



1

00:00:01,796 --> 00:00:05,236

Good morning and welcome to the International Space Station Flight Control Room.

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00:00:05,416 --> 00:00:10,536

This team is watching over systems onboard the space station and following along

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00:00:10,536 --> 00:00:12,806

with the activities of the Expedition 30 crew.

4

00:00:13,406 --> 00:00:16,686

This is the ISS Update for Tuesday, January 17.

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00:00:19,426 --> 00:00:23,356

The crew onboard the space station includes Commander Dan Burbank,

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00:00:23,626 --> 00:00:25,726

astronaut overseeing the operations.

7

00:00:26,316 --> 00:00:32,786

He's joined by Flight Engineers, cosmonauts Anton Shkaplerov and Anatoly Ivanishin

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00:00:32,846 --> 00:00:36,616

and Oleg Kononenko and NASA astronaut Don Pettit

9

00:00:37,086 --> 00:00:39,656

and European Space Agency astronaut Andre Kuipers.

10

00:00:40,126 --> 00:00:46,176

This week the crew members are focusing on research onboard the space station.

11

00:00:47,086 --> 00:00:51,006

We received video that was recorded earlier onboard the complex with Pettit

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00:00:51,596 --> 00:00:55,806

and he was working on the  
SPHERES Zero Robotics activity,

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00:00:55,806 --> 00:00:59,116

doing a dry run of use of those satellites.

14

00:00:59,326 --> 00:01:05,596

SPHERES stands for the Synchronized, Position,  
Hold, Engage, Reorient Experimental Satellites

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00:01:06,156 --> 00:01:11,306

and the Zero Robotics aspect is an educational  
activity that establishes an opportunity

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00:01:11,306 --> 00:01:14,476

for high school students to design  
research for the space station.

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00:01:15,126 --> 00:01:19,456

As part of the competition, students write  
algorithms for the SPHERES satellites

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00:01:19,836 --> 00:01:23,796

to accomplish various tasks that are  
relevant to future space missions.

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00:01:24,106 --> 00:01:29,706

The algorithms are tested by the SPHERES  
team and the best designs are selected

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00:01:29,706 --> 00:01:33,136

for the competition to operate the SPHERES  
satellites onboard the space station.

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00:01:33,806 --> 00:01:38,886

Pettit was doing a dry run of that activity  
today and the main event, the finals,

22  
00:01:39,486 --> 00:01:42,766  
are scheduled for next Monday, January 23.

23  
00:01:43,296 --> 00:01:49,236  
Other work Pettit is doing today involves  
the Microgravity Science Glovebox.

24  
00:01:49,656 --> 00:01:56,486  
A lot of work scheduled with that facility this  
week to get it ready for science activities.

25  
00:01:57,206 --> 00:02:03,636  
That is one of the major science facilities  
onboard the space station inside the

26  
00:02:03,636 --> 00:02:04,706  
Destiny laboratory.

27  
00:02:05,386 --> 00:02:11,406  
It provides a glovebox particularly  
suited for handling hazardous materials

28  
00:02:11,436 --> 00:02:17,426  
when the crew is working with them.

29  
00:02:17,636 --> 00:02:21,406  
The crew was busy at work on Monday  
even though it was a government holiday.

30  
00:02:22,296 --> 00:02:24,406  
It was not one observed onboard  
the space station,

31  
00:02:24,446 --> 00:02:26,496  
so other science experiments were ongoing.

32  
00:02:27,456 --> 00:02:34,306  
Pettit continued work with experiments operating  
the Capillary Flow Experiment called Vane Gap.

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00:02:34,566 --> 00:02:39,526

The Capillary Flow experiments are a suite of physics fluids experiments

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00:02:39,526 --> 00:02:46,446

that investigate capillary flows and flows of fluids in containers with complex geometries.

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00:02:47,616 --> 00:02:51,886

Results from those experiments will improve current computer models that are used

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00:02:51,886 --> 00:02:54,586

by designers of low gravity fluid systems

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00:02:54,586 --> 00:02:57,896

that may improve fluid transfer systems on future spacecraft.

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00:02:59,266 --> 00:03:04,606

Without gravity it is more difficult to control the flow of fluids and this is a challenge

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00:03:04,606 --> 00:03:10,536

for designing spacecraft systems such as liquid propellants, thermal control systems,

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00:03:10,596 --> 00:03:12,336

wastewater management and recycling.

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00:03:13,326 --> 00:03:18,176

European Space Agency astronaut Andre Kuipers also worked with an experiment on Monday,

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00:03:18,176 --> 00:03:20,576

actually putting away the equipment for one

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00:03:20,576 --> 00:03:24,886

that was being used earlier  
called the SODI experiment,

44  
00:03:24,926 --> 00:03:31,986  
the Selectable Optical Diagnostics Instrument,  
which is an aggregation of colloidal suspensions

45  
00:03:31,986 --> 00:03:34,806  
that will study the aggregation  
or mass phenomena

46  
00:03:34,876 --> 00:03:37,166  
of colloids in the microgravity environment.

47  
00:03:38,206 --> 00:03:42,536  
One of the most promising applications of  
colloidal engineering is the fabrication

48  
00:03:42,636 --> 00:03:49,196  
of photonic devices, or technologies involving  
light such as those used in telecommunications,

49  
00:03:49,196 --> 00:03:51,166  
robotics and medicine applications.

50  
00:03:52,016 --> 00:03:56,966  
Other experiments have been operated by the  
cosmonauts onboard including a BAR experiment,

51  
00:03:57,036 --> 00:04:01,906  
that Shkaplerov worked on that is  
helping develop methods and instruments

52  
00:04:01,936 --> 00:04:05,626  
to help detect the location of a  
loss of pressure onboard the station.

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00:04:06,526 --> 00:04:11,966  
And he also worked on an experiment  
with Ivanishin that is called Typologia

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00:04:12,296 --> 00:04:16,226

which is a behavioral assessment  
that the cosmonauts are undergoing.

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00:04:16,806 --> 00:04:21,216

The ground team has been working on a tightly  
choreographed activity with the crew also.

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00:04:21,786 --> 00:04:26,786

Starting on Monday, the team here in Mission  
CControl started pushing a software update

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00:04:26,886 --> 00:04:29,956

to the space station's computers,  
all of the major computers

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00:04:30,006 --> 00:04:33,806

that control the station  
systems and research onboard.

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00:04:34,366 --> 00:04:39,656

The transitions of several computers including  
those that operate the systems and some

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00:04:39,656 --> 00:04:43,206

of the laptop computers onboard,  
the ones that the crew members use

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00:04:43,206 --> 00:04:45,026

to interface with the station systems.

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00:04:45,816 --> 00:04:50,196

That started on Sunday and then astronaut  
Dan Burbank helped with that on Monday

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00:04:50,546 --> 00:04:55,046

with those laptop compueters, installing  
new hard drives and plugging those back

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00:04:55,046 --> 00:04:59,176

in after some transitions were done with the major computers.

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00:04:59,636 --> 00:05:04,606

And that work continues today and continues to go well as the team upgrades the software

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00:05:04,806 --> 00:05:10,206

for enhancing the space station's operations and incorporating changes

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00:05:10,206 --> 00:05:14,326

for future activities including the visiting commercial vehicles.

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00:05:15,086 --> 00:05:22,426

With the first of those planned to be from SpaceX, the Dragon vehicle

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00:05:23,146 --> 00:05:27,686

to demonstrate a rendezvous capability with the space station for cargo delivery.

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00:05:28,376 --> 00:05:34,246

That first demonstration flight was targeted for a launch on February 7,

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00:05:34,316 --> 00:05:39,436

but SpaceX has informed NASA that it will need to delay that launch to ensure