
EXPEDITION 32
SERCEI REVIN
Flight Engineer

1
00:00:01,736 --> 00:00:03,126
Good morning and welcome

2
00:00:03,126 --> 00:00:05,296
to today's International
Space Station Update.

3
00:00:05,826 --> 00:00:08,796
Onboard the station is
the crew of Expedition 32,

4
00:00:09,336 --> 00:00:12,356
currently commanded by Russian
cosmonaut Gennady Padalka there

5
00:00:12,356 --> 00:00:12,986
in the center.

6
00:00:13,306 --> 00:00:16,006
To the left is another
Russian cosmonaut Sergei Revin

7
00:00:16,006 --> 00:00:17,336
on his first spaceflight.

8
00:00:17,696 --> 00:00:19,986
On the right there NASA
astronaut Joe Acaba,

9
00:00:19,986 --> 00:00:22,536
veteran of one shuttle
mission STS-119,

10
00:00:22,836 --> 00:00:25,396
on his first long-duration
stay onboard the International

11
00:00:25,396 --> 00:00:26,166
Space Station.

12
00:00:26,706 --> 00:00:30,066
So the crew pretty busy
this week doing a range

13
00:00:30,066 --> 00:00:32,066
of science experiments
and maintenance work

14
00:00:32,106 --> 00:00:34,326
to systems onboard the
International Space Station.

15
00:00:34,756 --> 00:00:36,026
Starting off on Monday,

16
00:00:36,026 --> 00:00:37,886
Commander Padalka was
doing some maintenance

17
00:00:37,886 --> 00:00:39,286
on the Russian comm system.

18
00:00:39,606 --> 00:00:42,106
He was working alongside
Sergei Revin as they look

19
00:00:42,156 --> 00:00:44,686
to do an upgrade to
the Integrated Command

20
00:00:44,686 --> 00:00:46,556
and Telemetry system which is,

21
00:00:46,806 --> 00:00:49,296
functions on the
S-band communication

22
00:00:49,296 --> 00:00:52,656

and it will be used for
future payload transmissions

23
00:00:52,656 --> 00:00:55,156
to ground sites as these
astronauts are always working

24
00:00:55,156 --> 00:00:58,506
in conjunction with subject
matter experts on the ground

25
00:00:58,506 --> 00:01:00,176
for any payloads
and experiments.

26
00:01:00,606 --> 00:01:03,356
Aside from that Padalka was
also working on cleaning some

27
00:01:03,356 --> 00:01:06,046
of the dust filters in the
mini-research module one,

28
00:01:06,046 --> 00:01:07,436
or the Rassvet module,

29
00:01:08,206 --> 00:01:12,036
making sure that the astronauts
Air Revitalization System's

30
00:01:12,146 --> 00:01:13,526
working in tiptop shape.

31
00:01:15,056 --> 00:01:17,656
Meanwhile, Russian cosmonaut
Sergei Revin was stowing some

32
00:01:17,656 --> 00:01:20,076
items inside of the
47 Progress vehicle.

33
00:01:20,076 --> 00:01:22,566
That Russian unmanned cargo
craft currently docked

34
00:01:22,566 --> 00:01:23,996
to the International
Space Station.

35
00:01:24,356 --> 00:01:26,886
It'll have some are pretty
interesting activities a little

36
00:01:26,886 --> 00:01:29,876
bit later this month as
it undocks on July 22

37
00:01:29,876 --> 00:01:33,376
and redocks just a little over
a day later testing out one

38
00:01:33,376 --> 00:01:37,656
of its new Kurs automatic
rendezvous system

39
00:01:37,976 --> 00:01:40,926
which always guides these
unmanned cargo craft

40
00:01:40,926 --> 00:01:42,446
to the International
Space Station.

41
00:01:42,976 --> 00:01:46,456
After that redocking test
it'll undock for the final time

42
00:01:46,456 --> 00:01:48,706
on July 30 and then
reenter and burn

43
00:01:48,706 --> 00:01:49,996
up in the Earth's atmosphere.

44
00:01:51,316 --> 00:01:55,436
Meanwhile on Monday, NASA
astronaut Joe Acaba was working

45
00:01:55,436 --> 00:01:57,226
with the BCAT-6 experiment.

46
00:01:57,226 --> 00:02:00,346
BCAT standing for the
Binary Colloidal Alloy Test.

47
00:02:00,756 --> 00:02:03,986
Colloids are these tiny
suspensions of particles

48
00:02:03,986 --> 00:02:08,156
in fluids and is one of the many
particle experiments onboard the

49
00:02:08,156 --> 00:02:10,526
station giving researchers here

50
00:02:10,526 --> 00:02:13,956
on the ground some fundamental
insights into the base level

51
00:02:13,956 --> 00:02:17,976
of how particles grow and
crystallize in microgravity.

52
00:02:18,346 --> 00:02:19,906
He was next doing photographing

53
00:02:19,906 --> 00:02:21,376
and stowing some

of those samples.

54
00:02:21,806 --> 00:02:24,326
And also on Monday,
he did his first work

55
00:02:24,326 --> 00:02:26,616
with the station's
EarthKAM which stands

56
00:02:26,616 --> 00:02:28,896
for Earth Knowledge Acquired
by Middle School Students.

57
00:02:28,896 --> 00:02:30,196
He was setting that up inside

58
00:02:30,196 --> 00:02:32,826
of the Window Observational
Research Facility onboard

59
00:02:32,826 --> 00:02:33,336
the station.

60
00:02:33,886 --> 00:02:36,496
This is in preparation for
some weeklong activities

61
00:02:36,496 --> 00:02:40,266
that have been going on where
over 120 different schools

62
00:02:40,266 --> 00:02:42,666
and groups across the
country have been controlling

63
00:02:42,666 --> 00:02:46,356
that camera via controls on
the Internet allowing students,

64
00:02:46,586 --> 00:02:48,656
again across the country,

65
00:02:49,066 --> 00:02:52,166
a chance to use the
station's unique vantage point

66
00:02:52,166 --> 00:02:54,456
to take photos of
different geological features

67
00:02:54,456 --> 00:02:55,236
around the globe.

68
00:02:56,986 --> 00:03:00,306
Moving on to Tuesday,
Commander Padalka was inside

69
00:03:00,306 --> 00:03:03,886
of another unmanned
cargo craft, the ATV-3,

70
00:03:04,346 --> 00:03:06,426
doing assembly removal

71
00:03:06,426 --> 00:03:08,246
and replacement work
on the cabin fan.

72
00:03:08,666 --> 00:03:10,996
This was done in preparation

73
00:03:10,996 --> 00:03:14,516
for some cargo activities
later on in the week.

74
00:03:14,966 --> 00:03:20,056
So all this was necessary
to make the ATV-3 vehicle,

75
00:03:20,056 --> 00:03:21,996
which you can see
here on your screen,

76
00:03:22,406 --> 00:03:25,626
currently it's the largest
unmanned resupply vehicle

77
00:03:25,626 --> 00:03:29,756
that visits the International
Space Station, and he was doing

78
00:03:29,756 --> 00:03:32,676
that cabin fan assembly
replacement work in preparation

79
00:03:32,676 --> 00:03:34,786
for some cargo work he'd
be doing later in the week.

80
00:03:34,786 --> 00:03:37,816
He was also busy inspecting
and photographing some

81
00:03:37,816 --> 00:03:40,046
of the windows on the
station's service module

82
00:03:40,046 --> 00:03:43,796
on the Russian segment
looking for any discoloration

83
00:03:43,796 --> 00:03:45,836
or any potential
nicks or scratches.

84
00:03:46,126 --> 00:03:48,936
You can see the station
layout here.

85
00:03:48,936 --> 00:03:51,856
That ATV-3 docked to the
aft port of the station.

86
00:03:52,286 --> 00:03:55,106
The Progress 47 craft
docked to the nadir,

87
00:03:55,106 --> 00:03:56,816
or the Earth-facing side,

88
00:03:57,216 --> 00:04:00,776
and their Soyuz TMA-04M
spacecraft docked

89
00:04:00,776 --> 00:04:03,916
to the Poisk module on the
zenith, or space-facing side.

90
00:04:04,266 --> 00:04:06,106
It's the craft that
brought these astronauts

91
00:04:06,106 --> 00:04:09,166
to the International Space
Station just back in May.

92
00:04:10,606 --> 00:04:13,286
Also on Tuesday, Sergei Revin
was stowing some more items

93
00:04:13,286 --> 00:04:16,846
inside of that 47 Progress
craft doing an update

94
00:04:16,846 --> 00:04:19,576
to the station's inventory
management system which looks

95
00:04:19,576 --> 00:04:21,756
to track all the items
onboard the station.

96
00:04:22,476 --> 00:04:27,936
And Joe Acaba was back, doing a
few checkouts on that EarthKAM

97
00:04:27,936 --> 00:04:30,826
and also troubleshooting
the station's ISSAC camera

98
00:04:31,196 --> 00:04:33,996
which is another Earth
observations project onboard

99
00:04:33,996 --> 00:04:34,586
the station.

100
00:04:34,716 --> 00:04:37,366
ISSAC stands for
International Space Station

101
00:04:37,366 --> 00:04:38,626
Agricultural Camera.

102
00:04:39,016 --> 00:04:42,106
He was troubleshooting a laptop
failure that's used control it.

103
00:04:42,576 --> 00:04:45,566
And once he was done with
all that he took some time

104
00:04:45,566 --> 00:04:47,856
out of his day to do
a ham radio contact

105
00:04:47,886 --> 00:04:49,886

with the WISH program here

106
00:04:49,886 --> 00:04:52,166
at the Johnson Space
Center in Houston, Texas.

107
00:04:52,166 --> 00:04:55,636
That was Women in STEM High
School Aerospace Scholars using

108
00:04:55,636 --> 00:04:59,296
the station's ham radio to
do a quick Q&A with students

109
00:04:59,296 --> 00:05:00,326
down here on the ground.

110
00:05:02,226 --> 00:05:05,176
Moving on to Wednesday,
Gennady Padalka woke up

111
00:05:05,176 --> 00:05:08,166
and immediately went
into a sample collection

112
00:05:08,166 --> 00:05:11,466
for the Russian Immuno
experiment taking blood,

113
00:05:11,466 --> 00:05:15,566
saliva and urine samples
which is then used to check

114
00:05:15,566 --> 00:05:18,636
for different hormones
associated with stress response.

115
00:05:19,086 --> 00:05:21,966
The Immuno study looks
to track any changes

116
00:05:21,966 --> 00:05:26,096
in the astronaut's immune system
during their long-duration

117
00:05:26,096 --> 00:05:29,386
spaceflights and also
couples it with stress tests

118
00:05:29,386 --> 00:05:32,856
to find any correlations
between an increase or decrease

119
00:05:32,856 --> 00:05:36,716
of stress and functioning of
the human body's immune system.

120
00:05:37,176 --> 00:05:39,286
He was also doing some
more window inspections

121
00:05:39,286 --> 00:05:41,656
in the service module,
also known as Zvezda,

122
00:05:42,236 --> 00:05:44,076
and doing some repair
and recovery work

123
00:05:44,076 --> 00:05:46,586
on the Russian Vozdukh
system which is one

124
00:05:46,586 --> 00:05:49,826
of the air revitalization
systems onboard the station

125
00:05:49,826 --> 00:05:53,166
which looks to constantly
scrub carbon dioxide

126
00:05:53,166 --> 00:05:55,206
from the breathing atmosphere
for these astronauts.

127
00:05:55,456 --> 00:05:59,576
Also working on the station's
atmosphere system was Sergei

128
00:05:59,576 --> 00:06:01,036
Revin who was doing
some maintenance

129
00:06:01,036 --> 00:06:05,266
on the Russian Elektron which is
their oxygen generation system.

130
00:06:05,296 --> 00:06:08,196
There are quite a few over
on the U.S. segment as well,

131
00:06:08,196 --> 00:06:10,526
but these Russians were doing
some routine maintenance getting

132
00:06:10,526 --> 00:06:12,096
there's up working.

133
00:06:12,986 --> 00:06:15,856
Revin was also cleaning a few
of the ventilation screens

134
00:06:15,856 --> 00:06:19,176
on the Zarya module's interior
panels and also working

135
00:06:19,176 --> 00:06:20,936
on its gas liquid
heat exchanger.

136
00:06:21,996 --> 00:06:25,606
Meanwhile on Wednesday, Joe
Acaba was doing his first check

137
00:06:25,606 --> 00:06:27,916
out of the HTV hardware
command panel.

138
00:06:28,416 --> 00:06:32,816
That HTV vehicle is scheduled
to launch next week on July 21

139
00:06:33,296 --> 00:06:34,946
and then rendezvous and capture

140
00:06:34,946 --> 00:06:37,026
and berth just about
six days later.

141
00:06:38,296 --> 00:06:40,036
That is an unmanned cargo craft

142
00:06:40,036 --> 00:06:42,456
from the Japanese
Aerospace Exploration Agency

143
00:06:42,456 --> 00:06:46,386
which will be delivering
about 4.6 tons of cargo

144
00:06:46,736 --> 00:06:49,376
to this newly expanded
Expedition 32 crew.

145
00:06:50,206 --> 00:06:53,926
Acaba was also at work with the
SPHERES satellites doing a few

146
00:06:53,996 --> 00:06:57,496

test runs as they practice
their automated rendezvous

147
00:06:57,496 --> 00:06:58,636
and docking procedures.

148
00:06:59,046 --> 00:07:01,616
SPHERES standing for the
Synchronized Position Hold

149
00:07:01,616 --> 00:07:04,056
Engage and Reorient
Experimental Satellites,

150
00:07:04,456 --> 00:07:07,146
the small bowling-ball
sized objects.

151
00:07:07,146 --> 00:07:09,366
You can see the orange one
their spinning in the middle

152
00:07:09,366 --> 00:07:11,486
of your screen, completely
autonomous

153
00:07:11,486 --> 00:07:14,116
and self-contained
satellites that practice things

154
00:07:14,116 --> 00:07:18,426
like formation flying and
docking using algorithms

155
00:07:18,426 --> 00:07:20,436
that are written down and
uplinked from the ground.

156
00:07:20,986 --> 00:07:22,456
So moving on to Thursday,

157
00:07:22,636 --> 00:07:24,336
Commander Padalka
was back inside

158
00:07:24,336 --> 00:07:30,286
that ATV cargo craft moving a
few trash items in as they look

159
00:07:30,286 --> 00:07:33,916
to clear up space for cargo
coming up on that HTV vehicle.

160
00:07:34,496 --> 00:07:36,646
He was also doing some
monthly maintenance

161
00:07:36,646 --> 00:07:39,556
on the station's TVIS,
which is the Treadmill

162
00:07:39,656 --> 00:07:42,036
with Vibration Isolation
Stabilization.

163
00:07:43,276 --> 00:07:45,216
And that was just some
monthly maintenance

164
00:07:45,216 --> 00:07:47,896
to make sure it's still
working as it should be.

165
00:07:48,466 --> 00:07:52,676
And then Sergei Revin was
busy taking his own saliva

166
00:07:52,676 --> 00:07:54,936
and blood samples for
that Russian Immuno test

167
00:07:55,256 --> 00:07:57,656
and also did some hardware
setup and execution

168
00:07:57,656 --> 00:08:00,586
of the Russian Relaxation
experiment which looks

169
00:08:00,586 --> 00:08:03,196
to determine the effects of
propulsion system exhaust

170
00:08:03,196 --> 00:08:05,546
on the Earth's upper
atmosphere and also

171
00:08:05,546 --> 00:08:08,756
on any optically sensitive
surfaces onboard the station

172
00:08:08,756 --> 00:08:11,906
like windows, equipment,
lenses and solar array panels.

173
00:08:12,506 --> 00:08:15,466
Meanwhile on Thursday,
Joe Acaba was hard at work

174
00:08:15,466 --> 00:08:18,256
on that BASS experiment,
BASS standing for the Burning

175
00:08:18,256 --> 00:08:19,526
and Suppression of Solids.

176
00:08:19,966 --> 00:08:26,096
It uses a fuel system and
igniter and then a series

177
00:08:26,096 --> 00:08:31,246
of fans to combust a bunch of
different solid fuel samples

178
00:08:31,276 --> 00:08:34,296
and then study their burn
characteristics and the best way

179
00:08:34,696 --> 00:08:37,956
in which to suppress them in
an ongoing study to figure

180
00:08:37,956 --> 00:08:41,326
out the best way to combat
any potential accidental fires

181
00:08:41,326 --> 00:08:43,266
that might breakout
in microgravity.

182
00:08:44,556 --> 00:08:49,076
And all that brings us to today,
Friday, where starting off

183
00:08:49,076 --> 00:08:50,936
with Russian commander
Gennady Padalka

184
00:08:51,396 --> 00:08:54,226
who immediately upon
waking up participated

185
00:08:54,226 --> 00:08:57,536
in the Russian SPRUT experiment
alongside Sergei Revin.

186
00:08:58,076 --> 00:09:00,866
That looks to study the
distribution of fluids

187
00:09:00,866 --> 00:09:03,346
in microgravity throughout
these astronaut's bodies

188
00:09:03,346 --> 00:09:06,106
as gravity is not
constantly pushing everything

189
00:09:06,106 --> 00:09:07,536
down towards your legs.

190
00:09:07,886 --> 00:09:10,446
It kind of redistributes
and can have affects

191
00:09:10,446 --> 00:09:12,706
on how well these
astronauts stay hydrated.

192
00:09:12,706 --> 00:09:15,106
So the Russian study
looking to combat any

193
00:09:15,106 --> 00:09:17,076
of the negative effects
that may come out of that.

194
00:09:17,636 --> 00:09:20,436
And Padalka will also be doing
a test a little bit later today

195
00:09:20,436 --> 00:09:23,756
on the station's TV system
through their KU-band

196
00:09:23,756 --> 00:09:25,056
which delivers all the video

197
00:09:25,056 --> 00:09:26,596

from the station
down to the ground.

198
00:09:27,096 --> 00:09:29,056
And that's all being
done in preparation

199
00:09:29,056 --> 00:09:31,516
for the upcoming monitoring
of their Soyuz docking

200
00:09:31,946 --> 00:09:34,856
which will be delivering there
three new crew members next week

201
00:09:34,856 --> 00:09:39,516
on Monday at about 11:52
p.m. Central time And aside

202
00:09:39,806 --> 00:09:42,766
from that SPRUT experiment his
fellow Russian cosmonaut Sergei

203
00:09:42,766 --> 00:09:44,176
Revin is doing some inspection

204
00:09:44,446 --> 00:09:47,336
of a few more windows inside
the station's service module,

205
00:09:47,336 --> 00:09:51,066
or Zvezda, again looking
for any discoloration

206
00:09:51,066 --> 00:09:55,196
or potential dings are scratches
on the inside or outside.

207
00:09:55,886 --> 00:09:57,506
And Joe Acaba, meanwhile,

208
00:09:57,506 --> 00:10:00,686
is closing out his week
cleaning a few more exhaust

209
00:10:00,686 --> 00:10:03,696
and intake ducts inside of the
crew quarters and then opening

210
00:10:03,696 --> 00:10:06,736
up the U.S. lab's window
shutters in support

211
00:10:06,736 --> 00:10:08,806
of that ISSAC camera,

212
00:10:08,806 --> 00:10:11,146
the International Space
Station Agricultural Camera,

213
00:10:11,146 --> 00:10:13,716
which he was troubleshooting
a little bit earlier this week

214
00:10:14,076 --> 00:10:17,386
and doing a final swap out on
some of those EarthKAM batteries

215
00:10:17,796 --> 00:10:21,346
as students continue to control
that camera via the Internet