



CONTINUING A LEGACY OF TRAILBLAZERS

 **SCIENCE LIVE**
VIRTUAL EDITION

1
00:00:04,870 --> 00:00:02,710
williams and i was born in oklahoma city

2
00:00:06,869 --> 00:00:04,880
oklahoma hi i'm chante tucker from

3
00:00:08,070 --> 00:00:06,879
altadena california and i'm a systems

4
00:00:10,629 --> 00:00:08,080
engineer at the jet propulsion

5
00:00:12,629 --> 00:00:10,639
laboratory in pasadena my name is norman

6
00:00:14,150 --> 00:00:12,639
phelps and i currently live in orlando

7
00:00:16,070 --> 00:00:14,160
florida and i work for launch services

8
00:00:17,269 --> 00:00:16,080
program here at kennedy space center i'm

9
00:00:19,189 --> 00:00:17,279
barbara brown and i'm the chief

10
00:00:20,950 --> 00:00:19,199
technologist at the john f kennedy space

11
00:00:22,310 --> 00:00:20,960
center in florida and i've known since i

12
00:00:24,230 --> 00:00:22,320
was seven or eight years old that i

13
00:00:26,550 --> 00:00:24,240

wanted to work for nasa i'm a launch

14

00:00:28,950 --> 00:00:26,560

operations and integration engineer i am

15

00:00:31,269 --> 00:00:28,960

dr lanay quick from nasa's goddard space

16

00:00:33,510 --> 00:00:31,279

flight center i am a planetary scientist

17

00:00:35,830 --> 00:00:33,520

and i study the planets and moons in our

18

00:00:38,229 --> 00:00:35,840

solar system i am currently at nasa

19

00:00:39,910 --> 00:00:38,239

goddard space flight center working as a

20

00:00:41,910 --> 00:00:39,920

social media specialist for nasa

21

00:00:44,389 --> 00:00:41,920

universe my name is phil hargrove i'm

22

00:00:46,869 --> 00:00:44,399

from san antonio texas and i work as a

23

00:00:49,670 --> 00:00:46,879

launch vehicle trajectory analyst at the

24

00:00:51,830 --> 00:00:49,680

kennedy space center

25

00:00:53,510 --> 00:00:51,840

and my name is bree hill and i'm a

26

00:00:55,510 --> 00:00:53,520

public affairs specialist at nasa

27

00:00:58,389 --> 00:00:55,520

headquarters and also your host for

28

00:01:00,310 --> 00:00:58,399

today's episode of nasa science live we

29

00:01:02,869 --> 00:01:00,320

are thrilled for you to join us today as

30

00:01:05,670 --> 00:01:02,879

we celebrate black history month

31

00:01:07,750 --> 00:01:05,680

behind every nasa success story there

32

00:01:10,310 --> 00:01:07,760

are people who make the impossible

33

00:01:11,830 --> 00:01:10,320

possible and today not only are we

34

00:01:14,149 --> 00:01:11,840

celebrating the contributions of

35

00:01:15,270 --> 00:01:14,159

african-american trailblazers but also

36

00:01:17,910 --> 00:01:15,280

those who are following in their

37

00:01:19,830 --> 00:01:17,920

footsteps helping nasa to reach new

38

00:01:22,550 --> 00:01:19,840

heights for the benefit of all human

39

00:01:25,510 --> 00:01:22,560

kind speakers like mary jackson

40

00:01:27,830 --> 00:01:25,520

catherine johnson gangnam guilford

41

00:01:29,910 --> 00:01:27,840

ray jemison have paved the way for

42

00:01:31,990 --> 00:01:29,920

generations of african americans in stem

43

00:01:35,670 --> 00:01:32,000

careers and while they may have been the

44

00:01:37,510 --> 00:01:35,680

first they certainly won't be the last

45

00:01:40,149 --> 00:01:37,520

while speaking of the next generation of

46

00:01:43,429 --> 00:01:40,159

blacks and stems we are here with deja

47

00:01:45,749 --> 00:01:43,439

williams a jpl engineer educator and

48

00:01:47,749 --> 00:01:45,759

creator thank you so much for joining us

49

00:01:49,590 --> 00:01:47,759

today jj

50

00:01:52,069 --> 00:01:49,600

hey bree thanks for having me i'm happy

51
00:01:54,870 --> 00:01:52,079
to be here

52
00:01:57,910 --> 00:01:54,880
deja please tell us what you do and what

53
00:02:00,069 --> 00:01:57,920
inspired you to become an engineer

54
00:02:01,749 --> 00:02:00,079
so i'm an industrial engineer i'm

55
00:02:03,830 --> 00:02:01,759
working with our training center to

56
00:02:06,069 --> 00:02:03,840
create a safer process to train our

57
00:02:07,190 --> 00:02:06,079
technicians throughout the cobit 19

58
00:02:09,270 --> 00:02:07,200
pandemic

59
00:02:11,350 --> 00:02:09,280
and what inspired me to be an engineer

60
00:02:13,830 --> 00:02:11,360
was it initially it started with a

61
00:02:16,790 --> 00:02:13,840
conversation with my mom she asked me

62
00:02:18,229 --> 00:02:16,800
what i wanted to be when i grew up

63
00:02:20,150 --> 00:02:18,239

and she led me down the path of

64

00:02:21,030 --> 00:02:20,160

engineering and i've always had a knack

65

00:02:22,869 --> 00:02:21,040

for

66

00:02:24,630 --> 00:02:22,879

learning how things worked and i was

67

00:02:28,550 --> 00:02:24,640

just always curious about the world

68

00:02:31,030 --> 00:02:28,560

around me um so here i am

69

00:02:33,589 --> 00:02:31,040

so what does an industrial engineer do

70

00:02:35,430 --> 00:02:33,599

and what made you pursue that field

71

00:02:38,470 --> 00:02:35,440

good question um so an industrial

72

00:02:41,110 --> 00:02:38,480

engineer is someone who looks at complex

73

00:02:42,790 --> 00:02:41,120

processes and tries to optimize it or

74

00:02:45,589 --> 00:02:42,800

make it more efficient

75

00:02:47,990 --> 00:02:45,599

um the reason i went down this path is

76

00:02:50,790 --> 00:02:48,000

because i'm a people person

77

00:02:53,110 --> 00:02:50,800

and industrial engineering allows you to

78

00:02:54,710 --> 00:02:53,120

to dip your toe in both engineering and

79

00:02:57,589 --> 00:02:54,720

the business world so i get an

80

00:02:59,509 --> 00:02:57,599

overarching understanding of how things

81

00:03:02,390 --> 00:02:59,519

are built and the difficulty that comes

82

00:03:04,630 --> 00:03:02,400

with it but i'm also looking at how can

83

00:03:07,030 --> 00:03:04,640

we make this the fastest way possible

84

00:03:09,990 --> 00:03:07,040

how can we make it um how can we not

85

00:03:11,670 --> 00:03:10,000

overspend and you be resourceful um so i

86

00:03:13,589 --> 00:03:11,680

i love

87

00:03:15,990 --> 00:03:13,599

being the middle person in between those

88

00:03:18,550 --> 00:03:16,000

two areas

89

00:03:20,790 --> 00:03:18,560

okay well thank you for that but um the

90

00:03:22,710 --> 00:03:20,800

word on the internet is you were doing

91

00:03:24,789 --> 00:03:22,720

some pretty cool outreach can you tell

92

00:03:28,149 --> 00:03:24,799

me a little bit about that

93

00:03:31,830 --> 00:03:28,159

yes bree so i rap about math and science

94

00:03:33,589 --> 00:03:31,840

um i want to create a more fun and

95

00:03:34,789 --> 00:03:33,599

relatable learning experience for

96

00:03:36,070 --> 00:03:34,799

students

97

00:03:40,390 --> 00:03:36,080

so i so

98

00:03:46,229 --> 00:03:40,400

i'm making dope music about stem topics

99

00:03:50,630 --> 00:03:49,030

energy and force mathematics studying

100

00:03:52,710 --> 00:03:50,640

the big bang

101
00:03:54,390 --> 00:03:52,720
i'm observing something and it may be

102
00:03:55,350 --> 00:03:54,400
nothing the hypothesis could change the

103
00:03:57,270 --> 00:03:55,360
game okay

104
00:03:58,290 --> 00:03:57,280
[Music]

105
00:04:09,610 --> 00:03:58,300
okay

106
00:04:09,620 --> 00:04:23,350
[Music]

107
00:04:27,430 --> 00:04:25,430
okay so

108
00:04:29,430 --> 00:04:27,440
where were you when i was in school and

109
00:04:31,830 --> 00:04:29,440
needed math mentorship thank you for

110
00:04:34,070 --> 00:04:31,840
doing this for the kids

111
00:04:37,990 --> 00:04:34,080
what motivates you

112
00:04:39,030 --> 00:04:38,000
work outside of your job

113
00:04:41,909 --> 00:04:39,040

um

114

00:04:42,629 --> 00:04:41,919

so growing up math and science classes

115

00:04:45,189 --> 00:04:42,639

were

116

00:04:47,189 --> 00:04:45,199

very hard for me but as i grew in the

117

00:04:49,110 --> 00:04:47,199

field i realized it was less about the

118

00:04:51,189 --> 00:04:49,120

challenges that were presented it was

119

00:04:52,790 --> 00:04:51,199

more so the languages that it was being

120

00:04:55,030 --> 00:04:52,800

taught to me in um i couldn't

121

00:04:57,030 --> 00:04:55,040

necessarily understand all of the words

122

00:04:58,629 --> 00:04:57,040

that they were using because

123

00:05:00,390 --> 00:04:58,639

i wasn't always taught by people who

124

00:05:02,790 --> 00:05:00,400

understood me or had the same background

125

00:05:05,029 --> 00:05:02,800

as me so i'm trying to build

126

00:05:06,629 --> 00:05:05,039

build that bridge where i'm creating

127

00:05:11,909 --> 00:05:06,639

more relatable

128

00:05:16,469 --> 00:05:14,230

now we know that diverse representation

129

00:05:19,430 --> 00:05:16,479

in stem is important can you tell us why

130

00:05:24,390 --> 00:05:22,070

um diverse representation is important

131

00:05:27,110 --> 00:05:24,400

because of opportunity

132

00:05:29,590 --> 00:05:27,120

it's not about forcing everybody to go

133

00:05:31,510 --> 00:05:29,600

into a stem career but it's important

134

00:05:32,469 --> 00:05:31,520

that people know that it's an actual

135

00:05:34,870 --> 00:05:32,479

option

136

00:05:37,270 --> 00:05:34,880

a lot of times i'm telling folks where i

137

00:05:39,909 --> 00:05:37,280

work and what i do and sometimes people

138

00:05:41,909 --> 00:05:39,919

don't even know what nasa is i feel that

139

00:05:45,189 --> 00:05:41,919

everybody should have an opportunity to

140

00:05:47,590 --> 00:05:45,199

experience uh launches to experience the

141

00:05:50,550 --> 00:05:47,600

wonders of space exploration so that's

142

00:05:52,629 --> 00:05:50,560

why diversity is important

143

00:05:54,870 --> 00:05:52,639

well that is wonderful

144

00:05:56,710 --> 00:05:54,880

now we know many of you at home have

145

00:05:58,950 --> 00:05:56,720

questions to ask and we would love for

146

00:06:01,110 --> 00:05:58,960

you to join the conversation please do

147

00:06:02,629 --> 00:06:01,120

not hesitate to send your questions by

148

00:06:03,830 --> 00:06:02,639

writing in the comment box wherever

149

00:06:07,110 --> 00:06:03,840

you're streaming

150

00:06:08,550 --> 00:06:07,120

and by using the hashtag ask nasa on

151

00:06:10,230 --> 00:06:08,560

social media

152

00:06:11,830 --> 00:06:10,240

deja will be answering all of your

153

00:06:13,990 --> 00:06:11,840

questions at the end of the show so

154

00:06:15,830 --> 00:06:14,000

please stay tuned deja we will see you

155

00:06:17,830 --> 00:06:15,840

in a bit

156

00:06:21,270 --> 00:06:17,840

all right

157

00:06:25,110 --> 00:06:22,309

just like

158

00:06:27,990 --> 00:06:25,120

deja we have many amazing people working

159

00:06:30,469 --> 00:06:28,000

across the agency 24 7 to help us

160

00:06:32,070 --> 00:06:30,479

achieve things beyond the imagination

161

00:06:35,110 --> 00:06:32,080

like getting to mars

162

00:06:37,670 --> 00:06:35,120

let's head over to muja gay cooper a jpl

163

00:06:39,830 --> 00:06:37,680

scientist who is helping to protect mars

164

00:06:42,150 --> 00:06:39,840

from earth's bacteria when the nasa

165

00:06:44,710 --> 00:06:42,160

perseverance rover lands on the red

166

00:06:46,230 --> 00:06:44,720

planet on february 18th let's take a

167

00:06:47,990 --> 00:06:46,240

look

168

00:06:50,390 --> 00:06:48,000

it's really important that we send a

169

00:06:52,230 --> 00:06:50,400

rover that's clean and we make sure that

170

00:06:54,150 --> 00:06:52,240

it doesn't contaminate mars my name is

171

00:06:56,469 --> 00:06:54,160

muji gay stricker and i protect mars

172

00:06:59,189 --> 00:06:56,479

from earth bacteria the next mars rover

173

00:07:01,029 --> 00:06:59,199

is slated to go to mars collect samples

174

00:07:02,870 --> 00:07:01,039

so that eventually we can bring those

175

00:07:05,189 --> 00:07:02,880

samples back to earth and determine for

176

00:07:07,350 --> 00:07:05,199

the very first time did life exist on

177

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

mars there's nothing that we can build

178

00:07:10,790 --> 00:07:09,120

that's sterile so we take swabs and

179

00:07:13,029 --> 00:07:10,800

wipes of the spacecraft as it's being

180

00:07:14,950 --> 00:07:13,039

built it gets put in an oven it gets put

181

00:07:16,230 --> 00:07:14,960

in various chambers and clean rooms so

182

00:07:18,469 --> 00:07:16,240

that we can maintain that level of

183

00:07:20,469 --> 00:07:18,479

cleanliness if we do find something on

184

00:07:21,909 --> 00:07:20,479

mars we have to make sure and that

185

00:07:23,350 --> 00:07:21,919

actually came from ours and not

186

00:07:25,510 --> 00:07:23,360

something that hitched a ride this is

187

00:07:28,070 --> 00:07:25,520

the place where the magic happens oh

188

00:07:30,469 --> 00:07:28,080

it's definitely fun in this lab we look

189

00:07:32,550 --> 00:07:30,479

specifically at spores floors are those

190

00:07:34,950 --> 00:07:32,560

hearty microorganisms that can actually

191

00:07:36,870 --> 00:07:34,960

survive if it made it on the spacecraft

192

00:07:40,150 --> 00:07:36,880

of the journey through space through the

193

00:07:42,309 --> 00:07:40,160

vacuum it's very humbling to be a part

194

00:07:43,830 --> 00:07:42,319

of this big project because there are

195

00:07:45,589 --> 00:07:43,840

hundreds of people that have to come

196

00:07:48,070 --> 00:07:45,599

together and no one person that could

197

00:07:50,950 --> 00:07:48,080

say i did this i made this happen it's

198

00:07:53,189 --> 00:07:50,960

always a we i owe it all to carl sagan

199

00:07:55,110 --> 00:07:53,199

and watching the cosmos i remember being

200

00:07:57,189 --> 00:07:55,120

a little kid going to the public library

201
00:07:58,950 --> 00:07:57,199
and renting that vhs and from that

202
00:08:01,430 --> 00:07:58,960
moment the light bulb turned on it

203
00:08:03,670 --> 00:08:01,440
actually was a start of my passion of

204
00:08:05,589 --> 00:08:03,680
science communication we are citizens of

205
00:08:08,150 --> 00:08:05,599
our universe we have to be good

206
00:08:09,589 --> 00:08:08,160
ambassadors when we are exploring and

207
00:08:14,710 --> 00:08:09,599
its other moons so it's the right thing

208
00:08:20,309 --> 00:08:17,670
we are now joined by dr charles norton

209
00:08:22,230 --> 00:08:20,319
associate chief technologist at jpl and

210
00:08:24,869 --> 00:08:22,240
former special advisor for small

211
00:08:28,309 --> 00:08:24,879
satellite missions at nasa headquarters

212
00:08:29,990 --> 00:08:28,319
charles thank you for joining us today

213
00:08:31,589 --> 00:08:30,000

oh thanks so much free it's really great

214

00:08:35,589 --> 00:08:31,599

to see you

215

00:08:37,509 --> 00:08:35,599

tell us a little bit about yourself and

216

00:08:40,790 --> 00:08:37,519

what made you become interested in

217

00:08:43,670 --> 00:08:40,800

science and space

218

00:08:45,590 --> 00:08:43,680

yes well really bri i see myself as a

219

00:08:48,150 --> 00:08:45,600

product of the space age i'm actually

220

00:08:50,310 --> 00:08:48,160

originally from long island new york

221

00:08:51,509 --> 00:08:50,320

my mother there was a mathematics

222

00:08:53,750 --> 00:08:51,519

teacher

223

00:08:56,230 --> 00:08:53,760

but my dad actually worked on the lunar

224

00:08:57,990 --> 00:08:56,240

excursion module at burman aerospace and

225

00:09:00,949 --> 00:08:58,000

bethpage

226

00:09:03,190 --> 00:09:00,959

so even though sadly he passed away not

227

00:09:05,670 --> 00:09:03,200

long after i was born

228

00:09:07,269 --> 00:09:05,680

i'm sure they both had a big influence

229

00:09:10,470 --> 00:09:07,279

on my

230

00:09:14,150 --> 00:09:10,480

decision to study uh science engineering

231

00:09:17,190 --> 00:09:14,160

and and go into this field

232

00:09:19,110 --> 00:09:17,200

that's fantastic now before you were the

233

00:09:20,949 --> 00:09:19,120

chief technologist i understand you were

234

00:09:24,949 --> 00:09:20,959

the special advisor for small satellite

235

00:09:27,670 --> 00:09:24,959

missions can you explain what that means

236

00:09:30,470 --> 00:09:27,680

yes exactly so uh i spent a couple of

237

00:09:32,630 --> 00:09:30,480

years at nasa headquarters and in that

238

00:09:34,230 --> 00:09:32,640

role i was really responsible for

239

00:09:36,310 --> 00:09:34,240

helping the agency

240

00:09:38,470 --> 00:09:36,320

understand and look at how small

241

00:09:41,829 --> 00:09:38,480

satellites could provide an innovative

242

00:09:44,070 --> 00:09:41,839

approach towards discovery in earth

243

00:09:46,150 --> 00:09:44,080

astrophysics heliophysics and planetary

244

00:09:48,310 --> 00:09:46,160

science as well as the role that small

245

00:09:50,710 --> 00:09:48,320

satellites could have to impact

246

00:09:53,350 --> 00:09:50,720

technology development and these small

247

00:09:55,350 --> 00:09:53,360

satellites they're really quite amazing

248

00:09:57,670 --> 00:09:55,360

you know they can be as small as one

249

00:09:59,269 --> 00:09:57,680

kilogram and 10 centimeters on the sod

250

00:10:01,110 --> 00:09:59,279

them in your hand

251

00:10:03,670 --> 00:10:01,120

others can actually be the size of a

252

00:10:05,509 --> 00:10:03,680

small refrigerator and they they really

253

00:10:07,750 --> 00:10:05,519

are a disruptive innovation that are

254

00:10:10,310 --> 00:10:07,760

allowing us to increase our science

255

00:10:13,110 --> 00:10:10,320

return the diversity of missions that we

256

00:10:15,990 --> 00:10:13,120

can perform uh the rate and speed at

257

00:10:18,389 --> 00:10:16,000

which we can develop and launch and fly

258

00:10:20,310 --> 00:10:18,399

these missions also spurring our

259

00:10:22,949 --> 00:10:20,320

community think about new observation

260

00:10:25,269 --> 00:10:22,959

techniques which can help improve

261

00:10:29,509 --> 00:10:25,279

our understanding of not just earth but

262

00:10:34,310 --> 00:10:32,310

now how can the use of small satellites

263

00:10:37,110 --> 00:10:34,320

give more people including african

264

00:10:39,829 --> 00:10:37,120

americans access to more

265

00:10:42,470 --> 00:10:39,839

um to learn more about their planet and

266

00:10:46,949 --> 00:10:44,949

yeah that's a great question well you

267

00:10:49,750 --> 00:10:46,959

know these small satellites really

268

00:10:51,910 --> 00:10:49,760

started out in universities as a

269

00:10:54,550 --> 00:10:51,920

training mechanism to help students and

270

00:10:56,550 --> 00:10:54,560

others learn about space and how to

271

00:10:57,590 --> 00:10:56,560

develop these missions to a hands-on

272

00:11:00,470 --> 00:10:57,600

approach

273

00:11:02,790 --> 00:11:00,480

and again so you know one of the

274

00:11:04,630 --> 00:11:02,800

important ways in which these small

275

00:11:07,269 --> 00:11:04,640

satellites address that question is

276

00:11:10,389 --> 00:11:07,279

they're helping to democratize space

277

00:11:12,150 --> 00:11:10,399

really nearly anyone now um

278

00:11:14,470 --> 00:11:12,160

at the university or at other

279

00:11:16,710 --> 00:11:14,480

institutions can participate

280

00:11:18,949 --> 00:11:16,720

in developing these missions advancing

281

00:11:21,030 --> 00:11:18,959

our knowledge of of the planets and

282

00:11:22,630 --> 00:11:21,040

space and the world around us

283

00:11:24,470 --> 00:11:22,640

and you know the community of people

284

00:11:26,470 --> 00:11:24,480

that are developing these small missions

285

00:11:29,030 --> 00:11:26,480

are really just very welcoming and

286

00:11:29,990 --> 00:11:29,040

supportive and we're always looking to

287

00:11:32,630 --> 00:11:30,000

grow

288

00:11:34,710 --> 00:11:32,640

the not just the number of missions but

289

00:11:39,190 --> 00:11:34,720

also the number and variety and

290

00:11:43,269 --> 00:11:41,350

can you share why representation in the

291

00:11:46,310 --> 00:11:43,279

stem field is so important in the black

292

00:11:51,269 --> 00:11:48,470

it really is very important you know i

293

00:11:53,190 --> 00:11:51,279

really see it as another avenue to sort

294

00:11:55,110 --> 00:11:53,200

of showcase the

295

00:11:57,990 --> 00:11:55,120

wealth and

296

00:12:00,389 --> 00:11:58,000

imagination and creativity that the

297

00:12:03,110 --> 00:12:00,399

african-american community has you know

298

00:12:06,949 --> 00:12:03,120

we've seen this in other areas through

299

00:12:09,670 --> 00:12:06,959

music and art and dance and poetry

300

00:12:12,230 --> 00:12:09,680

so really it's just essential

301
00:12:14,470 --> 00:12:12,240
for the broad community now to see the

302
00:12:17,269 --> 00:12:14,480
contributions african-americans are

303
00:12:20,150 --> 00:12:17,279
making and have made uh both in the past

304
00:12:21,910 --> 00:12:20,160
and present and now that you know we're

305
00:12:24,550 --> 00:12:21,920
recognizing and celebrating these

306
00:12:26,949 --> 00:12:24,560
contributions more directly it's really

307
00:12:28,710 --> 00:12:26,959
having a positive impact in growing our

308
00:12:31,350 --> 00:12:28,720
presence in stem

309
00:12:33,509 --> 00:12:31,360
so it's you know i'm just really proud

310
00:12:37,670 --> 00:12:33,519
to be a part of the community and help

311
00:12:40,710 --> 00:12:39,269
charles thank you so much for your

312
00:12:43,590 --> 00:12:40,720
insights

313
00:12:46,069 --> 00:12:43,600

we will be right back with both charles

314

00:12:48,550 --> 00:12:46,079

and deja to answer your questions at

315

00:12:50,550 --> 00:12:48,560

home remember to join the conversation

316

00:12:53,269 --> 00:12:50,560

ask your questions using

317

00:12:55,590 --> 00:12:53,279

ask nasa in the comment box anywhere on

318

00:12:58,550 --> 00:12:55,600

social media but before we answer your

319

00:13:00,470 --> 00:12:58,560

questions let's meet renee horton an

320

00:13:04,310 --> 00:13:00,480

engineer at nasa's michoud assembly

321

00:13:06,629 --> 00:13:04,320

facility in new orleans renee is making

322

00:13:09,509 --> 00:13:06,639

history preparing astronauts for their

323

00:13:11,590 --> 00:13:09,519

first journey to the moon

324

00:13:13,030 --> 00:13:11,600

we all want to go back to the moon

325

00:13:16,550 --> 00:13:13,040

getting us back to the moon in this

326

00:13:19,829 --> 00:13:16,560

generation sparks a whole new generation

327

00:13:22,949 --> 00:13:19,839

of explorers hi my name is dr k renee

328

00:13:25,670 --> 00:13:22,959

horton and i am boots on the ground for

329

00:13:27,750 --> 00:13:25,680

sls we actually weld our liquid hydrogen

330

00:13:29,670 --> 00:13:27,760

tanks and our liquid oxygen tanks on

331

00:13:31,670 --> 00:13:29,680

this it is the largest well tool in the

332

00:13:34,790 --> 00:13:31,680

world it's the only one of its kind it

333

00:13:37,990 --> 00:13:34,800

stays 170 feet tall and has a diameter

334

00:13:39,430 --> 00:13:38,000

of about 27.6 feet so as a quality

335

00:13:40,629 --> 00:13:39,440

engineer we make sure that they're

336

00:13:42,069 --> 00:13:40,639

actually meeting the requirements

337

00:13:44,230 --> 00:13:42,079

they're supposed to meet they do a

338

00:13:45,590 --> 00:13:44,240

phased array ultrasound which goes in

339

00:13:48,150 --> 00:13:45,600

and checks to make sure we don't have

340

00:13:49,670 --> 00:13:48,160

any defects in the weld to get up and to

341

00:13:51,990 --> 00:13:49,680

pull up the news article and they're

342

00:13:54,310 --> 00:13:52,000

talking about what you do at work is

343

00:13:56,389 --> 00:13:54,320

amazing for me i really love detective

344

00:13:57,750 --> 00:13:56,399

novels and so i'm an avid reader and i

345

00:14:00,230 --> 00:13:57,760

actually write children's book in my

346

00:14:02,629 --> 00:14:00,240

spare time my children's books are about

347

00:14:04,710 --> 00:14:02,639

dr h exploring the universe

348

00:14:05,990 --> 00:14:04,720

each day i walk into the factory i know

349

00:14:07,829 --> 00:14:06,000

that i'm putting my footprints in

350

00:14:11,910 --> 00:14:07,839

history and that's a pretty big deal for

351

00:14:16,629 --> 00:14:14,069

as you've seen there are many people

352

00:14:18,550 --> 00:14:16,639

working on amazing things here at nasa

353

00:14:19,910 --> 00:14:18,560

but for those watching at home who may

354

00:14:22,550 --> 00:14:19,920

want to be a part of all of this

355

00:14:24,870 --> 00:14:22,560

excitement how do they get here charles

356

00:14:26,550 --> 00:14:24,880

and deja what would you say to someone

357

00:14:28,710 --> 00:14:26,560

who may be interested in following in

358

00:14:30,949 --> 00:14:28,720

your footsteps what kind of advice would

359

00:14:33,030 --> 00:14:30,959

you offer charles why don't i start with

360

00:14:36,230 --> 00:14:33,040

you do you have anything to

361

00:14:40,629 --> 00:14:39,110

yes brie i think uh from my experience i

362

00:14:42,629 --> 00:14:40,639

think it's really important to build

363

00:14:44,150 --> 00:14:42,639

meaningful connections with colleagues

364

00:14:45,430 --> 00:14:44,160

there's so much that people can learn

365

00:14:47,910 --> 00:14:45,440

from each other

366

00:14:50,230 --> 00:14:47,920

and for individuals to always be willing

367

00:14:51,430 --> 00:14:50,240

to share their expertise and their

368

00:14:53,189 --> 00:14:51,440

knowledge and

369

00:14:54,949 --> 00:14:53,199

and of course you know these days you

370

00:14:57,189 --> 00:14:54,959

know oral and written communication

371

00:14:59,030 --> 00:14:57,199

skills are so important in communicating

372

00:15:01,269 --> 00:14:59,040

and conveying your ideas

373

00:15:05,030 --> 00:15:01,279

you know it's an important strength to

374

00:15:08,310 --> 00:15:05,040

uh to continuously develop

375

00:15:11,030 --> 00:15:08,320

and de ja do you have any thoughts to add

376

00:15:12,949 --> 00:15:11,040

yes so my advice is to just go for it

377

00:15:15,430 --> 00:15:12,959

don't be afraid or back down from

378

00:15:17,509 --> 00:15:15,440

challenges know that you belong in their

379

00:15:21,990 --> 00:15:17,519

space for you in any place that you want

380

00:15:25,990 --> 00:15:24,069

thank you guys so much for this advice

381

00:15:29,430 --> 00:15:26,000

and now we have some words of wisdom

382

00:15:32,150 --> 00:15:29,440

from people all across nasa

383

00:15:34,310 --> 00:15:32,160

my advice to anyone who wants to pursue

384

00:15:36,790 --> 00:15:34,320

a career in stem be curious about the

385

00:15:38,710 --> 00:15:36,800

world around you never give up believe

386

00:15:41,749 --> 00:15:38,720

you can do anything you want to do work

387

00:15:43,509 --> 00:15:41,759

hard work hard perseverance is the key

388

00:15:45,110 --> 00:15:43,519

be willing to put in the time and effort

389

00:15:46,790 --> 00:15:45,120

that it takes to get the knowledge and

390

00:15:48,470 --> 00:15:46,800

training that you need make sure you

391

00:15:50,790 --> 00:15:48,480

always put your best foot forward do the

392

00:15:52,790 --> 00:15:50,800

very best to find your own path find a

393

00:15:54,710 --> 00:15:52,800

mentor asking questions whenever you

394

00:15:56,230 --> 00:15:54,720

have them they give great advice it

395

00:15:57,590 --> 00:15:56,240

might not always be advice that you want

396

00:16:00,629 --> 00:15:57,600

to hear but you know it's for your own

397

00:16:03,030 --> 00:16:00,639

good don't let anyone distract you from

398

00:16:06,230 --> 00:16:03,040

doing the very best you can to meet your

399

00:16:09,030 --> 00:16:06,240

goals in life don't be afraid to try and

400

00:16:11,670 --> 00:16:09,040

fail sometimes but if you fail

401
00:16:14,069 --> 00:16:11,680
learn from it and use that knowledge to

402
00:16:16,310 --> 00:16:14,079
find the path to success i would not be

403
00:16:18,470 --> 00:16:16,320
where i am today if it wasn't for having

404
00:16:20,470 --> 00:16:18,480
such great mentoring beginning in high

405
00:16:23,350 --> 00:16:20,480
school and and going on throughout

406
00:16:25,350 --> 00:16:23,360
graduate school and and obtaining my phd

407
00:16:27,430 --> 00:16:25,360
and continuing to challenge yourself

408
00:16:29,269 --> 00:16:27,440
take a lot of math and science and to

409
00:16:31,189 --> 00:16:29,279
find ways to integrate math and science

410
00:16:33,110 --> 00:16:31,199
in your everyday play time in your

411
00:16:35,430 --> 00:16:33,120
adventures and in your extracurricular

412
00:16:37,990 --> 00:16:35,440
activities seek out those opportunities

413
00:16:39,990 --> 00:16:38,000

that will lead you along this path and

414

00:16:42,230 --> 00:16:40,000

never give up on your dream pursue their

415

00:16:44,790 --> 00:16:42,240

dreams go for that dream of yours dream

416

00:16:51,350 --> 00:16:44,800

dream big and act on it and hopefully

417

00:16:54,710 --> 00:16:53,590

so let's jump into our ask nasa

418

00:16:59,110 --> 00:16:54,720

questions

419

00:17:02,230 --> 00:16:59,120

our first question is from xxgamer519xx

420

00:17:04,630 --> 00:17:02,240

on youtube he asks what advice would you

421

00:17:05,909 --> 00:17:04,640

give to those aspiring to work at nasa

422

00:17:09,909 --> 00:17:05,919

one day

423

00:17:14,630 --> 00:17:12,230

yeah so i think for those that are

424

00:17:16,949 --> 00:17:14,640

looking to work at nasa you know there

425

00:17:19,270 --> 00:17:16,959

are many internship opportunities that

426

00:17:22,150 --> 00:17:19,280

are available across the agency

427

00:17:23,750 --> 00:17:22,160

so my advice would be that's a great

428

00:17:25,990 --> 00:17:23,760

first step to

429

00:17:29,110 --> 00:17:26,000

understand the agency and for the agency

430

00:17:31,430 --> 00:17:29,120

to understand you and to find a good way

431

00:17:34,630 --> 00:17:31,440

of having a match with your interests

432

00:17:36,549 --> 00:17:34,640

and knows of the agency

433

00:17:39,830 --> 00:17:36,559

in deja do you have any advice to give

434

00:17:42,630 --> 00:17:39,840

xxx gamer519x

435

00:17:45,750 --> 00:17:42,640

yes uh i agree with what was just said i

436

00:17:49,270 --> 00:17:45,760

was personally an intern first at

437

00:17:52,230 --> 00:17:49,280

nasa jpl so that is very true um but

438

00:17:54,789 --> 00:17:52,240

before i got that internship um my

439

00:17:57,270 --> 00:17:54,799

beginning years in college i made sure i

440

00:17:59,750 --> 00:17:57,280

got a lot of experience before

441

00:18:02,230 --> 00:17:59,760

you know i even submitted so i wanted to

442

00:18:05,110 --> 00:18:02,240

be prepared for the opportunity so do

443

00:18:07,029 --> 00:18:05,120

whatever you can do to to gain

444

00:18:08,470 --> 00:18:07,039

experience in in the field that you want

445

00:18:10,549 --> 00:18:08,480

to so

446

00:18:12,310 --> 00:18:10,559

create your own projects go into the

447

00:18:14,390 --> 00:18:12,320

classes that are talking about or

448

00:18:17,909 --> 00:18:14,400

teaching about the the field that you

449

00:18:22,390 --> 00:18:19,190

thank you

450

00:18:27,350 --> 00:18:22,400

angela on facebook asks how can i join

451

00:18:27,360 --> 00:18:31,190

charles do you have a suggestion

452

00:18:37,350 --> 00:18:33,750

oh sure well of course you know um there

453

00:18:40,390 --> 00:18:37,360

are many ways uh one way is to be

454

00:18:42,070 --> 00:18:40,400

employed by nasa and then uh

455

00:18:43,590 --> 00:18:42,080

identifying a project of interest that

456

00:18:46,630 --> 00:18:43,600

you want to work with

457

00:18:48,549 --> 00:18:46,640

but i would say equally important uh if

458

00:18:53,029 --> 00:18:48,559

you happen to be at a university or

459

00:18:55,350 --> 00:18:53,039

maybe even at a company would be to

460

00:18:58,070 --> 00:18:55,360

seek out the principal investigator for

461

00:19:01,029 --> 00:18:58,080

a mission or many of their key team

462

00:19:03,190 --> 00:19:01,039

members and just communicate your

463

00:19:05,270 --> 00:19:03,200

interests and your background

464

00:19:07,190 --> 00:19:05,280

and i'm sure in many

465

00:19:09,110 --> 00:19:07,200

mechanisms in many ways

466

00:19:12,470 --> 00:19:09,120

they could find an appropriate way to

467

00:19:15,270 --> 00:19:12,480

help you contribute to the mission

468

00:19:18,630 --> 00:19:15,280

and deja how about your answer

469

00:19:21,190 --> 00:19:18,640

yes so at my university we have multiple

470

00:19:23,510 --> 00:19:21,200

teams that that work on extra curricular

471

00:19:26,549 --> 00:19:23,520

activities where we're submitting

472

00:19:29,669 --> 00:19:26,559

proposals and examples for different

473

00:19:31,750 --> 00:19:29,679

missions that we have going on so um i

474

00:19:34,710 --> 00:19:31,760

know that we have a mars rover team at

475

00:19:36,549 --> 00:19:34,720

my school and and different

476

00:19:38,310 --> 00:19:36,559

projects like that that could get you

477

00:19:39,430 --> 00:19:38,320

you know working on nasa things before

478

00:19:43,350 --> 00:19:39,440

you actually

479

00:19:48,390 --> 00:19:45,590

marianne on facebook asks what can

480

00:19:51,029 --> 00:19:48,400

members of the non-um

481

00:19:53,029 --> 00:19:51,039

black indigenous peace people of color

482

00:19:55,510 --> 00:19:53,039

community asks to do

483

00:19:58,070 --> 00:19:55,520

to address inequality in industries of

484

00:20:03,110 --> 00:19:58,080

science and technology like nasa as

485

00:20:10,070 --> 00:20:04,830

um

486

00:20:11,510 --> 00:20:10,080

found

487

00:20:13,590 --> 00:20:11,520

uh

488

00:20:16,149 --> 00:20:13,600

i found it when

489

00:20:19,110 --> 00:20:16,159

i am coming in contact with you know

490

00:20:20,870 --> 00:20:19,120

people who are not black and they are

491

00:20:22,070 --> 00:20:20,880

they are welcoming

492

00:20:23,909 --> 00:20:22,080

in class

493

00:20:26,070 --> 00:20:23,919

that's that's super important they're

494

00:20:28,149 --> 00:20:26,080

welcoming when i come into work that's

495

00:20:29,510 --> 00:20:28,159

super important um you have those

496

00:20:32,870 --> 00:20:29,520

conversations let me know what

497

00:20:34,310 --> 00:20:32,880

opportunities are coming up um i feel

498

00:20:36,230 --> 00:20:34,320

like a lot of times there's a secret

499

00:20:38,230 --> 00:20:36,240

society when it comes to stem

500

00:20:40,310 --> 00:20:38,240

opportunities and just making those

501
00:20:41,990 --> 00:20:40,320
opportunities widespread and known to

502
00:20:43,750 --> 00:20:42,000
all communities i think would be very

503
00:20:47,190 --> 00:20:43,760
helpful

504
00:20:52,710 --> 00:20:49,669
yeah i would agree with deja i mean i

505
00:20:56,070 --> 00:20:52,720
know that uh we both have been parts of

506
00:20:58,070 --> 00:20:56,080
societies like nsbe national society of

507
00:21:01,830 --> 00:20:58,080
black engineers but there are also other

508
00:21:03,510 --> 00:21:01,840
technical societies for many different

509
00:21:05,669 --> 00:21:03,520
ethnic groups and there are

510
00:21:08,710 --> 00:21:05,679
professionals in those organizations

511
00:21:10,070 --> 00:21:08,720
that can certainly act as mentors and

512
00:21:12,789 --> 00:21:10,080
help

513
00:21:14,230 --> 00:21:12,799

you reach that stepping stone of getting

514

00:21:17,750 --> 00:21:14,240

involved

515

00:21:19,430 --> 00:21:17,760

with a nasa project or or even not even

516

00:21:21,029 --> 00:21:19,440

emission but sometimes even the research

517

00:21:24,470 --> 00:21:21,039

and the scientists that come along with

518

00:21:26,630 --> 00:21:24,480

the data analysis so i would definitely

519

00:21:29,990 --> 00:21:26,640

work through the community

520

00:21:32,950 --> 00:21:30,000

of these organizations

521

00:21:34,789 --> 00:21:32,960

now this question is for deja

522

00:21:36,630 --> 00:21:34,799

misty on facebook asks

523

00:21:38,950 --> 00:21:36,640

females are still a minority in most

524

00:21:41,430 --> 00:21:38,960

stem fields what would you tell young

525

00:21:43,990 --> 00:21:41,440

ladies today about stem fields in order

526
00:21:45,190 --> 00:21:44,000
to build their interests

527
00:21:46,070 --> 00:21:45,200
hmm

528
00:21:48,870 --> 00:21:46,080
um

529
00:21:51,190 --> 00:21:48,880
just don't be afraid i i grew up playing

530
00:21:53,990 --> 00:21:51,200
basketball which is a male dominated

531
00:21:54,870 --> 00:21:54,000
field so

532
00:21:57,029 --> 00:21:54,880
go

533
00:21:58,549 --> 00:21:57,039
don't be don't be afraid don't sit in

534
00:22:01,190 --> 00:21:58,559
the back of the class sit in the front

535
00:22:03,510 --> 00:22:01,200
of the class ask those questions you you

536
00:22:05,350 --> 00:22:03,520
belong there um you may not know the

537
00:22:06,549 --> 00:22:05,360
answer don't don't feel like you're not

538
00:22:07,990 --> 00:22:06,559

smart

539

00:22:09,510 --> 00:22:08,000

if you have the question i'm sure a

540

00:22:11,430 --> 00:22:09,520

bunch of other people in the in the

541

00:22:13,029 --> 00:22:11,440

class have that question as well so

542

00:22:14,390 --> 00:22:13,039

knowing that you belong and having that

543

00:22:16,470 --> 00:22:14,400

confidence

544

00:22:19,590 --> 00:22:16,480

i think it will get all of us women

545

00:22:23,190 --> 00:22:21,830

um so i have a question from cesare

546

00:22:26,310 --> 00:22:23,200

arasaki

547

00:22:33,190 --> 00:22:26,320

on youtube they ask can anyone who is

548

00:22:39,190 --> 00:22:34,950

the answer is yes

549

00:22:46,549 --> 00:22:42,630

so of course yes

550

00:22:49,430 --> 00:22:46,559

okay so our next question is john

551

00:22:51,909 --> 00:22:49,440

i'm sorry one more time

552

00:22:53,990 --> 00:22:51,919

yeah i mean i've had uh undergraduate

553

00:22:55,350 --> 00:22:54,000

students myself i've even had high

554

00:22:58,549 --> 00:22:55,360

school students

555

00:22:59,590 --> 00:22:58,559

uh that i've mentored over the years

556

00:23:01,190 --> 00:22:59,600

and uh

557

00:23:03,990 --> 00:23:01,200

you know many of them have gone on to

558

00:23:05,909 --> 00:23:04,000

become professors at universities and

559

00:23:08,870 --> 00:23:05,919

and have gone on to other institutions

560

00:23:10,870 --> 00:23:08,880

so it's it's uh definitely possible

561

00:23:12,870 --> 00:23:10,880

there are many uh ways to apply for

562

00:23:13,909 --> 00:23:12,880

those roles

563

00:23:16,470 --> 00:23:13,919

awesome

564

00:23:19,350 --> 00:23:16,480

um now deseant from facebook asks what's

565

00:23:21,510 --> 00:23:19,360

the best advice to give future nasa

566

00:23:23,750 --> 00:23:21,520

employees when they are struggling and

567

00:23:26,470 --> 00:23:23,760

on when they are struggling and how can

568

00:23:34,470 --> 00:23:26,480

that employee or employees succeed in

569

00:23:39,270 --> 00:23:37,110

we can go to days your days are started

570

00:23:41,669 --> 00:23:39,280

well my answer would be one thing i did

571

00:23:43,029 --> 00:23:41,679

as a new employee is if i if i found

572

00:23:45,269 --> 00:23:43,039

someone who was doing something

573

00:23:47,430 --> 00:23:45,279

interesting or even just someone sitting

574

00:23:49,269 --> 00:23:47,440

and eating lunch i would ask them to

575

00:23:51,190 --> 00:23:49,279

have asked to have lunch with them and i

576

00:23:53,909 --> 00:23:51,200

get to sit there and have a 30 minute

577

00:23:55,990 --> 00:23:53,919

intro to what they were doing um and

578

00:23:58,230 --> 00:23:56,000

that is how i've been able to grow in my

579

00:23:59,110 --> 00:23:58,240

careers learning about what's out there

580

00:24:01,190 --> 00:23:59,120

and

581

00:24:04,390 --> 00:24:01,200

just getting a little taste of

582

00:24:07,510 --> 00:24:04,400

people's experiences

583

00:24:13,909 --> 00:24:10,630

oh deja is exactly right i mean um i

584

00:24:16,710 --> 00:24:13,919

found over my career at nasa that

585

00:24:19,190 --> 00:24:16,720

you know literally any question you have

586

00:24:22,230 --> 00:24:19,200

can be answered it doesn't have to even

587

00:24:23,350 --> 00:24:22,240

be science related you know there's so

588

00:24:26,070 --> 00:24:23,360

much

589

00:24:30,070 --> 00:24:26,080

curiosity in this community

590

00:24:31,750 --> 00:24:30,080

that you know one could very easily

591

00:24:33,350 --> 00:24:31,760

get to

592

00:24:36,149 --> 00:24:33,360

understand better how they can

593

00:24:38,310 --> 00:24:36,159

contribute to the agency's mission um

594

00:24:40,390 --> 00:24:38,320

and should never be concerned about that

595

00:24:43,190 --> 00:24:40,400

if they have um any struggles or

596

00:24:45,430 --> 00:24:43,200

difficulties by just simply reaching out

597

00:24:47,430 --> 00:24:45,440

and talking with your colleagues and it

598

00:24:50,230 --> 00:24:47,440

could be about any subject

599

00:24:52,390 --> 00:24:50,240

people are just very warm and welcoming

600

00:24:56,710 --> 00:24:52,400

here

601
00:24:58,630 --> 00:24:56,720
specific moment or event that pushed you

602
00:25:03,110 --> 00:24:58,640
in the direction of pursuing your career

603
00:25:05,669 --> 00:25:03,120
at nasa and deja can i start with you

604
00:25:07,990 --> 00:25:05,679
yes so what pushed me

605
00:25:10,149 --> 00:25:08,000
uh into this career was actually being a

606
00:25:13,269 --> 00:25:10,159
part of the national society of black

607
00:25:15,029 --> 00:25:13,279
engineers um before being a part of this

608
00:25:18,310 --> 00:25:15,039
organization i didn't know that looking

609
00:25:20,630 --> 00:25:18,320
at nasa's apo was even possible

610
00:25:23,110 --> 00:25:20,640
but going to the conferences and seeing

611
00:25:24,870 --> 00:25:23,120
that there are opportunities available

612
00:25:28,950 --> 00:25:24,880
that's what kind of pushed me to make

613
00:25:31,909 --> 00:25:28,960

this a goal to work at nasa

614

00:25:35,750 --> 00:25:33,750

yeah i'm probably dating myself a little

615

00:25:37,990 --> 00:25:35,760

bit it was a little bit by accident but

616

00:25:40,310 --> 00:25:38,000

i remember when the netscape navigator

617

00:25:42,470 --> 00:25:40,320

browser was first released one of the

618

00:25:45,430 --> 00:25:42,480

first internet browsers and i was

619

00:25:47,750 --> 00:25:45,440

looking for an opportunity to do work in

620

00:25:49,990 --> 00:25:47,760

high performance computing and nasa at

621

00:25:52,870 --> 00:25:50,000

the time had super computers that were

622

00:25:54,310 --> 00:25:52,880

among the top 500 fastest in the world

623

00:25:57,110 --> 00:25:54,320

so i did a

624

00:25:59,430 --> 00:25:57,120

search long before google was invented

625

00:26:02,470 --> 00:25:59,440

and uh found it was an opportunity to

626

00:26:03,830 --> 00:26:02,480

work uh with jpl and you know i had

627

00:26:05,669 --> 00:26:03,840

planned to actually only spend a few

628

00:26:08,230 --> 00:26:05,679

years at the lab

629

00:26:09,590 --> 00:26:08,240

and then go ahead and look to become a

630

00:26:12,870 --> 00:26:09,600

professor

631

00:26:15,029 --> 00:26:12,880

but i'm still at jpl and enjoying it so

632

00:26:17,350 --> 00:26:15,039

maybe i'll pursue that in retirement

633

00:26:19,350 --> 00:26:17,360

someday

634

00:26:21,669 --> 00:26:19,360

well that is all the time we have for

635

00:26:26,070 --> 00:26:21,679

questions today thank you so much for

636

00:26:26,080 --> 00:26:29,590

absolutely thank you

637

00:26:34,630 --> 00:26:31,669

and many thanks to all of you who joined

638

00:26:36,549 --> 00:26:34,640

us from home if you would like to learn

639

00:26:39,269 --> 00:26:36,559

more about some of the amazing people

640

00:26:41,669 --> 00:26:39,279

featured in today's episode please visit

641

00:26:43,190 --> 00:26:41,679

go.nasa.gov

642

00:26:45,510 --> 00:26:43,200

forward slash

643

00:26:47,590 --> 00:26:45,520

black history month thank you for

644

00:26:49,830 --> 00:26:47,600

joining today's episode and see you next

645

00:27:20,510 --> 00:26:49,840

time

646

00:27:26,870 --> 00:27:26,760

[Music]

647

00:27:41,029 --> 00:27:26,880

[Applause]

648

00:27:43,140 --> 00:27:42,600

so

649

00:28:01,620 --> 00:27:43,150

[Applause]