
34

1
00:00:00,516 --> 00:00:05,346
>> The Expedition 34 crewmembers
take their turn on board

2
00:00:05,606 --> 00:00:08,356
after 12 straight years
of crewed operations

3
00:00:08,356 --> 00:00:11,256
on the International Space
Station and they're excited

4
00:00:11,256 --> 00:00:12,716
to get to work focused

5
00:00:12,716 --> 00:00:15,306
on advancing the
station's long term goals.

6
00:00:15,836 --> 00:00:19,136
>> This space station
really represents, to me,

7
00:00:19,136 --> 00:00:22,056
the very first big
cooperative effort

8
00:00:22,056 --> 00:00:24,786
between the most affluent
nations on this planet,

9
00:00:25,106 --> 00:00:30,086
coming together to do something
all toward one goal and that is

10
00:00:30,086 --> 00:00:33,546
to do science that can't be done
on the surface of the earth,

11

00:00:33,546 --> 00:00:35,966
that is the core purpose
of the space station.

12
00:00:36,486 --> 00:00:39,816
And so our job, as the people
onboard is to make sure

13
00:00:39,816 --> 00:00:42,636
that that science gets done.

14
00:00:42,636 --> 00:00:46,846
>> [Inaudible] used to see how
the space factor affects not

15
00:00:47,046 --> 00:00:50,786
only the different experiments,
the different materials

16
00:00:50,786 --> 00:00:54,576
but to see how it affects
us, real, living humans,

17
00:00:54,656 --> 00:00:56,206
how it affects our bodies.

18
00:00:56,386 --> 00:01:00,216
>> A long term existence
under the conditions

19
00:01:00,216 --> 00:01:02,876
of zero [inaudible]
leaves its trace

20
00:01:03,096 --> 00:01:05,976
on a healthy presence,
such as a cosmonaut.

21
00:01:06,236 --> 00:01:08,676
>> The zero gravity

reduces our muscle tone,

22
00:01:08,676 --> 00:01:10,376
our muscles atrophy
including our heart

23
00:01:10,376 --> 00:01:13,776
and the cardiovascular system
atrophies and bones atrophy,

24
00:01:14,266 --> 00:01:15,706
decrease in bone
mineral density.

25
00:01:15,926 --> 00:01:19,606
>> It's as if you spent months
or years, even decades on earth,

26
00:01:19,606 --> 00:01:21,216
happening in just a
few months in orbit.

27
00:01:21,596 --> 00:01:26,296
And using changes in
exercise and changes in diet,

28
00:01:26,566 --> 00:01:29,906
we have basically found a way
to beat that type of aging,

29
00:01:30,006 --> 00:01:32,096
beat that type of osteoporosis.

30
00:01:32,296 --> 00:01:34,936
>> So all of this accelerated
aging process and the means

31
00:01:34,936 --> 00:01:38,516
by which we figure out exactly
what's going down, going on,

32
00:01:38,516 --> 00:01:43,216
even in the cellular level,
how to fix it, exercise, diet,

33
00:01:43,216 --> 00:01:47,566
medications, other things,
all of those things stand

34
00:01:47,566 --> 00:01:49,606
to benefit us on the earth.

35
00:01:49,606 --> 00:01:51,456
>> And why do we do this?

36
00:01:51,726 --> 00:01:54,256
We do this gain a
lot of experience,

37
00:01:55,006 --> 00:01:57,716
to prepare for subsequent
flights,

38
00:01:57,856 --> 00:02:00,356
more long duration
flights to other planets.

39
00:02:00,836 --> 00:02:03,846
>> And the research on the
people is only part of the plan.

40
00:02:03,846 --> 00:02:06,736
For instance, there
are also investigations

41
00:02:06,736 --> 00:02:09,086
in technology development
because things

42

00:02:09,086 --> 00:02:11,726
in space work differently
than they do on earth.

43
00:02:12,096 --> 00:02:14,926
>> You're lucky in your car
because your fuel's always

44
00:02:14,926 --> 00:02:17,146
on the bottom of the tank,
we're not that lucky in space,

45
00:02:17,446 --> 00:02:20,686
we have to design a tank so
that that fuel is always ready

46
00:02:20,686 --> 00:02:23,096
by the pump there to be
pulled down the line and sent

47
00:02:23,096 --> 00:02:25,376
to the engine or
to whatever kind

48
00:02:25,376 --> 00:02:27,266
of device that's going to drive.

49
00:02:27,266 --> 00:02:33,896
>> The potential from the
station is great starting

50
00:02:33,896 --> 00:02:36,626
with the visual observations
of the earth,

51
00:02:36,626 --> 00:02:41,556
the various natural disasters
and phenomena and as well

52
00:02:41,556 --> 00:02:43,286

as the events in space.

53
00:02:43,526 --> 00:02:46,376
>> There are different
experiments

54
00:02:46,666 --> 00:02:50,556
with growing vial crystal
because here on earth,

55
00:02:50,556 --> 00:02:54,466
it is impossible to
grow perfect crystal

56
00:02:54,556 --> 00:02:57,726
because it's not the
right, correct shape

57
00:02:57,726 --> 00:02:59,386
as it should have been.

58
00:02:59,426 --> 00:03:01,246
There are very different
experiments.

59
00:03:01,466 --> 00:03:06,856
Well, the main idea of course
is to use all the potential

60
00:03:06,856 --> 00:03:12,336
of zero gravity of space
and also the various factors

61
00:03:12,336 --> 00:03:16,686
of space flight to test
various materials and products,

62
00:03:16,686 --> 00:03:19,396
maybe test some medicines.

63
00:03:19,396 --> 00:03:22,276
>> The human crewmembers
are test subjects

64
00:03:22,276 --> 00:03:24,916
for some experiments and
lab assistants for others

65
00:03:25,296 --> 00:03:28,666
and spend the rest of their time
making sure the station operates

66
00:03:28,666 --> 00:03:32,806
safely and efficiently, that can
mean routine maintenance inside

67
00:03:32,836 --> 00:03:35,166
the station, that
could mean spacewalks

68
00:03:35,166 --> 00:03:37,036
to do repairs outside
the station,

69
00:03:37,206 --> 00:03:39,286
though none are currently
planned for this increment.

70
00:03:39,826 --> 00:03:43,196
And that can mean supporting
the missions of a small fleet

71
00:03:43,196 --> 00:03:46,026
of unscrewed cargo ships
that keep the station

72
00:03:46,026 --> 00:03:47,246
and its crews supplied.

73

00:03:47,846 --> 00:03:51,666
Visits are targeted within the
Expedition 34 and 35 timeframe

74
00:03:51,976 --> 00:03:53,946
by the Russian Progress Vehicle,

75
00:03:54,476 --> 00:03:56,476
Europe's automated
transfer vehicle

76
00:03:56,936 --> 00:03:59,136
and two American
commercial ships,

77
00:03:59,516 --> 00:04:02,666
Space Exploration Technology's
Corporation's Dragon

78
00:04:03,146 --> 00:04:06,346
and the Cygnus from Orbital
Sciences Corporation,

79
00:04:06,576 --> 00:04:07,946
the second participant

80
00:04:07,946 --> 00:04:10,756
in the Commercial Orbital
Transportation Services Program.

81
00:04:11,256 --> 00:04:15,006
Expedition 34 wraps up
when Ford, Novitskiy,

82
00:04:15,006 --> 00:04:18,186
and Tarelkin come home in
March, leaving Hadfield

83
00:04:18,186 --> 00:04:21,086
to assume command of the

station for Expedition 35

84
00:04:21,506 --> 00:04:24,546
and become the first
Canadian astronaut ever

85
00:04:24,546 --> 00:04:26,426
to command any space vehicle.

86
00:04:27,116 --> 00:04:30,266
He sees this as the next
logical step in Canada's history

87
00:04:30,266 --> 00:04:33,546
of space exploration from
the Alouette 1 Satellite,

88
00:04:33,546 --> 00:04:36,916
launched 50 years ago, to
the first Canadian astronauts

89
00:04:36,916 --> 00:04:39,346
on space shuttle and
space station crews

90
00:04:39,626 --> 00:04:41,686
to pioneering space robotics

91
00:04:41,956 --> 00:04:44,036
that built the International
Space Station.

92
00:04:44,706 --> 00:04:47,606
>> It's a big deal for me
but also it's a big deal

93
00:04:47,606 --> 00:04:50,706
for my country, for my space
agency and for where I'm from.

94
00:04:50,886 --> 00:04:56,286
And so I'm happy that people
are interested in it and --

95
00:04:56,366 --> 00:05:01,986
but I'm fundamentally happy that
this is a continuation of all

96
00:05:01,986 --> 00:05:05,446
of those capabilities and it
continues to open opportunities

97
00:05:05,486 --> 00:05:07,146
for the Canadians
that follow after me.

98
00:05:08,186 --> 00:05:10,396
>> Hadfield's crew
expands in late March

99
00:05:10,696 --> 00:05:14,416
when a Soyuz spacecraft delivers
former station commander

100
00:05:15,206 --> 00:05:17,346
[Foreign name], first time flyer
Alexander Mazurkin [assumed

101
00:05:17,736 --> 00:05:20,336
spelling] and space shuttle
veteran astronaut Chris Cassidy,

102
00:05:20,696 --> 00:05:23,286
making his second trip to the
International Space Station.

103
00:05:23,946 --> 00:05:26,476
They'll join the growing
line of space travelers

104
00:05:26,476 --> 00:05:28,336
from around the world
who have served

105
00:05:28,336 --> 00:05:31,346
on board the International
Space Station to get earth men

106
00:05:31,346 --> 00:05:34,076
and women prepared to
leave their little corner

107
00:05:34,076 --> 00:05:36,056
of the solar system
in the years to come.

108
00:05:36,706 --> 00:05:39,116
>> We're building on the
-- a lot of accomplishments

109
00:05:39,116 --> 00:05:42,046
and successes of astronauts that
have gone up there before us

110
00:05:42,586 --> 00:05:44,896
and they've been able
to build efficiencies

111
00:05:44,896 --> 00:05:46,746
and get more science done
and we want to do that