



**Mike Sarafin**

NASA FLIGHT DIRECTOR

**Josh Byerly**

NASA PUBLIC AFFAIRS

1  
00:00:08,150 --> 00:00:05,510  
all right i now uh understand it's time

2  
00:00:11,430 --> 00:00:08,160  
for us to go to mission control they

3  
00:00:13,509 --> 00:00:11,440  
should be hearing us josh are you there

4  
00:00:15,030 --> 00:00:13,519  
hey ryan we're here uh thanks for

5  
00:00:16,790 --> 00:00:15,040  
tossing it to us i'm josh barley here in

6  
00:00:18,390 --> 00:00:16,800  
ted mission control houston i am uh

7  
00:00:20,470 --> 00:00:18,400  
currently it's time for us to go to

8  
00:00:22,550 --> 00:00:20,480  
mission control for the past 30 minutes

9  
00:00:24,150 --> 00:00:22,560  
i've been talking with ball high school

10  
00:00:25,429 --> 00:00:24,160  
in galveston texas talking about some of

11  
00:00:27,429 --> 00:00:25,439  
the amazing things that are happening

12  
00:00:29,189 --> 00:00:27,439  
here at nasa as well as the

13  
00:00:30,550 --> 00:00:29,199

international space station

14

00:00:32,310 --> 00:00:30,560

we are connected to mission control i

15

00:00:33,990 --> 00:00:32,320

understand josh are you there yeah we're

16

00:00:35,270 --> 00:00:34,000

here ryan uh this is josh barley here

17

00:00:37,430 --> 00:00:35,280

inside mission control we want to thank

18

00:00:38,950 --> 00:00:37,440

you guys for joining us here i'm here

19

00:00:41,350 --> 00:00:38,960

with mike serafin who is a flight

20

00:00:43,030 --> 00:00:41,360

director here he is both a space station

21

00:00:44,549 --> 00:00:43,040

and a space shuttle flight director

22

00:00:46,790 --> 00:00:44,559

worked a number of shuttle ambitions

23

00:00:48,869 --> 00:00:46,800

also is uh working an upcoming test

24

00:00:50,069 --> 00:00:48,879

flight for our orion spacecraft which is

25

00:00:52,229 --> 00:00:50,079

the one that we're designing to go out

26  
00:00:54,069 --> 00:00:52,239  
into a deep space here in the next few

27  
00:00:55,830 --> 00:00:54,079  
years so the flight director is really

28  
00:00:57,910 --> 00:00:55,840  
in charge of the entire team here so

29  
00:00:59,430 --> 00:00:57,920  
mike knows quite a bit about how things

30  
00:01:01,110 --> 00:00:59,440  
work both here on the ground and up in

31  
00:01:06,390 --> 00:01:01,120  
space so let's go ahead and take your

32  
00:01:13,109 --> 00:01:09,990  
hi my name is andrea

33  
00:01:16,230 --> 00:01:13,119  
how many people fit in the space shuttle

34  
00:01:18,630 --> 00:01:16,240  
and space station

35  
00:01:20,550 --> 00:01:18,640  
hi that's a good question welcome to

36  
00:01:23,109 --> 00:01:20,560  
mission control

37  
00:01:25,510 --> 00:01:23,119  
the space shuttle we have seats for

38  
00:01:27,270 --> 00:01:25,520

seven people to fly up on that and on

39

00:01:29,749 --> 00:01:27,280

the space station we've got enough room

40

00:01:31,830 --> 00:01:29,759

to sleep six people

41

00:01:33,190 --> 00:01:31,840

so right now we've got six uh astronauts

42

00:01:35,030 --> 00:01:33,200

and cosmonauts staying onboard the

43

00:01:37,030 --> 00:01:35,040

international space station

44

00:01:39,429 --> 00:01:37,040

and uh when what we call visiting

45

00:01:41,270 --> 00:01:39,439

vehicles a space shuttle or another uh

46

00:01:43,749 --> 00:01:41,280

crude spaceship like the russian soyuz

47

00:01:46,310 --> 00:01:43,759

come and visit the space station houses

48

00:01:47,990 --> 00:01:46,320

those folks as well and sometimes uh

49

00:01:49,670 --> 00:01:48,000

during the space shuttle missions that

50

00:01:51,910 --> 00:01:49,680

we flew in the past

51  
00:02:02,389 --> 00:01:51,920  
the uh people would get up to 13 on

52  
00:02:06,230 --> 00:02:04,389  
who's next

53  
00:02:07,749 --> 00:02:06,240  
hi my name is raquel archie and my

54  
00:02:11,029 --> 00:02:07,759  
question is where are the current

55  
00:02:13,589 --> 00:02:11,039  
missions of the space station

56  
00:02:15,510 --> 00:02:13,599  
hi raquel uh well the space station has

57  
00:02:18,710 --> 00:02:15,520  
a number of missions

58  
00:02:21,350 --> 00:02:18,720  
all of them revolve around science and

59  
00:02:23,510 --> 00:02:21,360  
engineering and understanding

60  
00:02:25,830 --> 00:02:23,520  
the earth and the solar system

61  
00:02:27,350 --> 00:02:25,840  
right now we've got experiments on board

62  
00:02:29,510 --> 00:02:27,360  
physics experiments like the alpha

63  
00:02:31,830 --> 00:02:29,520

magnetic spectrometer that are measuring

64

00:02:34,390 --> 00:02:31,840

particles out there in space it sees

65

00:02:37,350 --> 00:02:34,400

billions of particles a month

66

00:02:39,030 --> 00:02:37,360

we are studying the human body and how

67

00:02:41,030 --> 00:02:39,040

that changes in a microgravity

68

00:02:43,110 --> 00:02:41,040

environment uh one of the

69

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

one of the more compelling experiments

70

00:02:48,150 --> 00:02:45,519

going on right now is understanding how

71

00:02:50,390 --> 00:02:48,160

the fluids shift from

72

00:02:52,630 --> 00:02:50,400

the lower body to the upper body uh

73

00:02:54,229 --> 00:02:52,640

increases uh what they call intracranial

74

00:02:56,869 --> 00:02:54,239

pressure in in the

75

00:02:59,990 --> 00:02:56,879

in the human's uh head and how that

76

00:03:02,390 --> 00:03:00,000

affects uh our ability to see and uh

77

00:03:04,229 --> 00:03:02,400

changes in vision over time in space

78

00:03:05,990 --> 00:03:04,239

they're also uh material science

79

00:03:07,509 --> 00:03:06,000

experiments uh there's uh one of my

80

00:03:09,270 --> 00:03:07,519

favorite experiments is called missy

81

00:03:10,470 --> 00:03:09,280

it's a materials and space experiment

82

00:03:12,309 --> 00:03:10,480

where we fly

83

00:03:15,270 --> 00:03:12,319

uh science uh

84

00:03:17,910 --> 00:03:15,280

materials or or various uh

85

00:03:20,390 --> 00:03:17,920

spacecraft components on board a a

86

00:03:22,229 --> 00:03:20,400

platform that sits outside the space

87

00:03:24,149 --> 00:03:22,239

station and expose it to the vacuum of

88

00:03:26,309 --> 00:03:24,159

space and the extreme heat and cold of

89

00:03:28,309 --> 00:03:26,319

space and we see how those materials

90

00:03:30,470 --> 00:03:28,319

react so those are just a couple of

91

00:03:33,270 --> 00:03:30,480

experiments they're also

92

00:03:36,149 --> 00:03:33,280

medical experiments and uh and just

93

00:03:38,070 --> 00:03:36,159

general uh fluid physics and other other

94

00:03:39,509 --> 00:03:38,080

science experiments we conduct and

95

00:03:40,630 --> 00:03:39,519

actually to mike's point some of those

96

00:03:42,229 --> 00:03:40,640

experiments that we have on board right

97

00:03:43,589 --> 00:03:42,239

now are actually designed by students i

98

00:03:46,070 --> 00:03:43,599

mean some of them flew up on the recent

99

00:03:47,750 --> 00:03:46,080

spacex mission that were designed by

100

00:03:49,589 --> 00:03:47,760

kids just like you and some of them i

101  
00:03:51,910 --> 00:03:49,599  
can't even pronounce what they are but

102  
00:03:53,670 --> 00:03:51,920  
uh but they're very cool and

103  
00:03:55,110 --> 00:03:53,680  
uh it's kind of neat to see students

104  
00:03:56,390 --> 00:03:55,120  
like you guys actually designing things

105  
00:03:58,229 --> 00:03:56,400  
that the crew is actually testing on

106  
00:04:00,470 --> 00:03:58,239  
board the space station so it's a good

107  
00:04:01,830 --> 00:04:00,480  
question who's up next

108  
00:04:03,509 --> 00:04:01,840  
and i couldn't agree more josh this is

109  
00:04:05,190 --> 00:04:03,519  
ryan at the dln i'm going to cut in real

110  
00:04:07,429 --> 00:04:05,200  
quickly if you don't mind i'm getting

111  
00:04:10,630 --> 00:04:07,439  
word now that if the school could change

112  
00:04:13,350 --> 00:04:10,640  
the camera shot to the wide

113  
00:04:14,630 --> 00:04:13,360

classroom shot that would be better and

114

00:04:16,710 --> 00:04:14,640

you might want to also watch your mute

115

00:04:18,229 --> 00:04:16,720

button if you can mute your microphone

116

00:04:19,430 --> 00:04:18,239

between questions that we'd also

117

00:04:23,510 --> 00:04:19,440

appreciate that

118

00:04:31,590 --> 00:04:25,350

go ahead and stand where you're sitting

119

00:04:31,600 --> 00:04:45,430

so do we have another question

120

00:04:51,350 --> 00:04:48,230

so i think the question was what are our

121

00:04:52,710 --> 00:04:51,360

current plans for future space travel

122

00:04:54,870 --> 00:04:52,720

in the short term we're going to

123

00:04:57,030 --> 00:04:54,880

continue to fly to the international

124

00:04:59,030 --> 00:04:57,040

space station and do the experiments

125

00:05:01,670 --> 00:04:59,040

that we just talked about

126

00:05:04,070 --> 00:05:01,680

and develop technology required to go to

127

00:05:05,670 --> 00:05:04,080

deep space and send humans beyond low

128

00:05:08,950 --> 00:05:05,680

earth orbit

129

00:05:10,950 --> 00:05:08,960

as josh mentioned at the outset of our

130

00:05:12,790 --> 00:05:10,960

talk together i'm the lead flight

131

00:05:14,310 --> 00:05:12,800

director for one of the missions where

132

00:05:16,469 --> 00:05:14,320

we're going to fly the orion capsule

133

00:05:17,749 --> 00:05:16,479

it's going to be a man capable uh

134

00:05:21,270 --> 00:05:17,759

spacecraft

135

00:05:22,950 --> 00:05:21,280

up to an altitude of uh 3 300 nautical

136

00:05:25,749 --> 00:05:22,960

miles it'll be the highest at a

137

00:05:28,390 --> 00:05:25,759

man-capable spacecraft has flown since

138

00:05:30,710 --> 00:05:28,400

the 1970s in the apollo era and we're

139

00:05:32,870 --> 00:05:30,720

going to test out its capabilities with

140

00:05:34,710 --> 00:05:32,880

the intent of sending humans

141

00:05:37,950 --> 00:05:34,720

around the moon and back

142

00:05:43,670 --> 00:05:40,710

2017-2019 time frame so we're gonna

143

00:05:48,150 --> 00:05:43,680

continue to explore uh low-earth orbit

144

00:05:48,160 --> 00:06:02,469

good question who's next

145

00:06:08,469 --> 00:06:05,029

yeah absolutely uh we can see all of the

146

00:06:10,950 --> 00:06:08,479

earth's weather from space

147

00:06:12,710 --> 00:06:10,960

one of the primary things that the

148

00:06:14,309 --> 00:06:12,720

astronauts like to do in their free time

149

00:06:16,070 --> 00:06:14,319

is to just look out the window we have

150

00:06:18,950 --> 00:06:16,080

this wonderful platform the viewing

151  
00:06:20,629 --> 00:06:18,960  
platform called the cupolo and it has a

152  
00:06:22,230 --> 00:06:20,639  
series of windows and it looks down at

153  
00:06:24,150 --> 00:06:22,240  
the earth and

154  
00:06:26,070 --> 00:06:24,160  
they they take wonderful photographs a

155  
00:06:28,710 --> 00:06:26,080  
lot of those are posted on the nasa

156  
00:06:30,230 --> 00:06:28,720  
website [www.nasa.gov](http://www.nasa.gov)

157  
00:06:31,990 --> 00:06:30,240  
and you can look at those on a daily

158  
00:06:34,230 --> 00:06:32,000  
basis they update those

159  
00:06:35,590 --> 00:06:34,240  
those photos every day based on what the

160  
00:06:37,110 --> 00:06:35,600  
astronauts view

161  
00:06:38,870 --> 00:06:37,120  
one of my favorite things to do here in

162  
00:06:40,309 --> 00:06:38,880  
mission control is just to watch the

163  
00:06:41,590 --> 00:06:40,319

video coming down from the international

164

00:06:44,390 --> 00:06:41,600

space station

165

00:06:46,309 --> 00:06:44,400

and we've seen things like hurricanes

166

00:06:47,430 --> 00:06:46,319

you know just missing the united states

167

00:06:49,589 --> 00:06:47,440

and

168

00:06:52,230 --> 00:06:49,599

the smoke plumes from volcanoes erupting

169

00:06:54,790 --> 00:06:52,240

or smoked plumes from forest fires in

170

00:06:56,230 --> 00:06:54,800

in texas and in other areas around

171

00:06:58,950 --> 00:06:56,240

around the world

172

00:07:00,790 --> 00:06:58,960

we've seen the aftermath of tsunamis on

173

00:07:03,029 --> 00:07:00,800

the other side of the world and and just

174

00:07:05,749 --> 00:07:03,039

you see some remarkable things including

175

00:07:07,350 --> 00:07:05,759

land use pattern and how uh humans are

176

00:07:10,150 --> 00:07:07,360

are using the earth either for

177

00:07:11,749 --> 00:07:10,160

agriculture or uh to build ports or

178

00:07:13,589 --> 00:07:11,759

cities here on earth matter of fact

179

00:07:15,189 --> 00:07:13,599

there's some wildfires in new mexico and

180

00:07:16,790 --> 00:07:15,199

colorado that they flew over uh

181

00:07:18,710 --> 00:07:16,800

yesterday and try to get some pictures

182

00:07:20,710 --> 00:07:18,720

of and of course like mike said just log

183

00:07:21,990 --> 00:07:20,720

onto the nasa website you can see any of

184

00:07:23,990 --> 00:07:22,000

those pictures some of them have gotten

185

00:07:25,350 --> 00:07:24,000

just a ton of views on the website

186

00:07:26,710 --> 00:07:25,360

because they're so remarkable to take a

187

00:07:27,909 --> 00:07:26,720

look at them so

188

00:07:29,990 --> 00:07:27,919

if you haven't seen it go check it out

189

00:07:31,749 --> 00:07:30,000

you can probably also spot your hometown

190

00:07:33,990 --> 00:07:31,759

and some of those pictures as well

191

00:07:36,390 --> 00:07:34,000

galveston's kind of easy to spot so

192

00:07:38,469 --> 00:07:36,400

yeah galveston is a is a real easy place

193

00:07:41,189 --> 00:07:38,479

to see you just follow the the texas

194

00:07:43,830 --> 00:07:41,199

coastline along and then you'll see

195

00:07:45,430 --> 00:07:43,840

galveston bay the the trinity bay area

196

00:07:47,510 --> 00:07:45,440

and then the galveston sitting just

197

00:07:57,990 --> 00:07:47,520

below it it's it's pretty easy to spot

198

00:08:02,550 --> 00:08:00,550

my name is caitlin hamilton and what

199

00:08:04,309 --> 00:08:02,560

role does each country play now in

200

00:08:06,950 --> 00:08:04,319

regards to the international space

201  
00:08:10,230 --> 00:08:08,710  
okay that's a good question uh now that

202  
00:08:12,869 --> 00:08:10,240  
we've built the international space

203  
00:08:15,350 --> 00:08:12,879  
station all of the the nations that are

204  
00:08:17,589 --> 00:08:15,360  
involved in the space station program

205  
00:08:19,510 --> 00:08:17,599  
are still cooperating to not only fly

206  
00:08:21,510 --> 00:08:19,520  
their own astronauts up to the

207  
00:08:23,189 --> 00:08:21,520  
international space station and and

208  
00:08:25,430 --> 00:08:23,199  
perform their own

209  
00:08:27,350 --> 00:08:25,440  
nation's science objectives

210  
00:08:29,670 --> 00:08:27,360  
but we're also working together to do

211  
00:08:31,990 --> 00:08:29,680  
things like

212  
00:08:33,750 --> 00:08:32,000  
do interplanetary exploration uh there

213  
00:08:35,269 --> 00:08:33,760

are missions that

214

00:08:36,389 --> 00:08:35,279

nasa and the united states government

215

00:08:39,509 --> 00:08:36,399

flies

216

00:08:41,430 --> 00:08:39,519

with the european space agency and the

217

00:08:42,630 --> 00:08:41,440

the japanese space age exploration

218

00:08:44,630 --> 00:08:42,640

agency

219

00:08:46,470 --> 00:08:44,640

we've got a lot of joint missions that

220

00:08:48,230 --> 00:08:46,480

are going on together

221

00:08:49,910 --> 00:08:48,240

partly because they're really expensive

222

00:08:52,389 --> 00:08:49,920

and and we want to share the cost but

223

00:08:54,150 --> 00:08:52,399

also because it's important to cooperate

224

00:08:57,910 --> 00:08:54,160

with other nations you use that as a

225

00:08:59,990 --> 00:08:57,920

foundation uh to to just have a good uh

226

00:09:01,509 --> 00:09:00,000

working relationship together it also

227

00:09:03,030 --> 00:09:01,519

shows the importance of learning other

228

00:09:04,630 --> 00:09:03,040

languages which is going to be critical

229

00:09:06,070 --> 00:09:04,640

to i think you guys and everybody that

230

00:09:08,150 --> 00:09:06,080

comes behind you i mean most of our

231

00:09:09,509 --> 00:09:08,160

astronauts if not all of them speak some

232

00:09:11,190 --> 00:09:09,519

amount of russian

233

00:09:12,790 --> 00:09:11,200

and some of them speak japanese so it's

234

00:09:14,470 --> 00:09:12,800

it's important to be able to communicate

235

00:09:15,509 --> 00:09:14,480

with all of our different partners on

236

00:09:17,430 --> 00:09:15,519

board to learn about those different

237

00:09:19,110 --> 00:09:17,440

cultures and their languages as well

238

00:09:20,470 --> 00:09:19,120

right and and one of the

239

00:09:22,949 --> 00:09:20,480

one of the more unique things you learn

240

00:09:25,509 --> 00:09:22,959

when you get into a field like space

241

00:09:27,670 --> 00:09:25,519

flight and engineering is that math and

242

00:09:29,030 --> 00:09:27,680

science are universal language and of

243

00:09:30,630 --> 00:09:29,040

themselves

244

00:09:32,389 --> 00:09:30,640

because you don't need to translate any

245

00:09:35,190 --> 00:09:32,399

of that it's it's the same in russian

246

00:09:36,790 --> 00:09:35,200

and japanese and english as is any other

247

00:09:38,630 --> 00:09:36,800

language uh so

248

00:09:41,590 --> 00:09:38,640

uh just the fact that we're cooperating

249

00:09:43,750 --> 00:09:41,600

and talking the same things um

250

00:09:44,949 --> 00:09:43,760

it goes a long way math is important

251  
00:09:45,910 --> 00:09:44,959  
unless you're a journalism major and

252  
00:09:46,630 --> 00:09:45,920  
this

253  
00:09:48,630 --> 00:09:46,640  
is

254  
00:09:53,110 --> 00:09:48,640  
not so much but now you still gotta pay

255  
00:09:57,269 --> 00:09:55,269  
my name is jeroen and johnson and my

256  
00:10:00,230 --> 00:09:57,279  
question is that last month the private

257  
00:10:02,710 --> 00:10:00,240  
space company spacex sent its dragon

258  
00:10:04,710 --> 00:10:02,720  
ships to the international space station

259  
00:10:07,190 --> 00:10:04,720  
well nasa's new space vehicle will be

260  
00:10:08,710 --> 00:10:07,200  
similar to the dragon

261  
00:10:12,310 --> 00:10:08,720  
that's a good question uh that is a

262  
00:10:16,470 --> 00:10:12,320  
great question the orion spacecraft that

263  
00:10:18,710 --> 00:10:16,480

we're gonna fly here in 2014 is

264

00:10:21,590 --> 00:10:18,720

similar but very different in terms of

265

00:10:25,269 --> 00:10:21,600

capability from the dragon spacecraft

266

00:10:28,069 --> 00:10:25,279

nasa has consciously uh agreed with the

267

00:10:30,389 --> 00:10:28,079

commercial space industry to not compete

268

00:10:33,590 --> 00:10:30,399

for low earth orbit

269

00:10:35,269 --> 00:10:33,600

commercial services so to send cargo to

270

00:10:36,949 --> 00:10:35,279

and from the international space station

271

00:10:39,829 --> 00:10:36,959

we're going to let our commercial

272

00:10:43,190 --> 00:10:39,839

partners like spacex and and other

273

00:10:45,030 --> 00:10:43,200

companies handle that um but for the

274

00:10:48,389 --> 00:10:45,040

what we'll call the high ground above

275

00:10:51,190 --> 00:10:48,399

low earth orbit and services that go

276  
00:10:53,030 --> 00:10:51,200  
outside of what the international space

277  
00:10:56,230 --> 00:10:53,040  
station flies to

278  
00:10:59,670 --> 00:10:56,240  
altitudes you know in excess of 500

279  
00:11:01,590 --> 00:10:59,680  
nautical miles that that is where nasa

280  
00:11:02,710 --> 00:11:01,600  
will continue to explore and push out

281  
00:11:04,630 --> 00:11:02,720  
from earth

282  
00:11:06,870 --> 00:11:04,640  
not only just to to see what the

283  
00:11:08,550 --> 00:11:06,880  
environment is like but also to uh to

284  
00:11:11,030 --> 00:11:08,560  
learn about

285  
00:11:12,550 --> 00:11:11,040  
the benefits of space

286  
00:11:13,910 --> 00:11:12,560  
and one thing is you got to realize that

287  
00:11:16,069 --> 00:11:13,920  
you know going to the station's about a

288  
00:11:17,590 --> 00:11:16,079

two-day trip and

289

00:11:18,550 --> 00:11:17,600

when we go to an asteroid or someplace

290

00:11:19,670 --> 00:11:18,560

like that or even back to the moon

291

00:11:21,430 --> 00:11:19,680

you're talking about

292

00:11:23,190 --> 00:11:21,440

weeks if not months of trying to get

293

00:11:25,190 --> 00:11:23,200

there so what are we flying it's got to

294

00:11:26,790 --> 00:11:25,200

take a lot of gas a lot of air a lot of

295

00:11:28,230 --> 00:11:26,800

water for the crew and

296

00:11:29,750 --> 00:11:28,240

so orion's a little bit different in

297

00:11:31,190 --> 00:11:29,760

terms of what it's got to do and the

298

00:11:32,470 --> 00:11:31,200

environment inside and how the crews are

299

00:11:33,750 --> 00:11:32,480

going to live in there so it's a it's a

300

00:11:35,509 --> 00:11:33,760

bit of a different vehicle a lot a lot

301  
00:11:37,030 --> 00:11:35,519  
of different requirements for it yeah

302  
00:11:38,949 --> 00:11:37,040  
probably the biggest difference there is

303  
00:11:40,870 --> 00:11:38,959  
orion has to have a heat shield that is

304  
00:11:43,829 --> 00:11:40,880  
capable of we're withstanding what we

305  
00:11:47,350 --> 00:11:43,839  
call a a high velocity reentry when we

306  
00:11:50,150 --> 00:11:47,360  
come out of low earth orbit uh the the

307  
00:11:51,750 --> 00:11:50,160  
speed of the spacecraft is around 25 000

308  
00:11:53,590 --> 00:11:51,760  
miles per hour but when we come back

309  
00:11:55,590 --> 00:11:53,600  
from the moon it is far greater than

310  
00:11:58,150 --> 00:11:55,600  
that and the heat shield has to be able

311  
00:12:00,710 --> 00:11:58,160  
to take all that energy out and and

312  
00:12:03,670 --> 00:12:00,720  
withstand the heat of reentry and you

313  
00:12:05,829 --> 00:12:03,680

design the spacecraft around that so the

314

00:12:07,350 --> 00:12:05,839

companies like spacex are are designing

315

00:12:09,110 --> 00:12:07,360

robust heat shields but they're only

316

00:12:11,190 --> 00:12:09,120

designed for low earth orbit and reentry

317

00:12:14,230 --> 00:12:11,200

from there whereas the orion spacecraft

318

00:12:17,030 --> 00:12:14,240

has to be a lot more robust and capable

319

00:12:27,829 --> 00:12:17,040

of withstanding a far greater heat

320

00:12:27,839 --> 00:12:34,550

speak up a little louder

321

00:12:38,230 --> 00:12:36,949

what was that question

322

00:12:40,470 --> 00:12:38,240

uh what is nasa's greatest

323

00:12:42,230 --> 00:12:40,480

accomplishment okay

324

00:12:44,470 --> 00:12:42,240

that's a that's a tough question what is

325

00:12:47,030 --> 00:12:44,480

nasa's greatest accomplishment um

326

00:12:49,110 --> 00:12:47,040

certainly flying 30 years of the space

327

00:12:51,750 --> 00:12:49,120

shuttle is is at or near the top of the

328

00:12:53,509 --> 00:12:51,760

list the hubble space telescope

329

00:12:54,870 --> 00:12:53,519

and all of its discoveries are at the

330

00:12:55,750 --> 00:12:54,880

top of the list

331

00:12:57,190 --> 00:12:55,760

and then

332

00:12:59,030 --> 00:12:57,200

the international space station

333

00:13:02,150 --> 00:12:59,040

assembling that

334

00:13:04,790 --> 00:13:02,160

the mars missions that we've explored

335

00:13:08,069 --> 00:13:04,800

and put rovers and scene

336

00:13:09,190 --> 00:13:08,079

uh you know fantastic photos and video

337

00:13:11,350 --> 00:13:09,200

of that

338

00:13:13,269 --> 00:13:11,360

it's it's really hard to pick um it it

339

00:13:15,030 --> 00:13:13,279

really depends on your area of interest

340

00:13:17,670 --> 00:13:15,040

whether that's interplanetary

341

00:13:19,350 --> 00:13:17,680

exploration seeing uh planets like

342

00:13:21,110 --> 00:13:19,360

saturn and jupiter or whether it's

343

00:13:23,030 --> 00:13:21,120

seeing stars that are far beyond our

344

00:13:25,910 --> 00:13:23,040

solar system or whether it's just

345

00:13:28,389 --> 00:13:25,920

observing the earth or the human element

346

00:13:46,310 --> 00:13:28,399

in space i think it really depends but

347

00:13:52,550 --> 00:13:47,829

i'm sorry could you repeat that question

348

00:13:52,560 --> 00:13:55,829

satellites

349

00:13:58,389 --> 00:13:57,189

something about others say can we get

350

00:13:59,350 --> 00:13:58,399

you guys to repeat the question one more

351

00:14:02,150 --> 00:13:59,360

time

352

00:14:04,150 --> 00:14:02,160

yeah yeah um he asked how does uh how do

353

00:14:06,550 --> 00:14:04,160

you avoid uh running into other

354

00:14:07,350 --> 00:14:06,560

spacecraft satellites while orbiting the

355

00:14:09,430 --> 00:14:07,360

earth

356

00:14:10,629 --> 00:14:09,440

yeah that's a great question

357

00:14:13,509 --> 00:14:10,639

certainly

358

00:14:15,990 --> 00:14:13,519

avoiding other spacecraft and man-made

359

00:14:18,069 --> 00:14:16,000

debris as well as natural debris that

360

00:14:19,590 --> 00:14:18,079

exists out there in space meteoroids and

361

00:14:21,430 --> 00:14:19,600

micrometeoroids

362

00:14:23,590 --> 00:14:21,440

is one of one of the key things that we

363

00:14:26,150 --> 00:14:23,600

do here in mission control we've got a

364

00:14:28,150 --> 00:14:26,160

lot of information out there about

365

00:14:29,910 --> 00:14:28,160

where objects are and where they orbit

366

00:14:32,389 --> 00:14:29,920

relative to the space station we know

367

00:14:33,990 --> 00:14:32,399

exactly where the space station is and

368

00:14:36,790 --> 00:14:34,000

we have a pretty good idea where a lot

369

00:14:38,629 --> 00:14:36,800

of other debris is in space and we use

370

00:14:41,030 --> 00:14:38,639

that to basically

371

00:14:43,430 --> 00:14:41,040

track or map where they are relative to

372

00:14:45,189 --> 00:14:43,440

each other so if you've got for example

373

00:14:46,710 --> 00:14:45,199

two vehicles on a road and there's an

374

00:14:47,750 --> 00:14:46,720

intersection coming up you want to know

375

00:14:50,150 --> 00:14:47,760

that they're going to cross that

376

00:14:51,990 --> 00:14:50,160

intersection at different times

377

00:14:54,710 --> 00:14:52,000

so what we do here in mission control

378

00:14:57,829 --> 00:14:54,720

working with a number of our our

379

00:14:59,990 --> 00:14:57,839

counterparts outside of houston is to

380

00:15:02,150 --> 00:15:00,000

track where those objects are relative

381

00:15:03,509 --> 00:15:02,160

to the space station and then make sure

382

00:15:05,350 --> 00:15:03,519

that they're not going to intersect at

383

00:15:07,430 --> 00:15:05,360

the same time

384

00:15:10,550 --> 00:15:07,440

occasionally we do find that there's

385

00:15:12,310 --> 00:15:10,560

going to be a pretty close call and

386

00:15:13,829 --> 00:15:12,320

what happens in those cases is we

387

00:15:15,670 --> 00:15:13,839

actually move the space station out of

388

00:15:18,069 --> 00:15:15,680

the way and we perform what's called a

389

00:15:19,990 --> 00:15:18,079

debris avoidance maneuver and we

390

00:15:22,550 --> 00:15:20,000

literally push the space station to a

391

00:15:24,150 --> 00:15:22,560

higher orbit or a lower orbit and get it

392

00:15:25,910 --> 00:15:24,160

out of the way so that it crosses that

393

00:15:27,110 --> 00:15:25,920

intersection at a different time and

394

00:15:28,710 --> 00:15:27,120

keep in mind the space station weighs

395

00:15:30,150 --> 00:15:28,720

about close to a million pounds so

396

00:15:31,910 --> 00:15:30,160

that's uh there actually is somebody

397

00:15:34,870 --> 00:15:31,920

here in mission control that

398

00:15:36,150 --> 00:15:34,880

technically steers the thing and

399

00:15:37,590 --> 00:15:36,160

it's called an adco attitude

400

00:15:39,670 --> 00:15:37,600

determination and control officer and

401  
00:15:40,870 --> 00:15:39,680  
they can work to the us has a bit of a

402  
00:15:43,110 --> 00:15:40,880  
different way of steering the station

403  
00:15:44,949 --> 00:15:43,120  
than the russian side does um but yeah

404  
00:15:46,150 --> 00:15:44,959  
they can just they can just move it it's

405  
00:15:48,389 --> 00:15:46,160  
it's one thing you can do in space you

406  
00:16:05,350 --> 00:15:48,399  
really can't do here on earth so

407  
00:16:07,749 --> 00:16:06,710  
if we get you guys a little bit closer

408  
00:16:09,350 --> 00:16:07,759  
to the phone i think we'll be able to

409  
00:16:11,030 --> 00:16:09,360  
hear you a little bit better carson why

410  
00:16:14,310 --> 00:16:11,040  
are you trying to come around hold on

411  
00:16:14,320 --> 00:16:21,110  
wait repeat the question again

412  
00:16:24,389 --> 00:16:22,230  
with all the training that the

413  
00:16:25,990 --> 00:16:24,399

astronauts do how does how does the

414

00:16:28,790 --> 00:16:26,000

training prepare them for things like

415

00:16:31,829 --> 00:16:28,800

motion sickness okay

416

00:16:33,189 --> 00:16:31,839

uh good question again um the astronauts

417

00:16:35,430 --> 00:16:33,199

actually uh

418

00:16:37,670 --> 00:16:35,440

we train them

419

00:16:39,749 --> 00:16:37,680

to experience what is essentially

420

00:16:41,269 --> 00:16:39,759

weightlessness or microgravity before

421

00:16:43,749 --> 00:16:41,279

they ever fly

422

00:16:45,350 --> 00:16:43,759

we have an aircraft

423

00:16:47,590 --> 00:16:45,360

that some people call it the weightless

424

00:16:50,230 --> 00:16:47,600

wonder where we fly people

425

00:16:52,710 --> 00:16:50,240

and they experience short periods of

426  
00:16:54,310 --> 00:16:52,720  
microgravity or weightlessness and that

427  
00:16:56,310 --> 00:16:54,320  
that gives you the experience of

428  
00:16:57,990 --> 00:16:56,320  
floating in space or free falling for

429  
00:16:59,990 --> 00:16:58,000  
short periods of time so we know what

430  
00:17:02,710 --> 00:17:00,000  
that feels like and then there's a lot

431  
00:17:06,390 --> 00:17:02,720  
of other physiologic physiological

432  
00:17:07,669 --> 00:17:06,400  
training so performing exercise and just

433  
00:17:10,470 --> 00:17:07,679  
general uh

434  
00:17:12,789 --> 00:17:10,480  
strength and conditioning that people do

435  
00:17:14,710 --> 00:17:12,799  
before they fly that we know helps

436  
00:17:16,710 --> 00:17:14,720  
combat the

437  
00:17:18,949 --> 00:17:16,720  
the space sickness or occurrence of

438  
00:17:20,549 --> 00:17:18,959

space sickness so there's things that we

439

00:17:22,470 --> 00:17:20,559

can do that are considered preventative

440

00:17:24,069 --> 00:17:22,480

measures but then we also train people

441

00:17:26,069 --> 00:17:24,079

to experience what it's going to be like

442

00:17:26,870 --> 00:17:26,079

before they ever get there so they know

443

00:17:31,190 --> 00:17:26,880

what

444

00:17:37,270 --> 00:17:31,200

to combat that

445

00:17:41,029 --> 00:17:39,190

my name is bethany have you always

446

00:17:44,470 --> 00:17:41,039

wanted to work at nasa and what steps

447

00:17:46,950 --> 00:17:44,480

can someone our age to work towards that

448

00:17:49,510 --> 00:17:46,960

that's a good question yeah i uh i get

449

00:17:51,669 --> 00:17:49,520

asked that question a fair amount and uh

450

00:17:53,990 --> 00:17:51,679

the answer is no i i didn't always want

451

00:17:56,070 --> 00:17:54,000

to work for nasa i didn't i didn't uh

452

00:17:57,270 --> 00:17:56,080

you know wake up one day in in grade

453

00:17:59,190 --> 00:17:57,280

school thinking i want to be an

454

00:18:01,350 --> 00:17:59,200

astronaut or a flight director it's

455

00:18:03,350 --> 00:18:01,360

really something that happened over time

456

00:18:05,990 --> 00:18:03,360

it was it was largely

457

00:18:07,990 --> 00:18:06,000

based on my interest in science and

458

00:18:09,830 --> 00:18:08,000

engineering and math i had some great uh

459

00:18:11,909 --> 00:18:09,840

teachers in

460

00:18:15,909 --> 00:18:11,919

in grade school and high school that

461

00:18:18,230 --> 00:18:15,919

encouraged me and i hope and know that

462

00:18:20,470 --> 00:18:18,240

you guys have those folks

463

00:18:22,150 --> 00:18:20,480

encouraging you as well

464

00:18:24,390 --> 00:18:22,160

but i had a great physics

465

00:18:25,750 --> 00:18:24,400

physics teacher a great calculus teacher

466

00:18:28,549 --> 00:18:25,760

in high school they encouraged me to

467

00:18:29,669 --> 00:18:28,559

take advanced placement courses so that

468

00:18:31,430 --> 00:18:29,679

i was

469

00:18:33,350 --> 00:18:31,440

ahead of the curve before i got to

470

00:18:35,350 --> 00:18:33,360

college and then i just continued on

471

00:18:37,190 --> 00:18:35,360

with those studies once i got to college

472

00:18:39,430 --> 00:18:37,200

i honestly thought i would go work for

473

00:18:41,350 --> 00:18:39,440

one of the major aircraft manufacturing

474

00:18:43,990 --> 00:18:41,360

companies boeing or a lockheed when i

475

00:18:45,830 --> 00:18:44,000

got out of college and i was fortunate

476

00:18:48,230 --> 00:18:45,840

enough to

477

00:18:50,390 --> 00:18:48,240

be on the same floor as somebody that

478

00:18:52,710 --> 00:18:50,400

was going to do an internship

479

00:18:55,190 --> 00:18:52,720

in college here in houston as an

480

00:18:56,950 --> 00:18:55,200

engineering intern and we got talking

481

00:18:59,830 --> 00:18:56,960

about it one day and we were friends and

482

00:19:02,549 --> 00:18:59,840

in the same classes and he told me i was

483

00:19:06,150 --> 00:19:02,559

you know hey i'm going to houston uh

484

00:19:07,990 --> 00:19:06,160

next next semester uh to uh to be an

485

00:19:10,070 --> 00:19:08,000

intern at nasa

486

00:19:11,510 --> 00:19:10,080

and that got me interested and i applied

487

00:19:13,750 --> 00:19:11,520

i figured what's the worst that can

488

00:19:15,510 --> 00:19:13,760

happen they'll tell me no you know so i

489

00:19:18,710 --> 00:19:15,520

applied and i was accepted

490

00:19:20,950 --> 00:19:18,720

um so a lesson to you guys is um follow

491

00:19:23,110 --> 00:19:20,960

your interest and take chances you know

492

00:19:25,110 --> 00:19:23,120

get out there and you know even though

493

00:19:26,390 --> 00:19:25,120

you're maybe a little bit gun shy or a

494

00:19:28,710 --> 00:19:26,400

little bit afraid of the answer that

495

00:19:31,110 --> 00:19:28,720

might come back sometimes sometimes you

496

00:19:33,190 --> 00:19:31,120

get exactly what you're aiming for and

497

00:19:34,630 --> 00:19:33,200

so and sometimes you don't uh but that

498

00:19:35,830 --> 00:19:34,640

just means you need to try again or try

499

00:19:36,630 --> 00:19:35,840

a little harder

500

00:19:39,029 --> 00:19:36,640

so

501  
00:19:43,029 --> 00:19:39,039  
just again follow your interest and

502  
00:19:47,510 --> 00:19:45,350  
so who's up next hi my name

503  
00:19:49,350 --> 00:19:47,520  
hi my name is valentina what college

504  
00:19:53,350 --> 00:19:49,360  
degrees does it take to become an

505  
00:19:56,230 --> 00:19:53,360  
astronaut or work for mission control

506  
00:19:58,549 --> 00:19:56,240  
to work in mission control we look for a

507  
00:20:00,630 --> 00:19:58,559  
degree in science engineering or

508  
00:20:03,350 --> 00:20:00,640  
mathematics

509  
00:20:05,669 --> 00:20:03,360  
we have folks that have physics degrees

510  
00:20:07,430 --> 00:20:05,679  
and chemistry degrees as well as any

511  
00:20:10,789 --> 00:20:07,440  
number of engineering degrees all

512  
00:20:12,230 --> 00:20:10,799  
bachelor of science or higher masters

513  
00:20:13,909 --> 00:20:12,240

to my knowledge there's only a couple of

514

00:20:15,909 --> 00:20:13,919

phds running around here in mission

515

00:20:17,909 --> 00:20:15,919

control and the astronaut core is very

516

00:20:20,390 --> 00:20:17,919

much the same a large number of

517

00:20:22,070 --> 00:20:20,400

astronauts come from the the united

518

00:20:25,029 --> 00:20:22,080

states military either the navy or the

519

00:20:27,510 --> 00:20:25,039

air force or the marine corps

520

00:20:29,510 --> 00:20:27,520

and they they go through officer

521

00:20:32,830 --> 00:20:29,520

training and they typically have at

522

00:20:36,390 --> 00:20:32,840

least a master's degree and that gets

523

00:20:38,470 --> 00:20:36,400

them the foundation that allows them to

524

00:20:40,470 --> 00:20:38,480

to apply as an astronaut

525

00:20:42,310 --> 00:20:40,480

the criteria to become an astronaut are

526

00:20:43,590 --> 00:20:42,320

listed out there on the on the nasa

527

00:20:45,029 --> 00:20:43,600

website if you're ever interested in

528

00:20:47,430 --> 00:20:45,039

doing that in the future

529

00:20:49,029 --> 00:20:47,440

and uh and the criteria here in mission

530

00:20:51,029 --> 00:20:49,039

control again are very similar to that

531

00:20:53,029 --> 00:20:51,039

so uh just again follow your interest

532

00:20:54,710 --> 00:20:53,039

and if you follow science engineering or

533

00:20:56,950 --> 00:20:54,720

mathematics you you dramatically

534

00:21:01,990 --> 00:20:56,960

increase your your chances of of coming

535

00:21:06,710 --> 00:21:04,549

my giver was oh my name is gabriel ramos

536

00:21:10,470 --> 00:21:06,720

and my question is how does it feel when

537

00:21:13,110 --> 00:21:10,480

you're landing on earth after a mission

538

00:21:14,870 --> 00:21:13,120

hi gabriel um i personally haven't

539

00:21:17,510 --> 00:21:14,880

returned from space i haven't flown in

540

00:21:19,990 --> 00:21:17,520

space i i oversee the the safety and

541

00:21:22,310 --> 00:21:20,000

success of those missions for my friends

542

00:21:24,630 --> 00:21:22,320

the astronauts and cosmonauts who fly

543

00:21:25,990 --> 00:21:24,640

uh from here in mission control

544

00:21:28,070 --> 00:21:26,000

but what i've been told is it really

545

00:21:29,350 --> 00:21:28,080

depends on the spacecraft that you're

546

00:21:30,789 --> 00:21:29,360

returning in

547

00:21:33,430 --> 00:21:30,799

the space shuttle

548

00:21:34,870 --> 00:21:33,440

glides to a slow landing on a runway and

549

00:21:37,430 --> 00:21:34,880

i've been told

550

00:21:39,350 --> 00:21:37,440

by by some of my astronaut friends that

551  
00:21:41,110 --> 00:21:39,360  
they hardly knew when they touched down

552  
00:21:42,950 --> 00:21:41,120  
that it was such a soft smooth landing

553  
00:21:44,310 --> 00:21:42,960  
that that you know they knew they were

554  
00:21:45,350 --> 00:21:44,320  
within the earth's gravity field but

555  
00:21:48,470 --> 00:21:45,360  
they didn't know that they were on the

556  
00:21:51,350 --> 00:21:48,480  
ground uh and then the soyuz uh the

557  
00:21:53,270 --> 00:21:51,360  
russian spacecraft that returns uh

558  
00:21:56,149 --> 00:21:53,280  
cosmonauts and astronauts is a little

559  
00:21:58,310 --> 00:21:56,159  
more abrupt than that it has thrusters

560  
00:22:00,870 --> 00:21:58,320  
that fire only in the last few feet

561  
00:22:03,510 --> 00:22:00,880  
before it it hits the the earth's

562  
00:22:06,549 --> 00:22:03,520  
surface as it glides down on parachutes

563  
00:22:08,710 --> 00:22:06,559

and you slow down from uh almost 100

564

00:22:12,310 --> 00:22:08,720

miles an hour to nothing in those few

565

00:22:13,430 --> 00:22:12,320

feet so it's a pretty abrupt uh stop as

566

00:22:14,870 --> 00:22:13,440

you get back to earth and you really

567

00:22:16,950 --> 00:22:14,880

know that you've landed it's like a

568

00:22:18,630 --> 00:22:16,960

small car crash yeah

569

00:22:22,789 --> 00:22:18,640

but they can take it they train for it

570

00:22:26,070 --> 00:22:24,789

hi my name is alex and um how do you

571

00:22:28,230 --> 00:22:26,080

stay balanced when you're floating

572

00:22:29,669 --> 00:22:28,240

inside inside space

573

00:22:31,590 --> 00:22:29,679

how do you how do you maintain balance

574

00:22:32,950 --> 00:22:31,600

while you're floating in space

575

00:22:35,750 --> 00:22:32,960

yes

576

00:22:37,830 --> 00:22:35,760

yeah the uh the astronauts have a lot of

577

00:22:40,310 --> 00:22:37,840

what we call hand holds and footholds in

578

00:22:42,549 --> 00:22:40,320

the uh in the cabin is their floating

579

00:22:44,310 --> 00:22:42,559

weightless in space and what they'll do

580

00:22:48,310 --> 00:22:44,320

is they'll just tuck their their foot

581

00:22:50,070 --> 00:22:48,320

underneath a strap or a handle and uh

582

00:22:52,070 --> 00:22:50,080

they'll just hold on to that you don't

583

00:22:53,669 --> 00:22:52,080

need a whole lot of strength to hold

584

00:22:55,029 --> 00:22:53,679

onto things in space because you're

585

00:22:56,549 --> 00:22:55,039

you're weightless

586

00:22:57,750 --> 00:22:56,559

so the only thing you need to do is

587

00:22:59,909 --> 00:22:57,760

control your

588

00:23:01,909 --> 00:22:59,919

momentum and motion in space

589

00:23:03,270 --> 00:23:01,919

because the the harder or faster you're

590

00:23:07,029 --> 00:23:03,280

moving the harder

591

00:23:09,669 --> 00:23:07,039

uh it is that it is to slow you down so

592

00:23:11,430 --> 00:23:09,679

they just delicately hold themselves

593

00:23:12,950 --> 00:23:11,440

either with a handhold or foothold so

594

00:23:15,590 --> 00:23:12,960

like if you're using a camera you tuck

595

00:23:18,630 --> 00:23:15,600

your foot under a strap and then uh you

596

00:23:20,310 --> 00:23:18,640

use that to uh to you to basically brace

597

00:23:22,549 --> 00:23:20,320

yourself against the floor ceiling or

598

00:23:24,390 --> 00:23:22,559

wall and then you

599

00:23:25,990 --> 00:23:24,400

use both your hands so it's it's a

600

00:23:27,909 --> 00:23:26,000

pretty simple process i've been told

601  
00:23:29,430 --> 00:23:27,919  
that after a few days of flying you

602  
00:23:30,310 --> 00:23:29,440  
really get a sense of

603  
00:23:34,390 --> 00:23:30,320  
of

604  
00:23:35,909 --> 00:23:34,400  
funny sometimes when you see a brand new

605  
00:23:38,149 --> 00:23:35,919  
astronaut coming up for the first time

606  
00:23:40,070 --> 00:23:38,159  
they they kind of use a little too much

607  
00:23:41,510 --> 00:23:40,080  
force they're a little too aggressive in

608  
00:23:43,590 --> 00:23:41,520  
how they're maneuvering around or how

609  
00:23:45,830 --> 00:23:43,600  
they grab a handhold and and they look

610  
00:23:47,590 --> 00:23:45,840  
kind of clumsy for a few days but after

611  
00:23:49,590 --> 00:23:47,600  
a while they they really get

612  
00:23:53,190 --> 00:23:49,600  
the the feel of it down and and they do

613  
00:23:55,830 --> 00:23:54,630

all right that's a wonderful answer i'm

614

00:23:57,669 --> 00:23:55,840

going to cut in again this is right at

615

00:24:00,310 --> 00:23:57,679

the dln i believe we only have about a

616

00:24:03,110 --> 00:24:00,320

minute left with mission control so

617

00:24:06,470 --> 00:24:03,120

i may want to allow josh and or mike to

618

00:24:07,990 --> 00:24:06,480

say any uh parting words of inspiration

619

00:24:09,430 --> 00:24:08,000

before we say goodbye

620

00:24:11,110 --> 00:24:09,440

you wanna wrap it up

621

00:24:13,669 --> 00:24:11,120

yeah i just wanna thank you guys for uh

622

00:24:15,830 --> 00:24:13,679

being with us uh and again welcome to

623

00:24:17,669 --> 00:24:15,840

mission control uh you guys are just

624

00:24:18,870 --> 00:24:17,679

down the road from us so please come

625

00:24:21,269 --> 00:24:18,880

visit us

626

00:24:23,669 --> 00:24:21,279

we've got the rocket park out here in

627

00:24:25,110 --> 00:24:23,679

front of nasa and anybody can come see

628

00:24:27,590 --> 00:24:25,120

that it doesn't cost a dime you just

629

00:24:29,269 --> 00:24:27,600

need to get there during daylight hours

630

00:24:30,549 --> 00:24:29,279

and you can see rockets that have flown

631

00:24:33,029 --> 00:24:30,559

in the past

632

00:24:35,430 --> 00:24:33,039

we've got the visitor center here and uh

633

00:24:37,029 --> 00:24:35,440

and if you know somebody here at nasa

634

00:24:39,350 --> 00:24:37,039

you're certainly welcome to come visit

635

00:24:40,789 --> 00:24:39,360

us maybe i'll see you here in mission

636

00:24:42,470 --> 00:24:40,799

control someday

637

00:24:44,470 --> 00:24:42,480

but other than that listen to your

638

00:24:45,990 --> 00:24:44,480

teachers keep studying

639

00:24:48,230 --> 00:24:46,000

make sure that uh you follow your

640

00:24:50,630 --> 00:24:48,240

interest and and uh take chances when it

641

00:24:52,630 --> 00:24:50,640

comes time to to apply to a college or

642

00:24:54,470 --> 00:24:52,640

uh or find the job you you never know

643

00:24:56,230 --> 00:24:54,480

where that's gonna lead uh even though

644

00:24:59,029 --> 00:24:56,240

you might not find the ideal job right

645

00:25:01,350 --> 00:24:59,039

out of the right out of school uh it'll

646

00:25:02,789 --> 00:25:01,360

it'll provide contacts and friends and

647

00:25:03,909 --> 00:25:02,799

it'll let you know what you're

648

00:25:05,350 --> 00:25:03,919

interested in and what you're not

649

00:25:07,110 --> 00:25:05,360

interested in and that's valuable

650

00:25:09,110 --> 00:25:07,120

information that you're the only one

651

00:25:11,029 --> 00:25:09,120

that knows what's right for you so so

652

00:25:13,029 --> 00:25:11,039

make sure you you uh take chances and

653

00:25:14,310 --> 00:25:13,039

make those decisions yeah so thank you

654

00:25:16,710 --> 00:25:14,320

guys down there in galveston like mike

655

00:25:17,990 --> 00:25:16,720

said come see us sometime uh it's we've

656

00:25:19,269 --> 00:25:18,000

got some of the coolest jobs in the

657

00:25:20,950 --> 00:25:19,279

world and hopefully one of the one of

658

00:25:22,549 --> 00:25:20,960

these days you guys will be here

659

00:25:24,149 --> 00:25:22,559

uh working with us so thanks to you guys

660

00:25:26,549 --> 00:25:24,159

and thank you ryan for uh for letting us