



General T...
and F...

PAO

1
00:00:01,710 --> 00:00:02,370
>> Amiko Kauderer: Hi.

2
00:00:02,370 --> 00:00:04,620
Welcome inside the International
Space Station flight

3
00:00:04,620 --> 00:00:05,650
control room.

4
00:00:05,650 --> 00:00:09,180
We are today with
astronaut Shannon Walker.

5
00:00:09,180 --> 00:00:13,510
Astronaut Shannon Walker was
just -- gosh, two years ago --

6
00:00:13,510 --> 00:00:15,340
aboard that International
Space Station,

7
00:00:15,340 --> 00:00:19,820
and she flew aboard
Expedition 24/25?

8
00:00:19,820 --> 00:00:20,210
>> Shannon Walker:
That's correct.

9
00:00:20,210 --> 00:00:23,300
>> Amiko Kauderer:
And it was 163 days.

10
00:00:23,300 --> 00:00:26,890
And so she knows what this
experience is like docking

11
00:00:26,890 --> 00:00:28,580

to the station and
the hatch opening

12

00:00:28,580 --> 00:00:30,250

and living aboard
the Space Station.

13

00:00:30,250 --> 00:00:31,540

Welcome and thank
you for joining us

14

00:00:31,540 --> 00:00:32,890

to talk to us about this.

15

00:00:32,890 --> 00:00:34,070

>> Shannon Walker: Thank
you, very much for having me.

16

00:00:34,070 --> 00:00:34,820

>> Amiko Kauderer: Great.

17

00:00:34,820 --> 00:00:39,140

So first, let's just talk about
that road to Space Station,

18

00:00:39,140 --> 00:00:41,710

'cause as I understand,
it's a long one.

19

00:00:41,710 --> 00:00:43,280

It's not, you know, just, hey,

20

00:00:43,280 --> 00:00:45,270

I'll get assigned
and there you go.

21

00:00:45,270 --> 00:00:45,840

>> Shannon Walker:
That's correct.

22

00:00:45,840 --> 00:00:47,390

You don't just wake up
one morning and say, hey,

23

00:00:47,390 --> 00:00:48,800

I want to go fly on a rocket.

24

00:00:48,800 --> 00:00:50,900

The training process
is about two and a half

25

00:00:50,900 --> 00:00:53,050

to three years long
depending on which seat

26

00:00:53,050 --> 00:00:54,640

in the Soyuz you're assigned to.

27

00:00:54,640 --> 00:00:57,080

It's a little bit longer
for the people that sit

28

00:00:57,080 --> 00:01:00,200

in what's called the left seat
'cause that is the copilot seat,

29

00:01:00,200 --> 00:01:01,870

and so you spend a
lot of extra time

30

00:01:01,870 --> 00:01:04,170

in Russia learning all
the systems of the Soyuz

31

00:01:04,170 --> 00:01:05,420

and learning how to fly it just

32

00:01:05,420 --> 00:01:07,110

like the commander

of the Soyuz does.

33

00:01:07,110 --> 00:01:09,760

So my training was
about three years long.

34

00:01:09,760 --> 00:01:10,890

>> Amiko Kauderer: Wow.

35

00:01:10,890 --> 00:01:14,160

And so when -- so when
you did get assigned

36

00:01:14,160 --> 00:01:15,860

and then you were
training, tell --

37

00:01:15,860 --> 00:01:17,860

first I guess just tell me
a little bit that training.

38

00:01:17,860 --> 00:01:19,360

I mean, it's not
all just here --

39

00:01:19,360 --> 00:01:20,650

we're here in Mission Control --

40

00:01:20,650 --> 00:01:23,750

we're here in Houston but
you go all over the world.

41

00:01:23,750 --> 00:01:24,220

>> Shannon Walker:
That's correct.

42

00:01:24,220 --> 00:01:25,230

We train all over the world.

43

00:01:25,230 --> 00:01:26,810

We spend a lot of time
in Russia, of course,

44

00:01:26,810 --> 00:01:29,260

because we are flying these
days on the Soyuz space craft,

45

00:01:29,260 --> 00:01:32,090

and so we have to go through a
full training program there just

46

00:01:32,090 --> 00:01:34,910

like we had a training program
here with the space shuttle.

47

00:01:34,910 --> 00:01:38,720

So that training for the Soyuz
takes, oh, six months to a year

48

00:01:38,720 --> 00:01:40,980

that we spend in Russia;
we go back and forth

49

00:01:40,980 --> 00:01:43,180

between Russia and Houston.

50

00:01:43,180 --> 00:01:44,810

Interspersed with
the Soyuz training,

51

00:01:44,810 --> 00:01:46,240

we learn the Space
Station system.

52

00:01:46,240 --> 00:01:49,610

So we spend time in Houston
doing Space Station training.

53

00:01:49,610 --> 00:01:53,610

We spend time in Germany
learning the Columbus module.

54

00:01:53,610 --> 00:01:56,700

We spend time in Japan
learning the Kibo module.

55

00:01:56,700 --> 00:01:58,630

And we spend time in
Canada learning how

56

00:01:58,630 --> 00:01:59,850

to operate the robotic arm.

57

00:01:59,850 --> 00:02:01,740

So we spend a lot of
time all over the world.

58

00:02:01,740 --> 00:02:02,340

>> Amiko Kauderer:
All over the world

59

00:02:02,340 --> 00:02:03,670

and then you eventually fly

60

00:02:03,670 --> 00:02:06,460

and then you're flying
literally all around the world.

61

00:02:06,460 --> 00:02:07,210

>> Shannon Walker:
That's correct.

62

00:02:07,210 --> 00:02:07,780

>> Amiko Kauderer: Good deal.

63

00:02:07,780 --> 00:02:10,940

Well, so, you know,
when -- when you are --

64

00:02:10,940 --> 00:02:14,050

you're doing all this traveling
to train and that sort of thing,

65

00:02:14,050 --> 00:02:16,510

so with your crew
members who you flew with,

66

00:02:16,510 --> 00:02:18,160

do you train together?

67

00:02:18,160 --> 00:02:20,620

So are you a close knit family
before you even get there

68

00:02:20,620 --> 00:02:21,860

to Space Station or --

69

00:02:21,860 --> 00:02:22,650

>> Shannon Walker: You
know, that's kind of one

70

00:02:22,650 --> 00:02:24,780

of the hard parts these
days because you spend a lot

71

00:02:24,780 --> 00:02:26,320

of time not training
with your crew

72

00:02:26,320 --> 00:02:29,150

because everybody's got a
different schedule and it kind

73

00:02:29,150 --> 00:02:32,570

of depends on some of your
duties on the Space Station

74

00:02:32,570 --> 00:02:35,560

or your duties on the Soyuz.

75

00:02:35,560 --> 00:02:38,680

So because I was
copilot on the Soyuz,

76

00:02:38,680 --> 00:02:41,570

I spent more time in Russia.

77

00:02:41,570 --> 00:02:45,700

My crew mate Doug Wheelock was
going to be one of the EVA --

78

00:02:45,700 --> 00:02:47,800

or one of the space walkers,
so he had to spend more time

79

00:02:47,800 --> 00:02:50,090

in Houston doing the
space walk training

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00:02:50,090 --> 00:02:51,370

that I didn't have to do.

81

00:02:51,370 --> 00:02:53,520

And then I spent more time
doing robotics training,

82

00:02:53,520 --> 00:02:56,020

and so it just -- it just
depends, and unfortunately,

83

00:02:56,020 --> 00:02:58,350

you don't get to spend a lot
of time training together,

84

00:02:58,350 --> 00:02:59,920

but we do try and spend
personal time together

85

00:02:59,920 --> 00:03:00,830

so we can get to
know each other.

86

00:03:00,830 --> 00:03:01,320

>> Amiko Kauderer:
You get plenty

87

00:03:01,320 --> 00:03:02,270

of time when you get there.

88

00:03:02,270 --> 00:03:03,120

>> Shannon Walker:
Yes, that's true.

89

00:03:03,120 --> 00:03:04,190

We have lots of time
together in orbit.

90

00:03:04,190 --> 00:03:05,220

>> Amiko Kauderer:
Plenty of togetherness.

91

00:03:05,220 --> 00:03:08,490

So let's now just real
briefly describe for me what

92

00:03:08,490 --> 00:03:10,220

that launch is like for you.

93

00:03:10,220 --> 00:03:10,910

>> Shannon Walker: The launch.

94

00:03:10,910 --> 00:03:12,550

The launch is amazing.

95

00:03:12,550 --> 00:03:14,680

We actually enter
the Soyuz about two

96

00:03:14,680 --> 00:03:16,060

and a half hours
before the launch.

97

00:03:16,060 --> 00:03:17,580

We go through a bunch
of system checks,

98

00:03:17,580 --> 00:03:20,650

and once those checks are done,
we've got about 45 minutes

99

00:03:20,650 --> 00:03:21,970

to an hour we just have to sit

100

00:03:21,970 --> 00:03:24,410

and wait while the ground
finishes the preparations

101

00:03:24,410 --> 00:03:25,050

for the shuttle.

102

00:03:25,050 --> 00:03:27,620

So we're sitting there calmly
just waiting, waiting, waiting,

103

00:03:27,620 --> 00:03:30,370

and all of a sudden the ground
starts talking to you again

104

00:03:30,370 --> 00:03:32,370

and you start hearing
things happen beneath you.

105

00:03:32,370 --> 00:03:34,230

You start hearing these
big valves moving.

106

00:03:34,230 --> 00:03:36,280

You can tell that the engines are being pressurized

107

00:03:36,280 --> 00:03:38,250

and then you know something's going to happen,

108

00:03:38,250 --> 00:03:40,130

and you're watching the clock tick down to the time

109

00:03:40,130 --> 00:03:42,800

of your launch, and then the engines light

110

00:03:42,800 --> 00:03:45,300

and everything starts rumbling and --

111

00:03:45,300 --> 00:03:48,140

and you're not moving yet, it's just getting ready to go,

112

00:03:48,140 --> 00:03:50,660

and when the engines are at full power, you slowly lift off

113

00:03:50,660 --> 00:03:53,260

and you get -- you can feel the speed build up and build up,

114

00:03:53,260 --> 00:03:55,160

and there's so much noise and so much vibrations,

115

00:03:55,160 --> 00:03:57,050

it's just an amazing ride.

116

00:03:57,050 --> 00:03:59,980

>> Amiko Kauderer: What are you feeling when you're going up?

117

00:03:59,980 --> 00:04:02,810

>> Shannon Walker: You feel -- well, one, a lot of excitement.

118

00:04:02,810 --> 00:04:04,010

It's very exciting.

119

00:04:04,010 --> 00:04:07,980

You also feel the pressure from the g-forces, so you have --

120

00:04:07,980 --> 00:04:09,770

you're -- you're laying back in your seats

121

00:04:09,770 --> 00:04:11,520

and so you have pressure on your chest,

122

00:04:11,520 --> 00:04:14,010

so it's like someone is sitting on your chest, and you build

123

00:04:14,010 --> 00:04:18,750

up to about 4-Gs going uphill, and so it's just a lot

124

00:04:18,750 --> 00:04:20,410

of vibration, a lot of noise, a lot of pressure,

125

00:04:20,410 --> 00:04:21,230

and a lot of excitement.

126

00:04:21,230 --> 00:04:22,190

>> Amiko Kauderer: And then once you get there,

127

00:04:22,190 --> 00:04:23,580

how do you know you've made it?

128

00:04:23,580 --> 00:04:25,660

>> Shannon Walker: When -- you know you make it into orbit

129

00:04:25,660 --> 00:04:29,130

when the third stage engine cuts off and separates,

130

00:04:29,130 --> 00:04:31,840

there is a huge bang, and then all of a sudden it's quiet

131

00:04:31,840 --> 00:04:33,950

and you're just kind of hanging in your seats and you know

132

00:04:33,950 --> 00:04:35,230

that you're floating in space.

133

00:04:35,230 --> 00:04:35,770

>> Amiko Kauderer: Wow.

134

00:04:35,770 --> 00:04:36,800

That's exciting.

135

00:04:36,800 --> 00:04:40,030

Okay. So now let's talk about that two-day trip.

136

00:04:40,030 --> 00:04:42,680

'Cause it's a two-day trip to the International Space Station.

137

00:04:42,680 --> 00:04:45,600

So you have all this

anticipation, this buildup,

138

00:04:45,600 --> 00:04:46,830
and this great adrenalin rush

139

00:04:46,830 --> 00:04:47,970
and you're there
and you're floating.

140

00:04:47,970 --> 00:04:49,390
But two days?

141

00:04:49,390 --> 00:04:50,770
>> Shannon Walker: Yeah,
two days can be a long time.

142

00:04:50,770 --> 00:04:53,640
You're -- there's a lot of time
where you've got a lot activity

143

00:04:53,640 --> 00:04:54,360
and there's a lot of time

144

00:04:54,360 --> 00:04:56,050
when you have absolutely
nothing to do.

145

00:04:56,050 --> 00:04:59,120
So once you get on orbit,
you have to do a lot

146

00:04:59,120 --> 00:05:01,180
of systems checks, so you're
-- as soon as you're in orbit,

147

00:05:01,180 --> 00:05:03,640
you're busy -- you're
still busy from the launch.

148

00:05:03,640 --> 00:05:06,240

You make sure that the
pressurization is holding

149

00:05:06,240 --> 00:05:08,360

in the spacecraft, you
do a lot of leak checks,

150

00:05:08,360 --> 00:05:10,550

you check out all the
motion control systems.

151

00:05:10,550 --> 00:05:11,740

That takes a couple of orbits.

152

00:05:11,740 --> 00:05:15,850

And then about two orbits
after you're in space,

153

00:05:15,850 --> 00:05:18,350

you actually do the
first rendezvous burns,

154

00:05:18,350 --> 00:05:21,160

the first engine burns to put
you on the right trajectory

155

00:05:21,160 --> 00:05:22,630

to reach the Space Station.

156

00:05:22,630 --> 00:05:24,120

>> Amiko Kauderer:
And how was the space?

157

00:05:24,120 --> 00:05:26,190

>> Shannon Walker: Oh, how's
the space inside the Soyuz?

158

00:05:26,190 --> 00:05:26,530

>> Amiko Kauderer: Uh-huh.

159

00:05:26,530 --> 00:05:27,270

>> Shannon Walker:

It's kind of small.

160

00:05:27,270 --> 00:05:28,430

It is kind of small.

161

00:05:28,430 --> 00:05:31,730

The hatch -- the descent module

where you are -- where you --

162

00:05:31,730 --> 00:05:34,680

you ride to space and you

come home is a very small --

163

00:05:34,680 --> 00:05:35,350

small location.

164

00:05:35,350 --> 00:05:37,340

But you do have an orbital

compartment above you.

165

00:05:37,340 --> 00:05:39,260

You get to open the hatch, and

you do have a little more space

166

00:05:39,260 --> 00:05:40,720

to move around in

for those two days.

167

00:05:40,720 --> 00:05:41,400

>> Amiko Kauderer: Okay.

168

00:05:41,400 --> 00:05:44,830

Wow. So hopefully you like

the people you're flying with.

169

00:05:44,830 --> 00:05:45,590

>> Shannon Walker: Yes,
you better like them.

170
00:05:45,590 --> 00:05:46,860

>> Amiko Kauderer:
Get along anyway.

171
00:05:46,860 --> 00:05:48,800

If not, you're going
to force yourself to.

172
00:05:48,800 --> 00:05:51,260
So I have a question here now.

173
00:05:51,260 --> 00:05:54,070

We've -- we pulled
public -- thank you, guys,

174
00:05:54,070 --> 00:05:55,300
for sending us the questions.

175
00:05:55,300 --> 00:05:57,500

We do have a couple of
Twitter questions for you.

176
00:05:57,500 --> 00:06:01,240

One of them comes
from IBhappyhopi:

177
00:06:01,240 --> 00:06:03,680

How long do they stay
in the Sokul Suits?

178
00:06:03,680 --> 00:06:05,080
until docking?

179
00:06:05,080 --> 00:06:06,170

>> Shannon Walker:
That's a good question.

180
00:06:06,170 --> 00:06:07,810
So the Sokul Suits
are the pressure suits

181
00:06:07,810 --> 00:06:11,080
that we wear during launch
and entry to, you know,

182
00:06:11,080 --> 00:06:12,460
to protect us if
there's a problem.

183
00:06:12,460 --> 00:06:14,940
If there's a big leak in the --

184
00:06:14,940 --> 00:06:16,720
in the Soyuz, we
would still be safe.

185
00:06:16,720 --> 00:06:19,800
So we are in our pressure
suits for a couple

186
00:06:19,800 --> 00:06:21,180
of orbits after launch.

187
00:06:21,180 --> 00:06:24,460
And so we're able to get out
of them maybe two and a half

188
00:06:24,460 --> 00:06:26,250
or three hours after you launch.

189
00:06:26,250 --> 00:06:28,500
And we're in them for about
five hours before launch.

190
00:06:28,500 --> 00:06:30,400
So you're in your suit for

a long time but you do get

191

00:06:30,400 --> 00:06:33,650

to take them off, you get into
some regular clothes and spend

192

00:06:33,650 --> 00:06:35,850

that time for the two days
just in regular clothes.

193

00:06:35,850 --> 00:06:39,300

And then right before docking,
you put your suits back on as --

194

00:06:39,300 --> 00:06:40,840

just as a safety precaution

195

00:06:40,840 --> 00:06:43,510

because you are essentially
colliding with a big object

196

00:06:43,510 --> 00:06:45,290

in space and you want to
make sure everything's going

197

00:06:45,290 --> 00:06:45,690

to be safe.

198

00:06:45,690 --> 00:06:45,930

>> Amiko Kauderer: You're safe.

199

00:06:45,930 --> 00:06:47,520

As safe as you can be, right?

200

00:06:47,520 --> 00:06:49,050

So that just brought up this --

201

00:06:49,050 --> 00:06:51,660

the second Twitter question

that we do have here.

202

00:06:51,660 --> 00:06:53,700

This one comes from jkestner77:

203

00:06:53,700 --> 00:06:58,110

Has docking become routine, or is it dangerous?

204

00:06:58,110 --> 00:07:00,340

>> Shannon Walker: I would have to say yes and yes.

205

00:07:00,340 --> 00:07:05,250

The technology that we use for docking has been out there

206

00:07:05,250 --> 00:07:07,630

for a long time and it works extremely well,

207

00:07:07,630 --> 00:07:10,650

but it is dangerous because you are going incredibly fast

208

00:07:10,650 --> 00:07:13,450

and you are, like I said, trying to collide with a big object

209

00:07:13,450 --> 00:07:15,690

in space in precisely the right point.

210

00:07:15,690 --> 00:07:18,690

And so we do spend a lot of time training for that,

211

00:07:18,690 --> 00:07:20,690

making sure we know how to fly the Soyuz.

212

00:07:20,690 --> 00:07:23,450

I should point out
that in most cases,

213

00:07:23,450 --> 00:07:25,490

the Soyuz dockings are
done automatically.

214

00:07:25,490 --> 00:07:28,540

We've got a very good radar
system and computer systems

215

00:07:28,540 --> 00:07:31,520

and it -- and the motion
control system will guide you

216

00:07:31,520 --> 00:07:34,310

into the Space Station, but just
in case something goes wrong,

217

00:07:34,310 --> 00:07:37,060

one of the pieces of equipment
fails, you have to be prepared

218

00:07:37,060 --> 00:07:38,900

to fly it in yourself, and
that's what we spend a lot

219

00:07:38,900 --> 00:07:41,140

of time practicing so
we can do it safely.

220

00:07:41,140 --> 00:07:42,220

>> Amiko Kauderer: And
hopefully we don't have

221

00:07:42,220 --> 00:07:43,380

to do that, though, right?

222

00:07:43,380 --> 00:07:43,620

>> Shannon Walker: Right.

223

00:07:43,620 --> 00:07:44,680

Exactly.

224

00:07:44,680 --> 00:07:46,400

>> Amiko Kauderer: So
let's talk about docking.

225

00:07:46,400 --> 00:07:48,690

As you're approaching, that's
got to be a really exciting time

226

00:07:48,690 --> 00:07:51,590

for you guys, but just
kind of explain to me --

227

00:07:51,590 --> 00:07:54,000

'cause we usually see the
station side, you know,

228

00:07:54,000 --> 00:07:55,990

everyone being excited
and they've been waiting

229

00:07:55,990 --> 00:07:57,920

for a while for, you know,
new company and whatnot,

230

00:07:57,920 --> 00:07:59,860

but what's going on
aboard the Soyuz?

231

00:07:59,860 --> 00:08:00,880

I mean, it's been a long trip.

232

00:08:00,880 --> 00:08:02,600

>> Shannon Walker: It

has been a long trip

233

00:08:02,600 --> 00:08:04,730

and the excitement is
building, but it's a --

234

00:08:04,730 --> 00:08:07,620

it is a time where you really
have to focus and make sure

235

00:08:07,620 --> 00:08:08,780

that everything is going right,

236

00:08:08,780 --> 00:08:10,970

make sure all the systems
are working perfectly.

237

00:08:10,970 --> 00:08:13,530

So the three of us in the
Soyuz are sitting in our --

238

00:08:13,530 --> 00:08:15,800

in our seats in the
descent module

239

00:08:15,800 --> 00:08:18,310

and we are working very hard.

240

00:08:18,310 --> 00:08:20,450

We actually don't have
good views of the station.

241

00:08:20,450 --> 00:08:22,930

We've got little bitty
windows on the Soyuz that point

242

00:08:22,930 --> 00:08:25,090

out to the side, the
station is in front of us,

243

00:08:25,090 --> 00:08:28,340

so we can't really see the
station when we're coming

244

00:08:28,340 --> 00:08:30,080

up to it, although when
I did look out my window,

245

00:08:30,080 --> 00:08:32,800

I could see the very tips of the
solar arrays, but I don't have

246

00:08:32,800 --> 00:08:34,490

that big beautiful
view that you'd --

247

00:08:34,490 --> 00:08:35,980

you would think you would have

248

00:08:35,980 --> 00:08:37,610

when you're flying
up to the station.

249

00:08:37,610 --> 00:08:39,670

So it's a busy time for
the crew inside the Soyuz.

250

00:08:39,670 --> 00:08:40,080

>> Amiko Kauderer: Yeah.

251

00:08:40,080 --> 00:08:42,120

Okay. So capture.

252

00:08:42,120 --> 00:08:42,910

Then what?

253

00:08:42,910 --> 00:08:44,580

>> Shannon Walker: So
capture, you kind of thunk

254

00:08:44,580 --> 00:08:49,360

into the station, you feel the
latches latch, some hooks drive,

255

00:08:49,360 --> 00:08:52,620

and then it's a -- and then
it's a hurry up and wait really

256

00:08:52,620 --> 00:08:54,260

because you have to make sure

257

00:08:54,260 --> 00:08:57,080

that nothing went
wrong during docking,

258

00:08:57,080 --> 00:08:59,340

meaning that you didn't knock
a hole into your spacecraft.

259

00:08:59,340 --> 00:09:00,260

So we do leak checks.

260

00:09:00,260 --> 00:09:04,070

We do a leak check of the
area between the Soyuz

261

00:09:04,070 --> 00:09:08,520

and the Space Station, we do a
leak check of the Soyuz itself

262

00:09:08,520 --> 00:09:10,600

to make sure it's still
leak tight, and when all

263

00:09:10,600 --> 00:09:12,460

of that is good --
and we do change

264

00:09:12,460 --> 00:09:14,850
out of our Sokul Suits back
into our regular clothes --

265
00:09:14,850 --> 00:09:16,300
when all of that is
good, couple hours

266
00:09:16,300 --> 00:09:18,640
after we've reached the
station, we're finally able

267
00:09:18,640 --> 00:09:21,250
to open the hatch and greet our
friends on the Space Station.

268
00:09:21,250 --> 00:09:21,710
>> Amiko Kauderer: Great.

269
00:09:21,710 --> 00:09:24,380
And I'm sure -- so that
explains actually why it takes a

270
00:09:24,380 --> 00:09:24,930
couple hours.

271
00:09:24,930 --> 00:09:26,520
So last night's docking occurred

272
00:09:26,520 --> 00:09:30,830
at 11:51 central time last
night, and then the hatches open

273
00:09:30,830 --> 00:09:32,310
at 2:23 in the morning.

274
00:09:32,310 --> 00:09:33,460
That sounds pretty nominal

275

00:09:33,460 --> 00:09:35,480
because that was
what was planned.

276
00:09:35,480 --> 00:09:37,720
I mean, I think they
had an 11:53 docking,

277
00:09:37,720 --> 00:09:39,170
which is pretty much,
like, perfect,

278
00:09:39,170 --> 00:09:42,130
and then 2:25 a.m.
central time hatch opening,

279
00:09:42,130 --> 00:09:43,800
so it just went along perfectly.

280
00:09:43,800 --> 00:09:44,130
>> Shannon Walker: Yeah.

281
00:09:44,130 --> 00:09:45,290
That's a perfect schedule.

282
00:09:45,290 --> 00:09:47,370
And most of that is taken
up with the leak checks,

283
00:09:47,370 --> 00:09:49,640
and it takes a long
time to check --

284
00:09:49,640 --> 00:09:50,860
to check the pressurizations

285
00:09:50,860 --> 00:09:53,500
because you could have a
really tiny leak and you want

286

00:09:53,500 --> 00:09:56,120

to know -- obviously, if
there's big leak in the --

287

00:09:56,120 --> 00:09:58,260

in the Soyuz somewhere,
you'd know that right away,

288

00:09:58,260 --> 00:09:59,830

but you're looking
for the tiny leaks

289

00:09:59,830 --> 00:10:01,730

and so that's why it
just takes time to do.

290

00:10:01,730 --> 00:10:02,180

>> Amiko Kauderer: Sure.

291

00:10:02,180 --> 00:10:03,530

And I'm going to flip it on you.

292

00:10:03,530 --> 00:10:05,080

So you were also on station

293

00:10:05,080 --> 00:10:07,100

when you had a new
crew join you guys.

294

00:10:07,100 --> 00:10:08,980

So what is -- what
are you guys doing?

295

00:10:08,980 --> 00:10:11,160

>> Shannon Walker: Yeah,
that's an exciting time

296

00:10:11,160 --> 00:10:12,280

for the crew on the station.

297

00:10:12,280 --> 00:10:17,420

So the -- we have a couple
of places where we can watch.

298

00:10:17,420 --> 00:10:20,320

We do have some TV screens
so we're getting video,

299

00:10:20,320 --> 00:10:23,700

and we can look out the windows
and see the Soyuz approach.

300

00:10:23,700 --> 00:10:27,700

And for one, Soyuz -- for
Soyuz docking I actually went

301

00:10:27,700 --> 00:10:31,060

to the hatch area where
they would be docking

302

00:10:31,060 --> 00:10:34,680

and put my ear next to the hatch
so I could hear them attach

303

00:10:34,680 --> 00:10:36,340

to the station which
was kind of neat.

304

00:10:36,340 --> 00:10:37,560

>> Amiko Kauderer:
Oh, that's fun.

305

00:10:37,560 --> 00:10:39,110

That sounds really fun.

306

00:10:39,110 --> 00:10:42,730

So hatches open, you
greet each other,

307

00:10:42,730 --> 00:10:45,160

there's a welcome ceremony, and
then you have an opportunity

308

00:10:45,160 --> 00:10:47,690

to talk with friends and
family who actually travel

309

00:10:47,690 --> 00:10:50,090

that long way to
see you lift off.

310

00:10:50,090 --> 00:10:51,230

What is that like?

311

00:10:51,230 --> 00:10:52,290

>> Shannon Walker:
That's pretty neat.

312

00:10:52,290 --> 00:10:55,470

And it is really special because
the crew in the Soyuz has been

313

00:10:55,470 --> 00:10:58,320

out of view for two days, and
so I think it's really important

314

00:10:58,320 --> 00:11:01,390

that the family gets a chance
and your friends and the world

315

00:11:01,390 --> 00:11:03,820

to get a chance to see that,
you know, that everybody's okay

316

00:11:03,820 --> 00:11:07,020

and you can -- you can say hi
to your friends and family,

317

00:11:07,020 --> 00:11:09,410
and then -- then say, you
know, I finally made it.

318
00:11:09,410 --> 00:11:12,490
I've worked this long and here I
am and I'm ready to get to work.

319
00:11:12,490 --> 00:11:12,910
>> Amiko Kauderer: Yeah.

320
00:11:12,910 --> 00:11:15,440
And I'm sure it's probably
pretty nice to know --

321
00:11:15,440 --> 00:11:16,770
knowing that you
had that family --

322
00:11:16,770 --> 00:11:19,110
that support there knowing
that they're going to be

323
00:11:19,110 --> 00:11:20,960
with you all along the way
even though you're not --

324
00:11:20,960 --> 00:11:23,750
you're many, many miles
away for quite a long time.

325
00:11:23,750 --> 00:11:24,180
>> Shannon Walker: Absolutely.

326
00:11:24,180 --> 00:11:24,800
No question.

327
00:11:24,800 --> 00:11:28,340
It is a -- it is a long training
process, you're in orbit

328

00:11:28,340 --> 00:11:31,200
for a long time, and none of it
is possible without the support

329

00:11:31,200 --> 00:11:32,140
of your friends and family.

330

00:11:32,140 --> 00:11:32,700
>> Amiko Kauderer: Sure.

331

00:11:32,700 --> 00:11:35,110
Now, on station, first
order of business.

332

00:11:35,110 --> 00:11:35,750
>> Shannon Walker: First order

333

00:11:35,750 --> 00:11:37,800
of business actually
a short break

334

00:11:37,800 --> 00:11:38,880
after the welcome ceremony,

335

00:11:38,880 --> 00:11:41,260
and then you actually have a
safety briefing, because you're

336

00:11:41,260 --> 00:11:42,800
in a new vehicle,
you need to make sure

337

00:11:42,800 --> 00:11:44,160
that you refresh your memory

338

00:11:44,160 --> 00:11:45,460
where all the safety
equipment is.

339

00:11:45,460 --> 00:11:47,140

So that is the first
thing that happens.

340

00:11:47,140 --> 00:11:48,940

And then after that,
hopefully a little bite to eat

341

00:11:48,940 --> 00:11:49,940

because you're probably
pretty hungry.

342

00:11:49,940 --> 00:11:51,470

>> Amiko Kauderer:
And do you tour?

343

00:11:51,470 --> 00:11:52,880

I guess --

344

00:11:52,880 --> 00:11:54,130

>> Shannon Walker: You take
a tour of the Space Station

345

00:11:54,130 --> 00:11:55,320

as you're doing your
safety briefing.

346

00:11:55,320 --> 00:11:57,230

So you'll actually go
through every module,

347

00:11:57,230 --> 00:12:00,440

and the crew that's already
on the station will point out,

348

00:12:00,440 --> 00:12:02,770

you know, here -- here are
the fire extinguishers,

349

00:12:02,770 --> 00:12:03,810

here are the valves
that we'll need

350

00:12:03,810 --> 00:12:05,910

to operate should we
have a fire or depress

351

00:12:05,910 --> 00:12:07,770

or a toxic atmosphere.

352

00:12:07,770 --> 00:12:10,090

And so you go through
and refresh your memory.

353

00:12:10,090 --> 00:12:11,610

It's kind of a quick run-through

354

00:12:11,610 --> 00:12:15,020

because you actually have a more
thorough one a day or two later

355

00:12:15,020 --> 00:12:17,580

when you've had time to sort
of collect your thoughts

356

00:12:17,580 --> 00:12:20,630

and get a good night's sleep
and process information better,

357

00:12:20,630 --> 00:12:22,810

but you do have that first
run-through, and then,

358

00:12:22,810 --> 00:12:25,340

since it has been a long day,
usually it's a bite to eat,

359

00:12:25,340 --> 00:12:27,060

set up your crew quarters,
and then go to sleep.

360

00:12:27,060 --> 00:12:27,660

>> Amiko Kauderer: Right.

361

00:12:27,660 --> 00:12:31,650

So I know the crew that
has now joined Sunny, Aki,

362

00:12:31,650 --> 00:12:32,970

and Yuri are going
to spend some time

363

00:12:32,970 --> 00:12:34,370

with some familiarization tasks.

364

00:12:34,370 --> 00:12:36,920

Luckily, all three of
them have flown before.

365

00:12:36,920 --> 00:12:43,340

But also just adjusting to
space, how long does that take,

366

00:12:43,340 --> 00:12:46,630

I mean, for you to adjust
and get kind of, you know --

367

00:12:46,630 --> 00:12:46,810

>> Shannon Walker: Yeah.

368

00:12:46,810 --> 00:12:49,340

Adjusting to space, it really
depends on the individual.

369

00:12:49,340 --> 00:12:51,380

Some people adjust
quite quickly,

370

00:12:51,380 --> 00:12:53,710

some people it's more slowly.

371

00:12:53,710 --> 00:12:55,750

Some people have go to
through two adjustments.

372

00:12:55,750 --> 00:12:58,350

You may adjust into space
while you're on the Soyuz,

373

00:12:58,350 --> 00:13:00,220

and then you get into
the Space Station,

374

00:13:00,220 --> 00:13:01,290

it's a much bigger volume

375

00:13:01,290 --> 00:13:03,880

and you have a different
adjustment period.

376

00:13:03,880 --> 00:13:06,960

For me, I felt fine the whole
time, but it took me awhile

377

00:13:06,960 --> 00:13:10,220

to sort of learn how to
fly about gracefully.

378

00:13:10,220 --> 00:13:12,930

You really have to learn how
hard you have to push off

379

00:13:12,930 --> 00:13:14,780

so you don't go crashing
into equipment,

380

00:13:14,780 --> 00:13:15,710

into walls and things.

381

00:13:15,710 --> 00:13:19,920

So it just -- it takes a while
to get your sea legs as it were.

382

00:13:19,920 --> 00:13:20,490

>> Amiko Kauderer: Yeah.

383

00:13:20,490 --> 00:13:23,780

And I know, you know, with you,
you were there for 163 days.

384

00:13:23,780 --> 00:13:27,410

I'm sure after some point in
time, I think I've even heard,

385

00:13:27,410 --> 00:13:30,430

that there were some games to
see who can fly the furthest

386

00:13:30,430 --> 00:13:31,860

without knocking into anything.

387

00:13:31,860 --> 00:13:32,910

>> Shannon Walker:
Yeah, we would do that.

388

00:13:32,910 --> 00:13:35,610

We would -- you know, when
we had some spare time,

389

00:13:35,610 --> 00:13:37,710

and we said, we've got to take
advantage of this atmosphere.

390

00:13:37,710 --> 00:13:38,570

We've got to have some fun.

391

00:13:38,570 --> 00:13:41,650

So we would try to fly for one
end of the station to the other

392

00:13:41,650 --> 00:13:43,720

without running into things.

393

00:13:43,720 --> 00:13:46,330

And then my colleague
Dougie and I would kind

394

00:13:46,330 --> 00:13:47,770

of do these do-si-does
where we would --

395

00:13:47,770 --> 00:13:50,230

we would do a little
loop-to-loop and try

396

00:13:50,230 --> 00:13:51,950

to head back the
direction that we came,

397

00:13:51,950 --> 00:13:53,500

but that was never successful

398

00:13:53,500 --> 00:13:54,990

because I think we
had a mass problem.

399

00:13:54,990 --> 00:13:57,000

Doug weighs a lot more
than I do, a lot more mass,

400

00:13:57,000 --> 00:13:59,660

and so I was always being flung
off into some other direction

401

00:13:59,660 --> 00:14:01,550

that I didn't want to go.

402

00:14:01,550 --> 00:14:02,110

>> Amiko Kauderer: That's great.

403

00:14:02,110 --> 00:14:04,750

Well, and spare time is
just hard to come by there

404

00:14:04,750 --> 00:14:06,360

on the Space Station
so you definitely have

405

00:14:06,360 --> 00:14:09,050

to take advantage of
it when it's there.

406

00:14:09,050 --> 00:14:12,810

So I'm going to go ahead and
ask you another quick couple

407

00:14:12,810 --> 00:14:15,000

of questions that came
to us from Twitter.

408

00:14:15,000 --> 00:14:19,990

This one comes from cyrusdubash:
What speed is ISS traveling

409

00:14:19,990 --> 00:14:21,570

at at the time you're docking?

410

00:14:21,570 --> 00:14:24,100

And after docking, is
the ISS still moving,

411

00:14:24,100 --> 00:14:25,460

and if so, at what speed?

412

00:14:25,460 --> 00:14:27,450

>> Shannon Walker: Well,
that's a very good question.

413
00:14:27,450 --> 00:14:31,440
The station is moving at
roughly 17,500 miles an hour

414
00:14:31,440 --> 00:14:33,810
or roughly 30,000
kilometers an hour.

415
00:14:33,810 --> 00:14:35,090
And it is moving that fast

416
00:14:35,090 --> 00:14:37,700
through the entire docking
process and afterwards.

417
00:14:37,700 --> 00:14:40,570
So what the Soyuz does,
the station's in orbit

418
00:14:40,570 --> 00:14:43,360
and the Soyuz plays catch up
to it, and then you sort of go

419
00:14:43,360 --> 00:14:45,840
into a holding pattern.

420
00:14:45,840 --> 00:14:47,660
So you're matching the
speed with the station,

421
00:14:47,660 --> 00:14:49,070
and then you're slowly
inching forward.

422
00:14:49,070 --> 00:14:52,810
So it looks slow on the TV
video that you see down,

423

00:14:52,810 --> 00:14:55,820
but you're actually zipping
through space pretty fast.

424

00:14:55,820 --> 00:14:56,010
>> Amiko Kauderer: Wow.

425

00:14:56,010 --> 00:14:58,470
So now, just one other thing.

426

00:14:58,470 --> 00:14:59,430
So one of the activities

427

00:14:59,430 --> 00:15:02,110
that the crew is doing
aboard Space Station today,

428

00:15:02,110 --> 00:15:05,870
the new crew members, they are
setting up their crew quarters.

429

00:15:05,870 --> 00:15:06,760
Can you tell me a little

430

00:15:06,760 --> 00:15:08,790
about what the crew
quarters is like and --

431

00:15:08,790 --> 00:15:08,880
>> Shannon Walker: Yeah.

432

00:15:08,880 --> 00:15:09,910
The crew quarters are --

433

00:15:09,910 --> 00:15:12,150
you're only personal
space on the station.

434

00:15:12,150 --> 00:15:16,620

It's a very small space about
the size of, I would say,

435

00:15:16,620 --> 00:15:19,790

an old phone booth, or like
the red British phone booths.

436

00:15:19,790 --> 00:15:20,910

It's about that big.

437

00:15:20,910 --> 00:15:24,090

You have a sleeping bag inside
that's attached to a wall

438

00:15:24,090 --> 00:15:25,220

and that's where you sleep.

439

00:15:25,220 --> 00:15:26,820

You actually have
a laptop inside

440

00:15:26,820 --> 00:15:29,640

where you can get your
e-mail and make phone calls

441

00:15:29,640 --> 00:15:31,100

to your friends and family.

442

00:15:31,100 --> 00:15:33,960

And then you have a few of your
clothes that are in there --

443

00:15:33,960 --> 00:15:35,710

you don't have all your clothes
'cause you don't want six months

444

00:15:35,710 --> 00:15:37,830

worth of clothes inside

your crew quarters --

445

00:15:37,830 --> 00:15:40,900

but, you know, the clothes
that you wear for about a week,

446

00:15:40,900 --> 00:15:43,860

your exercise clothes, and
things like that and --

447

00:15:43,860 --> 00:15:45,090

are in the crew quarters
with you,

448

00:15:45,090 --> 00:15:47,550

and what other personal items,
like if you brought pictures

449

00:15:47,550 --> 00:15:49,870

of family, you can put those
up inside your crew quarters.

450

00:15:49,870 --> 00:15:51,220

>> Amiko Kauderer:
Oh, very good.

451

00:15:51,220 --> 00:15:56,450

Well, so while flying to space
and being on the Space Station,

452

00:15:56,450 --> 00:16:00,830

a lot of the activities seem to
be a lot of routine maintenance

453

00:16:00,830 --> 00:16:02,450

and upkeep because, you know,

454

00:16:02,450 --> 00:16:03,730

it's just like being
at home, right?

455

00:16:03,730 --> 00:16:05,240

We have to maintain our home.

456

00:16:05,240 --> 00:16:08,870

But also there is science.

457

00:16:08,870 --> 00:16:11,430

And so this next question is

-- kind of talks about science,

458

00:16:11,430 --> 00:16:12,840

and I want to go ahead

and ask this one.

459

00:16:12,840 --> 00:16:16,460

This one came on

Twitter from jonesWCaleb:

460

00:16:16,460 --> 00:16:19,770

How can I best kindle my

daughter's interest in science?

461

00:16:19,770 --> 00:16:22,640

>> Shannon Walker: Oh,

that's a good question.

462

00:16:22,640 --> 00:16:24,960

You know, it's always tough

to answer questions like that.

463

00:16:24,960 --> 00:16:27,840

First, you got to see where

your daughter's interests lie.

464

00:16:27,840 --> 00:16:30,830

She may be -- and by that I

mean she may be interested

465

00:16:30,830 --> 00:16:32,250
in a biological sciences
as opposed

466
00:16:32,250 --> 00:16:33,340
to the physical sciences.

467
00:16:33,340 --> 00:16:37,820
And so if you can
pick a direction,

468
00:16:37,820 --> 00:16:42,360
then maybe you can show
things, do experiments at home.

469
00:16:42,360 --> 00:16:45,800
Science is a lot of fun and
so you get kids involved

470
00:16:45,800 --> 00:16:47,310
at a young age and
sort of thinking

471
00:16:47,310 --> 00:16:51,830
about how the world works and
what happens if I do something,

472
00:16:51,830 --> 00:16:55,070
they're going to be interested
in science for the long haul.

473
00:16:55,070 --> 00:16:58,950
So I'd say start introducing
fun experiments at home

474
00:16:58,950 --> 00:17:00,930
and see where it takes you.

475
00:17:00,930 --> 00:17:02,280
>> Amiko Kauderer: And then

you never know what's going

476

00:17:02,280 --> 00:17:04,190
to happen, because they may
be doing science all the time

477

00:17:04,190 --> 00:17:06,560
around the house and you
may be sorry you did that.

478

00:17:06,560 --> 00:17:07,220
>> Shannon Walker:
Well, that's true.

479

00:17:07,220 --> 00:17:07,780
You never know.

480

00:17:07,780 --> 00:17:09,600
But think of it as a good thing.

481

00:17:09,600 --> 00:17:10,680
>> Amiko Kauderer:
That's very good.

482

00:17:10,680 --> 00:17:14,070
So just one last
question before we go.

483

00:17:14,070 --> 00:17:16,880
Speaking of science, so what was
your favorite science experiment

484

00:17:16,880 --> 00:17:17,850
while you were there?

485

00:17:17,850 --> 00:17:19,580
>> Oh, that's a good question.

486

00:17:19,580 --> 00:17:22,690

When I was on the station,
we had something like 100 --

487

00:17:22,690 --> 00:17:25,040

I forget -- 130 different
experiments going,

488

00:17:25,040 --> 00:17:27,440

so unfortunately we don't
get to spend a lot of time

489

00:17:27,440 --> 00:17:28,730

with too many of them.

490

00:17:28,730 --> 00:17:31,200

I thought some of the most
interesting ones were ones

491

00:17:31,200 --> 00:17:32,950

where I was the test subject.

492

00:17:32,950 --> 00:17:36,930

We were studying how the human
body reacted to various things.

493

00:17:36,930 --> 00:17:41,510

We were doing a study on how
types of protein you eat --

494

00:17:41,510 --> 00:17:43,580

animal protein versus
vegetable protein --

495

00:17:43,580 --> 00:17:47,330

how that affects your bone
and muscle mass, and so things

496

00:17:47,330 --> 00:17:49,930

like that are very
interesting to me.

497

00:17:49,930 --> 00:17:53,260

But all my involvement was essentially eating certain

498

00:17:53,260 --> 00:17:56,430

specialized diets that they had and then donating blood

499

00:17:56,430 --> 00:17:58,640

and urine, which is not that, you know, exciting to do.

500

00:17:58,640 --> 00:17:59,970

Little difficult in space.

501

00:17:59,970 --> 00:18:03,090

But some of the Japanese experiments that I did

502

00:18:03,090 --> 00:18:04,650

with plants were very interesting to me.

503

00:18:04,650 --> 00:18:06,790

Watching plants grow and see how they are affected

504

00:18:06,790 --> 00:18:08,910

by zero gravity is very interesting.

505

00:18:08,910 --> 00:18:09,210

>> Amiko Kauderer: Yeah.

506

00:18:09,210 --> 00:18:12,320

I always find that experiment very interesting as well.

507

00:18:12,320 --> 00:18:15,710

And the diet one, you know,
that one is essentially

508

00:18:15,710 --> 00:18:18,470

to show us how --
because there's bone loss,

509

00:18:18,470 --> 00:18:20,740

and so maybe it's to
help mitigate those --

510

00:18:20,740 --> 00:18:22,420

the negative effects
that space flight --

511

00:18:22,420 --> 00:18:24,520

long duration space
flight has on our bodies.

512

00:18:24,520 --> 00:18:25,890

>> Shannon Walker: Yeah,
that's exactly right.

513

00:18:25,890 --> 00:18:30,230

So it's twofold: One, can we
mitigate the effects of space

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00:18:30,230 --> 00:18:32,420

on the crews while they're
there based on diet --

515

00:18:32,420 --> 00:18:34,980

something as simple as diet --
and I think the answer is yes.

516

00:18:34,980 --> 00:18:36,760

But then it also has a
wide application to --

517

00:18:36,760 --> 00:18:39,440
to people on earth
because, of course,

518
00:18:39,440 --> 00:18:42,050
osteoporosis is a big
problem for so many women,

519
00:18:42,050 --> 00:18:45,960
and if you can change
people's diets ever so slightly

520
00:18:45,960 --> 00:18:49,380
and say you -- well this type of
protein is better than that type

521
00:18:49,380 --> 00:18:53,480
of protein to maintaining your
bustle -- muscle and bone mass,

522
00:18:53,480 --> 00:18:55,340
then people will be
better off in the long run.

523
00:18:55,340 --> 00:18:55,710
>> Amiko Kauderer: Right.

524
00:18:55,710 --> 00:18:57,870
And I can imagine that will
be very important for us

525
00:18:57,870 --> 00:18:59,900
as we continue in space

526
00:18:59,900 --> 00:19:03,090
and continue our future
in space exploration.

527
00:19:03,090 --> 00:19:03,550
>> Shannon Walker: Absolutely.

528

00:19:03,550 --> 00:19:05,330

>> Amiko Kauderer: So Shannon,
thanks so much for coming out.

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00:19:05,330 --> 00:19:09,630

An exciting day for the
Expedition 32, your colleagues,

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00:19:09,630 --> 00:19:11,500

so it must be fun watching them.

531

00:19:11,500 --> 00:19:13,630

And always a pleasure
talking with you.

532

00:19:13,630 --> 00:19:14,670

Thanks for coming.

533

00:19:14,670 --> 00:19:15,820

>> Shannon Walker: Thank
you, very much for having me.