



1  
00:00:07,190 --> 00:00:05,590  
good morning

2  
00:00:08,950 --> 00:00:07,200  
welcome to johnson space center my name

3  
00:00:10,870 --> 00:00:08,960  
is mark guyer i'm the nasa program

4  
00:00:12,950 --> 00:00:10,880  
manager for orion uh thank you for

5  
00:00:14,950 --> 00:00:12,960  
coming today it's a great day

6  
00:00:17,269 --> 00:00:14,960  
here in houston

7  
00:00:19,349 --> 00:00:17,279  
you know when i was a kid uh along with

8  
00:00:20,950 --> 00:00:19,359  
thousands of other kids i watched men

9  
00:00:22,550 --> 00:00:20,960  
walk on the moon and

10  
00:00:24,630 --> 00:00:22,560  
those flights and all the flights before

11  
00:00:26,310 --> 00:00:24,640  
really motivated me to be a student to

12  
00:00:28,790 --> 00:00:26,320  
work hard on math and science what we're

13  
00:00:30,470 --> 00:00:28,800

going to talk about today i think is

14

00:00:32,709 --> 00:00:30,480

doing even more than that actually

15

00:00:34,389 --> 00:00:32,719

bringing these uh questions and

16

00:00:36,470 --> 00:00:34,399

excitement into the classroom directly

17

00:00:37,910 --> 00:00:36,480

so it's a great example i think what

18

00:00:39,670 --> 00:00:37,920

nasa is trying to do

19

00:00:42,790 --> 00:00:39,680

and bringing these exciting things into

20

00:00:44,310 --> 00:00:42,800

the students classrooms

21

00:00:46,069 --> 00:00:44,320

as i said i'm the manager of the orion

22

00:00:49,510 --> 00:00:46,079

program behind me is a mock-up of the

23

00:00:51,350 --> 00:00:49,520

orion we use this mock-up to test human

24

00:00:53,029 --> 00:00:51,360

factors like can the crew reach things

25

00:00:54,790 --> 00:00:53,039

can they get into their suits an

26  
00:00:56,549 --> 00:00:54,800  
emergency can we get to the stowe the

27  
00:00:57,910 --> 00:00:56,559  
equipment we need it's very important

28  
00:00:59,110 --> 00:00:57,920  
work we do right here at the johnson

29  
00:01:01,990 --> 00:00:59,120  
space center

30  
00:01:04,149 --> 00:01:02,000  
putting together the flight test article

31  
00:01:06,550 --> 00:01:04,159  
that we're going to fly in space

32  
00:01:08,550 --> 00:01:06,560  
uh in 18 short months

33  
00:01:11,429 --> 00:01:08,560  
we'll be taking that article 3000 miles

34  
00:01:13,830 --> 00:01:11,439  
into space entering about 80 percent of

35  
00:01:15,510 --> 00:01:13,840  
the lunar entry velocity and also going

36  
00:01:17,910 --> 00:01:15,520  
through the van allen belts and it'll

37  
00:01:18,710 --> 00:01:17,920  
experience some pretty high radiation

38  
00:01:20,630 --> 00:01:18,720

um

39

00:01:22,630 --> 00:01:20,640

right now the heat shield structure is

40

00:01:24,550 --> 00:01:22,640

being sent to boston and we'll actually

41

00:01:26,550 --> 00:01:24,560

put the ablative material on that'll

42

00:01:28,149 --> 00:01:26,560

actually allow us to survive that entry

43

00:01:30,149 --> 00:01:28,159

and then it'll go to the cape

44

00:01:32,230 --> 00:01:30,159

all our computers and

45

00:01:33,749 --> 00:01:32,240

communication system and power systems

46

00:01:35,350 --> 00:01:33,759

are being tested in denver with the

47

00:01:37,030 --> 00:01:35,360

flight software

48

00:01:40,230 --> 00:01:37,040

so there's a whole bunch going on to

49

00:01:41,510 --> 00:01:40,240

make this flight test happen

50

00:01:43,109 --> 00:01:41,520

as i mentioned

51  
00:01:44,630 --> 00:01:43,119  
orion is going to see high radiation

52  
00:01:45,990 --> 00:01:44,640  
during its flight it's one of the things

53  
00:01:48,230 --> 00:01:46,000  
this radiation is one of the things that

54  
00:01:49,910 --> 00:01:48,240  
we have to understand and manage better

55  
00:01:52,230 --> 00:01:49,920  
as we send people into deep space and to

56  
00:01:53,429 --> 00:01:52,240  
mars and so that's why this experiment

57  
00:01:55,190 --> 00:01:53,439  
that we're going to talk about is so

58  
00:01:57,910 --> 00:01:55,200  
important

59  
00:01:59,270 --> 00:01:57,920  
we have a very august group today

60  
00:02:00,709 --> 00:01:59,280  
that you're going to meet

61  
00:02:02,469 --> 00:02:00,719  
and going to speak to you today i think

62  
00:02:03,749 --> 00:02:02,479  
it gives really a sense for how

63  
00:02:06,230 --> 00:02:03,759

important

64

00:02:08,229 --> 00:02:06,240

education is to nasa and to lockheed and

65

00:02:10,309 --> 00:02:08,239

to the rest of the nation so i have the

66

00:02:18,550 --> 00:02:10,319

honor now to introduce charlie bolden

67

00:02:24,229 --> 00:02:20,630

mark thanks very much it's good for me

68

00:02:25,910 --> 00:02:24,239

to be back back actually back home

69

00:02:27,670 --> 00:02:25,920

it's always good to come to jsc i want

70

00:02:29,190 --> 00:02:27,680

to welcome everybody who's here at the

71

00:02:31,190 --> 00:02:29,200

johnson space center

72

00:02:33,830 --> 00:02:31,200

um i think everybody knows for more than

73

00:02:36,070 --> 00:02:33,840

50 years now jesse has played a vital

74

00:02:38,150 --> 00:02:36,080

role in america's human space flight

75

00:02:39,190 --> 00:02:38,160

program both our storied home of mission

76

00:02:40,790 --> 00:02:39,200

control

77

00:02:43,110 --> 00:02:40,800

and the place where every astronaut

78

00:02:45,509 --> 00:02:43,120

trains uh to earn their wings in fact we

79

00:02:47,190 --> 00:02:45,519

were back in the green room and we

80

00:02:49,110 --> 00:02:47,200

interrupted a little training going a

81

00:02:52,309 --> 00:02:49,120

little fire training going on for one of

82

00:02:55,430 --> 00:02:52,319

the future space station astronauts

83

00:02:57,270 --> 00:02:55,440

uh if not all of us most of us remember

84

00:03:00,710 --> 00:02:57,280

those immortal words associated with the

85

00:03:01,830 --> 00:03:00,720

1970 apollo 13 mission houston we have a

86

00:03:03,509 --> 00:03:01,840

problem

87

00:03:05,589 --> 00:03:03,519

today we're here to announce an effort

88

00:03:07,990 --> 00:03:05,599

in partnership with lockheed martin and

89

00:03:09,830 --> 00:03:08,000

the and the young people of america

90

00:03:12,710 --> 00:03:09,840

that will allow us

91

00:03:16,309 --> 00:03:12,720

to take about a year from now to

92

00:03:18,309 --> 00:03:16,319

proclaim houston we have a solution

93

00:03:20,869 --> 00:03:18,319

in a moment you'll hear details of the

94

00:03:23,430 --> 00:03:20,879

nasa lockheed martin exploration design

95

00:03:25,670 --> 00:03:23,440

challenge that will play a vital role in

96

00:03:28,390 --> 00:03:25,680

the launch of orion america's next

97

00:03:30,309 --> 00:03:28,400

generation spacecraft set for its maiden

98

00:03:32,229 --> 00:03:30,319

voyage next year

99

00:03:33,990 --> 00:03:32,239

i want to take a few moments to talk a

100

00:03:35,509 --> 00:03:34,000

little bit about the genesis and purpose

101  
00:03:37,990 --> 00:03:35,519  
of orion

102  
00:03:39,830 --> 00:03:38,000  
three years ago my boss president obama

103  
00:03:42,630 --> 00:03:39,840  
set a goal of sending humans farther

104  
00:03:46,070 --> 00:03:42,640  
into space than we've ever been

105  
00:03:47,910 --> 00:03:46,080  
to an asteroid in 2025 and to mars in

106  
00:03:50,149 --> 00:03:47,920  
the 2030s and i'm looking at all the

107  
00:03:53,110 --> 00:03:50,159  
students out here okay think about it

108  
00:03:55,190 --> 00:03:53,120  
2030s that's you that's not me

109  
00:03:56,789 --> 00:03:55,200  
so that's what the president's told us

110  
00:03:58,550 --> 00:03:56,799  
he wants us to do and we're trying to

111  
00:04:00,710 --> 00:03:58,560  
get there but we've got some problems

112  
00:04:02,710 --> 00:04:00,720  
that mark already alluded to

113  
00:04:04,309 --> 00:04:02,720

after prolonged deliberations congress

114

00:04:05,589 --> 00:04:04,319

and the president agreed that the best

115

00:04:07,670 --> 00:04:05,599

way to do that

116

00:04:09,670 --> 00:04:07,680

was for nasa to turn over the delivery

117

00:04:12,070 --> 00:04:09,680

of cargo and crew to the international

118

00:04:14,149 --> 00:04:12,080

space station and other low earth orbit

119

00:04:16,390 --> 00:04:14,159

destinations to private companies so

120

00:04:18,229 --> 00:04:16,400

that we could concentrate on building

121

00:04:21,030 --> 00:04:18,239

america's next generation space

122

00:04:22,870 --> 00:04:21,040

exploration system the orion spacecraft

123

00:04:24,550 --> 00:04:22,880

the model of which is behind me and the

124

00:04:26,469 --> 00:04:24,560

space launch system

125

00:04:28,950 --> 00:04:26,479

by investing in american companies and

126  
00:04:31,430 --> 00:04:28,960  
american ingenuity we're spurring free

127  
00:04:33,590 --> 00:04:31,440  
market competition to give taxpayers

128  
00:04:36,469 --> 00:04:33,600  
more bang for the buck while enabling

129  
00:04:38,390 --> 00:04:36,479  
nasa to do what we do best reach deeper

130  
00:04:40,550 --> 00:04:38,400  
into our solar system

131  
00:04:42,790 --> 00:04:40,560  
we're always we're also ending the

132  
00:04:44,870 --> 00:04:42,800  
outsourcing of american space jobs and

133  
00:04:47,350 --> 00:04:44,880  
bringing them right back here to houston

134  
00:04:48,629 --> 00:04:47,360  
and other states and cities all across

135  
00:04:50,629 --> 00:04:48,639  
this country

136  
00:04:53,590 --> 00:04:50,639  
this strategy is producing tangible

137  
00:04:56,550 --> 00:04:53,600  
results on march 1st spacex launched the

138  
00:04:58,790 --> 00:04:56,560

second of 12 scheduled cargo missions to

139

00:05:00,950 --> 00:04:58,800

the us to the iss

140

00:05:03,749 --> 00:05:00,960

the company's dragon capsule executed a

141

00:05:05,510 --> 00:05:03,759

successful birthing to the iss two days

142

00:05:07,990 --> 00:05:05,520

later in health and has now delivered

143

00:05:10,870 --> 00:05:08,000

twelve hundred pounds of supplies

144

00:05:12,870 --> 00:05:10,880

fresh foods and science experiments

145

00:05:14,550 --> 00:05:12,880

as the only vehicle capable of returning

146

00:05:15,749 --> 00:05:14,560

large amounts of cargo and experiments

147

00:05:17,510 --> 00:05:15,759

back to earth

148

00:05:19,749 --> 00:05:17,520

dragon will be fully loaded when it

149

00:05:22,550 --> 00:05:19,759

splashes down in the pacific off the

150

00:05:25,110 --> 00:05:22,560

california coast on march 25th

151  
00:05:27,670 --> 00:05:25,120  
this capability is key to enabling nasa

152  
00:05:31,350 --> 00:05:27,680  
to attain our goal of sending humans to

153  
00:05:33,510 --> 00:05:31,360  
an asteroid and ultimately to mars

154  
00:05:35,430 --> 00:05:33,520  
these ambitious missions will depend on

155  
00:05:38,710 --> 00:05:35,440  
engagement from every sector of our

156  
00:05:41,430 --> 00:05:38,720  
society from scientists and astronauts

157  
00:05:43,830 --> 00:05:41,440  
at our nasa centers to our corporate

158  
00:05:46,710 --> 00:05:43,840  
partners like lockheed martin

159  
00:05:48,870 --> 00:05:46,720  
and america's k-12 students

160  
00:05:52,629 --> 00:05:48,880  
when orion takes its first flight in

161  
00:05:55,670 --> 00:05:52,639  
2014 that's next year okay this is 2013

162  
00:05:58,309 --> 00:05:55,680  
2014 next year it will travel farther

163  
00:06:00,230 --> 00:05:58,319

into space than any spacecraft developed

164

00:06:02,070 --> 00:06:00,240

for human space flight has flown in the

165

00:06:03,430 --> 00:06:02,080

40 years since our astronauts returned

166

00:06:06,070 --> 00:06:03,440

from the moon

167

00:06:07,590 --> 00:06:06,080

this will require new technologies

168

00:06:09,670 --> 00:06:07,600

including new ways to keep our

169

00:06:11,830 --> 00:06:09,680

astronauts safe from deep space

170

00:06:14,150 --> 00:06:11,840

radiation

171

00:06:16,469 --> 00:06:14,160

that is the purpose of this challenge

172

00:06:19,270 --> 00:06:16,479

and we're excited that american students

173

00:06:21,510 --> 00:06:19,280

will be helping us to solve that problem

174

00:06:23,350 --> 00:06:21,520

this project also supports nasa's

175

00:06:26,309 --> 00:06:23,360

commitment to inspiring more young

176  
00:06:28,550 --> 00:06:26,319  
people to study and pursue careers in

177  
00:06:31,749 --> 00:06:28,560  
science technology engineering and

178  
00:06:34,390 --> 00:06:31,759  
mathematics the stem disciplines

179  
00:06:36,390 --> 00:06:34,400  
as you all know stem educated workers

180  
00:06:38,469 --> 00:06:36,400  
are the key to america's technological

181  
00:06:40,230 --> 00:06:38,479  
leadership and economic growth in the

182  
00:06:42,550 --> 00:06:40,240  
21st century

183  
00:06:44,710 --> 00:06:42,560  
nasa and the entire aerospace industry

184  
00:06:47,189 --> 00:06:44,720  
in particular will need a steady

185  
00:06:50,390 --> 00:06:47,199  
pipeline of scientists engineers and

186  
00:06:53,110 --> 00:06:50,400  
technicians so we can continue to push

187  
00:06:55,510 --> 00:06:53,120  
the boundaries of exploration and do our

188  
00:06:57,990 --> 00:06:55,520

part to reinvigorate america's

189

00:06:59,270 --> 00:06:58,000

manufacturing scientific and high-tech

190

00:07:01,510 --> 00:06:59,280

industries

191

00:07:03,589 --> 00:07:01,520

the orion exploration design challenge

192

00:07:05,510 --> 00:07:03,599

will give more young people a chance to

193

00:07:07,430 --> 00:07:05,520

develop those skills

194

00:07:10,070 --> 00:07:07,440

i want to thank lockheed and our

195

00:07:11,749 --> 00:07:10,080

education team at nasa led by former

196

00:07:13,189 --> 00:07:11,759

astronaut my hero

197

00:07:15,430 --> 00:07:13,199

leland melvin

198

00:07:17,189 --> 00:07:15,440

and the young hey come on come on

199

00:07:18,790 --> 00:07:17,199

leland's a unique individual i think

200

00:07:20,629 --> 00:07:18,800

most of you know that and i brag about

201  
00:07:21,990 --> 00:07:20,639  
him all the time there is no other human

202  
00:07:24,309 --> 00:07:22,000  
being on the surface of the earth who's

203  
00:07:27,749 --> 00:07:24,319  
ever played nfl football and also been

204  
00:07:29,350 --> 00:07:27,759  
to space so that's my man

205  
00:07:31,749 --> 00:07:29,360  
uh leland and the young people of

206  
00:07:33,270 --> 00:07:31,759  
america are really going to help us do

207  
00:07:35,430 --> 00:07:33,280  
this and i thank all of you for your

208  
00:07:37,189 --> 00:07:35,440  
commitment and involving and involvement

209  
00:07:39,270 --> 00:07:37,199  
in america's space program

210  
00:07:41,189 --> 00:07:39,280  
it's now my honor to have this

211  
00:07:43,029 --> 00:07:41,199  
opportunity to bring to the podium our

212  
00:07:45,110 --> 00:07:43,039  
great partner in this endeavor the new

213  
00:07:54,710 --> 00:07:45,120

president and ceo of lockheed martin

214

00:07:59,029 --> 00:07:56,469

administrator bolden thank you very much

215

00:08:01,589 --> 00:07:59,039

for that kind introduction

216

00:08:04,150 --> 00:08:01,599

well my thanks also to associate

217

00:08:05,990 --> 00:08:04,160

administrator melvin and to mr guyer of

218

00:08:08,150 --> 00:08:06,000

the orion program office for this

219

00:08:10,550 --> 00:08:08,160

wonderful opportunity

220

00:08:13,110 --> 00:08:10,560

and to miss pinchback thank you for your

221

00:08:14,629 --> 00:08:13,120

dedicated service to our schools and to

222

00:08:16,710 --> 00:08:14,639

our students

223

00:08:19,270 --> 00:08:16,720

we at lockheed martin are grateful for

224

00:08:21,990 --> 00:08:19,280

the opportunity to once again support

225

00:08:23,990 --> 00:08:22,000

science technology engineering and math

226

00:08:26,629 --> 00:08:24,000

education

227

00:08:28,629 --> 00:08:26,639

space exploration has inspired

228

00:08:30,150 --> 00:08:28,639

and fascinated young people for

229

00:08:32,550 --> 00:08:30,160

generations

230

00:08:35,829 --> 00:08:32,560

and the exploration design challenge is

231

00:08:38,230 --> 00:08:35,839

a unique way to capture and engage the

232

00:08:39,990 --> 00:08:38,240

imaginings of tomorrow's engineers and

233

00:08:42,469 --> 00:08:40,000

scientists

234

00:08:43,829 --> 00:08:42,479

innovation is the engine of american

235

00:08:46,630 --> 00:08:43,839

progress

236

00:08:49,269 --> 00:08:46,640

and stem education is the fuel that

237

00:08:51,670 --> 00:08:49,279

fires that engine

238

00:08:53,509 --> 00:08:51,680

yet we're facing a real challenge

239

00:08:55,350 --> 00:08:53,519

as a generation of scientists and

240

00:08:57,430 --> 00:08:55,360

engineers retire

241

00:08:59,590 --> 00:08:57,440

we aren't seeing enough young people

242

00:09:00,949 --> 00:08:59,600

stepping into these important technology

243

00:09:02,070 --> 00:09:00,959

careers

244

00:09:05,350 --> 00:09:02,080

we need

245

00:09:07,750 --> 00:09:05,360

bright creative leaders for these feats

246

00:09:10,790 --> 00:09:07,760

fields and we need them to ensure that

247

00:09:12,710 --> 00:09:10,800

the innovation engine continues to drive

248

00:09:17,190 --> 00:09:12,720

our country's leadership

249

00:09:19,190 --> 00:09:17,200

national security and economic strength

250

00:09:21,990 --> 00:09:19,200

at lockheed martin we embrace the

251  
00:09:24,070 --> 00:09:22,000  
responsibility to champion and support

252  
00:09:26,070 --> 00:09:24,080  
stem education

253  
00:09:28,630 --> 00:09:26,080  
and that's why we're so proud to partner

254  
00:09:31,350 --> 00:09:28,640  
with educators government agencies like

255  
00:09:33,910 --> 00:09:31,360  
nasa and our communities on stem

256  
00:09:35,990 --> 00:09:33,920  
initiatives that engage and inspire

257  
00:09:38,310 --> 00:09:36,000  
students

258  
00:09:40,070 --> 00:09:38,320  
many of our corporations sixty thousand

259  
00:09:42,790 --> 00:09:40,080  
engineers scientists and i t

260  
00:09:45,990 --> 00:09:42,800  
professionals support stem education

261  
00:09:47,990 --> 00:09:46,000  
through school outreach volunteerism and

262  
00:09:50,310 --> 00:09:48,000  
charitable giving

263  
00:09:52,710 --> 00:09:50,320

our volunteers work side by side in the

264

00:09:55,990 --> 00:09:52,720

classroom the students and teachers

265

00:09:57,990 --> 00:09:56,000

mentoring and coaching students

266

00:09:59,990 --> 00:09:58,000

through our work we know

267

00:10:02,550 --> 00:10:00,000

that what gets students excited about

268

00:10:05,190 --> 00:10:02,560

careers in technology is the chance to

269

00:10:07,670 --> 00:10:05,200

make a difference to achieve things no

270

00:10:09,269 --> 00:10:07,680

one else has ever achieved and to make a

271

00:10:10,710 --> 00:10:09,279

difference that is meaningful and

272

00:10:12,790 --> 00:10:10,720

lasting

273

00:10:15,190 --> 00:10:12,800

and frankly it's the same thing that

274

00:10:16,790 --> 00:10:15,200

motivates and inspires all of us in our

275

00:10:19,030 --> 00:10:16,800

jobs

276

00:10:22,470 --> 00:10:19,040

this exploration design challenge

277

00:10:24,790 --> 00:10:22,480

captures the opportunity perfectly

278

00:10:27,590 --> 00:10:24,800

for the students here with us today

279

00:10:31,590 --> 00:10:27,600

and those who are on nasa tv watching

280

00:10:33,430 --> 00:10:31,600

you're about to embark on an amazing

281

00:10:35,990 --> 00:10:33,440

the skills you'll learn from this

282

00:10:38,949 --> 00:10:36,000

challenge problem solving

283

00:10:41,030 --> 00:10:38,959

critical thinking systems engineering

284

00:10:43,590 --> 00:10:41,040

are the very same skills that our

285

00:10:46,949 --> 00:10:43,600

engineers apply to our most challenging

286

00:10:50,069 --> 00:10:46,959

problems every day you're taking on a

287

00:10:51,990 --> 00:10:50,079

mission that is hugely important keeping

288

00:10:54,710 --> 00:10:52,000

our astronauts safe

289

00:10:56,630 --> 00:10:54,720

during a journey through deep space

290

00:10:58,630 --> 00:10:56,640

and all of you who participate will be

291

00:11:03,509 --> 00:10:58,640

part of something that's never been done

292

00:11:05,350 --> 00:11:03,519

before the first test flight of orion

293

00:11:07,110 --> 00:11:05,360

nasa's vision and leadership are the

294

00:11:09,509 --> 00:11:07,120

driving force behind both this

295

00:11:13,110 --> 00:11:09,519

opportunity and the missions and

296

00:11:15,190 --> 00:11:13,120

memories that have inspired generations

297

00:11:17,430 --> 00:11:15,200

for more than five decades the men and

298

00:11:20,069 --> 00:11:17,440

women of lockheed martin have proudly

299

00:11:22,230 --> 00:11:20,079

worked side by side with nasa and many

300

00:11:23,910 --> 00:11:22,240

of the on many of those missions

301  
00:11:25,750 --> 00:11:23,920  
landing on the moon

302  
00:11:28,949 --> 00:11:25,760  
exploring mars

303  
00:11:30,870 --> 00:11:28,959  
capturing pieces of comets and our sun

304  
00:11:32,550 --> 00:11:30,880  
and traveling to outer reaches of the

305  
00:11:34,150 --> 00:11:32,560  
universe

306  
00:11:37,269 --> 00:11:34,160  
it's fitting that we're here today in

307  
00:11:41,269 --> 00:11:37,279  
front of orion which will take humankind

308  
00:11:43,750 --> 00:11:41,279  
on its next great journey

309  
00:11:45,269 --> 00:11:43,760  
our moon is one thousand times more

310  
00:11:47,269 --> 00:11:45,279  
distant from earth than the

311  
00:11:50,470 --> 00:11:47,279  
international space station

312  
00:11:54,230 --> 00:11:50,480  
and through orion our goal is to explore

313  
00:11:57,110 --> 00:11:54,240

millions of miles beyond

314

00:11:59,430 --> 00:11:57,120

every journey starts with a single step

315

00:12:02,310 --> 00:11:59,440

and the orion's exploration flight test

316

00:12:05,350 --> 00:12:02,320

1 is a significant first step toward

317

00:12:07,829 --> 00:12:05,360

deep space human exploration

318

00:12:10,230 --> 00:12:07,839

this mission will lay the foundation for

319

00:12:13,110 --> 00:12:10,240

future orion flights and will take

320

00:12:15,590 --> 00:12:13,120

astronauts past the moon and onto

321

00:12:18,150 --> 00:12:15,600

asteroids and mars

322

00:12:20,870 --> 00:12:18,160

and those future missions will be led by

323

00:12:23,190 --> 00:12:20,880

a whole new generation of scientists

324

00:12:25,509 --> 00:12:23,200

engineers and explorers

325

00:12:29,670 --> 00:12:25,519

students like the bright innovative

326

00:12:34,629 --> 00:12:31,829

we know nothing teaches

327

00:12:36,710 --> 00:12:34,639

like real hands-on experience and that's

328

00:12:38,949 --> 00:12:36,720

what draws lockheed martin to support

329

00:12:40,150 --> 00:12:38,959

programs like the exploration design

330

00:12:42,629 --> 00:12:40,160

challenge

331

00:12:44,710 --> 00:12:42,639

we recognize the amazing increase in

332

00:12:47,829 --> 00:12:44,720

learning that comes with critical

333

00:12:50,870 --> 00:12:47,839

thinking and real world problem solving

334

00:12:53,030 --> 00:12:50,880

and in this case real out of this world

335

00:12:54,790 --> 00:12:53,040

problem solving

336

00:12:56,790 --> 00:12:54,800

administrator bolden once again thank

337

00:12:59,269 --> 00:12:56,800

you for this opportunity to partner with

338

00:13:02,230 --> 00:12:59,279

nasa and to help reach and inspire

339

00:13:04,870 --> 00:13:02,240

millions of students as we usher in a

340

00:13:08,150 --> 00:13:04,880

new generation of scientists

341

00:13:10,310 --> 00:13:08,160

engineers and explorers

342

00:13:12,629 --> 00:13:10,320

it's now my pleasure to introduce leland

343

00:13:15,509 --> 00:13:12,639

melvin nasa's associate administrator

344

00:13:16,870 --> 00:13:15,519

for education and two-time space shuttle

345

00:13:18,389 --> 00:13:16,880

astronaut

346

00:13:20,230 --> 00:13:18,399

in his current role leland is

347

00:13:22,470 --> 00:13:20,240

responsible for the development and

348

00:13:23,910 --> 00:13:22,480

implementation of nasa's education

349

00:13:25,910 --> 00:13:23,920

programs

350

00:13:28,470 --> 00:13:25,920

using the excitement of the agency's

351

00:13:30,629 --> 00:13:28,480

exploration missions and scientific

352

00:13:32,310 --> 00:13:30,639

discoveries he and his team are

353

00:13:33,350 --> 00:13:32,320

strengthening student involvement in

354

00:13:35,750 --> 00:13:33,360

stem

355

00:13:37,030 --> 00:13:35,760

and helping build our next generation of

356

00:13:38,870 --> 00:13:37,040

explorers

357

00:13:40,150 --> 00:13:38,880

please join me in welcoming leland

358

00:13:42,389 --> 00:13:40,160

melvin who will share some of the

359

00:13:51,829 --> 00:13:42,399

details of the exploration design

360

00:13:56,310 --> 00:13:53,590

thank you marilyn and i hate when

361

00:13:59,430 --> 00:13:56,320

charlie does that

362

00:14:01,430 --> 00:13:59,440

i'm very excited to be here and i i just

363

00:14:03,030 --> 00:14:01,440

want to say there's a there's a african

364

00:14:05,030 --> 00:14:03,040

proverb that says it takes a village to

365

00:14:07,030 --> 00:14:05,040

raise a child and when i think about

366

00:14:08,629 --> 00:14:07,040

this relationship with nasa and lockheed

367

00:14:09,990 --> 00:14:08,639

martin and how we're coming together to

368

00:14:11,910 --> 00:14:10,000

help inspire

369

00:14:14,230 --> 00:14:11,920

that next generation of explorer i think

370

00:14:16,150 --> 00:14:14,240

about my roots growing up in a small

371

00:14:18,069 --> 00:14:16,160

town in lynchburg virginia with

372

00:14:18,870 --> 00:14:18,079

educators as parents

373

00:14:20,069 --> 00:14:18,880

and

374

00:14:21,990 --> 00:14:20,079

for the students out here in the

375

00:14:23,350 --> 00:14:22,000

audience hands-on experiential

376

00:14:25,910 --> 00:14:23,360

activities that maryland just talked

377

00:14:28,629 --> 00:14:25,920

about are what fuel your curiosity now

378

00:14:30,790 --> 00:14:28,639

when i was a kid my mother gave me an

379

00:14:32,710 --> 00:14:30,800

age inappropriate chemistry set that was

380

00:14:35,030 --> 00:14:32,720

not vetted by osha

381

00:14:37,110 --> 00:14:35,040

i created the most incredible explosion

382

00:14:38,790 --> 00:14:37,120

in my mother's living room

383

00:14:40,310 --> 00:14:38,800

and that fueled my curiosity become a

384

00:14:42,150 --> 00:14:40,320

chemistry major

385

00:14:44,310 --> 00:14:42,160

so the things that we're trying to do

386

00:14:46,710 --> 00:14:44,320

with orion and the exploration design

387

00:14:49,430 --> 00:14:46,720

challenge will help you find that

388

00:14:51,430 --> 00:14:49,440

curiosity will help you solve problems

389

00:14:54,710 --> 00:14:51,440

to help our astronauts and maybe even

390

00:14:57,430 --> 00:14:54,720

you one day flying orion to mars

391

00:15:00,470 --> 00:14:57,440

so the work that you're doing today

392

00:15:03,590 --> 00:15:00,480

in developing creating radiation shields

393

00:15:05,189 --> 00:15:03,600

to help save us keep us going to mars

394

00:15:07,269 --> 00:15:05,199

may be the radiation shield that saves

395

00:15:09,430 --> 00:15:07,279

your life one day so a little bit more

396

00:15:13,829 --> 00:15:09,440

about the details of the challenge you

397

00:15:15,110 --> 00:15:13,839

can actually go to [nasa.gov](https://www.nasa.gov/education) education

398

00:15:17,670 --> 00:15:15,120

edc

399

00:15:19,829 --> 00:15:17,680

and students from k-12 can actually

400

00:15:22,230 --> 00:15:19,839

register to be part of this so students

401  
00:15:23,910 --> 00:15:22,240  
and parents students and teachers we

402  
00:15:26,550 --> 00:15:23,920  
want to have teams of students clustered

403  
00:15:29,189 --> 00:15:26,560  
together to work as a team just like we

404  
00:15:31,110 --> 00:15:29,199  
do in this building nine building these

405  
00:15:32,470 --> 00:15:31,120  
models build these mock-ups building so

406  
00:15:35,509 --> 00:15:32,480  
forth and so on

407  
00:15:36,790 --> 00:15:35,519  
so if you're a k-4 student our youngest

408  
00:15:39,110 --> 00:15:36,800  
explorers

409  
00:15:40,870 --> 00:15:39,120  
you'll compete with nasa education

410  
00:15:42,949 --> 00:15:40,880  
activities related to radiation so you

411  
00:15:44,949 --> 00:15:42,959  
learn more about what the basics of

412  
00:15:47,670 --> 00:15:44,959  
radiation are when you take an x-ray

413  
00:15:50,310 --> 00:15:47,680

when you do things when you walk outside

414

00:15:52,310 --> 00:15:50,320

for 365 days on the planet

415

00:15:54,710 --> 00:15:52,320

you get about the dosage of about four

416

00:15:56,949 --> 00:15:54,720

to five chest x-rays so learning about

417

00:15:58,949 --> 00:15:56,959

what it means to get radiation in your

418

00:16:00,629 --> 00:15:58,959

body and how that affects your body

419

00:16:03,189 --> 00:16:00,639

and so those students will actually be

420

00:16:05,110 --> 00:16:03,199

able to do activities and then their

421

00:16:06,790 --> 00:16:05,120

names will be submitted to actually fly

422

00:16:08,230 --> 00:16:06,800

on eft one

423

00:16:09,990 --> 00:16:08,240

our fifth through eighth grade middle

424

00:16:11,030 --> 00:16:10,000

schoolers we've added a little more of a

425

00:16:12,949 --> 00:16:11,040

challenge

426  
00:16:14,629 --> 00:16:12,959  
so they'll also complete education

427  
00:16:16,710 --> 00:16:14,639  
activities they'll have a chance to

428  
00:16:17,749 --> 00:16:16,720  
become honorary crew members but in

429  
00:16:20,470 --> 00:16:17,759  
addition

430  
00:16:22,389 --> 00:16:20,480  
yields that devon design and develop a

431  
00:16:24,870 --> 00:16:22,399  
radiation shield prototype

432  
00:16:26,870 --> 00:16:24,880  
so that's for the middle schoolers

433  
00:16:28,949 --> 00:16:26,880  
the high school is here you guys are all

434  
00:16:30,389 --> 00:16:28,959  
high schoolers right okay

435  
00:16:32,230 --> 00:16:30,399  
you guys look really wonderful out there

436  
00:16:33,670 --> 00:16:32,240  
by the way

437  
00:16:35,670 --> 00:16:33,680  
you guys are going to be our engineers

438  
00:16:37,910 --> 00:16:35,680

in the making and you'll have a chance

439

00:16:40,870 --> 00:16:37,920

to get even more involved

440

00:16:43,430 --> 00:16:40,880

you'll be forming a team so mentors

441

00:16:45,829 --> 00:16:43,440

maybe from lockheed from nasa maybe your

442

00:16:46,870 --> 00:16:45,839

parents we working together to form a

443

00:16:51,670 --> 00:16:46,880

team

444

00:16:54,150 --> 00:16:51,680

to test their designs in a virtual

445

00:16:56,949 --> 00:16:54,160

radiation simulator

446

00:16:59,269 --> 00:16:56,959

all five teams that are chosen will go

447

00:17:01,110 --> 00:16:59,279

down to to kennedy space center for the

448

00:17:03,509 --> 00:17:01,120

launch of the ft-1

449

00:17:05,029 --> 00:17:03,519

and there will be a final down select of

450

00:17:08,549 --> 00:17:05,039

the winning design

451

00:17:11,829 --> 00:17:08,559

that will possibly be flown on the ft-1

452

00:17:13,510 --> 00:17:11,839

now we're banking on this design because

453

00:17:15,110 --> 00:17:13,520

one of you or one of our astronauts will

454

00:17:16,150 --> 00:17:15,120

be flying to mars we'll be actually

455

00:17:18,949 --> 00:17:16,160

using

456

00:17:20,949 --> 00:17:18,959

space certified radiation sensors

457

00:17:22,309 --> 00:17:20,959

sitting behind your radiation shield to

458

00:17:23,909 --> 00:17:22,319

see how effective it's working and

459

00:17:25,669 --> 00:17:23,919

blocking radiation

460

00:17:26,549 --> 00:17:25,679

so that's kind of the big picture of the

461

00:17:28,789 --> 00:17:26,559

test

462

00:17:31,110 --> 00:17:28,799

i think about partnerships i think about

463

00:17:32,950 --> 00:17:31,120

community all the federal agencies are

464

00:17:36,470 --> 00:17:32,960

working to ensure that we leverage our

465

00:17:39,190 --> 00:17:36,480

unique assets orion is a fantastic

466

00:17:40,789 --> 00:17:39,200

unique asset that both nasa and lockheed

467

00:17:42,470 --> 00:17:40,799

martin are working together to help

468

00:17:45,029 --> 00:17:42,480

change the world through this community

469

00:17:46,390 --> 00:17:45,039

of learning thank you very much and next

470

00:17:47,430 --> 00:17:46,400

i'm going to invite up

471

00:17:50,950 --> 00:17:47,440

amber

472

00:17:53,190 --> 00:17:50,960

pinchback she's an hisd principal

473

00:18:01,590 --> 00:17:53,200

educator and an award-winning educator

474

00:18:05,430 --> 00:18:03,590

good morning

475

00:18:07,350 --> 00:18:05,440

to reach for new heights and reveal the

476

00:18:09,590 --> 00:18:07,360

unknown so that what we do and learn

477

00:18:10,470 --> 00:18:09,600

will benefit all humankind is nasa's

478

00:18:13,190 --> 00:18:10,480

mission

479

00:18:15,110 --> 00:18:13,200

educators

480

00:18:17,110 --> 00:18:15,120

for if we do not motivate our students

481

00:18:19,110 --> 00:18:17,120

to reach for new heights and reveal

482

00:18:22,150 --> 00:18:19,120

something new within themselves how will

483

00:18:23,909 --> 00:18:22,160

we benefit all humankind

484

00:18:25,830 --> 00:18:23,919

as a young girl my fifth grade math and

485

00:18:27,110 --> 00:18:25,840

science teachers miss miller and miss

486

00:18:28,710 --> 00:18:27,120

richardson

487

00:18:30,390 --> 00:18:28,720

were able to motivate and challenge me

488

00:18:31,830 --> 00:18:30,400

to discover my capabilities in these

489

00:18:33,270 --> 00:18:31,840

subjects

490

00:18:35,590 --> 00:18:33,280

they even convinced me to be on the

491

00:18:37,110 --> 00:18:35,600

school's math and science team

492

00:18:39,190 --> 00:18:37,120

where i was taught how to improve and

493

00:18:41,430 --> 00:18:39,200

sharpen my skills and my confidence

494

00:18:43,110 --> 00:18:41,440

soared because of them

495

00:18:45,029 --> 00:18:43,120

and as my interest in math and science

496

00:18:47,750 --> 00:18:45,039

grew i happened upon a movie titled

497

00:18:49,510 --> 00:18:47,760

space camp and i knew i had to go

498

00:18:51,750 --> 00:18:49,520

i just didn't know the opportunity would

499

00:18:53,110 --> 00:18:51,760

present itself to me as an adult while

500

00:18:54,549 --> 00:18:53,120

teaching 8th grade science here in

501  
00:18:57,110 --> 00:18:54,559  
houston isd

502  
00:18:59,669 --> 00:18:57,120  
this is where my connection to nasa and

503  
00:19:01,270 --> 00:18:59,679  
education begins

504  
00:19:03,430 --> 00:19:01,280  
i traveled with a group of educators

505  
00:19:05,830 --> 00:19:03,440  
from a variety of houston schools to

506  
00:19:08,950 --> 00:19:05,840  
huntsville alabama and we embarked on

507  
00:19:10,950 --> 00:19:08,960  
our space camp adventure

508  
00:19:13,830 --> 00:19:10,960  
and boy was i glad i experienced space

509  
00:19:15,669 --> 00:19:13,840  
camp as an adult and not as a child

510  
00:19:17,750 --> 00:19:15,679  
not only was it exhilarating to create

511  
00:19:18,870 --> 00:19:17,760  
and shoot rockets simulate walking on

512  
00:19:20,549 --> 00:19:18,880  
the moon

513  
00:19:22,549 --> 00:19:20,559

and take on the role of capcom during

514

00:19:24,310 --> 00:19:22,559

our simulated missions but i also

515

00:19:26,789 --> 00:19:24,320

learned how to navigate many of nasa's

516

00:19:28,470 --> 00:19:26,799

resources including the nasa website

517

00:19:31,110 --> 00:19:28,480

where educators like me can find a

518

00:19:32,789 --> 00:19:31,120

plethora of photos videos

519

00:19:34,630 --> 00:19:32,799

games and student-centered

520

00:19:36,710 --> 00:19:34,640

objective-driven lessons for all ages

521

00:19:39,190 --> 00:19:36,720

and constant areas so with my blue

522

00:19:41,190 --> 00:19:39,200

jumpsuit excitement from my experience

523

00:19:42,950 --> 00:19:41,200

and the knowledge to navigate resources

524

00:19:46,310 --> 00:19:42,960

i headed home to houston to share what i

525

00:19:47,830 --> 00:19:46,320

learned with my students and colleagues

526

00:19:49,909 --> 00:19:47,840

a couple of years later i became an

527

00:19:51,990 --> 00:19:49,919

administrator at the same school and a

528

00:19:54,150 --> 00:19:52,000

teacher approached me to apply for an

529

00:19:56,310 --> 00:19:54,160

in-flight downlink with astronauts

530

00:19:57,909 --> 00:19:56,320

aboard the iss

531

00:20:00,230 --> 00:19:57,919

with the help of nasa's teaching from

532

00:20:01,909 --> 00:20:00,240

space department we were able to host a

533

00:20:04,470 --> 00:20:01,919

successful in-flight downlink in our

534

00:20:06,470 --> 00:20:04,480

school auditorium

535

00:20:08,630 --> 00:20:06,480

where approximately 20 students had the

536

00:20:10,390 --> 00:20:08,640

opportunity to ask questions to

537

00:20:13,029 --> 00:20:10,400

astronaut shannon walker and doug

538

00:20:14,710 --> 00:20:13,039

wheelock while the remaining 1600 of our

539

00:20:17,909 --> 00:20:14,720

students watched live from the classroom

540

00:20:19,830 --> 00:20:17,919

tv's on nasa tv

541

00:20:21,830 --> 00:20:19,840

our downlink was the first step our

542

00:20:24,630 --> 00:20:21,840

school took towards implementing stem

543

00:20:26,870 --> 00:20:24,640

objectives science technology

544

00:20:28,630 --> 00:20:26,880

engineering and math

545

00:20:30,149 --> 00:20:28,640

see my school johnston middle school is

546

00:20:32,070 --> 00:20:30,159

the performing and visual arts middle

547

00:20:33,669 --> 00:20:32,080

school of houston isd

548

00:20:35,590 --> 00:20:33,679

and our students are renowned for their

549

00:20:37,750 --> 00:20:35,600

artistic abilities

550

00:20:39,669 --> 00:20:37,760

but our students are more than artists

551  
00:20:42,230 --> 00:20:39,679  
they are future engineers

552  
00:20:43,669 --> 00:20:42,240  
doctors and computer scientists and we

553  
00:20:45,669 --> 00:20:43,679  
want our students to know they can be

554  
00:20:47,590 --> 00:20:45,679  
both

555  
00:20:50,070 --> 00:20:47,600  
with an auditorium full of over 800

556  
00:20:51,350 --> 00:20:50,080  
people you could have heard a pin drop

557  
00:20:53,270 --> 00:20:51,360  
when our students were sending their

558  
00:20:55,350 --> 00:20:53,280  
questions to the iss

559  
00:20:57,590 --> 00:20:55,360  
everyone was on the edge of their seats

560  
00:20:59,110 --> 00:20:57,600  
waiting to hear the astronauts responses

561  
00:21:01,029 --> 00:20:59,120  
and watching them

562  
00:21:05,190 --> 00:21:01,039  
utilize weightlessness as they spin

563  
00:21:08,950 --> 00:21:07,430

and the excitement didn't stop there we

564

00:21:10,950 --> 00:21:08,960

worked with the astronauts appearance

565

00:21:13,029 --> 00:21:10,960

office and were able to host dr walker

566

00:21:15,029 --> 00:21:13,039

at our school the days that led up to

567

00:21:17,510 --> 00:21:15,039

her visit were celebrated with space and

568

00:21:20,230 --> 00:21:17,520

stem lessons in every classroom many of

569

00:21:21,750 --> 00:21:20,240

them retrieved from the nasa website

570

00:21:26,149 --> 00:21:21,760

the building principal even began

571

00:21:27,750 --> 00:21:26,159

calling our campus johnston space center

572

00:21:29,750 --> 00:21:27,760

through nasa explorer schools and the

573

00:21:31,350 --> 00:21:29,760

digital learning network two colleagues

574

00:21:33,270 --> 00:21:31,360

and i were able to fly aboard nasa's

575

00:21:35,430 --> 00:21:33,280

weightless wonder and conduct science

576

00:21:37,350 --> 00:21:35,440

experiments in micro and hyper gravity

577

00:21:39,590 --> 00:21:37,360

collect data and compare it to the data

578

00:21:41,430 --> 00:21:39,600

our students collected back at school in

579

00:21:42,950 --> 00:21:41,440

1g

580

00:21:44,470 --> 00:21:42,960

we've also had the opportunity to work

581

00:21:46,630 --> 00:21:44,480

with the student space flights

582

00:21:48,310 --> 00:21:46,640

experiments program where students are

583

00:21:51,110 --> 00:21:48,320

challenged to create experiments to be

584

00:21:52,789 --> 00:21:51,120

conducted by astronauts aboard the iss

585

00:21:54,470 --> 00:21:52,799

collect the data and bring it back to

586

00:21:55,909 --> 00:21:54,480

earth for comparison to their 1g

587

00:21:57,510 --> 00:21:55,919

experiments

588

00:21:59,430 --> 00:21:57,520

the impact this project had on our

589

00:22:00,950 --> 00:21:59,440

students was stunning

590

00:22:02,950 --> 00:22:00,960

to offer a middle school student the

591

00:22:05,909 --> 00:22:02,960

chance to create an experiment and have

592

00:22:07,510 --> 00:22:05,919

it fly in space is unbelievable

593

00:22:09,990 --> 00:22:07,520

there are no other middle school science

594

00:22:12,230 --> 00:22:10,000

experiments that compare

595

00:22:14,789 --> 00:22:12,240

this is what makes the orion exploration

596

00:22:16,870 --> 00:22:14,799

design challenge so magnificent

597

00:22:18,230 --> 00:22:16,880

inviting students to assist nasa in

598

00:22:20,230 --> 00:22:18,240

solving the problem of radiation

599

00:22:22,070 --> 00:22:20,240

protection takes learning and applying

600

00:22:23,669 --> 00:22:22,080

science to a new level

601  
00:22:25,909 --> 00:22:23,679  
it allows students the chance to wrap

602  
00:22:28,149 --> 00:22:25,919  
their minds around a real problem like a

603  
00:22:30,230 --> 00:22:28,159  
real scientist and solve

604  
00:22:32,149 --> 00:22:30,240  
and find real answers

605  
00:22:33,830 --> 00:22:32,159  
not only is the problem real but it is

606  
00:22:35,909 --> 00:22:33,840  
also one that will help humans achieve

607  
00:22:38,070 --> 00:22:35,919  
what we have never before achieved by

608  
00:22:40,870 --> 00:22:38,080  
taking us beyond low earth orbit and

609  
00:22:42,710 --> 00:22:40,880  
onto an asteroid or mars

610  
00:22:44,630 --> 00:22:42,720  
orion is the future of human space

611  
00:22:46,470 --> 00:22:44,640  
flight and what better way to connect

612  
00:22:48,390 --> 00:22:46,480  
the country to this spacecraft than by

613  
00:22:50,149 --> 00:22:48,400

enticing educators and the next

614

00:22:52,149 --> 00:22:50,159

generation of scientists

615

00:22:53,590 --> 00:22:52,159

to become a part of its progress and

616

00:22:55,190 --> 00:22:53,600

purpose

617

00:22:57,430 --> 00:22:55,200

it is through this partnership that

618

00:23:00,230 --> 00:22:57,440

space exploration will flourish and

619

00:23:02,310 --> 00:23:00,240

continue to reveal the unknown so that

620

00:23:03,909 --> 00:23:02,320

what we do and learn will benefit all

621

00:23:04,950 --> 00:23:03,919

humankind

622

00:23:06,549 --> 00:23:04,960

thank you

623

00:23:13,029 --> 00:23:06,559

i will now turn the event back over to

624

00:23:16,230 --> 00:23:14,789

okay so it

625

00:23:17,750 --> 00:23:16,240

at this time we're going to have a

626

00:23:19,430 --> 00:23:17,760

chance to get questions from the

627

00:23:21,270 --> 00:23:19,440

students of this very distinguished

628

00:23:22,789 --> 00:23:21,280

panel here so i would like to bring up

629

00:23:26,470 --> 00:23:22,799

the first student to ask your question

630

00:23:29,669 --> 00:23:28,470

hi my name is kyle what do you feel is

631

00:23:33,750 --> 00:23:29,679

the greatest benefit of human

632

00:23:37,990 --> 00:23:36,710

you want to hit that sir i can try i you

633

00:23:41,029 --> 00:23:38,000

know i think there are a number of

634

00:23:43,590 --> 00:23:41,039

benefits but since you said the greatest

635

00:23:45,990 --> 00:23:43,600

i think it's an aspirational benefit and

636

00:23:48,070 --> 00:23:46,000

that is one that helps people

637

00:23:50,390 --> 00:23:48,080

believe that there is much

638

00:23:53,669 --> 00:23:50,400

higher things to attain than what we

639

00:23:55,430 --> 00:23:53,679

normally see in our lives every day

640

00:23:58,710 --> 00:23:55,440

you know i will be very disa i tell

641

00:24:00,950 --> 00:23:58,720

people i came here in 1980

642

00:24:02,950 --> 00:24:00,960

as a brand new astronaut candidate

643

00:24:04,470 --> 00:24:02,960

and when i came

644

00:24:05,510 --> 00:24:04,480

i thought i would fly on the shuttle

645

00:24:07,590 --> 00:24:05,520

once

646

00:24:09,830 --> 00:24:07,600

and and then start training for a

647

00:24:12,630 --> 00:24:09,840

mission back to the moon and then

648

00:24:14,870 --> 00:24:12,640

eventually on to mars and unfortunately

649

00:24:16,870 --> 00:24:14,880

for me and my class we had something

650

00:24:20,149 --> 00:24:16,880

happen in 1986 which was loss of

651

00:24:22,149 --> 00:24:20,159

challenger and uh in the world

652

00:24:24,549 --> 00:24:22,159

all of a sudden turned away from that

653

00:24:26,630 --> 00:24:24,559

kind of experience and it has taken us

654

00:24:28,630 --> 00:24:26,640

quite a while to recover so

655

00:24:30,789 --> 00:24:28,640

i would like to help all of you get that

656

00:24:32,789 --> 00:24:30,799

dream again because i know we can do it

657

00:24:35,350 --> 00:24:32,799

but it's something that the nation has

658

00:24:36,870 --> 00:24:35,360

to really believe in otherwise it won't

659

00:24:38,630 --> 00:24:36,880

happen so

660

00:24:39,590 --> 00:24:38,640

just having people having you able to

661

00:24:41,269 --> 00:24:39,600

talk to an astronaut on the

662

00:24:43,190 --> 00:24:41,279

international space station

663

00:24:45,190 --> 00:24:43,200

to see that people who are just like you

664

00:24:47,110 --> 00:24:45,200

started just like you

665

00:24:48,710 --> 00:24:47,120

have reached that level of of

666

00:24:51,590 --> 00:24:48,720

achievement i think is is really

667

00:24:55,190 --> 00:24:54,070

thank you charlie next question i i

668

00:24:58,149 --> 00:24:55,200

think is the next question is for

669

00:25:02,070 --> 00:24:59,909

want to go ahead and ask you a question

670

00:25:04,070 --> 00:25:02,080

hi my uh my name is robert kennedy my

671

00:25:07,269 --> 00:25:04,080

question is specifically to uh mark

672

00:25:11,029 --> 00:25:09,510

what role specifically has innovation

673

00:25:13,669 --> 00:25:11,039

played in

674

00:25:16,470 --> 00:25:13,679

the developing orion

675

00:25:18,149 --> 00:25:16,480

oh great question yeah so

676  
00:25:19,990 --> 00:25:18,159  
you know really we have to innovate in

677  
00:25:21,909 --> 00:25:20,000  
order to make this mission happen uh

678  
00:25:24,230 --> 00:25:21,919  
some of it looks similar to apollo but

679  
00:25:25,909 --> 00:25:24,240  
the the guts of orion are really state

680  
00:25:26,789 --> 00:25:25,919  
of the art so a good example would be

681  
00:25:28,630 --> 00:25:26,799  
the

682  
00:25:30,230 --> 00:25:28,640  
network interface time trigger gigabit

683  
00:25:32,549 --> 00:25:30,240  
ethernet allows us to communicate with

684  
00:25:34,230 --> 00:25:32,559  
the computers extremely fast but also

685  
00:25:35,909 --> 00:25:34,240  
very safe and reliable which is very

686  
00:25:37,909 --> 00:25:35,919  
important when you've got human

687  
00:25:39,590 --> 00:25:37,919  
uh humans on board

688  
00:25:42,470 --> 00:25:39,600

we do a lot of things innovating

689

00:25:44,070 --> 00:25:42,480

relative to saving money as well a lot

690

00:25:45,190 --> 00:25:44,080

of this mock-up behind you the stuff

691

00:25:47,909 --> 00:25:45,200

inside

692

00:25:50,230 --> 00:25:47,919

is actually designed and built by middle

693

00:25:51,590 --> 00:25:50,240

school high school college students

694

00:25:53,190 --> 00:25:51,600

because they can provide things that

695

00:25:54,870 --> 00:25:53,200

help make this work

696

00:25:56,549 --> 00:25:54,880

also tie education back into the

697

00:25:57,750 --> 00:25:56,559

classroom but also save us money so it's

698

00:25:59,990 --> 00:25:57,760

things like that it's all sorts of

699

00:26:01,350 --> 00:26:00,000

technological and affordability things

700

00:26:02,549 --> 00:26:01,360

we need to do to innovate to make this

701  
00:26:04,390 --> 00:26:02,559  
work

702  
00:26:07,190 --> 00:26:04,400  
advice would you give for

703  
00:26:09,029 --> 00:26:07,200  
young women trying to pursue careers in

704  
00:26:11,190 --> 00:26:09,039  
aerospace

705  
00:26:13,350 --> 00:26:11,200  
i guess my best advice would be to go

706  
00:26:15,990 --> 00:26:13,360  
for it i mean i've been in the aerospace

707  
00:26:17,830 --> 00:26:16,000  
industry for 30 years started as an

708  
00:26:20,549 --> 00:26:17,840  
industrial engineer so many years ago

709  
00:26:22,630 --> 00:26:20,559  
and this is an industry where as you can

710  
00:26:24,630 --> 00:26:22,640  
see you can be involved in cutting edge

711  
00:26:25,430 --> 00:26:24,640  
technology and you can work with some of

712  
00:26:29,990 --> 00:26:25,440  
the

713  
00:26:31,190 --> 00:26:30,000

world so it's a great place to spend

714

00:26:32,789 --> 00:26:31,200

your career

715

00:26:34,230 --> 00:26:32,799

i would just suggest that you know

716

00:26:36,390 --> 00:26:34,240

there's three areas that you should

717

00:26:37,830 --> 00:26:36,400

focus on so that you can be successful

718

00:26:40,149 --> 00:26:37,840

what we find is

719

00:26:41,750 --> 00:26:40,159

those who focus on doing their best work

720

00:26:43,990 --> 00:26:41,760

hard and meet their commitments are the

721

00:26:46,149 --> 00:26:44,000

ones that are most successful because we

722

00:26:48,789 --> 00:26:46,159

we want folks that are dedicated and

723

00:26:49,830 --> 00:26:48,799

that are working hard and and delivering

724

00:26:51,269 --> 00:26:49,840

results

725

00:26:52,390 --> 00:26:51,279

the second thing that's really important

726  
00:26:53,830 --> 00:26:52,400  
in this industry

727  
00:26:56,070 --> 00:26:53,840  
in working with nasa and other

728  
00:26:59,190 --> 00:26:56,080  
government agencies is that you have to

729  
00:27:02,149 --> 00:26:59,200  
be a team player everything we do

730  
00:27:04,390 --> 00:27:02,159  
is around teams it's not individuals

731  
00:27:05,990 --> 00:27:04,400  
it's teams that make things happen so

732  
00:27:08,470 --> 00:27:06,000  
being a team player and learning how to

733  
00:27:10,630 --> 00:27:08,480  
work in teams is extremely important and

734  
00:27:12,950 --> 00:27:10,640  
then i'd say the last thing is you need

735  
00:27:14,630 --> 00:27:12,960  
to focus on continuous learning your

736  
00:27:15,669 --> 00:27:14,640  
learning does not stop when you leave

737  
00:27:18,389 --> 00:27:15,679  
school

738  
00:27:20,230 --> 00:27:18,399

we learn every day i learn every day

739

00:27:21,830 --> 00:27:20,240

those on this panel learn every day and

740

00:27:24,870 --> 00:27:21,840

it's important that you have a focus for

741

00:27:29,029 --> 00:27:27,190

fantastic just go for it and also check

742

00:27:31,510 --> 00:27:29,039

out women.nasa.gov

743

00:27:33,029 --> 00:27:31,520

to look at other brilliant uh brilliant

744

00:27:35,430 --> 00:27:33,039

scientists and engineers just happen to

745

00:27:38,310 --> 00:27:35,440

just happen to be women next question

746

00:27:41,029 --> 00:27:38,320

hi my name is kevin and what was your

747

00:27:43,190 --> 00:27:41,039

first experience working for nasa

748

00:27:45,110 --> 00:27:43,200

hope was my first experience let's see i

749

00:27:47,990 --> 00:27:45,120

was working as a research scientist at

750

00:27:50,870 --> 00:27:48,000

nasa langley research center i was

751  
00:27:52,950 --> 00:27:50,880  
building in creating fiber optic sensors

752  
00:27:55,430 --> 00:27:52,960  
to measure strain temperature and

753  
00:27:56,630 --> 00:27:55,440  
hydrogen on aerospace vehicles like the

754  
00:27:59,430 --> 00:27:56,640  
space shuttle

755  
00:28:00,950 --> 00:27:59,440  
and i had never imagined working for

756  
00:28:02,630 --> 00:28:00,960  
nasa i'd never imagined even being an

757  
00:28:04,149 --> 00:28:02,640  
astronaut until a friend of mine told me

758  
00:28:04,950 --> 00:28:04,159  
hey you'd be a great astronaut and i'm

759  
00:28:06,230 --> 00:28:04,960  
like

760  
00:28:07,990 --> 00:28:06,240  
me what are you talking about he handed

761  
00:28:10,149 --> 00:28:08,000  
me an application i didn't fill it out

762  
00:28:12,549 --> 00:28:10,159  
and that same year our friend dr charlie

763  
00:28:13,750 --> 00:28:12,559

camarda got into the astronaut corps and

764

00:28:16,310 --> 00:28:13,760

i said to myself well wait a minute if

765

00:28:18,149 --> 00:28:16,320

they let people like that in maybe maybe

766

00:28:21,110 --> 00:28:18,159

i could get into

767

00:28:22,549 --> 00:28:21,120

so i applied to the astronaut corps

768

00:28:24,549 --> 00:28:22,559

after that and it was one of the most

769

00:28:26,950 --> 00:28:24,559

incredible things the outreach the

770

00:28:28,789 --> 00:28:26,960

missions the training the teamwork that

771

00:28:30,870 --> 00:28:28,799

maryland talked about it's all comes

772

00:28:32,310 --> 00:28:30,880

together not just us teamwork but

773

00:28:34,470 --> 00:28:32,320

international teamwork people working

774

00:28:35,750 --> 00:28:34,480

together as one team to advance

775

00:28:37,990 --> 00:28:35,760

civilization

776

00:28:40,389 --> 00:28:38,000

that's what we do as a as a nasa

777

00:28:42,710 --> 00:28:40,399

lockheed martin our contract teams to

778

00:28:44,389 --> 00:28:42,720

change the world and so

779

00:28:46,470 --> 00:28:44,399

that was my first experience and then my

780

00:28:48,230 --> 00:28:46,480

last experience flying in space and now

781

00:28:49,830 --> 00:28:48,240

helping you guys reach your dreams

782

00:28:51,750 --> 00:28:49,840

through education

783

00:28:54,630 --> 00:28:51,760

all right next question

784

00:28:56,710 --> 00:28:54,640

hi my name is brandi and my question is

785

00:29:00,710 --> 00:28:56,720

what is your most interesting part of

786

00:29:04,149 --> 00:29:00,720

your job okay wanna answer that

787

00:29:08,230 --> 00:29:06,230

the most interesting part of my job is

788

00:29:09,750 --> 00:29:08,240

finding new resources to excite my

789

00:29:11,110 --> 00:29:09,760

students and get them motivated about

790

00:29:12,470 --> 00:29:11,120

learning

791

00:29:14,549 --> 00:29:12,480

through stem science technology

792

00:29:16,389 --> 00:29:14,559

engineering and math and working with

793

00:29:18,149 --> 00:29:16,399

nasa and all the opportunities that

794

00:29:22,549 --> 00:29:18,159

they've provided us is very exhilarating

795

00:29:27,590 --> 00:29:25,269

thanks next question hello i'm jordan

796

00:29:29,909 --> 00:29:27,600

groom this is for charlie bolden uh what

797

00:29:32,070 --> 00:29:29,919

is the long-term goal of nasa's deep

798

00:29:34,230 --> 00:29:32,080

space exploration i think you've heard

799

00:29:37,269 --> 00:29:34,240

all of us talk about going to mars and

800

00:29:39,590 --> 00:29:37,279

asteroids and nasa's long-term goal our

801  
00:29:41,110 --> 00:29:39,600  
ultimate destination for human beings

802  
00:29:42,230 --> 00:29:41,120  
and it helps that the president told us

803  
00:29:45,029 --> 00:29:42,240  
to do it

804  
00:29:47,190 --> 00:29:45,039  
is mars and the orion spacecraft back

805  
00:29:48,710 --> 00:29:47,200  
here everything that we do today is

806  
00:29:51,830 --> 00:29:48,720  
geared toward trying to get humans to

807  
00:29:55,110 --> 00:29:51,840  
mars in the 2030 time frame so that's

808  
00:29:57,350 --> 00:29:55,120  
the ultimate okay

809  
00:29:58,710 --> 00:29:57,360  
thank you and i think our time is up and

810  
00:30:00,789 --> 00:29:58,720  
we really appreciate all the

811  
00:30:03,590 --> 00:30:00,799  
participation from the students go to

812  
00:30:05,669 --> 00:30:03,600  
nasa.gov education

813  
00:30:07,269 --> 00:30:05,679

edc for exploration design challenge

814

00:30:09,830 --> 00:30:07,279

this has been a fantastic community

815

00:30:11,430 --> 00:30:09,840

helping change the minds and hearts of

816

00:30:25,750 --> 00:30:11,440

our next generation of explorers

817

00:30:30,149 --> 00:30:28,070

nasa is currently developing a new heavy

818

00:30:32,549 --> 00:30:30,159

lift rocket to carry a human-rated

819

00:30:34,230 --> 00:30:32,559

spacecraft called orion multi-purpose

820

00:30:36,149 --> 00:30:34,240

crew vehicle

821

00:30:37,750 --> 00:30:36,159

orion will support deep space missions

822

00:30:38,950 --> 00:30:37,760

to asteroids

823

00:30:40,870 --> 00:30:38,960

the moon

824

00:30:42,950 --> 00:30:40,880

and mars

825

00:30:45,909 --> 00:30:42,960

we are building an exciting future of

826

00:30:47,909 --> 00:30:45,919

discovery science and exploration that

827

00:30:49,510 --> 00:30:47,919

will challenge our world through lessons

828

00:30:51,190 --> 00:30:49,520

we are learning today

829

00:30:53,350 --> 00:30:51,200

the international space station is

830

00:30:56,230 --> 00:30:53,360

helping prepare for these steps further

831

00:30:57,830 --> 00:30:56,240

into space hi my name is suni williams

832

00:30:59,669 --> 00:30:57,840

i'm a flight engineer on the

833

00:31:01,350 --> 00:30:59,679

international space station

834

00:31:03,110 --> 00:31:01,360

outside the protection of earth's

835

00:31:05,350 --> 00:31:03,120

atmosphere is a universe full of

836

00:31:07,990 --> 00:31:05,360

radiation it's everywhere

837

00:31:09,990 --> 00:31:08,000

space radiation sometimes called cosmic

838

00:31:12,630 --> 00:31:10,000

radiation is different from the types of

839

00:31:15,269 --> 00:31:12,640

radiation you find on earth it has very

840

00:31:17,430 --> 00:31:15,279

different effect on human dna cells and

841

00:31:19,669 --> 00:31:17,440

tissues and it's very difficult to

842

00:31:21,990 --> 00:31:19,679

predict the long-term effects of space

843

00:31:23,350 --> 00:31:22,000

radiation on the human body

844

00:31:24,950 --> 00:31:23,360

because of this uncertainty we are

845

00:31:26,950 --> 00:31:24,960

running experiments to learn more about

846

00:31:28,870 --> 00:31:26,960

radiation some of the radiation

847

00:31:31,029 --> 00:31:28,880

detectors are small others are a little

848

00:31:33,269 --> 00:31:31,039

bit bigger outside of the space station

849

00:31:35,269 --> 00:31:33,279

we also have materials international

850

00:31:37,990 --> 00:31:35,279

space station experiment eight called

851  
00:31:39,669 --> 00:31:38,000  
missy eight and it's also gathering data

852  
00:31:41,830 --> 00:31:39,679  
to help us understand radiation

853  
00:31:44,230 --> 00:31:41,840  
protection required for interplanetary

854  
00:31:46,870 --> 00:31:44,240  
flight we are charting a pathway for

855  
00:31:49,909 --> 00:31:46,880  
your generation's journey further into

856  
00:31:51,830 --> 00:31:49,919  
space and we need your help

857  
00:31:54,389 --> 00:31:51,840  
so get involved with nasa's newest

858  
00:31:56,710 --> 00:31:54,399  
design challenge the exploration design

859  
00:31:58,870 --> 00:31:56,720  
challenge this challenge is charting

860  
00:32:01,350 --> 00:31:58,880  
your journey to mars by tracking one of

861  
00:32:03,190 --> 00:32:01,360  
the major challenges to deep space long

862  
00:32:05,350 --> 00:32:03,200  
duration exploration

863  
00:32:06,549 --> 00:32:05,360

namely the dangers associated with

864

00:32:08,549 --> 00:32:06,559

radiation

865

00:32:10,230 --> 00:32:08,559

and the need to protect our astronauts

866

00:32:12,230 --> 00:32:10,240

as they venture into places never

867

00:32:14,470 --> 00:32:12,240

visited by humans before

868

00:32:17,190 --> 00:32:14,480

register now for the exploration design

869

00:32:19,509 --> 00:32:17,200

challenge you and your team may be the

870

00:32:21,430 --> 00:32:19,519

student engineers who help nasa develop

871

00:32:23,909 --> 00:32:21,440

the technology needed to protect

872

00:32:25,590 --> 00:32:23,919

astronauts from space radiation as they

873

00:32:28,789 --> 00:32:25,600

travel to the moon