1
00:00:01,466 --> 00:00:04,586
Good morning and welcome
to this Friday's edition

2
00:00:04,586 --> 00:00:06,466
of the International Space Station Update.

3
00:00:06,806 --> 00:00:09,676
The crew is bringing an end
to their first full week

4
00:00:09,676 --> 00:00:13,076
as the Expedition 31 mission
following the departure

5
00:00:13,076 --> 00:00:15,686
of their Expedition 30 crewmates late last week.

6
00:00:16,786 --> 00:00:22,736
Starting off on Monday this week Commander
Kononenko spent much of his day unloading items

7
00:00:22,736 --> 00:00:26,266
from the Progress 47 resupply
craft which has been docked

8
00:00:26,266 --> 00:00:28,536
to the Pirs compartment since April 22.

9
00:00:29,116 --> 00:00:34,246
Along with unloading all that cargo he was also
updating the station's inventory management

10
00:00:34,246 --> 00:00:41,456
system which is a fairly complex program
onboard the station to track, monitor where each

11
00:00:41,456 --> 00:00:43,636
and every single piece of cargo is located.

12
00:00:45,256 --> 00:00:48,146
Also doing some cargo work
that day was Andre Kuipers.

13
00:00:48,456 --> 00:00:51,876
But he was working in the
ATV-3 or the "Edoardo Amaldi,"

14
00:00:52,266 --> 00:00:57,406
another unmanned resupply craft that's currently
docked to the aft portion of the Zvezda module.

15
00:00:57,406 --> 00:01:02,126
As you can see here is the European
Space Agency's unmanned resupply craft.

16
00:01:02,406 --> 00:01:04,686
So he was unloading some more cargo from it.

17
00:01:05,016 --> 00:01:06,596
And along with that he was working

18
00:01:06,596 --> 00:01:12,166
on a biological experiment called the Integrated
Cardiovascular setting up the monitoring system

19
00:01:12,166 --> 00:01:17,496
on his own person which looks to study any heart
atrophy, or the weakening of the heart muscle,

20
00:01:17,906 --> 00:01:21,516
during these astronauts'
long-duration exposure to microgravity.

21
00:01:22,736 --> 00:01:27,646
Also on Monday, Don Pettit was conducting
some more vision tests with Robonaut setting

22

00:01:27,646 --> 00:01:33,136
up a task board while robotics controllers on
the ground worked send commands to the robot

23
00:01:33,136 --> 00:01:37,726
as it worked through a few dexterous movements
and also testing out its visual acuity.

24
00:01:38,616 --> 00:01:43,506
He was also working that day with the
Biolab changing out a life support module.

25
00:01:43,936 --> 00:01:49,066
Biolab located in the Columbus
laboratory seen here is used

26
00:01:49,066 --> 00:01:53,286
to perform different space biology
experiments on things like microorganisms,

27
00:01:53,966 --> 00:01:58,526
cells and tissue cultures and also
small plants and small invertebrates all

28
00:01:58,526 --> 00:02:02,446
to help scientists gain a better
understanding of the effects of microgravity

29
00:02:02,446 --> 00:02:05,356
and space radiation on biological organisms.

30
00:02:06,106 --> 00:02:09,236
Also on Monday, not up in space,
but down here on the ground,

31
00:02:09,556 --> 00:02:14,936
commercial company SpaceX conducted a
successful hot fire of their Falcon 9 rocket.

32
00:02:15,806 --> 00:02:19,506

During this SpaceX engineers ran
through all of the countdown processes

33
00:02:19,506 --> 00:02:21,186
as though it were an actual launch day.

34
00:02:21,656 --> 00:02:26,886
And the exercises ended with the firing of
all nine Merlin engines all taking place

35
00:02:26,886 --> 00:02:30,686
at Space Launch Complex 40 down at
the Cape Canaveral Air Force station.

36
00:02:32,386 --> 00:02:37,136
Moving on to Tuesday, Commander Kononenko was
doing some maintenance work throughout the

37
00:02:37,136 --> 00:02:41,046
Russian segment cleaning some of the
vent screens replacing a few dust filters

38
00:02:41,426 --> 00:02:44,306
in the Zarya module and also the Rassvet module.

39
00:02:44,636 --> 00:02:48,856
He was also working with the
Russian Matryoshka experiment named

40
00:02:48,856 --> 00:02:54,076
after the famous Russian nested dolls
and looks to study the radiation doses

41
00:02:54,076 --> 00:02:57,256
that the astronauts are exposed
to by placing a number

42
00:02:57,356 --> 00:03:00,426
of sensors inside of a mannequin-sized body.

43
00:03:00,916 --> 00:03:05,026
And then all, he was collecting the data
from those sensors and then transferring it

44
00:03:05,026 --> 00:03:07,416
to computers and down to
scientists here on the ground.

45
00:03:08,776 --> 00:03:13,306
He also did some more cargo transfers
from that Progress 47 spacecraft.

46
00:03:13,856 --> 00:03:16,906
And then Andre Kuipers was
also doing some more cargo work

47
00:03:16,906 --> 00:03:19,946
on Tuesday working in that ATV vehicle again.

48
00:03:20,496 --> 00:03:24,056
But along with that he was doing
some very important robotics training

49
00:03:24,476 --> 00:03:26,156
on the station's robotic arm.

50
00:03:26,786 --> 00:03:32,426
He will be working alongside Don Pettit when
the Dragon capsule begins its final approach

51
00:03:32,426 --> 00:03:35,486
to the International Space Station
for docking later this month.

52
00:03:35,996 --> 00:03:41,276
And so he and Pettit were doing some training
simulations and exercises with that robotic arm

53
00:03:41,626 --> 00:03:44,086

to practice for their eventual
grapple and docking.

54
00:03:44,556 --> 00:03:48,446
They'll reach out and then grab the capsule
and then dock it to the Earth-facing port

55
00:03:48,446 --> 00:03:54,346
of the Harmony module onboard the station and
will successfully complete the first visit

56
00:03:54,346 --> 00:03:56,826
of a commercial vehicle to the station.

57
00:03:58,226 --> 00:04:02,936
And again Don Pettit was working with Kuipers on
Tuesday with that robotics training on the arm

58
00:04:03,346 --> 00:04:05,566
but also doing some more Robonaut set up,

59
00:04:05,566 --> 00:04:13,406
setting up our robotic crew member onboard the
station for another round of visual acuity tests

60
00:04:13,406 --> 00:04:18,046
and actually conducted some of the
first switch throws and button pushes

61
00:04:18,046 --> 00:04:23,076
on his task board completing a fairly
big milestone and the engineering test

62
00:04:23,076 --> 00:04:26,686
of this humanoid robot's dexterity
all the while being commanded

63
00:04:26,686 --> 00:04:28,936
from the Payload Operations Center in Marshall.

64
00:04:30,396 --> 00:04:34,856
Moving on to Wednesday, we had Oleg Kononenko
taking some electrical readings throughout the

65
00:04:34,856 --> 00:04:40,736
station using a scope meter checking for the
different amplitudes and voltages on a number

66
00:04:40,736 --> 00:04:46,106
of different instruments throughout the
Russian segment onboard the station.

67
00:04:46,496 --> 00:04:48,196
He was also doing some maintenance

68
00:04:48,196 --> 00:04:52,946
on the Russian toilet system replacing the
urine receptacle and also the filter insert just

69
00:04:52,946 --> 00:04:56,766
to make sure it was still
performing in tip-top shape.

70
00:04:57,846 --> 00:05:02,076
It is one of the more vital pieces of hardware
for these astronauts onboard the station.

71
00:05:03,506 --> 00:05:07,306
Meanwhile, Andre Kuipers was
doing some inventory work

72
00:05:07,306 --> 00:05:09,566
on the Human Research Facility supply kits

73
00:05:09,886 --> 00:05:13,136
and unloading some more cargo
from that ATV-3 vehicle.

74
00:05:14,006 --> 00:05:17,746

He also worked up, he set up the SLAMMD,

75
00:05:17,746 --> 00:05:22,716
or the Space Linear Acceleration Mass
Measurement Device, which the astronauts use

76
00:05:22,716 --> 00:05:25,526
to take body mass measurements
onboard the station.

77
00:05:25,936 --> 00:05:31,596
As things like a scale do not work in
microgravity, they have these things like SLAMMD

78
00:05:31,746 --> 00:05:38,106
to use basic physics equations using force
and acceleration to measure their mass.

79
00:05:38,436 --> 00:05:41,646
He was also prepacking some
items that will be loaded on to

80
00:05:41,646 --> 00:05:44,616
that Dragon capsule later on when it visits.

81
00:05:44,616 --> 00:05:49,286
It will be brought back down to Earth
those include things like experiment items

82
00:05:49,286 --> 00:05:53,436
and also hardware for eventual testing
and repair back down here on the ground.

83
00:05:53,656 --> 00:05:59,846
He was also doing some cleaning of the
station's Atmosphere Revitalization System,

84
00:06:00,036 --> 00:06:04,576
cleaning out a few bacteria filters on
Nodes 1, 2 and 3 in the U.S. segment.

85
00:06:05,906 --> 00:06:09,286
Meanwhile, on Wednesday Don Pettit
spent pretty much his entire day

86
00:06:09,716 --> 00:06:14,216
on some heavy experiment work starting
off with the Binary Colloidal Alloy Test.

87
00:06:14,626 --> 00:06:19,046
It's a fairly complex study that uses
microscopic particles known as colloids

88
00:06:19,486 --> 00:06:24,026
as models for studying the fundamental
physics of the liquid crystal phase.

89
00:06:24,926 --> 00:06:27,856
Also, on Wednesday Pettit was
working with the BASS experiment

90
00:06:27,856 --> 00:06:30,156
with the Burning and Suppression of Solids.

91
00:06:30,756 --> 00:06:35,216
This is an investigation that examines
the burning and extinction characteristics

92
00:06:35,216 --> 00:06:40,906
of a wide variety of fuel samples in
microgravity and will help to guide strategies

93
00:06:40,906 --> 00:06:46,476
for extinguishing accidental fires in the
microgravity environment and also contribute

94
00:06:46,476 --> 00:06:51,546
to combustion computational models
used for designing fire detection

95
00:06:51,546 --> 00:06:55,656
and suppression systems both up in
space and down here on the ground.

96
00:06:56,756 --> 00:07:00,876
Along with that he was relocating some of
the emergency equipment onboard the station

97
00:07:01,196 --> 00:07:05,036
in preparation for the upcoming
arrival of the 30 Soyuz vehicle

98
00:07:05,396 --> 00:07:09,536
which will carry the next three crew
members to join this Expedition 31 crew

99
00:07:10,456 --> 00:07:16,546
who on Wednesday were flying from the Gagarin
Cosmonaut Training Center in Star City, Russia,

100
00:07:17,146 --> 00:07:20,806
and departed that base and flew down to
their launch site at the Baikonur Cosmodrome

101
00:07:20,806 --> 00:07:24,926
in Kazakhstan for their final
launch, prelaunch preparations.

102
00:07:25,206 --> 00:07:28,806
Those three seen here are
Joseph Acaba, a NASA astronaut,

103
00:07:29,196 --> 00:07:33,826
and two Russian cosmonauts Gennady Padalka
and Sergei Revin were scheduled to launch

104
00:07:33,826 --> 00:07:36,436
up to the station coming up on May 14.

105

00:07:38,156 --> 00:07:43,486
Moving on to Thursday, Kononenko was
doing some upgrades of software on three

106
00:07:43,486 --> 00:07:46,826
of the Russian laptops and continuing
some of the work he was doing

107
00:07:46,826 --> 00:07:48,316
on the Russian toilet maintenance.

108
00:07:48,816 --> 00:07:51,206
He also transferred a few more items off

109
00:07:51,206 --> 00:07:55,506
of that Progress 47 resupply vehicle
before doing some maintenance work

110
00:07:55,506 --> 00:07:59,016
on the Russian Elektron system
which works to generate oxygen

111
00:07:59,016 --> 00:08:01,426
for the astronauts' breathing
air onboard the station.

112
00:08:02,256 --> 00:08:08,986
Meanwhile, on Thursday Andre Kuipers set up the
Ultrasound-2 device which was used in a couple

113
00:08:08,986 --> 00:08:14,856
of biomedical experiments onboard the station on
Thursday doing some ultrasounds on his own body

114
00:08:14,856 --> 00:08:20,316
for the Integrated Cardiovascular doing,
which is looking to study again heart atrophy,

115
00:08:20,316 --> 00:08:24,646
or the weakening of the heart muscle, inside of

astronauts over these long-duration spaceflight

116
00:08:25,066 --> 00:08:31,106
and also taking some images of his veins and
arms and legs for the Vessel Imaging Experiment

117
00:08:31,106 --> 00:08:34,346
which looks to evaluate the
changes in thickness and compliance

118
00:08:34,726 --> 00:08:37,636
of long-duration ISS crew members both during

119
00:08:37,636 --> 00:08:41,076
and after their long-term
exposure to microgravity.

120
00:08:41,186 --> 00:08:46,256
He was also working on the Carbon
Dioxide Removal Assembly alongside

121
00:08:46,256 --> 00:08:48,096
with Don Pettit who was doing some of that work.

122
00:08:48,096 --> 00:08:52,106
They were replacing and fixing up
some of the air selector valves.

123
00:08:54,756 --> 00:08:57,516
That Carbon Dioxide Removal Assembly,

124
00:08:57,646 --> 00:09:01,366
again Kuipers was doing some work,
but also Don Pettit was as well.

125
00:09:02,236 --> 00:09:08,576
And he, that is used to scrub
or remove excess carbon dioxide

126

00:09:08,576 --> 00:09:10,446
from the atmosphere onboard the station.

127
00:09:10,966 --> 00:09:15,656
As you need to maintain a healthy
breathing atmosphere for these astronauts

128
00:09:15,656 --> 00:09:21,206
as they are exhaling carbon dioxide into
this closed environment at all times.

129
00:09:21,206 --> 00:09:26,256
So that's just to keep our astronauts safe
when breathing an oxygen-rich atmosphere.

130
00:09:27,536 --> 00:09:32,536
Also on Thursday Pettit did his own Integrated
Cardiovascular scan with that ultrasound

131
00:09:33,086 --> 00:09:36,996
and also took a health survey for
the Integrated Immune which looks

132
00:09:36,996 --> 00:09:39,486
to track any immune deficiencies that arise

133
00:09:39,486 --> 00:09:41,946
in these astronauts during their
long-duration spaceflights.

134
00:09:42,436 --> 00:09:45,416
And also was setting up some
hardware for testing today

135
00:09:46,006 --> 00:09:49,266
which will be used for the VO2Max experiment.

136
00:09:50,276 --> 00:09:55,306
Meanwhile, on Thursday down here on the ground
those upcoming Expedition 31 crew members

137
00:09:55,566 --> 00:10:00,226
climbed into their Sokol launch and entry
suits which they will wear during all

138
00:10:00,226 --> 00:10:05,066
of the launch activities inside
they're Soyuz TMA-04M spacecraft.

139
00:10:05,426 --> 00:10:10,386
This was the first of two fit check dress
rehearsals to familiarize themselves

140
00:10:10,386 --> 00:10:14,946
with the vehicle again that they
will launch upcoming here on May 14.

141
00:10:16,116 --> 00:10:21,046
And that launch is scheduled to take
place at 10:01 p.m. Central time,

142
00:10:21,046 --> 00:10:24,926
11:01 p.m. Eastern time just
under two weeks from now.

143
00:10:24,966 --> 00:10:29,336
Again we will have coverage here
on NASA TV of all those events.

144
00:10:30,956 --> 00:10:33,526
And that brings us up to today, Friday,

145
00:10:33,526 --> 00:10:40,036
where Oleg Kononenko was doing some cable audit
photography work in the mini-research module-2,

146
00:10:40,036 --> 00:10:45,026
or the Poisk module and also taking some
measurements of any interference inside

147
00:10:45,026 --> 00:10:50,136
of the Potok air purification system
inside of the Zvezda service module.

148
00:10:51,616 --> 00:10:55,196
Meanwhile, Andre Kuipers is downloading
a lot of that data that's been taken

149
00:10:55,556 --> 00:11:00,756
from the Integrated Cardiovascular experiment
and also setting up the Kubik-3 module.

150
00:11:01,256 --> 00:11:06,576
Kubik-3 is a small controlled temperature
incubator or cooler that's used

151
00:11:06,576 --> 00:11:09,966
to study biological samples in
this microgravity environment.

152
00:11:11,546 --> 00:11:15,756
Meanwhile, Don Pettit is working
with that VO2Max experiment

153
00:11:15,756 --> 00:11:17,836
that he was setting hardware for yesterday.

154
00:11:19,246 --> 00:11:24,896
VO2Max looks to study the maximum oxygen uptake
and aerobic capacity of these astronauts.

155
00:11:25,336 --> 00:11:28,986
Measurements are taken both before,
during and after their spaceflights.

156
00:11:29,286 --> 00:11:33,346
He'll also be doing some checkout work
on the Dragon command and control panel.

157

00:11:33,796 --> 00:11:39,596
Some more upcoming prep work for that
flight of the SpaceX Dragon capsule

158
00:11:39,596 --> 00:11:41,166
to the International Space Station.

159
00:11:41,236 --> 00:11:44,426
You can see some photos of that
their also known as the CUCU.

160
00:11:44,756 --> 00:11:46,346
So he'll be doing those checkouts.

161
00:11:46,896 --> 00:11:52,546
And a little bit later in this hour he'll
be doing a, an interactive interview event

162
00:11:52,936 --> 00:11:56,706
with Fox News Radio and CBS News
Radio along with Andre Kuipers.

163
00:11:57,166 --> 00:11:59,856
So again that will take place
later this hour beginning

164
00:11:59,856 --> 00:12:04,146
at 10:55 a.m. Central time, 11:55 a.m. Eastern.

165
00:12:05,466 --> 00:12:10,256
And then a few other items with
the crew directly involved in.

166
00:12:10,766 --> 00:12:15,836
Padalka, Acaba and Revin who are down in the
Baikonur Cosmodrome in Kazakhstan right now,

167
00:12:15,836 --> 00:12:20,896
participating in the traditional ceremony
outside of their Cosmonaut Hotel crew quarters

168
00:12:21,366 --> 00:12:26,116
and they are reviewing some rendezvous and
docking procedures on their laptop simulators

169
00:12:26,486 --> 00:12:30,096
as they prepare to begin for their flight
to the International Space Station.

170
00:12:31,086 --> 00:12:34,476
And then earlier this morning
the thrusters on the ATV-3,

171
00:12:34,546 --> 00:12:39,116
or the "Edoardo Amaldi" Transfer
Vehicle, fired for about 20 minutes

172
00:12:39,116 --> 00:12:42,466
and 21 seconds at 3:37 a.m. Central time.

173
00:12:42,976 --> 00:12:47,666
And the reboost placed the station at the
correct altitude for the May 15 launch

174
00:12:48,046 --> 00:12:52,676
of that Soyuz TMA-04M spacecraft
which will carry Padalka,

175
00:12:52,676 --> 00:12:56,646
Acaba and Revin to the International
Space Station.

176
00:12:57,416 --> 00:13:02,316
And then aside from all of that some
European flight controllers down here

177
00:13:02,316 --> 00:13:06,256
on the ground are going to prepare to
reintegrate the prime chain of the RECS system.

178
00:13:06,356 --> 00:13:12,366
RECS standing for the Russian Equipment Control
System which had some unexplained problems back

179
00:13:12,366 --> 00:13:16,586
on March 29 just after the ATV-3 vehicle docked.

180
00:13:17,056 --> 00:13:21,416
But engineers believe that the chain is
healthy based on some extensive analysis

181
00:13:21,416 --> 00:13:23,156
of all the data that was brought down.

182
00:13:23,616 --> 00:13:27,576
They believe it will be put back
online with no further issues.