00:01:05,270 --> 00:01:02,879
curiosity had another busy day yesterday

27
00:01:06,469 --> 00:01:05,280
and she's asleep right now getting ready

28
00:01:10,149 --> 00:01:06,479
for tomorrow

29
00:01:11,350 --> 00:01:10,159
but as usual at the end of the rover day

30
00:01:13,429 --> 00:01:11,360
we get a call through the through the

31
00:01:14,710 --> 00:01:13,439
orbiters with uh with the status for

32
00:01:16,149 --> 00:01:14,720
what what uh what happened with that

33
00:01:18,550 --> 00:01:16,159
day's activities

34
00:01:20,550 --> 00:01:18,560
and uh curiosity is still still healthy

35
00:01:23,670 --> 00:01:20,560
still uh what we call surface nominal

36
00:01:25,429 --> 00:01:23,680
mode um and uh still in great shape

37
00:01:27,429 --> 00:01:25,439
now yesterday's activity started off

38
00:01:29,510 --> 00:01:27,439

with the high gain antenna deploy and i

39
00:01:31,429 --> 00:01:29,520
think i talked about that yesterday so

40
00:01:33,590 --> 00:01:31,439
uh on this rover model this is the high

41
00:01:37,030 --> 00:01:33,600
gain antenna right here so we want to

42
00:01:39,910 --> 00:01:37,040
get this this antenna this small antenna

43
00:01:41,990 --> 00:01:39,920
deployed and that allows us to to talk

44
00:01:43,990 --> 00:01:42,000
with a little bit higher bandwidth to uh

45
00:01:45,830 --> 00:01:44,000
to curiosity and allows her to to talk

46
00:01:47,910 --> 00:01:45,840
to us directly by the big antennas at

47
00:01:49,190 --> 00:01:47,920
the deep space network uh we've always

48
00:01:50,710 --> 00:01:49,200
been talking to her through the uh

49
00:01:53,590 --> 00:01:50,720
through the orbiters uh you know since

50
00:01:54,950 --> 00:01:53,600
uh you know since uh edl night

51
00:01:57,510 --> 00:01:54,960
now the first thing that has to do is

52
00:01:59,510 --> 00:01:57,520
deploy and go through a range of motion

53
00:02:02,149 --> 00:01:59,520
and uh and that was successfully done

54
00:02:04,550 --> 00:02:02,159
the the uh the the mechanism the antenna

55
00:02:06,789 --> 00:02:04,560
mechanism is in is in fine shape

56
00:02:08,389 --> 00:02:06,799
um but it was not quite pointed

57
00:02:10,550 --> 00:02:08,399
accurately enough at the earth for us to

58
00:02:12,630 --> 00:02:10,560
get the telecom signal that that that we

59
00:02:13,990 --> 00:02:12,640
wanted now we've looked at that pointing

60
00:02:15,589 --> 00:02:14,000
that's a parameter that we can set

61
00:02:17,510 --> 00:02:15,599
there's a little bias in the pointing

62
00:02:19,430 --> 00:02:17,520
and and the telecom folks and the

63
00:02:21,190 --> 00:02:19,440

antenna mechanism folks have taken a

64
00:02:22,630 --> 00:02:21,200
look at that and have a correction for

65
00:02:25,589 --> 00:02:22,640
that bias and we're going to send that

66
00:02:27,030 --> 00:02:25,599
up um with our next command load and uh

67
00:02:29,110 --> 00:02:27,040
and established direct earth

68
00:02:30,710 --> 00:02:29,120
communications uh via this by this

69
00:02:32,949 --> 00:02:30,720
antenna um

70
00:02:33,990 --> 00:02:32,959
uh on tomorrow

71
00:02:36,550 --> 00:02:34,000
okay the next thing that happened

72
00:02:38,229 --> 00:02:36,560
yesterday was um was the initiation of

73
00:02:40,390 --> 00:02:38,239
some some science observations we turned

74
00:02:42,150 --> 00:02:40,400
on the rad instrument and then in fact

75
00:02:43,350 --> 00:02:42,160
the pi of rad don hassler is right here

76
00:02:46,150 --> 00:02:43,360
in the audience

77
00:02:47,830 --> 00:02:46,160
um and acquired several hours of of

78
00:02:50,390 --> 00:02:47,840
of of excellent rad data that the team

79
00:02:52,949 --> 00:02:50,400
is now taking a close look at

80
00:02:54,710 --> 00:02:52,959
we also did the first sensor diagnostic

81
00:02:57,110 --> 00:02:54,720
sensor calibrations for the rims

82
00:02:59,509 --> 00:02:57,120
instrument and we acquired a few minutes

83
00:03:01,990 --> 00:02:59,519
of rims data and and that worked

84
00:03:04,710 --> 00:03:02,000
successfully

85
00:03:07,110 --> 00:03:04,720
we then tested the mali focus mechanism

86
00:03:08,949 --> 00:03:07,120
and acquired our first uh mali image on

87
00:03:11,750 --> 00:03:08,959
the surface and ken egypt will talk

88
00:03:14,149 --> 00:03:11,760

about that uh just shortly here

89
00:03:16,710 --> 00:03:14,159
um we also took what are called dark

90
00:03:19,509 --> 00:03:16,720
images uh from uh from our navigation

91
00:03:21,350 --> 00:03:19,519
cameras and uh and the mast cam so the

92
00:03:22,869 --> 00:03:21,360
the remote sensing mast which is this

93
00:03:25,430 --> 00:03:22,879
mast is

94
00:03:27,830 --> 00:03:25,440
is folded down like this and the cameras

95
00:03:29,670 --> 00:03:27,840
are facing down and allows us to take an

96
00:03:30,869 --> 00:03:29,680
image with no light in it to see if

97
00:03:32,869 --> 00:03:30,879
there's any bright pixels in there that

98
00:03:34,789 --> 00:03:32,879
we need to subtract away to

99
00:03:36,550 --> 00:03:34,799
to get the best possible quality images

100
00:03:38,630 --> 00:03:36,560
later when we're deployed

101
00:03:40,390 --> 00:03:38,640
um and those are executed successfully

102
00:03:42,869 --> 00:03:40,400
as well

103
00:03:45,030 --> 00:03:42,879
uh we then uh wanted to turn rims on and

104
00:03:47,910 --> 00:03:45,040
acquire some additional rims data

105
00:03:50,550 --> 00:03:47,920
and um and uh that test did not work

106
00:03:52,390 --> 00:03:50,560
correctly um the the rims uh instrument

107
00:03:54,309 --> 00:03:52,400
has a has a lot of uh parameters that

108
00:03:55,670 --> 00:03:54,319
control its uh the frequency of its

109
00:03:57,670 --> 00:03:55,680
observations

110
00:03:58,789 --> 00:03:57,680
and uh and uh i think they're taking a

111
00:04:00,550 --> 00:03:58,799
close look at whether those parameters

112
00:04:02,309 --> 00:04:00,560
were set the way they uh they want to so

113
00:04:03,990 --> 00:04:02,319

the rem team is is taking a look at that

114
00:04:05,350 --> 00:04:04,000
right now but that but the the sensor

115
00:04:07,350 --> 00:04:05,360
diagnostic that occurred earlier in the

116
00:04:09,910 --> 00:04:07,360
day was successful so we think this is

117
00:04:11,990 --> 00:04:09,920
just a a a function of uh how their

118
00:04:12,830 --> 00:04:12,000
observation table parameters are

119
00:04:16,469 --> 00:04:12,840
are set

120
00:04:19,270 --> 00:04:16,479
up um okay now the plan for uh the plan

121
00:04:21,349 --> 00:04:19,280
for tomorrow is i mentioned is to uh is

122
00:04:23,510 --> 00:04:21,359
to establish direct earth communications

123
00:04:25,670 --> 00:04:23,520
by slightly changing the pointing of the

124
00:04:28,550 --> 00:04:25,680
of the high gain antenna and we're also

125
00:04:30,150 --> 00:04:28,560
going to to deploy this remote sensing

126
00:04:32,390 --> 00:04:30,160
mast

127
00:04:34,790 --> 00:04:32,400
and actually we have a video of how that

128
00:04:37,430 --> 00:04:34,800
should look when we did it in assembly

129
00:04:40,830 --> 00:04:37,440
and test before uh before launch so we

130
00:04:45,270 --> 00:04:43,350
video okay so here it is

131
00:04:46,870 --> 00:04:45,280
so that is a remote sensing mast it's

132
00:04:48,950 --> 00:04:46,880
quite a huge thing

133
00:04:51,110 --> 00:04:48,960
you know compared to previous missions

134
00:04:53,990 --> 00:04:51,120
what you see on the top there is you see

135
00:04:55,990 --> 00:04:54,000
a big white box and that's actually a

136
00:04:57,430 --> 00:04:56,000
part of the chemcam instrument right

137
00:04:59,110 --> 00:04:57,440
they'll eventually uh you know fire a

138
00:05:01,590 --> 00:04:59,120

laser at rocks and allow us to remotely

139
00:05:03,990 --> 00:05:01,600
determine uh composition contains both a

140
00:05:06,230 --> 00:05:04,000
camera and uh and a laser

141
00:05:09,110 --> 00:05:06,240
and then below that is our primary are

142
00:05:12,150 --> 00:05:09,120
our primary uh imaging systems so you

143
00:05:14,469 --> 00:05:12,160
see four little silver uh cylinders

144
00:05:15,510 --> 00:05:14,479
there those are redundant uh navigation

145
00:05:17,670 --> 00:05:15,520
cameras

146
00:05:19,749 --> 00:05:17,680
and then in between those you see kind

147
00:05:22,390 --> 00:05:19,759
of a square and around uh camera and

148
00:05:25,350 --> 00:05:22,400
those are um the mainland uh space line

149
00:05:27,350 --> 00:05:25,360
systems uh mast cam cameras so that's

150
00:05:29,830 --> 00:05:27,360
our those are the highest quality color

151
00:05:31,430 --> 00:05:29,840
um um imagers that we have

152
00:05:33,749 --> 00:05:31,440
so of course we want to get them up on

153
00:05:35,830 --> 00:05:33,759
top of the mast and get them up high uh

154
00:05:36,950 --> 00:05:35,840
you know this is this mask you you you

155
00:05:39,270 --> 00:05:36,960
could not look this in the eye unless

156
00:05:40,550 --> 00:05:39,280
you're probably an nba player

157
00:05:42,150 --> 00:05:40,560
and so we want to get these up high and

158
00:05:44,150 --> 00:05:42,160
take a good look at the horizon and you

159
00:05:46,390 --> 00:05:44,160
know start taking our stereo photographs

160
00:05:47,590 --> 00:05:46,400
and and our color photographs

161
00:05:49,189 --> 00:05:47,600
so this is one of the key activities for

162
00:05:51,270 --> 00:05:49,199
tomorrow is to deploy

163
00:05:53,830 --> 00:05:51,280

we received enough telemetry

164
00:05:55,830 --> 00:05:53,840
today to to to say that that mechanism

165
00:05:57,029 --> 00:05:55,840
is go for deploy and so we see no reason

166
00:05:59,350 --> 00:05:57,039
that that's not going to going to

167
00:06:00,230 --> 00:05:59,360
function successfully tomorrow

168
00:06:02,309 --> 00:06:00,240
um

169
00:06:04,830 --> 00:06:02,319
we're then going to to take it to look

170
00:06:07,029 --> 00:06:04,840
back at our own deck and take a

171
00:06:08,550 --> 00:06:07,039
navigation camera parameter actually be

172
00:06:10,150 --> 00:06:08,560
a 360 but we'll kind of start at the

173
00:06:11,110 --> 00:06:10,160
deck and look around and then we'll also

174
00:06:13,110 --> 00:06:11,120
take a

175
00:06:14,710 --> 00:06:13,120
an image from the mastcam of the

176
00:06:17,430 --> 00:06:14,720
calibration target the mass cam

177
00:06:18,710 --> 00:06:17,440
calibration target

178
00:06:20,790 --> 00:06:18,720
so i think that that's

179
00:06:21,830 --> 00:06:20,800
i think that's everything for uh for

180
00:06:23,029 --> 00:06:21,840
tomorrow

181
00:06:24,790 --> 00:06:23,039
and um

182
00:06:27,830 --> 00:06:24,800
and i mentioned we we took the first

183
00:06:28,629 --> 00:06:27,840
molly image yesterday so can't edge it

184
00:06:29,430 --> 00:06:28,639
and

185
00:06:34,629 --> 00:06:29,440
the

186
00:06:36,309 --> 00:06:34,639
cameras and nav cameras and kim cam in

187
00:06:38,629 --> 00:06:36,319
the eye but the molly can because the

188
00:06:40,150 --> 00:06:38,639

molly is on the end of a two meter long

189
00:06:42,710 --> 00:06:40,160
robotic arm

190
00:06:44,390 --> 00:06:42,720
and we can position molly

191
00:06:45,749 --> 00:06:44,400
anywhere that arm can go we can go

192
00:06:47,350 --> 00:06:45,759
straight up

193
00:06:48,950 --> 00:06:47,360
we can go all the way down to the ground

194
00:06:51,110 --> 00:06:48,960
we can get within an inch of a rock or

195
00:06:53,029 --> 00:06:51,120
inch of soil and take a close-up image

196
00:06:55,430 --> 00:06:53,039
that's about twice the resolution of the

197
00:06:57,110 --> 00:06:55,440
mi the microscopic imageron spirit and

198
00:06:59,749 --> 00:06:57,120
opportunity

199
00:07:01,589 --> 00:06:59,759
right now the arm i guess i should just

200
00:07:04,309 --> 00:07:01,599
show there's a there's an animation

201
00:07:06,150 --> 00:07:04,319
right now the arm is stowed and the

202
00:07:08,469 --> 00:07:06,160
turret is stowed and when that's

203
00:07:10,710 --> 00:07:08,479
happening the molly is just pointed off

204
00:07:12,629 --> 00:07:10,720
sort of the left front shoulder

205
00:07:14,790 --> 00:07:12,639
of the rover

206
00:07:16,629 --> 00:07:14,800
and

207
00:07:18,629 --> 00:07:16,639
that just happens to be right now

208
00:07:20,150 --> 00:07:18,639
pointed directly north from where we've

209
00:07:21,589 --> 00:07:20,160
landed so you see in the animation the

210
00:07:23,830 --> 00:07:21,599
field of view of the molly there it's

211
00:07:25,350 --> 00:07:23,840
about 38 degrees in the diagonal sense

212
00:07:27,110 --> 00:07:25,360
there's the mali

213
00:07:29,430 --> 00:07:27,120

and there's the image we got which we

214
00:07:31,589 --> 00:07:29,440
put out overnight and um we'll talk a

215
00:07:35,430 --> 00:07:31,599
little bit more about that in a minute

216
00:07:37,589 --> 00:07:35,440
or so the molly is a focusable color

217
00:07:40,390 --> 00:07:37,599
camera this is the first color image of

218
00:07:41,909 --> 00:07:40,400
the landscape where we've landed and

219
00:07:46,230 --> 00:07:41,919
like i said we'll talk about it some

220
00:08:08,629 --> 00:07:48,469
i

221
00:08:11,909 --> 00:08:08,639
edl and the temperature cycles and does

222
00:08:14,150 --> 00:08:11,919
the focus still focus and it does now we

223
00:08:16,230 --> 00:08:14,160
also have a dust cover because most of

224
00:08:17,589 --> 00:08:16,240
the time we don't want dust on the land

225
00:08:18,869 --> 00:08:17,599
we don't want dust on the lens at all

226
00:08:21,670 --> 00:08:18,879
but most of the time we'll just keep it

227
00:08:23,430 --> 00:08:21,680
closed for this first image we said

228
00:08:25,830 --> 00:08:23,440
let's keep it closed we can focus

229
00:08:27,270 --> 00:08:25,840
whether the cover is open or closed so

230
00:08:28,790 --> 00:08:27,280
we thought we'd better keep it closed

231
00:08:30,629 --> 00:08:28,800
because we don't know the state of you

232
00:08:31,589 --> 00:08:30,639
know how dusty the molly is after

233
00:08:33,190 --> 00:08:31,599
landing

234
00:08:35,110 --> 00:08:33,200
and um

235
00:08:37,670 --> 00:08:35,120
let's look at the next there's a picture

236
00:08:39,190 --> 00:08:37,680
of this is the hazard camera the front

237
00:08:42,230 --> 00:08:39,200
hazard cameras that you've seen this

238
00:08:44,550 --> 00:08:42,240

before the one on the uh i guess it's my

239
00:08:46,230 --> 00:08:44,560
left i don't know if it's your right

240
00:08:48,389 --> 00:08:46,240
but there's one that's really dusty

241
00:08:50,790 --> 00:08:48,399
right that was before the hazard cameras

242
00:08:51,990 --> 00:08:50,800
dust covers popped off and then the

243
00:08:54,630 --> 00:08:52,000
other image

244
00:08:57,110 --> 00:08:54,640
is not so dusty that's after the dust

245
00:08:59,509 --> 00:08:57,120
cover was removed on the haz cams those

246
00:09:01,910 --> 00:08:59,519
are off and they stay off on molly the

247
00:09:05,430 --> 00:09:01,920
cover will open and close when we want

248
00:09:07,670 --> 00:09:05,440
to use the molle with the cover open

249
00:09:09,750 --> 00:09:07,680
so let's go to the next image and again

250
00:09:12,550 --> 00:09:09,760
this is the image that molly took and

251
00:09:15,670 --> 00:09:12,560
you can see that the cover has dust on

252
00:09:17,590 --> 00:09:15,680
it and so the scene is kind of murky

253
00:09:19,910 --> 00:09:17,600
it's actually somewhat pathological

254
00:09:22,230 --> 00:09:19,920
because the the we're facing north and

255
00:09:24,070 --> 00:09:22,240
the sun it's it's still winter there and

256
00:09:27,350 --> 00:09:24,080
so the sun is kind of

257
00:09:29,030 --> 00:09:27,360
high and sort of northwest of here and

258
00:09:30,949 --> 00:09:29,040
at this time of day

259
00:09:32,630 --> 00:09:30,959
and so you're just kind of getting some

260
00:09:34,710 --> 00:09:32,640
of that scattering off the front of the

261
00:09:35,910 --> 00:09:34,720
lens so it makes it look even more murky

262
00:09:37,590 --> 00:09:35,920
than it actually is it's not a dust

263
00:09:39,590 --> 00:09:37,600

storm there's actually clear day on mars

264
00:09:40,870 --> 00:09:39,600
and the lens is just a little

265
00:09:42,790 --> 00:09:40,880
dusty

266
00:09:43,990 --> 00:09:42,800
one of my co-investigators said looks

267
00:09:45,190 --> 00:09:44,000
like the dust cover did what it's

268
00:09:46,150 --> 00:09:45,200
supposed to do

269
00:09:48,790 --> 00:09:46,160
and that was

270
00:09:50,790 --> 00:09:48,800
like yes it did but the other point is

271
00:09:53,829 --> 00:09:50,800
the camera did what it's supposed to do

272
00:09:56,070 --> 00:09:53,839
it found focus when you look at this the

273
00:09:58,550 --> 00:09:56,080
image online you will see that you can

274
00:09:59,509 --> 00:09:58,560
see rocks in the foreground

275
00:10:01,030 --> 00:09:59,519
and

276
00:10:03,190 --> 00:10:01,040
you'll also notice it's kind of blocky

277
00:10:04,470 --> 00:10:03,200
that's the compression uh

278
00:10:06,630 --> 00:10:04,480
you know

279
00:10:08,870 --> 00:10:06,640
because of the the fuzziness on that you

280
00:10:10,710 --> 00:10:08,880
know the dust it sort of over compresses

281
00:10:12,069 --> 00:10:10,720
it right if it was clean you wouldn't

282
00:10:14,630 --> 00:10:12,079
see that so

283
00:10:16,230 --> 00:10:14,640
um it works it's awesome can't wait to

284
00:10:18,230 --> 00:10:16,240
open it

285
00:10:19,350 --> 00:10:18,240
and see what else we can see yeah we

286
00:10:20,630 --> 00:10:19,360
should have called this the the dust

287
00:10:23,670 --> 00:10:20,640
cover test

288
00:10:26,470 --> 00:10:23,680

it's a focus back and sometimes we'll

289
00:10:28,310 --> 00:10:26,480
test the dust cover later on

290
00:10:29,670 --> 00:10:28,320
uh after we're certain that we can open

291
00:10:31,670 --> 00:10:29,680
it so we'll first we'll take a look at

292
00:10:34,389 --> 00:10:31,680
it with the navigation cameras on the

293
00:10:37,269 --> 00:10:34,399
mast and stuff um i guess there's one

294
00:10:39,590 --> 00:10:37,279
more picture this was uh

295
00:10:42,630 --> 00:10:39,600
sort of gives you a sense of what the

296
00:10:44,710 --> 00:10:42,640
image looks like in context this is

297
00:10:46,630 --> 00:10:44,720
digital terrain derived from topography

298
00:10:48,949 --> 00:10:46,640
from images from

299
00:10:51,509 --> 00:10:48,959
a lot of orbiters from from mars express

300
00:10:53,430 --> 00:10:51,519
and and mars reconnaissance orbiter all

301
00:10:55,030 --> 00:10:53,440
put together and then we placed the mali

302
00:10:56,790 --> 00:10:55,040
image in there to give you a sense of

303
00:10:58,710 --> 00:10:56,800
what it looks like then we made that

304
00:11:00,150 --> 00:10:58,720
molly image a little bit transparent so

305
00:11:02,790 --> 00:11:00,160
you could actually see the stuff behind

306
00:11:04,389 --> 00:11:02,800
it but it all lines up real nice so

307
00:11:07,829 --> 00:11:04,399
and

308
00:11:08,790 --> 00:11:07,839
i think i covered all my points

309
00:11:11,590 --> 00:11:08,800
okay

310
00:11:14,550 --> 00:11:11,600
well so yesterday i was here to show you

311
00:11:16,550 --> 00:11:14,560
a fabulous image that highrise took

312
00:11:18,870 --> 00:11:16,560
of curiosity coming in through the

313
00:11:22,150 --> 00:11:18,880

atmosphere and today i'm here with

314
00:11:24,550 --> 00:11:22,160
another fabulous image of

315
00:11:26,949 --> 00:11:24,560
curiosity on the surface

316
00:11:32,310 --> 00:11:28,870
this is a special this was a special

317
00:11:33,430 --> 00:11:32,320
sequence we did normally mro only uh

318
00:11:35,829 --> 00:11:33,440
takes

319
00:11:38,790 --> 00:11:35,839
can only it rotates with or it rolls

320
00:11:41,110 --> 00:11:38,800
within 30 degrees either direction

321
00:11:43,430 --> 00:11:41,120
as it's traveling across the martian

322
00:11:44,470 --> 00:11:43,440
surface

323
00:11:46,630 --> 00:11:44,480
for this

324
00:11:48,710 --> 00:11:46,640
we had to roll

325
00:11:51,509 --> 00:11:48,720
about

326
00:11:53,750 --> 00:11:51,519
41 degrees in order to get this image so

327
00:11:55,590 --> 00:11:53,760
it's not as good quality as images that

328
00:11:56,389 --> 00:11:55,600
we are going to get later but we wanted

329
00:11:59,269 --> 00:11:56,399
to get

330
00:12:01,269 --> 00:11:59,279
an image of the surface as soon as

331
00:12:03,750 --> 00:12:01,279
possible after landing so if we could go

332
00:12:06,550 --> 00:12:03,760
to the first animation

333
00:12:09,269 --> 00:12:06,560
um so this we're zooming into the

334
00:12:11,350 --> 00:12:09,279
landing site here

335
00:12:13,590 --> 00:12:11,360
and the the image you're going to see

336
00:12:16,550 --> 00:12:13,600
it's actually the view is as if it's

337
00:12:18,389 --> 00:12:16,560
tilted 45 degrees so there's the hot

338
00:12:20,310 --> 00:12:18,399

there's the full high-rise image because

339
00:12:22,389 --> 00:12:20,320
the the role of 41 degrees we're now

340
00:12:25,030 --> 00:12:22,399
seeing part of the planetary curvature

341
00:12:28,310 --> 00:12:25,040
so that the image is a little skewed and

342
00:12:33,990 --> 00:12:28,320
this is what we call we're calling the

343
00:12:38,550 --> 00:12:36,710
so this is about 39 centimeters per

344
00:12:41,030 --> 00:12:38,560
pixel and

345
00:12:43,430 --> 00:12:41,040
at this location the mro orbit is about

346
00:12:45,110 --> 00:12:43,440
300 kilometers above the surface

347
00:12:48,069 --> 00:12:45,120
and we can see

348
00:12:50,230 --> 00:12:48,079
uh just the all of the components of the

349
00:12:51,030 --> 00:12:50,240
whole edl system

350
00:12:53,269 --> 00:12:51,040
so

351
00:12:56,310 --> 00:12:53,279
if we could go to the if we could keep

352
00:13:00,069 --> 00:12:56,320
going so we're zooming in here is

353
00:13:01,509 --> 00:13:00,079
curiosity that's that sort of spot at

354
00:13:04,870 --> 00:13:01,519
the center there

355
00:13:07,190 --> 00:13:04,880
is is curiosity and the dark streaks on

356
00:13:11,110 --> 00:13:07,200
either side that's where the bright dust

357
00:13:12,949 --> 00:13:11,120
has been removed or disturbed as

358
00:13:15,750 --> 00:13:12,959
in the course of landing and one thing

359
00:13:18,870 --> 00:13:15,760
that's really great about this

360
00:13:21,350 --> 00:13:18,880
we we predicted the position by looking

361
00:13:23,590 --> 00:13:21,360
at these dust streaks we can figure out

362
00:13:26,150 --> 00:13:23,600
what orientation we think

363
00:13:28,550 --> 00:13:26,160

msl or curiosity is and if you keep

364
00:13:32,310 --> 00:13:28,560
going

365
00:13:33,990 --> 00:13:32,320
can see we have knowledge from oh we

366
00:13:36,310 --> 00:13:34,000
don't have it on this one okay well we'd

367
00:13:38,150 --> 00:13:36,320
have knowledge from msl itself

368
00:13:40,470 --> 00:13:38,160
and it matches up

369
00:13:41,670 --> 00:13:40,480
just perfectly so it's a really nice

370
00:13:43,910 --> 00:13:41,680
feeling when

371
00:13:45,750 --> 00:13:43,920
you have uh you're getting the same

372
00:13:47,430 --> 00:13:45,760
information from orbit as you're getting

373
00:13:49,430 --> 00:13:47,440
from the ground and that really makes

374
00:13:52,629 --> 00:13:49,440
you feel very good

375
00:13:54,870 --> 00:13:52,639
this is the the parachute

376
00:13:58,310 --> 00:13:54,880
and the back shell

377
00:13:59,829 --> 00:13:58,320
and you can see as you look

378
00:14:01,350 --> 00:13:59,839
you know as you look closely at this you

379
00:14:03,269 --> 00:14:01,360
can start you can see some of the the

380
00:14:05,509 --> 00:14:03,279
features on the parachute that you were

381
00:14:11,030 --> 00:14:05,519
able to see in the edl image you know

382
00:14:14,870 --> 00:14:13,110
this all of these images again because

383
00:14:17,750 --> 00:14:14,880
of this

384
00:14:19,750 --> 00:14:17,760
this angle that we took this image at um

385
00:14:22,069 --> 00:14:19,760
it's looking through a larger

386
00:14:24,629 --> 00:14:22,079
column of a longer column of atmosphere

387
00:14:26,470 --> 00:14:24,639
so there's a lot more dust that that we

388
00:14:28,230 --> 00:14:26,480

have to look through in order to see

389
00:14:30,629 --> 00:14:28,240
these and also from

390
00:14:33,750 --> 00:14:30,639
the you know looking at the the dust

391
00:14:36,389 --> 00:14:33,760
covers on the the various cameras on

392
00:14:38,550 --> 00:14:36,399
curiosity we know that a lot of dust

393
00:14:41,189 --> 00:14:38,560
was kicked up over the course of these

394
00:14:44,710 --> 00:14:41,199
events so hopefully in our future images

395
00:14:46,470 --> 00:14:44,720
we'll be able to to get even better uh

396
00:14:48,870 --> 00:14:46,480
more detail in these

397
00:14:49,829 --> 00:14:48,880
um so if you go to the next

398
00:14:52,310 --> 00:14:49,839
one

399
00:14:55,030 --> 00:14:52,320
and again the dark the dark areas here

400
00:14:56,629 --> 00:14:55,040
where the bright dust has been removed

401
00:14:59,269 --> 00:14:56,639
so i think next is going to the heat

402
00:15:01,750 --> 00:14:59,279
shield and so you can see the heat

403
00:15:04,310 --> 00:15:01,760
shield and again

404
00:15:08,389 --> 00:15:04,320
disturbance around the heat shield and

405
00:15:08,399 --> 00:15:10,790
and

406
00:15:10,800 --> 00:15:16,710
finally this the sky crane um

407
00:15:23,670 --> 00:15:20,150
so this pattern is consistent with an

408
00:15:26,870 --> 00:15:23,680
oblique impact so coming in as your uh

409
00:15:29,670 --> 00:15:26,880
that the the dark areas is sort of down

410
00:15:32,550 --> 00:15:29,680
range of the of the in the impact this

411
00:15:35,189 --> 00:15:32,560
is what we see if we had you know

412
00:15:37,990 --> 00:15:35,199
meteorite impacts forming craters on the

413
00:15:41,749 --> 00:15:38,000

surface of planetary bodies and you this

414
00:15:45,269 --> 00:15:41,759
is the same sort of pattern that you get

415
00:15:47,189 --> 00:15:45,279
and if you could keep going

416
00:15:48,710 --> 00:15:47,199
and we don't know we're still looking at

417
00:15:52,310 --> 00:15:48,720
all the details of what's going on you

418
00:15:55,990 --> 00:15:52,320
know we this image was taken at about 10

419
00:15:57,670 --> 00:15:56,000
30 last night pacific time and

420
00:15:59,990 --> 00:15:57,680
you know then it takes several hours to

421
00:16:02,470 --> 00:16:00,000
get it down and to the high rise team

422
00:16:06,790 --> 00:16:02,480
and processed so we're still

423
00:16:11,030 --> 00:16:08,710
i have some i have some distances for

424
00:16:13,749 --> 00:16:11,040
you here uh the distance between the

425
00:16:15,350 --> 00:16:13,759
curiosity rover and

426
00:16:17,990 --> 00:16:15,360
the heat shield

427
00:16:20,870 --> 00:16:18,000
is about 1200 meters

428
00:16:23,870 --> 00:16:20,880
uh the distance from the rover to the

429
00:16:27,189 --> 00:16:23,880
back shell parachute area is about

430
00:16:29,269 --> 00:16:27,199
615 meters and then to the sky crane is

431
00:16:30,629 --> 00:16:29,279
650 meters

432
00:16:32,150 --> 00:16:30,639
so

433
00:16:33,670 --> 00:16:32,160
just to try and give you a sense of

434
00:16:35,269 --> 00:16:33,680
perspective here

435
00:16:36,470 --> 00:16:35,279
so

436
00:16:39,030 --> 00:16:36,480
we are

437
00:16:41,030 --> 00:16:39,040
next taking an image

438
00:16:43,910 --> 00:16:41,040

five days from now is the next time that

439
00:16:45,189 --> 00:16:43,920
we're able to take an image of this area

440
00:16:46,790 --> 00:16:45,199
and

441
00:16:49,829 --> 00:16:46,800
this one we are going to be able to

442
00:16:51,670 --> 00:16:49,839
target with the updated coordinates for

443
00:16:54,389 --> 00:16:51,680
where we know we actually landed this

444
00:16:56,389 --> 00:16:54,399
image was taken with uh we were

445
00:16:59,269 --> 00:16:56,399
targeting the very center of the landing

446
00:17:01,910 --> 00:16:59,279
ellipse so this is with where we were we

447
00:17:04,710 --> 00:17:01,920
thought we'd get to you know from

448
00:17:07,750 --> 00:17:04,720
from before we got there basically um

449
00:17:09,990 --> 00:17:07,760
so uh we're hoping that uh in the next

450
00:17:11,990 --> 00:17:10,000
few weeks we'll be able to to get a

451
00:17:13,829 --> 00:17:12,000
couple more images of this area um we're

452
00:17:15,189 --> 00:17:13,839
gonna try for some color

453
00:17:18,309 --> 00:17:15,199
in this area as well so that should be

454
00:17:20,470 --> 00:17:18,319
very exciting so uh stay tuned for that

455
00:17:22,309 --> 00:17:20,480
thanks all right thank you sarah thank

456
00:17:23,909 --> 00:17:22,319
you to all our panelists and again as i

457
00:17:26,470 --> 00:17:23,919
stated at the beginning it's amazing

458
00:17:27,990 --> 00:17:26,480
it's just been 20 36 hours and already

459
00:17:30,070 --> 00:17:28,000
what we have seen and

460
00:17:32,070 --> 00:17:30,080
more and the best yet to come we're

461
00:17:34,230 --> 00:17:32,080
going to start with the q and a's part

462
00:17:35,909 --> 00:17:34,240
of this news conference and if we'll

463
00:17:37,990 --> 00:17:35,919

start out here at jpl if you do have a

464
00:17:39,590 --> 00:17:38,000
question please raise your hand wait for

465
00:17:41,590 --> 00:17:39,600
the mic runner to get to you we're going

466
00:17:42,470 --> 00:17:41,600
to go in the first row first on this

467
00:17:44,830 --> 00:17:42,480
side

468
00:17:47,430 --> 00:17:44,840
and state your name and affiliation

469
00:17:49,350 --> 00:17:47,440
please uh leo enright uh with irish

470
00:17:50,950 --> 00:17:49,360
television could we get times on the

471
00:17:54,310 --> 00:17:50,960
major events uh

472
00:17:56,310 --> 00:17:54,320
for sol three i guess the the hga deploy

473
00:17:57,909 --> 00:17:56,320
and the the mast and so on uh it's all

474
00:17:59,510 --> 00:17:57,919
two yeah i'm sorry it's all two yeah

475
00:18:02,310 --> 00:17:59,520
i'll provide those to you right just

476
00:18:03,990 --> 00:18:02,320
after this okay and if uh can edge it

477
00:18:05,909 --> 00:18:04,000
could maybe talk to this picture could

478
00:18:08,789 --> 00:18:05,919
you about the geology i mean there seem

479
00:18:11,270 --> 00:18:08,799
to be three distinct uh geological

480
00:18:13,830 --> 00:18:11,280
regions and is that the thermal

481
00:18:15,270 --> 00:18:13,840
inertia zone there that we're looking at

482
00:18:17,510 --> 00:18:15,280
you know i've i've been so busy with

483
00:18:19,029 --> 00:18:17,520
this molly stuff that the team

484
00:18:21,669 --> 00:18:19,039
grotzinger's right here you know the

485
00:18:24,150 --> 00:18:21,679
team has been off discussing this all

486
00:18:26,870 --> 00:18:24,160
night um but you can see between

487
00:18:29,590 --> 00:18:26,880
curiosity and the heat shield you can

488
00:18:32,310 --> 00:18:29,600

see a surf the heat shield is on a

489
00:18:34,070 --> 00:18:32,320
surface with lots of small craters and

490
00:18:35,990 --> 00:18:34,080
curiosity is on a surface that's a

491
00:18:39,990 --> 00:18:36,000
little bit more with rounded hills and

492
00:18:42,310 --> 00:18:40,000
fewer small craters and then sort of

493
00:18:44,470 --> 00:18:42,320
above or north of curiosity and the heat

494
00:18:45,830 --> 00:18:44,480
shield is this lighter toned terrain

495
00:18:48,230 --> 00:18:45,840
with lots of little

496
00:18:49,590 --> 00:18:48,240
buttes and maces and pits

497
00:18:51,270 --> 00:18:49,600
i don't know what the t's been talking

498
00:18:53,350 --> 00:18:51,280
about all night but if it was up to me i

499
00:18:55,909 --> 00:18:53,360
would go to where those three come

500
00:18:57,830 --> 00:18:55,919
together

501
00:18:59,990 --> 00:18:57,840
as a starting point because you can

502
00:19:02,070 --> 00:19:00,000
start to get a flavor of what's going on

503
00:19:03,990 --> 00:19:02,080
here in terms of the different geologic

504
00:19:06,470 --> 00:19:04,000
materials do you want to say anything

505
00:19:06,480 --> 00:19:11,990
i just made that up

506
00:19:15,510 --> 00:19:14,310
okay

507
00:19:17,029 --> 00:19:15,520
all right we're going to take another

508
00:19:21,669 --> 00:19:17,039
question that actually was in the same

509
00:19:25,350 --> 00:19:23,990
hello olivia sangee and georgespace.com

510
00:19:27,350 --> 00:19:25,360
from france uh

511
00:19:29,190 --> 00:19:27,360
you said the distance for example for

512
00:19:31,110 --> 00:19:29,200
the sky crane was around 600 meters

513
00:19:32,870 --> 00:19:31,120

that's right uh

514
00:19:34,789 --> 00:19:32,880
between between which components uh

515
00:19:38,150 --> 00:19:34,799
curiosity and sky current and the sky

516
00:19:40,390 --> 00:19:38,160
crane yeah 650 meters approximately i'd

517
00:19:42,789 --> 00:19:40,400
like to know is it a plan to have

518
00:19:44,870 --> 00:19:42,799
curiosity going towards the sky trend

519
00:19:47,110 --> 00:19:44,880
the back shelf for example like you did

520
00:19:49,669 --> 00:19:47,120
with one of the previous rowers to make

521
00:19:52,710 --> 00:19:49,679
a sort of engineering checkup or is it

522
00:19:56,230 --> 00:19:52,720
not a scientific target

523
00:19:57,750 --> 00:19:56,240
is the question is is was is curiosity

524
00:20:00,870 --> 00:19:57,760
intending to go back and look visit

525
00:20:02,870 --> 00:20:00,880
those no it is not

526
00:20:04,149 --> 00:20:02,880
okay let's go right directly behind you

527
00:20:06,149 --> 00:20:04,159
if you can hand the mic back to the

528
00:20:09,190 --> 00:20:06,159
second row and then we'll go over to

529
00:20:11,029 --> 00:20:09,200
this side second row hi eric hand with

530
00:20:12,149 --> 00:20:11,039
nature uh questions for ken and maybe we

531
00:20:13,350 --> 00:20:12,159
can start with this picture and then go

532
00:20:14,470 --> 00:20:13,360
to your picture

533
00:20:20,230 --> 00:20:14,480
um

534
00:20:22,549 --> 00:20:20,240
toned deposit here yesterday your boss

535
00:20:23,990 --> 00:20:22,559
described it as as being a classic lag

536
00:20:26,710 --> 00:20:24,000
deposit or

537
00:20:28,470 --> 00:20:26,720
uh uh and wondering if you can kind of

538
00:20:30,470 --> 00:20:28,480

add your interpretation to to what

539
00:20:32,390 --> 00:20:30,480
you're seeing in the foreground of the

540
00:20:33,830 --> 00:20:32,400
mali picture

541
00:20:36,070 --> 00:20:33,840
you know what could possibly be

542
00:20:39,909 --> 00:20:36,080
responsible for all these

543
00:20:42,310 --> 00:20:39,919
sort of uh walnut-sized uh uh uh little

544
00:20:45,029 --> 00:20:42,320
uh pieces of rock in the foreground

545
00:20:48,470 --> 00:20:46,710
walnuts have got to be squirrels

546
00:20:50,070 --> 00:20:48,480
somewhere um

547
00:20:51,110 --> 00:20:50,080
they yeah

548
00:20:53,350 --> 00:20:51,120
you know

549
00:20:55,510 --> 00:20:53,360
i yeah you said mike malin was here

550
00:20:57,669 --> 00:20:55,520
yesterday talked about this lag surface

551
00:21:01,110 --> 00:20:57,679
that's based on what you see in the haz

552
00:21:02,870 --> 00:21:01,120
cam and now the mali image

553
00:21:04,230 --> 00:21:02,880
from what you can see in the orbiter

554
00:21:05,830 --> 00:21:04,240
image from the high rise and this is

555
00:21:08,549 --> 00:21:05,840
true from the high rise we had before

556
00:21:10,149 --> 00:21:08,559
this one you really can't get that far

557
00:21:11,270 --> 00:21:10,159
right because those particles are so

558
00:21:12,710 --> 00:21:11,280
small

559
00:21:14,950 --> 00:21:12,720
okay so

560
00:21:17,350 --> 00:21:14,960
how that what you see in front of you

561
00:21:19,750 --> 00:21:17,360
and these few images we have extends out

562
00:21:22,310 --> 00:21:19,760
over that patch of terrain i'm not going

563
00:21:23,430 --> 00:21:22,320

to go there i i i want to drive around a

564
00:21:27,029 --> 00:21:23,440
little bit and i want to see what the

565
00:21:29,350 --> 00:21:27,039
nav cams and mast cams show before we

566
00:21:31,110 --> 00:21:29,360
you know can i don't know how extensible

567
00:21:33,750 --> 00:21:31,120
what you see around the rover is you

568
00:21:34,950 --> 00:21:33,760
also notice that the dust has been blown

569
00:21:36,549 --> 00:21:34,960
out of there right

570
00:21:38,310 --> 00:21:36,559
so

571
00:21:40,789 --> 00:21:38,320
okay we're going to take this question

572
00:21:42,789 --> 00:21:40,799
and then we're going to go to the phones

573
00:21:45,990 --> 00:21:42,799
uh irene klotz with reuters and

574
00:21:47,669 --> 00:21:46,000
discovery news can um uh

575
00:21:49,909 --> 00:21:47,679
what time are the dust covers going to

576
00:21:52,630 --> 00:21:49,919
come off on molly and once they're off

577
00:21:55,350 --> 00:21:52,640
do they stay off or do you operate them

578
00:21:57,590 --> 00:21:55,360
as a protection if there's a dust storm

579
00:21:59,110 --> 00:21:57,600
or something yeah the mali dust cover

580
00:21:59,990 --> 00:21:59,120
which by the way i forgot to mention is

581
00:22:02,950 --> 00:22:00,000
actually

582
00:22:05,430 --> 00:22:02,960
totally transparent and clear so

583
00:22:07,110 --> 00:22:05,440
if it hadn't dust if it had no dust on

584
00:22:09,110 --> 00:22:07,120
it you'd be seeing it as if there was no

585
00:22:11,190 --> 00:22:09,120
dust cover that scene

586
00:22:13,590 --> 00:22:11,200
that dust cover is on a hinge and it'll

587
00:22:16,630 --> 00:22:13,600
just open and close whenever we want to

588
00:22:18,230 --> 00:22:16,640

open it so unlike the haz cams which pop

589
00:22:21,270 --> 00:22:18,240
off and stay off

590
00:22:23,590 --> 00:22:21,280
we most of the time keep this one closed

591
00:22:25,350 --> 00:22:23,600
when we want to look at something

592
00:22:26,870 --> 00:22:25,360
now that we know it's got dust on it

593
00:22:28,870 --> 00:22:26,880
we're always going to want to open it to

594
00:22:30,470 --> 00:22:28,880
actually look at something

595
00:22:31,990 --> 00:22:30,480
so we will just command it to open for

596
00:22:33,669 --> 00:22:32,000
that short period of time and close up

597
00:22:35,270 --> 00:22:33,679
again so that we don't get

598
00:22:37,510 --> 00:22:35,280
we're on a turret

599
00:22:39,270 --> 00:22:37,520
and there's a drill and there's a sieve

600
00:22:42,070 --> 00:22:39,280
and there's a brush we're going to be

601
00:22:44,390 --> 00:22:42,080
making dust with the turret and that

602
00:22:46,310 --> 00:22:44,400
dust could get on the molly

603
00:22:48,870 --> 00:22:46,320
when we were selected we were told

604
00:22:50,789 --> 00:22:48,880
expect bali to get dusty of course they

605
00:22:52,149 --> 00:22:50,799
meant because of the drill and all that

606
00:22:53,430 --> 00:22:52,159
they didn't mean because

607
00:22:55,110 --> 00:22:53,440
the first day you get there you're going

608
00:22:57,190 --> 00:22:55,120
to have some dust so

609
00:23:00,470 --> 00:22:57,200
thanks and i was also just wondering if

610
00:23:03,510 --> 00:23:00,480
um anybody's done any calculations of

611
00:23:04,549 --> 00:23:03,520
how deep into the martian soil those

612
00:23:07,350 --> 00:23:04,559
various

613
00:23:10,549 --> 00:23:07,360

discarded elements went

614
00:23:12,470 --> 00:23:10,559
like what sort of impact did it have

615
00:23:14,789 --> 00:23:12,480
uh from based on what we're seeing in

616
00:23:17,830 --> 00:23:14,799
the images

617
00:23:21,190 --> 00:23:17,840
probably more from calculations of the

618
00:23:23,190 --> 00:23:21,200
mass and the speed of impact of

619
00:23:24,710 --> 00:23:23,200
sky crane things like that

620
00:23:27,590 --> 00:23:24,720
uh i'm not aware of a depth of

621
00:23:28,950 --> 00:23:27,600
penetration um calculation and on john

622
00:23:30,870 --> 00:23:28,960
do you know

623
00:23:32,710 --> 00:23:30,880
it's still early

624
00:23:34,310 --> 00:23:32,720
i'm gonna predict a model oh a model

625
00:23:35,430 --> 00:23:34,320
yeah well that would be dependent on the

626
00:23:36,789 --> 00:23:35,440
regulator

627
00:23:38,789 --> 00:23:36,799
yeah it depends on what you hit you hit

628
00:23:41,269 --> 00:23:38,799
rock you hit you know soft you know

629
00:23:43,029 --> 00:23:41,279
dunes uh those would matter in the case

630
00:23:45,269 --> 00:23:43,039
of the descent stage you know the the

631
00:23:47,430 --> 00:23:45,279
the the sky crane

632
00:23:49,830 --> 00:23:47,440
um you know it matters a lot how much

633
00:23:51,510 --> 00:23:49,840
how much fuel was in it and and with

634
00:23:53,830 --> 00:23:51,520
what the final mass was things like that

635
00:23:54,950 --> 00:23:53,840
so so um

636
00:23:57,830 --> 00:23:54,960
i guess i was just wondering you know

637
00:24:00,310 --> 00:23:57,840
after missions lunar prospector and deep

638
00:24:02,310 --> 00:24:00,320

impact where you go and try and make a

639
00:24:06,149 --> 00:24:02,320
hole and get some fresh material if

640
00:24:08,310 --> 00:24:06,159
you'd ever have any scientific use for

641
00:24:09,430 --> 00:24:08,320
obviously you need to sort out the

642
00:24:10,870 --> 00:24:09,440
man-made parts

643
00:24:13,190 --> 00:24:10,880
so actually in the case of in the case

644
00:24:14,230 --> 00:24:13,200
of of of msl here we actually kind of

645
00:24:15,830 --> 00:24:14,240
want to stay away from these because we

646
00:24:17,190 --> 00:24:15,840
don't want to be contaminated by them i

647
00:24:19,190 --> 00:24:17,200
think we talked a little bit yesterday

648
00:24:21,269 --> 00:24:19,200
that the um the

649
00:24:24,149 --> 00:24:21,279
the balance masses the the the

650
00:24:26,390 --> 00:24:24,159
ballasting uh weights that come off

651
00:24:27,830 --> 00:24:26,400
um you know those are those are inert

652
00:24:29,830 --> 00:24:27,840
and and those could make those could

653
00:24:31,029 --> 00:24:29,840
excavate a nice a nice area and we

654
00:24:31,909 --> 00:24:31,039
actually did talk about that in fact i

655
00:24:34,230 --> 00:24:31,919
think john might have mentioned that

656
00:24:36,149 --> 00:24:34,240
yesterday uh but but their ballistic

657
00:24:37,750 --> 00:24:36,159
coefficient is so different from from us

658
00:24:39,350 --> 00:24:37,760
that they land very far away and are

659
00:24:41,269 --> 00:24:39,360
very incredibly unlucky to find them but

660
00:24:43,190 --> 00:24:41,279
that would have been a a very good

661
00:24:44,870 --> 00:24:43,200
object to excavate i just went even for

662
00:24:45,590 --> 00:24:44,880
future emissions orbiters things like

663
00:24:46,390 --> 00:24:45,600

that

664
00:24:48,630 --> 00:24:46,400
thanks

665
00:24:50,549 --> 00:24:48,640
okay we're going to take a question from

666
00:24:53,510 --> 00:24:50,559
the phones first we're going to hear

667
00:24:55,350 --> 00:24:53,520
from clara moskowitz at space.com go

668
00:24:57,590 --> 00:24:55,360
ahead clara

669
00:24:59,510 --> 00:24:57,600
yes hi my question is for either michael

670
00:25:01,590 --> 00:24:59,520
or ken i'm wondering if you can talk a

671
00:25:03,830 --> 00:25:01,600
little bit about the emotions among the

672
00:25:05,669 --> 00:25:03,840
team members now as you transition from

673
00:25:09,190 --> 00:25:05,679
the euphoria of landing to the

674
00:25:14,310 --> 00:25:10,070
um

675
00:25:16,310 --> 00:25:14,320
answer that in two ways the surface team

676
00:25:17,669 --> 00:25:16,320
is pretty excited still you know because

677
00:25:19,350 --> 00:25:17,679
like i think i mentioned yesterday you

678
00:25:21,510 --> 00:25:19,360
know this is the start of our mission

679
00:25:23,590 --> 00:25:21,520
and uh uh you know there are a lot of

680
00:25:26,230 --> 00:25:23,600
folks on surface that have been you know

681
00:25:28,470 --> 00:25:26,240
practicing and training and learning for

682
00:25:30,630 --> 00:25:28,480
years to you know to execute these you

683
00:25:32,630 --> 00:25:30,640
know these early parts of the mission

684
00:25:34,870 --> 00:25:32,640
and uh you know it's great to actually

685
00:25:36,789 --> 00:25:34,880
you know put our rover through uh you

686
00:25:38,470 --> 00:25:36,799
know through the motions here

687
00:25:39,750 --> 00:25:38,480
um it's also great to keep looking

688
00:25:41,350 --> 00:25:39,760

around the neighborhood i said this

689
00:25:43,350 --> 00:25:41,360
yesterday the you know my favorite

690
00:25:44,710 --> 00:25:43,360
images are always these first few images

691
00:25:46,310 --> 00:25:44,720
because you first get a chance to really

692
00:25:47,750 --> 00:25:46,320
see where you are and i think the

693
00:25:49,269 --> 00:25:47,760
emotion of those every time we get a new

694
00:25:50,870 --> 00:25:49,279
one yet we all crowd around the screen

695
00:25:52,789 --> 00:25:50,880
and you know and watch uh you know watch

696
00:25:54,470 --> 00:25:52,799
the first images come up here and we're

697
00:25:57,190 --> 00:25:54,480
still doing that just as much you know

698
00:25:58,149 --> 00:25:57,200
today as as we were on on landing night

699
00:25:59,510 --> 00:25:58,159
um

700
00:26:01,190 --> 00:25:59,520
but it is interesting i mean the you

701
00:26:02,870 --> 00:26:01,200
know the rooms are a little bit uh a

702
00:26:04,310 --> 00:26:02,880
little bit less crowded with uh you know

703
00:26:05,990 --> 00:26:04,320
with with onlookers that are not on the

704
00:26:07,669 --> 00:26:06,000
team mostly because it's it's occurring

705
00:26:08,470 --> 00:26:07,679
at three o'clock in the morning

706
00:26:09,830 --> 00:26:08,480
um

707
00:26:12,390 --> 00:26:09,840
but uh but you know i think the service

708
00:26:13,909 --> 00:26:12,400
team is still pretty excited um

709
00:26:15,750 --> 00:26:13,919
uh but there's you know a lot of long

710
00:26:17,669 --> 00:26:15,760
hours i think so uh so yeah the

711
00:26:18,870 --> 00:26:17,679
adrenaline will last for a while but you

712
00:26:20,470 --> 00:26:18,880
know i think a lot of folks are you know

713
00:26:21,750 --> 00:26:20,480

working late at night and on mars time

714
00:26:23,830 --> 00:26:21,760
and i think still getting adjusted to

715
00:26:25,350 --> 00:26:23,840
that but uh but you know these are these

716
00:26:27,430 --> 00:26:25,360
are the days that that people worked

717
00:26:28,390 --> 00:26:27,440
five and ten years for um going on right

718
00:26:29,830 --> 00:26:28,400
now

719
00:26:31,590 --> 00:26:29,840
all right we're going to jump back to

720
00:26:33,430 --> 00:26:31,600
the room here at jpl then we'll get back

721
00:26:36,390 --> 00:26:33,440
to the phones uh let's go ahead and take

722
00:26:37,909 --> 00:26:36,400
that question right there yeah hi um i'm

723
00:26:40,390 --> 00:26:37,919
mark kaufman with the washington post

724
00:26:41,590 --> 00:26:40,400
and national geographic um

725
00:26:43,750 --> 00:26:41,600
some of this you may have gone over

726
00:26:45,590 --> 00:26:43,760
yesterday i and i apologize if you

727
00:26:47,830 --> 00:26:45,600
already had but uh

728
00:26:49,990 --> 00:26:47,840
in terms of your situational awareness

729
00:26:51,110 --> 00:26:50,000
as it were do you know how far you are

730
00:26:55,510 --> 00:26:51,120
from

731
00:26:57,909 --> 00:26:55,520
and can is that the crater wall we're

732
00:26:58,950 --> 00:26:57,919
seeing in the back uh

733
00:27:00,950 --> 00:26:58,960
so

734
00:27:03,510 --> 00:27:00,960
just if you folks could give us a sense

735
00:27:05,350 --> 00:27:03,520
of where exactly in the crater you are

736
00:27:06,870 --> 00:27:05,360
you know it's funny because

737
00:27:09,110 --> 00:27:06,880
you know since we put that picture out

738
00:27:10,789 --> 00:27:09,120

you know 12 hours ago it's like oh yeah

739
00:27:12,870 --> 00:27:10,799
we

740
00:27:14,549 --> 00:27:12,880
yeah that's the north wall of gale in

741
00:27:16,630 --> 00:27:14,559
the mali image

742
00:27:18,310 --> 00:27:16,640
and we're facing pretty much due north

743
00:27:19,269 --> 00:27:18,320
with molly

744
00:27:21,350 --> 00:27:19,279
and that's

745
00:27:22,870 --> 00:27:21,360
there's a it's yeah so just to be clear

746
00:27:24,950 --> 00:27:22,880
let me just clarify yeah interrupt the

747
00:27:27,669 --> 00:27:24,960
rover is facing it's kind of east east

748
00:27:30,950 --> 00:27:27,679
southeast and but and molly's off is off

749
00:27:32,470 --> 00:27:30,960
to the side so mali the mali uh lens is

750
00:27:34,870 --> 00:27:32,480
facing due north the rover is facing

751
00:27:37,190 --> 00:27:34,880
kind of more east east southeast

752
00:27:41,269 --> 00:27:37,200
and that distance to that wall is you

753
00:27:42,389 --> 00:27:41,279
know roughly 20 to 25 kilometers i think

754
00:27:44,310 --> 00:27:42,399
and

755
00:27:46,389 --> 00:27:44,320
my recollection from what jennifer was

756
00:27:48,549 --> 00:27:46,399
saying here yesterday that to the

757
00:27:50,549 --> 00:27:48,559
mountain it's something like six

758
00:27:52,470 --> 00:27:50,559
kilometers as the crow flies or

759
00:27:53,269 --> 00:27:52,480
something like that is that from from

760
00:27:55,990 --> 00:27:53,279
the

761
00:27:58,310 --> 00:27:56,000
high-rise image we estimate and again

762
00:28:00,470 --> 00:27:58,320
this is rough because it's this sort of

763
00:28:01,269 --> 00:28:00,480

skewed perspective

764
00:28:03,830 --> 00:28:01,279
from

765
00:28:05,029 --> 00:28:03,840
the rover to the point directly to the

766
00:28:06,870 --> 00:28:05,039
point at which

767
00:28:09,110 --> 00:28:06,880
curiosity is going we're thinking

768
00:28:12,310 --> 00:28:09,120
curiosity is going to start climbing up

769
00:28:14,710 --> 00:28:12,320
uh is about 12 kilometers

770
00:28:17,350 --> 00:28:14,720
okay more questions here at jpl let's

771
00:28:19,590 --> 00:28:17,360
let's go back to second row back there

772
00:28:21,990 --> 00:28:19,600
todd halverson

773
00:28:24,710 --> 00:28:22,000
um thanks a lot todd alberson of florida

774
00:28:27,510 --> 00:28:24,720
today in usa today um

775
00:28:29,669 --> 00:28:27,520
i was i have several actually um could

776
00:28:31,909 --> 00:28:29,679
you go over again

777
00:28:33,830 --> 00:28:31,919
what you're going to first get from mass

778
00:28:36,310 --> 00:28:33,840
cam

779
00:28:38,710 --> 00:28:36,320
when you think you'll have the first

780
00:28:39,830 --> 00:28:38,720
panorama of the neighborhood

781
00:28:42,470 --> 00:28:39,840
and

782
00:28:45,669 --> 00:28:42,480
you mentioned mars time right now

783
00:28:48,149 --> 00:28:45,679
what is the work shift that people on

784
00:28:50,789 --> 00:28:48,159
mars time are working right now it

785
00:28:53,269 --> 00:28:50,799
sounds like it's overnight

786
00:28:56,149 --> 00:28:53,279
uh okay um let me try to remember all

787
00:28:57,110 --> 00:28:56,159
those questions so um we are taking a

788
00:29:37,269 --> 00:28:57,120

a

789
00:29:41,510 --> 00:29:37,279
um

790
00:29:43,029 --> 00:29:41,520
so so the mars time we actually are

791
00:29:44,630 --> 00:29:43,039
staffed um

792
00:29:48,870 --> 00:29:44,640
nearly around the clock

793
00:29:50,870 --> 00:29:48,880
the the the the prime start of the

794
00:29:53,909 --> 00:29:50,880
of the day for us is when the rover's

795
00:29:55,269 --> 00:29:53,919
day ends so the rover day ends on mars

796
00:29:56,789 --> 00:29:55,279
around three or four o'clock in the

797
00:29:59,029 --> 00:29:56,799
afternoon

798
00:30:01,269 --> 00:29:59,039
um uh in order to be timed with uh with

799
00:30:03,269 --> 00:30:01,279
the uh with the uh uh orbiter

800
00:30:04,549 --> 00:30:03,279
overflights with mro or odyssey over

801
00:30:05,350 --> 00:30:04,559
flights

802
00:30:08,789 --> 00:30:05,360
so

803
00:30:11,110 --> 00:30:08,799
the rover tells us what what yeah it did

804
00:30:12,630 --> 00:30:11,120
today and then sends that data down to

805
00:30:14,389 --> 00:30:12,640
the earth and then the team then wants

806
00:30:16,149 --> 00:30:14,399
to take a look at that and plan tomorrow

807
00:30:17,510 --> 00:30:16,159
based on what happened based on on what

808
00:30:20,149 --> 00:30:17,520
she told us

809
00:30:23,029 --> 00:30:20,159
her status was at the end of her day

810
00:30:25,110 --> 00:30:23,039
and that occurs for us uh as you

811
00:30:27,350 --> 00:30:25,120
remember edl happened around 10 30. that

812
00:30:28,630 --> 00:30:27,360
was under those overflights and so those

813
00:30:30,470 --> 00:30:28,640

are moving by the difference between the

814
00:30:33,110 --> 00:30:30,480
mars rotation mars day and the earth day

815
00:30:35,830 --> 00:30:33,120
so about 40 minutes later every night

816
00:30:37,269 --> 00:30:35,840
so so that shift of people coming in

817
00:30:39,510 --> 00:30:37,279
taking a look at the latest data from

818
00:30:41,590 --> 00:30:39,520
the rover is now starting you know 11

819
00:30:43,269 --> 00:30:41,600
and 12 o'clock at night and then going

820
00:30:44,950 --> 00:30:43,279
about eight hours and then another shift

821
00:30:46,870 --> 00:30:44,960
comes in to continue the the the

822
00:30:49,110 --> 00:30:46,880
planning for the you know the the to

823
00:30:51,190 --> 00:30:49,120
complete the sequences

824
00:30:52,389 --> 00:30:51,200
okay we're going to take a question from

825
00:30:55,110 --> 00:30:52,399
here and then we're going to jump to the

826
00:30:57,269 --> 00:30:55,120
phones let's get the blue shirt right

827
00:30:59,909 --> 00:30:57,279
behind you jody

828
00:31:01,990 --> 00:30:59,919
thank you very much i'm fernando correa

829
00:31:04,230 --> 00:31:02,000
from tercel millennium in mexico

830
00:31:07,110 --> 00:31:04,240
congratulations fears the question is

831
00:31:09,430 --> 00:31:07,120
exist something to do to clean the doors

832
00:31:10,870 --> 00:31:09,440
from the lenses from the instruments

833
00:31:11,750 --> 00:31:10,880
what we're going to do

834
00:31:14,710 --> 00:31:11,760
well

835
00:31:17,430 --> 00:31:14,720
the the molle has a dust cover

836
00:31:19,509 --> 00:31:17,440
so that we are protected from dust the

837
00:31:21,750 --> 00:31:19,519
fact that it's clear and we can see

838
00:31:24,310 --> 00:31:21,760

through it was really just in case it

839
00:31:26,549 --> 00:31:24,320
never opened for some reason so we will

840
00:31:27,990 --> 00:31:26,559
open it and then we're clean

841
00:31:29,909 --> 00:31:28,000
the uh

842
00:31:32,310 --> 00:31:29,919
hazard cameras as you know their covers

843
00:31:34,870 --> 00:31:32,320
already came off so any dust that would

844
00:31:36,230 --> 00:31:34,880
accumulate now is but they kind of point

845
00:31:38,630 --> 00:31:36,240
down

846
00:31:41,029 --> 00:31:38,640
the cameras on the mast right the nav

847
00:31:42,789 --> 00:31:41,039
cams the mast cams the chemcam

848
00:31:44,710 --> 00:31:42,799
those are which will deploy now

849
00:31:46,389 --> 00:31:44,720
typically you can you can typically

850
00:31:48,789 --> 00:31:46,399
you'll point down when you're not

851
00:31:51,509 --> 00:31:48,799
operating so that dust settling from the

852
00:31:53,669 --> 00:31:51,519
sky won't accumulate on those

853
00:31:55,909 --> 00:31:53,679
that's pretty standard on on opportunity

854
00:31:57,190 --> 00:31:55,919
and spirit as well right

855
00:31:59,509 --> 00:31:57,200
thank you

856
00:32:02,310 --> 00:31:59,519
okay we're going to jump to a call on

857
00:32:05,509 --> 00:32:02,320
the phone right now from houston and

858
00:32:07,590 --> 00:32:05,519
it's ian page with kprc tv go ahead ian

859
00:32:09,350 --> 00:32:07,600
if you're there thank you yes i am

860
00:32:11,350 --> 00:32:09,360
probably for ken kenny can you just talk

861
00:32:12,950 --> 00:32:11,360
about the significance of these color

862
00:32:14,470 --> 00:32:12,960
pictures which are giving us a look at

863
00:32:16,149 --> 00:32:14,480

mars that we've never seen before and

864
00:32:18,470 --> 00:32:16,159
just how thrilled that you guys must be

865
00:32:20,470 --> 00:32:18,480
about these pictures

866
00:32:21,669 --> 00:32:20,480
did you see the marty descent images

867
00:32:23,909 --> 00:32:21,679
yesterday

868
00:32:26,070 --> 00:32:23,919
i mean yeah i work for this very small

869
00:32:28,230 --> 00:32:26,080
company down san diego and we built four

870
00:32:31,190 --> 00:32:28,240
of these color cameras on this rover and

871
00:32:35,190 --> 00:32:31,200
we now know that two of them are working

872
00:32:36,789 --> 00:32:35,200
uh i'm just too emotional for me

873
00:32:40,710 --> 00:32:36,799
it's been a long journey and it's really

874
00:32:40,720 --> 00:32:44,149
did i answer the question yeah

875
00:32:49,110 --> 00:32:46,870
and i'm tired

876
00:32:50,950 --> 00:32:49,120
all right let's take some more questions

877
00:32:53,909 --> 00:32:50,960
here at jpl and i see we have several

878
00:32:57,350 --> 00:32:53,919
hands so let's start here in the third

879
00:32:58,710 --> 00:32:57,360
row and then we'll jump across the aisle

880
00:33:00,710 --> 00:32:58,720
behind you

881
00:33:02,549 --> 00:33:00,720
hi uh henry bortman with astrobiology

882
00:33:05,590 --> 00:33:02,559
magazine couple of questions

883
00:33:08,149 --> 00:33:05,600
um the relative data rates of uh high

884
00:33:10,470 --> 00:33:08,159
gain antenna the odyssey path and the

885
00:33:11,830 --> 00:33:10,480
mro path could you give us that

886
00:33:13,269 --> 00:33:11,840
information and is odyssey going to

887
00:33:15,590 --> 00:33:13,279
continue to be

888
00:33:17,750 --> 00:33:15,600

the main way we get stuff back

889
00:33:19,590 --> 00:33:17,760
yeah for sure odyssey and eventually mro

890
00:33:21,590 --> 00:33:19,600
are by far the the prime ways we get

891
00:33:24,549 --> 00:33:21,600
data back um the the director earth is

892
00:33:26,389 --> 00:33:24,559
is is is really not not a primary way to

893
00:33:28,630 --> 00:33:26,399
get uh to get science data back because

894
00:33:30,950 --> 00:33:28,640
the data rates are just too low the uh

895
00:33:32,310 --> 00:33:30,960
the relay rates the relay orbiters we

896
00:33:35,269 --> 00:33:32,320
actually can adjust those and they're

897
00:33:39,509 --> 00:33:35,279
set to kind of low rates for them um uh

898
00:33:41,269 --> 00:33:39,519
8k for odyssey and 32k for mro

899
00:33:43,990 --> 00:33:41,279
but we're about to up those rates and

900
00:33:45,669 --> 00:33:44,000
and in the case of mro um we could

901
00:33:46,710 --> 00:33:45,679
actually get up to close to two megabits

902
00:33:50,310 --> 00:33:46,720
per second

903
00:33:52,470 --> 00:33:50,320
so uh mro the radios on mro and um

904
00:33:53,830 --> 00:33:52,480
and curiosity actually can dynamically

905
00:33:55,909 --> 00:33:53,840
adjust the data rate depending on how

906
00:33:57,509 --> 00:33:55,919
good the link is and they can you know

907
00:33:59,669 --> 00:33:57,519
zoom it up to the maximum rate when when

908
00:34:00,630 --> 00:33:59,679
we activate that feature later on but in

909
00:34:02,789 --> 00:34:00,640
these early days we're trying to be

910
00:34:04,549 --> 00:34:02,799
careful trying to you know keep the the

911
00:34:06,470 --> 00:34:04,559
signal to noise ratio as high as we can

912
00:34:09,909 --> 00:34:06,480
and be kind of conservative

913
00:34:11,270 --> 00:34:09,919

um in addition um uh when mro activates

914
00:34:12,950 --> 00:34:11,280
all of its science instruments you know

915
00:34:14,069 --> 00:34:12,960
the chrism instrument and mcs and you

916
00:34:15,829 --> 00:34:14,079
know we've had it high-rise and all of

917
00:34:18,149 --> 00:34:15,839
these instruments um there's a little

918
00:34:19,669 --> 00:34:18,159
bit of of of interference and so we want

919
00:34:21,430 --> 00:34:19,679
to characterize all that before we you

920
00:34:23,909 --> 00:34:21,440
know before we uh commit to the final

921
00:34:25,430 --> 00:34:23,919
data rates so right now um you know

922
00:34:26,710 --> 00:34:25,440
we're still getting you know the vast

923
00:34:28,470 --> 00:34:26,720
majority and we'll continue to get the

924
00:34:30,710 --> 00:34:28,480
vast majority of data through the relay

925
00:34:33,430 --> 00:34:30,720
orbiters but we're about to get much

926
00:34:35,030 --> 00:34:33,440
more per day than we're getting now

927
00:34:37,270 --> 00:34:35,040
for you know four or five times more per

928
00:34:39,190 --> 00:34:37,280
day and a dust question there's been a

929
00:34:41,270 --> 00:34:39,200
lot of talk about dust on the dust

930
00:34:42,710 --> 00:34:41,280
covers on the cameras

931
00:34:44,950 --> 00:34:42,720
before

932
00:34:47,030 --> 00:34:44,960
edl there was

933
00:34:49,349 --> 00:34:47,040
in the description of the process one of

934
00:34:50,550 --> 00:34:49,359
the reasons for keeping the

935
00:34:53,750 --> 00:34:50,560
sky crane

936
00:34:55,430 --> 00:34:53,760
high off the ground was to prevent dust

937
00:34:57,430 --> 00:34:55,440
and i'm wondering if you got more dust

938
00:34:59,589 --> 00:34:57,440

than you thought you were going to

939
00:35:00,790 --> 00:34:59,599
um it's hard to tell i think there were

940
00:35:02,950 --> 00:35:00,800
there's a variety of opinions about how

941
00:35:04,870 --> 00:35:02,960
much dust we're going to see um i think

942
00:35:06,390 --> 00:35:04,880
you can tell because we put dust covers

943
00:35:07,910 --> 00:35:06,400
on on all the cameras including the haz

944
00:35:09,670 --> 00:35:07,920
cams we were concerned that we would get

945
00:35:10,870 --> 00:35:09,680
some um i think it remains we've seen

946
00:35:11,829 --> 00:35:10,880
how much how much we've gotten it

947
00:35:13,109 --> 00:35:11,839
certainly looks like you know there's a

948
00:35:14,870 --> 00:35:13,119
fair amount of dust kicked up by this

949
00:35:17,349 --> 00:35:14,880
thing um but you know the rover is

950
00:35:18,630 --> 00:35:17,359
designed to be largely tolerant of dust

951
00:35:20,069 --> 00:35:18,640
because you know the longer you sit out

952
00:35:22,390 --> 00:35:20,079
there on mars you start to get covered

953
00:35:24,310 --> 00:35:22,400
with dust um luckily we don't have the

954
00:35:25,910 --> 00:35:24,320
solar panel situation you know um spirit

955
00:35:27,349 --> 00:35:25,920
and opportunity we're sort of blessed by

956
00:35:28,630 --> 00:35:27,359
these cleaning events that kept them

957
00:35:30,150 --> 00:35:28,640
going but you know we thought of that as

958
00:35:32,550 --> 00:35:30,160
one of the one of the methods of decline

959
00:35:33,910 --> 00:35:32,560
of of of myrrh um and so we're not

960
00:35:35,670 --> 00:35:33,920
subject to that so you know we think

961
00:35:36,950 --> 00:35:35,680
we're pretty resilient to a fair amount

962
00:35:38,870 --> 00:35:36,960
of dust but it remains we've seen how

963
00:35:39,990 --> 00:35:38,880

much we how much we've got and i think

964
00:35:41,829 --> 00:35:40,000
some of the images we're about to get

965
00:35:44,310 --> 00:35:41,839
back where we can self-inspect will uh

966
00:35:45,670 --> 00:35:44,320
will will let us know a lot about that

967
00:35:47,670 --> 00:35:45,680
all right the next question we're going

968
00:35:49,430 --> 00:35:47,680
to take it jody right behind you scott

969
00:35:51,750 --> 00:35:49,440
can you raise your hand with the green

970
00:35:53,750 --> 00:35:51,760
shirt yep good morning scott gold with

971
00:35:55,990 --> 00:35:53,760
the l.a times uh two quick questions

972
00:35:58,790 --> 00:35:56,000
sarah there was some kind of giddy

973
00:36:00,550 --> 00:35:58,800
uh speculation immediately when the

974
00:36:01,829 --> 00:36:00,560
first images immediately arrived that

975
00:36:04,230 --> 00:36:01,839
you could see

976
00:36:05,829 --> 00:36:04,240
the descent stage of the sky crane crash

977
00:36:07,270 --> 00:36:05,839
landing in the background of one of

978
00:36:09,270 --> 00:36:07,280
those images now that you know where

979
00:36:11,670 --> 00:36:09,280
everything wound up where all the pieces

980
00:36:13,349 --> 00:36:11,680
are can you kind of either put that to

981
00:36:15,349 --> 00:36:13,359
rest or not

982
00:36:17,030 --> 00:36:15,359
and then uh secondly mike can you kind

983
00:36:19,270 --> 00:36:17,040
of explain a bit more about the rems

984
00:36:21,750 --> 00:36:19,280
test that did not work the way you had

985
00:36:23,190 --> 00:36:21,760
hoped exactly and sort of explain a bit

986
00:36:26,710 --> 00:36:23,200
more about the significance of that and

987
00:36:29,030 --> 00:36:26,720
how difficult a fix it is

988
00:36:30,630 --> 00:36:29,040

uh if we could show the kind of the

989
00:36:32,390 --> 00:36:30,640
crime scene photo with all the

990
00:36:33,990 --> 00:36:32,400
components

991
00:36:35,990 --> 00:36:34,000
on it

992
00:36:42,870 --> 00:36:36,000
okay uh sarah we'll get that up for you

993
00:36:48,550 --> 00:36:46,390
okay we'll just run through so um

994
00:36:50,710 --> 00:36:48,560
we we know

995
00:36:53,190 --> 00:36:50,720
what we know where everything is sort of

996
00:36:55,030 --> 00:36:53,200
with respect to each other and we know

997
00:36:57,910 --> 00:36:55,040
which direction

998
00:37:00,630 --> 00:36:57,920
uh curiosity is oriented

999
00:37:03,030 --> 00:37:00,640
so um

1000
00:37:04,630 --> 00:37:03,040
you know what precisely we saw in those

1001
00:37:06,390 --> 00:37:04,640
images

1002
00:37:09,990 --> 00:37:06,400
i don't really want to speculate about

1003
00:37:11,270 --> 00:37:10,000
at this time uh but you can see that so

1004
00:37:13,510 --> 00:37:11,280
um if

1005
00:37:17,430 --> 00:37:13,520
so the sky is you can see sky crane and

1006
00:37:18,150 --> 00:37:17,440
curiosity and then if um

1007
00:37:19,829 --> 00:37:18,160
we

1008
00:37:23,270 --> 00:37:19,839
so if you just remember which direction

1009
00:37:25,589 --> 00:37:23,280
that is and then go forward one one step

1010
00:37:28,069 --> 00:37:25,599
if you could um

1011
00:37:31,190 --> 00:37:28,079
so so

1012
00:37:33,030 --> 00:37:31,200
so okay so the rover that the rear has

1013
00:37:34,230 --> 00:37:33,040

cams are

1014
00:37:35,030 --> 00:37:34,240
pointing

1015
00:37:37,589 --> 00:37:35,040
um

1016
00:37:40,230 --> 00:37:37,599
perpendicular to that that dust streak

1017
00:37:42,470 --> 00:37:40,240
there and and pointing up to that uh

1018
00:37:44,310 --> 00:37:42,480
that corner and so yes that's the that's

1019
00:37:46,390 --> 00:37:44,320
the right direction

1020
00:37:49,109 --> 00:37:46,400
for the sky crane

1021
00:37:52,230 --> 00:37:49,119
but um what precisely we saw in those

1022
00:37:55,270 --> 00:37:52,240
images i think i think the team has to

1023
00:37:56,150 --> 00:37:55,280
talk about and and and

1024
00:37:58,550 --> 00:37:56,160
you know

1025
00:37:59,670 --> 00:37:58,560
we have to mull that over a bit more

1026
00:38:01,589 --> 00:37:59,680
yeah i think we're still thinking about

1027
00:38:03,589 --> 00:38:01,599
it you i don't think you can rule it out

1028
00:38:05,829 --> 00:38:03,599
based on this image

1029
00:38:07,589 --> 00:38:05,839
okay that sounds intriguing let's go

1030
00:38:10,390 --> 00:38:07,599
over to this side of the room

1031
00:38:12,310 --> 00:38:10,400
and the question blue shirt uh

1032
00:38:14,710 --> 00:38:12,320
right a couple rows behind you jody

1033
00:38:16,710 --> 00:38:14,720
there you go

1034
00:38:18,069 --> 00:38:16,720
oh yeah remember i'm sorry scott yeah so

1035
00:38:19,589 --> 00:38:18,079
uh let me say two things first of all

1036
00:38:21,349 --> 00:38:19,599
you know we have we have a you know a

1037
00:38:23,190 --> 00:38:21,359
great rems team and they're off work on

1038
00:38:25,109 --> 00:38:23,200

this and and uh you know a principal

1039
00:38:26,870 --> 00:38:25,119
investigator and a whole team of

1040
00:38:28,150 --> 00:38:26,880
engineers working on on rims and and

1041
00:38:30,230 --> 00:38:28,160
they're working this problem and i don't

1042
00:38:31,270 --> 00:38:30,240
really want to you know uh uh speak for

1043
00:38:33,430 --> 00:38:31,280
them because they're you know they're

1044
00:38:35,349 --> 00:38:33,440
they're um they're off looking into this

1045
00:38:37,349 --> 00:38:35,359
um you know our our first take on this

1046
00:38:38,390 --> 00:38:37,359
is you know the first checkout worked

1047
00:38:39,829 --> 00:38:38,400
fine

1048
00:38:42,310 --> 00:38:39,839
um

1049
00:38:44,550 --> 00:38:42,320
they uh they they have they do all this

1050
00:38:45,750 --> 00:38:44,560
checking of the of of the file that

1051
00:38:47,670 --> 00:38:45,760
they're about to read to execute the

1052
00:38:49,510 --> 00:38:47,680
next set of observations and that file

1053
00:38:51,829 --> 00:38:49,520
did not look like it it had the values

1054
00:38:54,310 --> 00:38:51,839
that they expected and uh i think things

1055
00:38:56,470 --> 00:38:54,320
like this are are are a class a thing

1056
00:38:58,230 --> 00:38:56,480
they've seen before and it's it's uh you

1057
00:38:59,589 --> 00:38:58,240
know in the past has been just fixed by

1058
00:39:01,510 --> 00:38:59,599
changing that table

1059
00:39:03,190 --> 00:39:01,520
so uh i would say that it does not

1060
00:39:04,790 --> 00:39:03,200
appear to be you know significant at

1061
00:39:06,230 --> 00:39:04,800
this time but you know the these guys

1062
00:39:07,349 --> 00:39:06,240
are off you know working it and it's uh

1063
00:39:09,270 --> 00:39:07,359

you know it's their baby and let's let

1064
00:39:10,550 --> 00:39:09,280
them uh think about it for a while i

1065
00:39:13,829 --> 00:39:10,560
mean john do you know any anymore do you

1066
00:39:18,150 --> 00:39:15,910
okay then let's go ahead with a question

1067
00:39:20,150 --> 00:39:18,160
and then we'll go um

1068
00:39:22,870 --> 00:39:20,160
let's just take you first okay thanks

1069
00:39:23,829 --> 00:39:22,880
kelly bd sky and telescope for ken um mr

1070
00:39:24,710 --> 00:39:23,839
p.i

1071
00:39:28,150 --> 00:39:24,720
uh

1072
00:39:29,589 --> 00:39:28,160
are the rgb filters on molly the same as

1073
00:39:31,589 --> 00:39:29,599
on the mast cams will you be able to

1074
00:39:33,510 --> 00:39:31,599
balance the color do the white balances

1075
00:39:35,349 --> 00:39:33,520
and such the same so that you get

1076
00:39:37,910 --> 00:39:35,359
consistent results with them

1077
00:39:41,109 --> 00:39:37,920
it's it's exactly the mali mast cam and

1078
00:39:42,870 --> 00:39:41,119
marty all have the same ccd it's a bear

1079
00:39:45,510 --> 00:39:42,880
pattern you know the

1080
00:39:46,630 --> 00:39:45,520
2x two times green and it versus red and

1081
00:39:48,069 --> 00:39:46,640
blue so

1082
00:39:49,829 --> 00:39:48,079
um

1083
00:39:52,470 --> 00:39:49,839
yeah we'll be able to perform all those

1084
00:39:54,390 --> 00:39:52,480
things uh it's a little challenging when

1085
00:39:56,150 --> 00:39:54,400
we have this low contrast image that we

1086
00:39:57,670 --> 00:39:56,160
have right now but

1087
00:40:00,310 --> 00:39:57,680
yes

1088
00:40:03,190 --> 00:40:00,320

and it'll all work great

1089
00:40:05,990 --> 00:40:03,200
okay let's uh go to a question

1090
00:40:10,069 --> 00:40:08,710
hi i'm rafael garcia with foid sao paulo

1091
00:40:13,270 --> 00:40:10,079
brazil

1092
00:40:15,030 --> 00:40:13,280
once you get the mess deployed uh are

1093
00:40:17,190 --> 00:40:15,040
the cameras in the mast high enough to

1094
00:40:21,510 --> 00:40:17,200
try to spot the sky crane the heat

1095
00:40:26,309 --> 00:40:23,430
um

1096
00:40:27,430 --> 00:40:26,319
feel the i i think they probably are it

1097
00:40:29,990 --> 00:40:27,440
depends a little bit on the local

1098
00:40:32,309 --> 00:40:30,000
topography uh i i think if it's pretty

1099
00:40:34,470 --> 00:40:32,319
flat we we uh we have a decent chance of

1100
00:40:39,270 --> 00:40:34,480
seeing them

1101
00:40:42,790 --> 00:40:41,030
can we get a mic up to john right here

1102
00:40:44,950 --> 00:40:42,800
he said he said yeah he agrees yeah get

1103
00:40:46,470 --> 00:40:44,960
up yeah okay

1104
00:40:47,510 --> 00:40:46,480
he thinks yes it depends a little bit

1105
00:40:49,750 --> 00:40:47,520
you know make sure that depends on you

1106
00:40:54,550 --> 00:40:49,760
know how flat it is between us and them

1107
00:40:58,309 --> 00:40:55,910
emily locked a wallet the planetary

1108
00:41:00,550 --> 00:40:58,319
society i'm wondering how windy do you

1109
00:41:02,550 --> 00:41:00,560
expect this site to be do you expect it

1110
00:41:04,069 --> 00:41:02,560
to blow dust off do you expect it to

1111
00:41:04,829 --> 00:41:04,079
blow dust on

1112
00:41:06,870 --> 00:41:04,839
your

1113
00:41:10,550 --> 00:41:06,880

equipment um

1114
00:41:14,150 --> 00:41:10,560
the dunes are actually known to move

1115
00:41:17,430 --> 00:41:14,160
from high-rise images taken over time

1116
00:41:19,190 --> 00:41:17,440
so that's that's a windy place

1117
00:41:20,870 --> 00:41:19,200
so i

1118
00:41:22,470 --> 00:41:20,880
now what it what we'll see in terms of

1119
00:41:24,470 --> 00:41:22,480
dust removal

1120
00:41:25,829 --> 00:41:24,480
remains to be seen but

1121
00:41:29,109 --> 00:41:25,839
get a little closer to that dune field

1122
00:41:33,190 --> 00:41:31,750
okay um has anybody anybody yeah let's

1123
00:41:35,030 --> 00:41:33,200
go to frank moore and you haven't asked

1124
00:41:36,150 --> 00:41:35,040
a question yet right here in the second

1125
00:41:37,829 --> 00:41:36,160
row

1126
00:41:39,270 --> 00:41:37,839
and then we'll get some repeat questions

1127
00:41:41,430 --> 00:41:39,280
if we have time

1128
00:41:43,990 --> 00:41:41,440
frank mooring with aviation week for for

1129
00:41:45,910 --> 00:41:44,000
ken and i guess maybe mike given the

1130
00:41:48,630 --> 00:41:45,920
turnaround beauty of your first color

1131
00:41:50,870 --> 00:41:48,640
shot when could we expect to see a clear

1132
00:41:53,030 --> 00:41:50,880
picture maybe from that camera or from

1133
00:41:55,349 --> 00:41:53,040
one of the mast cams

1134
00:41:57,829 --> 00:41:55,359
well from the mast cams as mike said

1135
00:42:00,390 --> 00:41:57,839
earlier on saw two they're gonna get

1136
00:42:02,150 --> 00:42:00,400
pictures their initial just like we did

1137
00:42:03,349 --> 00:42:02,160
with molly looking off where we're

1138
00:42:05,670 --> 00:42:03,359

pointed they're going to purposefully

1139
00:42:07,990 --> 00:42:05,680
point at their calibration target make

1140
00:42:10,550 --> 00:42:08,000
sure the mechanisms are working get in

1141
00:42:13,030 --> 00:42:10,560
focus the whole thing um so that should

1142
00:42:16,309 --> 00:42:13,040
be you know tomorrow we would see that i

1143
00:42:18,230 --> 00:42:16,319
guess yeah would there be any terrain in

1144
00:42:20,630 --> 00:42:18,240
any of those early pictures or tomorrow

1145
00:42:22,710 --> 00:42:20,640
the the the nav cam certainly will have

1146
00:42:25,349 --> 00:42:22,720
will have terrain in them the uh uh the

1147
00:42:26,790 --> 00:42:25,359
mass cam uh probably not right just a

1148
00:42:28,150 --> 00:42:26,800
little bit off to the sides it's focused

1149
00:42:29,510 --> 00:42:28,160
on the cal target

1150
00:42:31,349 --> 00:42:29,520
and the one

1151
00:42:33,190 --> 00:42:31,359
the one camera you'll see some of the

1152
00:42:34,870 --> 00:42:33,200
dirt down below the rover in that

1153
00:42:36,870 --> 00:42:34,880
direction yeah

1154
00:42:38,710 --> 00:42:36,880
and just from for mike has anyone had a

1155
00:42:39,589 --> 00:42:38,720
chance to look at the the crime scene

1156
00:42:41,430 --> 00:42:39,599
here

1157
00:42:42,870 --> 00:42:41,440
and see if things sort of landed

1158
00:42:44,470 --> 00:42:42,880
approximately where they were expected

1159
00:42:46,550 --> 00:42:44,480
to land yeah i think i think they have

1160
00:42:48,390 --> 00:42:46,560
already uh i've seen some uh um some

1161
00:42:50,710 --> 00:42:48,400
email with the edl team saying that the

1162
00:42:52,710 --> 00:42:50,720
the layout looks pretty much uh uh the

1163
00:42:53,829 --> 00:42:52,720

way they expected and and you know they

1164
00:42:56,230 --> 00:42:53,839
kind of you know i think they would kind

1165
00:42:58,150 --> 00:42:56,240
of simulate it this way

1166
00:42:59,750 --> 00:42:58,160
like any more questions here from

1167
00:43:01,109 --> 00:42:59,760
somebody who has not asked a question

1168
00:43:04,390 --> 00:43:01,119
yet um

1169
00:43:06,230 --> 00:43:04,400
yeah let's get a mic back to the

1170
00:43:07,630 --> 00:43:06,240
the fourth row there fifth row there

1171
00:43:09,910 --> 00:43:07,640
yeah there you go frank o'brien

1172
00:43:12,710 --> 00:43:09,920
americaspace.com for uh ken

1173
00:43:14,630 --> 00:43:12,720
you were mentioning that there could be

1174
00:43:16,069 --> 00:43:14,640
a fair amount of winds

1175
00:43:17,750 --> 00:43:16,079
would that be enough to start the

1176
00:43:19,750 --> 00:43:17,760
parachute billowing up would we be able

1177
00:43:21,510 --> 00:43:19,760
to see that

1178
00:43:23,349 --> 00:43:21,520
i mean just to get a feel for the idea

1179
00:43:25,270 --> 00:43:23,359
of how intense the breezes could be you

1180
00:43:26,790 --> 00:43:25,280
know as you say it i'm processing you

1181
00:43:30,710 --> 00:43:26,800
know you know we can take video with the

1182
00:43:30,720 --> 00:43:38,470
i don't know the answer to that question

1183
00:43:43,670 --> 00:43:39,430
okay

1184
00:43:50,309 --> 00:43:44,550
let's

1185
00:43:54,630 --> 00:43:52,150
in the images we've taken of other

1186
00:43:57,190 --> 00:43:54,640
landers the parachutes have stayed put

1187
00:44:00,069 --> 00:43:57,200
under pretty large wind conditions so

1188
00:44:01,349 --> 00:44:00,079

anticipation we expect that it's

1189
00:44:02,870 --> 00:44:01,359
it's it's hard to do i mean the

1190
00:44:04,309 --> 00:44:02,880
atmosphere is only one percent that of

1191
00:44:06,550 --> 00:44:04,319
earth so it takes a lot of work i mean

1192
00:44:07,750 --> 00:44:06,560
to move these particles these part these

1193
00:44:09,270 --> 00:44:07,760
particles are only bouncing a little

1194
00:44:12,230 --> 00:44:09,280
ways off the ground even even these

1195
00:44:14,630 --> 00:44:12,240
larger sand dunes um so we don't expect

1196
00:44:17,270 --> 00:44:14,640
a lot of a lot of uh

1197
00:44:18,870 --> 00:44:17,280
you know big gusts like we have on earth

1198
00:44:20,309 --> 00:44:18,880
um but it's enough to move and

1199
00:44:22,150 --> 00:44:20,319
especially if there's dust in the wind

1200
00:44:23,990 --> 00:44:22,160
it's enough to move other particles and

1201
00:44:25,510 --> 00:44:24,000
that's how we get dust cleaning events

1202
00:44:27,030 --> 00:44:25,520
when up when dust particles hit other

1203
00:44:29,670 --> 00:44:27,040
dust particles and they knock it through

1204
00:44:32,630 --> 00:44:29,680
just like a sand blaster

1205
00:44:34,230 --> 00:44:32,640
okay um let's see let's take a question

1206
00:44:37,190 --> 00:44:34,240
let's go back to eric right here in the

1207
00:44:38,790 --> 00:44:37,200
second row

1208
00:44:41,190 --> 00:44:38,800
hi yeah eric hand with nature just a

1209
00:44:44,470 --> 00:44:41,200
quick question uh to clarify uh

1210
00:44:46,069 --> 00:44:44,480
something yesterday uh uh joy crisp told

1211
00:44:48,710 --> 00:44:46,079
us i think based on

1212
00:44:51,430 --> 00:44:48,720
mike malen's location that the base of

1213
00:44:53,510 --> 00:44:51,440

mount sharp was 6.5 kilometers away you

1214
00:44:54,710 --> 00:44:53,520
just said 12 kilometers away so it

1215
00:44:57,030 --> 00:44:54,720
depends on

1216
00:44:59,990 --> 00:44:57,040
where you're defining the base

1217
00:45:01,510 --> 00:45:00,000
like and if you're going

1218
00:45:03,990 --> 00:45:01,520
you know which way you're going we we

1219
00:45:05,589 --> 00:45:04,000
did a rough calculation to the point in

1220
00:45:06,950 --> 00:45:05,599
one of the um

1221
00:45:09,750 --> 00:45:06,960
the early

1222
00:45:12,470 --> 00:45:09,760
speculative traverses of where

1223
00:45:14,630 --> 00:45:12,480
the rover would start climbing and it's

1224
00:45:16,390 --> 00:45:14,640
versus if you're just going to draw like

1225
00:45:18,710 --> 00:45:16,400
a straight line to

1226
00:45:19,990 --> 00:45:18,720
you know some other feature it's a big

1227
00:45:22,470 --> 00:45:20,000
it's a big mountain

1228
00:45:23,510 --> 00:45:22,480
okay so the 6.5 is as the crow flies to

1229
00:45:25,750 --> 00:45:23,520
the base

1230
00:45:27,589 --> 00:45:25,760
i'm not i i would have to

1231
00:45:29,510 --> 00:45:27,599
i was i would see joy is here joe you

1232
00:45:32,150 --> 00:45:29,520
want to clarify

1233
00:45:34,309 --> 00:45:32,160
oh let's get a mic over to joy chris

1234
00:45:37,190 --> 00:45:34,319
yeah this is working

1235
00:45:39,510 --> 00:45:37,200
it was 6.5 kilometers straight and

1236
00:45:41,670 --> 00:45:39,520
working with other geologists they were

1237
00:45:43,750 --> 00:45:41,680
showing me how difficult it is to define

1238
00:45:45,589 --> 00:45:43,760

the base so there's that issue too same

1239
00:45:47,510 --> 00:45:45,599
with the rim in some places it's hard to

1240
00:45:50,390 --> 00:45:47,520
exactly define where the rim of the

1241
00:45:52,870 --> 00:45:50,400
crater is so 6.5 was an approximate

1242
00:45:54,390 --> 00:45:52,880
distance straight to from the rover

1243
00:45:56,550 --> 00:45:54,400
location to

1244
00:46:01,589 --> 00:45:56,560
where you could like the very first

1245
00:46:03,990 --> 00:46:01,599
start of uh gail i'm mount sharp sorry

1246
00:46:08,069 --> 00:46:04,000
any more questions here at jpl okay

1247
00:46:10,790 --> 00:46:08,079
let's go to right here in the aisle

1248
00:46:12,390 --> 00:46:10,800
uh olivier gamejoyspace.com again um a

1249
00:46:14,790 --> 00:46:12,400
question about the money camera at the

1250
00:46:17,349 --> 00:46:14,800
front on the robotic arm

1251
00:46:18,230 --> 00:46:17,359
what is the minimal focus distance and

1252
00:46:20,390 --> 00:46:18,240
what

1253
00:46:22,470 --> 00:46:20,400
resolution can you have on the soil of

1254
00:46:24,150 --> 00:46:22,480
mars with that camera and i suppose it

1255
00:46:26,870 --> 00:46:24,160
will help for the sampling process could

1256
00:46:29,430 --> 00:46:26,880
you describe or you will have

1257
00:46:31,589 --> 00:46:29,440
a working operation with a guy who will

1258
00:46:33,670 --> 00:46:31,599
do samples

1259
00:46:37,270 --> 00:46:33,680
how will work with the sampling yeah

1260
00:46:39,750 --> 00:46:37,280
yeah okay um the mali as i mentioned you

1261
00:46:43,109 --> 00:46:39,760
can change the focus you can focus on

1262
00:46:46,550 --> 00:46:43,119
things as close as it's literally 2.1

1263
00:46:47,670 --> 00:46:46,560

centimeters which is rough about an inch

1264
00:46:50,309 --> 00:46:47,680
out to

1265
00:46:52,950 --> 00:46:50,319
infinity basically

1266
00:46:54,109 --> 00:46:52,960
at the closest distance the resolution

1267
00:46:57,349 --> 00:46:54,119
is

1268
00:47:01,190 --> 00:46:57,359
1414 microns per pixel

1269
00:47:04,069 --> 00:47:01,200
okay and the mi on opportunity is about

1270
00:47:05,109 --> 00:47:04,079
30 31 microns so it's about twice as

1271
00:47:07,829 --> 00:47:05,119
high

1272
00:47:09,349 --> 00:47:07,839
but we have to get that much closer

1273
00:47:11,910 --> 00:47:09,359
to the target

1274
00:47:13,910 --> 00:47:11,920
um but we can be at any distance from

1275
00:47:15,910 --> 00:47:13,920
that and we will probably take you know

1276
00:47:17,750 --> 00:47:15,920
really high resolution then a context

1277
00:47:20,069 --> 00:47:17,760
and then another you know step out and

1278
00:47:22,870 --> 00:47:20,079
and you can take those samples in there

1279
00:47:24,950 --> 00:47:22,880
so it's pretty versatile

1280
00:47:27,190 --> 00:47:24,960
the arm will

1281
00:47:29,349 --> 00:47:27,200
use the mali to do mali science but

1282
00:47:31,109 --> 00:47:29,359
we're also going to be supporting all of

1283
00:47:32,710 --> 00:47:31,119
the sampling you've got to document

1284
00:47:34,150 --> 00:47:32,720
where we're going to drill document

1285
00:47:36,390 --> 00:47:34,160
where you're going to scoop

1286
00:47:39,670 --> 00:47:36,400
we're going to deliver sample that's

1287
00:47:41,829 --> 00:47:39,680
been sieved not only to the chemin and

1288
00:47:43,670 --> 00:47:41,839

the sand but also to a little round tray

1289
00:47:47,430 --> 00:47:43,680
called the observation tray it really is

1290
00:47:50,710 --> 00:47:47,440
about it's 75 millimeters across

1291
00:47:53,190 --> 00:47:50,720
that the apxs can look at and so we will

1292
00:47:55,829 --> 00:47:53,200
document that with the mali as well so

1293
00:47:58,150 --> 00:47:55,839
we can also you can open the like the

1294
00:48:00,549 --> 00:47:58,160
sam or the i'm sorry the chemin inlet

1295
00:48:01,990 --> 00:48:00,559
cover and look down the hole

1296
00:48:03,670 --> 00:48:02,000
so if you think there's any kind of a

1297
00:48:05,670 --> 00:48:03,680
clog or something you can diagnose that

1298
00:48:07,510 --> 00:48:05,680
so it's an amazing thing we'll be able

1299
00:48:09,030 --> 00:48:07,520
to look back at the rover

1300
00:48:11,910 --> 00:48:09,040
take pictures of the rover we'll be able

1301
00:48:14,150 --> 00:48:11,920
to look under the rover in focus you

1302
00:48:17,190 --> 00:48:14,160
know document what's under the rover

1303
00:48:20,710 --> 00:48:17,200
leds too oh and it has leds so we can

1304
00:48:22,390 --> 00:48:20,720
take pictures at night we can

1305
00:48:25,430 --> 00:48:22,400
diagnose this camera if there is any

1306
00:48:27,829 --> 00:48:25,440
problem which i don't yeah yes yes well

1307
00:48:29,270 --> 00:48:27,839
you'll recall on on a previous rover

1308
00:48:31,190 --> 00:48:29,280
there was a situation where they had to

1309
00:48:32,309 --> 00:48:31,200
look under the rover because a wheel was

1310
00:48:34,150 --> 00:48:32,319
stuck

1311
00:48:36,390 --> 00:48:34,160
and but in that case the camera could

1312
00:48:38,710 --> 00:48:36,400
not change focus

1313
00:48:41,589 --> 00:48:38,720

we can do focus now so

1314
00:48:45,750 --> 00:48:43,670
okay we only have time for one or two

1315
00:48:48,630 --> 00:48:45,760
more questions let's go ahead and the

1316
00:48:49,829 --> 00:48:48,640
third mark off and again um from the

1317
00:48:51,030 --> 00:48:49,839
beginning everyone has said that the

1318
00:48:52,950 --> 00:48:51,040
most important things that you're going

1319
00:48:55,510 --> 00:48:52,960
to find are your are the things that are

1320
00:48:57,670 --> 00:48:55,520
surprising and that you don't expect

1321
00:48:59,910 --> 00:48:57,680
anything pop up so far that was

1322
00:49:03,430 --> 00:48:59,920
different than what you had imagined

1323
00:49:04,790 --> 00:49:03,440
anticipated oh who's he talking to uh i

1324
00:49:08,390 --> 00:49:04,800
would say

1325
00:49:10,069 --> 00:49:08,400
perspective it's it's gone as well as we

1326
00:49:11,349 --> 00:49:10,079
could have imagined so it's you know

1327
00:49:13,510 --> 00:49:11,359
it's it's it's

1328
00:49:15,510 --> 00:49:13,520
it's been unsurprising which is

1329
00:49:16,870 --> 00:49:15,520
fantastic uh from an engineering

1330
00:49:17,670 --> 00:49:16,880
perspective i think that's how we like

1331
00:49:18,870 --> 00:49:17,680
it

1332
00:49:20,630 --> 00:49:18,880
uh i think from a science perspective

1333
00:49:22,870 --> 00:49:20,640
it's just too early in the mission to

1334
00:49:24,309 --> 00:49:22,880
you know to tell but i i am confident

1335
00:49:25,829 --> 00:49:24,319
there will be a lot of surprises when we

1336
00:49:30,230 --> 00:49:25,839
start looking around

1337
00:49:34,150 --> 00:49:32,790
todd halverson of florida today in usa

1338
00:49:37,190 --> 00:49:34,160

today um

1339
00:49:39,910 --> 00:49:37,200
i was wondering what exactly is the mass

1340
00:49:42,630 --> 00:49:39,920
cam calibration target and

1341
00:49:45,829 --> 00:49:42,640
when you suppose the

1342
00:49:48,309 --> 00:49:45,839
you might shoot the chem cam laser

1343
00:49:50,150 --> 00:49:48,319
i'll i'll let him do the laser because i

1344
00:49:54,549 --> 00:49:50,160
don't know the answer to that the the

1345
00:49:57,430 --> 00:49:54,559
mast cam cal target is the flight spare

1346
00:49:58,870 --> 00:49:57,440
of the spirit and opportunity pan cam

1347
00:50:01,190 --> 00:49:58,880
cal target

1348
00:50:03,190 --> 00:50:01,200
so it was actually you know a flight

1349
00:50:04,230 --> 00:50:03,200
spare it was ready to fly but it didn't

1350
00:50:05,990 --> 00:50:04,240
have to

1351
00:50:08,069 --> 00:50:06,000
so

1352
00:50:09,829 --> 00:50:08,079
our co-investigator jim bell outfitted

1353
00:50:11,750 --> 00:50:09,839
it with a little bit different

1354
00:50:13,270 --> 00:50:11,760
decoration on the side but otherwise

1355
00:50:14,790 --> 00:50:13,280
it's the same and there's also we added

1356
00:50:17,510 --> 00:50:14,800
some magnets

1357
00:50:20,230 --> 00:50:17,520
which will keep just like on the phoenix

1358
00:50:22,870 --> 00:50:20,240
ssi cal targets will help keep little

1359
00:50:24,710 --> 00:50:22,880
circles clear of dust you know in each

1360
00:50:27,109 --> 00:50:24,720
of the color and gray elements on the

1361
00:50:30,150 --> 00:50:27,119
target but and it has that gnome in that

1362
00:50:31,670 --> 00:50:30,160
little ball on the stick thing so

1363
00:50:34,549 --> 00:50:31,680

okay let's

1364
00:50:36,950 --> 00:50:34,559
sorry okay so uh so we we have a we have

1365
00:50:39,829 --> 00:50:36,960
a script uh that we're trying to follow

1366
00:50:42,309 --> 00:50:39,839
here and uh if if uh for for what

1367
00:50:44,790 --> 00:50:42,319
happens on what on what's all number

1368
00:50:47,109 --> 00:50:44,800
and uh if everything goes perfectly it's

1369
00:50:48,790 --> 00:50:47,119
kind of scheduled in uh after uh you

1370
00:50:50,549 --> 00:50:48,800
know we do a flight software transition

1371
00:50:51,910 --> 00:50:50,559
to to this sort of new

1372
00:50:53,349 --> 00:50:51,920
uh new set of flight software new

1373
00:50:55,670 --> 00:50:53,359
operating system uh

1374
00:50:58,549 --> 00:50:55,680
designed for surface um it's just after

1375
00:51:00,069 --> 00:50:58,559
that so probably around sol 11 or 12 or

1376
00:51:02,230 --> 00:51:00,079
something like that but that's kind of

1377
00:51:03,829 --> 00:51:02,240
assuming the next week goes perfectly

1378
00:51:04,950 --> 00:51:03,839
and and nothing you know nothing slips

1379
00:51:06,549 --> 00:51:04,960
to the right

1380
00:51:07,349 --> 00:51:06,559
so i'd say the earliest is around that

1381
00:51:09,670 --> 00:51:07,359
day

1382
00:51:11,270 --> 00:51:09,680
i think we had a quick question in the

1383
00:51:13,190 --> 00:51:11,280
first row leo

1384
00:51:14,069 --> 00:51:13,200
right there

1385
00:51:15,190 --> 00:51:14,079
yeah

1386
00:51:17,589 --> 00:51:15,200
like

1387
00:51:19,510 --> 00:51:17,599
sorry i was doing something else um i

1388
00:51:21,270 --> 00:51:19,520

just i was wondering i know you guys

1389
00:51:23,270 --> 00:51:21,280
have had a long day but for the inner

1390
00:51:24,870 --> 00:51:23,280
geek within us i was wondering if it's

1391
00:51:26,950 --> 00:51:24,880
possible that somebody from the science

1392
00:51:28,790 --> 00:51:26,960
team could spend a bit of time after the

1393
00:51:31,109 --> 00:51:28,800
briefing going over this extraordinary

1394
00:51:32,950 --> 00:51:31,119
high-rise picture we really need some

1395
00:51:35,030 --> 00:51:32,960
help interpreting what we're seeing and

1396
00:51:38,790 --> 00:51:35,040
it's not appropriate i felt for this

1397
00:51:43,510 --> 00:51:41,190
okay that sounds that sounds plausible

1398
00:51:45,670 --> 00:51:43,520
um let's take one more question and that

1399
00:51:47,270 --> 00:51:45,680
would be right there kelly petey i hope

1400
00:51:48,069 --> 00:51:47,280
this is a suitable wrap-up question for

1401
00:51:50,790 --> 00:51:48,079
mike

1402
00:51:53,430 --> 00:51:50,800
now that you know where you are um has

1403
00:51:55,109 --> 00:51:53,440
the team started contemplating

1404
00:51:56,549 --> 00:51:55,119
where you're going to send the rover how

1405
00:51:58,309 --> 00:51:56,559
you're going to approach it i realize

1406
00:52:00,470 --> 00:51:58,319
there's a lot of contingency and and

1407
00:52:02,390 --> 00:52:00,480
maybe you haven't and if you haven't at

1408
00:52:04,950 --> 00:52:02,400
what point will you

1409
00:52:06,790 --> 00:52:04,960
uh so so the way we try to do that is uh

1410
00:52:08,390 --> 00:52:06,800
you know we uh we worked with uh with

1411
00:52:10,870 --> 00:52:08,400
the science team very carefully here to

1412
00:52:12,390 --> 00:52:10,880
to uh to come up with a plan of of

1413
00:52:14,630 --> 00:52:12,400

checking out the rover and making sure

1414
00:52:15,990 --> 00:52:14,640
that we're safe and and ready to operate

1415
00:52:17,430 --> 00:52:16,000
and then we kind of start handing over

1416
00:52:19,829 --> 00:52:17,440
the keys in terms of where we're going

1417
00:52:21,589 --> 00:52:19,839
to to the science team so right now

1418
00:52:23,349 --> 00:52:21,599
every day the science team is meeting

1419
00:52:24,630 --> 00:52:23,359
and looking looking at these images and

1420
00:52:26,390 --> 00:52:24,640
trying to decide what the highest

1421
00:52:28,309 --> 00:52:26,400
priority targets are you know both in

1422
00:52:30,309 --> 00:52:28,319
the in the local vicinity uh you know

1423
00:52:32,710 --> 00:52:30,319
the high thermal nursery unit and and

1424
00:52:34,790 --> 00:52:32,720
this alluvial fan as well as as progress

1425
00:52:36,710 --> 00:52:34,800
to um to mount sharp

1426
00:52:38,549 --> 00:52:36,720
so um you know so i think we're going to

1427
00:52:40,390 --> 00:52:38,559
let the scientists come decide what the

1428
00:52:42,710 --> 00:52:40,400
highest priority scientifically is for

1429
00:52:44,230 --> 00:52:42,720
them in terms of of uh which direction

1430
00:52:45,510 --> 00:52:44,240
we drive and where

1431
00:52:46,630 --> 00:52:45,520
but uh but you know that's a couple of

1432
00:52:49,589 --> 00:52:46,640
weeks away because we have a couple of

1433
00:52:50,950 --> 00:52:49,599
weeks of of of check out here um to go

1434
00:52:53,349 --> 00:52:50,960
through at least

1435
00:52:54,630 --> 00:52:53,359
and um and and the science team will use

1436
00:52:57,829 --> 00:52:54,640
that time to you know to make good

1437
00:52:59,349 --> 00:52:57,839
decisions about uh about where to go

1438
00:53:01,829 --> 00:52:59,359

thank you very much to our three

1439
00:53:03,829 --> 00:53:01,839
panelists today and

1440
00:53:05,589 --> 00:53:03,839
for everybody else i just want to remind

1441
00:53:07,589 --> 00:53:05,599
you that the next news briefing is

1442
00:53:09,030 --> 00:53:07,599
scheduled for tomorrow morning at 10 a.m

1443
00:53:10,950 --> 00:53:09,040
pacific time

1444
00:53:13,030 --> 00:53:10,960
after this broadcast immediately after

1445
00:53:15,589 --> 00:53:13,040
the broadcast we will replay the visuals

1446
00:53:17,910 --> 00:53:15,599
you just saw in this briefing and

1447
00:53:21,190 --> 00:53:17,920
remember that there is lots of info and

1448
00:53:25,190 --> 00:53:21,200
images available 24 7 online

1449
00:53:25,200 --> 00:53:45,030
mars thanks for joining us this morning

1450
00:53:45,040 --> 00:53:57,109
we're here

1451
00:54:49,910 --> 00:54:23,030
okay

1452
00:54:49,920 --> 00:55:03,990
more