



1
00:01:15,320 --> 00:00:03,830
hello I'm Pierre sellers of the sts-132

2
00:01:15,330 --> 00:01:26,080
Wow

3
00:01:26,090 --> 00:01:31,290
Oh

4
00:01:37,930 --> 00:01:33,910
good morning Atlanta's and a special

5
00:01:39,580 --> 00:01:37,940
good morning to you today peers hegemony

6
00:01:42,940 --> 00:01:39,590
Shanon everyone down there on the home

7
00:01:44,680 --> 00:01:42,950
planet cement with some mix and the

8
00:01:46,270 --> 00:01:44,690
gentlemen of the world stoned awake in

9
00:01:49,300 --> 00:01:46,280
this house if it's on the house and we

10
00:01:51,010 --> 00:01:49,310
are awake I'm ready for another day we

11
00:01:54,850 --> 00:01:51,020
are glad you're awake it's going to be a

12
00:01:59,590 --> 00:01:54,860
great day this is Mission Control

13
00:02:02,230 --> 00:01:59,600

Houston outside the station the robotic

14

00:02:04,180 --> 00:02:02,240

arms both for the space shuttle and for

15

00:02:07,510 --> 00:02:04,190

the International Space Station have

16

00:02:11,590 --> 00:02:07,520

been strategically relocated over the

17

00:02:13,900 --> 00:02:11,600

last couple of shifts to prepare for

18

00:02:16,840 --> 00:02:13,910

support of the extra vehicular activity

19

00:02:18,520 --> 00:02:16,850

or the EBA the second of two planned

20

00:02:21,100 --> 00:02:18,530

spacewalks on this mission

21

00:02:23,800 --> 00:02:21,110

Michael good will be performing his

22

00:02:27,790 --> 00:02:23,810

first spacewalk of this mission this

23

00:02:32,460 --> 00:02:27,800

will be his third EBA he performed two

24

00:02:35,170 --> 00:02:32,470

spacewalks a year ago on the sts-125

25

00:02:38,199 --> 00:02:35,180

voyage of atlantis to service the Hubble

26

00:02:41,110 --> 00:02:38,209

Space Telescope one last time he is

27

00:02:44,229 --> 00:02:41,120

wearing the red baseball cap you can see

28

00:02:46,840 --> 00:02:44,239

the dashed red barber pole like stripe

29

00:02:49,199 --> 00:02:46,850

on the pant legs of his suit that's how

30

00:02:53,350 --> 00:02:49,209

he will be distinguished while outside

31

00:02:55,600 --> 00:02:53,360

today and his colleague Steve Bowen who

32

00:02:58,330 --> 00:02:55,610

joined Garrett Riesman on the first

33

00:03:01,570 --> 00:02:58,340

spacewalk two days ago he'll be wearing

34

00:03:05,500 --> 00:03:01,580

a suit with a red stripe Bowen

35

00:03:07,440 --> 00:03:05,510

now has four spacewalks behind him so

36

00:03:11,350 --> 00:03:07,450

both gentlemen will be adding to their

37

00:03:14,110 --> 00:03:11,360

EBA time today with the second of three

38

00:03:17,949 --> 00:03:14,120

spacewalks on this mission this one

39

00:03:21,940 --> 00:03:17,959

devoted to the major task of beginning

40

00:03:25,900 --> 00:03:21,950

the removal and replacement of the older

41

00:03:28,479 --> 00:03:25,910

batteries on the p6 truss element that

42

00:03:31,780 --> 00:03:28,489

support absorbing electrical energy

43

00:03:34,270 --> 00:03:31,790

solar energy from the giant solar arrays

44

00:03:36,729 --> 00:03:34,280

on the International Space Station the

45

00:03:39,729 --> 00:03:36,739

batteries have lasted ten years and are

46

00:03:41,220 --> 00:03:39,739

still working but they have a design

47

00:03:44,430 --> 00:03:41,230

life of about six

48

00:03:47,309 --> 00:03:44,440

so these new batteries will be very

49

00:03:48,780 --> 00:03:47,319

beneficial to the extent extending the

50

00:03:50,900 --> 00:03:48,790

life of the International Space

51
00:03:54,479 --> 00:03:50,910
Station's electrical power generation

52
00:03:58,259 --> 00:03:54,489
system the additional tasks added to the

53
00:04:00,540 --> 00:03:58,269
spacewalk today also is what is expected

54
00:04:04,440 --> 00:04:00,550
to be a fairly short straightforward

55
00:04:06,420 --> 00:04:04,450
task to repair the pan and tilt unit

56
00:04:09,750 --> 00:04:06,430
capability on the orbiter boom sensor

57
00:04:12,059 --> 00:04:09,760
system the extension booms sensor

58
00:04:15,300 --> 00:04:12,069
package out on the end of that boom the

59
00:04:18,930 --> 00:04:15,310
pan and tilt unit was not able to pan

60
00:04:21,590 --> 00:04:18,940
left or right properly because of what

61
00:04:25,950 --> 00:04:21,600
appears to be a cable that is pinched or

62
00:04:29,280 --> 00:04:25,960
jammed on to a set screw a potential set

63
00:04:32,280 --> 00:04:29,290

screw issue that the crew could is

64

00:04:35,129 --> 00:04:32,290

expected to be easily be able to repair

65

00:04:38,460 --> 00:04:35,139

by just simply freeing that cable and

66

00:04:41,190 --> 00:04:38,470

then using a wire tie to clear it from

67

00:04:47,510 --> 00:04:41,200

that location so that the pan and tilt

68

00:04:55,740 --> 00:04:51,540

now attaching the safety device on the

69

00:04:58,290 --> 00:04:55,750

backpack of Michael good the safer as

70

00:05:02,430 --> 00:04:58,300

it's known as a acronym for simplified

71

00:05:07,320 --> 00:05:02,440

aid for EB a rescue it's a compressed

72

00:05:09,450 --> 00:05:07,330

nitrogen gas backpack that would allow a

73

00:05:11,940 --> 00:05:09,460

crew member to fly himself back to the

74

00:05:26,130 --> 00:05:11,950

station should he become inadvertently

75

00:05:32,460 --> 00:05:29,550

the depressurization process should

76
00:05:34,740 --> 00:05:32,470
begin about 10 minutes from now that's

77
00:05:38,670 --> 00:05:34,750
the point where the the purge of their

78
00:05:51,680 --> 00:05:38,680
spacesuits will be completed so all is

79
00:05:56,070 --> 00:05:54,180
and see though we're gonna go ahead and

80
00:06:02,820 --> 00:05:56,080
get the arm configured so straight a

81
00:06:07,470 --> 00:06:02,830
move I could see my head will end up hot

82
00:06:09,150 --> 00:06:07,480
all I need is about 3 feet support and

83
00:06:15,440 --> 00:06:09,160
it should be ready to my work envelope

84
00:06:15,450 --> 00:06:23,780
ever scared motion tapping your motion a

85
00:06:23,790 --> 00:06:27,620
little bit further

86
00:06:38,040 --> 00:06:30,260
keep coming

87
00:06:40,370 --> 00:06:38,050
there are six inches ourselves you come

88
00:06:42,960 --> 00:06:40,380

a little bit further it stops

89

00:06:44,880 --> 00:06:42,970

Cathy Stepp all right

90

00:06:47,550 --> 00:06:44,890

hey I need to read to you here real

91

00:06:51,420 --> 00:06:47,560

quick yeah the free all used to be

92

00:06:53,400 --> 00:06:51,430

please okay the cable guides their

93

00:06:55,290 --> 00:06:53,410

fragile can easily break but typically

94

00:06:57,600 --> 00:06:55,300

cable guys should be considered a sharp

95

00:06:59,670 --> 00:06:57,610

edge any broken cable guys should be

96

00:07:01,350 --> 00:06:59,680

treated as having sharp edges wires may

97

00:07:03,870 --> 00:07:01,360

be exposed when the cables released from

98

00:07:05,310 --> 00:07:03,880

the pitch point and the cut tip of the

99

00:07:08,900 --> 00:07:05,320

tie wrap when we get there should be

100

00:07:11,190 --> 00:07:08,910

treated as the sharp edge I understand

101
00:07:17,180 --> 00:07:11,200
thank you

102
00:07:20,450 --> 00:07:17,190
so 20 are you good really I kid got the

103
00:07:25,140 --> 00:07:20,460
TiVo un snag to yell direct cable

104
00:07:27,330 --> 00:07:25,150
unstable but I have it on stack well

105
00:07:30,600 --> 00:07:27,340
done superhero now let's see if you can

106
00:07:34,950 --> 00:07:30,610
handle the tie wrap I throw I don't I

107
00:07:37,560 --> 00:07:34,960
was in your trash bag some work and the

108
00:07:38,650 --> 00:07:37,570
note here says lock the wet to prevent

109
00:07:46,060 --> 00:07:38,660
the tie wrap

110
00:07:49,950 --> 00:07:46,070
I have a tie wrap on a rep at Manish

111
00:07:52,420 --> 00:07:49,960
houston big loop very much texture right

112
00:07:55,860 --> 00:07:52,430
yeah Steve can you inspect the cable for

113
00:07:59,800 --> 00:07:55,870

damage to it sometime that'd be great

114

00:08:02,050 --> 00:07:59,810

it out right now you can see the

115

00:08:04,930 --> 00:08:02,060

intention point but my finger is you

116

00:08:06,570 --> 00:08:04,940

guys got that the WCS and at the

117

00:08:09,400 --> 00:08:06,580

entrance

118

00:08:12,220 --> 00:08:09,410

it's the indentation wood away for the

119

00:08:14,980 --> 00:08:12,230

most part what the dip was released and

120

00:08:19,270 --> 00:08:14,990

then there's no pairing to the fabric

121

00:08:24,930 --> 00:08:19,280

covering you can can't be safe it's a

122

00:08:27,730 --> 00:08:24,940

great call well done guys it's great

123

00:08:30,580 --> 00:08:27,740

Steve Bowen is already on snagged the

124

00:08:33,820 --> 00:08:30,590

cable he's just going to tie wrap it to

125

00:08:36,279 --> 00:08:33,830

the other cable that you see there this

126
00:08:38,610 --> 00:08:36,289
is a view from his helmet cam 30 minutes

127
00:08:41,620 --> 00:08:38,620
into the EBA

128
00:08:45,880 --> 00:08:41,630
and verify that the tie wrap restrains

129
00:08:49,720 --> 00:08:45,890
the cable away from the read sensor good

130
00:08:55,690 --> 00:08:49,730
work awesome man faster than I can keep

131
00:08:59,740 --> 00:08:55,700
up with the reach and hold right there

132
00:09:02,890 --> 00:08:59,750
that's good I think we're ready to back

133
00:09:06,400 --> 00:09:02,900
away and test your work all right oh you

134
00:09:10,240 --> 00:09:06,410
can talk away I'm a photographer back in

135
00:09:15,370 --> 00:09:10,250
a way I really put this in the trash if

136
00:09:18,790 --> 00:09:15,380
I write back that is in the trash bag

137
00:09:38,600 --> 00:09:18,800
I'm going to train my rat the loop and

138
00:10:03,870 --> 00:09:41,520

you could watch it for us oh thanks put

139

00:10:11,100 --> 00:10:06,300

okay bueno you're doing great work out

140

00:10:13,710 --> 00:10:11,110

there tell me I'll get cable on table

141

00:10:17,129 --> 00:10:13,720

now you see that you all want to know

142

00:10:21,930 --> 00:10:17,139

and if you do can you feel fear issues

143

00:10:37,370 --> 00:10:21,940

watching yeah so that's the cable on

144

00:10:42,500 --> 00:10:39,740

Thank You Stan once we get this pitch

145

00:10:44,090 --> 00:10:42,510

and it tilts all the way completed it's

146

00:10:51,700 --> 00:10:44,100

a pan left to the heart stop can we do

147

00:10:56,620 --> 00:10:52,990

Thanks

148

00:10:59,690 --> 00:10:56,630

hey Steve Oh while you're waiting for

149

00:11:02,390 --> 00:10:59,700

the east coast of South America

150

00:11:21,370 --> 00:11:02,400

that's pretty down there beautiful

151

00:11:30,310 --> 00:11:27,280

they just say that's just a heads up

152

00:11:35,820 --> 00:11:30,320

there Stevo we got we were looking for

153

00:11:38,260 --> 00:11:35,830

3:05 for the tilt and we got 288 okay

154

00:11:40,510 --> 00:11:38,270

we're not getting all the way to the

155

00:11:41,890 --> 00:11:40,520

hand number either so maybe we got to

156

00:11:43,690 --> 00:11:41,900

bring it back to you and have you do

157

00:11:45,340 --> 00:11:43,700

your cable wrap adjust but that you were

158

00:11:46,600 --> 00:11:45,350

talking about yeah I could just slide it

159

00:11:47,260 --> 00:11:46,610

I could see where it's falling on this

160

00:11:49,600 --> 00:11:47,270

high raft

161

00:11:50,950 --> 00:11:49,610

there's a green tie wrap further on with

162

00:11:57,430 --> 00:11:50,960

a bundle of cable for the constriction

163

00:11:59,730 --> 00:11:57,440

they're thinking it off it can pull this

164

00:12:02,230 --> 00:11:59,740

through I'm sorry t-bo what you think

165

00:12:05,820 --> 00:12:02,240

I'm getting the wrap it pull the cable

166

00:12:08,560 --> 00:12:05,830

through that's as high as they can go

167

00:12:10,120 --> 00:12:08,570

and then it's final cut back and forth

168

00:12:12,190 --> 00:12:10,130

will go up and boil with the cable I'm

169

00:12:14,050 --> 00:12:12,200

wondering if this cable is the side that

170

00:12:16,990 --> 00:12:14,060

needs to be there baby

171

00:12:20,170 --> 00:12:17,000

it's just too tight and if I put a lot

172

00:12:24,030 --> 00:12:20,180

of those losers it might not be strict

173

00:12:27,070 --> 00:12:24,040

at that point seems to be restricting it

174

00:12:29,770 --> 00:12:27,080

and then decision tree view I'm just

175

00:12:31,480 --> 00:12:29,780

coming up with see yeah that's fine

176

00:12:37,080 --> 00:12:31,490

and I wishing that's good we're happy

177

00:12:42,280 --> 00:12:39,970

okay fine just to be clear are you

178

00:12:46,210 --> 00:12:42,290

giving up or you think it's totally good

179

00:12:48,610 --> 00:12:46,220

and it's not work fine for us in Tony we

180

00:12:50,800 --> 00:12:48,620

believe that that is adequate range of

181

00:12:52,390 --> 00:12:50,810

motion and even if the case if it does

182

00:12:55,030 --> 00:12:52,400

stand up we believe a little movement of

183

00:12:58,600 --> 00:12:55,040

the fan and total un snag it will get us

184

00:13:00,880 --> 00:12:58,610

good again okay great

185

00:13:03,250 --> 00:13:00,890

let me figure out how to back out of

186

00:13:04,540 --> 00:13:03,260

this said hock if you could just move it

187

00:13:14,800 --> 00:13:04,550

away from me that I can get out of my

188

00:13:25,670 --> 00:13:14,810

idea for okay huh moving it away I think

189

00:13:33,449 --> 00:13:30,240

and this view from the intensified black

190

00:13:37,139 --> 00:13:33,459

and white camera on the end of the

191

00:13:40,319 --> 00:13:37,149

shuttles boom this is the laser dynamic

192

00:13:43,530 --> 00:13:40,329

range immature Center package one camera

193

00:13:45,990 --> 00:13:43,540

that typically is reserved for use

194

00:13:52,280 --> 00:13:46,000

during Shuttle thermal Thailand our

195

00:14:00,230 --> 00:13:54,960

Michael good now releasing one of the

196

00:14:05,540 --> 00:14:00,240

two bolts securing the battery to its

197

00:14:10,040 --> 00:14:05,550

carrier on the p6 truss they release

198

00:14:12,150 --> 00:14:10,050

okay and a few kind words for steve-o or

199

00:14:14,460 --> 00:14:12,160

Garrett about running torque and

200

00:14:17,160 --> 00:14:14,470

indicators as you do these just shout

201
00:14:18,840 --> 00:14:17,170
them out next will be release h2 yeah

202
00:14:22,500 --> 00:14:18,850
running torque with nothing on each one

203
00:14:24,389 --> 00:14:22,510
and you see the indicator there 0/5

204
00:14:26,579 --> 00:14:24,399
don't write here for block just that far

205
00:14:28,829 --> 00:14:26,589
of each one it's not very far I could

206
00:14:30,210 --> 00:14:28,839
feel it you know right you know jumping

207
00:14:33,449 --> 00:14:30,220
on the threat at the end when I was

208
00:14:36,090 --> 00:14:33,459
doing I can only get that the killer is

209
00:14:38,670 --> 00:14:36,100
in I don't on each two times same

210
00:14:40,620 --> 00:14:38,680
settings a phone Bravo seven

211
00:14:43,470 --> 00:14:40,630
counterclockwise to all the way to

212
00:14:43,920 --> 00:14:43,480
release sixteen to seventeen terms okay

213
00:14:48,990 --> 00:14:43,930

here we go

214

00:14:58,319 --> 00:14:49,000

and it's charming I see it moving little

215

00:15:14,390 --> 00:14:58,329

bit of running car see it coming out not

216

00:15:19,200 --> 00:15:17,010

Valletta season three VA will get

217

00:15:24,990 --> 00:15:19,210

steve-o is bad mole here decay in about

218

00:15:26,880 --> 00:15:25,000

five minutes I think a pager kappa

219

00:15:29,010 --> 00:15:26,890

steve-o know

220

00:15:30,540 --> 00:15:29,020

you'll get your battery both decay

221

00:15:32,460 --> 00:15:30,550

message in about five minutes

222

00:15:38,750 --> 00:15:32,470

okay I'll report it when we get it thank

223

00:15:43,530 --> 00:15:38,760

you Tony yacht h2 is over these

224

00:15:45,840 --> 00:15:43,540

indicators fully yeah I'm after the

225

00:15:47,940 --> 00:15:45,850

battery clue there's no soft dock at all

226

00:15:51,060 --> 00:15:47,950

it's coming off I'm watching it bring it

227

00:15:53,460 --> 00:15:51,070

back out slowly it really is I'm ready

228

00:15:56,520 --> 00:15:53,470

for you okay see the picture that's it

229

00:15:59,580 --> 00:15:56,530

yeah uh how's the feel coming up

230

00:16:01,050 --> 00:15:59,590

straight looks fierce like if you could

231

00:16:05,310 --> 00:16:01,060

pull it to your right a little bit so I

232

00:16:07,170 --> 00:16:05,320

can get down the thank you Tony

233

00:16:11,280 --> 00:16:07,180

everybody didn't feel any soft talk you

234

00:16:13,290 --> 00:16:11,290

know it's just it was just flows okay I

235

00:16:17,250 --> 00:16:13,300

Cathy will be interested to see if the

236

00:16:19,710 --> 00:16:17,260

pallets the same or if it's a little

237

00:16:22,110 --> 00:16:19,720

more than two hours into the spacewalk

238

00:16:26,250 --> 00:16:22,120

the crew members have removed the first

239

00:16:46,050 --> 00:16:26,260

of the old batteries from the p6 channel

240

00:16:49,500 --> 00:16:46,060

B complement of batteries the view 220

241

00:16:53,810 --> 00:16:49,510

miles up as seen by astronaut Michael

242

00:16:53,820 --> 00:17:11,060

people you can look over this part

243

00:17:18,270 --> 00:17:13,410

you're picking your one picture that

244

00:17:25,439 --> 00:17:18,280

she's lost that your go ahead of the

245

00:17:41,940 --> 00:17:25,449

game almost there you just got to get it

246

00:17:44,400 --> 00:17:41,950

down flat and that go out figured left

247

00:17:47,400 --> 00:17:44,410

field Michael good assisting Steve

248

00:17:50,460 --> 00:17:47,410

Boeing as he climbs into the foot

249

00:17:55,290 --> 00:17:50,470

restraint in preparation for the

250

00:17:58,140 --> 00:17:55,300

installation of the first new battery

251

00:18:01,080 --> 00:17:58,150

the new battery whoo is designated

252

00:18:06,120 --> 00:18:01,090

battery a he'll be in the foot restraint

253

00:18:08,640 --> 00:18:06,130

in order to retrieve it from the pallet

254

00:18:10,680 --> 00:18:08,650

the integrated cargo carrier in which it

255

00:18:18,870 --> 00:18:10,690

was stowed and launched aboard space

256

00:18:21,930 --> 00:18:18,880

shuttle atlantis bowen is now handing

257

00:18:25,140 --> 00:18:21,940

the new the first new battery and he'll

258

00:18:27,600 --> 00:18:25,150

hand that off to michael good who will

259

00:18:33,690 --> 00:18:27,610

head back to the worksite for

260

00:18:38,490 --> 00:18:33,700

installation battery i'm gonna be a PFR

261

00:18:43,110 --> 00:18:38,500

okay okay you have to pitch it away a

262

00:18:52,630 --> 00:18:43,120

little bit can you push it yeah thanks

263

00:18:58,130 --> 00:18:54,680

I'm gonna give you that then you can

264

00:19:01,970 --> 00:18:58,140

face both end up back you have the

265

00:19:03,920 --> 00:19:01,980

battery look at Audi wait each day I'm

266

00:19:05,210 --> 00:19:03,930

having a lot check of the trust I still

267

00:19:07,370 --> 00:19:05,220

need a pod check in the back of the

268

00:19:12,170 --> 00:19:07,380

battery all four checks the part -

269

00:19:16,670 --> 00:19:12,180

the chocolates good yeah back get your

270

00:19:17,600 --> 00:19:16,680

back like and the battery looks good

271

00:19:20,150 --> 00:19:17,610

very good

272

00:19:26,390 --> 00:19:20,160

all right excellent all right keep it

273

00:19:30,920 --> 00:19:26,400

coming right let me get myself a line to

274

00:19:35,110 --> 00:19:30,930

help you out here stop stop Mike stop

275

00:19:39,320 --> 00:19:35,120

stop there you go

276

00:19:42,650 --> 00:19:39,330

baby's kept you're right about hey

277

00:19:48,910 --> 00:19:42,660

stop there and let me get sounds like a

278

00:19:52,850 --> 00:19:48,920

few you need to come off oh wait up

279

00:19:55,460 --> 00:19:52,860

great up that look he's coming pitch

280

00:19:58,490 --> 00:19:55,470

back a tiny bit okay that looks good you

281

00:20:08,480 --> 00:19:58,500

have cured clearance you can start

282

00:20:08,490 --> 00:20:13,040

can you get it keeps coming a little bit

283

00:20:13,050 --> 00:20:20,900

get a little bit fair but to feel like

284

00:20:25,950 --> 00:20:23,490

it could alone at the top I got good

285

00:20:28,160 --> 00:20:25,960

alignment aside and I guess they're all

286

00:20:32,520 --> 00:20:28,170

right

287

00:20:45,620 --> 00:20:32,530

okay well drive H to an excuse here we

288

00:20:54,080 --> 00:20:51,530

Tony Bravo seven clockwise - that's good

289

00:20:55,970 --> 00:20:54,090

expectant sixteen to seventeen turns and

290

00:20:58,190 --> 00:20:55,980

I'll take turns and torque from you

291

00:21:02,270 --> 00:20:58,200

please and the new battery now is soft

292

00:21:05,750 --> 00:21:02,280

docked Michael good now ready to seat

293

00:21:08,390 --> 00:21:05,760

the battery with the two bolts he's

294

00:21:27,820 --> 00:21:08,400

checking his settings on his pistol grip

295

00:21:42,960 --> 00:21:32,170

that's not sort of fair take share

296

00:22:12,360 --> 00:21:49,410

there we go that's it batteries living

297

00:22:23,430 --> 00:22:12,370

in all right 6 7 8 9 10 11 12 13 14 15

298

00:22:34,730 --> 00:22:23,440

get ready for the torch here 16 at 16

299

00:22:37,920 --> 00:22:37,380

good green light and the indicator is

300

00:22:41,070 --> 00:22:37,930

locked

301
00:22:43,860 --> 00:22:41,080
thanks what I'll do nice work will do H

302
00:22:47,520 --> 00:22:43,870
one thing settings five to six turns

303
00:22:48,780 --> 00:22:47,530
I'll take turns and forks okay so I had

304
00:22:52,230 --> 00:22:48,790
more turns than that

305
00:22:53,730 --> 00:22:52,240
tell me about 21 turns but I didn't

306
00:22:56,400 --> 00:22:53,740
start counting until I knew I had to

307
00:22:57,000 --> 00:22:56,410
work on it yeah understood there's no

308
00:22:59,400 --> 00:22:57,010
problem

309
00:23:00,870 --> 00:22:59,410
yeah I want to yeah I don't want the

310
00:23:04,370 --> 00:23:00,880
number off the machine I want what you

311
00:23:15,390 --> 00:23:06,840
thank you I'll take love gauntlet and

312
00:23:19,500 --> 00:23:15,400
config check for me my coffee like oh

313
00:23:25,890 --> 00:23:19,510

it's all three I have three rats on D

314

00:23:29,400 --> 00:23:25,900

and kikiki their trash bag that should

315

00:23:32,580 --> 00:23:29,410

be good thanks Toby five and a half

316

00:23:38,670 --> 00:23:32,590

turns 45 sticks on the torch big green

317

00:23:45,120 --> 00:23:38,680

light and the indicator is fun yeah

318

00:23:51,410 --> 00:23:45,130

there's six turns for this relief and

319

00:23:59,010 --> 00:23:54,630

three hours and 39 minutes into the

320

00:24:01,640 --> 00:23:59,020

spacewalk the third old battery has been

321

00:24:07,950 --> 00:24:04,310

Michael good now in the process of

322

00:24:12,330 --> 00:24:07,960

translating over to the pallet in order

323

00:24:14,940 --> 00:24:12,340

to deliver the old battery to Steve

324

00:24:29,200 --> 00:24:14,950

Bowen who will install it in the pallet

325

00:24:35,150 --> 00:24:32,930

let it get my race okay out that fast

326

00:24:37,550 --> 00:24:35,160

yeah everybody I'm just gonna move over

327

00:24:42,980 --> 00:24:37,560

to get over and well so let me try and

328

00:24:45,140 --> 00:24:42,990

get in at least uh I can't get it to you

329

00:24:46,730 --> 00:24:45,150

yet yeah I don't want to go up you don't

330

00:25:30,860 --> 00:24:46,740

throw your feet up there yeah let me put

331

00:25:37,700 --> 00:25:34,300

that's better yeah you've got it add it

332

00:25:43,610 --> 00:25:37,710

up to the vertical a couple more over

333

00:25:46,730 --> 00:25:43,620

yeah you can still have it I fell out it

334

00:25:54,800 --> 00:25:46,740

okay that's a good place to ferret I

335

00:26:02,950 --> 00:25:54,810

remember this coming over here okay I

336

00:26:06,620 --> 00:26:02,960

have to better Michael good now

337

00:26:09,740 --> 00:26:06,630

translating up to join Steve Bowen for

338

00:26:15,380 --> 00:26:09,750

the installation of the old battery

339

00:26:16,520 --> 00:26:15,390

number three into the empty slot B that

340

00:26:18,050 --> 00:26:16,530

is going in the hole

341

00:26:22,070 --> 00:26:18,060

how did I get a more like clear the

342

00:26:25,970 --> 00:26:22,080

fellas I'm a little bit less good

343

00:26:32,690 --> 00:26:25,980

alignment I'm showing it that's about as

344

00:26:35,960 --> 00:26:32,700

deep as I needed on each one side thank

345

00:26:40,220 --> 00:26:35,970

you for be honest if we give it a little

346

00:26:44,150 --> 00:26:40,230

bit of wiggle all your size fits in

347

00:26:49,070 --> 00:26:44,160

there all right totally different

348

00:26:54,140 --> 00:26:49,080

position that I started playing a

349

00:27:00,770 --> 00:26:54,150

certain age to that correct a firm h2

350

00:27:07,180 --> 00:27:00,780

and look like a little bit dorky hey

351
00:27:10,850 --> 00:27:07,190
clockwise to rattle seven clockwise to

352
00:27:19,120 --> 00:27:10,860
all good I'll take 16 to 17 turns turns

353
00:27:23,610 --> 00:27:19,130
and torque please I got good indications

354
00:27:34,230 --> 00:27:30,660
Coenen three brand-new batteries now

355
00:27:37,440 --> 00:27:34,240
have been installed on the the p6 truss

356
00:27:40,950 --> 00:27:37,450
the crew has been given a go for the

357
00:27:44,490 --> 00:27:40,960
fourth battery today so they are jumping

358
00:27:47,490 --> 00:27:44,500
ahead now that the new battery is

359
00:27:50,730 --> 00:27:47,500
installed they are in the process now of

360
00:27:55,530 --> 00:27:50,740
removing the fourth old battery battery

361
00:27:58,230 --> 00:27:55,540
number four from the p6 truss once they

362
00:28:00,570 --> 00:27:58,240
have that removed they will install it

363
00:28:04,230 --> 00:28:00,580

on the pallet to be returned home aboard

364

00:28:06,540 --> 00:28:04,240

Atlantis and then they will remove the

365

00:28:14,910 --> 00:28:06,550

fourth new battery from that palette and

366

00:28:16,260 --> 00:28:14,920

install it in the empty slot a good view

367

00:28:17,970 --> 00:28:16,270

of one of these batteries there on the

368

00:28:20,460 --> 00:28:17,980

left these batteries are fairly large in

369

00:28:25,500 --> 00:28:20,470

size they're about 40 inches by 37

370

00:28:28,020 --> 00:28:25,510

inches by 18 inches in depth and we

371

00:28:30,180 --> 00:28:28,030

close to 400 pounds apiece and each one

372

00:28:32,100 --> 00:28:30,190

of them has eight kilowatt hours of

373

00:28:33,450 --> 00:28:32,110

energy which is enough to run an LCD

374

00:28:47,190 --> 00:28:33,460

television here on the ground for about

375

00:28:51,950 --> 00:28:47,200

80 hours just on one charge right go

376

00:28:54,330 --> 00:28:51,960

right up a little bit

377

00:28:58,020 --> 00:28:54,340

the laundry marks appeared I think it's

378

00:29:00,060 --> 00:28:58,030

good to go in picks up a little bit come

379

00:29:03,120 --> 00:29:00,070

right a little bit more you go right

380

00:29:12,260 --> 00:29:03,130

about two inches black on black you look

381

00:29:20,190 --> 00:29:15,290

how's it feel

382

00:29:22,590 --> 00:29:20,200

thank we're on it all right okay

383

00:29:24,840 --> 00:29:22,600

and I've seen back a little tougher on

384

00:29:36,950 --> 00:29:24,850

this one this is the hardest one Billy

385

00:29:42,410 --> 00:29:39,440

dear Tony we besides course taking

386

00:29:44,270 --> 00:29:42,420

pictures we would like to throw out the

387

00:29:45,770 --> 00:29:44,280

possibility now this again it's just if

388

00:29:47,630 --> 00:29:45,780

everybody really is so like they're

389

00:29:49,580 --> 00:29:47,640

doing well and it really wants to do

390

00:29:52,070 --> 00:29:49,590

this it's not a high priority at this

391

00:29:52,580 --> 00:29:52,080

time but they're looking and doing some

392

00:29:57,260 --> 00:29:52,590

of those ask

393

00:30:00,110 --> 00:29:57,270

asking okay yeah I copy goog copy you

394

00:30:02,720 --> 00:30:00,120

have on the way okay sounds good stop at

395

00:30:04,970 --> 00:30:02,730

the airlock and while you're there we'll

396

00:30:09,920 --> 00:30:04,980

talk and see if we need o to topped off

397

00:30:11,690 --> 00:30:09,930

or not that bag okay and I think they

398

00:30:13,640 --> 00:30:11,700

gave it they set us up a really good

399

00:30:19,310 --> 00:30:13,650

procedure so I think I have high

400

00:30:20,740 --> 00:30:19,320

confidence we can get through that the

401
00:30:22,790 --> 00:30:20,750
crew is still ahead of the timeline

402
00:30:24,260 --> 00:30:22,800
before the ground team has offered up

403
00:30:26,270 --> 00:30:24,270
the option of taking care of this get

404
00:30:29,210 --> 00:30:26,280
ahead task on this spare space-to-ground

405
00:30:31,760 --> 00:30:29,220
antenna there was a challenge trying to

406
00:30:33,680 --> 00:30:31,770
get the actual dish the antenna dish

407
00:30:43,790 --> 00:30:33,690
installed on the pedestal or the boom

408
00:30:49,240 --> 00:30:43,800
that attaches it to the station fifteen

409
00:30:52,060 --> 00:30:49,250
point nine degree in life okay excellent

410
00:30:54,950 --> 00:30:52,070
and the loss coefficient forward a

411
00:30:58,160 --> 00:30:54,960
problems that feel they'll be on this

412
00:31:01,370 --> 00:30:58,170
horse I think it's got a hand there at

413
00:31:05,210 --> 00:31:01,380

least how much is I think it's a call

414

00:31:06,740 --> 00:31:05,220

over to the studio there's a good look

415

00:31:08,780 --> 00:31:06,750

at the bolts that steve bowen and mike

416

00:31:11,390 --> 00:31:08,790

good are currently working on there's

417

00:31:16,130 --> 00:31:11,400

four of them that hold this entire dish

418

00:31:17,420 --> 00:31:16,140

down onto its pedestal the entire

419

00:31:19,010 --> 00:31:17,430

objective of what they're trying to do

420

00:31:20,900 --> 00:31:19,020

is retighten these bolts and they will

421

00:31:22,370 --> 00:31:20,910

do a wiggle or a shake test on the

422

00:31:25,130 --> 00:31:22,380

entire assembly to make sure it's not

423

00:31:26,990 --> 00:31:25,140

moving more than what is expected if it

424

00:31:28,750 --> 00:31:27,000

does they will simply try to re tighten

425

00:31:30,920 --> 00:31:28,760

the bolts once more at a higher setting

426
00:31:33,710 --> 00:31:30,930
but if it doesn't move more than what

427
00:31:35,180 --> 00:31:33,720
they expect they will release the

428
00:31:36,680 --> 00:31:35,190
temporary tether that was put on there

429
00:31:38,690 --> 00:31:36,690
during the first spacewalk of the

430
00:31:41,650 --> 00:31:38,700
mission and also released the launch

431
00:31:44,150 --> 00:31:41,660
locks that held the antenna down

432
00:31:46,850 --> 00:31:44,160
everybody do the wiggle dress up about

433
00:31:49,440 --> 00:31:46,860
PGP we're getting down to the interface

434
00:31:56,649 --> 00:31:54,789
and Tony I'm doing a radon test I'm not

435
00:31:58,840 --> 00:31:56,659
getting any motion I'm seeing absolutely

436
00:31:59,889 --> 00:31:58,850
nothing nothing like you have the other

437
00:32:04,930 --> 00:31:59,899
day that's for sure

438
00:32:07,720 --> 00:32:04,940

okay great I don't see any gas let me

439

00:32:10,210 --> 00:32:07,730

give a Houston a chance to weigh in here

440

00:32:12,759 --> 00:32:10,220

houston we sell no motion at the wiggle

441

00:32:20,769 --> 00:32:12,769

test and we see no gaps we're ready to

442

00:32:22,600 --> 00:32:20,779

pick up and step 19 and Tony we saw the

443

00:32:26,669 --> 00:32:22,610

same give us a second toe to verify with

444

00:32:39,129 --> 00:32:33,039

secondly yeah it depends do you feel

445

00:32:43,360 --> 00:32:39,139

lucky no way okay you can put a read on

446

00:32:46,539 --> 00:32:43,370

game block to would like to do that then

447

00:32:48,310 --> 00:32:46,549

might developers with it so good news

448

00:32:50,409 --> 00:32:48,320

there on this space spare

449

00:32:51,850 --> 00:32:50,419

space-to-ground antenna the crew has

450

00:32:53,379 --> 00:32:51,860

performed the wiggle test they shook it

451
00:32:55,810 --> 00:32:53,389
back and forth they reported there's no

452
00:32:58,419 --> 00:32:55,820
motion and also it appears that this one

453
00:32:59,769 --> 00:32:58,429
millimeter gap that had existed during a

454
00:33:04,110 --> 00:32:59,779
first spacewalk lenore they tried to

455
00:33:13,899 --> 00:33:10,119
Atlantis Houston for you day good great

456
00:33:15,789 --> 00:33:13,909
job that does it yes ken is on firmly we

457
00:33:18,629 --> 00:33:15,799
already first have 19 and removing

458
00:33:22,720 --> 00:33:21,009
okay Falcon we're getting this

459
00:33:25,749 --> 00:33:22,730
adjustable feather off in here yeah

460
00:33:27,279 --> 00:33:25,759
let's click that off there now that the

461
00:33:29,440 --> 00:33:27,289
crew has reported that there was no

462
00:33:31,690 --> 00:33:29,450
wiggle of this antenna back and forth

463
00:33:34,360 --> 00:33:31,700

and also that the gap doesn't seem to be

464

00:33:36,789 --> 00:33:34,370

there anymore you're seeing them remove

465

00:33:38,110 --> 00:33:36,799

that temporary tether that was put on

466

00:33:40,840 --> 00:33:38,120

this antenna back during the first

467

00:33:42,730 --> 00:33:40,850

spacewalk of this flight that was done

468

00:33:45,159 --> 00:33:42,740

just to ensure that the antenna was in a

469

00:33:47,080 --> 00:33:45,169

good configuration in advance of today's

470

00:33:49,629 --> 00:33:47,090

activities but now that tether can be

471

00:33:51,490 --> 00:33:49,639

removed the crew will also remove the

472

00:33:56,049 --> 00:33:51,500

gimbal or launch locks that are part of

473

00:33:57,430 --> 00:33:56,059

this entire assembly and once they get

474

00:34:10,069 --> 00:33:57,440

that done that will actually wrap up

475

00:34:37,169 --> 00:34:35,849

go back into the coffee while this is

476

00:34:38,639 --> 00:34:37,179

bueno coming into Hanson

477

00:34:41,159 --> 00:34:38,649

all right let's check it after being the

478

00:34:42,539 --> 00:34:41,169

champion of champions kicked some

479

00:34:58,410 --> 00:34:42,549

serious butt today

480

00:35:01,710 --> 00:34:58,420

look at that look is in space serious

481

00:35:06,299 --> 00:35:01,720

heroes they both those guys unbelievable

482

00:35:08,400 --> 00:35:06,309

they did for battery save the SKA got

483

00:35:10,589 --> 00:35:08,410

everybody ahead so that our next CVA is

484

00:35:12,359 --> 00:35:10,599

gonna be awesome

485

00:35:18,349 --> 00:35:12,369

we're gonna get everything done I know

486

00:35:23,700 --> 00:35:18,359

it's a I'm so stinkin hacked all right

487

00:35:30,450 --> 00:35:23,710

seeing a little bit all right here they

488

00:35:30,460 --> 00:35:36,930

all right

489

00:35:41,040 --> 00:35:38,670

the awesome smell of space

490

00:35:42,660 --> 00:35:41,050

yeah for those of you watching at home

491

00:35:45,030 --> 00:35:42,670

you might not realize this but space has

492

00:35:54,950 --> 00:35:45,040

a smell it's actually the smell of stuff

493

00:35:59,400 --> 00:35:56,370

chicken

494

00:36:01,980 --> 00:35:59,410

that smells like ozone or it's kind of

495

00:36:07,380 --> 00:36:01,990

an electrical smell but we call this

496

00:36:11,310 --> 00:36:07,390

amount of space all right boom some more

497

00:36:13,910 --> 00:36:11,320

when there are more inside all right get

498

00:36:17,390 --> 00:36:13,920

the fellows out of their suits guys

499

00:36:21,859 --> 00:36:17,400

unbelievable EPA what you have to say

500

00:36:23,790 --> 00:36:21,869

epic that was fun it was it was great

501
00:36:28,100 --> 00:36:23,800
hanging out there at the end of the

502
00:36:33,540 --> 00:36:28,110
truss watching the world really yeah

503
00:36:37,590 --> 00:36:35,640
looking from inside the window and it

504
00:36:40,109 --> 00:36:37,600
looked really far out there you know who

505
00:36:42,320 --> 00:36:40,119
was on top of the arm Wow at once I know

506
00:36:45,020 --> 00:36:42,330
but I kept my eyes closed the whole time

507
00:36:47,400 --> 00:36:45,030
what time we flew over South America

508
00:36:52,320 --> 00:36:47,410
amazon for as long as i could see a

509
00:36:54,930 --> 00:36:52,330
thousand miles I can see it forever

510
00:36:58,760 --> 00:36:54,940
Wow yeah beautiful sunrises and sunsets

511
00:37:04,160 --> 00:37:02,480
unbelievable you guys you got let's say

512
00:37:07,520 --> 00:37:04,170
you got everything done in the nominal

513
00:37:08,900 --> 00:37:07,530

plant e VA plus the table

514

00:37:12,050 --> 00:37:08,910

you freed up the cable on our camera

515

00:37:15,460 --> 00:37:12,060

that was stuck plus you did all the

516

00:37:19,460 --> 00:37:15,470

setup that we expected to have done plus

517

00:37:22,490 --> 00:37:19,470

you've got the s Gantt the the dish both

518

00:37:24,530 --> 00:37:22,500

about to the the boom plus you got the

519

00:37:26,210 --> 00:37:24,540

gimbal locks off plus what am I

520

00:37:31,100 --> 00:37:26,220

forgetting there's so much stuff I can't

521

00:37:34,030 --> 00:37:31,110

remember we're set up for a BA three

522

00:37:36,770 --> 00:37:34,040

there big gu p alright mitt up all right

523

00:37:45,340 --> 00:37:36,780

all right there's no way we're topping

524

00:37:56,590 --> 00:37:47,240

alright that's enough

525

00:37:57,740 --> 00:37:56,600

congratulating each other international

526
00:38:01,550 --> 00:37:57,750
Kotori

527
00:38:08,630 --> 00:38:01,560
we got Russian maybe chicken with rice

528
00:38:23,300 --> 00:38:08,640
their winner what do you eaten Chef

529
00:38:27,150 --> 00:38:23,310
Boyardee what you in there to play with

530
00:38:51,720 --> 00:38:49,230
like that's just the way to eat we got

531
00:38:56,280 --> 00:38:51,730
like we got like sea urchin sashimi we

532
00:39:04,520 --> 00:38:56,290
have su dock we have yakitori we got all

533
00:39:06,990 --> 00:39:04,530
kinds of and you're eating what port MIT

534
00:39:11,430 --> 00:39:07,000
it's kind of frustrating are honest we

535
00:39:15,000 --> 00:39:11,440
know oh yeah and that's cool-looking

536
00:39:28,440 --> 00:39:15,010
- sent to huge yeah the one that never

537
00:39:31,529 --> 00:39:28,450
loves all right new plug is out me yeah

538
00:39:34,680 --> 00:39:31,539

I had a little bit everything so let me

539

00:39:38,760 --> 00:39:34,690

show you right now I just got an empty

540

00:40:38,900 --> 00:39:38,770

spoon fix that man I do I'll get