



1
00:00:01,936 --> 00:00:04,246
Greetings from Mission
Control Houston and welcome

2
00:00:04,246 --> 00:00:05,416
to this Friday edition

3
00:00:05,416 --> 00:00:07,256
of International
Space Station Update.

4
00:00:08,436 --> 00:00:09,596
Joining us here inside

5
00:00:09,596 --> 00:00:11,786
of the International Space
Station Flight Control Room

6
00:00:11,786 --> 00:00:13,876
at the Johnson Space
Center in Houston, Texas,

7
00:00:14,336 --> 00:00:15,726
where the Orbit Two
team is currently

8
00:00:15,726 --> 00:00:18,706
on console monitoring all
the systems onboard this

9
00:00:18,706 --> 00:00:19,636
orbiting laboratory.

10
00:00:20,936 --> 00:00:23,956
Team being led right now by
Flight Director Chris Edelen.

11
00:00:24,386 --> 00:00:26,896
He is joined at the

Capcom position right now

12

00:00:26,896 --> 00:00:29,686
by Lucia McCullough serving
as the communication link

13

00:00:29,686 --> 00:00:32,126
between all the controllers
down here on the ground

14

00:00:32,356 --> 00:00:34,006
and the astronauts up in space.

15

00:00:35,656 --> 00:00:37,556
Those astronauts
right now are the crew

16

00:00:37,556 --> 00:00:41,296
of Expedition 32
currently comprised

17

00:00:41,296 --> 00:00:43,616
of a six person team being led

18

00:00:43,616 --> 00:00:45,606
by Russian cosmonaut
Gennady Padalka,

19

00:00:45,706 --> 00:00:48,016
there on the right
side in the front row.

20

00:00:48,386 --> 00:00:54,066
Behind him are Soyuz TMA-04M
crewmates Joe Acaba over his...

21

00:00:54,266 --> 00:00:57,886
off to the left, and then
Russian cosmonaut Sergei Revin

22

00:00:57,886 --> 00:00:58,686

all the way on the right.

23

00:00:59,086 --> 00:01:02,116

Then on the left side we have
our three newest crew members

24

00:01:02,116 --> 00:01:03,746

onboard the International
Space Station.

25

00:01:04,226 --> 00:01:07,456

Starting on the left,
Japanese astronaut Aki Hoshide

26

00:01:07,456 --> 00:01:08,976

on his second flight to space.

27

00:01:09,516 --> 00:01:10,736

Right there in the middle,

28

00:01:10,736 --> 00:01:13,696

Yuri Malenchenko a veteran
astronaut on his fifth flight.

29

00:01:14,096 --> 00:01:16,366

And then finally NASA
astronaut Suni Williams

30

00:01:16,366 --> 00:01:20,206

on her second flight, second
long-duration mission.

31

00:01:21,476 --> 00:01:24,746

It's been a very busy week
onboard the International Space

32

00:01:24,746 --> 00:01:28,556

Station with a lot of robotics

activity and maintenance work

33

00:01:28,556 --> 00:01:34,056
and a slew of preparation work
for the spacewalk undertaken

34

00:01:34,056 --> 00:01:37,866
by NASA astronaut Suni Williams
and Aki Hoshide yesterday.

35

00:01:38,676 --> 00:01:42,046
Starting off on Monday
we had Joe Acaba working

36

00:01:42,046 --> 00:01:44,306
with Robonaut inside of
the Destiny laboratory.

37

00:01:44,766 --> 00:01:47,476
He was working to set
up the humanoid robot

38

00:01:47,476 --> 00:01:49,866
as it was then commanded
from controllers

39

00:01:49,866 --> 00:01:50,936
down here on the ground.

40

00:01:51,556 --> 00:01:53,236
Robonaut continuing
to go through a number

41

00:01:53,236 --> 00:01:58,416
of different checkouts
and exercises as they look

42

00:01:58,456 --> 00:01:59,936
to improve his dexterity

43

00:01:59,936 --> 00:02:02,766
and then functions onboard the
station eventually becoming a

44

00:02:02,766 --> 00:02:06,986
permanent addition to many
of the crew activities taking

45

00:02:06,986 --> 00:02:09,016
over some of the more
menial tasks like cleaning

46

00:02:09,016 --> 00:02:11,326
and taking air readings
from these crew members.

47

00:02:11,956 --> 00:02:14,786
Aside from that Robonaut work
on Monday, Joe Acaba was working

48

00:02:14,786 --> 00:02:18,336
to transfer some cargo from
the Japanese HTV vehicle,

49

00:02:18,786 --> 00:02:22,466
one of the numerous unmanned
cargo crafts currently docked

50

00:02:22,466 --> 00:02:23,856
to the International
Space Station.

51

00:02:24,726 --> 00:02:27,856
Meanwhile, his fellow NASA
astronaut Suni Williams is doing

52

00:02:27,856 --> 00:02:32,306
a check out on her SAFER
devices, SAFER standing

53

00:02:32,306 --> 00:02:34,716

for the Simplified
Aid For EVA Rescue.

54

00:02:35,276 --> 00:02:38,146

It's a small self-contained,
basically a jet pack

55

00:02:38,496 --> 00:02:41,606

that these astronauts wear
whenever they're outside the

56

00:02:41,606 --> 00:02:44,666

station airlocks doing
spacewalks and serves as kind

57

00:02:44,666 --> 00:02:46,096

of a safety net device.

58

00:02:46,276 --> 00:02:47,826

Should they become
untethered and start

59

00:02:47,826 --> 00:02:51,366

to float away they can always
fire that jet pack and get back

60

00:02:51,496 --> 00:02:54,386

to the safe portion
of the space station.

61

00:02:54,826 --> 00:02:58,166

She's also going over some of
the procedures for her spacewalk

62

00:02:58,196 --> 00:03:00,316

which again took place
yesterday on Thursday.

63

00:03:00,986 --> 00:03:03,976
Aside from that she was doing
a biomedical experiment working

64

00:03:03,976 --> 00:03:05,736
with the station's
SLAMMD device,

65

00:03:06,086 --> 00:03:08,966
which stands the Space
Linear Acceleration Mass

66

00:03:08,966 --> 00:03:09,886
Measurement Device.

67

00:03:10,306 --> 00:03:12,116
Doing a control run is one

68

00:03:12,116 --> 00:03:15,296
of the only devices onboard
the station that is able

69

00:03:15,296 --> 00:03:19,076
to measure a crew members'
mass given that they are

70

00:03:19,076 --> 00:03:20,626
in the microgravity environment,

71

00:03:20,806 --> 00:03:26,576
something like a scale is not
very useful so SLAMMD again part

72

00:03:26,576 --> 00:03:28,306
of the ongoing research

73

00:03:28,306 --> 00:03:31,406
to constantly monitor crew
members' bodies throughout these

74

00:03:31,406 --> 00:03:32,626

microgravity flights.

75

00:03:34,806 --> 00:03:39,326

Aki Hoshide was checking out his own SAFER device on Monday

76

00:03:39,326 --> 00:03:41,626

and also going through a procedure review

77

00:03:41,626 --> 00:03:44,516

with Suni Williams and also transferring some cargo

78

00:03:44,516 --> 00:03:47,856

over from that Japanese HTV vehicle along with Joe Acaba.

79

00:03:48,756 --> 00:03:51,206

Meanwhile, our Russian cosmonauts onboard on Monday,

80

00:03:51,206 --> 00:03:55,196

Gennady Padalka, the Expedition 32 commander, was doing a study

81

00:03:55,196 --> 00:03:57,166

of the veins in his lower limbs

82

00:03:57,536 --> 00:03:59,166

and also doing some replacement work

83

00:03:59,166 --> 00:04:01,486

on the Russian Elektron system.

84

00:04:01,486 --> 00:04:04,196

It's one of the oxygen

generation systems onboard

85

00:04:04,196 --> 00:04:05,466

International Space Station.

86

00:04:06,256 --> 00:04:10,126

Meanwhile, cosmonaut Sergei Revin was unloading some items

87

00:04:10,126 --> 00:04:11,956

from the 48 Progress vehicle

88

00:04:12,066 --> 00:04:15,916

which is the unmanned Russian cargo craft currently docked

89

00:04:15,916 --> 00:04:17,306

to the International Space Station.

90

00:04:17,696 --> 00:04:19,646

You can see the full station complex

91

00:04:19,646 --> 00:04:24,206

and all the visiting vehicles right now, two Soyuz crew crafts

92

00:04:24,206 --> 00:04:27,166

and then three unmanned robotic cargo crafts.

93

00:04:27,616 --> 00:04:29,766

The HTV-3 all the way on the left there,

94

00:04:29,766 --> 00:04:32,096

the Japanese vehicle, the Progress 48,

95

00:04:32,126 --> 00:04:33,586

the Russian vehicle
there in the middle,

96

00:04:33,956 --> 00:04:35,006

all the way at the aft end

97

00:04:35,006 --> 00:04:37,396

of the station the
ATV-3 vehicle built

98

00:04:37,396 --> 00:04:39,056

by the European Space Agency.

99

00:04:39,886 --> 00:04:42,886

So Revin was unloading some
items from that 48 Progress

100

00:04:42,886 --> 00:04:46,246

and also updating the station's
inventory management system,

101

00:04:46,806 --> 00:04:49,746

also working on the Russian
Pneumocard experiment

102

00:04:49,746 --> 00:04:54,076

which is a study that looks
to track the adaptation

103

00:04:54,076 --> 00:04:55,846

of the cardiovascular
system inside

104

00:04:55,846 --> 00:04:57,706

of these crew members
during their long-duration

105

00:04:57,706 --> 00:04:59,076

microgravity exposure.

106

00:04:59,926 --> 00:05:03,556

And meanwhile, Yuri Malenchenko was transferring a few items

107

00:05:03,556 --> 00:05:06,576

and also draining the Urine Processor Assembly recycle tank

108

00:05:06,906 --> 00:05:08,356

transferring some of that wastewater

109

00:05:08,356 --> 00:05:10,376

over to the ATV vehicle.

110

00:05:11,096 --> 00:05:13,356

Moving on to Tuesday, Joe Acaba was back

111

00:05:13,356 --> 00:05:16,046

in the Destiny laboratory powering up Robonaut

112

00:05:16,426 --> 00:05:19,096

and then stowing him away following the completion

113

00:05:19,096 --> 00:05:21,516

of two days of robotic ops down here on the ground.

114

00:05:22,096 --> 00:05:24,736

He was also installing a contingency jumper.

115

00:05:25,196 --> 00:05:29,086

A number of jumpers were installed prior to the spacewalk

116

00:05:29,156 --> 00:05:34,286
which was looking to replace a
failed MBSU power relay system.

117

00:05:34,906 --> 00:05:38,746
So this procedure that
Acaba took on Tuesday was

118

00:05:39,126 --> 00:05:43,226
to supply power to various loads
along the station's external

119

00:05:43,226 --> 00:05:46,546
truss in the event
of a loss of power.

120

00:05:47,206 --> 00:05:50,346
So moving on Williams,
Suni Williams,

121

00:05:50,346 --> 00:05:53,496
was completing a pre-spacewalk
medical exam on Tuesday

122

00:05:53,496 --> 00:05:59,426
and also doing an Exploration
Design Challenge looking

123

00:05:59,426 --> 00:06:02,176
to highlight radiation research
being conducted onboard the

124

00:06:02,176 --> 00:06:03,386
International Space Station.

125

00:06:03,926 --> 00:06:06,046
She was joined in
that by Aki Hoshide

126

00:06:06,046 --> 00:06:09,156

who was also doing his own
pre-spacewalk medical exam

127

00:06:09,496 --> 00:06:12,416

and also going through and doing
some final procedure updates

128

00:06:12,746 --> 00:06:14,956

for all their EVA tasks.

129

00:06:16,306 --> 00:06:21,086

Meanwhile on Tuesday, Gennady
Padalka was doing another

130

00:06:21,816 --> 00:06:25,056

medical experiment looking to
study orthostatic stability

131

00:06:25,536 --> 00:06:30,126

in these astronauts which
has some direct implications

132

00:06:30,126 --> 00:06:33,296

and looking at how well
these astronauts are able

133

00:06:33,296 --> 00:06:35,596

to stand upright and how
their balance is affected

134

00:06:35,596 --> 00:06:39,096

after spending long durations
in the weightless environment.

135

00:06:39,566 --> 00:06:42,046

Padalka was also doing
some routine replacement

136

00:06:42,046 --> 00:06:44,516
of a few components inside
of the Russian toilet system.

137
00:06:45,796 --> 00:06:48,086
Sergei Revin also
joining Padalka

138
00:06:48,086 --> 00:06:51,416
in that orthostatic stability
evaluation doing an on-orbit

139
00:06:51,416 --> 00:06:54,976
hearing test while Yuri
Malenchenko was replacing a

140
00:06:54,976 --> 00:06:58,696
relay adapter inside of the
Zarya module and then standing

141
00:06:58,696 --> 00:07:02,746
by with Joe Acaba to review
some of those robotic procedures

142
00:07:02,746 --> 00:07:06,136
as Acaba was quarterbacking
the spacewalk on Thursday

143
00:07:06,136 --> 00:07:08,366
and controlling the
station's robotic arm.

144
00:07:09,176 --> 00:07:11,376
Wednesday was a half
duty day for the crew,

145
00:07:11,896 --> 00:07:15,826
Joe Acaba doing some final
review of those EVA procedures

146

00:07:16,146 --> 00:07:21,406
and then installing
another jumper cable.

147

00:07:21,406 --> 00:07:27,166
So again just in case power was
lost through any of these...

148

00:07:27,276 --> 00:07:30,786
from a failed MBSU install
they would still be able

149

00:07:30,786 --> 00:07:34,876
to maintain power to
vital station systems.

150

00:07:35,626 --> 00:07:39,126
Meanwhile, again in that half
duty day Suni Williams was

151

00:07:39,176 --> 00:07:41,946
preparing the equipment lock
and configuring all the tools

152

00:07:42,326 --> 00:07:45,106
that she and Aki would
need for their spacewalk.

153

00:07:45,606 --> 00:07:48,836
Aki meanwhile was holding
one last procedure review

154

00:07:48,836 --> 00:07:50,276
in a conference with the ground.

155

00:07:50,596 --> 00:07:51,456
You can see them inside

156

00:07:51,456 --> 00:07:55,346
of the Quest Airlock here

getting everything ready before

157

00:07:55,346 --> 00:07:57,546

they were going to step
out the following morning.

158

00:07:58,986 --> 00:08:01,906

Also on Wednesday, Gennady
Padalka was replacing a battery

159

00:08:01,906 --> 00:08:05,036

unit inside of the Zvezda
service module while Sergei

160

00:08:05,036 --> 00:08:07,886

Revin was inside Zvezda and
Zarya collecting a number

161

00:08:07,886 --> 00:08:12,616

of air samples and Yuri
Malenchenko doing an audit

162

00:08:12,616 --> 00:08:15,746

of the station medical
kits and doing his own runs

163

00:08:15,746 --> 00:08:18,526

of the Pneumocard
medical experiment.

164

00:08:19,466 --> 00:08:21,866

Moving on to Thursday,
yesterday all eyes were

165

00:08:21,866 --> 00:08:25,626

on spacewalkers Suni
Williams and Aki Hoshide

166

00:08:25,626 --> 00:08:27,316

as they conducted an 8 hour

167

00:08:27,316 --> 00:08:30,226
and 17 minute spacewalk
moving themselves

168

00:08:30,226 --> 00:08:31,186
in to the history books

169

00:08:31,186 --> 00:08:34,736
as it was the third longest
spacewalk in history.

170

00:08:35,466 --> 00:08:38,636
Their main task of replacing
a Main Bus Switching Unit

171

00:08:38,636 --> 00:08:41,876
on the S-Zero truss
was unsuccessful due

172

00:08:41,876 --> 00:08:43,256
to a troublesome bolt.

173

00:08:43,766 --> 00:08:49,476
So meanwhile teams are now
looking at coming up with ways

174

00:08:50,086 --> 00:08:52,516
to decide the next
course of action

175

00:08:52,516 --> 00:08:55,266
and then do a potential
follow-up of the spacewalk

176

00:08:55,266 --> 00:08:58,116
in the nearby future to
complete the task perhaps even

177

00:08:58,116 --> 00:08:59,266
as early as next week.

178

00:09:00,136 --> 00:09:04,046
And then today a lot of
that post-EVA work going on,

179

00:09:04,426 --> 00:09:07,966
Joe Acaba initiating a charge
on a number of the batteries

180

00:09:07,966 --> 00:09:09,486
that are used for
these spacewalks,

181

00:09:09,956 --> 00:09:12,106
also getting inside the suits

182

00:09:12,106 --> 00:09:15,946
and doing some relief valve
cycling preparing them, again,

183

00:09:15,946 --> 00:09:18,496
should they be needed for
a spacewalk early next week

184

00:09:18,496 --> 00:09:19,756
for Williams and Hoshide.

185

00:09:20,616 --> 00:09:23,586
Meanwhile, the two spacewalkers
doing some health status,

186

00:09:23,966 --> 00:09:26,576
health status checks
post-spacewalk.

187

00:09:27,256 --> 00:09:30,256
Williams was also working
to prepare the suits

188

00:09:30,256 --> 00:09:33,496
and photographing the gloves
and checking for any damage

189

00:09:34,266 --> 00:09:35,546
that may have occurred

190

00:09:35,546 --> 00:09:37,936
on the hands while those
astronauts were moving outside

191

00:09:37,936 --> 00:09:38,546
of the station.

192

00:09:39,066 --> 00:09:42,376
She was also going through an
EVA debrief with teams here

193

00:09:42,376 --> 00:09:45,446
on the ground along with
Joe Acaba and Aki Hoshide.

194

00:09:45,446 --> 00:09:50,766
Hoshide assisting in all
that post-EVA prep work

195

00:09:51,336 --> 00:09:55,016
and also having a few more tasks
onboard the station relocating

196

00:09:55,016 --> 00:09:56,916
some of the contingency
water containers,

197

00:09:57,266 --> 00:10:00,556
also taking some time out to
do a ham radio pass with the,

198

00:10:00,826 --> 00:10:02,626
some students in Mayen, Germany.

199

00:10:03,626 --> 00:10:06,706
And then our three Russian
cosmonauts today onboard the

200

00:10:06,706 --> 00:10:07,926
station, Padalka back

201

00:10:07,926 --> 00:10:10,216
at Pneumocard doing his
own runs again looking

202

00:10:10,216 --> 00:10:12,896
to study cardiovascular
adaptation

203

00:10:12,896 --> 00:10:15,186
of these astronauts during
long-duration spaceflights

204

00:10:15,546 --> 00:10:18,206
and also replacing a gas
liquid mixture filter.

205

00:10:18,826 --> 00:10:21,626
His two fellow Russian
cosmonauts, Sergei Revin

206

00:10:21,626 --> 00:10:24,566
and Yuri Malenchenko, are giving
the TVIS, or the Treadmill

207

00:10:24,566 --> 00:10:26,846
with Vibration Isolation
Stabilization,

208

00:10:27,226 --> 00:10:30,376
its six-month maintenance

today doing things

209

00:10:30,376 --> 00:10:33,426

like verifying the torque
on different fasteners

210

00:10:33,426 --> 00:10:36,026

and also lubricating a
number of the components.

211

00:10:36,136 --> 00:10:37,756

You can see the TVIS here.

212

00:10:37,756 --> 00:10:39,956

It's one of the many
work out devices

213

00:10:39,956 --> 00:10:42,346

that these astronauts have while
they're onboard the station

214

00:10:42,346 --> 00:10:46,446

to maintain things
like muscle mass

215

00:10:46,446 --> 00:10:49,756

and also fight off
losses in bone density.

216

00:10:50,446 --> 00:10:54,276

So as you can see very busy
week onboard the station

217

00:10:54,276 --> 00:10:57,456

with that spacewalk being
the centerpiece of all

218

00:10:57,456 --> 00:10:58,996

of this week's activities.

219

00:10:59,516 --> 00:11:02,306

Teams down here on the
ground continuing to look

220

00:11:02,306 --> 00:11:04,546

at just what went
wrong with getting

221

00:11:04,546 --> 00:11:07,966

that Main Bus Switching Unit
reinstalled and continuing