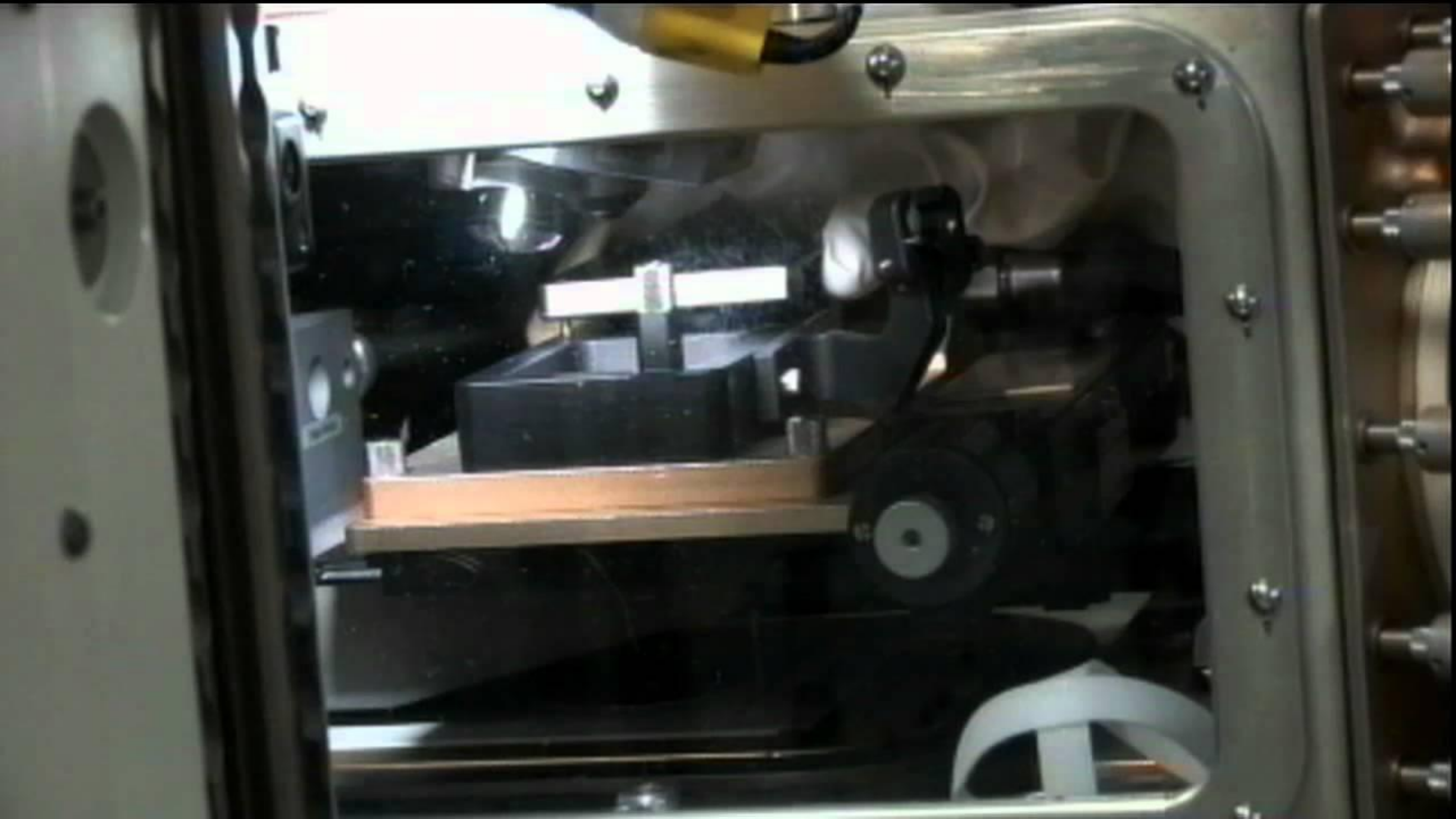

1
00:00:03,036 --> 00:00:04,706
This is Mission Control Houston.

2
00:00:04,706 --> 00:00:08,866
The team here in the International Space
Station Flight Control Room is continuing

3
00:00:08,866 --> 00:00:11,356
to monitor systems onboard the space station.

4
00:00:11,356 --> 00:00:14,766
All is working well as three crew members work

5
00:00:14,766 --> 00:00:20,156
through their day onboard the station
including station commander Mike Fossum

6
00:00:20,726 --> 00:00:24,266
and Flight Engineers Sergei
Volkov and Satoshi Furukawa.

7
00:00:29,756 --> 00:00:33,356
The crew members started off with a busy week.

8
00:00:33,356 --> 00:00:37,376
Even though it was a holiday in the
U.S. on Monday the crew members worked.

9
00:00:38,056 --> 00:00:41,446
Commander Mike Fossum spent
time early in the week working

10
00:00:41,446 --> 00:00:43,766
with the station's Water Recovery System.

11
00:00:44,936 --> 00:00:51,116
That's two refrigerator-sized racks packed
with a distiller and filters that convert urine

12
00:00:51,116 --> 00:00:54,076
and sweat into clean drinking
water onboard the station.

13
00:00:54,976 --> 00:01:00,066
He switched out one of the filter assemblies
with an advanced recycled filter tank assembly

14
00:01:00,066 --> 00:01:05,676
which will be able to be reused instead
of replaced and that separates the filters

15
00:01:05,676 --> 00:01:09,226
from a tank and allows the
tank to emptied and reused.

16
00:01:09,656 --> 00:01:16,946
Fossum and Flight Engineer Satoshi Furukawa
also performed regularly scheduled maintenance

17
00:01:16,946 --> 00:01:25,846
on the system as they collected test samples
and refilled tanks throughout the week.

18
00:01:26,836 --> 00:01:30,596
Meanwhile, Furukawa also
particpated in an educational activity

19
00:01:30,666 --> 00:01:37,136
as he assembled NASA inspired models such
as an exploration rover and a satellite

20
00:01:37,496 --> 00:01:42,536
with Lego bricks to help demonstrate to
children and student groups the challenges faced

21
00:01:43,196 --> 00:01:45,346
when building things in weightless environment.

22

00:01:46,786 --> 00:01:53,566
He also conducted an inspection of the Gradient
Heating Furnace inside the Japanese Kibo

23
00:01:53,566 --> 00:01:57,916
laboratory to help engineers on the ground
determine the cause of a short circuit

24
00:01:57,916 --> 00:01:59,766
that occurred within the unit in April.

25
00:02:00,486 --> 00:02:27,156
That facility is a vacuum furnace used for
high quality crystal growth experiments.

26
00:02:27,156 --> 00:02:33,286
On Wednesday, Fossum worked inside the
Combustion Integrated Rack swapping out hardware

27
00:02:33,286 --> 00:02:36,196
that supports the experiments conducted inside.

28
00:02:36,886 --> 00:02:40,246
The rack is used to perform
combustion experiments in microgravity

29
00:02:40,296 --> 00:02:43,266
such as the Flame Extinguishment
Experiment, or FLEX.

30
00:02:44,226 --> 00:02:49,316
FLEX uses small droplets of fuel to
study the special burning characteristics

31
00:02:49,316 --> 00:02:50,686
of fire in space.

32
00:02:51,796 --> 00:02:55,936
Understanding how fires burn in
microgravity will help to improve fire safety

33
00:02:56,016 --> 00:03:01,246
in future human spacecraft and will
also contribute to the development

34
00:03:01,246 --> 00:03:11,596
of liquid fuel burning engines by
increasing their efficiencies here on Earth.

35
00:03:13,056 --> 00:03:18,276
Flight Engineer Satoshi Furukawa joined
Fossum on Wednesday videotaping demonstrations

36
00:03:18,276 --> 00:03:21,856
and experiments for the Educational
Payload Operations program.

37
00:03:22,606 --> 00:03:25,596
Wednesday's demonstration showed
how a crew member sleeps in space

38
00:03:25,696 --> 00:03:28,216
and included a discussion
on the importance of sleep.

39
00:03:28,376 --> 00:03:32,926
The demonstration was geared towards students
and teachers in grades five through eight.

40
00:03:33,356 --> 00:03:38,566
There are several specific videos demonstrating
basic science principles that have been created

41
00:03:38,566 --> 00:03:44,446
by the crew members and are available via the
NASA Education Project and Central Operations

42
00:03:44,446 --> 00:03:54,866
of Resources for Educators
at CORE -- core.nasa.gov.

43
00:03:56,216 --> 00:04:03,056
On Thursday, Fossum devoted time on two separate
days actually to a Pathfinder demonstration,

44
00:04:03,056 --> 00:04:06,326
know as the Preliminary Advanced
Colloids Experiment, or PACE.

45
00:04:06,996 --> 00:04:12,026
This is setting the stage for the Advanced
Colloid Experiment by determining the limits

46
00:04:12,026 --> 00:04:16,396
of high resolution image magnification
possible onboard ths station.

47
00:04:17,306 --> 00:04:22,556
The ACE future experiment will fly
samples that have an important impact

48
00:04:22,556 --> 00:04:25,946
on our understanding of fundamental physics.

49
00:04:26,576 --> 00:04:29,526
An immediate space application

50
00:04:29,526 --> 00:04:34,996
for that technology demonstration could
be extending the shelf life of consumables

51
00:04:35,326 --> 00:04:37,116
on future long duration missions.

52
00:04:40,896 --> 00:04:46,836
Fossum also spent some time checking
out a microscope for experiment use

53
00:04:46,976 --> 00:04:54,556

in the CubeLab facilities which are
set up to ease the process of carrying

54
00:04:54,556 --> 00:04:59,226
out research onboard the International
Space Station in the modular type facility.

55
00:05:01,966 --> 00:05:08,976
Also on Thursdsay, Fossum and Furukawa
assembled Robonaut2 and powered it

56
00:05:08,976 --> 00:05:14,296
up to perform vision tests and check out
sensors in the humanoid robot's arms.

57
00:05:15,376 --> 00:05:20,086
Engineers on the ground sent the commands
for the tests which involved stretching

58
00:05:20,086 --> 00:05:22,536
out the arms for the first time in space.

59
00:05:23,746 --> 00:05:27,646
Robonaut2 was delivered to the
station on the STS-133 mission

60
00:05:27,646 --> 00:05:34,156
of space shuttle Discovery earlier this year.

61
00:05:34,456 --> 00:05:40,646
Robonaut2 is the first humanoid
robot in space and the primary job

62
00:05:40,646 --> 00:05:46,386
for now is teaching engineers how this
dexterous robot is behaving in space.

63
00:05:47,526 --> 00:05:53,856
The hope is that over time through upgrades and
advancements the robot could assist with tasks

64
00:05:55,106 --> 00:05:58,686
that the crew members are performing
and could even one day venture outside

65
00:05:58,686 --> 00:06:00,426
of the station to help spacewalkers.

66
00:06:04,976 --> 00:06:11,256
On Thursday, Fossum also participated
in an experiment called VO2Max.

67
00:06:12,216 --> 00:06:20,226
VO2Max is the standard measure of
aerobic capacity and is directly related

68
00:06:20,226 --> 00:06:23,056
to the physical capacity of an individual.

69
00:06:24,066 --> 00:06:26,846
Fossum wore sensors that
observe and record changes

70
00:06:26,846 --> 00:06:31,626
in a crew members maximum oxygen
uptake during strenuous activites.

71
00:06:35,776 --> 00:06:45,176
On Friday, the crew members are putting
together some equipment for maintenance work.

72
00:06:45,286 --> 00:06:47,946
Fossum put together and installed a cable

73
00:06:48,086 --> 00:06:53,296
for the Inter-Satellite Communications
System in the Japanese Kibo laboratory.

74
00:06:54,396 --> 00:07:00,436

The jumper cable is to provide power
to components in an alternate method

75
00:07:00,606 --> 00:07:05,656
since the system has been shut down
due to a possible short circuit inside.

76
00:07:08,176 --> 00:07:13,336
Furukawa worked inside the Columbus
laboratory to inspect, clean,

77
00:07:13,336 --> 00:07:16,266
disinfect and cover a few
of the water on/off valves.

78
00:07:17,066 --> 00:07:22,166
That procedure was developed after debris was
found on another valve and determined to be

79
00:07:22,736 --> 00:07:26,006
from condensation collected on
the cold surface of the valve.

80
00:07:26,836 --> 00:07:29,836
The covering is aimed to
help prevent the condensation

81
00:07:29,836 --> 00:07:32,126
from collecting on these other valves as well.

82
00:07:32,546 --> 00:07:40,016
In the Russian segment of the station this
week, Flight Engineer Sergei Volkov participated

83
00:07:40,016 --> 00:07:43,896
in the Pneumocard experiment,
a study of the adaptation

84
00:07:43,896 --> 00:07:47,536
of the cardiovascular system

during long duration spaceflight.

85
00:07:48,066 --> 00:07:52,776
He also conducted ongoing Russian experiments
such as Sonocard and Coulomb Crystal.

86
00:07:53,436 --> 00:08:00,306
Sonocard seeks to improve crew health monitoring
techniques while the Coulomb Crystal experiment

87
00:08:00,396 --> 00:08:04,796
observes how a magnetic field can control
materials that do not mix or react.

88
00:08:05,906 --> 00:08:11,816
Volkov also spent some time photographing panels
in the Zvezda service module and with assistance

89
00:08:11,816 --> 00:08:16,656
from Furukawa configured some laptop
computers in the station's Russian segment

90
00:08:16,656 --> 00:08:19,256
for sending high quality mpeg-2 videos.

91
00:08:20,236 --> 00:08:26,396
He wrapped up the work week
with packing up trash

92
00:08:26,396 --> 00:08:32,266
and unneeded equipment inside the 42 Progress
cargo vehicle so that it can be undocked on Oct.