



1
00:00:01,516 --> 00:00:03,666
Good morning and welcome to
Mission Control, Houston,

2
00:00:03,666 --> 00:00:05,666
and the International
Space Station update hour.

3
00:00:06,116 --> 00:00:08,176
We're back inside the
International Space Station

4
00:00:08,176 --> 00:00:09,896
flight control room at
the Mission Control Center

5
00:00:09,896 --> 00:00:13,396
in Houston, and Flight Director
Paul Dye is again here leading

6
00:00:13,396 --> 00:00:15,826
the orbit two team of flight
controllers through their shift

7
00:00:16,376 --> 00:00:25,796
with Josh Matthew in the
Capcom seat there next to him.

8
00:00:25,876 --> 00:00:28,786
On board the International Space
Station the Expedition 31 crew -

9
00:00:29,306 --> 00:00:32,366
Commander Oleg Kononenko, U.S.
Flight Engineers Don Pettit

10
00:00:32,366 --> 00:00:35,656
and Joe Acaba, European
Flight Engineer Andre Kuipers

11
00:00:35,656 --> 00:00:37,986
and Russian Flight
Engineers Gennady Padalka

12
00:00:38,086 --> 00:00:40,546
and Sergei Revin
- aren't slowing

13
00:00:40,546 --> 00:00:41,936
down as their week wraps up.

14
00:00:42,206 --> 00:00:45,906
They're now more than halfway
through a day of experiments

15
00:00:45,906 --> 00:00:48,646
and maintenance work which
started at 1 a.m. Central time.

16
00:00:50,176 --> 00:00:58,996
They're currently
orbiting 258 miles

17
00:00:59,466 --> 00:01:03,106
above the Pacific Ocean heading
south towards the very southern

18
00:01:03,106 --> 00:01:04,856
tip of South America
which they'll cross

19
00:01:04,856 --> 00:01:06,076
over in the next few minutes.

20
00:01:08,256 --> 00:01:11,376
After a busy week of
SpaceX activities last week,

21
00:01:11,376 --> 00:01:13,716

things have returned to
normal operations this week,

22

00:01:13,716 --> 00:01:15,566

but that doesn't mean that
the crew hasn't been busy.

23

00:01:15,646 --> 00:01:17,746

Of course, one of
the very unique tasks

24

00:01:17,746 --> 00:01:19,096

that the station crew worked

25

00:01:19,096 --> 00:01:21,956

on was photographing the
transit of Venus on Tuesday.

26

00:01:21,956 --> 00:01:24,556

They actually stayed up
into their sleep period

27

00:01:24,556 --> 00:01:28,306

to take the first photos by
humans from space of the event

28

00:01:28,306 --> 00:01:30,076

which occurs only
twice a century

29

00:01:30,076 --> 00:01:32,406

and won't occur again
until 2117.

30

00:01:33,306 --> 00:01:34,876

Flight Engineer Don
Pettit prepared

31

00:01:34,876 --> 00:01:37,206

for the event before he even

left Earth arranging to take

32

00:01:37,206 --> 00:01:40,046
up some special filters that
he needed in order to be able

33

00:01:40,046 --> 00:01:42,356
to capture the planet
Venus crossing

34

00:01:42,356 --> 00:01:44,176
between us and the sun on film.

35

00:01:45,636 --> 00:01:47,856
He took several hundred
pictures over the course

36

00:01:47,856 --> 00:01:49,006
of the seven-hour transit,

37

00:01:49,006 --> 00:01:54,466
many of which are now available
online at venustransit.nasa.gov.

38

00:01:54,836 --> 00:01:57,916
Again that is
venustransit.nasa.gov.

39

00:01:58,476 --> 00:02:03,686
The week hasn't lacked
for science experiments

40

00:02:03,686 --> 00:02:05,016
on board the space
station either.

41

00:02:05,486 --> 00:02:07,246
Over the course of the
week, the crew has worked

42

00:02:07,246 --> 00:02:09,986

on quite a variety, and
they'll add a couple more

43

00:02:09,986 --> 00:02:11,126

into the mix today.

44

00:02:11,846 --> 00:02:15,396

Flight Engineers Joe Acaba and
Don Pettit each spent some time

45

00:02:15,396 --> 00:02:18,916

on the BASS experiment
which stands for Burning

46

00:02:18,916 --> 00:02:20,296

And Suppression of Solids.

47

00:02:21,116 --> 00:02:23,936

That experiment tests
the hypothesis that,

48

00:02:24,426 --> 00:02:27,806

all other things being equal,
materials in microgravity burn

49

00:02:27,806 --> 00:02:30,306

as well or better than
they would in gravity.

50

00:02:30,776 --> 00:02:32,666

Some video here of
Pettit working

51

00:02:32,666 --> 00:02:33,826

in the Columbus laboratory

52

00:02:33,826 --> 00:02:37,696

at the Microgravity Science

Glovebox on that experiment.

53

00:02:39,626 --> 00:02:43,156

Acaba, Pettit and Andre Kuipers
all spent some time this week

54

00:02:43,156 --> 00:02:46,726

performing runs of the VO2 Max
experiment on various days.

55

00:02:46,726 --> 00:02:48,326

That documents changes

56

00:02:48,326 --> 00:02:51,646

in the crew members' maximum
oxygen uptake while they're

57

00:02:51,646 --> 00:02:52,226

in space.

58

00:02:53,056 --> 00:02:54,386

And Acaba also worked
with a couple

59

00:02:54,386 --> 00:02:56,606

of other experiments aimed
at monitoring crew health

60

00:02:56,606 --> 00:02:59,366

and fitness while
away from Earth:

61

00:02:59,366 --> 00:03:01,526

the Integrated Cardiovascular
experiment

62

00:03:01,526 --> 00:03:03,696

and the Pro K diet experiment.

63

00:03:04,336 --> 00:03:06,286
The first three monitors changes

64
00:03:06,286 --> 00:03:08,646
in the crew's cardiovascular
health during

65
00:03:08,646 --> 00:03:11,596
and after their time in
space, and the second is aimed

66
00:03:11,596 --> 00:03:14,476
at determining whether
special diets could be used

67
00:03:14,476 --> 00:03:16,766
as an easy way to prevent
bone loss in space.

68
00:03:18,236 --> 00:03:20,986
Kuipers and Pettit swapped
off throughout the week

69
00:03:20,986 --> 00:03:22,956
on a long maintenance
project they undertook

70
00:03:22,956 --> 00:03:24,606
with the Japanese Ryutai rack.

71
00:03:24,946 --> 00:03:26,456
That rack houses experiments

72
00:03:26,456 --> 00:03:30,196
that investigate fluid physics
phenomena in microgravity,

73
00:03:30,636 --> 00:03:33,306
measures changes in
morphology and growth conditions

74

00:03:33,306 --> 00:03:35,976
of crystals and manipulates
temperatures for proteins.

75

00:03:37,246 --> 00:03:40,076
Kuipers and Pettit have
been working all week

76

00:03:40,076 --> 00:03:43,686
to repair its image
processing unit's power supply,

77

00:03:43,686 --> 00:03:46,136
and they successfully wrapped
up that work yesterday.

78

00:03:46,736 --> 00:03:51,666
Pettit has also been working
for the past three days

79

00:03:51,666 --> 00:03:53,556
on the Amine Swingbed
experiment.

80

00:03:54,176 --> 00:03:55,226
That experiment's working

81

00:03:55,226 --> 00:03:59,186
to determine whether a vacuum
regenerated amine system can

82

00:03:59,186 --> 00:04:01,976
effectively remove carbon
dioxide from the stations air,

83

00:04:02,646 --> 00:04:06,156
but its control power unit
handler circuit board has blown

84

00:04:06,156 --> 00:04:08,516

a fuse that Pettit has
been working to replace.

85

00:04:08,516 --> 00:04:11,096

And he has now actually wrapped

86

00:04:11,346 --> 00:04:13,776

up that work for
the day as well.

87

00:04:15,336 --> 00:04:18,646

Today Pettit will be working
on an experiment called Sprint,

88

00:04:18,846 --> 00:04:21,076

which evaluates the
use of high-intensity,

89

00:04:21,076 --> 00:04:24,006

low-volume exercise to
minimize loss of muscle,

90

00:04:24,066 --> 00:04:27,656

bone and cardiovascular function
during long stays in space,

91

00:04:28,166 --> 00:04:32,286

and Kuipers is working with
the ALTEA-Shield project.

92

00:04:32,856 --> 00:04:37,886

ALTEA stands for
Anomalous Long-Term Effects

93

00:04:37,886 --> 00:04:41,986

in Astronauts' central nervous
system, and this is a portion

94

00:04:41,986 --> 00:04:43,196
of the experiment aimed

95

00:04:43,196 --> 00:04:46,256
at better understanding the
interaction between cosmic rays

96

00:04:46,256 --> 00:04:49,066
and brain function as well
as providing an assessment

97

00:04:49,066 --> 00:04:51,246
of the radiation environment
inside the space station.

98

00:04:53,356 --> 00:04:56,546
Kononenko, Kuipers and Pettit
have just a little more time

99

00:04:56,856 --> 00:04:58,636
to fit in their work
on the space station.

100

00:04:58,636 --> 00:05:00,266
They've been at the
station since December,

101

00:05:00,536 --> 00:05:04,106
and with 170 days in space and
160 days at the space station,

102

00:05:04,106 --> 00:05:05,916
they're coming up now on
the end of their stay.

103

00:05:06,416 --> 00:05:08,466
They'll be returning
to Earth on July 1.

104

00:05:10,206 --> 00:05:14,556

Their crewmates Acaba, Padalka and Revin will have most

105

00:05:14,556 --> 00:05:15,826

of their mission still in front of them.

106

00:05:15,826 --> 00:05:17,896

They only arrived at the station last month

107

00:05:18,426 --> 00:05:21,476

and have now spent 24 days in space and 22 at the station.

108

00:05:21,616 --> 00:05:23,376

And they'll be there until September.

109

00:05:23,776 --> 00:05:27,266

A couple of weeks after their crewmates leave, Acaba, Padalka

110

00:05:27,266 --> 00:05:30,226

and Revin are going to be joined by what will then be the rest

111

00:05:30,226 --> 00:05:33,366

of the Expedition 32 crew - Suni Williams,

112

00:05:33,366 --> 00:05:35,266

Yuri Malenchenko and Aki Hoshide.

113

00:05:36,046 --> 00:05:38,656

Those three are scheduled to launch from Baikonur on July 15,

114

00:05:38,656 --> 00:05:40,796

and they're already in Russia
preparing for their departure.

115

00:05:41,196 --> 00:05:43,636

Today they were at the Gagarin
Cosmonaut Training Center

116

00:05:43,806 --> 00:05:46,496

in Star City reviewing
flight plans and procedures

117

00:05:46,496 --> 00:05:47,566

with Russian specialists.

118

00:05:48,566 --> 00:05:50,286

That's what's been going
on in space this week,