

NASA AT HOME

SPACEPORT SERIES



1
00:00:00,000 --> 00:01:00,580

[Music]

2
00:01:03,979 --> 00:01:02,540

all right greetings once again and

3
00:01:06,170 --> 00:01:03,989

welcome back to our this week I'm Joshua

4
00:01:08,570 --> 00:01:06,180

Santora being joined by three amazing

5
00:01:11,690 --> 00:01:08,580

ladies who are helping to make the Orion

6
00:01:12,620 --> 00:01:11,700

program happen a reality ladies thanks

7
00:01:14,389 --> 00:01:12,630

for joining me I want to go and

8
00:01:15,020 --> 00:01:14,399

introduce you all first up Laura

9
00:01:19,070 --> 00:01:15,030

pullaiah

10
00:01:20,359 --> 00:01:19,080

is a test engineer for Orion she works

11
00:01:23,330 --> 00:01:20,369

at the Kennedy Space Center Laura how

12
00:01:24,800 --> 00:01:23,340

are you I'm good and yourself

13
00:01:26,749 --> 00:01:24,810

I'm doing great hey can you tell us a

14

00:01:28,520 --> 00:01:26,759

little bit about just really quickly

15

00:01:32,540 --> 00:01:28,530

what do you do for a Ryan at the Kennedy

16

00:01:35,090 --> 00:01:32,550

Space Center so out here I specifically

17

00:01:37,730 --> 00:01:35,100

focus on testing Orion at a system level

18

00:01:39,410 --> 00:01:37,740

and ensuring is qualified to meet the

19

00:01:41,630 --> 00:01:39,420

different experiments that is going to

20

00:01:44,690 --> 00:01:41,640

experience during launch mission and

21

00:01:46,820 --> 00:01:44,700

recovery I also work on testing Orion to

22

00:01:49,070 --> 00:01:46,830

ensure it meets those performance

23

00:01:51,800 --> 00:01:49,080

expectations perfect per the design

24

00:01:55,490 --> 00:01:51,810

which is essentially like manufacturing

25

00:01:57,800 --> 00:01:55,500

company of a car vehicle in innocent in

26
00:02:00,020 --> 00:01:57,810
essence yeah that's awesome we wanted to

27
00:02:02,420 --> 00:02:00,030
use a car analogy today to help explain

28
00:02:04,730 --> 00:02:02,430
these roles because it is incredibly

29
00:02:06,380 --> 00:02:04,740
complex to build a spaceship because

30
00:02:08,630 --> 00:02:06,390
that's what we're talking about this is

31
00:02:10,069 --> 00:02:08,640
that spaceship recently departed this

32
00:02:11,930 --> 00:02:10,079
facility in Ohio to come back to the

33
00:02:14,240 --> 00:02:11,940
Kennedy Space Center so we're excited to

34
00:02:14,960 --> 00:02:14,250
have her back so next up we have Susan

35
00:02:17,240 --> 00:02:14,970
beggarman

36
00:02:18,620 --> 00:02:17,250
Susan thank you for being here what is

37
00:02:22,069 --> 00:02:18,630
it that you do and you're at the Johnson

38
00:02:23,720 --> 00:02:22,079

Space Center correct I am yes I'm at

39

00:02:26,630 --> 00:02:23,730

Johnson's being in there performance

40

00:02:28,160 --> 00:02:26,640

throughout the mission so we basically

41

00:02:30,050 --> 00:02:28,170

take a human systems integration

42

00:02:32,930 --> 00:02:30,060

approach were involved from the very

43

00:02:35,479 --> 00:02:32,940

beginning from like the initial

44

00:02:37,009 --> 00:02:35,489

architectural and conceptual design

45

00:02:39,170 --> 00:02:37,019

decisions all the way through the

46

00:02:42,099 --> 00:02:39,180

detailed designs the certification of

47

00:02:44,330 --> 00:02:42,109

the vehicle and then we also help

48

00:02:46,910 --> 00:02:44,340

contribute to the training of the crew

49

00:02:49,250 --> 00:02:46,920

and the execution of the mission

50

00:02:51,229 --> 00:02:49,260

my group spans a wide variety of

51
00:02:53,210 --> 00:02:51,239
disciplines all focused on human health

52
00:02:56,660 --> 00:02:53,220
and performance so everything from human

53
00:02:57,530 --> 00:02:56,670
factors to medical operations radiation

54
00:03:01,250 --> 00:02:57,540
acoustics

55
00:03:02,960 --> 00:03:01,260
food environmental health exercise crew

56
00:03:04,849 --> 00:03:02,970
countermeasures basically any of the

57
00:03:07,350 --> 00:03:04,859
things that are needed to keep the

58
00:03:10,260 --> 00:03:07,360
astronauts healthy happy and productive

59
00:03:12,120 --> 00:03:10,270
while their entity so once where you sit

60
00:03:13,830 --> 00:03:12,130
in the car and be sure that you like the

61
00:03:16,050 --> 00:03:13,840
way it feels that you can reach all the

62
00:03:20,640 --> 00:03:16,060
controls that you're able to drive the

63
00:03:23,940 --> 00:03:20,650

car and that you basically are happy

64

00:03:25,890 --> 00:03:23,950

with the car itself that that's our

65

00:03:28,830 --> 00:03:25,900

focus is that interaction between the

66

00:03:29,400 --> 00:03:28,840

astronaut and the hardware itself yeah

67

00:03:31,530 --> 00:03:29,410

awesome

68

00:03:32,990 --> 00:03:31,540

and then last up we have Lauren Bacall

69

00:03:34,890 --> 00:03:33,000

you're Lauren thanks for being here and

70

00:03:38,010 --> 00:03:34,900

you're at the Johnson Space Center as

71

00:03:40,740 --> 00:03:38,020

well correct yeah that's right Joshua

72

00:03:43,020 --> 00:03:40,750

I'm here at Johnson Space Center and I

73

00:03:46,650 --> 00:03:43,030

am the flight operations manager

74

00:03:48,540 --> 00:03:46,660

supporting the Orion program flight

75

00:03:50,610 --> 00:03:48,550

operations is responsible for planning

76

00:03:53,070 --> 00:03:50,620

the mission training the flight control

77

00:03:54,449 --> 00:03:53,080

team and the astronauts and flying the

78

00:03:57,150 --> 00:03:54,459

mission which means we command and

79

00:03:59,729 --> 00:03:57,160

control the Orion spacecraft from the

80

00:04:02,220 --> 00:03:59,739

Mission Control during the mission using

81

00:04:05,430 --> 00:04:02,230

the car analogy we are conducting

82

00:04:06,930 --> 00:04:05,440

training sort of similar to learning how

83

00:04:09,479 --> 00:04:06,940

to drive a car what you would learn in

84

00:04:11,670 --> 00:04:09,489

drivers education and then during the

85

00:04:13,500 --> 00:04:11,680

mission were the actual driver or the

86

00:04:15,420 --> 00:04:13,510

flight control team that's commanding

87

00:04:20,449 --> 00:04:15,430

and controlling the spacecraft during

88

00:04:22,650 --> 00:04:20,459

the mission alright so jumping right in

89

00:04:24,270 --> 00:04:22,660

if you have questions for these ladies

90

00:04:25,860 --> 00:04:24,280

you feel free to ask those live in the

91

00:04:27,870 --> 00:04:25,870

chat window subscribe to our channel

92

00:04:30,030 --> 00:04:27,880

well we have one more episode tomorrow

93

00:04:31,790 --> 00:04:30,040

for the rest of our miss week but let's

94

00:04:34,710 --> 00:04:31,800

go back Laura actually tell me about

95

00:04:36,659 --> 00:04:34,720

testing for Orion obviously there is a

96

00:04:39,090 --> 00:04:36,669

lot of systems thinking about sustaining

97

00:04:42,680 --> 00:04:39,100

human life out in the vacuum of space so

98

00:04:48,540 --> 00:04:42,690

do you all do all of testing for brain

99

00:04:50,730 --> 00:04:48,550

yeah so kind of the day in the life in

100

00:04:52,680 --> 00:04:50,740

order to implement a lot of this testing

101
00:04:54,450 --> 00:04:52,690
that we're doing there's a lot of

102
00:04:57,000 --> 00:04:54,460
planning that's involved that you need

103
00:04:59,159 --> 00:04:57,010
to do first most of our days are working

104
00:05:01,020 --> 00:04:59,169
with our subject matter experts for the

105
00:05:03,510 --> 00:05:01,030
specific systems we're testing and

106
00:05:06,690 --> 00:05:03,520
creating those detailed plans and

107
00:05:09,270 --> 00:05:06,700
procedures and test profiles that we

108
00:05:11,610 --> 00:05:09,280
need to do to ensure that we don't harm

109
00:05:13,440 --> 00:05:11,620
the vehicle in any way when our program

110
00:05:14,820 --> 00:05:13,450
has actually built another test article

111
00:05:17,790 --> 00:05:14,830
which is called the structural test

112
00:05:20,010 --> 00:05:17,800
article also known as the STA and we're

113
00:05:23,279 --> 00:05:20,020

ever use that to perform a lot of ours

114

00:05:25,650 --> 00:05:23,289

some level qualification testing this

115

00:05:27,869 --> 00:05:25,660

was done in order to both save on time

116

00:05:31,050 --> 00:05:27,879

in work could do multiple testing at the

117

00:05:33,450 --> 00:05:31,060

in parallel and also lower the risk of

118

00:05:37,559 --> 00:05:33,460

causing damage to the flight article and

119

00:05:41,159 --> 00:05:37,569

I do have a video of one of the testing

120

00:05:46,170 --> 00:05:41,169

that we do with sta if you can bring

121

00:05:50,309 --> 00:05:46,180

that with that video up essentially this

122

00:05:52,680 --> 00:05:50,319

is with the FDA us simulating before

123

00:05:54,180 --> 00:05:52,690

they cover being jettisoned in order to

124

00:05:56,550 --> 00:05:54,190

deploy the parachutes that we're going

125

00:05:58,170 --> 00:05:56,560

to be using for descent here we're

126

00:05:59,909 --> 00:05:58,180

really looking for those vehicle

127

00:06:02,490 --> 00:05:59,919

responses and seeing if there's any

128

00:06:04,290 --> 00:06:02,500

negative impacts of the vehicle and we

129

00:06:06,149 --> 00:06:04,300

are using the sta instead of the fly

130

00:06:08,610 --> 00:06:06,159

article because if there are any

131

00:06:09,990 --> 00:06:08,620

negative responses we're not harming the

132

00:06:14,370 --> 00:06:10,000

vehicle that's going to be going into

133

00:06:16,770 --> 00:06:14,380

space alright and Susan tell me about

134

00:06:17,999 --> 00:06:16,780

your job what's what's exciting about it

135

00:06:20,820 --> 00:06:18,009

and what's challenging about it

136

00:06:25,350 --> 00:06:20,830

obviously making a spaceship ready for

137

00:06:28,080 --> 00:06:25,360

humans is no small task right there's a

138

00:06:29,790 --> 00:06:28,090

lot of exciting parts of my job the

139

00:06:31,980 --> 00:06:29,800

really neat part of my job is the cause

140

00:06:34,140 --> 00:06:31,990

were so focused on the human integration

141

00:06:36,180 --> 00:06:34,150

into the vehicle the vast majority of

142

00:06:38,610 --> 00:06:36,190

our work does interact directly with the

143

00:06:39,899 --> 00:06:38,620

astronauts so we spend a lot of time

144

00:06:42,749 --> 00:06:39,909

working with them getting their input

145

00:06:45,779 --> 00:06:42,759

their experience and ensuring that the

146

00:06:47,909 --> 00:06:45,789

hardware design really meets their needs

147

00:06:49,879 --> 00:06:47,919

so it's it's a really fun and exciting

148

00:06:51,870 --> 00:06:49,889

job from an engineering integration

149

00:06:54,300 --> 00:06:51,880

perspective while still having a lot of

150

00:06:57,360 --> 00:06:54,310

interaction with with the people that

151
00:06:58,980 --> 00:06:57,370
we're all focused on keeping safe it's

152
00:07:00,659 --> 00:06:58,990
also very rewarding because we feel like

153
00:07:02,070 --> 00:07:00,669
the decisions that were making the

154
00:07:03,719 --> 00:07:02,080
things that we're advocating for

155
00:07:06,059 --> 00:07:03,729
fighting for the things that we're

156
00:07:08,129 --> 00:07:06,069
testing are directly affecting the

157
00:07:09,330 --> 00:07:08,139
astronauts experience you see here on

158
00:07:11,700 --> 00:07:09,340
the screen some of the human-in-the-loop

159
00:07:14,070 --> 00:07:11,710
testing that we do this is a pretty

160
00:07:17,999 --> 00:07:14,080
common activity that we do where we

161
00:07:22,260 --> 00:07:18,009
bring astronauts into either a mock-up

162
00:07:24,600 --> 00:07:22,270
or like a part path trainer and have

163
00:07:28,969 --> 00:07:24,610

them assess the design as the design

164

00:07:31,230 --> 00:07:28,979

progresses so that we can improve it and

165

00:07:34,400 --> 00:07:31,240

enable them to be more productive in

166

00:07:40,800 --> 00:07:37,920

awesome and so Lauren sorry about that

167

00:07:42,990 --> 00:07:40,810

coming back out so Lauren what does what

168

00:07:46,320 --> 00:07:43,000

does it take to be a flight controller

169

00:07:48,120 --> 00:07:46,330

obviously no small thing to train

170

00:07:50,640 --> 00:07:48,130

astronauts I think a lot of times we

171

00:07:53,460 --> 00:07:50,650

think of astronauts as being one of the

172

00:07:56,070 --> 00:07:53,470

greatest most highly difficult jobs on

173

00:07:57,749 --> 00:07:56,080

earth or in space so what's that like to

174

00:08:01,050 --> 00:07:57,759

be the one to kind of help them learn

175

00:08:03,150 --> 00:08:01,060

what they do yeah thanks for that

176

00:08:04,980 --> 00:08:03,160

question not only to our flight

177

00:08:08,040 --> 00:08:04,990

controllers helped to Train astronauts

178

00:08:09,689 --> 00:08:08,050

but we also support and command and

179

00:08:12,240 --> 00:08:09,699

control the mission during the during

180

00:08:14,400 --> 00:08:12,250

real time for Mission Control and the

181

00:08:16,499 --> 00:08:14,410

foundations of flight operations are the

182

00:08:18,210 --> 00:08:16,509

backbone of what it takes to be a flight

183

00:08:20,490 --> 00:08:18,220

controller for any human spaceflight

184

00:08:23,010 --> 00:08:20,500

mission including for Artemis missions

185

00:08:25,589 --> 00:08:23,020

these foundations establish a guideline

186

00:08:26,909 --> 00:08:25,599

for personal excellence and our flight

187

00:08:28,589 --> 00:08:26,919

controllers are demonstrating these

188

00:08:30,629 --> 00:08:28,599

every single day as they're supporting

189

00:08:32,909 --> 00:08:30,639

the mission both training the crew and

190

00:08:35,639 --> 00:08:32,919

from Mission Control and one I'd like to

191

00:08:37,320 --> 00:08:35,649

talk about is competence being that

192

00:08:39,449 --> 00:08:37,330

there's no substitute for total

193

00:08:41,969 --> 00:08:39,459

preparation and complete dedication and

194

00:08:43,409 --> 00:08:41,979

I think that that sums up the impact of

195

00:08:45,480 --> 00:08:43,419

what our flight controllers role is

196

00:08:47,340 --> 00:08:45,490

during the mission and the care that we

197

00:08:49,949 --> 00:08:47,350

take toward ensuring that our astronauts

198

00:08:51,300 --> 00:08:49,959

and our spacecraft state safe for

199

00:08:53,699 --> 00:08:51,310

Artemis missions we're currently

200

00:08:56,490 --> 00:08:53,709

simulating the various flight phases of

201
00:08:58,290 --> 00:08:56,500
the mission and all the conflicts tasks

202
00:09:00,300 --> 00:08:58,300
that we need the flight control team to

203
00:09:02,160 --> 00:09:00,310
be ready to do to succeed during the

204
00:09:04,199 --> 00:09:02,170
mission and we practice all of the

205
00:09:06,150 --> 00:09:04,209
nominal that these are all of the

206
00:09:08,850 --> 00:09:06,160
expected activities and the off-nominal

207
00:09:10,889 --> 00:09:08,860
the unexpected scenarios that we think

208
00:09:12,600 --> 00:09:10,899
could occur during the mission we

209
00:09:15,510 --> 00:09:12,610
practice working through the process of

210
00:09:17,370 --> 00:09:15,520
identifying failures troubleshooting the

211
00:09:20,579 --> 00:09:17,380
things that go wrong and then resolving

212
00:09:22,860 --> 00:09:20,589
the issues and we're also exerting all

213
00:09:24,290 --> 00:09:22,870

of the coordination that happens amongst

214

00:09:26,970 --> 00:09:24,300

the flight control team during these

215

00:09:29,400 --> 00:09:26,980

simulations between them and the flight

216

00:09:31,380 --> 00:09:29,410

director and with the astronauts our

217

00:09:33,030 --> 00:09:31,390

goal is always to train like you fly

218

00:09:34,889 --> 00:09:33,040

that's something that we say a lot with

219

00:09:36,780 --> 00:09:34,899

the program and that's why these

220

00:09:39,150 --> 00:09:36,790

simulations are so important to our

221

00:09:40,829 --> 00:09:39,160

building the competence necessary that

222

00:09:44,790 --> 00:09:40,839

oath that the flight controllers will

223

00:09:46,160 --> 00:09:44,800

need to support Artemis awesome cool so

224

00:09:47,389 --> 00:09:46,170

Laura I want to ask you

225

00:09:49,509 --> 00:09:47,399

about the integration to the space

226

00:09:52,129 --> 00:09:49,519

launch system obviously the Orion

227

00:09:53,540 --> 00:09:52,139

capsule holds the people but in order to

228

00:09:55,670 --> 00:09:53,550

get into space it needs the space launch

229

00:09:57,410 --> 00:09:55,680

system so what's that process been like

230

00:10:02,449 --> 00:09:57,420

to not only make it self-sustaining but

231

00:10:07,009 --> 00:10:02,459

also to work well with the rocket right

232

00:10:09,500 --> 00:10:07,019

so we've actually with our sta article

233

00:10:11,990 --> 00:10:09,510

that that we have we've we've gone

234

00:10:14,720 --> 00:10:12,000

through and made it at the interface

235

00:10:17,660 --> 00:10:14,730

between the two and seeing what it takes

236

00:10:20,689 --> 00:10:17,670

to to perform that integration and also

237

00:10:22,639 --> 00:10:20,699

we've gone through modal testing which

238

00:10:25,850 --> 00:10:22,649

is where you're applying loads and seen

239

00:10:29,329 --> 00:10:25,860

at those interfaces what we're

240

00:10:31,069 --> 00:10:29,339

experiencing to ensure that there aren't

241

00:10:33,410 --> 00:10:31,079

going to be any issues when it comes for

242

00:10:35,240 --> 00:10:33,420

the real-time day of launch how we

243

00:10:37,579 --> 00:10:35,250

actually integrate the vehicle is going

244

00:10:39,470 --> 00:10:37,589

to be out at the Kennedy Space Center we

245

00:10:41,990 --> 00:10:39,480

have our Vehicle Assembly Building which

246

00:10:44,060 --> 00:10:42,000

is also known as the VAB and this is

247

00:10:46,009 --> 00:10:44,070

where the launch vehicle SLS comes in

248

00:10:48,470 --> 00:10:46,019

with the rhein spacecraft and gets

249

00:10:51,560 --> 00:10:48,480

integrated at that interface and I think

250

00:10:55,069 --> 00:10:51,570

you have here's the mobile launcher and

251
00:10:57,860 --> 00:10:55,079
the the VAB there's also with the SLS

252
00:11:00,769 --> 00:10:57,870
the breakdown of the of the boosters

253
00:11:04,610 --> 00:11:00,779
core stage yeah this one of the booster

254
00:11:06,680 --> 00:11:04,620
core stage and you see the the Orion

255
00:11:08,389 --> 00:11:06,690
stage adaptor in the middle that's

256
00:11:12,019 --> 00:11:08,399
really where Orion's gonna integrate

257
00:11:13,579 --> 00:11:12,029
there and we have about 360 fasteners

258
00:11:15,199 --> 00:11:13,589
that we're going to use to make that

259
00:11:17,930 --> 00:11:15,209
interface and ensure it's a good

260
00:11:20,269 --> 00:11:17,940
connection and then once we stack it in

261
00:11:22,519 --> 00:11:20,279
that and create that integrated vehicle

262
00:11:25,069 --> 00:11:22,529
we'll go through a series of testing in

263
00:11:27,500 --> 00:11:25,079

the VAB and out at the pad to ensure it

264

00:11:29,569 --> 00:11:27,510

works together us end to end to end

265

00:11:31,189 --> 00:11:29,579

across that vehicle and once after all

266

00:11:32,960 --> 00:11:31,199

that's completed then we'll roll out for

267

00:11:35,660 --> 00:11:32,970

launch awesome

268

00:11:38,150 --> 00:11:35,670

so Susan what is the what's the plan

269

00:11:42,470 --> 00:11:38,160

forward obviously the first flight

270

00:11:44,509 --> 00:11:42,480

Orion is called Artemis one so that'll

271

00:11:46,040 --> 00:11:44,519

happen next year and that's actually an

272

00:11:48,620 --> 00:11:46,050

uncrewed flight like you mentioned

273

00:11:50,449 --> 00:11:48,630

that's to be sure all of our systems are

274

00:11:53,180 --> 00:11:50,459

in great working order and ready for us

275

00:11:55,939 --> 00:11:53,190

to be able to fly a crew safely then our

276

00:11:59,900 --> 00:11:55,949

first crewed flight is Artemis ooh so

277

00:12:02,060 --> 00:11:59,910

that'll be in the 2023 timeframe

278

00:12:05,600 --> 00:12:02,070

we'll be flying four crew members around

279

00:12:07,010 --> 00:12:05,610

the moon and a lunar flyby flight and of

280

00:12:08,600 --> 00:12:07,020

course we're turning them safely to

281

00:12:10,730 --> 00:12:08,610

earth and all of that is in preparation

282

00:12:13,910 --> 00:12:10,740

for Artemis 3 which will be the next

283

00:12:16,580 --> 00:12:13,920

flight which is the flight where we will

284

00:12:20,330 --> 00:12:16,590

be putting boots on the moon delivering

285

00:12:22,460 --> 00:12:20,340

the first woman and the next man back to

286

00:12:25,220 --> 00:12:22,470

the surface of the Moon and that should

287

00:12:27,020 --> 00:12:25,230

be in the 2024 timeframe super exciting

288

00:12:29,900 --> 00:12:27,030

so we're bad time here so Lauren last

289

00:12:31,910 --> 00:12:29,910

question for you what are the goals for

290

00:12:34,760 --> 00:12:31,920

these future missions just as you all

291

00:12:35,360 --> 00:12:34,770

are working on training the astronauts

292

00:12:38,330 --> 00:12:35,370

to be ready

293

00:12:40,370 --> 00:12:38,340

what's that vision for the activity of

294

00:12:46,010 --> 00:12:40,380

the astronauts as they go out to the

295

00:12:48,560 --> 00:12:46,020

moon and beyond yeah sure so when it

296

00:12:50,240 --> 00:12:48,570

comes to training astronauts that's a

297

00:12:54,620 --> 00:12:50,250

really important part of what we're

298

00:12:56,300 --> 00:12:54,630

looking for to four to do and we develop

299

00:12:58,370 --> 00:12:56,310

special capabilities in all of our

300

00:13:00,560 --> 00:12:58,380

training facilities to mimic what it's

301
00:13:03,170 --> 00:13:00,570
like for the crew how it will be for

302
00:13:05,060 --> 00:13:03,180
them in space and depending on what kind

303
00:13:08,180 --> 00:13:05,070
of things are trying to Train we utilize

304
00:13:10,160 --> 00:13:08,190
different facilities to do that so we

305
00:13:11,870 --> 00:13:10,170
have an Orion capsule mock-up that I

306
00:13:13,820 --> 00:13:11,880
think you had a picture of the crew

307
00:13:16,010 --> 00:13:13,830
inside and that's inside of our

308
00:13:18,170 --> 00:13:16,020
spaceflight vehicle mock-up facility and

309
00:13:19,760 --> 00:13:18,180
we use that to train the current

310
00:13:21,170 --> 00:13:19,770
specific tasks that they're going to

311
00:13:23,840 --> 00:13:21,180
need to do during the mission like

312
00:13:25,370 --> 00:13:23,850
student training in their entry suits

313
00:13:27,530 --> 00:13:25,380

that's a picture of those orange suits

314

00:13:29,150 --> 00:13:27,540

right there getting into the vehicle on

315

00:13:30,680 --> 00:13:29,160

launch day and getting out of their

316

00:13:32,600 --> 00:13:30,690

slips and stowing them after the

317

00:13:34,190 --> 00:13:32,610

translunar injection burn that's the

318

00:13:36,410 --> 00:13:34,200

burn that's gonna take us to the moon

319

00:13:39,110 --> 00:13:36,420

flight operations also trains the

320

00:13:41,210 --> 00:13:39,120

astronauts in that same mock-up on

321

00:13:44,540 --> 00:13:41,220

housekeeping food preparation and

322

00:13:46,580 --> 00:13:44,550

exercise and that's where some of the

323

00:13:48,500 --> 00:13:46,590

roles of flight operations overlap with

324

00:13:50,870 --> 00:13:48,510

Susan's organization as we work together

325

00:13:52,370 --> 00:13:50,880

to make sure that all of that works for

326

00:13:54,860 --> 00:13:52,380

the crew and that they're safe doing all

327

00:13:58,340 --> 00:13:54,870

of those things and we're also

328

00:14:00,890 --> 00:13:58,350

developing a Orion crew station we're

329

00:14:03,320 --> 00:14:00,900

gonna use that to help astronauts learn

330

00:14:05,330 --> 00:14:03,330

how to operate Orion specifically

331

00:14:08,120 --> 00:14:05,340

training them to execute the procedures

332

00:14:10,310 --> 00:14:08,130

for navigation and maneuvers rendezvous

333

00:14:12,170 --> 00:14:10,320

and docking and the astronauts will

334

00:14:13,670 --> 00:14:12,180

interact with the flight software that

335

00:14:15,980 --> 00:14:13,680

works just like how

336

00:14:17,900 --> 00:14:15,990

it will on-the-fly beautiful we also

337

00:14:19,670 --> 00:14:17,910

will perform integrated training when

338

00:14:21,590 --> 00:14:19,680

the astronauts are in the crew station

339

00:14:23,120 --> 00:14:21,600

with our flight control team running

340

00:14:26,150 --> 00:14:23,130

through those simulations that I talked

341

00:14:28,430 --> 00:14:26,160

about in an earlier question yeah so

342

00:14:30,740 --> 00:14:28,440

much to do obviously a lot of really

343

00:14:32,660 --> 00:14:30,750

interesting amazing things that have to

344

00:14:34,460 --> 00:14:32,670

happen kind of herelet heralding back to

345

00:14:36,079 --> 00:14:34,470

the Apollo program with a lot of those

346

00:14:38,210 --> 00:14:36,089

things you mentioned like translunar

347

00:14:40,790 --> 00:14:38,220

injections and docking and rendezvous

348

00:14:42,079 --> 00:14:40,800

those kinds of things on-orbit ladies I

349

00:14:43,579 --> 00:14:42,089

know you could talk for days on this

350

00:14:45,560 --> 00:14:43,589

stuff appreciate you and all of your

351

00:14:46,639 --> 00:14:45,570

your work and your team's work but

352

00:14:51,280 --> 00:14:46,649

that's all the time we have for today so

353

00:14:53,960 --> 00:14:51,290

thanks for being here Thank You Joshua

354

00:14:56,210 --> 00:14:53,970

awesome this is gonna be it for us today

355

00:14:57,829 --> 00:14:56,220

check us out tomorrow for our final

356

00:14:59,960 --> 00:14:57,839

artemis week's show and i want to remind