



1

00:00:00,950 --> 00:00:05,280

Good day, and welcome to Mission Control Houston where the team of flight controllers is watching

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00:00:05,280 --> 00:00:11,100

over systems aboard the International Space Station as it travels about 230 statute miles

3

00:00:11,100 --> 00:00:13,820

over the eastern coast of the United States.

4

00:00:13,820 --> 00:00:18,610

On duty today as the flight director in charge is Emily Nelson, with Shannon Lucid,

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00:00:18,610 --> 00:00:21,690

a veteran astronaut, serving as the spacecraft communicator talking

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00:00:21,690 --> 00:00:25,920

to the Expedition 29 crew aboard the International Space Station.

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00:00:25,920 --> 00:00:27,580

Of course that's Commander Mike Fossum

8

00:00:27,580 --> 00:00:31,860

and Flight Engineers Sergei Volkov and Satoshi Furukawa.

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00:00:31,860 --> 00:00:35,990

Of course Volkov from the Russian Federal Space Agency and Furukawa

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00:00:35,990 --> 00:00:40,720

from the Japan Aerospace Exploration Agency, two of the key partners for NASA

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00:00:40,720 --> 00:00:46,700

on this orbiting outpost, along with European Space Agency and Canadian Space Agency.

12
00:00:46,700 --> 00:00:51,860
Today has been a day for these three crewmembers devoted primarily toward preparation

13
00:00:51,860 --> 00:00:56,700
for the arrival of new crewmembers and for their departure.

14
00:00:56,700 --> 00:01:02,370
The newest members of the crew are scheduled to launch from the Baikonur Cosmodrome

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00:01:02,370 --> 00:01:07,420
in Kazakhstan late the evening of November 14, Houston time.

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00:01:07,420 --> 00:01:12,810
That'll be Dan Burbank, the future commander of the space station along with Anatoly Ivanishin

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00:01:12,810 --> 00:01:17,090
and Anton Shkaplerov two of the Russian crewmates that'll be joining this crew,

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00:01:17,090 --> 00:01:21,960
these existing three crewmembers for a relatively short handover period.

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00:01:21,960 --> 00:01:26,960
The handover period only about six days long because of the delay in launch

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00:01:26,960 --> 00:01:31,770
of the next three crewmembers following the failure of one of the Progress launch vehicles

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00:01:31,770 --> 00:01:36,520

which had some similarities to the Soyuz rocket that will be used to launch those crewmembers.

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00:01:36,520 --> 00:01:40,630

The Russian team in the Russian Federal Space Agency

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00:01:40,630 --> 00:01:44,600

and their contractors have done a thorough view of the cause of that,

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00:01:44,600 --> 00:01:47,570

determined it was some debris in one of the fuel lines.

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00:01:47,570 --> 00:01:50,740

They had a successful launch of the Progress 45 spacecraft,

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00:01:50,740 --> 00:01:56,260

which has arrived at the International Space Station, is in the process of being unloaded,

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00:01:56,260 --> 00:02:00,300

and have reported in today's flight readiness review conducted here

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00:02:00,300 --> 00:02:05,290

at the Johnson Space Center in Houston by mission managers led by Bill Gerstenmaier,

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00:02:05,290 --> 00:02:10,460

the head of Human Spaceflight operations for NASA, that everything is looking good

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00:02:10,460 --> 00:02:15,400

for the upcoming launch of the remaining three crewmembers and the return of Fossum,

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00:02:15,400 --> 00:02:21,100

Furukawa and Volkov back home to Earth after their six months on orbit.

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00:02:21,100 --> 00:02:26,020
Among the things the crew did today in addition to preparing for their departure and the arrival

33
00:02:26,020 --> 00:02:31,280
of their new crewmates was to do a reconfiguration of some power systems.

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00:02:31,280 --> 00:02:37,790
They did a jumper installation on Destiny laboratory secondary power distribution system

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00:02:37,790 --> 00:02:41,350
to add some additional redundancy to the power systems on the space station.

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00:02:41,350 --> 00:02:44,770
They have been noticing some irregularities in the signals

37
00:02:44,770 --> 00:02:49,390
from one of the main bus switching units.

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00:02:49,390 --> 00:02:54,060
There are four of these located on the S0 part of the truss; that's where the truss connects

39
00:02:54,060 --> 00:02:56,170
to the Destiny laboratory module.

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00:02:56,170 --> 00:02:59,970
And just to provide the maximum redundancy of that switching unit

41
00:02:59,970 --> 00:03:05,180
that routes power throughout the space station, they installed a jumper inside the lab,

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00:03:05,180 --> 00:03:08,210

and that all has been completed well.

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00:03:08,210 --> 00:03:11,100

Crew also today did some experiment work.

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00:03:11,100 --> 00:03:16,680

One of the experiments that they worked on was called SODI by its nickname,

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00:03:16,680 --> 00:03:20,420

which stands for Selectable Optical Diagnostics Instrument,

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00:03:20,420 --> 00:03:23,540

and it's an aggregation of colloidal solutions.

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00:03:23,540 --> 00:03:27,700

Colloidal solutions are those like paint, where you have solids that are suspended

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00:03:27,700 --> 00:03:33,610

within the liquid, and this particular experiment studies how those kinds

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00:03:33,610 --> 00:03:41,360

of colloids aggregate or mass within the liquids onboard in the microgravity environment.

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00:03:41,360 --> 00:03:44,010

One of the most promising applications of this kind

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00:03:44,010 --> 00:03:49,300

of colloidal engineering is the fabrication of photonic devices.

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00:03:49,300 --> 00:03:54,830

These devices have to have structures whose scale length is comparable to the wavelength

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00:03:54,830 --> 00:03:58,760

of light, and are ordered in all three dimensions.

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00:03:58,760 --> 00:04:02,010

Gravity plays a disturbing role in the development of these on the Earth,

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00:04:02,010 --> 00:04:06,500

so these space experiments are looking at how we can improve on those materials.

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00:04:06,500 --> 00:04:11,900

Satoshi Furukawa was the main person working on those activities today.

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00:04:15,170 --> 00:04:18,830

And you can see him in these live downlinks as he's working with the setup of some

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00:04:18,830 --> 00:04:24,080

of the optical equipment that's associated with that SODI experiment.

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00:04:24,080 --> 00:04:29,910

Also on tap today were some routine water processing apparatus activities

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00:04:29,910 --> 00:04:31,040

by Commander Mike Fossum.

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00:04:31,040 --> 00:04:36,190

Fossum was working on doing...

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00:04:43,310 --> 00:04:48,350

topping off of a water recovery system waste storage tank.

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00:04:48,350 --> 00:04:50,340

That's the tank that stores the brine

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00:04:50,340 --> 00:04:53,950

from the water recovery system aboard
the International Space Station,

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00:04:53,950 --> 00:04:59,580

which recycles human waste, urine, and
eventually turns it into pure drinking water

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00:04:59,580 --> 00:05:04,360

that can be used by the crew for a variety
of purposes including meal preparation,

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00:05:04,360 --> 00:05:07,300

hygiene and other uses onboard
the space station.

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00:05:07,300 --> 00:05:16,290

Some pretty spectacular views coming down of
the eastern coast of United States and Canada

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00:05:16,290 --> 00:05:22,350

over Newfoundland as the International
Space Station orbits about 230 statute miles

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00:05:22,350 --> 00:05:27,630

over the Canadian partner in the
International Space Station effort.

71

00:05:27,630 --> 00:05:31,690

Fairly cloudy up there as
winter begins to set in.

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00:05:36,850 --> 00:05:41,360

But overall, all systems on the International
Space Station functioning very well

73
00:05:41,360 --> 00:05:46,080
as we get ready for the arrival of the
new set of crewmembers scheduled to launch

74
00:05:46,080 --> 00:05:50,970
from the Baikonur Cosmodrome
in Kazakhstan on November 13.

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00:05:50,970 --> 00:05:56,050
That's going to be a Sunday night here
in Houston at 10:14 p.m. central time.

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00:05:56,050 --> 00:06:02,080
It'll actually be just the opposite on
the clock at the Baikonur Cosmodrome

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00:06:02,080 --> 00:06:04,690
in Kazakhstan, so it'll be a daytime launch.

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00:06:04,690 --> 00:06:10,260
And then they'll be docking their spacecraft
to the Poisk module of the space station

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00:06:10,260 --> 00:06:14,910
at 11:33 p.m. central time on November 15.

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00:06:14,910 --> 00:06:17,940
And that will round out the
crew to six people once again,

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00:06:17,940 --> 00:06:28,040
but only for six days while they conduct a
rapid handover before Fossum and his colleagues,

82
00:06:28,040 --> 00:06:33,250
Furukawa and Volkov, return home to Earth
after the end of their six month stay on orbit.

83
00:06:33,250 --> 00:06:36,580

Change of command ceremony from
handing over the command from Fossum

84
00:06:36,580 --> 00:06:40,060
to Burbank is schedule for Sunday, November 20.