



**SPACESTATION
LIVE**

1
00:00:08,390 --> 00:00:06,710
so the six-man crew of expedition 44 has

2
00:00:10,230 --> 00:00:08,400
been working on a wide variety of

3
00:00:12,629 --> 00:00:10,240
experiments especially since they got

4
00:00:14,230 --> 00:00:12,639
back up to six people in late july

5
00:00:15,669 --> 00:00:14,240
here to tell me a little bit more about

6
00:00:17,590 --> 00:00:15,679
what the crew's been doing and what's

7
00:00:19,670 --> 00:00:17,600
ahead for expedition 44 is the lead

8
00:00:21,429 --> 00:00:19,680
increments scientists jorge sotomayor

9
00:00:23,429 --> 00:00:21,439
first off jorge thanks so much for

10
00:00:24,950 --> 00:00:23,439
joining me today it's always great to

11
00:00:26,550 --> 00:00:24,960
hear from the people who are behind the

12
00:00:28,070 --> 00:00:26,560
scenes getting all this work done

13
00:00:30,070 --> 00:00:28,080

getting the crew all the science they

14

00:00:31,589 --> 00:00:30,080

need so why don't we start off with

15

00:00:33,430 --> 00:00:31,599

something that's been making that's been

16

00:00:36,150 --> 00:00:33,440

making a lot of news and it has a really

17

00:00:38,950 --> 00:00:36,160

big milestone coming up on august 10th

18

00:00:40,630 --> 00:00:38,960

veggie this is a vegetable

19

00:00:42,069 --> 00:00:40,640

growth experiment tell us a little bit

20

00:00:43,990 --> 00:00:42,079

about you know what it's been doing and

21

00:00:46,709 --> 00:00:44,000

what that big milestone is going to be

22

00:00:49,190 --> 00:00:46,719

yes uh veggie we are all very excited

23

00:00:51,830 --> 00:00:49,200

about veggie uh we're growing lettuce um

24

00:00:54,310 --> 00:00:51,840

in the facility and actually veggie is a

25

00:00:57,029 --> 00:00:54,320

plant uh growth experiment uh or the

26

00:00:58,869 --> 00:00:57,039

facility and we have a

27

00:01:01,990 --> 00:00:58,879

different uh we can choose from

28

00:01:04,149 --> 00:01:02,000

different uh plant material to grow okay

29

00:01:07,670 --> 00:01:04,159

uh at this time we're growing uh lettuce

30

00:01:09,830 --> 00:01:07,680

and um we're getting ready to

31

00:01:11,510 --> 00:01:09,840

harvest uh the crop and actually that's

32

00:01:13,109 --> 00:01:11,520

gonna be on monday uh

33

00:01:13,990 --> 00:01:13,119

this next week

34

00:01:16,789 --> 00:01:14,000

and

35

00:01:17,590 --> 00:01:16,799

we are all very excited uh we're going

36

00:01:20,230 --> 00:01:17,600

to have

37

00:01:22,390 --> 00:01:20,240

several activities uh surrounding uh the

38

00:01:24,710 --> 00:01:22,400

harvest of the lettuce including

39

00:01:27,270 --> 00:01:24,720

actually the consumption of the produce

40

00:01:28,950 --> 00:01:27,280

uh produce this is the first time that

41

00:01:32,390 --> 00:01:28,960

the astronauts have received the

42

00:01:34,469 --> 00:01:32,400

go-ahead to actually eat what they grow

43

00:01:37,990 --> 00:01:34,479

so we've got a couple of

44

00:01:39,350 --> 00:01:38,000

suggestions for the crew some recipes

45

00:01:41,109 --> 00:01:39,360

including

46

00:01:44,230 --> 00:01:41,119

uh maybe a

47

00:01:46,870 --> 00:01:44,240

chicken lettuce wrap or maybe a

48

00:01:49,429 --> 00:01:46,880

lettuce chicken teriyaki

49

00:01:50,870 --> 00:01:49,439

or use it as in a fajita yeah which they

50

00:01:53,350 --> 00:01:50,880

have ingredients yeah that's that's

51
00:01:55,270 --> 00:01:53,360
really big so why and i mean why is that

52
00:01:57,190 --> 00:01:55,280
so huge why is being able to grow your

53
00:02:00,789 --> 00:01:57,200
own food and eat it in space such a big

54
00:02:03,670 --> 00:02:00,799
deal yeah yeah eventually as we want to

55
00:02:05,510 --> 00:02:03,680
extend the duration of humans in space

56
00:02:06,709 --> 00:02:05,520
and eventually go to mars

57
00:02:08,469 --> 00:02:06,719
we want to make sure that we have the

58
00:02:10,550 --> 00:02:08,479
capability to

59
00:02:11,750 --> 00:02:10,560
produce

60
00:02:13,910 --> 00:02:11,760
fresh food

61
00:02:15,670 --> 00:02:13,920
for the astronauts and it has the

62
00:02:17,190 --> 00:02:15,680
nutritional value of course according to

63
00:02:20,229 --> 00:02:17,200

what you're producing what you're

64

00:02:21,830 --> 00:02:20,239

growing but it also has a psychological

65

00:02:23,110 --> 00:02:21,840

value where the crew actually they

66

00:02:26,229 --> 00:02:23,120

really enjoy

67

00:02:28,229 --> 00:02:26,239

growing and seeing the plants grow uh in

68

00:02:29,750 --> 00:02:28,239

space getting a little taste of earth

69

00:02:31,350 --> 00:02:29,760

with them up there oh yes

70

00:02:33,190 --> 00:02:31,360

absolutely so switching gears a little

71

00:02:35,430 --> 00:02:33,200

bit there's a lot of technologies

72

00:02:37,270 --> 00:02:35,440

fascinating technologies being

73

00:02:38,550 --> 00:02:37,280

created and tested and you know

74

00:02:40,070 --> 00:02:38,560

everything onboard the international

75

00:02:41,990 --> 00:02:40,080

space station one of my favorites has

76
00:02:43,750 --> 00:02:42,000
always been robonaut the seventh crew

77
00:02:45,830 --> 00:02:43,760
member on board the space station

78
00:02:47,509 --> 00:02:45,840
where's the scott kelly worked with it a

79
00:02:49,190 --> 00:02:47,519
couple of weeks ago i believe where is

80
00:02:51,589 --> 00:02:49,200
robonaut right now and what's ahead for

81
00:02:53,190 --> 00:02:51,599
that project yes scott helped us a lot

82
00:02:55,030 --> 00:02:53,200
with the uh

83
00:02:58,149 --> 00:02:55,040
intravehicular uh

84
00:03:00,710 --> 00:02:58,159
activity uh mobility test uh with

85
00:03:01,509 --> 00:03:00,720
actually basically what uh a previous

86
00:03:04,149 --> 00:03:01,519
crew

87
00:03:05,910 --> 00:03:04,159
steve swanson installed the legs and an

88
00:03:07,990 --> 00:03:05,920

additional torso

89

00:03:10,550 --> 00:03:08,000

but now we're checking out and making

90

00:03:13,110 --> 00:03:10,560

sure that everything works properly so

91

00:03:15,190 --> 00:03:13,120

scott helped us with with that and as a

92

00:03:17,430 --> 00:03:15,200

matter of fact in the upcoming weeks we

93

00:03:19,910 --> 00:03:17,440

have another session to complete the

94

00:03:22,869 --> 00:03:19,920

checkout and and actually do the the

95

00:03:25,110 --> 00:03:22,879

full uh iva mobility test so it's going

96

00:03:27,750 --> 00:03:25,120

to be taking the first steps

97

00:03:29,509 --> 00:03:27,760

yes yes let's hope yeah that's a that's

98

00:03:31,509 --> 00:03:29,519

what we're hoping for yes we're shooting

99

00:03:32,789 --> 00:03:31,519

for that in addition eventually what

100

00:03:34,309 --> 00:03:32,799

we're going to have we're going to have

101
00:03:35,509 --> 00:03:34,319
is that the crew

102
00:03:38,070 --> 00:03:35,519
the ground

103
00:03:40,789 --> 00:03:38,080
control crews will be able to actually

104
00:03:42,949 --> 00:03:40,799
give commands to robonaut so that it

105
00:03:46,229 --> 00:03:42,959
will actually come out of its

106
00:03:47,990 --> 00:03:46,239
compartment on its own and then and also

107
00:03:50,630 --> 00:03:48,000
stow back in on its own so that will

108
00:03:52,550 --> 00:03:50,640
save crew time and in the future as the

109
00:03:54,789 --> 00:03:52,560
technology develops uh eventually we

110
00:03:56,710 --> 00:03:54,799
will actually to have the capability of

111
00:03:59,670 --> 00:03:56,720
having a robot

112
00:04:02,390 --> 00:03:59,680
robonaut or a robot that can go outside

113
00:04:04,869 --> 00:04:02,400

the space station and do uh the evas

114

00:04:07,350 --> 00:04:04,879

extra vehicular activities instead of

115

00:04:08,630 --> 00:04:07,360

sending a crew member which puts uh puts

116

00:04:11,429 --> 00:04:08,640

them at risk yeah

117

00:04:13,270 --> 00:04:11,439

okay well and something else that has

118

00:04:14,869 --> 00:04:13,280

been happening outside the station is

119

00:04:16,229 --> 00:04:14,879

it's i mean it's been deploying

120

00:04:17,990 --> 00:04:16,239

satellites they've been using a

121

00:04:19,990 --> 00:04:18,000

technology on board to deploy these

122

00:04:21,749 --> 00:04:20,000

cubesats i know there were some that

123

00:04:24,550 --> 00:04:21,759

went out recently what were those doing

124

00:04:26,390 --> 00:04:24,560

in i mean how how cool how revolutionary

125

00:04:28,469 --> 00:04:26,400

is that kind of technology yeah it's

126
00:04:32,950 --> 00:04:28,479
pretty neat yeah and actually last month

127
00:04:36,870 --> 00:04:32,960
we had 16 satellites deployed um 14 of

128
00:04:39,430 --> 00:04:36,880
them are from the planet labs doves

129
00:04:42,070 --> 00:04:39,440
satellites so it's a fleet of satellites

130
00:04:44,629 --> 00:04:42,080
and they're taking pictures uh of earth

131
00:04:47,189 --> 00:04:44,639
from space and especially in the areas

132
00:04:50,070 --> 00:04:47,199
with a higher population and more

133
00:04:51,990 --> 00:04:50,080
agriculturally developed areas so they

134
00:04:52,950 --> 00:04:52,000
send that information back to the ground

135
00:04:54,629 --> 00:04:52,960
for

136
00:04:56,710 --> 00:04:54,639
the users

137
00:04:59,430 --> 00:04:56,720
and then also we had two additional

138
00:05:02,390 --> 00:04:59,440

satellites on that same uh deployment

139

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

sequence um one of them was the uh

140

00:05:08,629 --> 00:05:05,280

centennial one and that one was

141

00:05:11,749 --> 00:05:08,639

actually uh testing new technologies uh

142

00:05:13,670 --> 00:05:11,759

uh for developing a future aircraft and

143

00:05:16,710 --> 00:05:13,680

actually that one in particular is

144

00:05:17,990 --> 00:05:16,720

looking at uh identifying

145

00:05:20,629 --> 00:05:18,000

and tracking

146

00:05:23,590 --> 00:05:20,639

other satellites about the same size or

147

00:05:26,150 --> 00:05:23,600

the the one cube satellite so this one

148

00:05:28,150 --> 00:05:26,160

the centennial one is tracking those uh

149

00:05:31,350 --> 00:05:28,160

satellites and then we have the archive

150

00:05:34,390 --> 00:05:31,360

three which is a longer uh satellite and

151

00:05:36,790 --> 00:05:34,400

that one uh ideally um and and the

152

00:05:37,990 --> 00:05:36,800

objective is to develop a technology and

153

00:05:39,670 --> 00:05:38,000

explore

154

00:05:41,749 --> 00:05:39,680

asteroids or

155

00:05:44,950 --> 00:05:41,759

other

156

00:05:46,390 --> 00:05:44,960

bodies around the inner solar system

157

00:05:48,230 --> 00:05:46,400

okay so i mean that could be something

158

00:05:50,390 --> 00:05:48,240

really important as we continue you know

159

00:05:51,670 --> 00:05:50,400

pushing out to going and grabbing a

160

00:05:53,110 --> 00:05:51,680

piece of an asteroid and then heading

161

00:05:55,590 --> 00:05:53,120

out to mars

162

00:05:57,029 --> 00:05:55,600

right now exactly exactly okay and then

163

00:05:59,510 --> 00:05:57,039

the final one i think we wanted to talk

164

00:06:01,350 --> 00:05:59,520

about today was spheres so those

165

00:06:02,790 --> 00:06:01,360

colorful bowling balls floating around

166

00:06:04,230 --> 00:06:02,800

inside the station always doing a lot of

167

00:06:05,670 --> 00:06:04,240

cool stuff what are some of the

168

00:06:07,749 --> 00:06:05,680

experiments that spheres have been

169

00:06:09,510 --> 00:06:07,759

involved in and what's ahead for those

170

00:06:12,150 --> 00:06:09,520

yes actually we've we've done a couple

171

00:06:13,990 --> 00:06:12,160

of uh spheres slush runs and we have

172

00:06:17,350 --> 00:06:14,000

that look at that yeah actually that one

173

00:06:19,990 --> 00:06:17,360

looks at how the liquids behave in

174

00:06:21,110 --> 00:06:20,000

microgravity when they're moved so

175

00:06:22,469 --> 00:06:21,120

basically

176

00:06:24,469 --> 00:06:22,479

as as you know

177

00:06:26,790 --> 00:06:24,479

with the rockets uh that we use they

178

00:06:28,629 --> 00:06:26,800

have liquid propellants inside now the

179

00:06:30,629 --> 00:06:28,639

the phenomena and the and the fluid

180

00:06:34,230 --> 00:06:30,639

dynamics involved uh

181

00:06:36,230 --> 00:06:34,240

and the analysis of the fluids as they

182

00:06:38,550 --> 00:06:36,240

are launched and then go into micro

183

00:06:41,350 --> 00:06:38,560

gravity it's not completely understood

184

00:06:44,230 --> 00:06:41,360

so we hope to get more information from

185

00:06:46,309 --> 00:06:44,240

uh from this investigation uh from slush

186

00:06:49,430 --> 00:06:46,319

so actually we have the the two

187

00:06:52,870 --> 00:06:49,440

satellites uh moving

188

00:06:55,110 --> 00:06:52,880

a liquid inside a container and with

189

00:06:57,350 --> 00:06:55,120

cameras looking at that so we can

190

00:06:59,029 --> 00:06:57,360

understand better what's happening yeah

191

00:07:01,029 --> 00:06:59,039

and there is another thing spheres is

192

00:07:03,350 --> 00:07:01,039

doing again real soon too isn't there

193

00:07:06,070 --> 00:07:03,360

yes yeah next week we're going to have a

194

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

spheres zero robotics session

195

00:07:08,790 --> 00:07:07,919

and this one is going to be a joint

196

00:07:09,990 --> 00:07:08,800

actually it's going to be very

197

00:07:13,029 --> 00:07:10,000

interesting because we're going to have

198

00:07:14,150 --> 00:07:13,039

the russian uh crew members helping out

199

00:07:17,990 --> 00:07:14,160

with the

200

00:07:20,710 --> 00:07:18,000

actually the the actual test run

201
00:07:22,550 --> 00:07:20,720
as well as the usos uh crew members so

202
00:07:25,670 --> 00:07:22,560
it's going to be a joint effort between

203
00:07:26,710 --> 00:07:25,680
the the two nations uh in getting the

204
00:07:29,189 --> 00:07:26,720
the

205
00:07:31,029 --> 00:07:29,199
experiment going and this is a very

206
00:07:32,070 --> 00:07:31,039
interesting experiment

207
00:07:35,110 --> 00:07:32,080
because

208
00:07:35,830 --> 00:07:35,120
students on the ground design algorithms

209
00:07:38,550 --> 00:07:35,840
to

210
00:07:40,710 --> 00:07:38,560
make the satellites the bowling ball uh

211
00:07:42,309 --> 00:07:40,720
satellites and they get to control them

212
00:07:43,830 --> 00:07:42,319
they control them from the ground yes

213
00:07:45,670 --> 00:07:43,840

well actually they designed the

214

00:07:48,230 --> 00:07:45,680

algorithms on the ground and then the

215

00:07:50,070 --> 00:07:48,240

crew implements uh the algorithms on

216

00:07:52,230 --> 00:07:50,080

orbit so it's going to be very

217

00:07:54,309 --> 00:07:52,240

interesting to see how it goes and who

218

00:07:55,990 --> 00:07:54,319

wins the competition all right well

219

00:07:57,830 --> 00:07:56,000

again that's just a look at just a

220

00:07:59,510 --> 00:07:57,840

handful of the hundreds of experiments

221

00:08:02,550 --> 00:07:59,520

that have taken place and are taking

222

00:08:04,469 --> 00:08:02,560

place for expedition 44. you know lead

223

00:08:06,309 --> 00:08:04,479

increment scientist jorge sotomayor

224

00:08:07,909 --> 00:08:06,319

joining me today thank you so much for

225

00:08:09,670 --> 00:08:07,919

this little behind-the-scenes look real

226

00:08:11,990 --> 00:08:09,680

excited to see things like spheres and