



1  
00:00:04,150 --> 00:00:02,550  
aviation week and space technology this

2  
00:00:06,309 --> 00:00:04,160  
is mission control houston please call

3  
00:00:08,390 --> 00:00:06,319  
station for a voice check

4  
00:00:10,470 --> 00:00:08,400  
good morning station this is mark caro

5  
00:00:13,589 --> 00:00:10,480  
with aviation week in space technology

6  
00:00:17,349 --> 00:00:15,589  
hi mark welcome aboard the international

7  
00:00:18,390 --> 00:00:17,359  
space station

8  
00:00:19,830 --> 00:00:18,400  
thank you

9  
00:00:21,429 --> 00:00:19,840  
i've got some questions i know you're

10  
00:00:22,790 --> 00:00:21,439  
both busy so i appreciate the

11  
00:00:25,269 --> 00:00:22,800  
opportunity

12  
00:00:27,189 --> 00:00:25,279  
i wonder if the two of you could discuss

13  
00:00:29,029 --> 00:00:27,199

what the key challenges are for this

14

00:00:30,950 --> 00:00:29,039

third spacewalk as it's currently

15

00:00:32,870 --> 00:00:30,960

planned it seems like there's lots of

16

00:00:37,990 --> 00:00:32,880

cable and lots of space station real

17

00:00:41,510 --> 00:00:39,990

that's right mark we're continuing the

18

00:00:43,670 --> 00:00:41,520

cable theme that we had from the first

19

00:00:45,910 --> 00:00:43,680

two evas and this one we're going to lay

20

00:00:47,750 --> 00:00:45,920

down over 400 feet of cable we're going

21

00:00:49,350 --> 00:00:47,760

to send two cables out to the left side

22

00:00:51,510 --> 00:00:49,360

of the station or port side and two to

23

00:00:53,189 --> 00:00:51,520

the right side or starboard side

24

00:00:54,869 --> 00:00:53,199

and these cables are going to attach to

25

00:00:57,189 --> 00:00:54,879

some antennas that are going to be used

26

00:00:58,630 --> 00:00:57,199

for the future american vehicles that

27

00:00:59,990 --> 00:00:58,640

are going to be docking bringing crew to

28

00:01:02,389 --> 00:01:00,000

the space station starting in a few

29

00:01:03,990 --> 00:01:02,399

years so we need to put these antennas

30

00:01:06,149 --> 00:01:04,000

and the cables there for them and also

31

00:01:08,149 --> 00:01:06,159

some reflectors so their onboard

32

00:01:10,310 --> 00:01:08,159

navigation systems that use lasers can

33

00:01:11,990 --> 00:01:10,320

see the reflectors and that way the

34

00:01:13,910 --> 00:01:12,000

spaceship will know where the station is

35

00:01:15,830 --> 00:01:13,920

and what orientation it's in and will be

36

00:01:17,910 --> 00:01:15,840

able to dock properly so

37

00:01:19,590 --> 00:01:17,920

there's a lot of moving from one end to

38

00:01:20,870 --> 00:01:19,600

the other of the station and a lot of

39

00:01:23,030 --> 00:01:20,880

equipment and hardware that we're going

40

00:01:25,190 --> 00:01:23,040

to be bringing out there

41

00:01:27,350 --> 00:01:25,200

and terry i'd like to ask you if

42

00:01:29,749 --> 00:01:27,360

if you and the experts on the ground are

43

00:01:31,030 --> 00:01:29,759

any closer to identifying the source of

44

00:01:32,950 --> 00:01:31,040

the water

45

00:01:34,630 --> 00:01:32,960

in your spacesuit helmet after the

46

00:01:37,270 --> 00:01:34,640

second spacewalk

47

00:01:39,510 --> 00:01:37,280

and how concerned you might be about

48

00:01:44,069 --> 00:01:39,520

embarking on a third spacewalk in the

49

00:01:47,830 --> 00:01:45,749

well you know to be honest i've been

50

00:01:49,190 --> 00:01:47,840

busy getting ready for the third

51  
00:01:50,550 --> 00:01:49,200  
spacewalk and i know a lot of

52  
00:01:51,670 --> 00:01:50,560  
specialists i've gotten some emails and

53  
00:01:54,389 --> 00:01:51,680  
talked to folks on the ground they're

54  
00:01:55,749 --> 00:01:54,399  
very busy analyzing the data this is

55  
00:01:57,030 --> 00:01:55,759  
something that we've seen before and i

56  
00:01:58,469 --> 00:01:57,040  
mentioned it yesterday when i noticed

57  
00:02:01,190 --> 00:01:58,479  
some water i said it might be the same

58  
00:02:03,109 --> 00:02:01,200  
issue it's happened a few times

59  
00:02:04,069 --> 00:02:03,119  
so it's something that it's possible

60  
00:02:05,670 --> 00:02:04,079  
that it's something that we've seen

61  
00:02:07,830 --> 00:02:05,680  
before but that's still to be determined

62  
00:02:09,029 --> 00:02:07,840  
and i'm sure that nasa is looking very

63  
00:02:11,430 --> 00:02:09,039

intently at it and they're going to have

64

00:02:12,790 --> 00:02:11,440

a good answer for us here shortly um as

65

00:02:13,910 --> 00:02:12,800

far as being concerned i'm actually

66

00:02:15,190 --> 00:02:13,920

pretty happy with this spacesuit it's

67

00:02:17,030 --> 00:02:15,200

gotten me out the door and back in

68

00:02:18,390 --> 00:02:17,040

safely twice so i kind of like it and

69

00:02:20,229 --> 00:02:18,400

and hopefully it's good and i can keep

70

00:02:22,869 --> 00:02:20,239

on going out in the same one

71

00:02:25,190 --> 00:02:22,879

well it sounds like uh if if they can

72

00:02:27,910 --> 00:02:25,200

find a satisfactory answer

73

00:02:30,949 --> 00:02:27,920

um your your prime you're ready to go on

74

00:02:34,630 --> 00:02:32,229

that's right yeah butch and i will

75

00:02:35,910 --> 00:02:34,640

absolutely be ready to go and uh it's

76  
00:02:37,830 --> 00:02:35,920  
just a question the ground's gonna make

77  
00:02:40,070 --> 00:02:37,840  
the decision for us uh after looking at

78  
00:02:41,589 --> 00:02:40,080  
the data and uh i'm i'm completely

79  
00:02:43,030 --> 00:02:41,599  
confident i'm not going outside unless

80  
00:02:44,309 --> 00:02:43,040  
we're sure that it's a good shoot good

81  
00:02:46,229 --> 00:02:44,319  
suit

82  
00:02:47,110 --> 00:02:46,239  
okay and i'd like to ask the both of you

83  
00:02:50,070 --> 00:02:47,120  
um

84  
00:02:51,670 --> 00:02:50,080  
these this series of three spacewalks to

85  
00:02:53,830 --> 00:02:51,680  
reconfigure

86  
00:02:56,550 --> 00:02:53,840  
the station for these commercial uh

87  
00:02:59,270 --> 00:02:56,560  
docking ports seems um you know bigger

88  
00:03:01,110 --> 00:02:59,280

than just the just the work of

89

00:03:03,110 --> 00:03:01,120

putting the hardware in place this is

90

00:03:05,910 --> 00:03:03,120

really sort of giving

91

00:03:07,830 --> 00:03:05,920

the us space program a new direction and

92

00:03:10,309 --> 00:03:07,840

i just wonder what the two of you think

93

00:03:14,710 --> 00:03:10,319

about the significance of this activity

94

00:03:19,430 --> 00:03:17,270

oh it's absolutely a huge significance

95

00:03:20,710 --> 00:03:19,440

it is is changing our capabilities of

96

00:03:22,790 --> 00:03:20,720

the international space station we're

97

00:03:25,110 --> 00:03:22,800

preparing for the future as we prepare

98

00:03:26,869 --> 00:03:25,120

for as terry said for these these us

99

00:03:28,309 --> 00:03:26,879

vehicles to dock to the station right

100

00:03:30,309 --> 00:03:28,319

now we've got the old shuttle docking

101  
00:03:31,750 --> 00:03:30,319  
adapters and they're kind of big those

102  
00:03:33,350 --> 00:03:31,760  
kind of docking doctors are big and

103  
00:03:34,390 --> 00:03:33,360  
heavy and and these smaller vehicles

104  
00:03:36,070 --> 00:03:34,400  
there's no reason to put that kind of

105  
00:03:37,670 --> 00:03:36,080  
weight on them so the docking adapters

106  
00:03:39,110 --> 00:03:37,680  
are different and so we put those

107  
00:03:40,789 --> 00:03:39,120  
docking adapters on there like we said

108  
00:03:42,710 --> 00:03:40,799  
they have to have power and getting that

109  
00:03:44,710 --> 00:03:42,720  
power to them this is our job or working

110  
00:03:46,710 --> 00:03:44,720  
on those cables to get it to it and this

111  
00:03:47,910 --> 00:03:46,720  
is a huge effort yeah we've spent some

112  
00:03:49,990 --> 00:03:47,920  
you know six and a half hours on two

113  
00:03:52,550 --> 00:03:50,000

spacewalks outside but it has been

114

00:03:55,030 --> 00:03:52,560

literally years of planning engineers

115

00:03:57,990 --> 00:03:55,040

training teams assessment teams uh

116

00:03:59,750 --> 00:03:58,000

operational teams uh across our nation

117

00:04:01,509 --> 00:03:59,760

doing much in preparation for this so

118

00:04:04,070 --> 00:04:01,519

this is this is a huge endeavor you're

119

00:04:06,309 --> 00:04:04,080

absolutely right in that assessment

120

00:04:08,869 --> 00:04:06,319

i wonder if the two of you could give us

121

00:04:11,270 --> 00:04:08,879

a little insight into sort of physical

122

00:04:14,470 --> 00:04:11,280

demands uh even the mental

123

00:04:16,789 --> 00:04:14,480

demands of doing this kind of work i

124

00:04:18,310 --> 00:04:16,799

i listened yesterday to the space walks

125

00:04:20,310 --> 00:04:18,320

and it seemed like there was an awful

126

00:04:22,870 --> 00:04:20,320

lot of coordination between the two of

127

00:04:25,189 --> 00:04:22,880

you probably as much just looking at one

128

00:04:27,110 --> 00:04:25,199

another is actually talking

129

00:04:30,310 --> 00:04:27,120

and also the sort of

130

00:04:32,629 --> 00:04:30,320

support that you got from samantha and

131

00:04:34,070 --> 00:04:32,639

also on the ground from joe acaba and

132

00:04:35,830 --> 00:04:34,080

kind of cueing

133

00:04:37,510 --> 00:04:35,840

you here and there to

134

00:04:39,909 --> 00:04:37,520

to what was coming next and i just

135

00:04:45,510 --> 00:04:39,919

wonder how important that sort of

136

00:04:49,590 --> 00:04:47,670

yeah that teamwork is absolutely vital

137

00:04:51,189 --> 00:04:49,600

these these goals don't get accomplished

138

00:04:53,030 --> 00:04:51,199

these objectives do not happen without

139

00:04:55,430 --> 00:04:53,040

the work of everybody coming together

140

00:04:57,189 --> 00:04:55,440

and you know in joel talking to us he's

141

00:04:58,950 --> 00:04:57,199

just the voice of many people in the

142

00:05:01,430 --> 00:04:58,960

background that are talking to him and

143

00:05:03,430 --> 00:05:01,440

he's the conduit of communication to us

144

00:05:04,870 --> 00:05:03,440

back and forth so there's many many uh

145

00:05:06,230 --> 00:05:04,880

people on the ground that are assessing

146

00:05:08,710 --> 00:05:06,240

you know real time making real-time

147

00:05:10,070 --> 00:05:08,720

changes to what's taking place and like

148

00:05:12,469 --> 00:05:10,080

i said he's he's the one of the prime

149

00:05:14,550 --> 00:05:12,479

ones and samantha like you said uh terry

150

00:05:17,270 --> 00:05:14,560

and samantha worked together to lube the

151  
00:05:19,830 --> 00:05:17,280  
the arm yesterday and it would not have

152  
00:05:21,029 --> 00:05:19,840  
happened uh they got all the get-aheads

153  
00:05:23,029 --> 00:05:21,039  
done and it would not have happened in

154  
00:05:25,110 --> 00:05:23,039  
our time allotted had not samantha been

155  
00:05:27,029 --> 00:05:25,120  
exactly ready to start and do her part

156  
00:05:28,629 --> 00:05:27,039  
every single time so her part was vital

157  
00:05:30,230 --> 00:05:28,639  
as well and as far as the physical

158  
00:05:31,830 --> 00:05:30,240  
aspects i can tell you there's there's

159  
00:05:33,749 --> 00:05:31,840  
not many things that that i think that

160  
00:05:36,150 --> 00:05:33,759  
are more mentally

161  
00:05:38,469 --> 00:05:36,160  
and physically challenging

162  
00:05:40,629 --> 00:05:38,479  
simultaneously as is doing a spacewalk

163  
00:05:42,070 --> 00:05:40,639

like this with all the intricate details

164

00:05:44,070 --> 00:05:42,080

and the various things and and there's

165

00:05:45,909 --> 00:05:44,080

no way that at least in my brain that i

166

00:05:48,070 --> 00:05:45,919

can mentally put it all together and

167

00:05:49,830 --> 00:05:48,080

make it happen alone that's why we need

168

00:05:52,070 --> 00:05:49,840

joe and those ground teams feeding us

169

00:05:54,150 --> 00:05:52,080

information sometimes where a handrail

170

00:05:55,990 --> 00:05:54,160

is located something as simple as that

171

00:05:57,749 --> 00:05:56,000

and it's like you said it's absolutely

172

00:05:59,189 --> 00:05:57,759

crucial to the success of any endeavor

173

00:06:02,070 --> 00:05:59,199

like this

174

00:06:03,670 --> 00:06:02,080

and what about the the physicality of it

175

00:06:05,270 --> 00:06:03,680

um i

176

00:06:08,469 --> 00:06:05,280

i guess i'm really kind of wondering if

177

00:06:11,029 --> 00:06:08,479

if you know are you are your hands uh in

178

00:06:12,469 --> 00:06:11,039

need of more rest or your arms and all

179

00:06:14,230 --> 00:06:12,479

that or or can you work in the

180

00:06:16,150 --> 00:06:14,240

spacesuits and do all the stuff that's

181

00:06:17,189 --> 00:06:16,160

planned for the third spacewalk without

182

00:06:19,430 --> 00:06:17,199

being

183

00:06:24,070 --> 00:06:19,440

um you know cramped or

184

00:06:28,230 --> 00:06:26,309

yeah you are absolutely sore and uh

185

00:06:29,990 --> 00:06:28,240

tired after a spacewalk the good news is

186

00:06:31,430 --> 00:06:30,000

it seems like your body heals a little

187

00:06:33,590 --> 00:06:31,440

bit quicker in space than it does on

188

00:06:34,870 --> 00:06:33,600

earth but they give us a few days off

189

00:06:36,469 --> 00:06:34,880

which are really important like you said

190

00:06:38,710 --> 00:06:36,479

that just to heal your forearms and your

191

00:06:39,590 --> 00:06:38,720

and your your hand muscles

192

00:06:41,110 --> 00:06:39,600

um

193

00:06:42,950 --> 00:06:41,120

but you are tired i've done a few

194

00:06:45,830 --> 00:06:42,960

marathons on earth and half marathons

195

00:06:47,909 --> 00:06:45,840

and the spacewalk is is is definitely

196

00:06:49,270 --> 00:06:47,919

takes a lot of energy out of you we were

197

00:06:51,189 --> 00:06:49,280

talking to the doctors yesterday just

198

00:06:52,950 --> 00:06:51,199

about our heart rates and it's amazing

199

00:06:54,950 --> 00:06:52,960

the heart rate level and the amount of

200

00:06:56,469 --> 00:06:54,960

physical work you do for

201  
00:06:58,469 --> 00:06:56,479  
uh the six and a half hours we were

202  
00:07:00,070 --> 00:06:58,479  
outside plus a couple hours beforehand

203  
00:07:02,309 --> 00:07:00,080  
in the suit and about an hour afterwards

204  
00:07:03,670 --> 00:07:02,319  
in the suit so it's a lot of work you're

205  
00:07:06,150 --> 00:07:03,680  
absolutely right about the physical

206  
00:07:08,390 --> 00:07:06,160  
aspect of a spacewalk

207  
00:07:09,830 --> 00:07:08,400  
okay one thing the uh one thing that a

208  
00:07:11,270 --> 00:07:09,840  
lot of people aren't aware of is that

209  
00:07:12,870 --> 00:07:11,280  
you know when you're out on in the in

210  
00:07:14,629 --> 00:07:12,880  
the vacuum of space

211  
00:07:16,870 --> 00:07:14,639  
it's like literally

212  
00:07:18,950 --> 00:07:16,880  
almost 300 degrees and and the place you

213  
00:07:20,950 --> 00:07:18,960

can feel that is right in our fingertips

214

00:07:23,830 --> 00:07:20,960

when we're on the you know on the sun

215

00:07:25,110 --> 00:07:23,840

side of the orbit and that heat

216

00:07:26,950 --> 00:07:25,120

you don't feel 300 degrees at your

217

00:07:28,870 --> 00:07:26,960

fingertips but you feel warm that heat

218

00:07:30,790 --> 00:07:28,880

combined with the fatigue inside those

219

00:07:32,150 --> 00:07:30,800

gloves really does wear on those

220

00:07:33,510 --> 00:07:32,160

fingertips for a while you know when you

221

00:07:35,990 --> 00:07:33,520

come back in your fingertips are all

222

00:07:38,150 --> 00:07:36,000

pink and white and discolored and and

223

00:07:39,909 --> 00:07:38,160

very very tender and after the first

224

00:07:41,270 --> 00:07:39,919

spacewalk even your your fingernails

225

00:07:43,110 --> 00:07:41,280

feel like they get peeled back a little

226

00:07:44,950 --> 00:07:43,120

bit and after the first spacewalk it

227

00:07:47,189 --> 00:07:44,960

took about three days before they felt

228

00:07:48,469 --> 00:07:47,199

really normal and i told terry i said i

229

00:07:50,070 --> 00:07:48,479

bet you after the second one we'll feel

230

00:07:51,749 --> 00:07:50,080

better and then and it that is indeed

231

00:07:53,189 --> 00:07:51,759

the case this morning i feel much better

232

00:07:54,629 --> 00:07:53,199

than i did the morning after the first

233

00:07:55,830 --> 00:07:54,639

one so just anyway just a little piece

234

00:07:58,070 --> 00:07:55,840

of information

235

00:07:59,350 --> 00:07:58,080

no that's very interesting it seems very

236

00:08:00,869 --> 00:07:59,360

physical

237

00:08:03,909 --> 00:08:00,879

my last question

238

00:08:06,230 --> 00:08:03,919

for you butch is i know your mission is

239

00:08:07,189 --> 00:08:06,240

nearing an end in a couple of weeks i

240

00:08:08,869 --> 00:08:07,199

just

241

00:08:10,950 --> 00:08:08,879

wonder how you might characterize your

242

00:08:15,830 --> 00:08:10,960

time aboard the space station as a sort

243

00:08:22,070 --> 00:08:17,830

i think one the first adjective that

244

00:08:27,350 --> 00:08:23,990

the second group of words that come to

245

00:08:30,070 --> 00:08:27,360

grip to mind is uh a great deal of work

246

00:08:31,430 --> 00:08:30,080

this is a busy place and it needs to be

247

00:08:33,190 --> 00:08:31,440

i mean you come up here you need to be

248

00:08:35,110 --> 00:08:33,200

ready to work and there's a great deal

249

00:08:36,709 --> 00:08:35,120

that we're trying to accomplish and so

250

00:08:38,310 --> 00:08:36,719

that means pretty much sun up to sun

251  
00:08:40,630 --> 00:08:38,320  
down as it would be on earth you know we

252  
00:08:42,870 --> 00:08:40,640  
get 16 of them here that it's continual

253  
00:08:44,149 --> 00:08:42,880  
work almost all day every day and like i

254  
00:08:45,190 --> 00:08:44,159  
said it needs to be that way because

255  
00:08:46,870 --> 00:08:45,200  
there's so much that we're trying to

256  
00:08:49,350 --> 00:08:46,880  
accomplish so you got to come up here

257  
00:08:51,509 --> 00:08:49,360  
with an eager energetic attitude and

258  
00:08:53,190 --> 00:08:51,519  
keep the fire burning because uh

259  
00:08:54,630 --> 00:08:53,200  
it's it's pretty busy like i said and it

260  
00:08:56,470 --> 00:08:54,640  
should be

261  
00:08:59,590 --> 00:08:56,480  
okay well let me thank both of you and

262  
00:09:02,070 --> 00:08:59,600  
wish you both the best of luck as you

263  
00:09:04,949 --> 00:09:02,080

pursue the rest of your cable hookups

264

00:09:10,070 --> 00:09:08,070

super thank you mark

265

00:09:11,990 --> 00:09:10,080

station this is houston acr that

266

00:09:13,990 --> 00:09:12,000

concludes the aviation week and space

267

00:09:15,829 --> 00:09:14,000

technology portion of the event

268

00:09:26,550 --> 00:09:15,839

please stand by for a voice check from

269

00:09:31,670 --> 00:09:28,550

station this is way tv how do you hear

270

00:09:36,389 --> 00:09:33,110

we read you loud and clear welcome on

271

00:09:39,030 --> 00:09:36,399

board way tv

272

00:09:41,030 --> 00:09:39,040

flight engineer terry verts and iss

273

00:09:41,829 --> 00:09:41,040

commander butch wilmar joining me right

274

00:09:42,710 --> 00:09:41,839

now

275

00:09:44,310 --> 00:09:42,720

um

276

00:09:46,470 --> 00:09:44,320

butch and terry i'm here in huntsville

277

00:09:49,030 --> 00:09:46,480

uh home of the the marshall space flight

278

00:09:50,790 --> 00:09:49,040

center and they're probably at the poic

279

00:09:52,070 --> 00:09:50,800

they're probably a little angry right

280

00:09:53,590 --> 00:09:52,080

now that i'm taking some of your time

281

00:09:55,190 --> 00:09:53,600

away from science but i wanted to ask

282

00:09:56,870 --> 00:09:55,200

you i talk to them all the time about

283

00:09:59,670 --> 00:09:56,880

how they work with you so i wanted to

284

00:10:01,110 --> 00:09:59,680

ask you you know on a day-to-day basis

285

00:10:05,350 --> 00:10:01,120

how often are you guys working with the

286

00:10:10,630 --> 00:10:08,949

yeah goodness on on well first of all uh

287

00:10:12,630 --> 00:10:10,640

home of the marshall space flight center

288

00:10:15,430 --> 00:10:12,640

and home of a lot of snow i understand

289

00:10:17,350 --> 00:10:15,440

um we are uh working with them every day

290

00:10:19,030 --> 00:10:17,360

and we are just uh

291

00:10:20,550 --> 00:10:19,040

on most days on the last few days it's

292

00:10:21,990 --> 00:10:20,560

been spacewalks but on most days we're

293

00:10:23,509 --> 00:10:22,000

dealing with them there's lots of

294

00:10:24,949 --> 00:10:23,519

different experiments every day it's a

295

00:10:26,389 --> 00:10:24,959

different type of experiment a different

296

00:10:27,990 --> 00:10:26,399

variety and so

297

00:10:29,430 --> 00:10:28,000

one of the best parts of our time here

298

00:10:31,269 --> 00:10:29,440

is a chance to do science it's the

299

00:10:33,590 --> 00:10:31,279

mission that we're here for and it's a

300

00:10:38,630 --> 00:10:33,600

lot of fun doing such a varied and

301

00:10:42,389 --> 00:10:40,069

thanks terry uh you mentioned the

302

00:10:44,550 --> 00:10:42,399

spacewalk that you guys just did i know

303

00:10:45,750 --> 00:10:44,560

the poi crew got a little bit of a break

304

00:10:48,150 --> 00:10:45,760

yesterday while you guys were out for

305

00:10:49,829 --> 00:10:48,160

about six and a half hours um you guys

306

00:10:52,069 --> 00:10:49,839

are in the airlock right now i know both

307

00:10:53,990 --> 00:10:52,079

of you are experienced spacewalkers but

308

00:10:55,910 --> 00:10:54,000

the question that i have is when that

309

00:11:00,790 --> 00:10:55,920

airlock opens and you're suited up what

310

00:11:04,710 --> 00:11:02,710

well i'll say for me this is my first

311

00:11:06,949 --> 00:11:04,720

and yesterday was my second spacewalk uh

312

00:11:09,110 --> 00:11:06,959

what's going through my mind is uh what

313

00:11:11,430 --> 00:11:09,120

do i do next where's my tether going to

314

00:11:12,389 --> 00:11:11,440

go what handrail do i go to

315

00:11:13,750 --> 00:11:12,399

and

316

00:11:15,509 --> 00:11:13,760

you know what what are the next steps

317

00:11:17,030 --> 00:11:15,519

that we're going to do so i'm pretty

318

00:11:18,870 --> 00:11:17,040

much just focused on the tasks so

319

00:11:21,430 --> 00:11:18,880

excuses some of our spacewalking

320

00:11:23,910 --> 00:11:21,440

equipment just floated by

321

00:11:25,670 --> 00:11:23,920

but uh you have to be for every minute

322

00:11:27,430 --> 00:11:25,680

it's six and a half hours out the door

323

00:11:29,750 --> 00:11:27,440

but inside it's a couple extra hours

324

00:11:33,190 --> 00:11:29,760

beforehand an hour afterwards and so

325

00:11:35,509 --> 00:11:33,200

it's literally it's like 12 hours of 100

326

00:11:40,069 --> 00:11:35,519

concentration on every every second of

327

00:11:44,230 --> 00:11:42,470

yeah i'll say also that that the kind of

328

00:11:46,710 --> 00:11:44,240

the motto that terry and i talk about

329

00:11:48,550 --> 00:11:46,720

before we go out and remind each other

330

00:11:50,470 --> 00:11:48,560

is that there's nothing more important

331

00:11:52,150 --> 00:11:50,480

than what you're doing right now if

332

00:11:53,590 --> 00:11:52,160

you've done something great put it

333

00:11:54,949 --> 00:11:53,600

behind you you got to you got more work

334

00:11:56,629 --> 00:11:54,959

to do if you've done something bad put

335

00:11:57,829 --> 00:11:56,639

it behind you you've got more work to do

336

00:11:59,430 --> 00:11:57,839

you can't think about what's coming in

337

00:12:01,590 --> 00:11:59,440

the future because you're in the vacuum

338

00:12:02,949 --> 00:12:01,600

of space and you're attached to this to

339

00:12:05,190 --> 00:12:02,959

the station by a little bit you know

340

00:12:07,509 --> 00:12:05,200

kind of a little metal tether and

341

00:12:08,949 --> 00:12:07,519

anything could go awry at any moment so

342

00:12:10,389 --> 00:12:08,959

you really got to be focused on your

343

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

tasks make sure your local tethers are

344

00:12:13,990 --> 00:12:12,160

there you're you're attaching your self

345

00:12:15,269 --> 00:12:14,000

to station and keep your mind turning

346

00:12:16,870 --> 00:12:15,279

you know when we fly airplanes both of

347

00:12:19,910 --> 00:12:16,880

us are pilots well he's a pilot and i'm

348

00:12:21,110 --> 00:12:19,920

a naval aviator but uh you always sort

349

00:12:22,389 --> 00:12:21,120

of think about staying in front of the

350

00:12:23,430 --> 00:12:22,399

airplane you never want to get up where

351  
00:12:24,949 --> 00:12:23,440  
you're hanging onto the tail of the

352  
00:12:27,590 --> 00:12:24,959  
airplane we think the thing same thing

353  
00:12:29,509 --> 00:12:27,600  
about spacewalking is that if if if you

354  
00:12:30,949 --> 00:12:29,519  
feel like you're getting behind you miss

355  
00:12:32,710 --> 00:12:30,959  
and you realize that you didn't put down

356  
00:12:35,430 --> 00:12:32,720  
a local tether when you should

357  
00:12:36,790 --> 00:12:35,440  
slow down because it's vital and it's a

358  
00:12:38,069 --> 00:12:36,800  
very dangerous environment as you know

359  
00:12:40,150 --> 00:12:38,079  
and it's vital that we do things and we

360  
00:12:41,269 --> 00:12:40,160  
do it right and so safety is paramount

361  
00:12:42,710 --> 00:12:41,279  
and that's that's kind of what we just

362  
00:12:46,069 --> 00:12:42,720  
like i said try to keep reminding

363  
00:12:49,990 --> 00:12:47,990

well i've been seeing on on twitter you

364

00:12:52,150 --> 00:12:50,000

guys have tweeted out spacewalk selfies

365

00:12:53,990 --> 00:12:52,160

and stuff like that so while remaining

366

00:12:56,629 --> 00:12:54,000

focused on the job is something that

367

00:12:58,230 --> 00:12:56,639

you're always doing uh it looks like you

368

00:12:59,750 --> 00:12:58,240

you take a moment every now and then to

369

00:13:02,230 --> 00:12:59,760

just appreciate you know i'm doing

370

00:13:06,470 --> 00:13:02,240

something that very few people have ever

371

00:13:10,310 --> 00:13:07,829

well that's right you know i'm a

372

00:13:12,150 --> 00:13:10,320

photographer i love taking pictures um

373

00:13:14,150 --> 00:13:12,160

but i was really shocked on both the

374

00:13:15,670 --> 00:13:14,160

first and second spacewalk that we did

375

00:13:16,949 --> 00:13:15,680

how little time there was to take

376

00:13:19,509 --> 00:13:16,959

pictures on the first spacewalk there

377

00:13:21,430 --> 00:13:19,519

was there was basically no time i had to

378

00:13:23,190 --> 00:13:21,440

grab the camera snap a few pictures real

379

00:13:24,629 --> 00:13:23,200

quick for maybe a minute or less and put

380

00:13:26,710 --> 00:13:24,639

it away and i think i did that two or

381

00:13:28,230 --> 00:13:26,720

three times almost no time at all and

382

00:13:30,470 --> 00:13:28,240

even on the second spacewalk when i had

383

00:13:32,069 --> 00:13:30,480

some time

384

00:13:33,829 --> 00:13:32,079

where i was just standing still i

385

00:13:35,590 --> 00:13:33,839

thought i'd have a few minutes to take

386

00:13:36,870 --> 00:13:35,600

pictures but it almost didn't exist

387

00:13:38,470 --> 00:13:36,880

because there's so much work that you

388

00:13:39,750 --> 00:13:38,480

need to do and you just don't want to

389

00:13:41,670 --> 00:13:39,760

waste any time you just want to get the

390

00:13:43,269 --> 00:13:41,680

work done so we try and take them and we

391

00:13:45,269 --> 00:13:43,279

can and hopefully we got a few good ones

392

00:13:46,629 --> 00:13:45,279

but uh it was surprising to me because i

393

00:13:48,550 --> 00:13:46,639

love taking pictures and i thought i'd

394

00:13:50,230 --> 00:13:48,560

make some time but it's it's hard it's

395

00:13:54,790 --> 00:13:50,240

hard to grab a few minutes uh when

396

00:13:57,829 --> 00:13:55,829

um

397

00:13:59,910 --> 00:13:57,839

bush this question might be more for you

398

00:14:01,590 --> 00:13:59,920

i wanted to ask a little bit about

399

00:14:03,269 --> 00:14:01,600

the 3d printer i know that's that's a

400

00:14:05,430 --> 00:14:03,279

project they got going on at marshall

401  
00:14:07,430 --> 00:14:05,440  
right now and they told me that you've

402  
00:14:09,670 --> 00:14:07,440  
kind of adopted that you installed it

403  
00:14:12,389 --> 00:14:09,680  
pulled off the first pieces and all that

404  
00:14:13,910 --> 00:14:12,399  
um so i just want to ask what what's the

405  
00:14:17,990 --> 00:14:13,920  
interest in that why why did you kind of

406  
00:14:20,949 --> 00:14:19,670  
well you know you don't you don't like

407  
00:14:22,550 --> 00:14:20,959  
just go out and say that's mine i'll

408  
00:14:24,069 --> 00:14:22,560  
take that fortunately i was very

409  
00:14:25,750 --> 00:14:24,079  
fortunate that it would just kind of

410  
00:14:27,990 --> 00:14:25,760  
fill in my lap i was here at the time

411  
00:14:30,550 --> 00:14:28,000  
kind of alone i was between missions and

412  
00:14:31,910 --> 00:14:30,560  
it was time to install it so i i sort of

413  
00:14:34,230 --> 00:14:31,920

got to install it and from there i just

414

00:14:35,670 --> 00:14:34,240

kind of scheduled to work with it and it

415

00:14:37,670 --> 00:14:35,680

was it's very intriguing i mean you

416

00:14:38,949 --> 00:14:37,680

think about the concept of of needing a

417

00:14:41,110 --> 00:14:38,959

part for the space station you don't

418

00:14:42,790 --> 00:14:41,120

have on board and being able literally

419

00:14:44,470 --> 00:14:42,800

to print it out in a printer and then go

420

00:14:46,069 --> 00:14:44,480

install it oh i need this special tool i

421

00:14:48,389 --> 00:14:46,079

don't have that tool on board okay well

422

00:14:49,990 --> 00:14:48,399

let's print out that special tool and uh

423

00:14:52,550 --> 00:14:50,000

and make it work and we actually printed

424

00:14:54,230 --> 00:14:52,560

out a small uh wrench as well so i mean

425

00:14:56,389 --> 00:14:54,240

it's it's just fascinating technology

426

00:14:57,750 --> 00:14:56,399

the possibilities are absolutely endless

427

00:14:59,750 --> 00:14:57,760

we're in the baby steps right now of

428

00:15:01,829 --> 00:14:59,760

learning how to do this process we're

429

00:15:04,470 --> 00:15:01,839

just using plastics right now in the

430

00:15:05,590 --> 00:15:04,480

zero g environment but the the prospects

431

00:15:07,430 --> 00:15:05,600

are like i said are just out of this

432

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

world literally about where this could

433

00:15:14,389 --> 00:15:12,069

um i'd like to follow up on that where

434

00:15:16,310 --> 00:15:14,399

do you guys see this technology going um

435

00:15:18,230 --> 00:15:16,320

and what do you see its value being for

436

00:15:19,990 --> 00:15:18,240

astronauts you know you guys are about a

437

00:15:21,430 --> 00:15:20,000

few hours away from a resupply but when

438

00:15:23,269 --> 00:15:21,440

we start going farther and farther and

439

00:15:24,389 --> 00:15:23,279

farther um

440

00:15:29,590 --> 00:15:24,399

what do you see the worth of that

441

00:15:32,870 --> 00:15:31,509

well yeah it's absolutely

442

00:15:35,590 --> 00:15:32,880

valuable for something like that if you

443

00:15:37,269 --> 00:15:35,600

could print out tools or parts

444

00:15:39,350 --> 00:15:37,279

that could really save on the amount of

445

00:15:40,470 --> 00:15:39,360

mass that you have to launch into space

446

00:15:41,910 --> 00:15:40,480

and it could also give you some

447

00:15:43,590 --> 00:15:41,920

flexibility if something broke that you

448

00:15:46,230 --> 00:15:43,600

didn't anticipate breaking you could

449

00:15:48,069 --> 00:15:46,240

print it out and use that part so

450

00:15:49,350 --> 00:15:48,079

in the future this could be really

451  
00:15:50,790 --> 00:15:49,360  
really valuable right now there are

452  
00:15:52,790 --> 00:15:50,800  
certain types of plastics that they're

453  
00:15:54,230 --> 00:15:52,800  
using uh but if they you know maybe

454  
00:15:55,829 --> 00:15:54,240  
eventually we'll be able to do something

455  
00:15:56,629 --> 00:15:55,839  
like metal or with that type of hardness

456  
00:15:58,870 --> 00:15:56,639  
so

457  
00:16:01,350 --> 00:15:58,880  
yeah the for future space exploration

458  
00:16:05,269 --> 00:16:01,360  
there's no resupply missions on mars so

459  
00:16:08,710 --> 00:16:06,550  
yeah i'm excited to see where they're

460  
00:16:10,629 --> 00:16:08,720  
going to take it um but we're about out

461  
00:16:12,150 --> 00:16:10,639  
of time now so i just wanted to ask um

462  
00:16:14,389 --> 00:16:12,160  
terry i know you're about halfway

463  
00:16:15,910 --> 00:16:14,399

through your ex your mission uh butch

464

00:16:17,590 --> 00:16:15,920

you're you're coming to the end so i

465

00:16:18,790 --> 00:16:17,600

wanted to ask both of you what if you

466

00:16:20,870 --> 00:16:18,800

could pick one moment that you're going

467

00:16:26,389 --> 00:16:20,880

to look back on your time and space

468

00:16:29,590 --> 00:16:28,550

you know i'll i'll say it's hard to say

469

00:16:31,590 --> 00:16:29,600

that because there's been so many

470

00:16:33,030 --> 00:16:31,600

moments continually but i saw sunrise

471

00:16:35,110 --> 00:16:33,040

yesterday that like i've never seen a

472

00:16:37,189 --> 00:16:35,120

sunrise before in the visor you just

473

00:16:38,470 --> 00:16:37,199

have this big panorama and when you look

474

00:16:40,150 --> 00:16:38,480

out of the station windows it's

475

00:16:41,910 --> 00:16:40,160

incredible but there's modules and

476

00:16:43,749 --> 00:16:41,920

there's things in the way but sitting

477

00:16:45,990 --> 00:16:43,759

there on the foot restraint it was just

478

00:16:48,310 --> 00:16:46,000

you know my body sticking out and

479

00:16:49,829 --> 00:16:48,320

watching the sunrise was just incredible

480

00:16:51,910 --> 00:16:49,839

um it's like you're looking down on

481

00:16:53,509 --> 00:16:51,920

creation and uh

482

00:16:55,030 --> 00:16:53,519

and also butch and i both noticed that

483

00:16:57,269 --> 00:16:55,040

we saw shades of colors that i'd never

484

00:16:58,550 --> 00:16:57,279

seen before especially blue so i that's

485

00:17:00,710 --> 00:16:58,560

definitely going to stick in my mind

486

00:17:03,110 --> 00:17:00,720

forever

487

00:17:05,270 --> 00:17:03,120

and i think for me without question it's

488

00:17:07,669 --> 00:17:05,280

it's not the personal experience so much

489

00:17:09,990 --> 00:17:07,679

for me as it is you know we're we're

490

00:17:12,309 --> 00:17:10,000

we're giving loving caring beings that's

491

00:17:15,350 --> 00:17:12,319

that's what we are and to be able to

492

00:17:16,470 --> 00:17:15,360

share this experience has been what i'll

493

00:17:18,309 --> 00:17:16,480

remember the most you know the

494

00:17:20,069 --> 00:17:18,319

excitement to my wife and my daughters

495

00:17:21,829 --> 00:17:20,079

and my brother and my mom and dad and

496

00:17:23,510 --> 00:17:21,839

many friends and family about some

497

00:17:24,309 --> 00:17:23,520

pictures and some conversations that we

498

00:17:25,669 --> 00:17:24,319

have

499

00:17:27,110 --> 00:17:25,679

those are the things that i'll remember

500

00:17:28,309 --> 00:17:27,120

the most without question certainly i'll

501  
00:17:29,990 --> 00:17:28,319  
take the sights and the sounds and the

502  
00:17:32,070 --> 00:17:30,000  
pictures all together you can't have

503  
00:17:33,590 --> 00:17:32,080  
that without that but the sharing and

504  
00:17:35,590 --> 00:17:33,600  
the with the people that you love and

505  
00:17:38,470 --> 00:17:35,600  
care about is very very special very

506  
00:17:41,909 --> 00:17:40,310  
yeah i'm sure it is i'm sure that's

507  
00:17:43,350 --> 00:17:41,919  
quite an experience so we're about out

508  
00:17:45,190 --> 00:17:43,360  
of time i got one last question for you

509  
00:17:46,549 --> 00:17:45,200  
butch so we're here in alabama in the

510  
00:17:48,470 --> 00:17:46,559  
tennessee valley i know you're from

511  
00:17:50,310 --> 00:17:48,480  
tennessee you have anything you'd like

512  
00:17:53,590 --> 00:17:50,320  
to say to your southern neighbors here

513  
00:17:58,070 --> 00:17:55,909

you know we love alabama stepping

514

00:17:59,430 --> 00:17:58,080

football season us tennesseans and and

515

00:18:01,669 --> 00:17:59,440

we know that

516

00:18:03,430 --> 00:18:01,679

alabamans don't live in god's country

517

00:18:05,430 --> 00:18:03,440

like us tennesseans do but you're very

518

00:18:07,190 --> 00:18:05,440

close very close cousins and we love

519

00:18:10,150 --> 00:18:07,200

y'all just the same so absolutely we

520

00:18:13,909 --> 00:18:11,830

all right thanks a lot butch and terry

521

00:18:15,350 --> 00:18:13,919

thank you so much for your time butch i

522

00:18:16,630 --> 00:18:15,360

hope you're safe return home in the next

523

00:18:18,150 --> 00:18:16,640

couple of weeks

524

00:18:21,350 --> 00:18:18,160

thanks a lot good luck with the rest of

525

00:18:25,110 --> 00:18:22,950

all right thank you and thank you to

526

00:18:29,110 --> 00:18:25,120

alabama and all of your wade tv

527

00:18:35,830 --> 00:18:30,870

station this is houston acr that

528

00:18:40,470 --> 00:18:37,350

thank you aviation week in space

529

00:18:42,230 --> 00:18:40,480

technology and waay tv station we are