1
00:02:31,110 --> 00:02:28,630
good morning everyone and welcome to the

2
00:02:33,110 --> 00:02:31,120
rollout of the orion exploration flight

3
00:02:34,710 --> 00:02:33,120
test article one

4
00:02:36,630 --> 00:02:34,720
behind me

5
00:02:38,550 --> 00:02:36,640
this is a great day

6
00:02:40,630 --> 00:02:38,560
i'm dan dunbacher

7
00:02:42,630 --> 00:02:40,640
in the nasa human exploration and

8
00:02:44,470 --> 00:02:42,640
operations mission directorate i'm the

9
00:02:46,630 --> 00:02:44,480
deputy associate administrator for our

10
00:02:49,350 --> 00:02:46,640
exploration systems

11
00:02:51,270 --> 00:02:49,360
this is truly a great day

12
00:02:52,949 --> 00:02:51,280
for all the progress that we have made

13
00:02:54,229 --> 00:02:52,959

and the orion team has made on the

14
00:02:56,470 --> 00:02:54,239
hardware

15
00:02:58,550 --> 00:02:56,480
this is our first step in exploration

16
00:03:00,390 --> 00:02:58,560
beyond low earth orbit

17
00:03:01,589 --> 00:03:00,400
a couple of weeks ago we had a great

18
00:03:03,910 --> 00:03:01,599
success

19
00:03:06,470 --> 00:03:03,920
with the commercial activities in spacex

20
00:03:08,869 --> 00:03:06,480
going to the international space station

21
00:03:13,990 --> 00:03:08,879
behind me you see the exploration flight

22
00:03:19,030 --> 00:03:16,710
this is our first step to go beyond low

23
00:03:20,790 --> 00:03:19,040
earth orbit the flight test article

24
00:03:22,710 --> 00:03:20,800
behind me will go through its flight

25
00:03:25,270 --> 00:03:22,720
test in 2014

26
00:03:27,670 --> 00:03:25,280
in preparation for our next flight test

27
00:03:30,550 --> 00:03:27,680
with the all up space launch system in

28
00:03:32,949 --> 00:03:30,560
2017.

29
00:03:35,030 --> 00:03:32,959
i'd like to thank the orion team for

30
00:03:37,110 --> 00:03:35,040
getting us to where we are today the

31
00:03:38,550 --> 00:03:37,120
kennedy space center team for getting us

32
00:03:41,190 --> 00:03:38,560
here today

33
00:03:43,190 --> 00:03:41,200
and also a special thank you

34
00:03:47,589 --> 00:03:43,200
again to our space flight awareness

35
00:03:49,589 --> 00:03:47,599
honorees who are with us here today

36
00:03:53,110 --> 00:03:49,599
i would like to introduce

37
00:03:55,110 --> 00:03:53,120
a space explorer himself

38
00:03:56,869 --> 00:03:55,120

bob cabana the kennedy space center

39
00:03:58,789 --> 00:03:56,879
director

40
00:04:01,190 --> 00:03:58,799
the man responsible for the team that

41
00:04:02,229 --> 00:04:01,200
will bring orion the space launch

42
00:04:03,990 --> 00:04:02,239
systems

43
00:04:07,270 --> 00:04:04,000
everything to the launch pad so that we

44
00:04:17,430 --> 00:04:07,280
can fly in 2014 and 2017.

45
00:04:20,870 --> 00:04:18,949
thanks dan good morning and welcome to

46
00:04:22,629 --> 00:04:20,880
the kennedy space center

47
00:04:24,310 --> 00:04:22,639
i'd like to take a minute we have many

48
00:04:25,590 --> 00:04:24,320
distinguished folks in the audience but

49
00:04:28,230 --> 00:04:25,600
there's a few that i would like to

50
00:04:37,030 --> 00:04:28,240
recognize first off the honorable bill

51
00:04:45,189 --> 00:04:39,030
the honorable thad altman florida state

52
00:04:53,030 --> 00:04:47,189
miss barbara arthur from the office of

53
00:04:57,510 --> 00:04:55,270
ms susan fernandez from the office of

54
00:05:02,710 --> 00:04:57,520
the honorable marco rubio united states

55
00:05:06,870 --> 00:05:04,870
mr patrick gavin from the office of the

56
00:05:12,070 --> 00:05:06,880
honorable bill posey united states

57
00:05:15,909 --> 00:05:14,070
mr jared stout from the office of the

58
00:05:20,710 --> 00:05:15,919
honorable sandy adams united states

59
00:05:24,390 --> 00:05:22,550
miss cindy brown from the office of the

60
00:05:29,510 --> 00:05:24,400
honorable daniel webster u.s

61
00:05:33,270 --> 00:05:31,350
we also have the rest of our human space

62
00:05:37,590 --> 00:05:33,280
flight center directors here mike coats

63
00:05:40,870 --> 00:05:39,189

mike's

64
00:05:43,110 --> 00:05:40,880
mike center is responsible for the

65
00:05:44,950 --> 00:05:43,120
program management that brought us orion

66
00:05:50,629 --> 00:05:44,960
mr gene goldman director of the marshall

67
00:05:53,270 --> 00:05:51,990
gene's going to give us that rocket

68
00:05:55,830 --> 00:05:53,280
that's going to put this thing out of

69
00:06:02,070 --> 00:05:55,840
low earth orbit uh mr patrick sherman

70
00:06:06,309 --> 00:06:03,430
and patrick's going to make sure that

71
00:06:08,629 --> 00:06:06,319
all those engines work on that rocket

72
00:06:10,390 --> 00:06:08,639
and brigadier general anthony cotton

73
00:06:12,309 --> 00:06:10,400
commander the 45th space swing and

74
00:06:19,189 --> 00:06:12,319
director of the eastern range at patrick

75
00:06:23,270 --> 00:06:20,710
you know as ksc

76
00:06:25,189 --> 00:06:23,280
celebrates its 50th anniversary this

77
00:06:27,189 --> 00:06:25,199
month i can't think of a more

78
00:06:30,390 --> 00:06:27,199
appropriate way to celebrate than by

79
00:06:32,550 --> 00:06:30,400
having the very first orion multipurpose

80
00:06:34,710 --> 00:06:32,560
crew vehicle here at ksc

81
00:06:37,189 --> 00:06:34,720
orion is ushering in a new era of space

82
00:06:39,189 --> 00:06:37,199
exploration beyond our home planet

83
00:06:40,950 --> 00:06:39,199
enabling us to go further than we've

84
00:06:43,590 --> 00:06:40,960
ever gone before

85
00:06:45,510 --> 00:06:43,600
the future is here now

86
00:06:47,990 --> 00:06:45,520
in the vehicle that we see here today

87
00:06:50,309 --> 00:06:48,000
it's not a powerpoint chart it's a real

88
00:06:52,309 --> 00:06:50,319

spacecraft moving toward a test flight

89
00:06:54,070 --> 00:06:52,319
in 2014.

90
00:06:55,430 --> 00:06:54,080
it wouldn't be here today in this onc

91
00:06:57,830 --> 00:06:55,440
high bay if it weren't for the

92
00:06:59,990 --> 00:06:57,840
outstanding partnership between the

93
00:07:02,870 --> 00:07:00,000
state of florida space florida lockheed

94
00:07:05,830 --> 00:07:02,880
martin and nasa thanks to all you for

95
00:07:07,510 --> 00:07:05,840
the teamwork that brought orion here

96
00:07:08,550 --> 00:07:07,520
we still have many challenges in front

97
00:07:10,950 --> 00:07:08,560
of us

98
00:07:13,350 --> 00:07:10,960
but i believe our future is bright

99
00:07:15,749 --> 00:07:13,360
and as great as our last 50 years have

100
00:07:17,670 --> 00:07:15,759
been i believe our next 50 years are

101
00:07:19,830 --> 00:07:17,680
going to be even better

102
00:07:22,150 --> 00:07:19,840
we are going to continue the challenge

103
00:07:24,150 --> 00:07:22,160
of developing the innovative systems

104
00:07:25,189 --> 00:07:24,160
that allow us to explore beyond our home

105
00:07:27,029 --> 00:07:25,199
planet

106
00:07:28,710 --> 00:07:27,039
while we enable the commercial sector to

107
00:07:32,390 --> 00:07:28,720
fly our crews and others to low earth

108
00:07:34,469 --> 00:07:32,400
orbit in the international space station

109
00:07:37,510 --> 00:07:34,479
space ports that were once science

110
00:07:38,870 --> 00:07:37,520
fiction will be reality we are making

111
00:07:41,029 --> 00:07:38,880
that happen

112
00:07:43,589 --> 00:07:41,039
my sincere great congratulations to the

113
00:07:45,909 --> 00:07:43,599

orion team that brought us this far and

114
00:07:47,830 --> 00:07:45,919
i look forward with great anticipation

115
00:07:50,070 --> 00:07:47,840
to the first flight of orion and your

116
00:07:53,189 --> 00:07:50,080
continued success

117
00:07:54,629 --> 00:07:53,199
at this time it's a real pleasure for me

118
00:07:56,869 --> 00:07:54,639
to introduce one of our strongest

119
00:07:58,869 --> 00:07:56,879
advocates someone who needs no

120
00:08:08,469 --> 00:07:58,879
introduction are deputy nasa

121
00:08:12,469 --> 00:08:10,550
good morning thank you for

122
00:08:14,950 --> 00:08:12,479
being here thank you

123
00:08:17,670 --> 00:08:14,960
bob and happy birthday to the kennedy

124
00:08:20,869 --> 00:08:17,680
space center it is a great day in

125
00:08:22,390 --> 00:08:20,879
florida and for 50 years

126
00:08:25,350 --> 00:08:22,400
kennedy space center has been our

127
00:08:28,790 --> 00:08:25,360
gateway to space in fact the road to

128
00:08:30,950 --> 00:08:28,800
space has always and always will

129
00:08:33,110 --> 00:08:30,960
lead right through the great state of

130
00:08:35,909 --> 00:08:33,120
florida with the delivery of this

131
00:08:38,230 --> 00:08:35,919
magnificent magnificent golden

132
00:08:41,029 --> 00:08:38,240
anniversary present

133
00:08:43,509 --> 00:08:41,039
there is no doubt that as poet robert

134
00:08:46,870 --> 00:08:43,519
frost once said you still have promises

135
00:08:49,110 --> 00:08:46,880
to keep and many miles before you sleep

136
00:08:52,389 --> 00:08:49,120
this is a milestone moment for the space

137
00:08:55,030 --> 00:08:52,399
coast nasa and america space program

138
00:08:57,190 --> 00:08:55,040

orion's arrival here marks a major

139
00:08:59,509 --> 00:08:57,200
accomplishment in the ambitious new

140
00:09:01,350 --> 00:08:59,519
american space program that president

141
00:09:03,110 --> 00:09:01,360
obama and congress

142
00:09:04,790 --> 00:09:03,120
have approved

143
00:09:08,150 --> 00:09:04,800
it's a new and exciting chapter in

144
00:09:10,790 --> 00:09:08,160
america's great space exploration story

145
00:09:13,750 --> 00:09:10,800
one that will see more discoveries more

146
00:09:14,710 --> 00:09:13,760
scientific return and more

147
00:09:17,509 --> 00:09:14,720
people

148
00:09:19,110 --> 00:09:17,519
and americans going into space and going

149
00:09:20,550 --> 00:09:19,120
places that have never before been

150
00:09:21,670 --> 00:09:20,560
visited

151
00:09:24,710 --> 00:09:21,680
so it was

152
00:09:25,829 --> 00:09:24,720
just over two years ago in this very

153
00:09:27,990 --> 00:09:25,839
building

154
00:09:30,550 --> 00:09:28,000
that president obama set a goal of

155
00:09:33,509 --> 00:09:30,560
sending humans farther into space than

156
00:09:36,710 --> 00:09:33,519
we have ever been to an asteroid in 2025

157
00:09:39,190 --> 00:09:36,720
and on to mars in the 2030s

158
00:09:41,670 --> 00:09:39,200
our leadership in washington agreed that

159
00:09:43,750 --> 00:09:41,680
the best way to do that was for nasa to

160
00:09:46,230 --> 00:09:43,760
work with a private sector to develop

161
00:09:48,630 --> 00:09:46,240
capabilities to transport our cargo and

162
00:09:51,190 --> 00:09:48,640
crew to the international space station

163
00:09:53,670 --> 00:09:51,200

and other low earth orbit destinations

164
00:09:56,550 --> 00:09:53,680
so that we at nasa with our commercial

165
00:09:59,509 --> 00:09:56,560
partners can continue to go further and

166
00:10:02,069 --> 00:09:59,519
to build americans next generation of

167
00:10:05,110 --> 00:10:02,079
space exploration system the orion

168
00:10:07,430 --> 00:10:05,120
spacecraft and the space launch system

169
00:10:10,389 --> 00:10:07,440
so by investing with american companies

170
00:10:12,069 --> 00:10:10,399
and american ingenuity we are spurring

171
00:10:15,430 --> 00:10:12,079
competition

172
00:10:17,110 --> 00:10:15,440
in our free market to give taxpayers

173
00:10:20,230 --> 00:10:17,120
more for their dollar more bang for

174
00:10:21,910 --> 00:10:20,240
their buck and while enabling nasa to do

175
00:10:24,710 --> 00:10:21,920
what it does best also with our

176
00:10:26,230 --> 00:10:24,720
commercial partners to reach again for

177
00:10:28,310 --> 00:10:26,240
the stars

178
00:10:31,110 --> 00:10:28,320
we're through this program going to be

179
00:10:33,430 --> 00:10:31,120
ending the outsourcing of american space

180
00:10:35,590 --> 00:10:33,440
jobs and bringing them right back here

181
00:10:37,430 --> 00:10:35,600
to america and to florida and to other

182
00:10:39,829 --> 00:10:37,440
states across the country

183
00:10:42,310 --> 00:10:39,839
so this strategy is already producing

184
00:10:44,470 --> 00:10:42,320
tangible results and the teams are here

185
00:10:47,670 --> 00:10:44,480
in florida and across the nation are

186
00:10:49,910 --> 00:10:47,680
making steady progress so in may as was

187
00:10:52,389 --> 00:10:49,920
mentioned spacex became the first

188
00:10:54,069 --> 00:10:52,399

private company to launch and dock a

189
00:10:56,470 --> 00:10:54,079
spacecraft to the international space

190
00:10:58,389 --> 00:10:56,480
station and return their capsule back

191
00:11:00,150 --> 00:10:58,399
safely to earth we have other

192
00:11:01,829 --> 00:11:00,160
competitors where we are looking to be

193
00:11:04,069 --> 00:11:01,839
doing this again

194
00:11:06,230 --> 00:11:04,079
more soon but today

195
00:11:08,710 --> 00:11:06,240
there's also proof that the strategy is

196
00:11:11,910 --> 00:11:08,720
working as we take this step with the

197
00:11:14,710 --> 00:11:11,920
orion test flight in 2014. it will

198
00:11:17,190 --> 00:11:14,720
travel farther into space than any

199
00:11:19,990 --> 00:11:17,200
spacecraft designed for humans has flown

200
00:11:21,350 --> 00:11:20,000
in the 40 years since our astronauts

201
00:11:23,750 --> 00:11:21,360
went to the moon

202
00:11:26,230 --> 00:11:23,760
but we do still have miles to go

203
00:11:28,069 --> 00:11:26,240
beginning today this orion capsule will

204
00:11:31,590 --> 00:11:28,079
undergo final construction and

205
00:11:33,750 --> 00:11:31,600
integration supporting at least 350

206
00:11:35,350 --> 00:11:33,760
additional space coast jobs so you

207
00:11:37,509 --> 00:11:35,360
should all know that

208
00:11:40,150 --> 00:11:37,519
in our president's budget request for

209
00:11:42,630 --> 00:11:40,160
2013 it includes over 100 million

210
00:11:46,230 --> 00:11:42,640
dollars in investments in nasa's 21st

211
00:11:48,389 --> 00:11:46,240
century space launch complex program

212
00:11:50,710 --> 00:11:48,399
we'll create new jobs in florida and

213
00:11:52,949 --> 00:11:50,720

help modernize and transform the kennedy

214
00:11:55,190 --> 00:11:52,959
space center launch infrastructure to

215
00:11:58,389 --> 00:11:55,200
benefit current and future government

216
00:12:01,110 --> 00:11:58,399
and commercial users so nasa is a driver

217
00:12:03,110 --> 00:12:01,120
of an innovation and economic growth a

218
00:12:05,110 --> 00:12:03,120
creator of high skilled

219
00:12:07,509 --> 00:12:05,120
high-paying jobs and a force for

220
00:12:09,430 --> 00:12:07,519
inspiration to the american people

221
00:12:12,230 --> 00:12:09,440
today nasa and kennedy space center are

222
00:12:13,350 --> 00:12:12,240
again lifting our sights and lifting our

223
00:12:15,670 --> 00:12:13,360
spirit

224
00:12:17,750 --> 00:12:15,680
to new heights i want to again

225
00:12:19,829 --> 00:12:17,760
congratulate all of you at kennedy space

226
00:12:23,030 --> 00:12:19,839
center and to those of you on the orion

227
00:12:25,910 --> 00:12:23,040
team across the country to our partners

228
00:12:28,150 --> 00:12:25,920
lockheed martin for achieving

229
00:12:29,269 --> 00:12:28,160
this historic milestone and getting us

230
00:12:31,110 --> 00:12:29,279
this far

231
00:12:33,990 --> 00:12:31,120
putting us on a course as he said bob

232
00:12:35,990 --> 00:12:34,000
for greatness in the next 50 years

233
00:12:38,310 --> 00:12:36,000
and it is my privilege to introduce

234
00:12:41,030 --> 00:12:38,320
someone who is helping us usher in these

235
00:12:43,430 --> 00:12:41,040
next 50 years you hear a lot about

236
00:12:45,269 --> 00:12:43,440
dissension in washington but i'm here to

237
00:12:48,389 --> 00:12:45,279
tell you we work together

238
00:12:52,150 --> 00:12:48,399

well with our partners on capitol hill

239
00:12:54,389 --> 00:12:52,160
because senator bill nelson has been

240
00:12:57,430 --> 00:12:54,399
one of the top congressional architects

241
00:13:00,949 --> 00:12:57,440
of this new strategy of the deep space

242
00:13:04,550 --> 00:13:00,959
program of america continuing to lead

243
00:13:06,870 --> 00:13:04,560
in space he is himself a former

244
00:13:09,350 --> 00:13:06,880
astronaut he was talking about having

245
00:13:11,509 --> 00:13:09,360
spent time in these crew quarters

246
00:13:13,829 --> 00:13:11,519
not so long ago

247
00:13:16,310 --> 00:13:13,839
but a great supporter of the space coast

248
00:13:28,550 --> 00:13:16,320
and one of the nation's best champions

249
00:13:34,389 --> 00:13:31,430
it's good to be home

250
00:13:35,829 --> 00:13:34,399
and i say that literally

251
00:13:38,069 --> 00:13:35,839
most of you

252
00:13:39,030 --> 00:13:38,079
do not know

253
00:13:42,389 --> 00:13:39,040
that

254
00:13:45,189 --> 00:13:42,399
my grandparents homesteaded

255
00:13:48,069 --> 00:13:45,199
under the homestead act when you under

256
00:13:50,310 --> 00:13:48,079
the law had to work the land for four

257
00:13:54,790 --> 00:13:50,320
years

258
00:13:57,910 --> 00:13:54,800
they homesteaded a plot of 160 acres

259
00:14:00,870 --> 00:13:57,920
between 1913

260
00:14:03,350 --> 00:14:00,880
and 1917.

261
00:14:07,030 --> 00:14:03,360
and that 160 acres

262
00:14:09,430 --> 00:14:07,040
is at the north end of today's space

263
00:14:12,150 --> 00:14:09,440

shuttle runway

264
00:14:15,269 --> 00:14:12,160
i have a copy of the deed that's hanging

265
00:14:16,790 --> 00:14:15,279
in my office signed by president woodrow

266
00:14:18,870 --> 00:14:16,800
wilson

267
00:14:20,389 --> 00:14:18,880
to my grandparents

268
00:14:22,230 --> 00:14:20,399
and

269
00:14:24,389 --> 00:14:22,240
literally

270
00:14:25,829 --> 00:14:24,399
it it was quite

271
00:14:28,629 --> 00:14:25,839
remarkable

272
00:14:31,990 --> 00:14:28,639
on that first morning

273
00:14:34,310 --> 00:14:32,000
in that early morning darkness

274
00:14:37,509 --> 00:14:34,320
i was the last member of the crew to

275
00:14:40,470 --> 00:14:37,519
climb in and i wandered off on that

276
00:14:42,949 --> 00:14:40,480
launch pad by myself

277
00:14:47,189 --> 00:14:42,959
looked in the direction only

278
00:14:49,269 --> 00:14:47,199
three miles away from pad 39a

279
00:14:52,550 --> 00:14:49,279
where my grandparents

280
00:14:53,430 --> 00:14:52,560
had swatted mosquitoes and where they

281
00:14:58,710 --> 00:14:53,440
had

282
00:15:00,150 --> 00:14:58,720
dug out of the dirt

283
00:15:03,590 --> 00:15:00,160
a living

284
00:15:05,910 --> 00:15:03,600
and uh just i was amazed that they would

285
00:15:08,710 --> 00:15:05,920
not were they living

286
00:15:11,750 --> 00:15:08,720
i could have believed that a grandson

287
00:15:13,030 --> 00:15:11,760
was literally going to leave the face of

288
00:15:17,110 --> 00:15:13,040

the earth

289
00:15:20,389 --> 00:15:17,120
almost right from the old homestead

290
00:15:22,470 --> 00:15:20,399
it's also home this very building

291
00:15:24,829 --> 00:15:22,480
if you all recall

292
00:15:28,310 --> 00:15:24,839
hoot gibson's

293
00:15:29,829 --> 00:15:28,320
crew we spent a lot of time right up

294
00:15:33,430 --> 00:15:29,839
there

295
00:15:34,710 --> 00:15:33,440
because we had to go through four scrubs

296
00:15:37,189 --> 00:15:34,720
still the

297
00:15:39,269 --> 00:15:37,199
dubious record

298
00:15:42,389 --> 00:15:39,279
but on the fifth try

299
00:15:44,550 --> 00:15:42,399
launched into an all most flawless

300
00:15:46,150 --> 00:15:44,560
mission

301
00:15:48,629 --> 00:15:46,160
and isn't

302
00:15:51,509 --> 00:15:48,639
this beautiful

303
00:15:53,749 --> 00:15:51,519
and i know there's a lot of people here

304
00:15:55,910 --> 00:15:53,759
that can't wait to get their hands and

305
00:15:57,910 --> 00:15:55,920
their fingers

306
00:16:01,430 --> 00:15:57,920
on this hardware and ladies and

307
00:16:04,389 --> 00:16:01,440
gentlemen we're going to mars

308
00:16:06,790 --> 00:16:04,399
without question

309
00:16:08,470 --> 00:16:06,800
the long-term goal

310
00:16:13,590 --> 00:16:08,480
of our space

311
00:16:15,590 --> 00:16:13,600
program human space program right now

312
00:16:19,110 --> 00:16:15,600
is the goal of going to mars in the

313
00:16:22,069 --> 00:16:19,120

decade of the 2030s

314
00:16:23,749 --> 00:16:22,079
we still need to refine how we're going

315
00:16:25,350 --> 00:16:23,759
to go there

316
00:16:28,069 --> 00:16:25,360
we've got to develop a lot of

317
00:16:30,870 --> 00:16:28,079
technologies

318
00:16:34,310 --> 00:16:30,880
we've got to figure out how and where

319
00:16:38,069 --> 00:16:34,320
we're going to stop along the way

320
00:16:42,470 --> 00:16:38,079
and the president's goal is

321
00:16:48,150 --> 00:16:44,389
but we know

322
00:16:50,550 --> 00:16:48,160
that the orion capsule is a critical

323
00:16:53,110 --> 00:16:50,560
part of the system

324
00:16:56,310 --> 00:16:53,120
that is going to take us there

325
00:16:58,230 --> 00:16:56,320
and so we're working on it

326
00:16:59,829 --> 00:16:58,240
and kennedy space

327
00:17:02,870 --> 00:16:59,839
center workers

328
00:17:05,350 --> 00:17:02,880
are working on flight hardware

329
00:17:06,309 --> 00:17:05,360
that's going to fly

330
00:17:07,750 --> 00:17:06,319
and

331
00:17:11,429 --> 00:17:07,760
who better

332
00:17:13,189 --> 00:17:11,439
to prepare orion for this journey

333
00:17:14,710 --> 00:17:13,199
than the folks at the kennedy space

334
00:17:17,189 --> 00:17:14,720
center

335
00:17:18,949 --> 00:17:17,199
you think back

336
00:17:23,429 --> 00:17:18,959
the tradition

337
00:17:30,870 --> 00:17:27,750
every human space flight since mercury

338
00:17:33,909 --> 00:17:30,880

our country has entrusted the final

339
00:17:36,310 --> 00:17:33,919
preparation of the spacecraft

340
00:17:39,350 --> 00:17:36,320
to the cape

341
00:17:41,990 --> 00:17:39,360
the many apollo spacecraft were tested

342
00:17:45,590 --> 00:17:42,000
and readied for flight

343
00:17:52,789 --> 00:17:49,029
when the space shuttle columbia faced

344
00:17:55,190 --> 00:17:52,799
seemingly unsolvable technical problems

345
00:17:57,029 --> 00:17:55,200
what happened

346
00:18:01,510 --> 00:17:57,039
it was shipped

347
00:18:05,190 --> 00:18:01,520
from california partially assembled

348
00:18:08,070 --> 00:18:05,200
and it came here to ksc

349
00:18:11,110 --> 00:18:08,080
and the agency knew that if any group of

350
00:18:13,430 --> 00:18:11,120
people in this world

351
00:18:16,390 --> 00:18:13,440
could get the revolutionary new

352
00:18:20,310 --> 00:18:16,400
spacecraft ready for its first flight it

353
00:18:25,029 --> 00:18:22,470
and when

354
00:18:27,190 --> 00:18:25,039
manufacturers struggled to build the

355
00:18:28,710 --> 00:18:27,200
elements of the international space

356
00:18:31,590 --> 00:18:28,720
station

357
00:18:34,710 --> 00:18:31,600
perhaps the most complex engineering

358
00:18:36,630 --> 00:18:34,720
project in human history

359
00:18:39,029 --> 00:18:36,640
once again

360
00:18:41,990 --> 00:18:39,039
nasa called upon the kennedy space

361
00:18:45,029 --> 00:18:42,000
center to finish the modules and ready

362
00:18:50,950 --> 00:18:48,150
and now it's our time

363
00:18:56,470 --> 00:18:50,960

to put ksc's knowledge

364
00:18:58,789 --> 00:18:56,480
skills and experience to work on orion

365
00:19:03,270 --> 00:18:58,799
the spacecraft that will carry us

366
00:19:06,870 --> 00:19:03,280
farther than we've ever been before

367
00:19:22,870 --> 00:19:06,880
the spacecraft that will take us to mars

368
00:19:27,350 --> 00:19:24,789
thank you senator nelson and also thank

369
00:19:30,230 --> 00:19:27,360
you for all of your great support

370
00:19:32,470 --> 00:19:30,240
at this time we'd like to introduce

371
00:19:34,390 --> 00:19:32,480
members of three of our programs mark

372
00:19:37,510 --> 00:19:34,400
guyer will come up and give you a

373
00:19:39,350 --> 00:19:37,520
summary of the orion program

374
00:19:41,350 --> 00:19:39,360
dave beeman will come up to talk about

375
00:19:43,590 --> 00:19:41,360
the space launch system and pepper

376
00:19:45,750 --> 00:19:43,600
phillips will come up to talk about our

377
00:19:46,789 --> 00:19:45,760
ground systems in preparation for our

378
00:19:52,230 --> 00:19:46,799
launches

379
00:19:55,590 --> 00:19:54,310
thank you

380
00:19:57,270 --> 00:19:55,600
thanks for coming today you know it's

381
00:19:58,870 --> 00:19:57,280
always an honor to be able to represent

382
00:20:00,549 --> 00:19:58,880
the orion team

383
00:20:01,909 --> 00:20:00,559
uh this piece of hardware behind me

384
00:20:03,830 --> 00:20:01,919
represents a couple of things that i'd

385
00:20:06,310 --> 00:20:03,840
like to talk about first of all is this

386
00:20:07,909 --> 00:20:06,320
incredible test we're about to do in in

387
00:20:09,430 --> 00:20:07,919
2014 i'll talk about some of the

388
00:20:11,669 --> 00:20:09,440

specifics but as laurie said it's going

389
00:20:13,669 --> 00:20:11,679
to go much further than we've gone in a

390
00:20:15,110 --> 00:20:13,679
very long time and exercised some of our

391
00:20:16,549 --> 00:20:15,120
key systems

392
00:20:18,789 --> 00:20:16,559
but to me it also represents the

393
00:20:21,430 --> 00:20:18,799
incredible dedication of the exploration

394
00:20:24,230 --> 00:20:21,440
systems team and the orion team folks

395
00:20:26,070 --> 00:20:24,240
working nights weekends holidays

396
00:20:29,990 --> 00:20:26,080
to get this hardware here to meet the

397
00:20:32,470 --> 00:20:30,000
schedule that we're trying to meet

398
00:20:34,070 --> 00:20:32,480
and actually trailing a tropical storm

399
00:20:35,830 --> 00:20:34,080
to get it here on time so incredible

400
00:20:37,909 --> 00:20:35,840
work by the team but i think that's just

401
00:20:39,669 --> 00:20:37,919
an example of all the stuff that these

402
00:20:41,270 --> 00:20:39,679
guys are doing every day and also again

403
00:20:43,590 --> 00:20:41,280
i also recognize the space flight

404
00:20:45,510 --> 00:20:43,600
awareness folks that are here today also

405
00:20:46,549 --> 00:20:45,520
in their great work that keep us moving

406
00:20:48,390 --> 00:20:46,559
forward

407
00:20:50,950 --> 00:20:48,400
i'm going to show some pictures

408
00:20:52,710 --> 00:20:50,960
because eft one is our next milestone

409
00:20:54,789 --> 00:20:52,720
but it's not the first and we've done a

410
00:20:56,870 --> 00:20:54,799
lot of great work so far and leading up

411
00:20:58,310 --> 00:20:56,880
to uh keeping america first in

412
00:21:00,149 --> 00:20:58,320
exploration so

413
00:21:02,149 --> 00:21:00,159

i think this will work there we go a

414
00:21:05,190 --> 00:21:02,159
couple years ago we did a pad abort test

415
00:21:06,950 --> 00:21:05,200
out at white sends missile range in

416
00:21:08,789 --> 00:21:06,960
new mexico the paddleboard test is

417
00:21:10,230 --> 00:21:08,799
important because during all phases of

418
00:21:11,110 --> 00:21:10,240
flight we want to be sure that if we

419
00:21:12,950 --> 00:21:11,120
have

420
00:21:14,390 --> 00:21:12,960
issues on our systems that we get the

421
00:21:16,149 --> 00:21:14,400
crew safely home

422
00:21:17,750 --> 00:21:16,159
one of the most dynamic phases of flight

423
00:21:19,190 --> 00:21:17,760
is early in ascent

424
00:21:21,190 --> 00:21:19,200
and so we have a system that will get

425
00:21:24,070 --> 00:21:21,200
the crew off even in that very difficult

426
00:21:25,430 --> 00:21:24,080
phase of flight it's a very energetic

427
00:21:27,270 --> 00:21:25,440
phase of flight that's why we did that

428
00:21:28,549 --> 00:21:27,280
test first it's the highest loads the

429
00:21:30,630 --> 00:21:28,559
vehicle is going to see some of the most

430
00:21:33,029 --> 00:21:30,640
critical commanding and operations that

431
00:21:35,029 --> 00:21:33,039
need to be done and an example of that

432
00:21:37,350 --> 00:21:35,039
is an attitude control motor

433
00:21:38,870 --> 00:21:37,360
that has seven thousand pounds of thrust

434
00:21:41,190 --> 00:21:38,880
it's a solid rocket motor the valves

435
00:21:43,270 --> 00:21:41,200
themselves see three thousand degrees

436
00:21:45,270 --> 00:21:43,280
uh temperature and have to operate those

437
00:21:46,789 --> 00:21:45,280
conditions the flight worked flawlessly

438
00:21:48,870 --> 00:21:46,799

and again it's just another example of

439
00:21:51,750 --> 00:21:48,880
the many tests we are using to move

440
00:21:53,590 --> 00:21:51,760
forward to putting people into space

441
00:21:55,110 --> 00:21:53,600
the heat shield structure

442
00:21:57,350 --> 00:21:55,120
which will eventually come here is being

443
00:21:59,029 --> 00:21:57,360
fabricated in denver then it'll go to

444
00:22:00,549 --> 00:21:59,039
connecticut and we'll actually add the

445
00:22:03,270 --> 00:22:00,559
thermal protection system then ship it

446
00:22:05,750 --> 00:22:03,280
down here to florida so another key part

447
00:22:07,909 --> 00:22:05,760
of the orion system coming together

448
00:22:09,990 --> 00:22:07,919
one of the most stressing things the

449
00:22:11,430 --> 00:22:10,000
vehicle will see is the acoustic levels

450
00:22:14,070 --> 00:22:11,440
these are the sound levels we'll see

451
00:22:16,630 --> 00:22:14,080
from the launch of the rocket or an

452
00:22:18,470 --> 00:22:16,640
abort if we have to do an abort so we've

453
00:22:20,070 --> 00:22:18,480
actually manufactured a ground test

454
00:22:21,430 --> 00:22:20,080
article that you can see further down in

455
00:22:22,870 --> 00:22:21,440
the o and c

456
00:22:25,350 --> 00:22:22,880
we put it through its paces in an

457
00:22:27,350 --> 00:22:25,360
acoustic chamber at lockheed also did

458
00:22:28,630 --> 00:22:27,360
some random vibration testing all of

459
00:22:30,470 --> 00:22:28,640
this is for to make sure that we

460
00:22:31,669 --> 00:22:30,480
understand how the structure is going to

461
00:22:33,830 --> 00:22:31,679
behave how the systems are going to

462
00:22:36,070 --> 00:22:33,840
behave in real flight so another key

463
00:22:38,149 --> 00:22:36,080

test for orion that we have

464
00:22:39,990 --> 00:22:38,159
successfully completed parachutes are

465
00:22:41,350 --> 00:22:40,000
another critical system that's it's one

466
00:22:44,630 --> 00:22:41,360
of the few systems that actually

467
00:22:46,390 --> 00:22:44,640
assemble itself uh during operations uh

468
00:22:49,029 --> 00:22:46,400
we have several parachute

469
00:22:51,590 --> 00:22:49,039
pieces drugs pilots mains so we do

470
00:22:53,110 --> 00:22:51,600
several drop tests out at yuma uh to

471
00:22:55,029 --> 00:22:53,120
test to make sure the system will work

472
00:22:56,710 --> 00:22:55,039
properly this is an example of two

473
00:22:57,990 --> 00:22:56,720
different tests where we change the

474
00:22:59,990 --> 00:22:58,000
different reefing how we open the

475
00:23:02,149 --> 00:23:00,000
parachutes

476
00:23:04,470 --> 00:23:02,159
and we have a mock-up of the orion here

477
00:23:06,390 --> 00:23:04,480
you see it coming out of the c-17 so we

478
00:23:08,310 --> 00:23:06,400
can model the wake how the aerodynamics

479
00:23:09,830 --> 00:23:08,320
behave and how the parachutes behave

480
00:23:12,870 --> 00:23:09,840
when they open a lot of things again

481
00:23:14,549 --> 00:23:12,880
moving forward to flight

482
00:23:16,070 --> 00:23:14,559
we do a lot of testing of our thermal

483
00:23:17,830 --> 00:23:16,080
protection system

484
00:23:19,350 --> 00:23:17,840
we did a lot of early development in the

485
00:23:20,870 --> 00:23:19,360
orion program to figure out which was

486
00:23:22,870 --> 00:23:20,880
the right the appropriate thermal

487
00:23:24,470 --> 00:23:22,880
protection material now we're testing

488
00:23:25,990 --> 00:23:24,480

the specific environments we're going to

489
00:23:27,830 --> 00:23:26,000
see in flight

490
00:23:29,669 --> 00:23:27,840
and now we're actually putting in

491
00:23:31,909 --> 00:23:29,679
test modules of the instrumentation

492
00:23:33,750 --> 00:23:31,919
we're going to put on eft-1 all again to

493
00:23:34,950 --> 00:23:33,760
make sure we understand the environments

494
00:23:37,029 --> 00:23:34,960
and have the right design when we

495
00:23:38,950 --> 00:23:37,039
actually put the people on board the

496
00:23:40,789 --> 00:23:38,960
also i think it's important to note

497
00:23:43,110 --> 00:23:40,799
that one of the things the exploration

498
00:23:44,390 --> 00:23:43,120
systems provide not only is the hardware

499
00:23:46,710 --> 00:23:44,400
to fly

500
00:23:49,269 --> 00:23:46,720
but we provide this information on heat

501
00:23:51,830 --> 00:23:49,279
shield material parachutes

502
00:23:53,510 --> 00:23:51,840
aerodynamic databases landing studies

503
00:23:54,789 --> 00:23:53,520
that we've done we provide that to the

504
00:23:57,590 --> 00:23:54,799
commercial

505
00:23:59,669 --> 00:23:57,600
crew transport to space so they don't

506
00:24:01,669 --> 00:23:59,679
have to recreate this information so as

507
00:24:03,590 --> 00:24:01,679
taxpayers it's a great value it's kind

508
00:24:05,269 --> 00:24:03,600
of a spin off in my mind providing

509
00:24:07,830 --> 00:24:05,279
expertise and technology to help them

510
00:24:09,350 --> 00:24:07,840
move forward

511
00:24:10,710 --> 00:24:09,360
we do a lot of wind tunnel testing this

512
00:24:13,269 --> 00:24:10,720
is a wind tunnel test of the drogue

513
00:24:14,950 --> 00:24:13,279

parachute deployment

514
00:24:16,710 --> 00:24:14,960
and then we do a lot of landing tests

515
00:24:17,830 --> 00:24:16,720
landing it turns out to be the most

516
00:24:19,590 --> 00:24:17,840
stressing

517
00:24:21,110 --> 00:24:19,600
load case for the primary structure that

518
00:24:23,029 --> 00:24:21,120
you see behind me

519
00:24:25,190 --> 00:24:23,039
so we have models that do a pretty good

520
00:24:26,630 --> 00:24:25,200
job but there's uncertainty in how water

521
00:24:28,870 --> 00:24:26,640
reacts with us with the primary

522
00:24:30,950 --> 00:24:28,880
structure so we did testing at langley

523
00:24:32,390 --> 00:24:30,960
we have this system that allows us to

524
00:24:34,230 --> 00:24:32,400
test by

525
00:24:35,590 --> 00:24:34,240
changing the velocities and the angle of

526
00:24:37,590 --> 00:24:35,600
the unit we can test different wave

527
00:24:39,269 --> 00:24:37,600
heights all the kind of different

528
00:24:41,190 --> 00:24:39,279
environments we might see

529
00:24:42,549 --> 00:24:41,200
so great great work by the team at

530
00:24:44,310 --> 00:24:42,559
langley we'll take this ground test

531
00:24:45,669 --> 00:24:44,320
article you'll see further down we'll

532
00:24:49,669 --> 00:24:45,679
put a real heat shield on it we'll be

533
00:24:53,110 --> 00:24:51,669
i mentioned before that we have a case

534
00:24:54,950 --> 00:24:53,120
that we can abort we can get the crew

535
00:24:56,950 --> 00:24:54,960
off during launch there's also aborts

536
00:24:58,390 --> 00:24:56,960
when we're out in deep space

537
00:25:00,149 --> 00:24:58,400
where potentially you could have a

538
00:25:01,269 --> 00:25:00,159

depress event so the crew needs to be in

539
00:25:03,269 --> 00:25:01,279
their pressure suits and they need to

540
00:25:05,510 --> 00:25:03,279
stay in there for a while so we can keep

541
00:25:07,029 --> 00:25:05,520
alive as we bring them back to earth one

542
00:25:09,029 --> 00:25:07,039
of the things we're uncertain about is

543
00:25:10,149 --> 00:25:09,039
the suit inflates can they get back in

544
00:25:12,390 --> 00:25:10,159
their seat can they do the other

545
00:25:15,510 --> 00:25:12,400
operation so at jsc we're actually doing

546
00:25:16,870 --> 00:25:15,520
tests even today on pressurizing these

547
00:25:17,909 --> 00:25:16,880
suits and moving them around in a

548
00:25:19,510 --> 00:25:17,919
cabinet

549
00:25:22,310 --> 00:25:19,520
and doing tests with the seats that

550
00:25:24,710 --> 00:25:22,320
we've designed for run again all these

551
00:25:27,029 --> 00:25:24,720
important pieces that it takes to get a

552
00:25:28,630 --> 00:25:27,039
full human rated system

553
00:25:30,310 --> 00:25:28,640
that's actually rex walheim they're

554
00:25:31,510 --> 00:25:30,320
hanging from that uh

555
00:25:33,350 --> 00:25:31,520
from that cord

556
00:25:34,710 --> 00:25:33,360
uh we're of course mission operations

557
00:25:36,710 --> 00:25:34,720
will be part of

558
00:25:38,950 --> 00:25:36,720
uh when we fly people and they're

559
00:25:40,950 --> 00:25:38,960
actually part of eft one

560
00:25:42,390 --> 00:25:40,960
there's a few uh contingency commands we

561
00:25:44,149 --> 00:25:42,400
can send during that flight again to

562
00:25:45,909 --> 00:25:44,159
flesh out the integrated system so we've

563
00:25:48,149 --> 00:25:45,919

already actually had some tests

564
00:25:49,990 --> 00:25:48,159
from our avionics lab to

565
00:25:52,070 --> 00:25:50,000
mission operations at jsc and it worked

566
00:25:53,350 --> 00:25:52,080
great

567
00:25:55,350 --> 00:25:53,360
it's hard to have

568
00:25:58,310 --> 00:25:55,360
exciting pictures of avionics you know

569
00:25:59,669 --> 00:25:58,320
flashing red lights maybe but uh this is

570
00:26:01,269 --> 00:25:59,679
for an avionics guy this is pretty

571
00:26:04,149 --> 00:26:01,279
exciting stuff this is the lab out in

572
00:26:05,430 --> 00:26:04,159
denver uh we have the brass board units

573
00:26:07,590 --> 00:26:05,440
out there for the main computer the

574
00:26:09,029 --> 00:26:07,600
networks the power distribution units so

575
00:26:11,190 --> 00:26:09,039
all the engineering units are starting

576
00:26:12,390 --> 00:26:11,200
to show up and on the upper right is a

577
00:26:13,990 --> 00:26:12,400
picture of the

578
00:26:16,070 --> 00:26:14,000
power distribution unit which is really

579
00:26:19,669 --> 00:26:16,080
an integration marvel great work by the

580
00:26:26,149 --> 00:26:22,630
more more testing of the of the seat

581
00:26:27,990 --> 00:26:26,159
interface with the crew displays

582
00:26:30,230 --> 00:26:28,000
this is a picture of the pad abort one

583
00:26:32,390 --> 00:26:30,240
crew module we reuse a lot of the

584
00:26:33,909 --> 00:26:32,400
hardware that we do for our testing so

585
00:26:37,029 --> 00:26:33,919
after this test we actually brought it

586
00:26:38,870 --> 00:26:37,039
here to the ksc to do some mock-up

587
00:26:40,230 --> 00:26:38,880
and work out some other operations we've

588
00:26:41,830 --> 00:26:40,240

also used it for some of the public

589
00:26:44,310 --> 00:26:41,840
relations

590
00:26:46,230 --> 00:26:44,320
events that we've had

591
00:26:47,909 --> 00:26:46,240
we had a mock-up here actually in

592
00:26:49,669 --> 00:26:47,919
florida took it out in the water had the

593
00:26:51,190 --> 00:26:49,679
search and rescue guys participate in

594
00:26:52,390 --> 00:26:51,200
testing there to make sure we had the

595
00:26:54,470 --> 00:26:52,400
right fittings

596
00:26:55,909 --> 00:26:54,480
uh how we would get the crew out when

597
00:26:58,070 --> 00:26:55,919
they landed so a lot of good work there

598
00:26:59,590 --> 00:26:58,080
all these again a lot of different tests

599
00:27:01,190 --> 00:26:59,600
to move forward to flight this is a

600
00:27:03,750 --> 00:27:01,200
picture of the building you're in

601
00:27:05,430 --> 00:27:03,760
um and i think as was mentioned before

602
00:27:06,870 --> 00:27:05,440
the exciting part about this building is

603
00:27:09,830 --> 00:27:06,880
we're actually assembling the vehicle

604
00:27:11,110 --> 00:27:09,840
here in florida and the guys as

605
00:27:12,390 --> 00:27:11,120
was said before can't wait to get their

606
00:27:14,630 --> 00:27:12,400
hands on this thing and start moving

607
00:27:17,190 --> 00:27:14,640
forward there's a lot of

608
00:27:20,389 --> 00:27:17,200
subtle things about how this is such a

609
00:27:22,710 --> 00:27:20,399
adaptable factory allows us to move

610
00:27:24,950 --> 00:27:22,720
tooling around to to adapt to the

611
00:27:26,710 --> 00:27:24,960
changing requirements as necessary and

612
00:27:28,230 --> 00:27:26,720
also to have the clean room

613
00:27:30,630 --> 00:27:28,240

effect as needed and you can see the

614
00:27:32,630 --> 00:27:30,640
hepa filters behind me that allow us to

615
00:27:35,669 --> 00:27:32,640
have the cleanliness we need to install

616
00:27:38,230 --> 00:27:35,679
some of the life support systems

617
00:27:39,750 --> 00:27:38,240
again lots of public relations get now

618
00:27:41,990 --> 00:27:39,760
telling the folks that orion and

619
00:27:43,990 --> 00:27:42,000
exploration systems is part of how nasa

620
00:27:47,350 --> 00:27:44,000
is moving forward to stay in exploration

621
00:27:48,549 --> 00:27:47,360
stay a leader in exploration

622
00:27:51,269 --> 00:27:48,559
there's a better picture that right

623
00:27:53,830 --> 00:27:51,279
behind me than the one on the screen so

624
00:27:55,669 --> 00:27:53,840
uh eft one

625
00:27:57,909 --> 00:27:55,679
as was mentioned is going to go 3 000

626
00:27:59,990 --> 00:27:57,919
nautical miles into space

627
00:28:01,350 --> 00:28:00,000
over 10 times higher than the

628
00:28:03,990 --> 00:28:01,360
space station orbit we're going to get

629
00:28:05,350 --> 00:28:04,000
about 84 percent of a lunar entry

630
00:28:06,789 --> 00:28:05,360
velocity

631
00:28:07,990 --> 00:28:06,799
which is really going to stress the heat

632
00:28:10,230 --> 00:28:08,000
shield which is exactly what we're

633
00:28:12,630 --> 00:28:10,240
trying to do we'll also exercise

634
00:28:14,149 --> 00:28:12,640
key deployments of fairings

635
00:28:15,430 --> 00:28:14,159
and separation the crew module and

636
00:28:16,710 --> 00:28:15,440
service module

637
00:28:18,710 --> 00:28:16,720
we'll also test the guidance and

638
00:28:20,950 --> 00:28:18,720

navigation and we'll do a a nominal

639
00:28:22,549 --> 00:28:20,960
recovery off the coast of california so

640
00:28:24,630 --> 00:28:22,559
there's a lot of things we're exercising

641
00:28:26,630 --> 00:28:24,640
including interfaces with

642
00:28:28,310 --> 00:28:26,640
sls they're building an adapter for us

643
00:28:30,149 --> 00:28:28,320
as part of this test so a lot of things

644
00:28:32,710 --> 00:28:30,159
we're doing not just for orion but for

645
00:28:34,149 --> 00:28:32,720
the whole exploration system so eft one

646
00:28:36,950 --> 00:28:34,159
is the next step

647
00:28:39,590 --> 00:28:36,960
uh beyond that is the more exciting

648
00:28:41,590 --> 00:28:39,600
stuff beyond that is also flying in 2017

649
00:28:52,149 --> 00:28:41,600
on uh space launch system and so david

650
00:28:56,230 --> 00:28:54,870
as i sat here and thought about

651
00:28:57,190 --> 00:28:56,240
everything that's happened in this

652
00:28:58,549 --> 00:28:57,200
building

653
00:29:00,310 --> 00:28:58,559
over the years

654
00:29:03,269 --> 00:29:00,320
i'm in awe you know i think about what

655
00:29:04,870 --> 00:29:03,279
we're doing with sls with orion and i

656
00:29:07,029 --> 00:29:04,880
looked at the the people that are

657
00:29:09,190 --> 00:29:07,039
discussing this and i finally realized

658
00:29:11,990 --> 00:29:09,200
why i was asked to come down here you

659
00:29:13,990 --> 00:29:12,000
have really dynamic speakers up front to

660
00:29:15,590 --> 00:29:14,000
start a program and really dynamic

661
00:29:17,190 --> 00:29:15,600
speakers in the end and then you have

662
00:29:20,870 --> 00:29:17,200
fill in people and so i'm a fill-in

663
00:29:23,190 --> 00:29:20,880

person but i'm okay with that um

664
00:29:27,269 --> 00:29:23,200
exploration

665
00:29:31,510 --> 00:29:29,430
why are we here you know you look at sls

666
00:29:33,269 --> 00:29:31,520
you look at orion it's our desire to

667
00:29:35,430 --> 00:29:33,279
explore we look all the way back the

668
00:29:37,269 --> 00:29:35,440
history of our country

669
00:29:39,110 --> 00:29:37,279
we have a desire to go places that no

670
00:29:41,110 --> 00:29:39,120
one else has gone to experience things

671
00:29:42,710 --> 00:29:41,120
that no one else has experienced you

672
00:29:44,389 --> 00:29:42,720
know that's amazing

673
00:29:46,389 --> 00:29:44,399
and if we think about

674
00:29:48,470 --> 00:29:46,399
how it actually looks out there what it

675
00:29:50,310 --> 00:29:48,480
would be like to be in space

676
00:29:52,549 --> 00:29:50,320
well we at sls

677
00:29:53,830 --> 00:29:52,559
are only a portion of that overall

678
00:29:56,230 --> 00:29:53,840
vision and we're providing the

679
00:29:57,669 --> 00:29:56,240
capability to go deeper into space now

680
00:29:59,669 --> 00:29:57,679
if you look at our mission and our

681
00:30:01,990 --> 00:29:59,679
vision there's different pieces to that

682
00:30:04,389 --> 00:30:02,000
from an agency and from a program we

683
00:30:06,149 --> 00:30:04,399
have strategic partnerships with the

684
00:30:07,830 --> 00:30:06,159
commercial industry

685
00:30:09,669 --> 00:30:07,840
to do what we did previously with the

686
00:30:13,110 --> 00:30:09,679
shuttle and provide people in cargo

687
00:30:15,909 --> 00:30:13,120
access to low earth orbit our goal uh

688
00:30:17,830 --> 00:30:15,919

for sls is to provide that access

689
00:30:19,990 --> 00:30:17,840
deeper into space and to do those things

690
00:30:22,470 --> 00:30:20,000
that we've we've only really thought

691
00:30:24,630 --> 00:30:22,480
about to this point

692
00:30:26,310 --> 00:30:24,640
so if you look this is an amazing rocket

693
00:30:28,630 --> 00:30:26,320
you think about the size you compare it

694
00:30:30,710 --> 00:30:28,640
to a saturn v or the shuttle

695
00:30:32,549 --> 00:30:30,720
absolutely amazing the biggest rocket

696
00:30:34,470 --> 00:30:32,559
the world has ever considered

697
00:30:35,909 --> 00:30:34,480
we're designing it building it and in a

698
00:30:37,750 --> 00:30:35,919
few years we're going to be assembling

699
00:30:39,750 --> 00:30:37,760
it down here and flying it and that's

700
00:30:42,230 --> 00:30:39,760
exciting

701
00:30:43,909 --> 00:30:42,240
if you think about the heritage hardware

702
00:30:46,710 --> 00:30:43,919
the fact that we have a strategic

703
00:30:49,190 --> 00:30:46,720
approach at the agency level to utilize

704
00:30:51,990 --> 00:30:49,200
existing heritage hardware as well as

705
00:30:54,389 --> 00:30:52,000
develop future hardware what we're doing

706
00:30:56,149 --> 00:30:54,399
is strategically managing our assets and

707
00:30:58,870 --> 00:30:56,159
and doing things that are

708
00:31:01,029 --> 00:30:58,880
most effective for the agency

709
00:31:02,870 --> 00:31:01,039
um you look at the ssmes the fact that

710
00:31:05,990 --> 00:31:02,880
they'll be used or we call them the

711
00:31:07,990 --> 00:31:06,000
rs25s early in the program then we'll

712
00:31:09,669 --> 00:31:08,000
have potentially other engines develop

713
00:31:11,350 --> 00:31:09,679

that's that's amazing

714
00:31:13,990 --> 00:31:11,360
um if you look at the

715
00:31:15,990 --> 00:31:14,000
solid rocket boosters uh the heritage

716
00:31:18,389 --> 00:31:16,000
from the shuttle taking that stretching

717
00:31:19,990 --> 00:31:18,399
it to a five segment actually utilizing

718
00:31:23,669 --> 00:31:20,000
some of the margin test from that

719
00:31:29,509 --> 00:31:27,110
continued hardware development

720
00:31:31,909 --> 00:31:29,519
in not only the motor and booster worlds

721
00:31:33,669 --> 00:31:31,919
but in the ssme world for future

722
00:31:35,430 --> 00:31:33,679
missions you see some of the asteroid

723
00:31:37,190 --> 00:31:35,440
structures that are being used out at

724
00:31:38,549 --> 00:31:37,200
atk

725
00:31:40,549 --> 00:31:38,559
look at some of the testing that's

726
00:31:42,549 --> 00:31:40,559
happened early in the program you think

727
00:31:45,750 --> 00:31:42,559
about the j2x

728
00:31:48,149 --> 00:31:45,760
the development actually the first

729
00:31:50,310 --> 00:31:48,159
engine developed in over the last 30

730
00:31:53,509 --> 00:31:50,320
years in this country that's amazing

731
00:31:57,029 --> 00:31:55,190
think about the testing you look at

732
00:31:59,269 --> 00:31:57,039
stennis space center all the testing

733
00:32:01,350 --> 00:31:59,279
we've done now down there the design

734
00:32:02,950 --> 00:32:01,360
work at marshall all of that will come

735
00:32:04,470 --> 00:32:02,960
together and be integrated here at

736
00:32:06,149 --> 00:32:04,480
kennedy space center for our first

737
00:32:07,990 --> 00:32:06,159
mission

738
00:32:09,669 --> 00:32:08,000

the avionics work

739
00:32:12,230 --> 00:32:09,679
mark talked about the avionics we have

740
00:32:13,590 --> 00:32:12,240
an avionics system on on the sls and

741
00:32:15,110 --> 00:32:13,600
that's going to have to integrate with

742
00:32:16,630 --> 00:32:15,120
orion in other areas there's been a

743
00:32:18,870 --> 00:32:16,640
significant amount of development work

744
00:32:21,190 --> 00:32:18,880
done in the avionics world and these

745
00:32:22,870 --> 00:32:21,200
pictures represent that

746
00:32:25,590 --> 00:32:22,880
um

747
00:32:28,389 --> 00:32:25,600
one thing i'm proud of is is our office

748
00:32:30,789 --> 00:32:28,399
we have a strategic partnership with

749
00:32:33,350 --> 00:32:30,799
orion to provide some hardware for eft

750
00:32:35,269 --> 00:32:33,360
one the actual physical adapter

751
00:32:37,590 --> 00:32:35,279
my office is responsible for designing

752
00:32:39,430 --> 00:32:37,600
and building and providing that

753
00:32:41,269 --> 00:32:39,440
for eft one

754
00:32:43,269 --> 00:32:41,279
to fly on the delta iv

755
00:32:44,870 --> 00:32:43,279
and we're actually designing and

756
00:32:46,070 --> 00:32:44,880
building that in-house at marshall then

757
00:32:48,230 --> 00:32:46,080
it'll be shipped down here and

758
00:32:50,630 --> 00:32:48,240
integrated so it's a strategic

759
00:32:52,149 --> 00:32:50,640
partnership to where you know now we're

760
00:32:54,470 --> 00:32:52,159
not off designing

761
00:32:56,470 --> 00:32:54,480
things in different programs and then

762
00:32:58,230 --> 00:32:56,480
realizing we overlapped we're actually

763
00:32:59,750 --> 00:32:58,240

partnering doing it one time doing it

764
00:33:02,310 --> 00:32:59,760
right and then we'll build it multiple

765
00:33:03,669 --> 00:33:02,320
times part of that we're utilizing the

766
00:33:06,470 --> 00:33:03,679
friction store welding you see the

767
00:33:08,470 --> 00:33:06,480
facility here um

768
00:33:10,950 --> 00:33:08,480
similar to what's being used with the

769
00:33:12,710 --> 00:33:10,960
the orion capsule also

770
00:33:15,190 --> 00:33:12,720
and and obviously the

771
00:33:17,110 --> 00:33:15,200
the development you look at

772
00:33:19,190 --> 00:33:17,120
modeling that we have to do we have to

773
00:33:20,870 --> 00:33:19,200
do wind tunnel testing this shows a

774
00:33:22,789 --> 00:33:20,880
basically a three percent wind tunnel

775
00:33:24,310 --> 00:33:22,799
model

776
00:33:25,909 --> 00:33:24,320
this is the hardware i spoke about

777
00:33:28,710 --> 00:33:25,919
earlier this is an ingot we're actually

778
00:33:30,549 --> 00:33:28,720
machining um the parts at marshall space

779
00:33:32,149 --> 00:33:30,559
flight center right now and we'll be

780
00:33:34,149 --> 00:33:32,159
doing the friction stir welding of the

781
00:33:35,590 --> 00:33:34,159
panels in order to to have our

782
00:33:39,029 --> 00:33:35,600
pathfinder and then we'll be building

783
00:33:40,870 --> 00:33:39,039
the flight hardware real soon

784
00:33:43,509 --> 00:33:40,880
and this is actually in the seven axis

785
00:33:45,110 --> 00:33:43,519
machine at marshall

786
00:33:47,269 --> 00:33:45,120
um technician actually doing the

787
00:33:48,870 --> 00:33:47,279
programming work the one thing i like is

788
00:33:51,269 --> 00:33:48,880

they're excited

789
00:33:52,549 --> 00:33:51,279
the young engineers when you get to do

790
00:33:53,750 --> 00:33:52,559
design work

791
00:33:55,430 --> 00:33:53,760
build things

792
00:33:57,190 --> 00:33:55,440
young engineers get excited and they

793
00:33:59,990 --> 00:33:57,200
don't just feel like they're following

794
00:34:02,310 --> 00:34:00,000
somebody else's work

795
00:34:04,070 --> 00:34:02,320
the the the msa or the adapter that i

796
00:34:07,269 --> 00:34:04,080
talked about for the orion vehicle that

797
00:34:09,510 --> 00:34:07,279
we're providing is noted on this picture

798
00:34:11,349 --> 00:34:09,520
and this is the ingot that that's a

799
00:34:13,589 --> 00:34:11,359
pretty big hunk of metal you know if you

800
00:34:16,069 --> 00:34:13,599
think about the capsule you think about

801
00:34:18,470 --> 00:34:16,079
the size this is actually up at lattice

802
00:34:20,790 --> 00:34:18,480
this is the ring that will be used to

803
00:34:21,909 --> 00:34:20,800
make the first and flight adapter that

804
00:34:25,190 --> 00:34:21,919
will mate

805
00:34:26,629 --> 00:34:25,200
to the capsule that you see behind us

806
00:34:30,470 --> 00:34:26,639
and this is the actual machining that

807
00:34:32,950 --> 00:34:32,069
so you look at the rocket you look at

808
00:34:34,790 --> 00:34:32,960
the

809
00:34:36,310 --> 00:34:34,800
aggressive schedule that we have you

810
00:34:38,310 --> 00:34:36,320
look at the development

811
00:34:40,149 --> 00:34:38,320
the sharing among centers

812
00:34:42,550 --> 00:34:40,159
the core stage development and work at

813
00:34:44,710 --> 00:34:42,560

math the integration work here at ksc

814
00:34:46,629 --> 00:34:44,720
the engine work its dentist design work

815
00:34:49,190 --> 00:34:46,639
at marshall it's truly a teaming

816
00:34:51,349 --> 00:34:49,200
environment and i'm proud to be a part

817
00:34:53,109 --> 00:34:51,359
of it mark i'm proud of the opportunity

818
00:34:54,629 --> 00:34:53,119
to participate and provide something for

819
00:34:56,790 --> 00:34:54,639
you all and

820
00:34:59,990 --> 00:34:56,800
you know it's just an amazing team and

821
00:35:01,430 --> 00:35:00,000
we thank you for that opportunity

822
00:35:03,349 --> 00:35:01,440
so if you look from a heritage

823
00:35:05,190 --> 00:35:03,359
standpoint you see the old saturn v on

824
00:35:07,750 --> 00:35:05,200
the left you see the shuttle

825
00:35:09,750 --> 00:35:07,760
which was our present up until last year

826
00:35:11,750 --> 00:35:09,760
and now you look at sls and that's our

827
00:35:13,670 --> 00:35:11,760
future launch vehicles

828
00:35:14,950 --> 00:35:13,680
um with that thanks for the opportunity

829
00:35:25,109 --> 00:35:14,960
and i'd like to introduce pepper

830
00:35:30,870 --> 00:35:27,910
well let's see if that didn't excite you

831
00:35:33,109 --> 00:35:30,880
this really will excite you

832
00:35:34,150 --> 00:35:33,119
we're building big hardware here at ksc

833
00:35:36,069 --> 00:35:34,160
i know

834
00:35:37,349 --> 00:35:36,079
lori had mentioned we're transforming

835
00:35:38,790 --> 00:35:37,359
ksc

836
00:35:40,310 --> 00:35:38,800
which is in fact

837
00:35:41,910 --> 00:35:40,320
what you'll see around here as you make

838
00:35:43,510 --> 00:35:41,920

your way around the center

839
00:35:46,069 --> 00:35:43,520
you'll see that transformation i'm going

840
00:35:48,069 --> 00:35:46,079
to share with you some actual

841
00:35:50,150 --> 00:35:48,079
hardware that you can really get your

842
00:35:51,270 --> 00:35:50,160
teeth into that you'll see big items at

843
00:35:53,510 --> 00:35:51,280
the center

844
00:35:55,109 --> 00:35:53,520
we're doing that but we're doing it in a

845
00:35:56,829 --> 00:35:55,119
transformation that has never occurred

846
00:35:59,829 --> 00:35:56,839
at kennedy space center

847
00:36:01,670 --> 00:35:59,839
before of course ksc has a long heritage

848
00:36:04,390 --> 00:36:01,680
of being able to build ground systems

849
00:36:06,150 --> 00:36:04,400
supporting nasa missions

850
00:36:09,030 --> 00:36:06,160
we're now venturing beyond that we're

851
00:36:12,150 --> 00:36:09,040
getting into missions that reach out to

852
00:36:13,829 --> 00:36:12,160
commercial users and other government

853
00:36:15,510 --> 00:36:13,839
entities so i'm going to tell you a

854
00:36:18,150 --> 00:36:15,520
little bit about how we're doing that in

855
00:36:19,750 --> 00:36:18,160
subsequent slides

856
00:36:22,069 --> 00:36:19,760
so this is kind of an image that tells

857
00:36:23,349 --> 00:36:22,079
you a little bit what that plan is of

858
00:36:24,950 --> 00:36:23,359
course we're going to keep our eye on

859
00:36:26,550 --> 00:36:24,960
the ball we're going to make sls and

860
00:36:28,550 --> 00:36:26,560
orion successful

861
00:36:30,390 --> 00:36:28,560
we're going to be ready in 2017 when the

862
00:36:31,829 --> 00:36:30,400
flight hardware arrives

863
00:36:33,589 --> 00:36:31,839

but you'll see in the background there

864
00:36:35,349 --> 00:36:33,599
that we're also keeping our eye towards

865
00:36:37,030 --> 00:36:35,359
the commercial

866
00:36:38,630 --> 00:36:37,040
commercial community

867
00:36:41,190 --> 00:36:38,640
that's bigger than what ksc has

868
00:36:43,910 --> 00:36:41,200
historically done we're excited about it

869
00:36:44,710 --> 00:36:43,920
it's an enabler for both sls and orion

870
00:36:46,630 --> 00:36:44,720
and

871
00:36:50,550 --> 00:36:46,640
low earth orbit capabilities that the

872
00:36:55,109 --> 00:36:53,109
so what you'll see here is our flight

873
00:36:56,790 --> 00:36:55,119
hardware this is the work that's being

874
00:36:59,109 --> 00:36:56,800
done at ksc

875
00:37:01,670 --> 00:36:59,119
this image was done about this time last

876
00:37:04,390 --> 00:37:01,680
year what this shows is the lightning

877
00:37:06,069 --> 00:37:04,400
protection system out at pad b

878
00:37:08,230 --> 00:37:06,079
what you'll see there is the heritage

879
00:37:09,910 --> 00:37:08,240
equipment from shuttle which is your fss

880
00:37:10,710 --> 00:37:09,920
and rss

881
00:37:13,030 --> 00:37:10,720
and then

882
00:37:14,390 --> 00:37:13,040
a before and after picture this is the

883
00:37:15,589 --> 00:37:14,400
same pad

884
00:37:17,910 --> 00:37:15,599
minus the

885
00:37:20,069 --> 00:37:17,920
fss and rss

886
00:37:22,550 --> 00:37:20,079
so what we're doing here is moving to a

887
00:37:23,990 --> 00:37:22,560
clean pad approach i told you i'd

888
00:37:26,790 --> 00:37:24,000

mention a little bit about how we're

889
00:37:29,270 --> 00:37:26,800
evolving so we're also adaptable to more

890
00:37:30,390 --> 00:37:29,280
than just the sls and orion

891
00:37:32,630 --> 00:37:30,400
this clean

892
00:37:34,950 --> 00:37:32,640
approach allows us to interface with

893
00:37:37,109 --> 00:37:34,960
more than one vehicle potentially

894
00:37:38,710 --> 00:37:37,119
so it's not specific about the pad you

895
00:37:40,550 --> 00:37:38,720
have all your services at the pad in

896
00:37:42,310 --> 00:37:40,560
this environment you got your fluids you

897
00:37:45,030 --> 00:37:42,320
got your power

898
00:37:46,390 --> 00:37:45,040
but a vehicle can come in any shape and

899
00:37:48,390 --> 00:37:46,400
size

900
00:37:50,870 --> 00:37:48,400
and will be able to launch from this

901
00:37:52,390 --> 00:37:50,880
incredible pad

902
00:37:54,870 --> 00:37:52,400
and be able to hook up to it just like

903
00:37:57,430 --> 00:37:54,880
any other vehicle would and that's our

904
00:37:58,950 --> 00:37:57,440
intent when we go design these systems

905
00:38:00,550 --> 00:37:58,960
what you don't see here is a lot of

906
00:38:02,630 --> 00:38:00,560
other work that's going on at the pad

907
00:38:05,030 --> 00:38:02,640
things like refurbishing the water tower

908
00:38:07,109 --> 00:38:05,040
so the sound suppression system's

909
00:38:08,870 --> 00:38:07,119
ready to go you've got other systems

910
00:38:10,710 --> 00:38:08,880
beneath the pad which is your power and

911
00:38:12,230 --> 00:38:10,720
electrical all of that is the

912
00:38:13,589 --> 00:38:12,240
development work that you don't see

913
00:38:17,670 --> 00:38:13,599

readily but it's

914
00:38:24,150 --> 00:38:21,349
this is our mobile launcher for sls it's

915
00:38:26,390 --> 00:38:24,160
repurposed from constellation um we

916
00:38:28,550 --> 00:38:26,400
actually did a study and said can we in

917
00:38:31,510 --> 00:38:28,560
fact use this existing hardware in order

918
00:38:33,430 --> 00:38:31,520
to execute the sls mission so giving the

919
00:38:36,150 --> 00:38:33,440
parameters and working with our

920
00:38:38,390 --> 00:38:36,160
sls friends we did an assessment that

921
00:38:39,670 --> 00:38:38,400
said yes in fact we can repurpose this

922
00:38:40,950 --> 00:38:39,680
hardware

923
00:38:45,190 --> 00:38:40,960
so that's what we've got we've got a

924
00:38:48,550 --> 00:38:46,950
we've run a couple of tests with that

925
00:38:50,630 --> 00:38:48,560
structure since building it we actually

926
00:38:52,630 --> 00:38:50,640
had a dynamic test for us

927
00:38:55,589 --> 00:38:52,640
this is our mile an hour check

928
00:38:57,589 --> 00:38:55,599
one mile per hour run out to the pad

929
00:39:00,230 --> 00:38:57,599
we actually instrumented this uh with a

930
00:39:02,470 --> 00:39:00,240
bunch of strain gauges to go check the

931
00:39:04,310 --> 00:39:02,480
structural response of this item again

932
00:39:05,910 --> 00:39:04,320
like mark mentioned to validate some of

933
00:39:07,829 --> 00:39:05,920
the models we had in building this

934
00:39:09,510 --> 00:39:07,839
structure

935
00:39:11,349 --> 00:39:09,520
and once we got to the pad we did the

936
00:39:13,430 --> 00:39:11,359
alignment checks again to check our

937
00:39:14,470 --> 00:39:13,440
engineering how how good did we do when

938
00:39:15,990 --> 00:39:14,480

we got

939
00:39:17,990 --> 00:39:16,000
to building this

940
00:39:20,069 --> 00:39:18,000
equipment and how did it fit with a pad

941
00:39:22,069 --> 00:39:20,079
what i'm happy to report is

942
00:39:25,109 --> 00:39:22,079
test results said we're pretty dang good

943
00:39:29,829 --> 00:39:27,589
back in the vab this is a our crawler

944
00:39:33,270 --> 00:39:29,839
transporter two this will be and we're

945
00:39:36,069 --> 00:39:33,280
using single string assets to go execute

946
00:39:38,870 --> 00:39:36,079
sls and orion uh crawler transporter two

947
00:39:40,790 --> 00:39:38,880
will be our crawler for sls

948
00:39:43,510 --> 00:39:40,800
what crawler transporter two is not

949
00:39:45,750 --> 00:39:43,520
capable of doing is list lifting that

950
00:39:46,790 --> 00:39:45,760
much weight

951
00:39:53,510 --> 00:39:46,800
the

952
00:39:55,750 --> 00:39:53,520
of this current transporter so we're

953
00:39:57,589 --> 00:39:55,760
making modifications and upgrades to

954
00:39:59,510 --> 00:39:57,599
this transporter in order to enable it

955
00:40:01,109 --> 00:39:59,520
to lift that weight

956
00:40:04,069 --> 00:40:01,119
also in here you've got to realize we

957
00:40:06,550 --> 00:40:04,079
have a 45 year old piece of equipment

958
00:40:09,270 --> 00:40:06,560
so with a 45 year old piece of equipment

959
00:40:12,950 --> 00:40:09,280
it's time to modernize some of the

960
00:40:15,829 --> 00:40:12,960
controls etc hydraulics

961
00:40:17,030 --> 00:40:15,839
power com systems on this uh crawler

962
00:40:20,390 --> 00:40:17,040
transporter and that's in fact what

963
00:40:23,910 --> 00:40:22,069

again here's another image of that same

964
00:40:25,990 --> 00:40:23,920
crawler transporter we changed out a

965
00:40:28,710 --> 00:40:26,000
couple of the

966
00:40:32,790 --> 00:40:28,720
generators in the vehicle it's a

967
00:40:34,069 --> 00:40:32,800
750 kw generators that were powering the

968
00:40:36,390 --> 00:40:34,079
trucks

969
00:40:40,069 --> 00:40:36,400
we're going to a larger capacity

970
00:40:41,349 --> 00:40:40,079
capability should be 1500 kw so these

971
00:40:43,349 --> 00:40:41,359
are two of the

972
00:40:46,150 --> 00:40:43,359
existing units coming out we put two new

973
00:40:48,309 --> 00:40:46,160
ones they're already installed

974
00:40:50,150 --> 00:40:48,319
this is a picture inside the vab it's

975
00:40:52,710 --> 00:40:50,160
just an illustration of some of the work

976
00:40:55,829 --> 00:40:52,720
that we're all pursuing again maybe not

977
00:40:58,230 --> 00:40:55,839
that exciting looking at its cables

978
00:40:59,990 --> 00:40:58,240
what i'll tell you is we've got 45 years

979
00:41:02,069 --> 00:41:00,000
worth of cable installations that have

980
00:41:03,030 --> 00:41:02,079
gone on inside that vehicle assembly

981
00:41:05,270 --> 00:41:03,040
building

982
00:41:07,270 --> 00:41:05,280
so you'll see a lot of cables on top of

983
00:41:09,349 --> 00:41:07,280
cables some were terminated in place in

984
00:41:11,430 --> 00:41:09,359
order not to have to replace a bunch

985
00:41:12,870 --> 00:41:11,440
what you'll see is old style cables what

986
00:41:14,630 --> 00:41:12,880
we're doing with those is pulling those

987
00:41:16,309 --> 00:41:14,640
out and putting in real small fiber

988
00:41:17,829 --> 00:41:16,319

optic cables that are consistent with

989
00:41:19,589 --> 00:41:17,839
what we're doing now

990
00:41:22,309 --> 00:41:19,599
that's representative of what else is

991
00:41:24,230 --> 00:41:22,319
going on in a 45 year old building you

992
00:41:25,910 --> 00:41:24,240
know it's got plumbing requirements it's

993
00:41:28,550 --> 00:41:25,920
got fire x things that need to be

994
00:41:30,550 --> 00:41:28,560
changed out it has com systems that need

995
00:41:33,190 --> 00:41:30,560
to be updated we're doing all that in

996
00:41:35,910 --> 00:41:33,200
this downtime cycle before we are up and

997
00:41:37,670 --> 00:41:35,920
running with sls and orion

998
00:41:39,030 --> 00:41:37,680
i wanted to reacquaint you with what we

999
00:41:41,270 --> 00:41:39,040
have inside

1000
00:41:45,030 --> 00:41:41,280
high bay 3 which is the existing

1001
00:41:49,510 --> 00:41:47,030
incidentally the platform set that we

1002
00:41:50,630 --> 00:41:49,520
use for shuttle was was migrated from

1003
00:41:52,630 --> 00:41:50,640
apollo

1004
00:41:54,470 --> 00:41:52,640
these are ganged platforms in other

1005
00:41:56,870 --> 00:41:54,480
words there's more than one access point

1006
00:41:58,710 --> 00:41:56,880
for each of those platform sets

1007
00:42:01,430 --> 00:41:58,720
this is where we get into being able to

1008
00:42:03,270 --> 00:42:01,440
transform beyond what is a unique or

1009
00:42:05,109 --> 00:42:03,280
specific vehicle

1010
00:42:06,710 --> 00:42:05,119
in a gang platform set when you go up

1011
00:42:08,550 --> 00:42:06,720
against the vehicle you got what you got

1012
00:42:10,950 --> 00:42:08,560
when you go to access it

1013
00:42:13,190 --> 00:42:10,960

what we've done with our proposal and

1014
00:42:14,870 --> 00:42:13,200
our future designs is

1015
00:42:16,870 --> 00:42:14,880
what you see here and again this to

1016
00:42:19,349 --> 00:42:16,880
orient you this is a cutaway

1017
00:42:21,910 --> 00:42:19,359
this shows one side of the high bay

1018
00:42:24,150 --> 00:42:21,920
actual the

1019
00:42:25,349 --> 00:42:24,160
service tower is towards the door so

1020
00:42:26,790 --> 00:42:25,359
that would be the east side of the

1021
00:42:28,630 --> 00:42:26,800
building

1022
00:42:30,470 --> 00:42:28,640
but what those platform designs are

1023
00:42:32,550 --> 00:42:30,480
telling us is we're going to have an

1024
00:42:34,790 --> 00:42:32,560
individual platform set

1025
00:42:37,109 --> 00:42:34,800
that is reconfigurable to a different

1026
00:42:39,589 --> 00:42:37,119
vehicle in fact we want to go do that

1027
00:42:41,990 --> 00:42:39,599
those platforms translate back and forth

1028
00:42:43,270 --> 00:42:42,000
but they can be repositioned so to

1029
00:42:45,990 --> 00:42:43,280
change with different heights of the

1030
00:42:48,309 --> 00:42:46,000
vehicle and they also have inserts that

1031
00:42:50,150 --> 00:42:48,319
you put in the platforms themselves so

1032
00:42:51,750 --> 00:42:50,160
the vehicle's shaped so outer mold line

1033
00:42:53,910 --> 00:42:51,760
changes on a vehicle

1034
00:42:55,750 --> 00:42:53,920
this particular high bay and this

1035
00:42:57,670 --> 00:42:55,760
development effort will allow us to

1036
00:42:59,349 --> 00:42:57,680
gravitate without changes in the outer

1037
00:43:01,670 --> 00:42:59,359
mold line

1038
00:43:05,270 --> 00:43:01,680

again here's a picture

1039
00:43:06,870 --> 00:43:05,280
with it with the sls and orion

1040
00:43:08,630 --> 00:43:06,880
and this is where we ultimately hope to

1041
00:43:11,349 --> 00:43:08,640
get to this is what we expect to see in

1042
00:43:12,790 --> 00:43:11,359
2017 with our new mobile launcher

1043
00:43:15,430 --> 00:43:12,800
reconfigured

1044
00:43:17,910 --> 00:43:15,440
rebuilt we had to we are going to have

1045
00:43:19,670 --> 00:43:17,920
to modify that existing structure in

1046
00:43:24,630 --> 00:43:19,680
order to be compatible with the sls and

1047
00:43:28,390 --> 00:43:27,109
back in the lcc uh not like mark

1048
00:43:30,230 --> 00:43:28,400
mentioned with the mission control

1049
00:43:31,750 --> 00:43:30,240
center we we too are going through a

1050
00:43:33,750 --> 00:43:31,760
transformation

1051
00:43:36,069 --> 00:43:33,760
this control center was modified again

1052
00:43:38,150 --> 00:43:36,079
for constellation and was in fact used

1053
00:43:40,870 --> 00:43:38,160
for the ares 1x

1054
00:43:42,790 --> 00:43:40,880
it was used with the existing systems at

1055
00:43:45,109 --> 00:43:42,800
ksc we were in fact going through a

1056
00:43:46,550 --> 00:43:45,119
redesign of that system uh spaceport

1057
00:43:48,550 --> 00:43:46,560
command control

1058
00:43:51,190 --> 00:43:48,560
uh communication system is what we're

1059
00:43:52,870 --> 00:43:51,200
building now it's to be compatible with

1060
00:43:54,790 --> 00:43:52,880
more than one launch vehicle so that's

1061
00:43:57,109 --> 00:43:54,800
where we're heading you see here

1062
00:44:01,270 --> 00:43:57,119
we're using a lot of the

1063
00:44:03,750 --> 00:44:01,280

existing cots commercial off the shelf

1064
00:44:06,309 --> 00:44:03,760
enclosures for the equipment and we're

1065
00:44:10,550 --> 00:44:06,319
going to have some very modernized

1066
00:44:12,309 --> 00:44:10,560
displays in this control room

1067
00:44:14,069 --> 00:44:12,319
and finally as mark and mentioned our

1068
00:44:16,870 --> 00:44:14,079
teams have been working well together to

1069
00:44:18,309 --> 00:44:16,880
get ready for this guy and for eft one

1070
00:44:20,790 --> 00:44:18,319
part of what we've been doing is going

1071
00:44:22,950 --> 00:44:20,800
out and running the test and open water

1072
00:44:24,710 --> 00:44:22,960
looking for opportunities to inform the

1073
00:44:27,109 --> 00:44:24,720
design and make this

1074
00:44:29,589 --> 00:44:27,119
recovery effort as smooth as they can be

1075
00:44:31,910 --> 00:44:29,599
so we're on task to do that we look

1076
00:44:34,870 --> 00:44:31,920
forward to be the first to greet eft one

1077
00:44:36,230 --> 00:44:34,880
and orion when she returns

1078
00:44:46,790 --> 00:44:36,240
and with that dan i guess i'll turn it

1079
00:44:49,670 --> 00:44:48,630
thank you pepper thank you dave thank

1080
00:44:52,309 --> 00:44:49,680
you mark

1081
00:44:53,589 --> 00:44:52,319
as you can see lots of excellent

1082
00:44:55,430 --> 00:44:53,599
progress

1083
00:44:56,309 --> 00:44:55,440
the team has really been working great

1084
00:44:58,710 --> 00:44:56,319
and it

1085
00:45:01,270 --> 00:44:58,720
takes a big team to go do this our

1086
00:45:02,309 --> 00:45:01,280
industry partners are critical to our

1087
00:45:04,790 --> 00:45:02,319
success

1088
00:45:14,950 --> 00:45:04,800

so for orion i'd like to introduce mr

1089
00:45:17,910 --> 00:45:16,309
well first of all i want to thank

1090
00:45:20,069 --> 00:45:17,920
everybody for being here it's a

1091
00:45:22,150 --> 00:45:20,079
wonderful day

1092
00:45:24,630 --> 00:45:22,160
the new home of orion

1093
00:45:26,870 --> 00:45:24,640
and thank you for your interest and but

1094
00:45:27,750 --> 00:45:26,880
i want to thank some other folks here uh

1095
00:45:29,510 --> 00:45:27,760
you know

1096
00:45:31,430 --> 00:45:29,520
you can't have this event without a lot

1097
00:45:33,270 --> 00:45:31,440
of teamwork not just for building the

1098
00:45:35,270 --> 00:45:33,280
spacecraft but working together to make

1099
00:45:37,589 --> 00:45:35,280
an event like this happen so i want to

1100
00:45:39,589 --> 00:45:37,599
thank nasa headquarters for hosting this

1101
00:45:41,670 --> 00:45:39,599
and supporting uh what we're doing here

1102
00:45:44,309 --> 00:45:41,680
and providing us a wonderful vision of

1103
00:45:46,230 --> 00:45:44,319
orion and sls and going to

1104
00:45:49,190 --> 00:45:46,240
a neo and mars and beyond so i

1105
00:45:50,950 --> 00:45:49,200
appreciate that and ksc for hosting uh

1106
00:45:52,630 --> 00:45:50,960
this wonderful event on their premises

1107
00:45:55,270 --> 00:45:52,640
and in the in the building here and

1108
00:45:56,550 --> 00:45:55,280
providing the ground systems for

1109
00:45:58,550 --> 00:45:56,560
for everything that we're doing whether

1110
00:46:01,270 --> 00:45:58,560
it's orion or sls

1111
00:46:03,430 --> 00:46:01,280
and of course for jsc support uh of

1112
00:46:05,670 --> 00:46:03,440
course we talk a lot about production uh

1113
00:46:08,230 --> 00:46:05,680

but of course the engineering gets done

1114
00:46:10,309 --> 00:46:08,240
uh by some wonderful uh folks not only

1115
00:46:12,550 --> 00:46:10,319
just on the industry team but also our

1116
00:46:14,150 --> 00:46:12,560
partners at jsc and of course marshall

1117
00:46:16,309 --> 00:46:14,160
providing a ride when we go beyond low

1118
00:46:17,670 --> 00:46:16,319
earth orbit but uh and of course our

1119
00:46:19,270 --> 00:46:17,680
speakers senator nelson you've always

1120
00:46:22,790 --> 00:46:19,280
been a great supporter and i appreciate

1121
00:46:24,150 --> 00:46:22,800
it and uh this is just the start of a

1122
00:46:26,470 --> 00:46:24,160
lot of great things that will happen

1123
00:46:27,430 --> 00:46:26,480
here in florida and of course i want to

1124
00:46:30,790 --> 00:46:27,440
thank

1125
00:46:32,710 --> 00:46:30,800
the sfa awardees for being here and

1126
00:46:35,910 --> 00:46:32,720
being able to transition from shuttle

1127
00:46:38,390 --> 00:46:35,920
experiences and and help into orion and

1128
00:46:40,950 --> 00:46:38,400
the next generation of explorers

1129
00:46:42,470 --> 00:46:40,960
but this day today is a day of firsts

1130
00:46:43,510 --> 00:46:42,480
and remembrances

1131
00:46:45,510 --> 00:46:43,520
and let me give you a personal

1132
00:46:48,950 --> 00:46:45,520
remembrance i first started working here

1133
00:46:53,270 --> 00:46:48,960
at ksc yes as a nasa cat way back when

1134
00:46:58,230 --> 00:46:56,710
little grayer but uh i worked at paulo

1135
00:46:59,910 --> 00:46:58,240
soyuz it was a wonderful thing and i

1136
00:47:01,670 --> 00:46:59,920
swore that i always wanted to be around

1137
00:47:04,069 --> 00:47:01,680
see the next generation of spacecraft to

1138
00:47:05,589 --> 00:47:04,079

go beyond low earth orbit and personally

1139
00:47:06,710 --> 00:47:05,599
i'm just thrilled to be standing in

1140
00:47:09,030 --> 00:47:06,720
front of the spacecraft that's going to

1141
00:47:10,390 --> 00:47:09,040
enable us to do that so

1142
00:47:12,069 --> 00:47:10,400
if you work long enough

1143
00:47:14,069 --> 00:47:12,079
not only does it excite old engineers

1144
00:47:16,390 --> 00:47:14,079
excites i mean young engineers excites

1145
00:47:18,390 --> 00:47:16,400
older engineers too and so uh i

1146
00:47:20,309 --> 00:47:18,400
appreciate to have that opportunity

1147
00:47:23,349 --> 00:47:20,319
now at a larger scale lockheed martin is

1148
00:47:24,870 --> 00:47:23,359
also celebrating its 100th anniversary

1149
00:47:26,630 --> 00:47:24,880
at centennial

1150
00:47:27,750 --> 00:47:26,640
and a tribute to our founders glenn l

1151
00:47:30,950 --> 00:47:27,760
martin

1152
00:47:32,390 --> 00:47:30,960
and and uh malcolm lockheed they started

1153
00:47:34,390 --> 00:47:32,400
in a church

1154
00:47:35,829 --> 00:47:34,400
and a garage respectively

1155
00:47:37,589 --> 00:47:35,839
now i gotta say we've been upgraded a

1156
00:47:40,390 --> 00:47:37,599
little bit in this facility

1157
00:47:41,510 --> 00:47:40,400
and it is just a wonderful capability we

1158
00:47:42,230 --> 00:47:41,520
have today

1159
00:47:44,390 --> 00:47:42,240
uh

1160
00:47:47,109 --> 00:47:44,400
reaching back the heritage heritage of

1161
00:47:49,349 --> 00:47:47,119
apollo but yet outfitted for the next

1162
00:47:51,750 --> 00:47:49,359
generation of spacecraft

1163
00:47:53,349 --> 00:47:51,760

so we'll be celebrating uh our

1164
00:47:55,270 --> 00:47:53,359
centennial lockheed martin will be

1165
00:47:56,470 --> 00:47:55,280
throughout the year and the achievements

1166
00:47:58,549 --> 00:47:56,480
of our customers that we've worked

1167
00:48:01,270 --> 00:47:58,559
together and of course look forward to

1168
00:48:03,270 --> 00:48:01,280
working on orion in the future

1169
00:48:05,190 --> 00:48:03,280
likewise this year in february our

1170
00:48:07,030 --> 00:48:05,200
nation celebrated the 50th anniversary

1171
00:48:09,030 --> 00:48:07,040
of the first orbital flight of course

1172
00:48:11,109 --> 00:48:09,040
lockheed martin heritage atlas

1173
00:48:13,349 --> 00:48:11,119
contributed to that success and since

1174
00:48:15,750 --> 00:48:13,359
then we've been proud partners with nasa

1175
00:48:17,349 --> 00:48:15,760
in the human space flight world and so

1176
00:48:18,549 --> 00:48:17,359
we just can't wait to go beyond low

1177
00:48:21,270 --> 00:48:18,559
earth orbit

1178
00:48:23,670 --> 00:48:21,280
and of course yesterday july the 1st in

1179
00:48:24,549 --> 00:48:23,680
1962 nasa activated their launch op

1180
00:48:27,990 --> 00:48:24,559
center

1181
00:48:29,750 --> 00:48:28,000
now known as ksc so a lot of pass but

1182
00:48:32,309 --> 00:48:29,760
today we're here to celebrate our

1183
00:48:34,549 --> 00:48:32,319
nation's next generation deep space

1184
00:48:37,109 --> 00:48:34,559
human exploration vehicle and the first

1185
00:48:38,790 --> 00:48:37,119
of any kind manufactured in florida so

1186
00:48:40,950 --> 00:48:38,800
now we operating the vehicle out of here

1187
00:48:42,630 --> 00:48:40,960
it will be finished uh and completed and

1188
00:48:45,270 --> 00:48:42,640

tested and operated in this building as

1189
00:48:47,349 --> 00:48:45,280
well so many firsts

1190
00:48:49,190 --> 00:48:47,359
and really a great tribute as senator

1191
00:48:50,950 --> 00:48:49,200
nelson said to the folks here in florida

1192
00:48:53,190 --> 00:48:50,960
to be able to do that

1193
00:48:55,270 --> 00:48:53,200
orion will carry humans of course on top

1194
00:48:57,349 --> 00:48:55,280
of sls to destinations

1195
00:48:59,349 --> 00:48:57,359
never explored the missions will

1196
00:49:01,190 --> 00:48:59,359
undoubtedly change the way we see our

1197
00:49:03,990 --> 00:49:01,200
solar system and the way we see

1198
00:49:05,829 --> 00:49:04,000
ourselves here on earth

1199
00:49:08,390 --> 00:49:05,839
seeing orion structure behind me today

1200
00:49:09,990 --> 00:49:08,400
makes me proud of many of our our teams

1201
00:49:11,430 --> 00:49:10,000
and people working this but i'd be

1202
00:49:14,710 --> 00:49:11,440
remiss if i didn't thank the hundreds of

1203
00:49:16,069 --> 00:49:14,720
men and women at michoud in new orleans

1204
00:49:18,309 --> 00:49:16,079
and of course here in florida for

1205
00:49:20,630 --> 00:49:18,319
getting the vehicle here on time and

1206
00:49:22,150 --> 00:49:20,640
there's people ready with drill bits and

1207
00:49:23,589 --> 00:49:22,160
tubes and pipes ready to start

1208
00:49:25,990 --> 00:49:23,599
assembling this vehicle as soon as we're

1209
00:49:27,510 --> 00:49:26,000
out of here and out of their way so no

1210
00:49:28,710 --> 00:49:27,520
but um

1211
00:49:30,390 --> 00:49:28,720
it's uh

1212
00:49:32,630 --> 00:49:30,400
just have to thank everybody that makes

1213
00:49:35,349 --> 00:49:32,640

this possible and likewise i'd like to

1214
00:49:37,349 --> 00:49:35,359
thank the nro and ula this past friday

1215
00:49:39,589 --> 00:49:37,359
for a delta iv test flight

1216
00:49:41,349 --> 00:49:39,599
that they had of course they put up

1217
00:49:43,589 --> 00:49:41,359
a national security payload but our test

1218
00:49:46,309 --> 00:49:43,599
flight for eft one of course it flew the

1219
00:49:49,030 --> 00:49:46,319
icps that's going to fly on sls

1220
00:49:50,710 --> 00:49:49,040
and it'll be the next eft will be the

1221
00:49:51,670 --> 00:49:50,720
next delta iv heavy that's flown out of

1222
00:49:53,990 --> 00:49:51,680
the cape

1223
00:49:55,750 --> 00:49:54,000
so many things are going on getting

1224
00:49:57,589 --> 00:49:55,760
ready for eft-1

1225
00:50:00,230 --> 00:49:57,599
and the next 18 months will be no

1226
00:50:01,750 --> 00:50:00,240
exception here in the onc we have many

1227
00:50:03,750 --> 00:50:01,760
things to do

1228
00:50:05,910 --> 00:50:03,760
and there'll be many firsts that we'll

1229
00:50:06,710 --> 00:50:05,920
do in this in this building

1230
00:50:09,030 --> 00:50:06,720
so

1231
00:50:10,470 --> 00:50:09,040
i look forward to uh having you back

1232
00:50:12,390 --> 00:50:10,480
here when we have other firsts like when

1233
00:50:13,910 --> 00:50:12,400
we power up the spacecraft and we we

1234
00:50:15,190 --> 00:50:13,920
complete mostly assembly and made it to

1235
00:50:17,990 --> 00:50:15,200
the sm

1236
00:50:19,510 --> 00:50:18,000
but in the meantime

1237
00:50:21,510 --> 00:50:19,520
there's just so many things to be proud

1238
00:50:23,270 --> 00:50:21,520

of and to look forward to

1239
00:50:24,549 --> 00:50:23,280
as a great nation space exploration

1240
00:50:27,190 --> 00:50:24,559
nation

1241
00:50:29,670 --> 00:50:27,200
and i just can't wait to go beyond leo

1242
00:50:31,750 --> 00:50:29,680
when i saw the last apollo soyuz fly

1243
00:50:35,030 --> 00:50:31,760
you know it was wonderful but i can't

1244
00:50:46,230 --> 00:50:35,040
wait to see orion fly and take us deeper

1245
00:50:49,750 --> 00:50:47,990
thank you john

1246
00:50:51,589 --> 00:50:49,760
and there you have it

1247
00:50:53,109 --> 00:50:51,599
this country has gone to the moon on

1248
00:50:54,710 --> 00:50:53,119
apollo

1249
00:50:57,430 --> 00:50:54,720
we have built the international space

1250
00:50:59,270 --> 00:50:57,440
station with the space shuttle

1251
00:51:00,790 --> 00:50:59,280
we are now servicing or beginning to

1252
00:51:02,309 --> 00:51:00,800
service the space station with our

1253
00:51:05,109 --> 00:51:02,319
commercial partners

1254
00:51:08,790 --> 00:51:05,119
and now behind us you see the first step

1255
00:51:11,430 --> 00:51:08,800
to go beyond low earth orbit

1256
00:51:12,710 --> 00:51:11,440
exploration flight test 1 you will now

1257
00:51:14,470 --> 00:51:12,720
see a video

1258
00:51:17,750 --> 00:51:14,480
of the next step

1259
00:51:19,109 --> 00:51:17,760
and the orion exploration flight test is