



1
00:00:06,550 --> 00:00:04,470
spacewalk officers here in mission

2
00:00:09,750 --> 00:00:06,560
control report that both suits are

3
00:00:12,470 --> 00:00:09,760
operating to perfection as we begin to

4
00:00:15,350 --> 00:00:12,480
see tim copra emerging from the quest

5
00:00:22,150 --> 00:00:15,360
airlock this the start of the third

6
00:00:25,950 --> 00:00:24,230
the quest airlock was installed on the

7
00:00:29,189 --> 00:00:25,960
international space station during the

8
00:00:37,750 --> 00:00:29,199
sts-104 mission of the shuttle atlantis

9
00:00:40,709 --> 00:00:39,430
tim peake just keep hanging for a second

10
00:00:46,229 --> 00:00:40,719
we're trying to get a good camera on

11
00:00:46,239 --> 00:00:59,349
copy that

12
00:01:02,150 --> 00:01:01,029
and there is a close-up view of tim

13
00:01:04,310 --> 00:01:02,160

cobra

14

00:01:05,270 --> 00:01:04,320

working at the base of the 1b solar

15

00:01:06,469 --> 00:01:05,280

array

16

00:01:08,390 --> 00:01:06,479

again

17

00:01:10,550 --> 00:01:08,400

as he attaches uh

18

00:01:13,350 --> 00:01:10,560

various pieces of equipment

19

00:01:15,670 --> 00:01:13,360

to handrails and other attach points

20

00:01:16,789 --> 00:01:15,680

uh in the lower left-hand portion of

21

00:01:20,070 --> 00:01:16,799

this view

22

00:01:22,310 --> 00:01:20,080

is uh the mast canister for the 1b array

23

00:01:24,950 --> 00:01:22,320

that holds the electronics essentially

24

00:01:26,950 --> 00:01:24,960

that governs the operation of the array

25

00:01:29,030 --> 00:01:26,960

and the direction of electrical

26

00:01:31,350 --> 00:01:29,040

potential down to the sequential shunt

27

00:01:34,550 --> 00:01:31,360

unit that will be replaced during the

28

00:01:36,230 --> 00:01:34,560

next night pass about 47 minutes from

29

00:01:37,590 --> 00:01:36,240

now

30

00:01:38,950 --> 00:01:37,600

all right gentlemen looking great glad

31

00:01:40,469 --> 00:01:38,960

to see you both out there together on

32

00:01:43,109 --> 00:01:40,479

the tip of the world

33

00:01:46,230 --> 00:01:43,119

we have two good wvs views and they are

34

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

and tim peake now has joined the copra

35

00:01:53,190 --> 00:01:50,399

at the base of the 1b

36

00:01:54,630 --> 00:01:53,200

solar array right at the very end of the

37

00:02:12,949 --> 00:01:54,640

starboard truss of the international

38

00:02:17,830 --> 00:02:15,750

and tim peake as you work your way

39

00:02:19,350 --> 00:02:17,840

around the mass caster there

40

00:02:20,710 --> 00:02:19,360

feel free to look at the load pads and

41

00:02:39,270 --> 00:02:20,720

get some situational awareness of what

42

00:02:43,750 --> 00:02:41,910

and a good view of tim copra his feet

43

00:02:45,350 --> 00:02:43,760

now planted in that portable foot

44

00:02:48,150 --> 00:02:45,360

restraint again that will give him

45

00:02:51,910 --> 00:02:48,160

leverage uh as he uses

46

00:02:53,750 --> 00:02:51,920

a ratchet wrench and a pistol grip tool

47

00:02:55,110 --> 00:02:53,760

to not only break the torque on the

48

00:02:57,110 --> 00:02:55,120

single bolt holding the failed

49

00:03:00,869 --> 00:02:57,120

sequential shunt unit in place but

50

00:03:03,910 --> 00:03:00,879

ultimately uh to remove that single bolt

51
00:03:06,869 --> 00:03:03,920
and then be joined by tim peake to

52
00:03:10,390 --> 00:03:06,879
remove the failed unit from its location

53
00:03:13,110 --> 00:03:10,400
at the base of the 1b solar array

54
00:03:14,630 --> 00:03:13,120
there are a series of tasks to be

55
00:03:16,149 --> 00:03:14,640
conducted by the flight control team

56
00:03:18,309 --> 00:03:16,159
here in houston

57
00:03:22,149 --> 00:03:18,319
they're called inhibits to make sure

58
00:03:23,830 --> 00:03:22,159
that all of the electrical systems are

59
00:03:24,710 --> 00:03:23,840
placed into a dormant

60
00:03:26,309 --> 00:03:24,720
mode

61
00:03:28,470 --> 00:03:26,319
during the time that the crew is

62
00:03:33,350 --> 00:03:28,480
handling uh this equipment at the base

63
00:03:37,830 --> 00:03:35,270

okay guys so we're working right now for

64

00:03:39,910 --> 00:03:37,840

tim copra off page 13 of the cuff

65

00:03:42,070 --> 00:03:39,920

checklist

66

00:03:43,750 --> 00:03:42,080

we know it's a small amount of water

67

00:03:46,309 --> 00:03:43,760

yep and i can just read you the the

68

00:03:48,149 --> 00:03:46,319

steps right now tim

69

00:03:50,309 --> 00:03:48,159

we already got the location and the

70

00:03:51,430 --> 00:03:50,319

quantity if there's any way to get a

71

00:03:53,589 --> 00:03:51,440

temperature of the water i don't know if

72

00:03:58,550 --> 00:03:53,599

you can move it around to get to that or

73

00:04:01,990 --> 00:04:00,149

it's about

74

00:04:05,190 --> 00:04:02,000

three inches above my head

75

00:04:05,200 --> 00:04:17,990

if i can make it mobile

76

00:04:23,590 --> 00:04:20,710

tim copra reporting a

77

00:04:26,310 --> 00:04:23,600

small amount of water

78

00:04:28,310 --> 00:04:26,320

inside the helmet of his extra vehicular

79

00:04:32,390 --> 00:04:28,320

mobility unit the next little line there

80

00:04:33,830 --> 00:04:32,400

is if the didb is a confirmed source

81

00:04:35,350 --> 00:04:33,840

we're handing over communications

82

00:04:43,270 --> 00:04:35,360

between satellites on the tracking and

83

00:04:46,950 --> 00:04:44,310

about a

84

00:04:47,830 --> 00:04:46,960

half inch line that i was able to

85

00:04:49,110 --> 00:04:47,840

get

86

00:04:51,270 --> 00:04:49,120

in front of me

87

00:04:54,070 --> 00:04:51,280

the water's cold

88

00:05:01,510 --> 00:04:54,080

the second area is water now about that

89

00:05:01,520 --> 00:05:19,510

okay guys stand by just for a second

90

00:05:24,310 --> 00:05:21,430

this is mission control houston at the 4

91

00:05:25,830 --> 00:05:24,320

hour 10 minute mark into today's eva

92

00:05:27,670 --> 00:05:25,840

guys you can start opening your cuff

93

00:05:29,510 --> 00:05:27,680

checklist to page seven we are going to

94

00:05:31,430 --> 00:05:29,520

terminate case

95

00:05:35,430 --> 00:05:31,440

and we're gathering words for tim peake

96

00:05:42,150 --> 00:05:39,670

okay copy that 82 copy so terminate eba

97

00:05:44,310 --> 00:05:42,160

ingress crew lock connect scu so i'm

98

00:05:56,629 --> 00:05:44,320

going to clean up all my stuff here read

99

00:05:59,430 --> 00:05:58,070

we want you to get your crew lock bag on

100

00:06:00,710 --> 00:05:59,440

your brt

101
00:06:02,790 --> 00:06:00,720
and start heading back towards the

102
00:06:05,029 --> 00:06:02,800
airlock for tim peake we're developing

103
00:06:06,469 --> 00:06:05,039
words for you uh for the most part it's

104
00:06:08,710 --> 00:06:06,479
going to be tying down the bundle you

105
00:06:15,189 --> 00:06:08,720
have giving us a good handrail location

106
00:06:19,270 --> 00:06:16,950
this is mission control houston once

107
00:06:21,670 --> 00:06:19,280
again at the four hour 10 minute mark

108
00:06:23,909 --> 00:06:21,680
into today's spacewalk

109
00:06:26,070 --> 00:06:23,919
at 10 58 a.m central time flight

110
00:06:28,309 --> 00:06:26,080
director royce renfrew directed the team

111
00:06:30,710 --> 00:06:28,319
to terminate

112
00:06:33,110 --> 00:06:30,720
today's spacewalk by tim copra and tim

113
00:06:35,430 --> 00:06:33,120

peake get it in a low profile take a

114

00:06:37,110 --> 00:06:35,440

really good wbs survey around with your

115

00:06:39,189 --> 00:06:37,120

eyes and make sure that nothing is

116

00:06:40,629 --> 00:06:39,199

hanging out or loose and then we'll take

117

00:06:42,309 --> 00:06:40,639

that handrail that's right in front of

118

00:06:45,990 --> 00:06:42,319

you that you are tying this thing down

119

00:06:46,000 --> 00:06:58,870

okay

120

00:07:04,390 --> 00:07:02,390

the decision to terminate today's eva

121

00:07:06,950 --> 00:07:04,400

by copper and peak was made after copra

122

00:07:09,350 --> 00:07:06,960

reported a small amount of water

123

00:07:11,749 --> 00:07:09,360

and a small feeling of dampness around

124

00:07:12,790 --> 00:07:11,759

his helmet absorption pad

125

00:07:14,230 --> 00:07:12,800

which was

126
00:07:16,870 --> 00:07:14,240
installed

127
00:07:18,550 --> 00:07:16,880
on all space walkers outside of the u.s

128
00:07:19,830 --> 00:07:18,560
segment of the international space

129
00:07:21,589 --> 00:07:19,840
station

130
00:07:25,350 --> 00:07:21,599
following

131
00:07:29,029 --> 00:07:25,360
an incident back in july of 2013

132
00:07:32,469 --> 00:07:29,039
on july 16 2013 when chris cassidy who's

133
00:07:34,550 --> 00:07:32,479
now the chief of the astronaut office

134
00:07:35,670 --> 00:07:34,560
and luca parmitano were conducting a

135
00:07:37,350 --> 00:07:35,680
spacewalk

136
00:07:40,390 --> 00:07:37,360
it was terminated in that case at the

137
00:07:41,589 --> 00:07:40,400
one hour 32 minute mark after parmitano

138
00:07:44,710 --> 00:07:41,599

reported

139

00:07:46,869 --> 00:07:44,720

an unexplained buildup of water inside

140

00:07:49,670 --> 00:07:46,879

his helmet that was later traced

141

00:07:51,589 --> 00:07:49,680

to cooling loop but chemistry issues

142

00:07:56,070 --> 00:07:51,599

and we do need to retrieve that bag or

143

00:07:57,670 --> 00:07:56,080

at a minimum the pe gt out of that bag

144

00:08:00,309 --> 00:07:57,680

with the helmet off

145

00:08:02,070 --> 00:08:00,319

uh the uh extra vehicular mobility unit

146

00:08:03,589 --> 00:08:02,080

with the red stripes being assisted by

147

00:08:06,309 --> 00:08:03,599

sergey volkov on the right yuri

148

00:08:08,309 --> 00:08:06,319

malenchenko on the left

149

00:08:10,150 --> 00:08:08,319

tim peake is still inside the crew lock

150

00:08:11,510 --> 00:08:10,160

section

151
00:08:16,790 --> 00:08:11,520
he'll be brought back inside the

152
00:08:20,390 --> 00:08:19,029
obviously copra is in good shape no

153
00:08:23,270 --> 00:08:20,400
issue there

154
00:08:25,830 --> 00:08:23,280
the crew was never in any danger at the

155
00:08:27,510 --> 00:08:25,840
time that cobra reported this small

156
00:08:28,390 --> 00:08:27,520
water bubble inside the helmet that you

157
00:08:51,590 --> 00:08:28,400
see

158
00:08:56,470 --> 00:08:54,230
a good overhead view of tim kopra back

159
00:08:57,829 --> 00:08:56,480
inside the equipment lock section of

160
00:09:00,230 --> 00:08:57,839
quest

161
00:09:01,430 --> 00:09:00,240
being assisted by scott kelly in the

162
00:09:03,269 --> 00:09:01,440
black shirt

163
00:09:07,990 --> 00:09:03,279

and just on the right is russian

164

00:09:12,389 --> 00:09:10,150

will assist now in removing the safer

165

00:09:14,389 --> 00:09:12,399

unit the simplified aid for eva rescue

166

00:09:16,870 --> 00:09:14,399

the jetpack unit from

167

00:09:18,630 --> 00:09:16,880

the back of cobra's extra vehicular

168

00:09:21,670 --> 00:09:18,640

mobility unit

169

00:09:24,630 --> 00:09:21,680

just to recap today's spacewalk began at

170

00:09:26,389 --> 00:09:24,640

6 48 a.m central time

171

00:09:29,269 --> 00:09:26,399

cobra and peak

172

00:09:31,350 --> 00:09:29,279

made their way

173

00:09:32,470 --> 00:09:31,360

outside of the quest airlock set up shop

174

00:09:34,470 --> 00:09:32,480

on the starboard truss of the

175

00:09:37,509 --> 00:09:34,480

international space station

176
00:09:39,509 --> 00:09:37,519
and successfully replaced a failed

177
00:09:43,269 --> 00:09:39,519
voltage regulator unit called a

178
00:09:46,070 --> 00:09:43,279
sequential shunt unit that

179
00:09:47,829 --> 00:09:46,080
stopped operating back on november 13th

180
00:09:49,110 --> 00:09:47,839
taking down one of the

181
00:09:54,070 --> 00:09:49,120
power channels

182
00:09:57,430 --> 00:09:56,310
other tasks were in the process of being

183
00:10:00,949 --> 00:09:57,440
completed

184
00:10:04,150 --> 00:10:00,959
by cobra and peak when at about 10 56

185
00:10:06,389 --> 00:10:04,160
a.m central time cobra reported a a

186
00:10:07,509 --> 00:10:06,399
small water bubble had formed inside his

187
00:10:09,509 --> 00:10:07,519
helmet

188
00:10:11,590 --> 00:10:09,519

after a brief consultation flight

189

00:10:13,990 --> 00:10:11,600

director royce renfrew ordered today's

190

00:10:16,389 --> 00:10:14,000

spacewalk terminated the crew made an

191

00:10:19,190 --> 00:10:16,399

orderly uh return back to the quest

192

00:10:21,110 --> 00:10:19,200

airlock closed the hatch cobra and peak

193

00:10:22,470 --> 00:10:21,120

thanked the flight control team for a

194

00:10:24,389 --> 00:10:22,480

great job

195

00:10:28,389 --> 00:10:24,399

in

196

00:10:29,990 --> 00:10:28,399

return the station to a full power

197

00:10:31,750 --> 00:10:30,000

capability

198

00:10:34,630 --> 00:10:31,760

they closed the hatch behind them the

199

00:10:38,150 --> 00:10:34,640

spacewalk ending at 11 31 a.m central

200

00:10:40,470 --> 00:10:38,160

time at the four-hour 43-minute mark

201

00:10:43,910 --> 00:10:40,480

when the airlock began its

202

00:10:49,350 --> 00:10:46,230

and as you can see uh tim kopra back

203

00:10:51,190 --> 00:10:49,360

inside he'll be joined uh momentarily by

204

00:10:53,269 --> 00:10:51,200

tim peake

205

00:10:55,750 --> 00:10:53,279

as

206

00:10:57,350 --> 00:10:55,760

all of the evidence water that had

207

00:10:59,430 --> 00:10:57,360

formed inside

208

00:11:01,670 --> 00:10:59,440

cobra's helmet

209

00:11:03,990 --> 00:11:01,680

plus the helmet absorption pad that is

210

00:11:05,670 --> 00:11:04,000

standard uh a tire inside the helmet for

211

00:11:08,389 --> 00:11:05,680

all space walkers

212

00:11:09,990 --> 00:11:08,399

and all other uh pertinent evidence is

213

00:11:12,230 --> 00:11:10,000

collected for future engineering

214

00:11:14,630 --> 00:11:12,240

analysis

215

00:11:15,829 --> 00:11:14,640

for any areas where we think the tubing

216

00:11:17,750 --> 00:11:15,839

could have leaked

217

00:11:27,750 --> 00:11:17,760

that condensation we would expect that

218

00:11:41,030 --> 00:11:38,150

okay i understand that

219

00:11:42,949 --> 00:11:41,040

ventilation tube in the middle there's

220

00:11:45,430 --> 00:11:42,959

water some water in there too i try to