



Johnson Space

1  
00:00:06,789 --> 00:00:03,750  
good afternoon and thanks for joining us

2  
00:00:08,950 --> 00:00:06,799  
for today's expedition 32 post spacewalk

3  
00:00:10,709 --> 00:00:08,960  
briefing with us today we have mike

4  
00:00:12,709 --> 00:00:10,719  
stefardini the international space

5  
00:00:14,870 --> 00:00:12,719  
station program manager

6  
00:00:17,349 --> 00:00:14,880  
ed van cise the flight director who is

7  
00:00:19,750 --> 00:00:17,359  
in charge of the eva today and keith

8  
00:00:21,910 --> 00:00:19,760  
johnson who was the lead eva officer for

9  
00:00:23,189 --> 00:00:21,920  
this spacewalk we'll start off with some

10  
00:00:25,750 --> 00:00:23,199  
statements with our participants and

11  
00:00:27,670 --> 00:00:25,760  
then we'll go to questions mike

12  
00:00:29,269 --> 00:00:27,680  
well good afternoon

13  
00:00:31,029 --> 00:00:29,279

we'll spend a few moments with you today

14

00:00:33,670 --> 00:00:31,039

talking about our eva

15

00:00:35,670 --> 00:00:33,680

it was eva 18 that we had conducted

16

00:00:37,990 --> 00:00:35,680

today with the primary purpose

17

00:00:39,750 --> 00:00:38,000

to replace a main bus switching unit on

18

00:00:41,750 --> 00:00:39,760

board iss that

19

00:00:44,470 --> 00:00:41,760

that was supplying power to the iss but

20

00:00:46,709 --> 00:00:44,480

couldn't be commanded as you recall some

21

00:00:47,750 --> 00:00:46,719

months ago we uncovered this problem and

22

00:00:50,229 --> 00:00:47,760

have been

23

00:00:52,310 --> 00:00:50,239

living with it ever since

24

00:00:54,470 --> 00:00:52,320

again it was a relatively nominal

25

00:00:56,549 --> 00:00:54,480

configuration for us

26  
00:00:58,150 --> 00:00:56,559  
but we were unable to command it and

27  
00:00:59,990 --> 00:00:58,160  
there are very few situations where we

28  
00:01:01,510 --> 00:01:00,000  
need to do that on a regular basis and

29  
00:01:03,750 --> 00:01:01,520  
so we're able to wait

30  
00:01:05,429 --> 00:01:03,760  
uh until now to conduct the eba when we

31  
00:01:06,630 --> 00:01:05,439  
were ready and and had everything in

32  
00:01:09,590 --> 00:01:06,640  
place

33  
00:01:11,429 --> 00:01:09,600  
the team did a great job today this eva

34  
00:01:12,789 --> 00:01:11,439  
one of the longest in the history in our

35  
00:01:16,710 --> 00:01:12,799  
history and

36  
00:01:22,469 --> 00:01:18,870  
excuse me increment eva that we've

37  
00:01:24,789 --> 00:01:22,479  
conducted since the iss program began

38  
00:01:27,030 --> 00:01:24,799

unfortunately today though we didn't we

39

00:01:29,350 --> 00:01:27,040

didn't complete all of our tasks uh we

40

00:01:30,710 --> 00:01:29,360

did we had we had three main tasks that

41

00:01:33,190 --> 00:01:30,720

we had planned and then one get ahead

42

00:01:35,990 --> 00:01:33,200

that was very important to us

43

00:01:38,550 --> 00:01:36,000

the mbsu of course was the primary uh

44

00:01:40,710 --> 00:01:38,560

job for the for the eva team but we also

45

00:01:42,950 --> 00:01:40,720

had some cables that had to be routed so

46

00:01:44,950 --> 00:01:42,960

we could supply power

47

00:01:46,870 --> 00:01:44,960

to a new russian module that's coming up

48

00:01:48,389 --> 00:01:46,880

in a year or so

49

00:01:50,389 --> 00:01:48,399

in addition that we had a boom camera on

50

00:01:52,630 --> 00:01:50,399

the ssrms that had failed that we had to

51  
00:01:55,109 --> 00:01:52,640  
replace and then if we had time we

52  
00:01:57,270 --> 00:01:55,119  
wanted to put a cover on the docking

53  
00:01:59,749 --> 00:01:57,280  
port that the shuttle used to use

54  
00:02:02,230 --> 00:01:59,759  
to keep it clear of debris until until

55  
00:02:04,230 --> 00:02:02,240  
we put the new docking system attached

56  
00:02:05,910 --> 00:02:04,240  
to the new docking system some years

57  
00:02:08,710 --> 00:02:05,920  
from now

58  
00:02:10,389 --> 00:02:08,720  
and as i said uh we didn't get all those

59  
00:02:13,030 --> 00:02:10,399  
tasks completed we did get the cables

60  
00:02:15,430 --> 00:02:13,040  
routed uh unfortunately in the process

61  
00:02:17,990 --> 00:02:15,440  
of trying to uh reinstall

62  
00:02:18,949 --> 00:02:18,000  
uh the new the spare mbsu we had some

63  
00:02:21,510 --> 00:02:18,959

trouble

64

00:02:23,350 --> 00:02:21,520

um getting the bolts torqued down

65

00:02:25,030 --> 00:02:23,360

in the and ed and keith will talk more

66

00:02:28,550 --> 00:02:25,040

about that after this

67

00:02:31,670 --> 00:02:28,560

um but they did a did a uh

68

00:02:34,550 --> 00:02:31,680

a tremendous job ed and his team the the

69

00:02:38,070 --> 00:02:34,560

engineers and the crew a fantastic job

70

00:02:39,270 --> 00:02:38,080

of of working with with the uh the box

71

00:02:41,509 --> 00:02:39,280

and uh

72

00:02:42,869 --> 00:02:41,519

taking as many steps they could could

73

00:02:44,710 --> 00:02:42,879

come up with

74

00:02:47,350 --> 00:02:44,720

uh to try to get this thing reinstalled

75

00:02:49,990 --> 00:02:47,360

and ultimately we were not successful

76

00:02:51,990 --> 00:02:50,000

so in the end we left the mbsu in place

77

00:02:53,030 --> 00:02:52,000

it's partially torqued down but the

78

00:02:53,830 --> 00:02:53,040

power

79

00:02:55,670 --> 00:02:53,840

uh

80

00:02:56,949 --> 00:02:55,680

the power connections are not made so

81

00:02:59,270 --> 00:02:56,959

we're getting no power from that

82

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

particular mbsu and then we've tied it

83

00:03:03,190 --> 00:03:01,120

down and in this position we're in a

84

00:03:05,110 --> 00:03:03,200

stable configuration the box is fine

85

00:03:07,190 --> 00:03:05,120

thermally it'll be okay

86

00:03:08,710 --> 00:03:07,200

and we'll uh we'll decide what to do

87

00:03:10,869 --> 00:03:08,720

next and

88

00:03:12,790 --> 00:03:10,879

and go take care of it here in the in

89

00:03:15,030 --> 00:03:12,800

the near future

90

00:03:16,869 --> 00:03:15,040

uh in the meantime the iss is being

91

00:03:19,750 --> 00:03:16,879

supplied power from six of its eight

92

00:03:23,030 --> 00:03:19,760

arrays the team installed some jumpers

93

00:03:25,670 --> 00:03:23,040

prior to uh powering down the mbsu

94

00:03:27,430 --> 00:03:25,680

in preparation for the for the eva and

95

00:03:29,750 --> 00:03:27,440

those jumpers allowed us to get all

96

00:03:32,229 --> 00:03:29,760

power to all the iss systems

97

00:03:34,390 --> 00:03:32,239

and payloads and and so really what the

98

00:03:36,070 --> 00:03:34,400

team has to do they have access we can

99

00:03:37,990 --> 00:03:36,080

get power to all the systems

100

00:03:39,589 --> 00:03:38,000

but we only have three quarters of the

101  
00:03:41,830 --> 00:03:39,599  
power available that we normally have

102  
00:03:43,430 --> 00:03:41,840  
from the iss and so

103  
00:03:45,430 --> 00:03:43,440  
depending on the task at hand over the

104  
00:03:47,430 --> 00:03:45,440  
next several days the team may have to

105  
00:03:49,589 --> 00:03:47,440  
manage power loads a little bit

106  
00:03:51,509 --> 00:03:49,599  
but this is familiar territory for the

107  
00:03:52,949 --> 00:03:51,519  
team and so we'll be able to to deal

108  
00:03:54,550 --> 00:03:52,959  
with that while we

109  
00:03:56,710 --> 00:03:54,560  
decide what our next

110  
00:03:58,149 --> 00:03:56,720  
next plan is

111  
00:04:00,229 --> 00:03:58,159  
we do have uh

112  
00:04:01,030 --> 00:04:00,239  
a number uh of

113  
00:04:10,630 --> 00:04:01,040

a

114

00:04:14,390 --> 00:04:10,640

coming home

115

00:04:17,030 --> 00:04:14,400

on the 16th of september local time

116

00:04:19,509 --> 00:04:17,040

and and then we have an atv departure on

117

00:04:21,270 --> 00:04:19,519

the 25th of september and so

118

00:04:23,189 --> 00:04:21,280

while we think about our plan and when

119

00:04:24,870 --> 00:04:23,199

we might do another eba if we decide

120

00:04:26,390 --> 00:04:24,880

that's necessary we'll have to take all

121

00:04:27,670 --> 00:04:26,400

that into account

122

00:04:28,950 --> 00:04:27,680

move things around in order to

123

00:04:31,590 --> 00:04:28,960

accommodate that

124

00:04:33,990 --> 00:04:31,600

uh but if we do decide to do an eva i

125

00:04:36,390 --> 00:04:34,000

think you'll see us uh if we can can

126  
00:04:39,110 --> 00:04:36,400  
determine what uh what we can do to get

127  
00:04:40,710 --> 00:04:39,120  
the mbsu ultimately installed you'll

128  
00:04:42,790 --> 00:04:40,720  
hear us talking about perhaps trying to

129  
00:04:45,110 --> 00:04:42,800  
do that sooner rather than later

130  
00:04:46,150 --> 00:04:45,120  
uh in the in the program

131  
00:04:49,189 --> 00:04:46,160  
uh so

132  
00:04:51,110 --> 00:04:49,199  
uh for for the team first the fantastic

133  
00:04:53,749 --> 00:04:51,120  
job they did a great job the vehicle is

134  
00:04:56,230 --> 00:04:53,759  
in a in a good configuration uh we know

135  
00:04:58,710 --> 00:04:56,240  
how to operate uh with without power

136  
00:05:00,469 --> 00:04:58,720  
from uh from two of the eight arrays

137  
00:05:02,950 --> 00:05:00,479  
but we do have power to all the critical

138  
00:05:05,350 --> 00:05:02,960

systems and so uh as always the team

139

00:05:07,830 --> 00:05:05,360

will sort this out uh decide the

140

00:05:11,029 --> 00:05:07,840

appropriate plan of action and we'll go

141

00:05:12,469 --> 00:05:11,039

out and take care of this in due time

142

00:05:14,390 --> 00:05:12,479

uh and with that i'll hand you over to

143

00:05:17,430 --> 00:05:14,400

ed who will uh talk to you more about

144

00:05:20,310 --> 00:05:17,440

the specifics of the eva

145

00:05:22,070 --> 00:05:20,320

well thank you mr suffradini and uh i i

146

00:05:25,510 --> 00:05:22,080

need to really start off uh by

147

00:05:27,830 --> 00:05:25,520

reiterating the the thanks and

148

00:05:30,629 --> 00:05:27,840

excellence that our team

149

00:05:31,670 --> 00:05:30,639

across the board showed today

150

00:05:32,790 --> 00:05:31,680

we train

151  
00:05:34,950 --> 00:05:32,800

frequently

152  
00:05:37,510 --> 00:05:34,960

not only in mission operations but in

153  
00:05:40,310 --> 00:05:37,520

all of our different areas on handling

154  
00:05:42,150 --> 00:05:40,320

malfunctions as they come up and as even

155  
00:05:43,749 --> 00:05:42,160

though we didn't necessarily train for

156  
00:05:46,070 --> 00:05:43,759

this particular situation it's the

157  
00:05:48,230 --> 00:05:46,080

mentality that we have grown up with and

158  
00:05:50,629 --> 00:05:48,240

that we demonstrate on console that gave

159  
00:05:53,029 --> 00:05:50,639

us all the tools we needed to first try

160  
00:05:54,070 --> 00:05:53,039

to troubleshoot the bolt issues that we

161  
00:05:56,390 --> 00:05:54,080

saw

162  
00:05:58,150 --> 00:05:56,400

and obviously we tried everything that

163  
00:06:00,309 --> 00:05:58,160

we could come up with

164

00:06:01,909 --> 00:06:00,319

jointly within the ops team and also

165

00:06:03,590 --> 00:06:01,919

with all the engineering

166

00:06:04,870 --> 00:06:03,600

community working to try to resolve the

167

00:06:07,350 --> 00:06:04,880

issue

168

00:06:09,590 --> 00:06:07,360

but was also as was also mentioned uh we

169

00:06:11,909 --> 00:06:09,600

have an ops team that is uh well

170

00:06:14,710 --> 00:06:11,919

equipped to handle uh long-term off

171

00:06:16,629 --> 00:06:14,720

nominal situations if it has to uh if we

172

00:06:18,790 --> 00:06:16,639

don't have all uh eight power channels

173

00:06:20,950 --> 00:06:18,800

we know how to work with those resources

174

00:06:22,710 --> 00:06:20,960

and as was mentioned we're really not in

175

00:06:24,309 --> 00:06:22,720

a posture that the redundancy is

176

00:06:26,629 --> 00:06:24,319

compromised onboard the vehicle but just

177

00:06:29,110 --> 00:06:26,639

a matter of which facilities and which

178

00:06:30,390 --> 00:06:29,120

operations we want to do at a given time

179

00:06:32,629 --> 00:06:30,400

with the amount of power that we have

180

00:06:33,990 --> 00:06:32,639

available so while it's not ideal that

181

00:06:35,590 --> 00:06:34,000

the situation that we're in right now

182

00:06:37,270 --> 00:06:35,600

it's certainly not one

183

00:06:39,430 --> 00:06:37,280

that leaves us

184

00:06:41,189 --> 00:06:39,440

in a off situation that we can't keep

185

00:06:43,749 --> 00:06:41,199

moving forward

186

00:06:46,070 --> 00:06:43,759

as far as the eva itself we got the crew

187

00:06:49,270 --> 00:06:46,080

up right on time they went through their

188

00:06:51,749 --> 00:06:49,280

eva preparations without any issues we

189

00:06:53,350 --> 00:06:51,759

got out the door also right on time at 7

190

00:06:55,350 --> 00:06:53,360

15 local

191

00:06:57,510 --> 00:06:55,360

and didn't work any suit issues

192

00:06:59,830 --> 00:06:57,520

throughout the day and

193

00:07:01,510 --> 00:06:59,840

we were also

194

00:07:03,029 --> 00:07:01,520

successful in getting the the cables

195

00:07:05,270 --> 00:07:03,039

routed and that was one that we also

196

00:07:07,510 --> 00:07:05,280

needed to track pretty closely

197

00:07:10,390 --> 00:07:07,520

obviously we ran into issues with the

198

00:07:12,070 --> 00:07:10,400

the bolts themselves on the mbsu

199

00:07:13,350 --> 00:07:12,080

and that took most of our attention

200

00:07:15,510 --> 00:07:13,360

throughout the

201  
00:07:16,790 --> 00:07:15,520  
rest of the eva we did get the failed

202  
00:07:18,550 --> 00:07:16,800  
box though

203  
00:07:20,790 --> 00:07:18,560  
installed on its

204  
00:07:22,230 --> 00:07:20,800  
stowage platform behind the airlock and

205  
00:07:24,309 --> 00:07:22,240  
got that covered back up with its

206  
00:07:26,309 --> 00:07:24,319  
thermal blankets so we have that piece

207  
00:07:27,909 --> 00:07:26,319  
of hardware fully secured

208  
00:07:29,670 --> 00:07:27,919  
which only leaves us with one problem to

209  
00:07:31,990 --> 00:07:29,680  
go finish resolving and that's the the

210  
00:07:34,309 --> 00:07:32,000  
box that's sitting out on the s0 truss

211  
00:07:36,070 --> 00:07:34,319  
not fully installed yet but

212  
00:07:37,110 --> 00:07:36,080  
the team did a great job at the end as

213  
00:07:39,350 --> 00:07:37,120

well

214

00:07:41,589 --> 00:07:39,360

in eva obviously this long not only

215

00:07:43,430 --> 00:07:41,599

takes its toll on on the crew and having

216

00:07:44,869 --> 00:07:43,440

to work

217

00:07:47,670 --> 00:07:44,879

the length of the day that they had to

218

00:07:49,270 --> 00:07:47,680

but also the the integrated team and

219

00:07:51,270 --> 00:07:49,280

i never saw anything that would give me

220

00:07:53,990 --> 00:07:51,280

any indications that i had to worry

221

00:07:55,749 --> 00:07:54,000

about their capabilities or fatigue

222

00:07:58,150 --> 00:07:55,759

they did an exceptional job we got the

223

00:07:59,990 --> 00:07:58,160

crew back inside safely we absolutely

224

00:08:01,909 --> 00:08:00,000

know our configuration that we're in and

225

00:08:04,230 --> 00:08:01,919

the teams are already talking about how

226

00:08:06,390 --> 00:08:04,240

we might go resolve the issue

227

00:08:08,230 --> 00:08:06,400

and get things squared away on board to

228

00:08:10,070 --> 00:08:08,240

support all the operations that

229

00:08:10,950 --> 00:08:10,080

mr suffredini mentioned and get us back

230

00:08:14,790 --> 00:08:10,960

to

231

00:08:16,629 --> 00:08:14,800

that we have on orbit

232

00:08:18,150 --> 00:08:16,639

as far as the operations go

233

00:08:19,430 --> 00:08:18,160

that was pretty much the highlights of

234

00:08:20,869 --> 00:08:19,440

our day and keith i don't know if you

235

00:08:22,469 --> 00:08:20,879

have anything else to add about the volt

236

00:08:25,510 --> 00:08:22,479

failures that we saw

237

00:08:27,350 --> 00:08:25,520

thank you mr van size

238

00:08:29,270 --> 00:08:27,360

let's see so uh first of all we were

239

00:08:31,350 --> 00:08:29,280

fortunate that the crew uh used the

240

00:08:33,509 --> 00:08:31,360

in-suit light exercise pre-breathe

241

00:08:35,990 --> 00:08:33,519

protocol this morning they uh they got

242

00:08:38,149 --> 00:08:36,000

out the door as had mentioned in a

243

00:08:39,430 --> 00:08:38,159

timely fashion and also we were able to

244

00:08:40,790 --> 00:08:39,440

change out

245

00:08:43,350 --> 00:08:40,800

their

246

00:08:44,949 --> 00:08:43,360

contamination control cartridge which uh

247

00:08:47,350 --> 00:08:44,959

provides them the co2 scrubbing

248

00:08:49,590 --> 00:08:47,360

capability and we installed new ones

249

00:08:50,790 --> 00:08:49,600

with 40 minutes of pre-breathe left

250

00:08:52,710 --> 00:08:50,800

and that allowed us to have the

251  
00:08:55,750 --> 00:08:52,720  
extension time available to do the

252  
00:08:57,829 --> 00:08:55,760  
troubleshooting that ed mentioned

253  
00:09:00,389 --> 00:08:57,839  
during the eva we did have one suit

254  
00:09:02,949 --> 00:09:00,399  
issue that we began tracking towards the

255  
00:09:04,550 --> 00:09:02,959  
end of the eva where aki's temperature

256  
00:09:05,350 --> 00:09:04,560  
started rising

257  
00:09:09,030 --> 00:09:05,360  
it

258  
00:09:10,550 --> 00:09:09,040  
the cooling he needed but we'll have to

259  
00:09:12,389 --> 00:09:10,560  
look at that suit

260  
00:09:14,310 --> 00:09:12,399  
afterwards to determine if it's go for

261  
00:09:17,030 --> 00:09:14,320  
eva again

262  
00:09:18,870 --> 00:09:17,040  
during the eva the the bolt issue that

263  
00:09:20,710 --> 00:09:18,880

we've been talking about i brought some

264

00:09:22,949 --> 00:09:20,720

hardware along with me

265

00:09:23,910 --> 00:09:22,959

off to my side over here

266

00:09:27,030 --> 00:09:23,920

this is

267

00:09:28,230 --> 00:09:27,040

what we call a stanchion bolt uh the h2

268

00:09:35,269 --> 00:09:28,240

bolt

269

00:09:37,590 --> 00:09:35,279

here drives

270

00:09:39,350 --> 00:09:37,600

the the box down into the configuration

271

00:09:41,829 --> 00:09:39,360

that it needs to go in

272

00:09:44,710 --> 00:09:41,839

on our first attempt we drove the bolt

273

00:09:45,670 --> 00:09:44,720

quite a few turns but not the sufficient

274

00:09:47,190 --> 00:09:45,680

number

275

00:09:49,269 --> 00:09:47,200

to get it all the way seated and the

276

00:09:50,710 --> 00:09:49,279

electrical connectors made it and as

277

00:09:53,670 --> 00:09:50,720

part of our troubleshooting we backed

278

00:09:55,670 --> 00:09:53,680

the box back out again um and tried to

279

00:09:58,630 --> 00:09:55,680

inspect it and during the inspection we

280

00:10:00,310 --> 00:09:58,640

noted that uh there was some fragments

281

00:10:01,670 --> 00:10:00,320

inside of

282

00:10:03,190 --> 00:10:01,680

the the

283

00:10:05,750 --> 00:10:03,200

the housing itself

284

00:10:07,110 --> 00:10:05,760

and we decided that it probably was

285

00:10:09,190 --> 00:10:07,120

prudent to clean

286

00:10:12,310 --> 00:10:09,200

the work site out so we went back to the

287

00:10:14,389 --> 00:10:12,320

airlock and retrieved a pair of pliers

288

00:10:16,150 --> 00:10:14,399

that's we went back for a different

289

00:10:18,150 --> 00:10:16,160

socket and found that it wasn't in the

290

00:10:20,550 --> 00:10:18,160

airlock as we expected and we're gonna

291

00:10:23,030 --> 00:10:20,560

have to do a team to go look and find

292

00:10:24,550 --> 00:10:23,040

out where that particular socket is

293

00:10:26,870 --> 00:10:24,560

we did find a pair of pliers we brought

294

00:10:28,949 --> 00:10:26,880

it with us to the work site and used

295

00:10:31,110 --> 00:10:28,959

that to to dab around and we found that

296

00:10:34,150 --> 00:10:31,120

some material came out of

297

00:10:35,910 --> 00:10:34,160

the socket when when we did that test

298

00:10:38,710 --> 00:10:35,920

and we tried to drive the bolt again

299

00:10:40,389 --> 00:10:38,720

with no success fewer turns this time

300

00:10:42,069 --> 00:10:40,399

when we backed it out we retrieved

301  
00:10:44,069 --> 00:10:42,079  
what's called a connector cleaner tool

302  
00:10:46,630 --> 00:10:44,079  
and i have a picture of that

303  
00:10:48,150 --> 00:10:46,640  
this is a gas canister that holds

304  
00:10:49,670 --> 00:10:48,160  
nitrogen

305  
00:10:52,389 --> 00:10:49,680  
i don't have the exact pressure that

306  
00:10:55,910 --> 00:10:52,399  
it's in there but it gives us about 10

307  
00:10:58,230 --> 00:10:55,920  
seconds worth of a burst of gas

308  
00:11:01,430 --> 00:10:58,240  
sonny williams injected that down into

309  
00:11:03,030 --> 00:11:01,440  
the receptacle on the socket and

310  
00:11:05,269 --> 00:11:03,040  
depressed the

311  
00:11:08,310 --> 00:11:05,279  
handle and it

312  
00:11:09,990 --> 00:11:08,320  
sprayed nitrogen gas down she noted that

313  
00:11:10,790 --> 00:11:10,000

more material came out of it at that

314

00:11:12,470 --> 00:11:10,800

point

315

00:11:15,750 --> 00:11:12,480

we then decided that it probably was

316

00:11:16,710 --> 00:11:15,760

prudent to spray the bolt on the mbsu

317

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

itself

318

00:11:21,750 --> 00:11:18,959

and again when we did that i'm at the

319

00:11:27,509 --> 00:11:25,110

that's the volt down at this end

320

00:11:28,710 --> 00:11:27,519

when we when we sprayed more material

321

00:11:30,790 --> 00:11:28,720

came out

322

00:11:32,150 --> 00:11:30,800

back at this end

323

00:11:34,949 --> 00:11:32,160

this is um

324

00:11:36,389 --> 00:11:34,959

the the bolt that the crew members drive

325

00:11:39,269 --> 00:11:36,399

we attached what's called a torque

326

00:11:41,269 --> 00:11:39,279

multiplier on this particular interface

327

00:11:43,670 --> 00:11:41,279

and that increases

328

00:11:46,389 --> 00:11:43,680

the torque that goes into the bolt that

329

00:11:49,110 --> 00:11:46,399

the pistol grip tool can supply

330

00:11:51,110 --> 00:11:49,120

when that happens there's an indicator

331

00:11:52,949 --> 00:11:51,120

it's located over here

332

00:11:55,990 --> 00:11:52,959

that shows us the locked and unlocked

333

00:11:56,790 --> 00:11:56,000

configuration for that particular bolt

334

00:11:59,030 --> 00:11:56,800

so

335

00:12:01,110 --> 00:11:59,040

the troubleshooting that ed mentioned we

336

00:12:04,790 --> 00:12:01,120

tried this several times our last

337

00:12:06,629 --> 00:12:04,800

attempt it became bound and we just

338

00:12:08,150 --> 00:12:06,639

at that point decided the best approach

339

00:12:09,750 --> 00:12:08,160

was to leave it where it is do

340

00:12:11,910 --> 00:12:09,760

additional troubleshooting on the ground

341

00:12:14,310 --> 00:12:11,920

and come up with a workaround plan

342

00:12:16,150 --> 00:12:14,320

that mr suffradini mentioned and

343

00:12:18,389 --> 00:12:16,160

will put in place and try here in the

344

00:12:20,069 --> 00:12:18,399

near future or determine if there's a

345

00:12:22,710 --> 00:12:20,079

better course of action

346

00:12:24,870 --> 00:12:22,720

so that's all i have

347

00:12:26,629 --> 00:12:24,880

okay with that uh we'll start our

348

00:12:27,910 --> 00:12:26,639

questions we'll start here in houston

349

00:12:33,350 --> 00:12:27,920

mark

350

00:12:35,430 --> 00:12:33,360

week um i have a couple questions

351  
00:12:37,590 --> 00:12:35,440  
and i just want to be clear on how the

352  
00:12:40,790 --> 00:12:37,600  
box is now fastened to the station and

353  
00:12:42,949 --> 00:12:40,800  
if i understand it right one bolt

354  
00:12:45,110 --> 00:12:42,959  
is holding it to the station and then

355  
00:12:47,990 --> 00:12:45,120  
it's lashed with a tether to the hand

356  
00:12:51,030 --> 00:12:48,000  
rail so it's secured that way does that

357  
00:12:55,910 --> 00:12:52,790  
we come up with a plan

358  
00:12:57,590 --> 00:12:55,920  
pre eva where conditions like this if

359  
00:13:01,190 --> 00:12:57,600  
they arise we come up with a safe

360  
00:13:02,150 --> 00:13:01,200  
configuration that restrains the bolt

361  
00:13:03,670 --> 00:13:02,160  
with a

362  
00:13:06,150 --> 00:13:03,680  
tether and what we have is a long

363  
00:13:09,030 --> 00:13:06,160

duration tie-down tether it's designed

364

00:13:11,350 --> 00:13:09,040

specifically to hold the the box in

365

00:13:13,430 --> 00:13:11,360

place for long duration and we have a

366

00:13:16,150 --> 00:13:13,440

tether point on the box itself and the

367

00:13:18,629 --> 00:13:16,160

tether point down on station and we do

368

00:13:21,350 --> 00:13:18,639

this for all the boxes that we intend to

369

00:13:23,590 --> 00:13:21,360

uh to remove and replace we come up with

370

00:13:25,509 --> 00:13:23,600

a method of doing this

371

00:13:27,430 --> 00:13:25,519

it just so happens that the bolt is now

372

00:13:29,030 --> 00:13:27,440

partially driven in so that's additional

373

00:13:30,870 --> 00:13:29,040

restraint

374

00:13:36,310 --> 00:13:30,880

but it is not the the correct

375

00:13:38,790 --> 00:13:37,190

so

376

00:13:41,189 --> 00:13:38,800

could you talk about

377

00:13:42,790 --> 00:13:41,199

what's affected in a power sense when

378

00:13:44,949 --> 00:13:42,800

you're in

379

00:13:47,269 --> 00:13:44,959

when you have three main bus switching

380

00:13:49,269 --> 00:13:47,279

units what some of the trade-offs are

381

00:13:51,430 --> 00:13:49,279

that you might be

382

00:13:53,670 --> 00:13:51,440

working in the next day or so in terms

383

00:13:56,150 --> 00:13:53,680

of providing power and you know whether

384

00:13:58,230 --> 00:13:56,160

it influences communications or life

385

00:14:00,949 --> 00:13:58,240

support or research or just you know

386

00:14:02,870 --> 00:14:00,959

what you have to sort of sort through to

387

00:14:04,389 --> 00:14:02,880

to take care of the priorities

388

00:14:06,470 --> 00:14:04,399

absolutely

389

00:14:07,990 --> 00:14:06,480

i guess just to provide the

390

00:14:10,230 --> 00:14:08,000

the

391

00:14:12,629 --> 00:14:10,240

clarification so we have

392

00:14:14,310 --> 00:14:12,639

power to the subsystems of the space

393

00:14:15,910 --> 00:14:14,320

station from six of our arrays but all

394

00:14:17,990 --> 00:14:15,920

eight of the arrays are of course still

395

00:14:19,910 --> 00:14:18,000

operating and still fully functional

396

00:14:21,430 --> 00:14:19,920

the two arrays that we're not pulling

397

00:14:24,150 --> 00:14:21,440

power from there

398

00:14:25,509 --> 00:14:24,160

one a and one b are what we call them

399

00:14:27,509 --> 00:14:25,519

they are still charging their own

400

00:14:29,269 --> 00:14:27,519

batteries and there are systems out

401  
00:14:31,110 --> 00:14:29,279  
associated with those solar arrays that

402  
00:14:32,710 --> 00:14:31,120  
still need maintenance and

403  
00:14:34,629 --> 00:14:32,720  
those arrays are still providing the

404  
00:14:36,069 --> 00:14:34,639  
power to do that

405  
00:14:37,269 --> 00:14:36,079  
so just to clarify that if there was

406  
00:14:39,829 --> 00:14:37,279  
question there

407  
00:14:41,990 --> 00:14:39,839  
with the subsystems inside and outside

408  
00:14:44,470 --> 00:14:42,000  
the vehicle that are not related to

409  
00:14:46,069 --> 00:14:44,480  
their own solar arrays we are down to

410  
00:14:47,030 --> 00:14:46,079  
six power channels to provide all that

411  
00:14:48,470 --> 00:14:47,040  
power

412  
00:14:50,629 --> 00:14:48,480  
and

413  
00:14:53,430 --> 00:14:50,639

we have flight rules in place that give

414

00:14:55,829 --> 00:14:53,440

us a maximum loading of kilowatts per

415

00:14:57,509 --> 00:14:55,839

channel and that's what we work to

416

00:14:58,790 --> 00:14:57,519

balance across the channels that we have

417

00:15:00,310 --> 00:14:58,800

available

418

00:15:03,509 --> 00:15:00,320

the

419

00:15:06,470 --> 00:15:03,519

assembled and operational it actually

420

00:15:08,629 --> 00:15:06,480

has a lot of flexibility to route power

421

00:15:11,509 --> 00:15:08,639

around through different means

422

00:15:14,790 --> 00:15:11,519

so we can be creative with how we

423

00:15:17,189 --> 00:15:14,800

share we call it share ratios but how we

424

00:15:19,509 --> 00:15:17,199

share power across the power channels to

425

00:15:22,069 --> 00:15:19,519

be able to provide as

426

00:15:23,990 --> 00:15:22,079

much balance as we can across them

427

00:15:26,310 --> 00:15:24,000

but that said there are some things that

428

00:15:29,030 --> 00:15:26,320

do require more power are only connected

429

00:15:30,310 --> 00:15:29,040

to certain power feeds so for example

430

00:15:35,749 --> 00:15:30,320

the

431

00:15:37,670 --> 00:15:35,759

when it's in use does draw power and so

432

00:15:38,949 --> 00:15:37,680

one of the things that we have the if we

433

00:15:40,230 --> 00:15:38,959

haven't done it already we'll be doing

434

00:15:41,030 --> 00:15:40,240

tonight before they go to bed as they

435

00:15:42,949 --> 00:15:41,040

will

436

00:15:45,509 --> 00:15:42,959

disconnect the robotics workstation in

437

00:15:47,430 --> 00:15:45,519

the u.s lab so that that piece is not

438

00:15:48,949 --> 00:15:47,440

drawing power off of

439

00:15:51,590 --> 00:15:48,959

the power channels that are highly

440

00:15:53,110 --> 00:15:51,600

loaded so we take actions like that to

441

00:15:54,790 --> 00:15:53,120

turn off equipment that aren't

442

00:15:55,509 --> 00:15:54,800

necessarily required

443

00:16:00,310 --> 00:15:55,519

to

444

00:16:03,509 --> 00:16:00,320

other places another tactic that we'll

445

00:16:05,829 --> 00:16:03,519

use is we normally have shell heaters

446

00:16:08,550 --> 00:16:05,839

for all the different modules

447

00:16:10,389 --> 00:16:08,560

on such that they can turn on themselves

448

00:16:11,749 --> 00:16:10,399

if needed so they just run on their own

449

00:16:13,670 --> 00:16:11,759

thermostats

450

00:16:15,350 --> 00:16:13,680

we might instead go to a manual shell

451  
00:16:17,189 --> 00:16:15,360  
heater operation to where we are

452  
00:16:19,829 --> 00:16:17,199  
selective on which shell heaters turn on

453  
00:16:22,470 --> 00:16:19,839  
so that they come on using the correct

454  
00:16:23,910 --> 00:16:22,480  
power channel but it's really

455  
00:16:25,350 --> 00:16:23,920  
on a bigger scale

456  
00:16:28,550 --> 00:16:25,360  
we're just balancing the loads across

457  
00:16:30,790 --> 00:16:28,560  
the six channels that we have without

458  
00:16:32,310 --> 00:16:30,800  
minimizing or reducing our operational

459  
00:16:34,550 --> 00:16:32,320  
redundancy we need to actually go fly

460  
00:16:35,670 --> 00:16:34,560  
the vehicle you also mentioned payloads

461  
00:16:36,790 --> 00:16:35,680  
and that is going to be something we're

462  
00:16:38,150 --> 00:16:36,800  
going to have to look at obviously we

463  
00:16:39,910 --> 00:16:38,160

want to keep doing that world-class

464

00:16:41,990 --> 00:16:39,920

science that we do

465

00:16:43,829 --> 00:16:42,000

we just have to be smart on which

466

00:16:45,910 --> 00:16:43,839

facilities we have up at a given time so

467

00:16:52,870 --> 00:16:45,920

we don't have two facilities that use a

468

00:16:57,189 --> 00:16:54,389

okay we'll go to our phone bridge

469

00:16:59,110 --> 00:16:57,199

questions uh we'll start with marcia at

470

00:17:01,749 --> 00:16:59,120

the associated press

471

00:17:04,549 --> 00:17:01,759

yes hi um i'm wondering what's the

472

00:17:05,590 --> 00:17:04,559

earliest you think a spacewalk might be

473

00:17:07,990 --> 00:17:05,600

held

474

00:17:09,590 --> 00:17:08,000

and i'm wondering if if if any of the

475

00:17:11,510 --> 00:17:09,600

three of you would you characterize this

476  
00:17:19,429 --> 00:17:11,520  
as an urgent situation that needs to be

477  
00:17:22,710 --> 00:17:21,029  
okay i'll do it

478  
00:17:24,630 --> 00:17:22,720  
uh let's see

479  
00:17:27,189 --> 00:17:24,640  
um there's an advantage to going

480  
00:17:29,590 --> 00:17:27,199  
outdoors uh here in the next little

481  
00:17:32,230 --> 00:17:29,600  
while while joe acaba is still on orbit

482  
00:17:34,470 --> 00:17:32,240  
for us because he's the arm operator and

483  
00:17:36,230 --> 00:17:34,480  
the the teams

484  
00:17:37,990 --> 00:17:36,240  
got all the experience they have now

485  
00:17:41,270 --> 00:17:38,000  
with having worked on the

486  
00:17:43,590 --> 00:17:41,280  
on the mbsu and so the urgency really is

487  
00:17:46,390 --> 00:17:43,600  
not about the configuration of the iss

488  
00:17:49,110 --> 00:17:46,400

or the or the condition the mbsu is in

489

00:17:51,190 --> 00:17:49,120

it really is um if we wait too long we

490

00:17:54,470 --> 00:17:51,200

have to do retesting of the emu's we

491

00:17:56,870 --> 00:17:54,480

have to do some uh checks of of the

492

00:18:00,390 --> 00:17:56,880

different systems that support the eba

493

00:18:03,350 --> 00:18:00,400

so if we can if we can figure out a plan

494

00:18:05,830 --> 00:18:03,360

that requires us to go eva to go uh

495

00:18:07,909 --> 00:18:05,840

solve this problem in the near future

496

00:18:09,830 --> 00:18:07,919

the advantage to us is saving crew time

497

00:18:11,430 --> 00:18:09,840

and getting ready to go outside and the

498

00:18:13,510 --> 00:18:11,440

crew's immediate experience having

499

00:18:15,430 --> 00:18:13,520

already dealt with this for some time

500

00:18:17,830 --> 00:18:15,440

but from a system perspective we're

501  
00:18:19,750 --> 00:18:17,840  
stable and in good shape we actually

502  
00:18:22,870 --> 00:18:19,760  
with this reconfiguration we actually do

503  
00:18:27,029 --> 00:18:22,880  
even get some redundancy back

504  
00:18:28,870 --> 00:18:27,039  
and so i would tell you uh this is not a

505  
00:18:30,390 --> 00:18:28,880  
a configuration want to stand for a long

506  
00:18:32,549 --> 00:18:30,400  
period of time but

507  
00:18:35,190 --> 00:18:32,559  
but even in this configuration we're

508  
00:18:36,470 --> 00:18:35,200  
we're robust to uh to many failures

509  
00:18:38,789 --> 00:18:36,480  
still

510  
00:18:41,190 --> 00:18:38,799  
and so in that respect we're not rushing

511  
00:18:42,710 --> 00:18:41,200  
out the door to try to hurry up and fix

512  
00:18:44,150 --> 00:18:42,720  
it we're really trying to take advantage

513  
00:18:45,909 --> 00:18:44,160

of our experience and the crew that's on

514

00:18:49,270 --> 00:18:45,919

board today

515

00:18:51,830 --> 00:18:49,280

also with the flights coming up

516

00:18:55,110 --> 00:18:51,840

the htv departure and then

517

00:18:56,950 --> 00:18:55,120

ultimately with the soyuz departure

518

00:18:58,870 --> 00:18:56,960

these of course are critical operations

519

00:19:00,150 --> 00:18:58,880

and so we'll have to look if we want to

520

00:19:01,669 --> 00:19:00,160

try to do this

521

00:19:04,070 --> 00:19:01,679

sooner rather than later then we'll have

522

00:19:06,310 --> 00:19:04,080

to look at those two operations

523

00:19:08,150 --> 00:19:06,320

um the hdb from the standpoint of do we

524

00:19:09,830 --> 00:19:08,160

have to do it right now or can we maybe

525

00:19:11,029 --> 00:19:09,840

delay it a little bit until after joe

526  
00:19:12,870 --> 00:19:11,039  
leaves

527  
00:19:15,270 --> 00:19:12,880  
in order to to get that

528  
00:19:16,470 --> 00:19:15,280  
that work done now we we're we're not

529  
00:19:18,390 --> 00:19:16,480  
entertaining

530  
00:19:19,669 --> 00:19:18,400  
uh asking the crew to stay on orbit

531  
00:19:20,789 --> 00:19:19,679  
longer

532  
00:19:22,390 --> 00:19:20,799  
and so

533  
00:19:24,150 --> 00:19:22,400  
using that as sort of a constraint we're

534  
00:19:25,990 --> 00:19:24,160  
just trying to see if we can figure out

535  
00:19:28,710 --> 00:19:26,000  
a plan of attack

536  
00:19:30,789 --> 00:19:28,720  
if we can can get it done before for

537  
00:19:32,310 --> 00:19:30,799  
before joe departs and while the systems

538  
00:19:34,390 --> 00:19:32,320

are still configured

539

00:19:37,350 --> 00:19:34,400

for the eva to minimize the impact in

540

00:19:39,830 --> 00:19:37,360

crude time to research

541

00:19:41,830 --> 00:19:39,840

thank you and and is what is your in

542

00:19:43,510 --> 00:19:41,840

your mind right now subject to change of

543

00:19:45,430 --> 00:19:43,520

course what is the earliest you could

544

00:19:47,990 --> 00:19:45,440

expect to go out would it be labor day

545

00:19:51,270 --> 00:19:48,000

monday tuesday wednesday do you have any

546

00:19:53,590 --> 00:19:51,280

clue s21 might be the earliest

547

00:19:55,110 --> 00:19:53,600

i would i don't know the answer to that

548

00:19:56,150 --> 00:19:55,120

uh of course we got to get the crew

549

00:19:57,430 --> 00:19:56,160

rested

550

00:19:58,470 --> 00:19:57,440

uh and we got to figure out what we're

551

00:20:00,230 --> 00:19:58,480

going to do and that's probably the

552

00:20:01,750 --> 00:20:00,240

biggest thing we need to

553

00:20:03,029 --> 00:20:01,760

you know the teams have been working all

554

00:20:04,630 --> 00:20:03,039

day today to try to get this thing

555

00:20:06,549 --> 00:20:04,640

installed and so now they're going to

556

00:20:09,190 --> 00:20:06,559

they're going to step back and and we'll

557

00:20:09,990 --> 00:20:09,200

have to go get the uh qual unit of the

558

00:20:11,990 --> 00:20:10,000

um

559

00:20:13,909 --> 00:20:12,000

of the heat exchanger which has the post

560

00:20:16,070 --> 00:20:13,919

on that keith showed you we'll go get

561

00:20:17,669 --> 00:20:16,080

the qual unit for the mbsu we'll take

562

00:20:19,350 --> 00:20:17,679

those out and probably building nine

563

00:20:21,029 --> 00:20:19,360

somewhere and we'll we'll try to look at

564

00:20:22,549 --> 00:20:21,039

what our options are and what we can do

565

00:20:25,110 --> 00:20:22,559

we'll have to look at

566

00:20:27,590 --> 00:20:25,120

the build paper for the s0 to see if we

567

00:20:29,669 --> 00:20:27,600

had anything happen during the assembly

568

00:20:30,789 --> 00:20:29,679

that would help help us understand what

569

00:20:33,190 --> 00:20:30,799

we're dealing with we have to look at

570

00:20:34,789 --> 00:20:33,200

other techniques so i would i would tell

571

00:20:37,270 --> 00:20:34,799

you marsha the long pole in the tent

572

00:20:40,950 --> 00:20:37,280

really for us is going to be can we can

573

00:20:42,789 --> 00:20:40,960

we figure out things that we could uh do

574

00:20:45,110 --> 00:20:42,799

to try to recover this

575

00:20:47,430 --> 00:20:45,120

uh and and by the time we've done that

576

00:20:48,950 --> 00:20:47,440

we've talked about it we've generated

577

00:20:50,870 --> 00:20:48,960

procedures we've

578

00:20:52,789 --> 00:20:50,880

um you know run through those procedures

579

00:20:55,110 --> 00:20:52,799

together and potted those procedures i

580

00:20:57,350 --> 00:20:55,120

think that will be the driving force

581

00:20:59,590 --> 00:20:57,360

uh and and by that time the crew will be

582

00:21:02,390 --> 00:20:59,600

rested and will have a plan in place so

583

00:21:05,270 --> 00:21:02,400

i i would think that if

584

00:21:07,830 --> 00:21:05,280

if we can we try to get out outdoors

585

00:21:09,350 --> 00:21:07,840

early early next week if we can come up

586

00:21:12,230 --> 00:21:09,360

with a plan again i think that's the

587

00:21:13,990 --> 00:21:12,240

biggest driver is knowing what we do

588

00:21:15,510 --> 00:21:14,000

and and

589

00:21:17,830 --> 00:21:15,520

having worked it enough to feel

590

00:21:20,470 --> 00:21:17,840

confident that we have you know plan a

591

00:21:22,789 --> 00:21:20,480

plan b plan c and plan d potted so we

592

00:21:24,710 --> 00:21:22,799

can get out there and be productive uh

593

00:21:26,549 --> 00:21:24,720

when we do finally go outside

594

00:21:31,830 --> 00:21:26,559

thank you very much

595

00:21:36,789 --> 00:21:34,390

yeah hi guys um yeah maybe this is for

596

00:21:39,430 --> 00:21:36,799

keith or or uh or ed i'm not sure i'm a

597

00:21:41,190 --> 00:21:39,440

little bit confused is the box

598

00:21:43,190 --> 00:21:41,200

is the bolt jammed right now in other

599

00:21:45,190 --> 00:21:43,200

words is it jammed on the post or can

600

00:21:47,350 --> 00:21:45,200

you get it off that's my first question

601  
00:21:49,990 --> 00:21:47,360  
i'm confused about it secondly

602  
00:21:52,470 --> 00:21:50,000  
is can this device could it is it even

603  
00:21:54,070 --> 00:21:52,480  
possible to jumper this thing outside if

604  
00:21:55,909 --> 00:21:54,080  
it came down to that if you could never

605  
00:21:57,909 --> 00:21:55,919  
get it to drive down on the post like

606  
00:22:00,070 --> 00:21:57,919  
you want it to are there possible

607  
00:22:01,510 --> 00:22:00,080  
workarounds to uh with cabling or

608  
00:22:04,390 --> 00:22:01,520  
whatever to

609  
00:22:06,310 --> 00:22:04,400  
to get around that

610  
00:22:09,750 --> 00:22:06,320  
well to answer the first part of your

611  
00:22:10,549 --> 00:22:09,760  
question the the bolt is uh jammed right

612  
00:22:12,230 --> 00:22:10,559  
now

613  
00:22:13,669 --> 00:22:12,240

we

614

00:22:15,830 --> 00:22:13,679

don't remember the exact turn count that

615

00:22:18,390 --> 00:22:15,840

we got on it but we did drive it with

616

00:22:20,390 --> 00:22:18,400

the torque multiplier that keith

617

00:22:24,310 --> 00:22:20,400

explained and drove it as far as we

618

00:22:27,029 --> 00:22:24,320

could before the the tool torqued out

619

00:22:29,190 --> 00:22:27,039

we did that however such that we could

620

00:22:30,630 --> 00:22:29,200

still be able to get it back out if if

621

00:22:32,470 --> 00:22:30,640

and when we need to

622

00:22:33,510 --> 00:22:32,480

so we were very methodical in our

623

00:22:36,630 --> 00:22:33,520

approach

624

00:22:38,310 --> 00:22:36,640

so that we always had a a known setting

625

00:22:40,070 --> 00:22:38,320

that we could use to back it back out so

626

00:22:43,190 --> 00:22:40,080

you saw us backing out several times

627

00:22:46,149 --> 00:22:43,200

today and the torque that we went into

628

00:22:47,830 --> 00:22:46,159

the uh the bolt the last time

629

00:22:49,270 --> 00:22:47,840

there's still a torque setting

630

00:22:51,510 --> 00:22:49,280

with that torque multiplier that'll

631

00:22:53,190 --> 00:22:51,520

allow us to get it back out so it's not

632

00:22:54,549 --> 00:22:53,200

jammed in there such that we can't go

633

00:22:56,149 --> 00:22:54,559

either direction

634

00:22:58,149 --> 00:22:56,159

we did leave it

635

00:22:59,830 --> 00:22:58,159

with it jammed in

636

00:23:00,950 --> 00:22:59,840

i'd say probably four or five turns on

637

00:23:02,870 --> 00:23:00,960

the bolt

638

00:23:04,549 --> 00:23:02,880

and then with a long duration tether

639

00:23:08,630 --> 00:23:04,559

that keith mentioned

640

00:23:11,750 --> 00:23:08,640

as far as jumpers to go between the s0

641

00:23:13,590 --> 00:23:11,760

truss and the mbsu for example we don't

642

00:23:16,230 --> 00:23:13,600

have anything like that right now it

643

00:23:17,830 --> 00:23:16,240

doesn't mean that creative people

644

00:23:20,549 --> 00:23:17,840

on orbit and on the ground couldn't come

645

00:23:23,190 --> 00:23:20,559

up with solutions so as of right now

646

00:23:24,789 --> 00:23:23,200

we've only just begun to start talking

647

00:23:26,789 --> 00:23:24,799

about what the different options might

648

00:23:28,789 --> 00:23:26,799

be of course we want to really resolve

649

00:23:29,909 --> 00:23:28,799

the issue and get the box fully

650

00:23:31,909 --> 00:23:29,919

installed

651  
00:23:33,990 --> 00:23:31,919  
but part of that of course will will

652  
00:23:35,669 --> 00:23:34,000  
spin off i'm sure discussions about what

653  
00:23:37,830 --> 00:23:35,679  
happens if we just can't and what is our

654  
00:23:39,830 --> 00:23:37,840  
long-term solution going to be and with

655  
00:23:41,430 --> 00:23:39,840  
the creativity that there is with people

656  
00:23:43,029 --> 00:23:41,440  
around here and

657  
00:23:44,630 --> 00:23:43,039  
if we have the materials on board there

658  
00:23:47,350 --> 00:23:44,640  
could very well be a possibility but we

659  
00:23:48,390 --> 00:23:47,360  
haven't had any of those discussions yet

660  
00:23:50,149 --> 00:23:48,400  
well

661  
00:23:52,149 --> 00:23:50,159  
can you give us any idea of what sorts

662  
00:23:53,430 --> 00:23:52,159  
of things might be done to get this

663  
00:23:55,510 --> 00:23:53,440

thing fixed i realize you don't have an

664

00:23:57,750 --> 00:23:55,520

answer yet but i'm i'm confused i guess

665

00:24:00,070 --> 00:23:57,760

enough to have any idea what might be

666

00:24:01,590 --> 00:24:00,080

possible thanks

667

00:24:02,830 --> 00:24:01,600

well let's see

668

00:24:05,669 --> 00:24:02,840

obviously the

669

00:24:07,669 --> 00:24:05,679

the go straight added approach was tried

670

00:24:09,029 --> 00:24:07,679

today we tried multiple torques of just

671

00:24:11,190 --> 00:24:09,039

driving it in multiple torques of

672

00:24:12,230 --> 00:24:11,200

driving it out wiggle it this way wiggle

673

00:24:14,390 --> 00:24:12,240

it that way

674

00:24:16,789 --> 00:24:14,400

can't it in different orientations so

675

00:24:18,470 --> 00:24:16,799

those were all the the easy

676  
00:24:21,430 --> 00:24:18,480  
maybe not so easy but the the lowest

677  
00:24:22,789 --> 00:24:21,440  
hanging fruit uh to attempt so really

678  
00:24:24,549 --> 00:24:22,799  
the first thing that has to happen is we

679  
00:24:26,230 --> 00:24:24,559  
have to like mr sufferdini said go back

680  
00:24:27,830 --> 00:24:26,240  
and look at the vehicle

681  
00:24:29,269 --> 00:24:27,840  
go look at the design and see if there

682  
00:24:31,430 --> 00:24:29,279  
might be some

683  
00:24:34,630 --> 00:24:31,440  
some tricks in there that we can use to

684  
00:24:36,149 --> 00:24:34,640  
use the tools to just actuate that bolt

685  
00:24:39,350 --> 00:24:36,159  
keith mentioned the connector cleaner

686  
00:24:40,870 --> 00:24:39,360  
tool we i believe we have additional

687  
00:24:42,710 --> 00:24:40,880  
capabilities with

688  
00:24:44,230 --> 00:24:42,720

similar tools like that to possibly

689

00:24:46,789 --> 00:24:44,240

clean out the

690

00:24:48,470 --> 00:24:46,799

the s0 side and the bolt side so people

691

00:24:50,310 --> 00:24:48,480

will be looking at that

692

00:24:52,470 --> 00:24:50,320

there's there's a lubricant i'm sure you

693

00:24:54,870 --> 00:24:52,480

heard the bolt threads and the

694

00:24:56,789 --> 00:24:54,880

receptacle threads were lubricated

695

00:24:58,549 --> 00:24:56,799

people i'm sure we'll be looking at that

696

00:25:01,750 --> 00:24:58,559

and see if there might be something we

697

00:25:03,990 --> 00:25:01,760

need to do in the ways of lubrication

698

00:25:06,230 --> 00:25:04,000

to make things turn a little bit

699

00:25:08,149 --> 00:25:06,240

more easily

700

00:25:09,669 --> 00:25:08,159

and that's just off the top of my head

701  
00:25:10,870 --> 00:25:09,679  
trying to come up with things that

702  
00:25:12,549 --> 00:25:10,880  
people are going to look at and i'm sure

703  
00:25:15,750 --> 00:25:12,559  
we'll go even deeper and further to come

704  
00:25:17,510 --> 00:25:15,760  
up with like you said plans a through d

705  
00:25:18,549 --> 00:25:17,520  
i will mention a couple other for you

706  
00:25:20,310 --> 00:25:18,559  
bill we

707  
00:25:21,830 --> 00:25:20,320  
you have to keep in mind it's a blind

708  
00:25:25,269 --> 00:25:21,840  
mate connection so when you talk about

709  
00:25:27,269 --> 00:25:25,279  
the jumper when the mbsu comes down

710  
00:25:29,750 --> 00:25:27,279  
not only are the electrical connectors

711  
00:25:32,310 --> 00:25:29,760  
connecting but the fins for the cooling

712  
00:25:34,630 --> 00:25:32,320  
system are are can are interlacing with

713  
00:25:37,110 --> 00:25:34,640

one another and we have to have that

714

00:25:38,870 --> 00:25:37,120

interface in order to keep it cool so

715

00:25:41,269 --> 00:25:38,880

the idea of a jumper is very difficult

716

00:25:42,950 --> 00:25:41,279

because you got to get in there and try

717

00:25:44,710 --> 00:25:42,960

to get the jumpers between the blind

718

00:25:46,070 --> 00:25:44,720

mate connection and still get the box

719

00:25:47,750 --> 00:25:46,080

down but you can't get the box down

720

00:25:50,390 --> 00:25:47,760

because the screw won't

721

00:25:52,390 --> 00:25:50,400

won't screw down so you we really can't

722

00:25:54,390 --> 00:25:52,400

operate in a configuration where the

723

00:25:56,390 --> 00:25:54,400

mbsu at least not at high loads where

724

00:25:58,710 --> 00:25:56,400

the mbsu is not connected to this heat

725

00:26:00,230 --> 00:25:58,720

exchanger so that's one of the one of

726

00:26:01,590 --> 00:26:00,240

the issues and so

727

00:26:04,630 --> 00:26:01,600

some of the things we've talked about

728

00:26:06,149 --> 00:26:04,640

while ed was busy doing his his day job

729

00:26:08,149 --> 00:26:06,159

back with the engineers we talked about

730

00:26:10,950 --> 00:26:08,159

was is there a way to either remove the

731

00:26:14,390 --> 00:26:10,960

post itself or remove the screw from the

732

00:26:16,149 --> 00:26:14,400

mbsu in order to to get it down and let

733

00:26:18,710 --> 00:26:16,159

just the other bolt what we call the h1

734

00:26:20,870 --> 00:26:18,720

bolt hold the mbsu in place and maybe

735

00:26:22,950 --> 00:26:20,880

add a strap

736

00:26:24,870 --> 00:26:22,960

it turns out both of those are kind of

737

00:26:26,870 --> 00:26:24,880

difficult

738

00:26:28,630 --> 00:26:26,880

but the the teams that's those are two

739

00:26:30,710 --> 00:26:28,640

other options the teams are off to look

740

00:26:32,390 --> 00:26:30,720

at uh we'll look at whether or not we

741

00:26:34,549 --> 00:26:32,400

can go higher on torques if we change

742

00:26:37,190 --> 00:26:34,559

techniques like ed mentioned

743

00:26:39,430 --> 00:26:37,200

uh we also are considering whether the

744

00:26:41,590 --> 00:26:39,440

the spdm can be utilized and whether or

745

00:26:44,870 --> 00:26:41,600

not as a robot

746

00:26:46,710 --> 00:26:44,880

we can apply forces on it to help it go

747

00:26:48,789 --> 00:26:46,720

down all of these things are being

748

00:26:50,630 --> 00:26:48,799

kicked around and i assume uh starting

749

00:26:52,710 --> 00:26:50,640

tomorrow the teams will have a whole

750

00:26:55,269 --> 00:26:52,720

list of other things as ed said

751  
00:26:56,470 --> 00:26:55,279  
as possibilities that we'll sort through

752  
00:27:00,149 --> 00:26:56,480  
to see if we can get this thing

753  
00:27:00,159 --> 00:27:04,310  
okay anything else bill

754  
00:27:14,070 --> 00:27:05,430  
all right then we'll go ahead and move

755  
00:27:18,549 --> 00:27:15,750  
all right not hearing anything todd with

756  
00:27:22,789 --> 00:27:21,830  
uh thanks todd halberon of florida

757  
00:27:26,549 --> 00:27:22,799  
today

758  
00:27:27,669 --> 00:27:26,559  
for anybody who wants to take it i'm i'm

759  
00:27:31,350 --> 00:27:27,679  
wondering if

760  
00:27:32,789 --> 00:27:31,360  
somebody can explain uh in real layman's

761  
00:27:35,830 --> 00:27:32,799  
terms

762  
00:27:39,430 --> 00:27:35,840  
why you would not be able to you know

763  
00:27:42,470 --> 00:27:39,440

drive a simple bolt something that

764

00:27:45,830 --> 00:27:42,480

everybody does in their garage

765

00:27:49,350 --> 00:27:45,840

i suspect it has to do with thermal

766

00:27:50,389 --> 00:27:49,360

conditions in space but uh perhaps you

767

00:27:53,269 --> 00:27:50,399

could

768

00:27:57,750 --> 00:27:55,510

who wants to take it gosh i guess if we

769

00:27:58,870 --> 00:27:57,760

knew that we'd have it bolted down by

770

00:28:02,789 --> 00:27:58,880

now

771

00:28:06,310 --> 00:28:02,799

cross-threaded it's an acme bolt it's a

772

00:28:08,549 --> 00:28:06,320

it's a very big square threaded bolt

773

00:28:11,029 --> 00:28:08,559

but bolt galling is a very

774

00:28:12,549 --> 00:28:11,039

um common condition

775

00:28:14,950 --> 00:28:12,559

which you may or may not have

776

00:28:17,430 --> 00:28:14,960

experienced in your garage

777

00:28:19,269 --> 00:28:17,440

you know most of us us uh shade tree

778

00:28:22,310 --> 00:28:19,279

mechanics and i count myself as one of

779

00:28:23,750 --> 00:28:22,320

those uh i've i've i've

780

00:28:26,630 --> 00:28:23,760

crossed threaded a bolt or two in my

781

00:28:28,149 --> 00:28:26,640

life and galled a bolt or two in my life

782

00:28:30,389 --> 00:28:28,159

and um

783

00:28:32,310 --> 00:28:30,399

you know when you do that it's your it's

784

00:28:34,230 --> 00:28:32,320

your car and you're only marginally

785

00:28:35,830 --> 00:28:34,240

worried about your success and so you

786

00:28:38,630 --> 00:28:35,840

just get a bigger torque wrench out and

787

00:28:40,310 --> 00:28:38,640

you hope you can get it down um but you

788

00:28:43,430 --> 00:28:40,320

know really as an ops team we can't do

789

00:28:44,389 --> 00:28:43,440  
that so we have to worry about

790

00:28:48,789 --> 00:28:44,399  
you can

791

00:28:51,510 --> 00:28:48,799  
bolts and then not be able to move them

792

00:28:53,750 --> 00:28:51,520  
and in this case if we had if we had

793

00:28:55,510 --> 00:28:53,760  
done that with this particular box and

794

00:28:58,870 --> 00:28:55,520  
gotten it half on

795

00:29:00,870 --> 00:28:58,880  
we'd be in a really bad spot so

796

00:29:02,950 --> 00:29:00,880  
part of it is we don't just get the

797

00:29:04,870 --> 00:29:02,960  
biggest torque wrench out and try to you

798

00:29:06,710 --> 00:29:04,880  
know really kind of lean on this thing

799

00:29:08,549 --> 00:29:06,720  
until it starts to move or that or the

800

00:29:10,070 --> 00:29:08,559  
the bolt shears off

801  
00:29:11,669 --> 00:29:10,080  
because that puts you in a much worse

802  
00:29:13,269 --> 00:29:11,679  
position so

803  
00:29:15,190 --> 00:29:13,279  
it's a you know it's got to be a

804  
00:29:16,549 --> 00:29:15,200  
combination of

805  
00:29:21,350 --> 00:29:16,559  
of

806  
00:29:23,909 --> 00:29:21,360  
assumed it was associated with how the

807  
00:29:26,549 --> 00:29:23,919  
box goes down as we said earlier you've

808  
00:29:28,549 --> 00:29:26,559  
got as the box comes down you've got one

809  
00:29:30,389 --> 00:29:28,559  
bolt driving first in fact we didn't

810  
00:29:32,549 --> 00:29:30,399  
start pulling down on the other bolt

811  
00:29:34,230 --> 00:29:32,559  
which is a little shorter the h1 bolt

812  
00:29:35,909 --> 00:29:34,240  
the h2 bolts got to get you down and

813  
00:29:37,190 --> 00:29:35,919

then you drive the h1 bolt well while

814

00:29:38,870 --> 00:29:37,200

that's happening

815

00:29:40,950 --> 00:29:38,880

you're you're eventually going to come

816

00:29:42,630 --> 00:29:40,960

down and settle on the on the on the

817

00:29:45,510 --> 00:29:42,640

fins and there's a whole bunch of fins

818

00:29:47,029 --> 00:29:45,520

that that small fins that meet each

819

00:29:48,710 --> 00:29:47,039

other and then you're going to have the

820

00:29:50,789 --> 00:29:48,720

connection over here well in the process

821

00:29:53,029 --> 00:29:50,799

of doing that you're trying to make sure

822

00:29:55,269 --> 00:29:53,039

this box is coming down square and so we

823

00:29:56,950 --> 00:29:55,279

we assumed eventually after we pulled

824

00:29:58,070 --> 00:29:56,960

the box off and confirmed that the bolts

825

00:29:59,510 --> 00:29:58,080

didn't look

826

00:30:01,990 --> 00:29:59,520

galled and that's kind of a hard

827

00:30:03,430 --> 00:30:02,000

assessment to make outside but but it

828

00:30:04,870 --> 00:30:03,440

looked like it wasn't gold and after

829

00:30:06,789 --> 00:30:04,880

cleaning it up we thought maybe it was a

830

00:30:08,389 --> 00:30:06,799

technique thing and so we started down

831

00:30:10,789 --> 00:30:08,399

this technique path

832

00:30:12,310 --> 00:30:10,799

of trying to get this this uh this box

833

00:30:13,669 --> 00:30:12,320

settled down so

834

00:30:15,350 --> 00:30:13,679

so somewhere in there you're either

835

00:30:16,549 --> 00:30:15,360

dealing with contamination you're

836

00:30:18,070 --> 00:30:16,559

dealing with

837

00:30:20,070 --> 00:30:18,080

uh you know we're getting it a little

838

00:30:22,630 --> 00:30:20,080

cocked and that's making it hard for us

839

00:30:23,750 --> 00:30:22,640

to drive the bolt maybe the bolt is gall

840

00:30:25,990 --> 00:30:23,760

that's one of the things we'll have to

841

00:30:27,830 --> 00:30:26,000

talk about can we recover from

842

00:30:29,269 --> 00:30:27,840

maybe is a thermal difference and for

843

00:30:31,029 --> 00:30:29,279

some reason the bolts a little bigger

844

00:30:32,950 --> 00:30:31,039

than the than the socket but we go to

845

00:30:36,630 --> 00:30:32,960

great pains to make sure that's not the

846

00:30:38,310 --> 00:30:36,640

case when we do tolerances before we fly

847

00:30:40,549 --> 00:30:38,320

but we'll look at all these different

848

00:30:41,909 --> 00:30:40,559

options to to to

849

00:30:44,310 --> 00:30:41,919

see what's keeping us from getting this

850

00:30:47,029 --> 00:30:44,320

bolt down and uh

851  
00:30:48,710 --> 00:30:47,039  
and and see if we can find a path that

852  
00:30:51,190 --> 00:30:48,720  
will give us the

853  
00:30:53,430 --> 00:30:51,200  
the additional force or oomph we need to

854  
00:30:55,510 --> 00:30:53,440  
get this installed without actually

855  
00:30:57,269 --> 00:30:55,520  
damaging ourselves to the damaging it to

856  
00:30:59,269 --> 00:30:57,279  
the point that we can't

857  
00:31:01,669 --> 00:30:59,279  
ultimately remove it and get a

858  
00:31:03,909 --> 00:31:01,679  
new one on again as you recall we pulled

859  
00:31:05,430 --> 00:31:03,919  
this off when we pulled the old one off

860  
00:31:08,070 --> 00:31:05,440  
we noticed the contamination but we

861  
00:31:10,070 --> 00:31:08,080  
looked at the bolt on the on the on the

862  
00:31:11,509 --> 00:31:10,080  
failed unit that came off the bolt was

863  
00:31:14,310 --> 00:31:11,519

in good shape we went and installed it

864

00:31:15,750 --> 00:31:14,320

in the fsc and and other than you know

865

00:31:18,870 --> 00:31:15,760

trying to get it positioned down there

866

00:31:20,470 --> 00:31:18,880

and torqued down we it went in okay

867

00:31:22,789 --> 00:31:20,480

and so right now we're not assuming that

868

00:31:24,230 --> 00:31:22,799

we're dealing with a completely

869

00:31:26,470 --> 00:31:24,240

um

870

00:31:28,070 --> 00:31:26,480

damaged socket

871

00:31:30,070 --> 00:31:28,080

or that we're not dealing with a bolt

872

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

issue on the spare

873

00:31:33,590 --> 00:31:31,760

otherwise we could just we could go get

874

00:31:34,870 --> 00:31:33,600

the other spare and install it but that

875

00:31:36,230 --> 00:31:34,880

would be one of the things we'll talk

876

00:31:37,509 --> 00:31:36,240

about is whether or not we think maybe

877

00:31:39,190 --> 00:31:37,519

we did something

878

00:31:40,549 --> 00:31:39,200

to the spare in the process of trying to

879

00:31:42,070 --> 00:31:40,559

get it installed so all those things

880

00:31:44,389 --> 00:31:42,080

we're going to have to talk about

881

00:31:45,909 --> 00:31:44,399

uh to see where we think we are and what

882

00:31:49,110 --> 00:31:45,919

the what the path through the wilderness

883

00:31:53,590 --> 00:31:51,029

thanks mike

884

00:32:00,549 --> 00:31:53,600

okay on to uh pat with the german press

885

00:32:06,389 --> 00:32:04,230

all right uh denise space.com

886

00:32:08,710 --> 00:32:06,399

hi thanks um i think this question is

887

00:32:10,630 --> 00:32:08,720

for ed um i'm just wondering if

888

00:32:13,190 --> 00:32:10,640

um you're still thinking or early

889

00:32:15,269 --> 00:32:13,200

assessments um lead you to believe that

890

00:32:15,909 --> 00:32:15,279

there might be some debris still stuck

891

00:32:20,710 --> 00:32:15,919

in

892

00:32:24,230 --> 00:32:20,720

likely caused when the bolts from the

893

00:32:26,470 --> 00:32:24,240

faulty unit before being removed

894

00:32:29,190 --> 00:32:26,480

well as keith mentioned we did two

895

00:32:32,230 --> 00:32:29,200

different methods of trying to get fod

896

00:32:33,990 --> 00:32:32,240

out of the s0 receptacle the first thing

897

00:32:35,909 --> 00:32:34,000

that we did

898

00:32:38,149 --> 00:32:35,919

when we pulled the mbsu out for the

899

00:32:39,029 --> 00:32:38,159

first time we had sunny williams go look

900

00:32:40,630 --> 00:32:39,039

at it

901  
00:32:42,470 --> 00:32:40,640  
and she did tell us about the little bit

902  
00:32:44,630 --> 00:32:42,480  
of fod that she could see

903  
00:32:46,149 --> 00:32:44,640  
and based on that we went and got the

904  
00:32:47,430 --> 00:32:46,159  
needle nose pliers out of the crew lock

905  
00:32:50,149 --> 00:32:47,440  
and had her

906  
00:32:51,990 --> 00:32:50,159  
put that into the receptacle to try to

907  
00:32:53,669 --> 00:32:52,000  
get the debris out of

908  
00:32:55,909 --> 00:32:53,679  
out of the area

909  
00:32:56,710 --> 00:32:55,919  
we attempted installing the mbsu as you

910  
00:32:59,110 --> 00:32:56,720  
know

911  
00:33:01,509 --> 00:32:59,120  
and didn't have luck so we got the

912  
00:33:03,990 --> 00:33:01,519  
connector cleaner tool and with that we

913  
00:33:04,630 --> 00:33:04,000

shot a couple puffs of nitrogen in there

914

00:33:06,870 --> 00:33:04,640

and

915

00:33:09,110 --> 00:33:06,880

she reported that she did see

916

00:33:10,950 --> 00:33:09,120

more debris coming out and after that

917

00:33:12,789 --> 00:33:10,960

was complete she looked in and as far as

918

00:33:15,029 --> 00:33:12,799

she could see there was nothing left

919

00:33:16,870 --> 00:33:15,039

inside the receptacle so we're fairly

920

00:33:18,630 --> 00:33:16,880

confident for at least the best that we

921

00:33:20,070 --> 00:33:18,640

could see that there was

922

00:33:22,789 --> 00:33:20,080

no debris

923

00:33:24,950 --> 00:33:22,799

remaining inside the receptacle when we

924

00:33:26,230 --> 00:33:24,960

went to install it this last time now it

925

00:33:27,830 --> 00:33:26,240

doesn't mean that there of course isn't

926

00:33:29,430 --> 00:33:27,840

debris generated now based on the

927

00:33:30,710 --> 00:33:29,440

efforts that we undertook and ultimately

928

00:33:32,310 --> 00:33:30,720

torquing out the

929

00:33:34,149 --> 00:33:32,320

the bolt but when we went to install it

930

00:33:35,669 --> 00:33:34,159

the last time at least as far as we

931

00:33:38,389 --> 00:33:35,679

could could see in the best of our

932

00:33:40,310 --> 00:33:38,399

ability we were clear of fod and we also

933

00:33:42,230 --> 00:33:40,320

inspected the bolt

934

00:33:44,950 --> 00:33:42,240

and gave it a couple of puffs of

935

00:33:48,950 --> 00:33:44,960

nitrogen as well to get anything

936

00:33:51,509 --> 00:33:48,960

off of the bolt that we could liberate

937

00:33:53,350 --> 00:33:51,519

thanks and as far as i know

938

00:33:54,549 --> 00:33:53,360

it wasn't possible or pictures just

939

00:33:56,310 --> 00:33:54,559

weren't taken

940

00:33:57,669 --> 00:33:56,320

of the work site um

941

00:33:59,990 --> 00:33:57,679

does that pose a challenge not being

942

00:34:01,990 --> 00:34:00,000

able to directly see

943

00:34:03,350 --> 00:34:02,000

what's going on or is does it not really

944

00:34:05,750 --> 00:34:03,360

matter because you have the building

945

00:34:07,750 --> 00:34:05,760

plans for all these components anyway

946

00:34:10,950 --> 00:34:07,760

well we did actually have the helmet

947

00:34:13,430 --> 00:34:10,960

cameras from both sunny and aki so we

948

00:34:14,950 --> 00:34:13,440

were able to get pretty good views but

949

00:34:16,470 --> 00:34:14,960

of course the the resolution that we

950

00:34:18,470 --> 00:34:16,480

would need to actually be able to see

951  
00:34:20,550 --> 00:34:18,480  
inside the bolt is something that we

952  
00:34:22,310 --> 00:34:20,560  
just don't have on those cameras we did

953  
00:34:23,829 --> 00:34:22,320  
have the crew take still pictures

954  
00:34:25,909 --> 00:34:23,839  
however we

955  
00:34:29,190 --> 00:34:25,919  
the very first time that we got the

956  
00:34:31,030 --> 00:34:29,200  
failed mbsu out we had sunny take some

957  
00:34:32,230 --> 00:34:31,040  
still pictures so we know

958  
00:34:33,990 --> 00:34:32,240  
what

959  
00:34:35,510 --> 00:34:34,000  
the the situation looked like before we

960  
00:34:39,430 --> 00:34:35,520  
attempted any cleaning and before we

961  
00:34:41,669 --> 00:34:39,440  
attempted installing the the spare mbsu

962  
00:34:44,310 --> 00:34:41,679  
and then also as we were leaving the

963  
00:34:45,669 --> 00:34:44,320

work site we had aki use his camera to

964

00:34:47,190 --> 00:34:45,679

take some more pictures of the worksite

965

00:34:49,669 --> 00:34:47,200

and of course that's with the

966

00:34:51,349 --> 00:34:49,679

mbsu installed as we have it right now

967

00:34:52,869 --> 00:34:51,359

but at least we have good clear

968

00:34:53,669 --> 00:34:52,879

indications of what the work site looks

969

00:34:55,430 --> 00:34:53,679

like

970

00:34:57,430 --> 00:34:55,440

we were also getting great verbal cues

971

00:34:59,829 --> 00:34:57,440

from the crew they were telling us the

972

00:35:01,750 --> 00:34:59,839

separation distances between the

973

00:35:03,030 --> 00:35:01,760

hardware and the truss for example they

974

00:35:04,630 --> 00:35:03,040

were telling us what the status

975

00:35:05,910 --> 00:35:04,640

indicators were doing that keith

976  
00:35:08,150 --> 00:35:05,920  
mentioned

977  
00:35:09,030 --> 00:35:08,160  
so based on their verbal cues we were

978  
00:35:11,109 --> 00:35:09,040  
also

979  
00:35:12,470 --> 00:35:11,119  
i feel confidently well aware of what

980  
00:35:16,069 --> 00:35:12,480  
was going on with

981  
00:35:17,030 --> 00:35:16,079  
the situation and the work site

982  
00:35:19,510 --> 00:35:17,040  
thank you

983  
00:35:21,829 --> 00:35:19,520  
okay and i think our last caller is

984  
00:35:23,990 --> 00:35:21,839  
irene klotz

985  
00:35:26,150 --> 00:35:24,000  
thanks kelly um i have a few different

986  
00:35:28,069 --> 00:35:26,160  
questions uh first of all could someone

987  
00:35:30,870 --> 00:35:28,079  
just describe the

988  
00:35:32,470 --> 00:35:30,880

dimensions of this bolt and also just

989

00:35:35,349 --> 00:35:32,480

i'm having trouble getting my head

990

00:35:37,510 --> 00:35:35,359

around this neither the h1 or the h2

991

00:35:39,349 --> 00:35:37,520

bolts are currently engaged is that

992

00:35:40,390 --> 00:35:39,359

correct

993

00:35:43,750 --> 00:35:40,400

well

994

00:35:45,270 --> 00:35:43,760

um as we mentioned the the h2 bolt is

995

00:35:46,710 --> 00:35:45,280

the first bolt that we drive when we're

996

00:35:48,310 --> 00:35:46,720

putting the box in and so all the

997

00:35:49,510 --> 00:35:48,320

troubleshooting that we did back and

998

00:35:51,829 --> 00:35:49,520

forth

999

00:35:55,349 --> 00:35:51,839

allowed us to get at least a few turns

1000

00:35:57,510 --> 00:35:55,359

into the h2 bolt so that is driven

1001  
00:35:58,790 --> 00:35:57,520  
probably on the order of four or five

1002  
00:36:01,109 --> 00:35:58,800  
turns

1003  
00:36:02,310 --> 00:36:01,119  
the dimensions the box itself is

1004  
00:36:03,270 --> 00:36:02,320  
probably

1005  
00:36:06,630 --> 00:36:03,280  
um

1006  
00:36:07,990 --> 00:36:06,640  
you know i would say on the order of a

1007  
00:36:10,829 --> 00:36:08,000  
probably about

1008  
00:36:13,990 --> 00:36:10,839  
i don't know 60 centimeters by

1009  
00:36:15,030 --> 00:36:14,000  
about 40 centimeters by about

1010  
00:36:17,190 --> 00:36:15,040  
maybe

1011  
00:36:18,470 --> 00:36:17,200  
i don't know a foot deep i'm changing

1012  
00:36:21,190 --> 00:36:18,480  
you know units here in the middle of

1013  
00:36:23,990 --> 00:36:21,200

this thing but uh the bolt itself is a

1014

00:36:25,030 --> 00:36:24,000

is a pretty good size bolt um

1015

00:36:27,510 --> 00:36:25,040

i can't

1016

00:36:30,630 --> 00:36:27,520

really it's hard to show in the in what

1017

00:36:33,030 --> 00:36:30,640

i have here but um it's a it's a pretty

1018

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

good gauge bolt it's it's sturdy it's

1019

00:36:38,790 --> 00:36:36,240

used to for launch loads and um and and

1020

00:36:41,670 --> 00:36:38,800

holding the box in place uh during that

1021

00:36:43,750 --> 00:36:41,680

and then again when it's on orbit

1022

00:36:45,349 --> 00:36:43,760

so we could probably provide you with

1023

00:36:46,710 --> 00:36:45,359

information on on all of those

1024

00:36:49,510 --> 00:36:46,720

dimensions

1025

00:36:51,910 --> 00:36:49,520

but i don't have them here

1026  
00:36:55,270 --> 00:36:51,920  
oh um okay can you you can't just like

1027  
00:36:58,470 --> 00:36:55,280  
estimate the diameter of it like the

1028  
00:36:58,480 --> 00:37:00,950  
think of

1029  
00:37:06,829 --> 00:37:02,870  
i don't know if somebody can zoom in on

1030  
00:37:10,790 --> 00:37:09,109  
size okay well

1031  
00:37:13,910 --> 00:37:10,800  
to give you a gauge

1032  
00:37:15,270 --> 00:37:13,920  
this is this is the bolt right here and

1033  
00:37:17,510 --> 00:37:15,280  
i'd say

1034  
00:37:19,430 --> 00:37:17,520  
probably on the order of i don't know

1035  
00:37:21,510 --> 00:37:19,440  
half inch to three-fourths of an inch

1036  
00:37:23,030 --> 00:37:21,520  
and it drives into this particular hole

1037  
00:37:24,470 --> 00:37:23,040  
right here

1038  
00:37:26,470 --> 00:37:24,480

so

1039

00:37:27,910 --> 00:37:26,480

if that gives you any indication

1040

00:37:29,589 --> 00:37:27,920

the torque that

1041

00:37:30,470 --> 00:37:29,599

one of the things that

1042

00:37:33,670 --> 00:37:30,480

we

1043

00:37:34,790 --> 00:37:33,680

like this

1044

00:37:37,750 --> 00:37:34,800

is

1045

00:37:38,710 --> 00:37:37,760

as ed mentioned we we changed the torque

1046

00:37:40,710 --> 00:37:38,720

um

1047

00:37:43,430 --> 00:37:40,720

stepping it up and increasing it each

1048

00:37:45,750 --> 00:37:43,440

time we tried to drive uh the bolt there

1049

00:37:48,630 --> 00:37:45,760

is a failure threshold that we that we

1050

00:37:50,550 --> 00:37:48,640

work towards and so

1051  
00:37:53,109 --> 00:37:50,560  
we want to make sure that we maintain a

1052  
00:37:55,030 --> 00:37:53,119  
torque that will not shear the bolt off

1053  
00:37:56,550 --> 00:37:55,040  
and and that creates all kinds of other

1054  
00:37:58,230 --> 00:37:56,560  
problems and and so part of our

1055  
00:38:01,270 --> 00:37:58,240  
troubleshooting and what we want to do

1056  
00:38:03,430 --> 00:38:01,280  
and maintain is is not actually causing

1057  
00:38:04,790 --> 00:38:03,440  
irreparable damage such as breaking a

1058  
00:38:06,150 --> 00:38:04,800  
torque so

1059  
00:38:08,230 --> 00:38:06,160  
the torque value

1060  
00:38:09,750 --> 00:38:08,240  
that this particular bolt would shear at

1061  
00:38:12,630 --> 00:38:09,760  
while driving it in is something on the

1062  
00:38:15,109 --> 00:38:12,640  
order of 63 foot pounds

1063  
00:38:16,550 --> 00:38:15,119

so we keep that in our scope as we're

1064

00:38:19,109 --> 00:38:16,560

increasing the torque and using the

1065

00:38:21,510 --> 00:38:19,119

tools to drive it we could well exceed

1066

00:38:23,589 --> 00:38:21,520

that with the tools that we have and so

1067

00:38:26,870 --> 00:38:23,599

we have to be very careful in how we

1068

00:38:30,069 --> 00:38:26,880

approach uh driving the bolt

1069

00:38:31,670 --> 00:38:30,079

thanks and um how many um how many of

1070

00:38:33,030 --> 00:38:31,680

the how many spare

1071

00:38:36,069 --> 00:38:33,040

units are

1072

00:38:37,990 --> 00:38:36,079

currently on the station

1073

00:38:39,190 --> 00:38:38,000

and have you i can't remember if this

1074

00:38:44,470 --> 00:38:39,200

has ever been

1075

00:38:48,150 --> 00:38:46,790

so i think we have uh so you're catching

1076

00:38:50,470 --> 00:38:48,160

us all cold because we have so many

1077

00:38:53,030 --> 00:38:50,480

spares on orbit now uh i believe we had

1078

00:38:54,630 --> 00:38:53,040

two mbsu spares on orbit uh in fact

1079

00:38:56,230 --> 00:38:54,640

we're fixing to fly one here in a few

1080

00:38:58,630 --> 00:38:56,240

flights but we have i believe we had two

1081

00:39:01,109 --> 00:38:58,640

spares on orbit so we were about to uh

1082

00:39:02,870 --> 00:39:01,119

we were about to consume this one and uh

1083

00:39:05,910 --> 00:39:02,880

and so that would leave us with one more

1084

00:39:07,510 --> 00:39:05,920

and then i believe the next htv flight

1085

00:39:10,230 --> 00:39:07,520

was going to bring up

1086

00:39:12,950 --> 00:39:10,240

another spare mbsu as well so we we do

1087

00:39:15,190 --> 00:39:12,960

have plenty of spares

1088

00:39:19,349 --> 00:39:15,200

and then the last uh question i had was

1089

00:39:21,750 --> 00:39:19,359

about the um science um impacts if any i

1090

00:39:23,270 --> 00:39:21,760

wasn't very clear about

1091

00:39:24,310 --> 00:39:23,280

why um

1092

00:39:27,030 --> 00:39:24,320

uh how

1093

00:39:29,829 --> 00:39:27,040

how you're going why you'd lose uh

1094

00:39:31,589 --> 00:39:29,839

to use the power availability of two of

1095

00:39:34,069 --> 00:39:31,599

the arrays

1096

00:39:38,150 --> 00:39:34,079

with this unit not connected

1097

00:39:40,710 --> 00:39:38,160

and um if you uh did power down anything

1098

00:39:43,270 --> 00:39:40,720

even you know today or yesterday

1099

00:39:45,190 --> 00:39:43,280

in preparation for the replacement of

1100

00:39:46,550 --> 00:39:45,200

this unit and in particular i'm

1101  
00:39:49,190 --> 00:39:46,560  
interested in

1102  
00:39:51,589 --> 00:39:49,200  
ams and any other of the

1103  
00:39:53,990 --> 00:39:51,599  
kind of very high profile experiments

1104  
00:39:58,069 --> 00:39:56,230  
well as far as the power downs are

1105  
00:40:01,190 --> 00:39:58,079  
concerned uh of course

1106  
00:40:03,109 --> 00:40:01,200  
the mbsu itself each we have four mbsus

1107  
00:40:05,829 --> 00:40:03,119  
operating on the vehicle and each of

1108  
00:40:08,069 --> 00:40:05,839  
them takes the input from two power

1109  
00:40:11,030 --> 00:40:08,079  
channels and just so you've got two

1110  
00:40:13,349 --> 00:40:11,040  
inputs and distributes them across

1111  
00:40:15,030 --> 00:40:13,359  
multiple different output feeds and we

1112  
00:40:15,750 --> 00:40:15,040  
route that to

1113  
00:40:20,710 --> 00:40:15,760

all

1114

00:40:22,230 --> 00:40:20,720

of the laboratories and we send some of

1115

00:40:24,069 --> 00:40:22,240

that power back to the russian segment

1116

00:40:25,829 --> 00:40:24,079

as well

1117

00:40:29,030 --> 00:40:25,839

and so that's that's what the critical

1118

00:40:31,190 --> 00:40:29,040

function is that these mbsu's provide

1119

00:40:33,510 --> 00:40:31,200

so when you take away a quarter of uh

1120

00:40:37,430 --> 00:40:33,520

the capability and that specifically is

1121

00:40:39,430 --> 00:40:37,440

the 1a and 1b power channel feeds

1122

00:40:41,589 --> 00:40:39,440

we have to

1123

00:40:42,950 --> 00:40:41,599

make do with only the six remaining

1124

00:40:44,870 --> 00:40:42,960

power feeds coming out of the other

1125

00:40:47,109 --> 00:40:44,880

mbsus

1126  
00:40:49,670 --> 00:40:47,119  
and if of course everything on board the

1127  
00:40:52,150 --> 00:40:49,680  
vehicle uses power so we have to do a

1128  
00:40:54,150 --> 00:40:52,160  
balancing act with that power and our

1129  
00:40:55,829 --> 00:40:54,160  
our research facilities use power just

1130  
00:40:58,710 --> 00:40:55,839  
like everything else

1131  
00:41:00,790 --> 00:40:58,720  
and again it's at this point

1132  
00:41:03,589 --> 00:41:00,800  
getting ready for the eva

1133  
00:41:04,470 --> 00:41:03,599  
we went and made a specific power down

1134  
00:41:06,630 --> 00:41:04,480  
plan

1135  
00:41:08,230 --> 00:41:06,640  
so that we could keep all of our

1136  
00:41:10,470 --> 00:41:08,240  
necessary redundancies with these

1137  
00:41:12,230 --> 00:41:10,480  
jumpers installed we could

1138  
00:41:13,430 --> 00:41:12,240

keep the heaters off that we didn't need

1139

00:41:15,270 --> 00:41:13,440

to be running

1140

00:41:18,390 --> 00:41:15,280

and basically make sure that we were in

1141

00:41:20,790 --> 00:41:18,400

a good power posture for this day

1142

00:41:22,630 --> 00:41:20,800

now we just need to continue that

1143

00:41:24,390 --> 00:41:22,640

through the next several days until we

1144

00:41:26,150 --> 00:41:24,400

get this issue resolved and we have a

1145

00:41:28,309 --> 00:41:26,160

great team a power resource team and

1146

00:41:30,390 --> 00:41:28,319

that is their primary function and their

1147

00:41:32,710 --> 00:41:30,400

exceptional added to looking at all the

1148

00:41:34,870 --> 00:41:32,720

different resources that are required

1149

00:41:36,710 --> 00:41:34,880

and so what will happen is

1150

00:41:37,589 --> 00:41:36,720

for any given day

1151

00:41:41,829 --> 00:41:37,599

the

1152

00:41:45,109 --> 00:41:41,839

your core systems that need just a given

1153

00:41:46,630 --> 00:41:45,119

set of power you have your core research

1154

00:41:49,750 --> 00:41:46,640

facilities that are always on for

1155

00:41:52,550 --> 00:41:49,760

example ams being one of those and then

1156

00:41:54,790 --> 00:41:52,560

you have the periodic loads be they the

1157

00:41:56,950 --> 00:41:54,800

space station robot arm or a specific

1158

00:41:59,589 --> 00:41:56,960

payload facility that needs power at a

1159

00:42:01,349 --> 00:41:59,599

specific time or for a specific day

1160

00:42:02,390 --> 00:42:01,359

all of those will go into the power

1161

00:42:03,589 --> 00:42:02,400

resource

1162

00:42:06,390 --> 00:42:03,599

officers

1163

00:42:09,109 --> 00:42:06,400

and they will lay it out onto the maps

1164

00:42:10,630 --> 00:42:09,119

of what's predicted to be our capability

1165

00:42:12,390 --> 00:42:10,640

for that given day

1166

00:42:13,829 --> 00:42:12,400

and ideally we'd like to accommodate

1167

00:42:15,430 --> 00:42:13,839

everything and sometimes that doesn't

1168

00:42:16,870 --> 00:42:15,440

work and now that we only have six of

1169

00:42:18,470 --> 00:42:16,880

eight power channels

1170

00:42:20,390 --> 00:42:18,480

we have to be

1171

00:42:22,550 --> 00:42:20,400

a little bit more constrained and what

1172

00:42:24,790 --> 00:42:22,560

we can manage and what that might mean

1173

00:42:27,430 --> 00:42:24,800

is that if a particular payload wants to

1174

00:42:28,950 --> 00:42:27,440

do science on wednesday

1175

00:42:31,349 --> 00:42:28,960

with some other activities also

1176

00:42:33,190 --> 00:42:31,359

occurring on wednesday they may have to

1177

00:42:35,510 --> 00:42:33,200

accept doing it on thursday instead just

1178

00:42:37,589 --> 00:42:35,520

so we can keep the power balance so as

1179

00:42:39,510 --> 00:42:37,599

far as capability for doing research the

1180

00:42:41,990 --> 00:42:39,520

ongoing research will keep going and

1181

00:42:44,069 --> 00:42:42,000

it's just the periodic research that we

1182

00:42:46,470 --> 00:42:44,079

pick and choose to do on certain days

1183

00:42:48,390 --> 00:42:46,480

will be a little bit more constrained on

1184

00:42:50,470 --> 00:42:48,400

potentially just given on what our

1185

00:42:52,710 --> 00:42:50,480

capabilities are for that day whether or

1186

00:42:54,390 --> 00:42:52,720

not they'll be able to operate but we're

1187

00:42:57,109 --> 00:42:54,400

not looking at needing to shut down any

1188

00:42:58,470 --> 00:42:57,119

of our key research facilities

1189

00:43:01,030 --> 00:42:58,480

not the ams

1190

00:43:02,630 --> 00:43:01,040

or any of the others and we will be able

1191

00:43:03,990 --> 00:43:02,640

to continue

1192

00:43:07,270 --> 00:43:04,000

doing all the research it's just a

1193

00:43:09,670 --> 00:43:07,280

matter of being able to schedule it

1194

00:43:11,270 --> 00:43:09,680

thanks very much

1195

00:43:12,630 --> 00:43:11,280

okay we skipped over a couple of folks

1196

00:43:17,030 --> 00:43:12,640

that were on the phone i want to make

1197

00:43:20,470 --> 00:43:17,990

okay

1198

00:43:22,150 --> 00:43:20,480

and any follow-ups here at jfc mark

1199

00:43:24,069 --> 00:43:22,160

yeah thanks mark

1200

00:43:25,589 --> 00:43:24,079

from aviation week and i think these are

1201

00:43:28,309 --> 00:43:25,599

pretty quick questions i just want to

1202

00:43:31,190 --> 00:43:28,319

make sure though that i understand the

1203

00:43:33,190 --> 00:43:31,200

four mbsus were

1204

00:43:35,990 --> 00:43:33,200

fitted onto the truss before it was

1205

00:43:38,069 --> 00:43:36,000

launched so seo came up

1206

00:43:40,870 --> 00:43:38,079

and

1207

00:43:43,109 --> 00:43:40,880

from your demonstrations the the bolts

1208

00:43:45,589 --> 00:43:43,119

are integrated into the

1209

00:43:47,829 --> 00:43:45,599

the truss and the mbsu it's not like you

1210

00:43:49,670 --> 00:43:47,839

can go get a spare bolt somewhere you

1211

00:43:55,270 --> 00:43:49,680

really have to work with what you've got

1212

00:43:58,230 --> 00:43:56,470

all right

1213

00:44:00,870 --> 00:43:58,240

well with that i want to thank everyone

1214

00:44:02,390 --> 00:44:00,880

for being here for today's briefing uh

1215

00:44:04,309 --> 00:44:02,400

here at the johnson space center the

1216

00:44:06,550 --> 00:44:04,319

newsroom will continue to track the

1217

00:44:08,630 --> 00:44:06,560

progress of the team as they work on the

1218

00:44:10,390 --> 00:44:08,640

issues that occurred today and we'll be

1219

00:44:13,589 --> 00:44:10,400

providing all the updates on the

1220

00:44:16,390 --> 00:44:13,599

internet at the nasa website at

1221

00:44:17,430 --> 00:44:16,400

[www.nasa.gov](http://www.nasa.gov)

1222

00:44:19,109 --> 00:44:17,440

station