
CATO

1
00:00:01,890 --> 00:00:04,290
Good afternoon and welcome
to Mission Control Houston.

2
00:00:04,290 --> 00:00:07,650
We're inside the International
Space Station flight control room.

3
00:00:07,650 --> 00:00:11,210
This team of flight controllers is
watching over the systems aboard the station

4
00:00:11,210 --> 00:00:13,590
and all is working well at this time.

5
00:00:13,590 --> 00:00:17,400
They're also following along with
the activities of the Expedition 30.

6
00:00:17,400 --> 00:00:25,050
The crew this week has been focusing on science
experiments and preparing for the departure

7
00:00:25,050 --> 00:00:29,460
and arrival of cargo vehicles
and maintenance activities.

8
00:00:29,460 --> 00:00:33,250
To speak of the science experiments
astronaut Don Pettit set up

9
00:00:33,250 --> 00:00:36,160
and ran a capillary flow experiment on Monday.

10
00:00:36,160 --> 00:00:41,680
That is a suite of fluid physics experiments
that are investigating capillary flows and flows

11
00:00:41,680 --> 00:00:45,360

of fluids in containers with complex geometries.

12
00:00:45,360 --> 00:00:50,790
In particular the experiment he ran called Vane
Gap studies capillary flow when there's a gap

13
00:00:50,790 --> 00:00:56,470
between interior corners such as in the gap
formed by an interior vane and tank wall

14
00:00:56,470 --> 00:00:59,850
in a large propellant storage tank.

15
00:00:59,850 --> 00:01:04,020
Without gravity it's more difficult to control
the flow of fluid and this is a challenge

16
00:01:04,020 --> 00:01:06,560
for designing spacecraft
systems No response required.

17
00:01:06,560 --> 00:01:10,970
We're just gonna let you know that
you have a go to power off Ultrasound.

18
00:01:10,970 --> 00:01:15,080
Pettit and station commander Dan
Burbank worked with another experiment

19
00:01:15,080 --> 00:01:18,710
for students called the SPHERES Zero Robotics.

20
00:01:18,710 --> 00:01:24,480
They did a dry run of using the small
bowling ball sized satellites on Tuesday.

21
00:01:24,480 --> 00:01:29,390
It's call the Synchronized Position Hold
Engage Reorient Experimental Satellites

22
00:01:29,390 --> 00:01:33,890
and this investigation helps provides
an opportunity for high school students

23
00:01:33,890 --> 00:01:36,520
to design research for the space station.

24
00:01:36,520 --> 00:01:40,920
As part of a competition the students
write algorithms for the SPHERES satellites

25
00:01:40,920 --> 00:01:46,640
to accomplish tasks that are relevant to future
space missions, and algorithms are tested

26
00:01:46,640 --> 00:01:50,070
by the SPHERES team and the best
designs are selected for competition

27
00:01:50,070 --> 00:01:52,170
to operate satellites onboard station.

28
00:01:52,170 --> 00:01:57,010
And the crew will help with the
actual challenge Monday, January 23

29
00:01:57,010 --> 00:02:00,760
and high school students teams from
the US and abroad arrived will gather

30
00:02:00,760 --> 00:02:06,250
for the third annual challenge at the MIT or
Massachusetts Institute of Technology campus

31
00:02:06,250 --> 00:02:10,440
in Massachusetts, and that will be
broadcast live on NASA television

32
00:02:10,440 --> 00:02:17,170

from 8 AM to 12:30 PM Eastern time.

33
00:02:17,170 --> 00:02:22,050
Burbank and Pettit also did some maintenance
on the Microgravity Science Glovebox this week.

34
00:02:22,050 --> 00:02:24,880
That to prepare for its use in research.

35
00:02:24,880 --> 00:02:28,600
It's one of the major dedicated science
facilities inside the Destiny laboratory

36
00:02:28,600 --> 00:02:29,160
of station.

37
00:02:29,160 --> 00:02:33,380
It has a large front window and built-in
gloves to provide a sealed environment

38
00:02:33,380 --> 00:02:36,750
for conducting science and
technology experiments.

39
00:02:36,750 --> 00:02:42,250
The glovebox is particularly suited for handling
hazardous materials when the crew is present.

40
00:02:42,250 --> 00:02:44,780
On Friday today, Pettit has been working

41
00:02:44,780 --> 00:02:47,840
on installing the SLICE experiment
inside the glovebox.

42
00:02:47,840 --> 00:02:50,960
It's called the Structure and
Liftoff And Combustion Experiment

43

00:02:50,960 --> 00:02:54,580
which investigates the nature
of flames in microgravity.

44
00:02:54,580 --> 00:02:58,830
The results from these experiments could lead
to improvements in technologies which aim

45
00:02:58,830 --> 00:03:02,970
to reduce pollution emissions
and improve burning efficiency

46
00:03:02,970 --> 00:03:05,610
for a wide variety of industries.

47
00:03:07,310 --> 00:03:11,870
Pettit and European Space Agency
astronaut Andre Kuipers participated

48
00:03:11,870 --> 00:03:14,980
in an Integrated Cardiovascular
experiment this week.

49
00:03:14,980 --> 00:03:21,300
Both participating in ultrasounds that
help determine the time course and pattern

50
00:03:21,300 --> 00:03:27,860
of progression of cardiac atrophy in-flight
or the decrease in size of the heart muscle.

51
00:03:27,860 --> 00:03:31,840
Kuipers also wore a halter to monitor his...

52
00:03:31,840 --> 00:03:36,870
and measure his physical activity
and cardiac work in flight.

53
00:03:36,870 --> 00:03:39,620
Pettit also participated in a second ultrasound

54
00:03:39,620 --> 00:03:43,320
of his leg specifically for
the Sprint experiment.

55
00:03:43,320 --> 00:03:47,860
the integrated resistance and aerobic
training study which evaluates the use

56
00:03:47,860 --> 00:03:53,610
of high-intensity low-volume exercise training
to minimize the loss in muscle, bone, muscle,

57
00:03:53,610 --> 00:04:01,190
bone and cardiovascular function that's seen in
station crew members Cosmonauts Anton Shkaplerov

58
00:04:01,190 --> 00:04:09,640
and Oleg Kononenko worked on packing up
the 45 Progress vehicle for its departure

59
00:04:09,640 --> 00:04:10,940
from the space station on Monday.

60
00:04:10,940 --> 00:04:17,830
They were closing the hatch on the station
side of the attachment for its departure.

61
00:04:17,830 --> 00:04:23,330
The progress will actually departs with its
hatch open in order to deploy a small satellite.

62
00:04:23,330 --> 00:04:29,890
The 88 pound satellite called Chibis-M will
be deployed after the Progress undocks.

63
00:04:29,890 --> 00:04:37,530
Undocking is set for Monday at 4:10 PM central
time, and the Progress vehicle will be deorbited

64
00:04:37,530 --> 00:04:41,350
on Tuesday at about 8:25 PM central time to burn

65
00:04:41,350 --> 00:04:44,860
up in the Earth's atmosphere
with all the trash inside.

66
00:04:44,860 --> 00:04:51,160
Before that the satellite deployment will occur
earlier on Tuesday at about 5:19 PM central.

67
00:04:51,160 --> 00:04:57,780
The vehicle will be a distance of about
7,300 statute miles behind and 62 miles

68
00:04:57,780 --> 00:05:02,450
above the station, and that
satellites will remain in orbit

69
00:05:02,450 --> 00:05:07,700
for at least four years studying the interaction
of plasma waves within the ionosphere.

70
00:05:07,700 --> 00:05:14,100
In some of the maintenance work done on board
the station this week Burbank did some repairs

71
00:05:14,100 --> 00:05:18,460
of the Advanced Resistive
Exercise Device, which...

72
00:05:18,460 --> 00:05:22,870
In particular working with the crank handle
that is used to set the load or the weight

73
00:05:22,870 --> 00:05:25,250
that the crew members use to exercise.

74
00:05:25,250 --> 00:05:29,100

There has been a problem with the
spring-loaded set pin inside of that

75
00:05:29,100 --> 00:05:35,100
and has been allowing the hardware to
shift the load or the weight automatically.

76
00:05:35,100 --> 00:05:38,540
The repairs will help with a temporary fix

77
00:05:38,540 --> 00:05:45,380
until a replacement crank handle assembly
can be launched on the next Progress vehicle

78
00:05:45,380 --> 00:05:50,520
which 46 Progress is set to launch
Wednesday and dock to the station on Friday.

79
00:05:50,520 --> 00:05:59,350
The team here in mission control is also working
with things remotely onboard the station.

80
00:05:59,350 --> 00:06:03,050
The team updated the software of
several computers including those

81
00:06:03,050 --> 00:06:07,990
that operate the station and its systems
and also laptop computers that the crew uses

82
00:06:07,990 --> 00:06:12,330
to interface with those station systems.

83
00:06:12,330 --> 00:06:15,710
The robotics team remotely
commanded the mobile transporter,

84
00:06:15,710 --> 00:06:21,830
its space station robotic arm Canadarm2
and Dextre to survey science experiments

85
00:06:21,830 --> 00:06:26,280
on the outside of the station
using the robotic systems cameras.

86
00:06:26,280 --> 00:06:32,260
It looked at the Space Test Program Houston 3
payload which is on the port three truss exposed

87
00:06:32,260 --> 00:06:37,110
to space, testing concepts in low
Earth orbit for long-duration missions.

88
00:06:37,110 --> 00:06:46,680
This is a view looking at the Vader or Variable
emissivity radiator Aerogel insulation blanket

89
00:06:46,680 --> 00:06:51,920
Dual zone thermal control Experiment
suite for Responsive space test.

90
00:06:51,920 --> 00:06:58,510
Looking at a new form of multilayer insulation
that uses aerogel as the thermal isolator