



735 LBS

1
00:00:13,669 --> 00:00:12,150
so what are you doing here today mark

2
00:00:16,630 --> 00:00:13,679
you're going to uh suit these guys up

3
00:00:19,429 --> 00:00:16,640
are you just here for supervision

4
00:00:21,990 --> 00:00:19,439
i don't do anything

5
00:00:23,990 --> 00:00:22,000
i just check on them

6
00:00:27,429 --> 00:00:24,000
i thought that was drew's job

7
00:00:30,710 --> 00:00:29,429
and i'd supervise him this means i don't

8
00:00:32,069 --> 00:00:30,720
do anything

9
00:00:32,950 --> 00:00:32,079
he's really independent he's doing a

10
00:00:34,389 --> 00:00:32,960
good job

11
00:00:36,870 --> 00:00:34,399
as you're ev-1 you've been happy with

12
00:00:39,910 --> 00:00:36,880
his performance he's been doing great

13
00:00:41,430 --> 00:00:39,920

so i can just leave him alone

14

00:00:43,030 --> 00:00:41,440

all i have to do is

15

00:00:44,950 --> 00:00:43,040

occasionally remind him don't screw it

16

00:00:48,709 --> 00:00:44,960

up

17

00:00:48,719 --> 00:00:53,430

it's just a future of science at stake

18

00:00:59,670 --> 00:00:55,990

real science real science real stuff ams

19

00:01:02,549 --> 00:01:00,709

not really

20

00:01:04,229 --> 00:01:02,559

but maybe maybe it will be hopefully i'd

21

00:01:06,310 --> 00:01:04,239

say hopefully it will be

22

00:01:09,030 --> 00:01:06,320

hopefully guaranteed guaranteed it will

23

00:01:12,789 --> 00:01:11,429

so mark can i ask you something

24

00:01:14,630 --> 00:01:12,799

maybe all right

25

00:01:17,190 --> 00:01:14,640

you were explaining to me anything

26

00:01:18,870 --> 00:01:17,200

all right i might not answer that's okay

27

00:01:20,149 --> 00:01:18,880

we got drew to make something up but you

28

00:01:21,910 --> 00:01:20,159

were explaining you know we we used to

29

00:01:23,350 --> 00:01:21,920

say with hubble that hubble's unlocking

30

00:01:25,670 --> 00:01:23,360

the secrets of the universe but i think

31

00:01:28,469 --> 00:01:25,680

with this ams

32

00:01:30,870 --> 00:01:28,479

this is some pretty exciting stuff

33

00:01:32,950 --> 00:01:30,880

more secrets more secrets of here you're

34

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

like the secret unlocker yeah because it

35

00:01:36,950 --> 00:01:34,640

did have a better secret

36

00:01:38,830 --> 00:01:36,960

better different difference much better

37

00:01:40,789 --> 00:01:38,840

marcus tell me a little bit about

38

00:01:42,950 --> 00:01:40,799

this can only see stuff this is good

39

00:01:44,230 --> 00:01:42,960

right yeah it's like it's like pictures

40

00:01:46,310 --> 00:01:44,240

does that really apply yeah but it just

41

00:01:48,069 --> 00:01:46,320

takes pictures so am i going to tell you

42

00:01:50,149 --> 00:01:48,079

they're all fake pictures but anyways

43

00:01:53,749 --> 00:01:50,159

drew make sure he doesn't lie

44

00:01:55,429 --> 00:01:53,759

so what ams can do yeah is as an example

45

00:01:56,870 --> 00:01:55,439

of one of the things that they do yeah

46

00:01:58,709 --> 00:01:56,880

you know you have all these galaxies and

47

00:02:00,149 --> 00:01:58,719

stars out there that hubble can see yeah

48

00:02:02,149 --> 00:02:00,159

very pretty it's a theory that some of

49

00:02:04,069 --> 00:02:02,159

those may be made up of antimatter yeah

50

00:02:05,749 --> 00:02:04,079

so inside of stars

51
00:02:08,070 --> 00:02:05,759
you have the bigger elements are made

52
00:02:10,790 --> 00:02:08,080
like oxygen nitrogen that have a lot of

53
00:02:13,510 --> 00:02:10,800
electrons a lot of protons yeah so if we

54
00:02:15,430 --> 00:02:13,520
can sense an anti-oxygen or

55
00:02:16,470 --> 00:02:15,440
anti-nitrogen particle coming through

56
00:02:18,630 --> 00:02:16,480
ams

57
00:02:21,510 --> 00:02:18,640
then we know that some of those stars

58
00:02:23,270 --> 00:02:21,520
and galaxies that hubble sees

59
00:02:25,350 --> 00:02:23,280
may be made of antimatter instead of

60
00:02:27,270 --> 00:02:25,360
matter it's a pretty big deal that would

61
00:02:29,510 --> 00:02:27,280
be like one of the greatest discoveries

62
00:02:31,110 --> 00:02:29,520
ever maybe ever ever maybe the greatest

63
00:02:33,750 --> 00:02:31,120

discovery ever maybe the combination of

64

00:02:37,750 --> 00:02:33,760

hubble and ams could work

65

00:02:40,150 --> 00:02:38,869

i think there may be some truth there

66

00:02:42,309 --> 00:02:40,160

because hubble could see this stuff but

67

00:02:44,390 --> 00:02:42,319

can't explain what it is right so hubble

68

00:02:46,309 --> 00:02:44,400

kind of identified the question yeah now

69

00:02:48,550 --> 00:02:46,319

ams is going to try to answer hubble is

70

00:02:54,390 --> 00:02:48,560

the photographer and ams is the

71

00:02:57,830 --> 00:02:56,229

excellent thank you

72

00:03:00,149 --> 00:02:57,840

and how's this crew doing mark they're

73

00:03:02,630 --> 00:03:00,159

doing great yeah the next time they do

74

00:03:06,070 --> 00:03:02,640

this eba is going to be for real can you

75

00:03:07,270 --> 00:03:06,080

imagine hopefully on april 30th or may

76

00:03:08,390 --> 00:03:07,280

1st

77

00:03:10,229 --> 00:03:08,400

toward the end of your mission that

78

00:03:11,830 --> 00:03:10,239

sounds like when you guys this is cba

79

00:03:13,830 --> 00:03:11,840

four so this is

80

00:03:15,430 --> 00:03:13,840

currently on flight day 11 but if we get

81

00:03:16,550 --> 00:03:15,440

an extra day it'll move to flight day

82

00:03:19,190 --> 00:03:16,560

12.

83

00:03:23,270 --> 00:03:19,200

we'll add the extra day there on

84

00:03:25,270 --> 00:03:24,229

and they haven't been giving you too

85

00:03:27,670 --> 00:03:25,280

much trouble

86

00:03:28,309 --> 00:03:27,680

shamatha has been behaving not yet all

87

00:03:29,509 --> 00:03:28,319

right

88

00:03:32,470 --> 00:03:29,519

so does this spacewalk have anything to

89

00:03:34,550 --> 00:03:32,480

do with the ams uh no no no actually you

90

00:03:36,149 --> 00:03:34,560

know our ams hopefully we can install it

91

00:03:38,229 --> 00:03:36,159

completely robotically and that goes

92

00:03:39,990 --> 00:03:38,239

perfectly smoothly oh so you have

93

00:03:42,869 --> 00:03:40,000

contingencies though right so if there's

94

00:03:44,229 --> 00:03:42,879

any problem installing it oh my gosh

95

00:03:46,149 --> 00:03:44,239

and you guys would go out and do that

96

00:03:47,670 --> 00:03:46,159

yeah all the mechanisms work it should

97

00:03:49,430 --> 00:03:47,680

that extend your flight much or would

98

00:03:51,509 --> 00:03:49,440

you have to do extra evas or you know

99

00:03:53,350 --> 00:03:51,519

we'd have to trade stuff off

100

00:03:54,630 --> 00:03:53,360

the first ebay out the door modify that

101
00:03:56,949 --> 00:03:54,640
one and yeah because we'd have to hold

102
00:03:58,470 --> 00:03:56,959
it off temporarily and oh my god i hope

103
00:03:59,910 --> 00:03:58,480
that doesn't happen

104
00:04:01,270 --> 00:03:59,920
because you got enough work to do

105
00:04:02,390 --> 00:04:01,280
exactly you know you've got these other

106
00:04:03,509 --> 00:04:02,400
things you want to do that's very

107
00:04:05,270 --> 00:04:03,519
important we got to get everything

108
00:04:06,949 --> 00:04:05,280
installed you got that thing that is sam

109
00:04:08,149 --> 00:04:06,959
ting is he counting on you to take care

110
00:04:10,550 --> 00:04:08,159
of things

111
00:04:12,149 --> 00:04:10,560
he's a uh he's an mit guy he's not a guy

112
00:04:15,350 --> 00:04:12,159
who's doing the final grappling i was

113
00:04:16,390 --> 00:04:15,360

mechanism you are yeah oh wow

114

00:04:17,670 --> 00:04:16,400

so you don't want to screw that up

115

00:04:19,749 --> 00:04:17,680

million dollar

116

00:04:21,349 --> 00:04:19,759

riding on a motor never mind no money we

117

00:04:22,550 --> 00:04:21,359

got to find that we got this this is a

118

00:04:23,830 --> 00:04:22,560

very important information we're going

119

00:04:26,230 --> 00:04:23,840

to get out of this thing

120

00:04:27,830 --> 00:04:26,240

you'd have the whole world mad at you we

121

00:04:29,830 --> 00:04:27,840

better not show this tape till after

122

00:04:31,270 --> 00:04:29,840

he's successful as you know that's

123

00:04:33,189 --> 00:04:31,280

pretty cool though i mean that's quite a

124

00:04:34,870 --> 00:04:33,199

responsibility yeah and it's great to be

125

00:04:36,310 --> 00:04:34,880

a part of something like that we got it

126

00:04:38,870 --> 00:04:36,320

all figured out hopefully it'll go yeah

127

00:04:41,270 --> 00:04:38,880

you guys you guys have no trouble

128

00:04:43,909 --> 00:04:41,280

yeah it's amazing amazing uh

129

00:04:45,990 --> 00:04:43,919

potential with the data from that uh

130

00:04:48,710 --> 00:04:46,000

yeah first time looking at particles

131

00:04:50,230 --> 00:04:48,720

instead of uh just light yeah

132

00:04:51,590 --> 00:04:50,240

that'll be great i understand what it is

133

00:04:53,110 --> 00:04:51,600

yeah if i just like because that's what

134

00:04:54,870 --> 00:04:53,120

hubble does i guess right it looks light

135

00:04:57,110 --> 00:04:54,880

looks at light but this thing's actually

136

00:04:58,310 --> 00:04:57,120

going to detect what the actual stuff is

137

00:04:59,990 --> 00:04:58,320

because hubble's detected stuff we don't

138

00:05:01,830 --> 00:05:00,000

know what it is and hubble is you know

139

00:05:02,629 --> 00:05:01,840

coming up with an amazing discovery yeah

140

00:05:03,830 --> 00:05:02,639

you know

141

00:05:05,510 --> 00:05:03,840

probably one of the most important ones

142

00:05:07,510 --> 00:05:05,520

is you know the universe is expanding

143

00:05:09,830 --> 00:05:07,520

and like it's accelerating rates instead

144

00:05:11,110 --> 00:05:09,840

of yeah so what's you know gravity that

145

00:05:13,510 --> 00:05:11,120

makes no sense with an understanding of

146

00:05:14,790 --> 00:05:13,520

gravity right and uh ams may help us

147

00:05:16,629 --> 00:05:14,800

figure this is that dark energy that

148

00:05:17,830 --> 00:05:16,639

might be out maybe there's something out

149

00:05:20,310 --> 00:05:17,840

there we don't know what it is called

150

00:05:22,469 --> 00:05:20,320

dark energy dark matter right you know

151

00:05:24,469 --> 00:05:22,479

ams may help us maybe ams can and then

152

00:05:25,510 --> 00:05:24,479

our kids can think we were all stupid oh

153

00:05:27,270 --> 00:05:25,520

they didn't even know what that stuff

154

00:05:28,629 --> 00:05:27,280

was they called it dark it was like the

155

00:05:30,550 --> 00:05:28,639

dark ages when we didn't know what they

156

00:05:33,990 --> 00:05:30,560

were something something like star wars

157

00:05:37,270 --> 00:05:35,749

don't you know do well with this because

158

00:05:38,310 --> 00:05:37,280

this is important it's quite cool

159

00:05:39,990 --> 00:05:38,320

responsibility i'm sure you guys are

160

00:05:41,350 --> 00:05:40,000

going to do a great job and hopefully

161

00:05:43,350 --> 00:05:41,360

they don't get in there

162

00:05:44,950 --> 00:05:43,360

that's good are you alive now you can't

163

00:05:48,310 --> 00:05:44,960

really say anything okay so now we can

164

00:05:53,990 --> 00:05:50,390

all right man have a good run

165

00:05:57,430 --> 00:05:55,909

so the next time you're going to do this

166

00:05:59,350 --> 00:05:57,440

you can't really talk can you because

167

00:06:00,870 --> 00:05:59,360

you're i'm hot mike yeah yeah yeah

168

00:06:03,189 --> 00:06:00,880

you're yeah

169

00:06:04,309 --> 00:06:03,199

no that's definitely not me

170

00:06:06,629 --> 00:06:04,319

but next time you do this you're going

171

00:06:07,430 --> 00:06:06,639

to be in space man what do you think of

172

00:06:08,870 --> 00:06:07,440

that

173

00:06:11,430 --> 00:06:08,880

it's pretty awesome it's real it's

174

00:06:15,029 --> 00:06:11,440

exciting it's amazing following in your

175

00:06:19,510 --> 00:06:17,350

nice thing to say mike but yeah

176
00:06:20,629 --> 00:06:19,520
you guys were like 100 miles higher you

177
00:06:22,790 --> 00:06:20,639
need to go we ain't go where you're

178
00:06:24,230 --> 00:06:22,800
going you're going to go to the station

179
00:06:25,350 --> 00:06:24,240
which of course you've been to for many

180
00:06:28,629 --> 00:06:25,360
you spend have you spent a year of your

181
00:06:31,270 --> 00:06:28,639
life on the space station yes 2.5 of my

182
00:06:32,790 --> 00:06:31,280
life 2.5 of your life has been on the

183
00:06:35,029 --> 00:06:32,800
space station

184
00:06:36,390 --> 00:06:35,039
how many point four percent how many but

185
00:06:38,550 --> 00:06:36,400
how long how much time have you had is

186
00:06:39,990 --> 00:06:38,560
it it's over a year right it's over just

187
00:06:41,270 --> 00:06:40,000
over a year a little over a year of your

188
00:06:43,670 --> 00:06:41,280

life

189

00:06:45,189 --> 00:06:43,680

and now you're just going for 14 days

190

00:06:46,629 --> 00:06:45,199

and like a little reunion

191

00:06:47,430 --> 00:06:46,639

could be busy

192

00:06:48,870 --> 00:06:47,440

all right

193

00:06:51,990 --> 00:06:48,880

hey we'll have a good run

194

00:06:56,150 --> 00:06:53,589

hey mark so uh

195

00:06:59,510 --> 00:06:56,160

greg was telling me that the last time

196

00:07:01,350 --> 00:06:59,520

he was uh greg shamatoff there taz

197

00:07:03,270 --> 00:07:01,360

what do we call him now tez

198

00:07:04,950 --> 00:07:03,280

all right so i've known him a long time

199

00:07:07,589 --> 00:07:04,960

how long known this guy we went to grad

200

00:07:09,510 --> 00:07:07,599

school together no in grad in in

201
00:07:11,430 --> 00:07:09,520
graduate school that's a smart dude have

202
00:07:12,950 --> 00:07:11,440
you tried does he like murmur you know

203
00:07:15,029 --> 00:07:12,960
when he's just he's he's one of the

204
00:07:16,710 --> 00:07:15,039
smartest guys i've ever met

205
00:07:18,710 --> 00:07:16,720
he's like rain man i mean a guy is a

206
00:07:20,230 --> 00:07:18,720
smart dude what's that he had like four

207
00:07:22,629 --> 00:07:20,240
pages of notes for the briefcase today

208
00:07:24,469 --> 00:07:22,639
handwritten oh greg fantastic he's a

209
00:07:25,909 --> 00:07:24,479
genius i was like hey can i look at some

210
00:07:27,749 --> 00:07:25,919
of those things

211
00:07:29,110 --> 00:07:27,759
yeah the first time i met this guy we

212
00:07:30,710 --> 00:07:29,120
were i was i was starting like two

213
00:07:32,870 --> 00:07:30,720

o'clock in the morning one of his

214

00:07:34,230 --> 00:07:32,880

roommates and i were in like the on the

215

00:07:37,990 --> 00:07:34,240

you know at their kitchen table in his

216

00:07:39,510 --> 00:07:38,000

suite sorry but first time i met him

217

00:07:41,029 --> 00:07:39,520

the first time i met the first time i

218

00:07:43,670 --> 00:07:41,039

met this guy give me the camera give me

219

00:07:45,510 --> 00:07:43,680

the first time i met this guy

220

00:07:47,189 --> 00:07:45,520

behind the scenes he was at mit we were

221

00:07:48,309 --> 00:07:47,199

at mit and we couldn't my buddy and i

222

00:07:49,430 --> 00:07:48,319

couldn't figure out the homework this

223

00:07:51,189 --> 00:07:49,440

guy walks in it's like two in the

224

00:07:53,589 --> 00:07:51,199

morning right he just probably got up

225

00:07:54,869 --> 00:07:53,599

and he has a gigantic orange

226

00:07:55,990 --> 00:07:54,879

he's feeling his gigantic he comes over

227

00:07:57,670 --> 00:07:56,000

he looks at this so he figures it out

228

00:07:59,350 --> 00:07:57,680

like in about 10 seconds

229

00:08:00,629 --> 00:07:59,360

you know nothing i mean i thought we

230

00:08:02,150 --> 00:08:00,639

would have orange juice on it while he

231

00:08:03,510 --> 00:08:02,160

was it was unbelievable like in two

232

00:08:05,589 --> 00:08:03,520

years you just need to do this and this

233

00:08:07,189 --> 00:08:05,599

i'm like okay great he's a smart dude

234

00:08:08,790 --> 00:08:07,199

but he was telling me mark that the last

235

00:08:10,550 --> 00:08:08,800

time he was in space you took him up

236

00:08:17,589 --> 00:08:10,560

there i did and you left him behind i

237

00:08:21,350 --> 00:08:19,909

i felt somewhat guilty really oh yeah

238

00:08:22,950 --> 00:08:21,360

did you would you if you said i want to

239

00:08:25,350 --> 00:08:22,960

go would you would you it wouldn't be

240

00:08:27,589 --> 00:08:25,360

like a typical you know six month

241

00:08:29,350 --> 00:08:27,599

increment you might get like a visitor

242

00:08:30,550 --> 00:08:29,360

but we were three per person crew and

243

00:08:32,630 --> 00:08:30,560

the next shuttle flight wasn't scheduled

244

00:08:35,029 --> 00:08:32,640

for six months whoa pick him up so he

245

00:08:37,110 --> 00:08:35,039

had no visitors so i closed the hatch on

246

00:08:40,070 --> 00:08:37,120

him and the next time anybody knew

247

00:08:41,990 --> 00:08:40,080

showed up it was his right ride home 180

248

00:08:43,829 --> 00:08:42,000

days later

249

00:08:45,350 --> 00:08:43,839

yeah so it was it kind of like was like

250

00:08:46,550 --> 00:08:45,360

dropping your kids off at college no you

251
00:08:47,670 --> 00:08:46,560
haven't gotten to that point yet but i

252
00:08:49,269 --> 00:08:47,680
mean i was like

253
00:08:51,110 --> 00:08:49,279
sorry dude

254
00:08:52,870 --> 00:08:51,120
junk did he did he cried he's like don't

255
00:08:54,470 --> 00:08:52,880
let me don't leave me here

256
00:08:59,190 --> 00:08:54,480
he was like he was a big boy about it he

257
00:09:02,389 --> 00:09:00,630
but you are going to bring him home this

258
00:09:03,670 --> 00:09:02,399
time because he's a little concerned he

259
00:09:05,509 --> 00:09:03,680
actually said i hope mark remembers to

260
00:09:07,430 --> 00:09:05,519
bring me home he'd probably stay up

261
00:09:11,990 --> 00:09:07,440
there

262
00:09:13,990 --> 00:09:12,000
my brother likes it

263
00:09:15,110 --> 00:09:14,000

yeah he might do it again yeah that's

264

00:09:16,389 --> 00:09:15,120

what he told me well i asked him he

265

00:09:18,790 --> 00:09:16,399

didn't sound like he was ready to do it

266

00:09:20,949 --> 00:09:18,800

right now again no he need a break

267

00:09:22,550 --> 00:09:20,959

yeah he's no training in about a year

268

00:09:23,910 --> 00:09:22,560

yeah that's what you've been doing yeah

269

00:09:25,269 --> 00:09:23,920

as you're saying this is what we all

270

00:09:26,710 --> 00:09:25,279

want isn't it

271

00:09:28,710 --> 00:09:26,720

so this is your first time to the

272

00:09:30,550 --> 00:09:28,720

station so what are you most excited

273

00:09:31,509 --> 00:09:30,560

about

274

00:09:33,110 --> 00:09:31,519

volume

275

00:09:40,949 --> 00:09:33,120

yeah flying

276

00:09:43,509 --> 00:09:42,310

while you're inside when you're outside

277

00:09:44,470 --> 00:09:43,519

you're going to be very careful of