



1

00:00:00,870 --> 00:00:04,630

Good morning and welcome to today's
International Space Station update hour.

2

00:00:04,630 --> 00:00:08,650

Getting a look now inside the flight control
room as ground controllers monitor systems

3

00:00:08,650 --> 00:00:10,670

on board the International Space Station.

4

00:00:10,670 --> 00:00:17,810

The Orbit 2 Team is currently on console, they
are being led by Flight Director Heather Rarick.

5

00:00:17,810 --> 00:00:22,160

Joining her to her right, is capcom Cathy Bolt.

6

00:00:24,210 --> 00:00:31,910

International Space Station currently
orbiting about 241 statute miles,

7

00:00:31,910 --> 00:00:39,330

heading on a north-easterly track that
will take it over the North Pacific.

8

00:00:39,330 --> 00:00:46,670

On board the crew of Expedition 30
is wrapping-up their first week.

9

00:00:46,670 --> 00:00:51,390

Commanding them is NASA Astronaut Dan
Burbank, veteran of two shuttle missions,

10

00:00:51,390 --> 00:00:56,490

on his first long-duration expedition flight.

11

00:00:56,490 --> 00:01:02,630

Joining him are Russian Cosmonauts

Anton and Anatoly Ivanishin.

12

00:01:07,830 --> 00:01:12,330

The crew is wrapping up a busy week, which saw the departure

13

00:01:12,330 --> 00:01:20,050

of their Expedition 29 crew mates earlier this week.

14

00:01:20,050 --> 00:01:24,620

This was kicked-off Sunday which saw a change-of-command ceremony

15

00:01:24,620 --> 00:01:27,680

between NASA Astronauts Dan Burbank and Mike Fossum.

16

00:01:27,680 --> 00:01:29,620

As Fossum formally handed-off command

17

00:01:29,620 --> 00:01:34,040

of the International Space Station to his astronaut counterpart.

18

00:01:34,040 --> 00:01:42,450

This was all in preparation of a Monday undocking and landing, which saw Fossum,

19

00:01:42,450 --> 00:01:49,690

Japanese astronaut Satoshi Furukawa and Russian Cosmonaut Sergei Volkov close up the hatch

20

00:01:49,690 --> 00:01:53,700

and get in their Soyuz spacecraft and then return home.

21

00:01:55,290 --> 00:02:00,170

Also on Monday, Fossum and Furukawa, in addition to their deorbit prep work,

22

00:02:00,170 --> 00:02:05,290

stored some medical samples on board
the spacecraft for their return home.

23

00:02:05,290 --> 00:02:09,170

While Volkov, who is the
commander of that Soyuz spacecraft,

24

00:02:09,170 --> 00:02:14,850

did some stowage close-out activities,
some photography of the external surface

25

00:02:14,850 --> 00:02:19,140

of the spacecraft for ground
controllers, and they performed all

26

00:02:19,140 --> 00:02:21,710

of these system activations and comm checks.

27

00:02:21,710 --> 00:02:28,450

Here you can see the spacecraft camera as it
prepares to undock from the space station.

28

00:02:28,450 --> 00:02:34,180

The command to undock was given about three
minutes before physical separation as a series

29

00:02:34,180 --> 00:02:38,050

of hooks and latches retracted, and then springs

30

00:02:38,050 --> 00:02:41,140

on the docking mechanism of
the spacecraft push it away.

31

00:02:41,140 --> 00:02:49,270

While that was going on Dan Burbank did some
biology experiment work and then maintenance

32

00:02:49,270 --> 00:02:53,680
on the Water Recovery System
on board the station.

33
00:02:53,680 --> 00:02:59,710
Anton Shkaplerov did some maintenance
work on the Vozdukh emergency valves,

34
00:02:59,710 --> 00:03:03,050
which is the carbon dioxide
scrubber on board the station

35
00:03:03,050 --> 00:03:06,450
and transferred some experiment
items to the Soyuz.

36
00:03:06,450 --> 00:03:10,940
Helping him on those experiment
transfers were Anatoly Ivanishin.

37
00:03:10,940 --> 00:03:16,910
Here you can see some footage from
the landing site in Kazakhstan.

38
00:03:16,910 --> 00:03:21,440
The crew landed at 8:26 p.m. CT Monday night,

39
00:03:21,440 --> 00:03:27,870
and that was 8:26 a.m. Kazakhstan
time Tuesday morning.

40
00:03:27,870 --> 00:03:31,800
You can see them being helped
out of their capsule here.

41
00:03:34,390 --> 00:03:39,220
Following landing, the crew members went
through some standard medical checks,

42
00:03:39,220 --> 00:03:43,970

before being brought back for a traditional Kazak welcoming ceremony.

43
00:03:43,970 --> 00:03:49,850
And following this, Fossum and Furukawa got on a NASA jet and headed back to Houston.

44
00:03:49,850 --> 00:03:52,170
While Russian Cosmonaut Sergei Volkov returned

45
00:03:52,170 --> 00:03:57,200
to the Gagarin Cosmonaut Training Center in Star City Russia.

46
00:04:01,050 --> 00:04:05,260
The crew landing in frigid conditions, with the temperature

47
00:04:05,260 --> 00:04:08,850
in the single digit degrees Fahrenheit and wind chills bringing those down to

48
00:04:08,850 --> 00:04:12,440
about negative 10, negative 20 degrees.

49
00:04:31,330 --> 00:04:37,280
Fossum, Furukawa and Volvov landing brought the International Space Station back

50
00:04:37,280 --> 00:04:42,120
to a three crew rotation, and it will continue that way until the launch

51
00:04:42,120 --> 00:04:45,650
of the remaining three Exoedition 30 crew mates.

52
00:04:45,650 --> 00:04:50,450
NASA astronaut Don Pettit,
Russian cosmonaut Oleg Kononenko

53
00:04:50,450 --> 00:04:57,070
and European Space Agency astronaut Andre Kuipers launch to the space station on Dec.

54
00:05:00,520 --> 00:05:04,020
21. Following that activity on Monday, the crew that remained

55
00:05:04,020 --> 00:05:08,600
on board the space station enjoyed an off-duty day as they recovered

56
00:05:08,600 --> 00:05:11,630
from their vigorous handover period.

57
00:05:11,630 --> 00:05:16,170
Normally these handover periods last two to three months, but this crew only had

58
00:05:16,170 --> 00:05:20,390
about six days, as their launch was delayed by that Aug.

59
00:05:20,390 --> 00:05:28,770
24 failure of a Progress spacecraft, which resulted in an extensive investigation.

60
00:05:30,930 --> 00:05:32,990
The only activity that really occurred

61
00:05:32,990 --> 00:05:38,610
on Tuesday was a potential debris avoidance activity.

62
00:05:38,610 --> 00:05:44,990
A piece of space debris estimated to be about four inches in diameter was being tracked.

63
00:05:44,990 --> 00:05:47,870

That was a piece of debris that was left

64

00:05:47,870 --> 00:05:52,430
over from a Chinese satellite
that was destroyed back in 2007.

65

00:05:52,430 --> 00:05:58,620
At about 1:06 p.m. CT on Tuesday the crew
was notified that they may need to shelter

66

00:05:58,620 --> 00:06:01,540
in place in their Soyuz spacecraft.

67

00:06:01,540 --> 00:06:06,110
Normally the station is maneuvered out of
the way in a debris avoidance maneuver,

68

00:06:06,110 --> 00:06:15,080
but due to the elevation and the short period of
time ahead of when the conjunction was predicted

69

00:06:15,080 --> 00:06:19,640
to possibly take place their wasn't enough time.

70

00:06:19,640 --> 00:06:27,230
Moving out of that off-duty day, on Wednesday,
Commander Dan Burbank started his day off

71

00:06:27,230 --> 00:06:31,570
with a public affairs event talking
with CBS News down here on the ground,

72

00:06:31,570 --> 00:06:35,500
before doing some maintenance
work and experiment work

73

00:06:35,500 --> 00:06:38,180
on board the International Space Station.

74

00:06:39,650 --> 00:06:44,840

He started that day with
work on the ISSAC camera,

75

00:06:44,840 --> 00:06:48,300

which stands for the International
Space Station Agricultural Camera.

76

00:06:48,300 --> 00:06:54,600

That camera is mounted in the window
Observational Research Facility and takes images

77

00:06:54,600 --> 00:06:58,230

of both visible and infrared
light of vegetated areas

78

00:06:58,230 --> 00:07:02,190

in the northern Great Plains
region of United States.

79

00:07:02,190 --> 00:07:07,590

These areas include things like
growing crops, grassland and forest.

80

00:07:07,590 --> 00:07:13,960

It is also used to study other dynamic
Earth processes around the world.

81

00:07:13,960 --> 00:07:19,870

These include melting glaciers, ecosystem
responses to seasonal changes, human impacts

82

00:07:19,870 --> 00:07:23,250

and rapid response monitoring
of any natural disasters.

83

00:07:23,250 --> 00:07:30,400

In addition to this experiment work, Burbank
worked on the Vessel Imaging Experiment

84

00:07:30,400 --> 00:07:35,700
which evaluates the changes in
blood vessel wall properties.

85

00:07:35,700 --> 00:07:39,830
Those are affected by the
microgravity environment.

86

00:07:39,830 --> 00:07:44,370
And also did some work on the B-CAT
experiment, which explores the formation

87

00:07:44,370 --> 00:07:48,590
of liquid crystals in microgravity.

88

00:07:48,590 --> 00:07:51,960
He also did some work on
the Passages experiment.

89

00:07:51,960 --> 00:07:56,170
You can see him here setting that up.

90

00:07:56,170 --> 00:08:03,910
And this is a test to determine how astronauts
interpret visual information while they are

91

00:08:03,910 --> 00:08:06,310
in microgravity.

92

00:08:06,310 --> 00:08:09,880
That microgravity environment
having an effect on a number

93

00:08:09,880 --> 00:08:14,230
of body systems while the
astronauts are on orbit.

94

00:08:14,230 --> 00:08:17,700
This one in particular is testing for
the effects of that weightlessness

95

00:08:17,700 --> 00:08:23,130

on the eye's estimates of visual distance and perceived eye height .

96

00:08:23,130 --> 00:08:27,870

These are important functions that can be used in everyday needs

97

00:08:27,870 --> 00:08:30,460

such as determining the passability of a doorway.

98

00:08:30,460 --> 00:08:32,880

You can see him setting this experiment up.

99

00:08:32,880 --> 00:08:38,540

It is very similar to an eye box that you would see at your local eye doctor.

100

00:08:38,540 --> 00:08:44,170

The astronauts then place their face up to the eye holes and it take a number

101

00:08:44,170 --> 00:08:48,070

of readings for controllers on the ground.

102

00:08:51,670 --> 00:08:54,620

His Russian crew mates on Wednesday,

103

00:08:54,620 --> 00:08:59,240

participated in their own Russian public affairs event, talking to reporters on the ground,

104

00:08:59,240 --> 00:09:06,440

and then did some extensive work inside the Russian segment doing some coolant leak checks,

105

00:09:06,440 --> 00:09:10,220

some maintenance and also some work on the Electron system,

106

00:09:10,220 --> 00:09:14,810

which is the oxygen generation unit on the Russian side.

107

00:09:14,810 --> 00:09:20,670

This is part of the dissimilar redundancy on board the International Space Station though,

108

00:09:20,670 --> 00:09:26,110

as the American segment has their own oxygen generating system.

109

00:09:26,110 --> 00:09:30,650

This is to ensure that there always at least two pieces of equipment

110

00:09:30,650 --> 00:09:35,370

that perform the same function, but in different ways.

111

00:09:35,370 --> 00:09:42,020

Moving into Thursday, the crew had a day off for the Thanksgiving holiday

112

00:09:42,020 --> 00:09:46,010

and enjoyed a special meal that was prepared for them.

113

00:09:50,770 --> 00:09:55,080

And then following that off-duty day, brought us into today.

114

00:09:55,080 --> 00:10:02,020

The crew began their day at midnight CT and started it off

115

00:10:02,020 --> 00:10:05,690

with the daily planning conferences they usually do.

116

00:10:05,690 --> 00:10:09,290

And then a crew conference with the Russian flight control team

117

00:10:09,290 --> 00:10:12,740

which happens on Friday every week.

118

00:10:14,470 --> 00:10:18,550

Dan Burbank is doing some more medical testing and experiment set

119

00:10:18,550 --> 00:10:23,040

up today working on the Ultrasound 2 system.

120

00:10:26,150 --> 00:10:33,600

The ultrasound on board is used for the Integrated Cardiovascular Experiment.

121

00:10:34,750 --> 00:10:41,690

Dan Burbank will set up activate this system and then perform an echocardiogram

122

00:10:41,690 --> 00:10:45,080

with guidance from controllers on the ground.

123

00:10:47,290 --> 00:10:51,930

This tests for any cardiac atrophy or diastolic dysfunction,

124

00:10:51,930 --> 00:10:56,040

again from that microgravity environment, as these astronauts continue

125

00:10:56,040 --> 00:10:59,870

to monitor their own bodies, kind of as experiments themselves while they are

126

00:10:59,870 --> 00:11:04,550

on board the space station to give NASA
and its partners a better understanding

127

00:11:04,550 --> 00:11:09,580

of how astronauts will react
to extended durations in space.

128

00:11:09,580 --> 00:11:16,030

In addition to this'll do
some vessel imaging scans

129

00:11:16,030 --> 00:11:20,860

with that ultrasound again testing
the blood vessel walls within his body

130

00:11:20,860 --> 00:11:24,040

and then some stowage work

131

00:11:24,040 --> 00:11:28,740

with the International Space
Station's medical accessory kit.

132

00:11:29,930 --> 00:11:34,730

He'll do some water recovery
management system monitoring,

133

00:11:34,730 --> 00:11:42,200

looking at the contingency water container,
and then get in his two hours of exercise,

134

00:11:42,200 --> 00:11:45,520

which each crewmembers required
to get in each day.

135

00:11:45,520 --> 00:11:52,580

As well as spending an hour of what the
flight control team calls, crew orientation,

136

00:11:52,580 --> 00:11:55,800
as he is only in his second week of space.

137

00:11:55,800 --> 00:12:00,490
An hour is set aside each day for the
astronauts each day to accustom their bodies

138

00:12:00,490 --> 00:12:06,830
to the microgravity environment on
board the International Space Station.

139

00:12:08,130 --> 00:12:11,910
Russian Cosmonaut Anton Shkaplerov
is doing some recovery work on one

140

00:12:11,910 --> 00:12:14,780
of the Russian segment's laptops, before going

141

00:12:14,780 --> 00:12:18,600
into some coolant system maintenance
on the Russian service module.

142

00:12:18,600 --> 00:12:24,790
He will then do some observation
and photography test sessions,

143

00:12:24,790 --> 00:12:28,910
as Earth observations are major
portion of the crews' duties

144

00:12:28,910 --> 00:12:34,240
since the first crews inhabited
the International Space Station.

145

00:12:34,240 --> 00:12:40,040
They have utilized it to take tens of
thousands of images of both natural

146

00:12:40,040 --> 00:12:43,210
and man-made structures on Earth.

147

00:12:45,590 --> 00:12:51,460

His fellow Russian Cosmonaut Anatoly
Ivanishin is doing some fluid loop,

148

00:12:51,460 --> 00:12:56,830

which is some more coolant work, in the
Mini-Research module on the Russian segment

149

00:12:56,830 --> 00:13:00,640

and also doing that crew
orientation time and his exercise.

150

00:13:00,640 --> 00:13:06,040

At the end of the day to crew will
have another daily planning conference,

151

00:13:06,040 --> 00:13:11,240

followed by their weekly flight director
and crew conference, and then are scheduled