1
00:00:04,400 --> 00:00:02,480
good morning everyone i'm yves lamothe

2
00:00:06,230 --> 00:00:04,410
and I work for the exploration ground

3
00:00:08,750 --> 00:00:06,240
systems here at the Kennedy Space Center

4
00:00:10,490 --> 00:00:08,760
the world's pre-eminent launch complex

5
00:00:13,009 --> 00:00:10,500
for government and commercial space

6
00:00:14,629 --> 00:00:13,019
access as some of you may know massive

7
00:00:17,240 --> 00:00:14,639
structure behind me here called the

8
00:00:19,370 --> 00:00:17,250
crawler-transporter - to put it in

9
00:00:21,290 --> 00:00:19,380
perspective the crawler-transporter

10
00:00:23,509 --> 00:00:21,300
is what will carry the mobile launcher

11
00:00:25,490 --> 00:00:23,519
along with nasa's integrated Space

12
00:00:29,750 --> 00:00:25,500
Launch System rocket and the Orion

13
00:00:31,479 --> 00:00:29,760

spacecraft to the pad we are not only do

14
00:00:33,770 --> 00:00:31,489
we do things big and we do big things

15
00:00:35,840 --> 00:00:33,780
but we have big news and we're excited

16
00:00:37,580 --> 00:00:35,850
to share that with you we are getting

17
00:00:39,440 --> 00:00:37,590
ready to undergo testing where we're

18
00:00:41,780 --> 00:00:39,450
going to use the crawler transporter the

19
00:00:45,590 --> 00:00:41,790
V the Vehicle Assembly Building the

20
00:00:48,440 --> 00:00:45,600
launch control center the pad and a

21
00:00:51,410 --> 00:00:48,450
crawler transporter to do to do testing

22
00:00:53,720 --> 00:00:51,420
here at the Kennedy Space Center for the

23
00:00:55,610 --> 00:00:53,730
first time tomorrow where the crawler

24
00:00:59,029 --> 00:00:55,620
transporter is going to take the mobile

25
00:01:00,170 --> 00:00:59,039
launcher to the pad and to talk to us a

26
00:01:02,180 --> 00:01:00,180
little bit more about the crow

27
00:01:04,609 --> 00:01:02,190
transporter here I have John Giles who

28
00:01:06,620 --> 00:01:04,619
is the crawler transporters project

29
00:01:09,649 --> 00:01:06,630
manager and one of the crawler drivers

30
00:01:11,539 --> 00:01:09,659
sam dove now folks as we're doing that

31
00:01:13,100 --> 00:01:11,549
was we're doing this live for you please

32
00:01:15,140 --> 00:01:13,110
feel free to submit your questions and

33
00:01:17,359 --> 00:01:15,150
I'll be able to ask on your behalf so

34
00:01:18,770 --> 00:01:17,369
the kicked things off John can you tell

35
00:01:21,499 --> 00:01:18,780
us a little bit more about the Karla

36
00:01:23,780 --> 00:01:21,509
transporter the crawler transporter was

37
00:01:27,410 --> 00:01:23,790
originally designed and construction

38
00:01:29,289 --> 00:01:27,420

began back in the early 1960s and large

39
00:01:33,289 --> 00:01:29,299
pieces of it were shipped here to KSC

40
00:01:35,600 --> 00:01:33,299
where it was assembled into the crawler

41
00:01:40,100 --> 00:01:35,610
that you see here now we made its first

42
00:01:43,340 --> 00:01:40,110
role and approximately mid 1965 and it

43
00:01:45,230 --> 00:01:43,350
has served well for the Apollo program

44
00:01:47,270 --> 00:01:45,240
and the shuttle program and then of

45
00:01:49,910 --> 00:01:47,280
course SLS program will be doing

46
00:01:51,710 --> 00:01:49,920
everything it needs and the one big

47
00:01:54,109 --> 00:01:51,720
change after the end of the the previous

48
00:01:56,990 --> 00:01:54,119
program was we have to be able to pick

49
00:01:58,310 --> 00:01:57,000
up more weight so so the SLS program

50
00:02:00,590 --> 00:01:58,320
said they wanted us to be able to pick

51
00:02:02,660 --> 00:02:00,600
up 18 million pounds on the previous

52
00:02:04,310 --> 00:02:02,670
amount was 12 million pounds Kennedy

53
00:02:06,830 --> 00:02:04,320
Space Center and the Ames Research

54
00:02:08,660 --> 00:02:06,840
Center out in California which they did

55
00:02:11,330 --> 00:02:08,670
all the analysis and determine exactly

56
00:02:13,220 --> 00:02:11,340
what we needed to change or replace or

57
00:02:14,930 --> 00:02:13,230
upgrade on this crawler

58
00:02:17,330 --> 00:02:14,940
then we started instigating all of those

59
00:02:19,820 --> 00:02:17,340
those projects things like changing

60
00:02:21,470 --> 00:02:19,830
putting in new bearings so they could

61
00:02:23,600 --> 00:02:21,480
withstand the extra weight putting in

62
00:02:25,220 --> 00:02:23,610
the new hydraulic cylinders so they

63
00:02:27,080 --> 00:02:25,230

could lift extra weight and some other

64
00:02:31,100 --> 00:02:27,090
strengthening structural strengthening

65
00:02:33,320 --> 00:02:31,110
mods okay very well so to get more in

66
00:02:35,390 --> 00:02:33,330
depth about what the capabilities of the

67
00:02:37,100 --> 00:02:35,400
crawler transporter is right we're going

68
00:02:40,550 --> 00:02:37,110
to talk a little bit to Sam dove Sam

69
00:02:43,339 --> 00:02:40,560
exactly how long does it take you know

70
00:02:44,990 --> 00:02:43,349
to drive the the transporter from save

71
00:02:48,410 --> 00:02:45,000
where it is right now over to the pad

72
00:02:50,150 --> 00:02:48,420
well normal speed which is 0.8 point on

73
00:02:53,059 --> 00:02:50,160
you can make the trip in probably about

74
00:02:54,740 --> 00:02:53,069
seven seven a half hours you have a

75
00:02:57,500 --> 00:02:54,750
number of hours to prepare for things

76
00:02:58,490 --> 00:02:57,510
that you have before you move and after

77
00:03:00,890 --> 00:02:58,500
you move when you get to the pad

78
00:03:03,380 --> 00:03:00,900
generally about 12 hours or so right in

79
00:03:06,410 --> 00:03:03,390
there if everything goes well 12 hours

80
00:03:08,539 --> 00:03:06,420
now I imagine is is that one person

81
00:03:11,569 --> 00:03:08,549
sitting and driving the transporter the

82
00:03:14,030 --> 00:03:11,579
entire way or is it do you do it in

83
00:03:16,849 --> 00:03:14,040
shifts no we have a team of

84
00:03:19,870 --> 00:03:16,859
approximately 30 people and we have some

85
00:03:23,990 --> 00:03:19,880
NASA folks that go with us as well and

86
00:03:26,479 --> 00:03:24,000
we taken that driver goes and he drives

87
00:03:28,069 --> 00:03:26,489
for 35 to 40 minutes and then we have

88
00:03:29,870 --> 00:03:28,079

people in the control room watching the

89
00:03:31,960 --> 00:03:29,880
systems controlling the systems a test

90
00:03:34,309 --> 00:03:31,970
conductor and everybody rotates

91
00:03:36,559 --> 00:03:34,319
approximately every 30 to 40 minutes and

92
00:03:37,849 --> 00:03:36,569
that way you're not just stuck on one

93
00:03:39,890 --> 00:03:37,859
thing and you don't get fatigued that

94
00:03:41,270 --> 00:03:39,900
way and you can stay sharp and see what

95
00:03:43,970 --> 00:03:41,280
all is going on with everything that has

96
00:03:46,670 --> 00:03:43,980
to happen that is absolutely amazing now

97
00:03:51,259 --> 00:03:46,680
this is such a massive massive massive

98
00:03:53,360 --> 00:03:51,269
structure you know so is it how exactly

99
00:03:54,800 --> 00:03:53,370
do you turn this this thing around is

100
00:03:56,809 --> 00:03:54,810
say you were on your way to the pad and

101
00:03:58,699 --> 00:03:56,819
you needed to come back what would you

102
00:04:00,349 --> 00:03:58,709
do in a situation like that well you

103
00:04:03,379 --> 00:04:00,359
don't actually turn it around

104
00:04:04,970 --> 00:04:03,389
it just goes one way and we call you

105
00:04:06,890 --> 00:04:04,980
have two ends on the crawler in one and

106
00:04:08,300 --> 00:04:06,900
in three and so if you're going to the

107
00:04:09,770 --> 00:04:08,310
pad you're always going in in three

108
00:04:12,110 --> 00:04:09,780
direction if you're coming back toward

109
00:04:14,780 --> 00:04:12,120
the Vav or the crawler yard here it's in

110
00:04:16,310 --> 00:04:14,790
one direction so if you have to stop and

111
00:04:18,560 --> 00:04:16,320
come back the other way you don't

112
00:04:20,779 --> 00:04:18,570
actually do you know the 32-point turn

113
00:04:23,209 --> 00:04:20,789

to get around the curves they just

114
00:04:26,510 --> 00:04:23,219
straight out straight back Wow

115
00:04:27,140 --> 00:04:26,520
now so being being a driver what does it

116
00:04:29,390 --> 00:04:27,150
take to become

117
00:04:32,150 --> 00:04:29,400
certified to be able to drive such a

118
00:04:33,860 --> 00:04:32,160
massive structure well first of all you

119
00:04:34,700 --> 00:04:33,870
have to have an engineering degree and

120
00:04:36,650 --> 00:04:34,710
you have to be in the

121
00:04:38,390 --> 00:04:36,660
crawler-transporter group and then you

122
00:04:41,390 --> 00:04:38,400
go through an on-the-job training

123
00:04:43,370 --> 00:04:41,400
program which includes you have to know

124
00:04:46,010 --> 00:04:43,380
and start as an entry-level person

125
00:04:48,050 --> 00:04:46,020
coming in and learn all the systems how

126
00:04:49,939 --> 00:04:48,060
they work how they apply with each other

127
00:04:54,499 --> 00:04:49,949
how it affects actually certified to

128
00:04:58,850 --> 00:04:54,509
drop by yourself this is from from

129
00:05:00,770 --> 00:04:58,860
Instagram the first question is is Sam

130
00:05:02,870 --> 00:05:00,780
driving the crawl of the entire time at

131
00:05:04,310 --> 00:05:02,880
what speed how long does it take to get

132
00:05:05,870 --> 00:05:04,320
to the launch pad and I think you you

133
00:05:08,480 --> 00:05:05,880
sort of answered those questions already

134
00:05:11,330 --> 00:05:08,490
right so it's not him the entire time

135
00:05:15,020 --> 00:05:11,340
their shifts about 30 to 45 minutes it

136
00:05:17,629 --> 00:05:15,030
goes about 0.8 2.9 miles per hour and it

137
00:05:19,670 --> 00:05:17,639
takes about 12 hours for us to get you

138
00:05:26,450 --> 00:05:19,680

know from the VA be over to the pad

139
00:05:28,070 --> 00:05:26,460
great question take another one the

140
00:05:29,689 --> 00:05:28,080
question is and maybe John you can

141
00:05:32,420 --> 00:05:29,699
answer this one is this the same crawler

142
00:05:34,370 --> 00:05:32,430
from shuttle and Apollo yes we actually

143
00:05:36,260 --> 00:05:34,380
have two crawlers so these two crawlers

144
00:05:39,140 --> 00:05:36,270
have handled every program here at KSC

145
00:05:40,670 --> 00:05:39,150
and we do not exceed point 3 either up

146
00:05:43,189 --> 00:05:40,680
or down whether we're loaded or unloaded

147
00:05:45,230 --> 00:05:43,199
and that way it gives the jacking

148
00:05:47,529 --> 00:05:45,240
equalization leveling system Tom and

149
00:05:49,370 --> 00:05:47,539
enough time to react and stay level

150
00:05:50,600 --> 00:05:49,380
because you are still dealing with

151
00:05:52,490 --> 00:05:50,610
hydraulics and it's not super

152
00:05:56,390 --> 00:05:52,500
instantaneous you have to give it a

153
00:05:59,060 --> 00:05:56,400
second to keep itself level so John will

154
00:06:01,520 --> 00:05:59,070
kind of go back a little bit to design

155
00:06:04,370 --> 00:06:01,530
right in what this was was intended for

156
00:06:06,920 --> 00:06:04,380
now at these kinds of speed and the the

157
00:06:08,689 --> 00:06:06,930
size of this structure how long do you

158
00:06:11,629 --> 00:06:08,699
think it would take for it to say travel

159
00:06:13,700 --> 00:06:11,639
from here to the moon ah we had that

160
00:06:16,460 --> 00:06:13,710
question and so I needed to go do some

161
00:06:17,570 --> 00:06:16,470
math I went and checked it and we're

162
00:06:20,060 --> 00:06:17,580
roughly two hundred and thirty nine

163
00:06:21,800 --> 00:06:20,070

thousand miles to the moon figuring if

164
00:06:26,839 --> 00:06:21,810
the crawler was going at one mile an

165
00:06:29,689 --> 00:06:26,849
hour we would it would take roughly 27

166
00:06:32,870 --> 00:06:29,699
years to get there 27 years that is

167
00:06:36,399 --> 00:06:32,880
absolutely amazing 27 years just to get

168
00:06:40,010 --> 00:06:36,409
from here all the way to the to the moon

169
00:06:42,409 --> 00:06:40,020
actually amazingly large structure and

170
00:06:44,510 --> 00:06:42,419
again this is how we do here KSC's space

171
00:06:47,839 --> 00:06:44,520
business is a big business and it takes

172
00:06:50,240 --> 00:06:47,849
a lot for us to to get from here to to

173
00:06:53,779 --> 00:06:50,250
deep space so we have another question

174
00:06:55,879 --> 00:06:53,789
here from YouTube this is a user bow and

175
00:06:59,980 --> 00:06:55,889
ask how long does the prep time on the

176
00:07:02,800 --> 00:06:59,990
crawler take and how much grease is used

177
00:07:06,890 --> 00:07:02,810
will you use quite a bit of lubrication

178
00:07:07,879 --> 00:07:06,900
the prep time is depends on what you're

179
00:07:09,710 --> 00:07:07,889
really going to do the mission you're

180
00:07:12,680 --> 00:07:09,720
gonna do but we replenish all the oils

181
00:07:15,860 --> 00:07:12,690
the greases lubrications and refill the

182
00:07:17,390 --> 00:07:15,870
crawler you probably use I don't know

183
00:07:19,490 --> 00:07:17,400
cup probably a couple barrels of

184
00:07:20,779 --> 00:07:19,500
lubrication for the tracks you can see

185
00:07:22,219 --> 00:07:20,789
the tracks behind us and they're a

186
00:07:27,529 --> 00:07:22,229
little greasy right now - that's a

187
00:07:29,870 --> 00:07:27,539
55-gallon barrel true and for the the

188
00:07:31,480 --> 00:07:29,880

pin spray which keeps the pins that you

189
00:07:33,680 --> 00:07:31,490
can see that hooks the belts together

190
00:07:35,809 --> 00:07:33,690
that pin spray we usually go through

191
00:07:39,290 --> 00:07:35,819
about a barrel and a 55-gallon barrel

192
00:07:40,730 --> 00:07:39,300
and maybe a half permission now earlier

193
00:07:42,950 --> 00:07:40,740
you talked about a team of about 30

194
00:07:45,499 --> 00:07:42,960
people that it takes you know - you know

195
00:07:47,959 --> 00:07:45,509
when when this thing is on the move is

196
00:07:49,790 --> 00:07:47,969
that 30 people the entire time so I

197
00:07:52,040 --> 00:07:49,800
imagine there's going to be some people

198
00:07:53,990 --> 00:07:52,050
walking on the floor there's there's

199
00:07:56,570 --> 00:07:54,000
some people on the deck there's there's

200
00:07:59,300 --> 00:07:56,580
people in the cabin how exactly does

201
00:08:01,189 --> 00:07:59,310
that work well we have observers on the

202
00:08:02,749 --> 00:08:01,199
ground usually one on each corner to

203
00:08:04,550 --> 00:08:02,759
help the driver and make sure that we

204
00:08:06,680 --> 00:08:04,560
don't get over too far or get in any

205
00:08:08,450 --> 00:08:06,690
kind of trouble in the curves we have

206
00:08:10,279 --> 00:08:08,460
guys in our Pump Rooms and engine rooms

207
00:08:11,959 --> 00:08:10,289
and we have guys walking around you know

208
00:08:13,999 --> 00:08:11,969
laying hands on things making sure it's

209
00:08:15,350 --> 00:08:14,009
good because you you know you've got

210
00:08:17,240 --> 00:08:15,360
good instrumentation but you want to

211
00:08:18,830 --> 00:08:17,250
keep your folks involved because there's

212
00:08:20,719 --> 00:08:18,840
nothing can beat a person down there

213
00:08:22,459 --> 00:08:20,729

making sure everything's good and all

214
00:08:23,990 --> 00:08:22,469
those guys rotate through - they don't

215
00:08:26,480 --> 00:08:24,000
spend the whole time walking on you know

216
00:08:28,070 --> 00:08:26,490
on the crawler and they spent time up in

217
00:08:29,269 --> 00:08:28,080
the engine room the Pump Rooms down on

218
00:08:31,249 --> 00:08:29,279
the crawl you know down on the side

219
00:08:34,029 --> 00:08:31,259
watching they spent time on break and

220
00:08:36,949 --> 00:08:34,039
it's just a continual rotation of people

221
00:08:39,199 --> 00:08:36,959
now John you know being that you know

222
00:08:41,779 --> 00:08:39,209
this has been the crawler has been used

223
00:08:44,960 --> 00:08:41,789
for multi programs throughout throughout

224
00:08:47,480 --> 00:08:44,970
the many programs here at NASA now if

225
00:08:50,269 --> 00:08:47,490
for some reason we needed to upgrade the

226
00:08:51,829 --> 00:08:50,279
crawler transporter tick to carry even

227
00:08:53,570 --> 00:08:51,839
more weight is that something that's

228
00:08:55,340 --> 00:08:53,580
actually possible I think

229
00:08:57,170 --> 00:08:55,350
we would have to do another analysis to

230
00:08:59,360 --> 00:08:57,180
you know figure out how much more weight

231
00:09:02,150 --> 00:08:59,370
we could carry but oh sure we can do

232
00:09:03,259 --> 00:09:02,160
that okay very very well very well all

233
00:09:06,500 --> 00:09:03,269
right so we'll take some more questions

234
00:09:09,470 --> 00:09:06,510
from our watchers here we have another

235
00:09:13,220 --> 00:09:09,480
YouTube question so the question is how

236
00:09:16,160 --> 00:09:13,230
much does the crawler way well right now

237
00:09:18,139 --> 00:09:16,170
we're just it's about 6.6 million pounds

238
00:09:21,139 --> 00:09:18,149

just to hear over that now let me ask

239
00:09:24,079 --> 00:09:21,149
how exactly do you know that well during

240
00:09:26,660 --> 00:09:24,089
the mods we actually picked the trucks

241
00:09:28,850 --> 00:09:26,670
up we had a company come in walked

242
00:09:32,170 --> 00:09:28,860
underneath and we pick the trucks again

243
00:09:33,889 --> 00:09:32,180
amazing here KSC we do things big

244
00:09:45,739 --> 00:09:33,899
alright so we'll take some more

245
00:09:49,199 --> 00:09:47,579
while you're looking for another one

246
00:09:52,350 --> 00:09:49,209
actually I could I could tell you back

247
00:09:54,059 --> 00:09:52,360
on the the laser system even though Sam

248
00:09:56,220 --> 00:09:54,069
described we don't use a laser system to

249
00:09:58,829 --> 00:09:56,230
level the crawler we are going to

250
00:10:00,629 --> 00:09:58,839
implement a laser system that lines us

251
00:10:02,670 --> 00:10:00,639
up for driving underneath whatever we

252
00:10:04,910 --> 00:10:02,680
have to pick up so we are going to

253
00:10:06,780 --> 00:10:04,920
implement that so then that'll give us

254
00:10:08,129 --> 00:10:06,790
precision alignment because we have to

255
00:10:09,929 --> 00:10:08,139
be pretty precise when we roll

256
00:10:12,989 --> 00:10:09,939
underneath things so we can pick it up

257
00:10:16,199 --> 00:10:12,999
and so it's balanced absolutely amazing

258
00:10:19,110 --> 00:10:16,209
all right so here we go our our next

259
00:10:21,869 --> 00:10:19,120
question is I'm from Twitter and Mike

260
00:10:23,489 --> 00:10:21,879
asked does the chromatin folks keep the

261
00:10:25,379 --> 00:10:23,499
questions coming in um thank you for

262
00:10:29,610 --> 00:10:25,389
staying involved this is a question from

263
00:10:33,059 --> 00:10:29,620

YouTube this is John Burkett asks is is

264
00:10:34,889 --> 00:10:33,069
the road surface prepped before a load

265
00:10:36,540 --> 00:10:34,899
carry and I and I imagine that it I

266
00:10:37,829 --> 00:10:36,550
think he's talking about the the pebbles

267
00:10:40,230 --> 00:10:37,839
that are that are on the ground here

268
00:10:42,660 --> 00:10:40,240
yeah absolutely it's condition to every

269
00:10:44,639 --> 00:10:42,670
time and they pull the gravels out get

270
00:10:46,799 --> 00:10:44,649
all the hills and valleys out all the

271
00:10:48,360 --> 00:10:46,809
furrows where people run across it get

272
00:10:51,329 --> 00:10:48,370
it all nice and level for us and it

273
00:10:52,920 --> 00:10:51,339
makes a nice nice smooth ride for the

274
00:10:55,199 --> 00:10:52,930
crawler when it's like and this has to

275
00:10:57,240 --> 00:10:55,209
be done for every single time that the

276
00:10:59,490 --> 00:10:57,250
crawler is carrying a load out there

277
00:11:00,869 --> 00:10:59,500
sometimes we don't because we're looking

278
00:11:02,069 --> 00:11:00,879
at crawler way things you know we want

279
00:11:03,929 --> 00:11:02,079
to see how the rocks are holding up

280
00:11:05,670 --> 00:11:03,939
everything but for every major move and

281
00:11:07,199 --> 00:11:05,680
for every mobile launch or move every

282
00:11:13,350 --> 00:11:07,209
move with flight hardware it's always

283
00:11:16,379 --> 00:11:13,360
conditioned and groomed another question

284
00:11:18,809 --> 00:11:16,389
from YouTube this is space girl ass when

285
00:11:20,970 --> 00:11:18,819
will the the tower be moved so as I

286
00:11:22,799 --> 00:11:20,980
mentioned for the first time tomorrow

287
00:11:25,079 --> 00:11:22,809
the crawler is going to be picking up

288
00:11:27,329 --> 00:11:25,089

the the mobile launcher and taking it

289
00:11:28,860 --> 00:11:27,339
out to the pad to undergo the testing so

290
00:11:30,329 --> 00:11:28,870
that that's going to be coming up

291
00:11:32,460 --> 00:11:30,339
tomorrow folks so please make sure you

292
00:11:34,650 --> 00:11:32,470
stay tuned stay tuned with us the entire

293
00:11:41,580 --> 00:11:34,660
week as we have so many activities going

294
00:11:45,720 --> 00:11:43,380
all right this is a question from

295
00:11:47,760 --> 00:11:45,730
Facebook this is from Peter Mazzy ask

296
00:11:49,740 --> 00:11:47,770
how does moving the mobile launcher

297
00:11:51,930 --> 00:11:49,750
tower with the SLS which is the Space

298
00:11:54,150 --> 00:11:51,940
Launch System compared to moving the

299
00:12:00,570 --> 00:11:54,160
mobile launcher launch umbilical tower

300
00:12:02,820 --> 00:12:00,580
with the Saturn 5 on it first when I

301
00:12:04,050 --> 00:12:02,830
first were out the KSC I was fortunate

302
00:12:04,590 --> 00:12:04,060
enough to work with some of the Apollo

303
00:12:06,660 --> 00:12:04,600
guys

304
00:12:12,480 --> 00:12:06,670
and can I ask how many years ago that

305
00:12:14,370 --> 00:12:12,490
was you can know I started in 87 I was

306
00:12:15,600 --> 00:12:14,380
very fortunate to be mentored by some of

307
00:12:17,340 --> 00:12:15,610
these guys and and they would always

308
00:12:19,200 --> 00:12:17,350
impart to us you know the stories of

309
00:12:21,510 --> 00:12:19,210
rollout with the tower and a Saturn fob

310
00:12:22,920 --> 00:12:21,520
and from what we've seen we've moved the

311
00:12:25,170 --> 00:12:22,930
mass mobile launcher before it was all

312
00:12:27,540 --> 00:12:25,180
modified and all outfitted we moved it

313
00:12:29,490 --> 00:12:27,550

twice already and it'll be very similar

314
00:12:31,560 --> 00:12:29,500
very similar but we're gonna wind up

315
00:12:34,380 --> 00:12:31,570
with a heavier rocket when we go with

316
00:12:35,970 --> 00:12:34,390
that a bigger rocket and the crawlers

317
00:12:39,090 --> 00:12:35,980
just think about driving your truck down

318
00:12:40,530 --> 00:12:39,100
the road empty versus having bags of

319
00:12:42,300 --> 00:12:40,540
cement or mulch in the back or something

320
00:12:44,880 --> 00:12:42,310
like that it rods a little bit different

321
00:12:47,220 --> 00:12:44,890
with that weight I suspect it'll be kind

322
00:12:48,600 --> 00:12:47,230
of very similar the tower will move

323
00:12:50,700 --> 00:12:48,610
around a little bit just like it did in

324
00:12:52,140 --> 00:12:50,710
Apollo but the crawler is well suited to

325
00:12:54,210 --> 00:12:52,150
handle it and I think it'll be a

326
00:12:58,620 --> 00:12:54,220
successful rollout pretty much the same

327
00:12:59,100 --> 00:12:58,630
thing very good amazing okay next

328
00:13:03,530 --> 00:12:59,110
question

329
00:13:06,980 --> 00:13:03,540
Steve Evan asks how quickly can it stop

330
00:13:09,230 --> 00:13:06,990
[Laughter]

331
00:13:12,660 --> 00:13:09,240
first of all it's how fast you're going

332
00:13:14,400 --> 00:13:12,670
at point none if you stop the crawler

333
00:13:17,520 --> 00:13:14,410
and for instance just take your foot off

334
00:13:19,500 --> 00:13:17,530
the gas or you hit what's called an

335
00:13:22,530 --> 00:13:19,510
emergency stop it will roll

336
00:13:24,420 --> 00:13:22,540
approximately 20 feet 25 feet if you

337
00:13:26,040 --> 00:13:24,430
apply the brakes it will stop much

338
00:13:29,040 --> 00:13:26,050

quicker and we try not to do that

339
00:13:31,740 --> 00:13:29,050
because we don't want to rock we don't

340
00:13:33,180 --> 00:13:31,750
want to rock our payload damage the

341
00:13:35,430 --> 00:13:33,190
rocket or anything anyway so generally

342
00:13:41,320 --> 00:13:35,440
if you stop you just let it roll to a

343
00:13:45,170 --> 00:13:43,250
alright ladies and gentlemen we are

344
00:13:46,970 --> 00:13:45,180
getting some weather warnings here right

345
00:13:48,530 --> 00:13:46,980
now so we're gonna go ahead and wrap it

346
00:13:50,660 --> 00:13:48,540
up I'm gonna go ahead and as just one

347
00:13:53,150 --> 00:13:50,670
last question um before we're done but

348
00:13:55,310 --> 00:13:53,160
on behalf of km you know the kennedy

349
00:13:56,810 --> 00:13:55,320
space are here the nesting ground

350
00:13:59,210 --> 00:13:56,820
systems program thank you so much for

351
00:14:00,680 --> 00:13:59,220
participating we're very excited to keep

352
00:14:02,750 --> 00:14:00,690
you in tune with everything that we have

353
00:14:05,300 --> 00:14:02,760
going on our last question is going to

354
00:14:07,370 --> 00:14:05,310
be from Jim Thurman and the question is

355
00:14:11,240 --> 00:14:07,380
why does NASA use those particular rocks

356
00:14:14,360 --> 00:14:11,250
on the pathway well they did a study of

357
00:14:16,280 --> 00:14:14,370
course and you have to look at the size

358
00:14:18,080 --> 00:14:16,290
of the gravel the roundness of the

359
00:14:20,390 --> 00:14:18,090
gravel and what the makeup of the gravel

360
00:14:22,120 --> 00:14:20,400
is of the rock and what that does is it

361
00:14:24,590 --> 00:14:22,130
helps the frictions for steering and

362
00:14:27,650 --> 00:14:24,600
spreads the support out underneath the

363
00:14:30,290 --> 00:14:27,660

shoes but mainly it provides you a good

364
00:14:32,690 --> 00:14:30,300
smooth path to steer the crawler with as

365
00:14:35,120 --> 00:14:32,700
opposed to being on concrete or asphalt

366
00:14:36,740 --> 00:14:35,130
and so it helps you when you steer on

367
00:14:39,140 --> 00:14:36,750
the curves a little less friction it

368
00:14:40,670 --> 00:14:39,150
makes it a lot easier on the crawler and

369
00:14:42,140 --> 00:14:40,680
then one other thing too is the the

370
00:14:44,210 --> 00:14:42,150
crawler doesn't have a suspension system

371
00:14:46,550 --> 00:14:44,220
it doesn't have shocks and springs like

372
00:14:49,610 --> 00:14:46,560
a car would so the actual crushing of

373
00:14:51,170 --> 00:14:49,620
the rock absorbs any vibrations and

374
00:14:54,440 --> 00:14:51,180
gives gives our payload a smoother ride

375
00:14:56,870 --> 00:14:54,450
very well very well so folks once again

376
00:14:58,640 --> 00:14:56,880
thank you so much for tuning in keep the

377
00:15:00,079 --> 00:14:58,650
questions coming and we'll do our best

378
00:15:02,420 --> 00:15:00,089
to answer as many of them as possible

379
00:15:04,430 --> 00:15:02,430
thank you for being here with us and

380
00:15:06,440 --> 00:15:04,440
being part of everything big that we

381
00:15:07,940 --> 00:15:06,450
have going on here this is again Yves

382
00:15:09,770 --> 00:15:07,950
lamothe with the exploration ground

383
00:15:10,610 --> 00:15:09,780
systems program and we'll see you guys