



1
00:00:07,269 --> 00:00:05,510
joining us here today on console is dr

2
00:00:09,350 --> 00:00:07,279
sandra moore who is a spacewalk

3
00:00:11,509 --> 00:00:09,360
specialist thanks so much for joining us

4
00:00:12,789 --> 00:00:11,519
this morning my pleasure it's really a

5
00:00:14,870 --> 00:00:12,799
privilege to see you again because i

6
00:00:16,870 --> 00:00:14,880
just saw you last week at the neutral

7
00:00:18,150 --> 00:00:16,880
buoyancy lab where scott kelly and shel

8
00:00:19,670 --> 00:00:18,160
lindgren were

9
00:00:20,950 --> 00:00:19,680
working so thanks for joining us here

10
00:00:23,029 --> 00:00:20,960
today to tell us a little bit more about

11
00:00:25,670 --> 00:00:23,039
your job yeah no problem

12
00:00:28,150 --> 00:00:25,680
so the onboard crew is preparing for

13
00:00:29,429 --> 00:00:28,160

three spacewalks that are coming up

14

00:00:31,349 --> 00:00:29,439

we've been following along with some of

15

00:00:32,870 --> 00:00:31,359

their activities getting the suits ready

16

00:00:35,430 --> 00:00:32,880

uh can you tell us just a little bit

17

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

about um how how the team approaches

18

00:00:39,270 --> 00:00:37,120

space station spacewalk training as

19

00:00:40,709 --> 00:00:39,280

compared to the shuttle era when you

20

00:00:42,790 --> 00:00:40,719

could really train with the crews right

21

00:00:44,630 --> 00:00:42,800

up into their launch but at this point

22

00:00:46,389 --> 00:00:44,640

you know you're you don't see the crews

23

00:00:48,150 --> 00:00:46,399

nearly as much and then sometimes many

24

00:00:50,310 --> 00:00:48,160

many months before they even launch yeah

25

00:00:52,150 --> 00:00:50,320

it's actually very different these days

26

00:00:54,709 --> 00:00:52,160

we used to train specifically with the

27

00:00:57,189 --> 00:00:54,719

eva team the the team

28

00:00:58,869 --> 00:00:57,199

they would have up to 10 mbl runs which

29

00:01:01,110 --> 00:00:58,879

are pool runs they'd actually practice

30

00:01:02,869 --> 00:01:01,120

end to end and they almost have that

31

00:01:05,429 --> 00:01:02,879

choreography memorized even if we were

32

00:01:07,030 --> 00:01:05,439

doing several evas this time it's much

33

00:01:07,990 --> 00:01:07,040

different you have one team that follows

34

00:01:09,750 --> 00:01:08,000

the crew

35

00:01:11,910 --> 00:01:09,760

and you have different teams that follow

36

00:01:13,510 --> 00:01:11,920

planned evas so you actually have a

37

00:01:16,469 --> 00:01:13,520

significant portion of the office so

38

00:01:18,390 --> 00:01:16,479

this next series they have

39

00:01:19,670 --> 00:01:18,400

both butch and crew had different eva

40

00:01:21,670 --> 00:01:19,680

training teams because they're on

41

00:01:23,670 --> 00:01:21,680

different increments and then they have

42

00:01:25,749 --> 00:01:23,680

several different eba teams that follow

43

00:01:28,310 --> 00:01:25,759

each of the different evas

44

00:01:30,310 --> 00:01:28,320

so they have a series of 10 ebas that

45

00:01:32,710 --> 00:01:30,320

they train with their trainers with the

46

00:01:34,789 --> 00:01:32,720

first seven are planned for contingency

47

00:01:36,710 --> 00:01:34,799

type evas so they'll see all those

48

00:01:39,350 --> 00:01:36,720

unique interfaces and they develop a

49

00:01:41,990 --> 00:01:39,360

basic skill set that we ask them to pull

50

00:01:44,710 --> 00:01:42,000

from for any eva they would do the last

51
00:01:46,550 --> 00:01:44,720
three evas are up to the training team

52
00:01:48,069 --> 00:01:46,560
to determine what evas they might see

53
00:01:49,830 --> 00:01:48,079
and we try to show them any unique

54
00:01:52,389 --> 00:01:49,840
interface they haven't seen

55
00:01:54,630 --> 00:01:52,399
so specifically for these evas coming up

56
00:01:56,789 --> 00:01:54,640
the first one is a deployment of a

57
00:01:58,550 --> 00:01:56,799
series of lots of lots of cables we're

58
00:02:00,550 --> 00:01:58,560
basically rewiring station for the

59
00:02:02,149 --> 00:02:00,560
international docking adapter

60
00:02:04,789 --> 00:02:02,159
and that's a pretty unique and very very

61
00:02:07,030 --> 00:02:04,799
tough eva one to visualize and the other

62
00:02:08,710 --> 00:02:07,040
two execute just based on hand strength

63
00:02:11,190 --> 00:02:08,720

and so they were able to practice that i

64

00:02:13,110 --> 00:02:11,200

think twice so still very different than

65

00:02:14,949 --> 00:02:13,120

shuttle days

66

00:02:17,589 --> 00:02:14,959

one other unique aspect is when you've

67

00:02:20,070 --> 00:02:17,599

got mixed crews like this butch launched

68

00:02:22,470 --> 00:02:20,080

months before terry so how do you guys

69

00:02:23,589 --> 00:02:22,480

approach that you know that phase of

70

00:02:25,350 --> 00:02:23,599

when they're not going to have as many

71

00:02:26,470 --> 00:02:25,360

opportunities to train together but yet

72

00:02:28,869 --> 00:02:26,480

on orbit they will be doing this

73

00:02:29,670 --> 00:02:28,879

spacewalk together so what we try to do

74

00:02:31,990 --> 00:02:29,680

is

75

00:02:34,070 --> 00:02:32,000

on either side of the increments if they

76
00:02:36,630 --> 00:02:34,080
could go out the door with each other we

77
00:02:38,550 --> 00:02:36,640
do try to train at least one if not two

78
00:02:40,630 --> 00:02:38,560
runs with them just so they can practice

79
00:02:42,630 --> 00:02:40,640
their teamwork and their their ability

80
00:02:43,990 --> 00:02:42,640
to to talk to one another and see how

81
00:02:44,949 --> 00:02:44,000
each other works everybody's a little

82
00:02:46,949 --> 00:02:44,959
different

83
00:02:49,110 --> 00:02:46,959
and so i know butch and terry actually

84
00:02:51,190 --> 00:02:49,120
practiced i think twice this first dva

85
00:02:53,750 --> 00:02:51,200
together and they were able to

86
00:02:56,309 --> 00:02:53,760
work on on their cadence and and their

87
00:02:57,830 --> 00:02:56,319
timing together as a team

88
00:03:00,149 --> 00:02:57,840

so you talked a little bit about the

89

00:03:01,910 --> 00:03:00,159

different approach of contingency evas

90

00:03:04,550 --> 00:03:01,920

and what's called planned evas which

91

00:03:06,790 --> 00:03:04,560

this one would fall into that category

92

00:03:08,149 --> 00:03:06,800

what are the kind of the challenges of

93

00:03:10,149 --> 00:03:08,159

trying to prepare for this type of

94

00:03:11,589 --> 00:03:10,159

spacewalk especially when the timing

95

00:03:13,030 --> 00:03:11,599

gets postponed which we've seen with

96

00:03:15,030 --> 00:03:13,040

this one as well

97

00:03:16,790 --> 00:03:15,040

yeah and the challenges come with one

98

00:03:18,630 --> 00:03:16,800

who's going to go out the door for you

99

00:03:21,910 --> 00:03:18,640

and every crew is a little different and

100

00:03:24,869 --> 00:03:21,920

they all have different types of

101
00:03:26,630 --> 00:03:24,879
preferences if you will and so we try to

102
00:03:28,470 --> 00:03:26,640
write the procedures fairly generically

103
00:03:29,830 --> 00:03:28,480
but we do fine-tune them

104
00:03:31,430 --> 00:03:29,840
for the crew as they go out the door

105
00:03:33,509 --> 00:03:31,440
where they wear their tethers how they

106
00:03:35,589 --> 00:03:33,519
like to carry their tools and so we

107
00:03:37,990 --> 00:03:35,599
worked closely with the training teams

108
00:03:39,190 --> 00:03:38,000
again butch and and terry had different

109
00:03:40,550 --> 00:03:39,200
training teams but we worked very

110
00:03:43,430 --> 00:03:40,560
closely with them as we're writing the

111
00:03:47,990 --> 00:03:46,309
in addition to that we they like they

112
00:03:50,229 --> 00:03:48,000
pull from that basic skill set and so we

113
00:03:52,710 --> 00:03:50,239

do try to make it a generic universal

114

00:03:55,830 --> 00:03:52,720

skill set that anyone that has gone

115

00:03:57,910 --> 00:03:55,840

through our our training can can do or

116

00:03:59,589 --> 00:03:57,920

execute that eva so it gives us

117

00:04:02,390 --> 00:03:59,599

confidence that anyone we have up there

118

00:04:04,070 --> 00:04:02,400

can do that no it's a great approach

119

00:04:06,949 --> 00:04:04,080

also what are the tools that you have on

120

00:04:08,070 --> 00:04:06,959

orbit for a crew to be able to refresh

121

00:04:09,429 --> 00:04:08,080

and

122

00:04:11,270 --> 00:04:09,439

you know remain proficient for those

123

00:04:12,550 --> 00:04:11,280

spacewalks when they come so what we do

124

00:04:14,869 --> 00:04:12,560

is we actually send up the written

125

00:04:16,390 --> 00:04:14,879

procedures that are ground ivy who's the

126
00:04:18,469 --> 00:04:16,400
astronaut who will talk to them through

127
00:04:20,150 --> 00:04:18,479
the eva and guide them

128
00:04:22,710 --> 00:04:20,160
as we'll read so basically we call it a

129
00:04:25,350 --> 00:04:22,720
checklist we also send up a briefing

130
00:04:27,430 --> 00:04:25,360
package that has pictures and

131
00:04:29,590 --> 00:04:27,440
shots of all the different hardware and

132
00:04:31,510 --> 00:04:29,600
places on orbit they're going to see and

133
00:04:34,070 --> 00:04:31,520
translate and then they have a few

134
00:04:36,070 --> 00:04:34,080
special tools one we call doug which is

135
00:04:38,550 --> 00:04:36,080
a computer program they can fly through

136
00:04:40,310 --> 00:04:38,560
station and position themselves so they

137
00:04:42,469 --> 00:04:40,320
can see it electronically and they can

138
00:04:44,469 --> 00:04:42,479

actually convert that into an on-orbit

139

00:04:46,710 --> 00:04:44,479

vr trainer which is where they actually

140

00:04:48,870 --> 00:04:46,720

can wear the laptop on the head it has a

141

00:04:51,350 --> 00:04:48,880

special series of goggles that lets them

142

00:04:53,030 --> 00:04:51,360

see what they're doing in an animated

143

00:04:55,110 --> 00:04:53,040

environment but in 3d so they can

144

00:04:57,510 --> 00:04:55,120

actually walk the eva so it's pretty

145

00:05:00,230 --> 00:04:57,520

incredible

146

00:05:01,510 --> 00:05:00,240

let's see one last question um

147

00:05:03,029 --> 00:05:01,520

what are they doing right now i know

148

00:05:04,070 --> 00:05:03,039

like i said we've been following along a

149

00:05:06,070 --> 00:05:04,080

little bit with some of the suit

150

00:05:07,909 --> 00:05:06,080

preparations they've started but

151
00:05:09,510 --> 00:05:07,919
talk us through the countdown to this

152
00:05:11,029 --> 00:05:09,520
first spacewalk coming up on the 20th

153
00:05:12,150 --> 00:05:11,039
can you tell us what types of activities

154
00:05:14,870 --> 00:05:12,160
they'll still be doing to prepare for

155
00:05:16,870 --> 00:05:14,880
that yeah so it does ramp up quite a bit

156
00:05:18,390 --> 00:05:16,880
they have to prep the suits

157
00:05:20,950 --> 00:05:18,400
to make sure they're ready to go so they

158
00:05:23,749 --> 00:05:20,960
go through a series of flushes and tests

159
00:05:25,510 --> 00:05:23,759
and check out something called an ofe

160
00:05:27,590 --> 00:05:25,520
where they actually make the suit fit

161
00:05:29,430 --> 00:05:27,600
their body and so it's comfortable when

162
00:05:30,790 --> 00:05:29,440
they go out the door and since they

163
00:05:32,950 --> 00:05:30,800

haven't tried it on orbit they actually

164

00:05:35,189 --> 00:05:32,960

grow a little bit so make sure that it

165

00:05:37,430 --> 00:05:35,199

accounts for any growth they've had on

166

00:05:39,670 --> 00:05:37,440

orbit then they prepare on the on the

167

00:05:41,029 --> 00:05:39,680

task side by prepping their tools so

168

00:05:43,270 --> 00:05:41,039

they gather all the tools needed for

169

00:05:46,310 --> 00:05:43,280

each va and pack them specifically as

170

00:05:48,469 --> 00:05:46,320

needed in the bags to minimize any extra

171

00:05:49,909 --> 00:05:48,479

work they would have to do outside

172

00:05:51,749 --> 00:05:49,919

and then they're studying and they're

173

00:05:53,189 --> 00:05:51,759

studying that that procedure and how it

174

00:05:54,710 --> 00:05:53,199

might have changed since they did it

175

00:05:56,550 --> 00:05:54,720

once or twice it's probably been about

176

00:05:57,990 --> 00:05:56,560

six months maybe even eight since

177

00:05:59,830 --> 00:05:58,000

they've seen it

178

00:06:01,670 --> 00:05:59,840

just to make sure they remember how they

179

00:06:03,189 --> 00:06:01,680

how they did it in the pool

180

00:06:04,150 --> 00:06:03,199

well it sounds like there's just a lot

181

00:06:06,629 --> 00:06:04,160

of different

182

00:06:08,309 --> 00:06:06,639

resources available and to prepare all

183

00:06:10,550 --> 00:06:08,319

the spacewalkers and the team itself for

184

00:06:12,309 --> 00:06:10,560

the eva so thanks so much for joining us

185

00:06:14,390 --> 00:06:12,319

today and and sharing a little bit with

186

00:06:16,150 --> 00:06:14,400

us about your job and how the team

187

00:06:18,550 --> 00:06:16,160

supports our astronauts for the

188

00:06:20,390 --> 00:06:18,560

spacewalks no problem my pleasure

189

00:06:22,070 --> 00:06:20,400

again that was dr sandra moore the

190

00:06:23,189 --> 00:06:22,080

spacewalk specialist here as part of the