1
00:00:05,600 --> 00:00:24,870
so

2
00:00:29,589 --> 00:00:27,029
very rarely do you get the opportunity

3
00:00:31,750 --> 00:00:29,599
to kind of literally from the ground up

4
00:00:33,590 --> 00:00:31,760
put together a factory whose sole

5
00:00:35,270 --> 00:00:33,600
purpose is to go make history and do

6
00:00:37,270 --> 00:00:35,280
exciting things for

7
00:00:39,910 --> 00:00:37,280
not just nasa but for american for the

8
00:00:41,910 --> 00:00:39,920
whole world we're in the process of

9
00:00:44,150 --> 00:00:41,920
getting the factory ready for sls

10
00:00:46,229 --> 00:00:44,160
production and in that process there's a

11
00:00:48,069 --> 00:00:46,239
series of new tools that we've been

12
00:00:50,950 --> 00:00:48,079
installing in the factory

13
00:00:52,709 --> 00:00:50,960

now we have not just put in new tool and

14
00:00:55,029 --> 00:00:52,719
there's some legacy tooling that we're

15
00:00:57,270 --> 00:00:55,039
using most of the external tank

16
00:00:59,029 --> 00:00:57,280
buildings are being reused we have a lot

17
00:01:01,830 --> 00:00:59,039
of construction going on for those

18
00:01:03,430 --> 00:01:01,840
getting ready for a rocket that's

19
00:01:06,390 --> 00:01:03,440
the same diameter but a little bit

20
00:01:08,469 --> 00:01:06,400
longer not only are we using the legacy

21
00:01:12,070 --> 00:01:08,479
knowledge the lessons learned we're also

22
00:01:14,070 --> 00:01:12,080
incorporating new technologies

23
00:01:16,230 --> 00:01:14,080
the the tool today

24
00:01:18,870 --> 00:01:16,240
is in the vertical friction stir welding

25
00:01:20,230 --> 00:01:18,880
center and it's its job is to produce

26
00:01:24,710 --> 00:01:20,240
the

27
00:01:26,550 --> 00:01:24,720
tank that will be stacked and that is

28
00:01:30,310 --> 00:01:26,560
going to be the tool that joins every

29
00:01:32,469 --> 00:01:30,320
panel on every barrel for the rocket

30
00:01:34,069 --> 00:01:32,479
this device will actually do the weld in

31
00:01:35,749 --> 00:01:34,079
a single pass and then also do

32
00:01:38,069 --> 00:01:35,759
inspections so these are the large

33
00:01:40,149 --> 00:01:38,079
barrel sections of the the core stage

34
00:01:41,910 --> 00:01:40,159
that will be the foundation or the

35
00:01:44,310 --> 00:01:41,920
beginning rocket that will actually take

36
00:01:48,789 --> 00:01:44,320
our crews beyond the moon and really

37
00:01:52,230 --> 00:01:49,910
here at marshall we've designed the

38
00:01:54,789 --> 00:01:52,240

interface hardware in between the orion

39
00:01:55,990 --> 00:01:54,799
capsule and that upper stage the msa i

40
00:01:57,190 --> 00:01:56,000
think is a great example of a couple

41
00:01:59,109 --> 00:01:57,200
things one it's actually a piece of

42
00:02:00,630 --> 00:01:59,119
hardware that we're flying on an early

43
00:02:02,149 --> 00:02:00,640
test but we're also going to fly for the

44
00:02:04,149 --> 00:02:02,159
long term so this is the same design

45
00:02:05,749 --> 00:02:04,159
that we'll use when orion's on the sls

46
00:02:07,510 --> 00:02:05,759
and we're actually flying people today

47
00:02:08,550 --> 00:02:07,520
we've been taking the two unique pieces

48
00:02:09,589 --> 00:02:08,560
of hardware

49
00:02:11,830 --> 00:02:09,599
that are supposed to have a common

50
00:02:13,670 --> 00:02:11,840
interface basically lowering them

51
00:02:15,270 --> 00:02:13,680
together bolting and making sure that

52
00:02:16,710 --> 00:02:15,280
they fit well we're going to test a lot

53
00:02:19,430 --> 00:02:16,720
of the key systems

54
00:02:21,110 --> 00:02:19,440
on orion and also for sls with the upper

55
00:02:24,990 --> 00:02:21,120
stage of the msa that are going to be

56
00:02:29,190 --> 00:02:25,000
used when we fly people into deep space

57
00:02:35,270 --> 00:02:31,589
most recently we've been involved with

58
00:02:37,830 --> 00:02:35,280
nasa with the sls development using our

59
00:02:40,150 --> 00:02:37,840
unique forming technology

60
00:02:43,509 --> 00:02:40,160
along with our other core processes in

61
00:02:45,910 --> 00:02:43,519
terms of machining welding heat treating

62
00:02:48,150 --> 00:02:45,920
and inspection technologies

63
00:02:53,270 --> 00:02:48,160

really is a one-stop shop is what you

64
00:02:57,430 --> 00:02:55,350
right behind me you have the first cap

65
00:02:59,750 --> 00:02:57,440
first weld development cap i think he

66
00:03:01,670 --> 00:02:59,760
called the weld confidence cap the

67
00:03:03,509 --> 00:03:01,680
production order started deliveries in

68
00:03:05,670 --> 00:03:03,519
2014.

69
00:03:07,750 --> 00:03:05,680
spincraft also builds the domes for the

70
00:03:10,550 --> 00:03:07,760
upper stage delta iv vehicle which will

71
00:03:12,710 --> 00:03:10,560
be used for the eft-1 flight as well as

72
00:03:16,200 --> 00:03:12,720
the first two production flights of the

73
00:03:17,990 --> 00:03:16,210
sls program

74
00:03:20,390 --> 00:03:18,000
[Music]

75
00:03:22,229 --> 00:03:20,400
for the sls pdr our primary role was the

76
00:03:24,390 --> 00:03:22,239
overall communication and outreach

77
00:03:27,270 --> 00:03:24,400
support that we provide back to todd

78
00:03:28,949 --> 00:03:27,280
may's office for sls we provide all of

79
00:03:30,789 --> 00:03:28,959
the communication support for that

80
00:03:32,710 --> 00:03:30,799
particular team that program and project

81
00:03:34,789 --> 00:03:32,720
well it's a preliminary design review

82
00:03:36,390 --> 00:03:34,799
and primarily it's a technical review to

83
00:03:38,070 --> 00:03:36,400
make sure that the design is acceptable

84
00:03:39,509 --> 00:03:38,080
and the appropriate level of maturity

85
00:03:41,270 --> 00:03:39,519
there's a lot of discussions there's a

86
00:03:44,390 --> 00:03:41,280
lot of meetings across the board from

87
00:03:46,630 --> 00:03:44,400
technical cost schedule performance data

88
00:03:48,149 --> 00:03:46,640

safety human factors it's like a health

89
00:03:49,589 --> 00:03:48,159
check on the program

90
00:03:50,630 --> 00:03:49,599
those of us that are working on the

91
00:03:52,309 --> 00:03:50,640
program

92
00:03:54,070 --> 00:03:52,319
we're got our head down we're we're

93
00:03:55,589 --> 00:03:54,080
doing our pieces

94
00:03:57,509 --> 00:03:55,599
and sometimes when you're working real

95
00:03:59,429 --> 00:03:57,519
close to things you don't necessarily

96
00:04:01,190 --> 00:03:59,439
see everything so there's so many moving

97
00:04:02,470 --> 00:04:01,200
parts and so many things going on at the

98
00:04:03,910 --> 00:04:02,480
agency

99
00:04:05,190 --> 00:04:03,920
as well as the center that to show

100
00:04:06,869 --> 00:04:05,200
people that we are moving in the right

101
00:04:09,990 --> 00:04:06,879
direction to pull together the complete

102
00:04:13,750 --> 00:04:10,000
story of where we are as a program

103
00:04:15,830 --> 00:04:13,760
watching at it from a higher level

104
00:04:17,670 --> 00:04:15,840
headquarters viewpoint it's just

105
00:04:20,069 --> 00:04:17,680
gratifying to see the

106
00:04:29,190 --> 00:04:20,079
the accomplishments that the teams have

107
00:04:37,990 --> 00:04:34,710
[Music]

108
00:04:39,990 --> 00:04:38,000
for ct2 we're doing modifications not

109
00:04:43,990 --> 00:04:40,000
only to make it last another 20 years

110
00:04:45,830 --> 00:04:44,000
but also to upgrade the load capacity

111
00:04:47,909 --> 00:04:45,840
the main project we're working on right

112
00:04:49,189 --> 00:04:47,919
now is the roller replacement project

113
00:04:51,350 --> 00:04:49,199

which is the roller assembly it's

114
00:04:53,590 --> 00:04:51,360
actually the rollers the shafts the

115
00:04:55,270 --> 00:04:53,600
bearings that support the crawler

116
00:04:58,469 --> 00:04:55,280
actually if you go there you'll see

117
00:05:00,390 --> 00:04:58,479
trucks a and c jacked up and on

118
00:05:02,390 --> 00:05:00,400
cribbing and that's the first time in

119
00:05:04,390 --> 00:05:02,400
the career crawler it's ever actually

120
00:05:06,870 --> 00:05:04,400
been jacked off the ground so the guys

121
00:05:09,110 --> 00:05:06,880
have easy access to the

122
00:05:11,430 --> 00:05:09,120
rollers roller assemblies and they're in

123
00:05:14,469 --> 00:05:11,440
the process now of removing the old

124
00:05:15,670 --> 00:05:14,479
rollers old shafts and old parts

125
00:05:17,350 --> 00:05:15,680
once they've

126
00:05:19,909 --> 00:05:17,360
done the line boring that's when they'll

127
00:05:22,230 --> 00:05:19,919
start assembling the new rollers and the

128
00:05:25,430 --> 00:05:22,240
new shafts and the new bearings and the

129
00:05:26,950 --> 00:05:25,440
new sleeves new adapters new plates so

130
00:05:29,110 --> 00:05:26,960
there's quite a bit of work and that

131
00:05:30,629 --> 00:05:29,120
work will go well from august through

132
00:05:33,270 --> 00:05:30,639
october so there's going to be a lot of

133
00:05:39,430 --> 00:05:33,280
trucks delivering a lot of steel

134
00:05:43,430 --> 00:05:41,990
we started actually the new design for

135
00:05:45,830 --> 00:05:43,440
flame deflector

136
00:05:48,230 --> 00:05:45,840
as well as a refurbishment of the flame

137
00:05:49,590 --> 00:05:48,240
trench and that's because of the new

138
00:05:53,350 --> 00:05:49,600

requirements for

139
00:05:55,510 --> 00:05:53,360
sls and commercial vehicles

140
00:05:58,390 --> 00:05:55,520
we've started the demolition of the

141
00:06:01,189 --> 00:05:58,400
flame deflector

142
00:06:02,870 --> 00:06:01,199
we've got concerns of you know due to

143
00:06:05,830 --> 00:06:02,880
age and the

144
00:06:08,390 --> 00:06:05,840
debonding of the flame trench structure

145
00:06:10,710 --> 00:06:08,400
this would possibly be a safety hazard

146
00:06:13,990 --> 00:06:10,720
for um you know our new program and

147
00:06:14,950 --> 00:06:14,000
that's why we had to go in and do a new

148
00:06:17,430 --> 00:06:14,960
design

149
00:06:24,309 --> 00:06:17,440
and refurbish this flame deflector and

150
00:06:29,350 --> 00:06:26,790
these pieces here they're not just one

151
00:06:31,189 --> 00:06:29,360
program it's not just one mission it's

152
00:06:33,510 --> 00:06:31,199
part of a capability that will enable

153
00:06:36,150 --> 00:06:33,520
this country to be a leader in space to

154
00:06:38,070 --> 00:06:36,160
continue to take people from the earth

155
00:06:40,070 --> 00:06:38,080
well beyond low earth orbit out into

156
00:06:42,309 --> 00:06:40,080
deep space and this is the hardware that

157
00:06:42,970 --> 00:06:42,319
will do that over multiple decades in

158
00:06:46,309 --> 00:06:42,980
the future

159
00:06:47,670 --> 00:06:46,319
[Music]

160
00:06:49,749 --> 00:06:47,680
so the work that's been accomplished so

161
00:06:52,070 --> 00:06:49,759
far is primarily structural type work

162
00:06:53,430 --> 00:06:52,080
right it's a lot of drilling a lot of

163
00:06:55,029 --> 00:06:53,440

secondary structure installation

164
00:06:57,589 --> 00:06:55,039
mechanical structures the support

165
00:06:59,990 --> 00:06:57,599
structure the next step is starting to

166
00:07:02,070 --> 00:07:00,000
install the subsystems when we actually

167
00:07:04,150 --> 00:07:02,080
perform the welding on tubes for

168
00:07:06,309 --> 00:07:04,160
propulsion in the environmental controls

169
00:07:08,150 --> 00:07:06,319
and life support systems

170
00:07:09,589 --> 00:07:08,160
those have to be at a higher level of

171
00:07:11,830 --> 00:07:09,599
cleanliness when you look at the

172
00:07:14,150 --> 00:07:11,840
facility there are these very large

173
00:07:16,070 --> 00:07:14,160
walls that are that are on the perimeter

174
00:07:17,990 --> 00:07:16,080
of the structure itself and and those

175
00:07:21,510 --> 00:07:18,000
are called hepa filter walls we can

176
00:07:22,870 --> 00:07:21,520
perform clean room work for the tubing

177
00:07:25,270 --> 00:07:22,880
concurrently

178
00:07:28,309 --> 00:07:25,280
while on the outside doing more standard

179
00:07:31,110 --> 00:07:28,319
clean room so our goal is next summer

180
00:07:32,790 --> 00:07:31,120
sometime to turn the vehicle over early

181
00:07:34,870 --> 00:07:32,800
summer over to the ground operations

182
00:07:37,110 --> 00:07:34,880
organization so they can start their

183
00:07:39,350 --> 00:07:37,120
processing

184
00:07:42,150 --> 00:07:39,360
well the service module is attached

185
00:07:44,390 --> 00:07:42,160
below the crew module and it has the

186
00:07:45,670 --> 00:07:44,400
prop tanks and the engine

187
00:07:48,869 --> 00:07:45,680
radiators

188
00:07:50,210 --> 00:07:48,879

solar panels a service module all came

189
00:07:53,029 --> 00:07:50,220
in pieces

190
00:07:56,230 --> 00:07:53,039
[Music]

191
00:07:59,110 --> 00:07:56,240
there's 49 composite panels on the sm

192
00:08:00,869 --> 00:07:59,120
the actual structure itself is aluminum

193
00:08:03,350 --> 00:08:00,879
that's the core skeleton where these

194
00:08:05,990 --> 00:08:03,360
composite panels were attached to

195
00:08:08,869 --> 00:08:06,000
after the cm releases and we stand

196
00:08:11,029 --> 00:08:08,879
returns to earth the sm will just burn

197
00:08:12,130 --> 00:08:11,039
up with the with the upper stage of the

198
00:08:16,309 --> 00:08:12,140
delta iv

199
00:08:20,390 --> 00:08:18,710
we performed two primary tests so far

200
00:08:22,390 --> 00:08:20,400
the proof pressure test which is just

201
00:08:24,790 --> 00:08:22,400
the pressure vessel and that is that is

202
00:08:26,309 --> 00:08:24,800
put into the proof pressure cell it's

203
00:08:28,070 --> 00:08:26,319
pressurized and a relatively high

204
00:08:30,469 --> 00:08:28,080
pressure we're testing how well the

205
00:08:32,790 --> 00:08:30,479
vehicle was built and then the follow-on

206
00:08:34,070 --> 00:08:32,800
test is the static loads test where the

207
00:08:36,389 --> 00:08:34,080
vehicle goes through eight different

208
00:08:38,949 --> 00:08:36,399
loads test cases and so the vehicle is

209
00:08:41,269 --> 00:08:38,959
put under under pressure it's put under

210
00:08:43,990 --> 00:08:41,279
tension it's put under compression the

211
00:08:45,269 --> 00:08:44,000
whole intent is to simulate similar

212
00:08:49,190 --> 00:08:45,279
conditions that the vehicle would

213
00:08:52,680 --> 00:08:49,200

experience say in flight in launch in

214
00:08:55,829 --> 00:08:52,690
and also in landing and recovery

215
00:08:57,910 --> 00:08:55,839
[Music]

216
00:08:59,430 --> 00:08:57,920
we usually get the abort motor first and

217
00:09:02,070 --> 00:08:59,440
for this mission the abort motor is

218
00:09:03,670 --> 00:09:02,080
inert uh being a nominal flight we're

219
00:09:05,350 --> 00:09:03,680
going to have instrumentation on it to

220
00:09:06,870 --> 00:09:05,360
again understand more about the loads

221
00:09:09,269 --> 00:09:06,880
and environments that we expect to see

222
00:09:11,350 --> 00:09:09,279
in flight but it will be an inert

223
00:09:13,750 --> 00:09:11,360
propellant that's cast into the motor

224
00:09:15,750 --> 00:09:13,760
this time we got the jettison motor next

225
00:09:17,829 --> 00:09:15,760
and that's the only live component of

226
00:09:20,070 --> 00:09:17,839
this vehicle

227
00:09:22,550 --> 00:09:20,080
we do a nominal jettison the jettison

228
00:09:24,949 --> 00:09:22,560
motor fires the last separates from the

229
00:09:26,230 --> 00:09:24,959
cm and the cm continues on its mission

230
00:09:28,710 --> 00:09:26,240
you know one of the challenges of any

231
00:09:30,790 --> 00:09:28,720
new system is understanding the loads as

232
00:09:33,190 --> 00:09:30,800
you send up through the atmosphere and

233
00:09:34,470 --> 00:09:33,200
the dynamics the acoustics and

234
00:09:40,150 --> 00:09:34,480
we'll be able to gather a lot of that

235
00:09:43,030 --> 00:09:41,430
the back shell

236
00:09:45,030 --> 00:09:43,040
it looks though it looks the same as

237
00:09:47,030 --> 00:09:45,040
what we flew on shuttle it is different

238
00:09:48,949 --> 00:09:47,040

we kind of took the best aspects and put

239
00:09:51,190 --> 00:09:48,959
them together to meet lockheed martin's

240
00:09:52,230 --> 00:09:51,200
requirements for for the orion capsule

241
00:09:53,910 --> 00:09:52,240
two major things we're trying to

242
00:09:55,430 --> 00:09:53,920
accomplish here one of them is to

243
00:09:57,190 --> 00:09:55,440
prevent micro meteorite damage when

244
00:09:59,750 --> 00:09:57,200
we're on orbit for long duration the

245
00:10:01,910 --> 00:09:59,760
other wood of course is is the reentry

246
00:10:04,230 --> 00:10:01,920
aspect the skin that you see on the

247
00:10:07,590 --> 00:10:04,240
capsule what you would see on orbit sits

248
00:10:09,829 --> 00:10:07,600
on top of a composite substrate what we

249
00:10:12,150 --> 00:10:09,839
call the back shell panel

250
00:10:14,310 --> 00:10:12,160
that that when combined together gives

251
00:10:15,829 --> 00:10:14,320
you the complete back shell there's some

252
00:10:17,350 --> 00:10:15,839
sections that have some very complex

253
00:10:19,750 --> 00:10:17,360
geometry so what we're going to do for

254
00:10:21,590 --> 00:10:19,760
the first time is take a substrate

255
00:10:22,949 --> 00:10:21,600
that's built by lockheed martin and put

256
00:10:24,550 --> 00:10:22,959
it together with

257
00:10:28,069 --> 00:10:24,560
the tiles that are manufactured by

258
00:10:29,990 --> 00:10:28,079
jacobs and and validate the fit up

259
00:10:31,110 --> 00:10:30,000
like any test vehicle you're heavily

260
00:10:33,350 --> 00:10:31,120
instrumented we're going to come back

261
00:10:34,820 --> 00:10:33,360
with a tremendous amount of data on how

262
00:10:37,509 --> 00:10:34,830
how the system performs

263
00:10:39,350 --> 00:10:37,519

[Music]

264
00:10:41,350 --> 00:10:39,360
this first flight test of orion is

265
00:10:42,870 --> 00:10:41,360
really to to understand how the heat

266
00:10:44,870 --> 00:10:42,880
shield performs and that heat shield's

267
00:10:49,509 --> 00:10:44,880
being going final manufacturing at

268
00:10:54,389 --> 00:10:51,670
textron's had a long association with

269
00:10:55,960 --> 00:10:54,399
nasa and working in the space area for

270
00:10:57,430 --> 00:10:55,970
space protection

271
00:10:59,269 --> 00:10:57,440
[Music]

272
00:11:00,470 --> 00:10:59,279
the technology today has advanced

273
00:11:02,230 --> 00:11:00,480
tremendously

274
00:11:04,710 --> 00:11:02,240
our manufacturing technology has

275
00:11:05,750 --> 00:11:04,720
advanced but ironically we're still

276
00:11:08,230 --> 00:11:05,760
using

277
00:11:11,430 --> 00:11:08,240
a material that has proven itself for

278
00:11:14,949 --> 00:11:11,440
the last 40 years mavcote is a very

279
00:11:17,509 --> 00:11:14,959
efficient ablater and as an ablator what

280
00:11:19,509 --> 00:11:17,519
it does it allows us to protect the

281
00:11:21,829 --> 00:11:19,519
capsule from the high heating that

282
00:11:23,509 --> 00:11:21,839
occurs during re-entry there is no

283
00:11:24,870 --> 00:11:23,519
material non-ablator material that can

284
00:11:26,310 --> 00:11:24,880
handle that kind of heat you have to

285
00:11:27,910 --> 00:11:26,320
shed away

286
00:11:29,509 --> 00:11:27,920
the heat basically what you're doing is

287
00:11:31,509 --> 00:11:29,519
you peel off the layers of the heat

288
00:11:34,150 --> 00:11:31,519

shield you're taking heat with it when

289
00:11:35,990 --> 00:11:34,160
we apply avco to the heat shield

290
00:11:39,110 --> 00:11:36,000
we bond the honeycomb onto the carrier

291
00:11:41,350 --> 00:11:39,120
structure and then we inject the avcode

292
00:11:44,630 --> 00:11:41,360
ablative material into the cells the

293
00:11:47,190 --> 00:11:44,640
honeycomb acts as a crack arrester and

294
00:11:47,990 --> 00:11:47,200
gives it rigidity and and strength as a

295
00:11:49,670 --> 00:11:48,000
whole

296
00:11:51,750 --> 00:11:49,680
we know we're on the critical path for

297
00:11:53,990 --> 00:11:51,760
the orion program and so our employees

298
00:11:55,509 --> 00:11:54,000
are literally working all hours all days

299
00:11:57,269 --> 00:11:55,519
of the week to make sure that we hit our

300
00:11:58,790 --> 00:11:57,279
schedule we know there'll be more heat

301
00:12:00,389 --> 00:11:58,800
shields coming and we're very excited

302
00:12:06,510 --> 00:12:00,399
about that our job is to make sure

303
00:12:12,150 --> 00:12:09,190
[Music]

304
00:12:14,150 --> 00:12:12,160
the development programs i find uh

305
00:12:15,509 --> 00:12:14,160
just awesome because this is where

306
00:12:17,829 --> 00:12:15,519
you're coming up with the new ideas

307
00:12:19,110 --> 00:12:17,839
you're creating the new vehicles you're

308
00:12:21,910 --> 00:12:19,120
you're pushing you're pushing the

309
00:12:24,470 --> 00:12:21,920
boundaries in essence you can feel that

310
00:12:26,790 --> 00:12:24,480
we're gonna go do this the hardware is

311
00:12:28,790 --> 00:12:26,800
starting to come the orion hardware is

312
00:12:32,710 --> 00:12:28,800
getting ready for its first flight test

313
00:12:36,629 --> 00:12:34,629

the excitement is here we are really

314
00:12:38,790 --> 00:12:36,639
ready to get going so we are far from

315
00:12:40,470 --> 00:12:38,800
being out of space we are really getting

316
00:12:43,430 --> 00:12:40,480
ready to go into space that's so

317
00:12:46,870 --> 00:12:43,440
rewarding to see our focus into what's

318
00:12:49,190 --> 00:12:46,880
next because this really is our future

319
00:12:50,310 --> 00:12:49,200
i know the day that we fly this thing

320
00:12:51,590 --> 00:12:50,320
there are going to be thousands of

321
00:12:53,110 --> 00:12:51,600
people that are going to be excited that

322
00:12:55,110 --> 00:12:53,120
are working on this and the nasa

323
00:12:56,310 --> 00:12:55,120
workforce and the contractor workforce

324
00:12:57,829 --> 00:12:56,320
we're going to be proud of the work that

325
00:12:59,269 --> 00:12:57,839
this team has done and i think we're

326
00:13:01,269 --> 00:12:59,279
going to be proud of our country too

327
00:13:03,509 --> 00:13:01,279
it's going to be pretty exciting time

328
00:13:06,890 --> 00:13:03,519
i'm ready to build a rocket and we are