
Kevin Ford
EXPEDITION 33 FLIGHT ENGINEER

1
00:00:01,356 --> 00:00:05,216
THE WORK NOW UNDERWAY ON BOARD
THE INTERNATIONAL SPACE STATION

2
00:00:05,536 --> 00:00:08,836
IS DESIGNED TO SUPPORT DEEP
SPACE EXPLORATION IN THE FUTURE

3
00:00:09,166 --> 00:00:11,526
AND PROVIDE BENEFITS
ON EARTH TODAY:

4
00:00:11,976 --> 00:00:15,476
THE EXPEDITION 33 CREW MEMBERS
ARE WORKING ON EXPERIMENTS

5
00:00:15,476 --> 00:00:18,736
IN ASTROPHYSICS AND EARTH
SCIENCE, IN EDUCATION

6
00:00:18,736 --> 00:00:20,206
AND IN TECHNOLOGY DEVELOPMENT,

7
00:00:20,656 --> 00:00:23,076
AND IN HUMAN PHYSIOLOGY
AND PERFORMANCE.

8
00:00:23,506 --> 00:00:25,746
...there's a myriad of things
that are going on, you know,

9
00:00:25,746 --> 00:00:30,626
not only U.S. but European,
uh, Japanese experiments...

10
00:00:31,076 --> 00:00:33,336
...there's experiments
from all over the world

11

00:00:33,336 --> 00:00:34,796
that we'll be doing and hoping,

12
00:00:35,136 --> 00:00:38,246
help some of the human
research that's going on.

13
00:00:39,526 --> 00:00:42,196
A TOP PRIORITY IS LEARNING
HOW A PROLONGED STAY

14
00:00:42,196 --> 00:00:43,966
IN SPACE AFFECTS THE HUMAN BODY.

15
00:00:44,606 --> 00:00:45,816
SOME OF THE DATA IS GATHERED

16
00:00:45,816 --> 00:00:48,776
FROM OBSERVING HOW CREW
MEMBERS OPERATE IN MICROGRAVITY;

17
00:00:49,286 --> 00:00:52,156
SOME OF THE DATA IS GATHERED IN
THE FORM OF BIOLOGICAL SAMPLES

18
00:00:52,156 --> 00:00:53,816
FROM THE CREW THAT
WILL BE EXAMINED

19
00:00:53,816 --> 00:00:55,116
ON THE GROUND AFTER THE FLIGHT.

20
00:00:55,596 --> 00:01:03,596
We will study the bone, tissue,
pre-flight and post-flight,

21
00:01:03,596 --> 00:01:08,806
we'll perform blood tests;
it's a large area for research.

22
00:01:09,686 --> 00:01:11,646
AT THE SAME TIME,
THROUGHOUT THE MISSION,

23
00:01:12,036 --> 00:01:15,416
THE CREW MEMBERS SPEND TIME EACH
DAY IN PRACTICAL APPLICATION

24
00:01:15,416 --> 00:01:17,186
OF THE BEST THEORIES ABOUT HOW

25
00:01:17,186 --> 00:01:19,986
TO COUNTERACT THE NEGATIVE
EFFECTS OF LIVING IN SPACE:

26
00:01:20,586 --> 00:01:23,996
TRYING TO PROVE CONCEPTS THAT
WILL KEEP DEEP SPACE EXPLORERS

27
00:01:23,996 --> 00:01:26,186
OF THE FUTURE HEALTHY
ON MISSIONS

28
00:01:26,186 --> 00:01:27,816
THAT WILL LAST FOR YEARS.

29
00:01:28,476 --> 00:01:29,946
THIS WORK ALSO CONTRIBUTES

30
00:01:29,946 --> 00:01:32,106
TO THE STATION CREW
MEMBERS' OVERALL HEALTH

31
00:01:32,106 --> 00:01:34,776
AND PHYSICAL FITNESS, SO
THEY'RE BETTER ABLE TO WORK

32
00:01:34,806 --> 00:01:37,906
WITH ALL THE OTHER EXPERIMENTS

ON BOARD, INCLUDING SOME

33
00:01:37,906 --> 00:01:41,716
THAT HAVE A SIMILAR GOAL, SUCH
AS A STUDY OF THE MEDAKA FISH.

34
00:01:42,066 --> 00:01:46,516
the importance of these very
small fishes are they have bones

35
00:01:46,766 --> 00:01:50,066
and muscles just like human
beings, so what we're trying

36
00:01:50,066 --> 00:01:55,916
to do is have them stay in
space for longer duration

37
00:01:56,326 --> 00:01:59,636
and then bring them down
and then take at a look

38
00:01:59,636 --> 00:02:02,736
at their bone structures
and muscles

39
00:02:03,256 --> 00:02:05,146
and see the effects
of microgravity.

40
00:02:06,246 --> 00:02:09,166
THE CREW MEMBERS TEND TO THE
OPERATION OF THAT EXPERIMENT

41
00:02:09,166 --> 00:02:10,906
AND OTHER INVESTIGATIONS GOING

42
00:02:10,906 --> 00:02:12,946
ON IN THE STATION'S
SEVERAL LABORATORIES,

43
00:02:13,346 --> 00:02:15,306
SERVING AS THE ON-ORBIT HANDS

44
00:02:15,556 --> 00:02:18,126
FOR EARTH-BOUND RESEARCHERS
WORKING IN A NUMBER

45
00:02:18,126 --> 00:02:21,026
OF SCIENTIFIC DISCIPLINES.

46
00:02:21,026 --> 00:02:23,236
in those kinds of
equipments we'll be acting

47
00:02:23,236 --> 00:02:27,116
as lab assistants, all kinds of
media that have to mixed and,

48
00:02:27,116 --> 00:02:29,676
you know, temperature
has to be maintained,

49
00:02:29,676 --> 00:02:31,866
certain time stamps will have
to, will have to be kept,

50
00:02:31,866 --> 00:02:34,016
and everything needs to be
done with a lot of precision

51
00:02:34,016 --> 00:02:37,536
and a lot of attention
to detail THIS PLATFORM

52
00:02:37,536 --> 00:02:41,686
IN SPACE SUPPORTS ALL OF THAT
RESEARCH, PLUS, A WHOLE SLEW

53

00:02:41,686 --> 00:02:44,286
OF EXPERIMENTS ON THE
OUTSIDE OF THE SPACE STATION

54
00:02:44,286 --> 00:02:47,366
THAT ARE CONSTANTLY GATHERING
DATA WITHOUT THE ASSISTANCE

55
00:02:47,366 --> 00:02:48,666
OF THE HUMAN CREW MEMBERS.

56
00:02:48,666 --> 00:02:53,256
FOR EXAMPLE: We have the
JEM Exposed Facility that,

57
00:02:53,306 --> 00:02:59,016
that has some even NASA payloads
outside, um, for example, MAXI,

58
00:02:59,016 --> 00:03:03,106
an X-ray, an all-sky X-ray
detector, on the outside,

59
00:03:03,106 --> 00:03:05,316
we're getting ready to
take up SCAN Testbed on HTV

60
00:03:05,316 --> 00:03:09,516
which will go on, like, an
external log, logistics platform

61
00:03:09,516 --> 00:03:12,806
out there, and, of course, Alpha
Magnetic Spectrometer sitting

62
00:03:12,806 --> 00:03:14,266
out on the starboard
side as well.

63
00:03:14,456 --> 00:03:17,866

...TAKING ADVANTAGE OF BEING
IN SPACE TO GATHER INFORMATION

64
00:03:17,866 --> 00:03:20,686
ON COSMIC PARTICLES FOR
RESEARCHERS WHO ARE TRYING

65
00:03:20,686 --> 00:03:24,336
TO LEARN WHAT THE UNIVERSE
IS MADE OF AND HOW IT BEGAN.

66
00:03:25,526 --> 00:03:28,746
FOR ALL OF THE CREW MEMBERS,
THERE IS ONE OTHER WIDE-RANGING,

67
00:03:28,876 --> 00:03:32,906
HIGH-PRIORITY TASK THAT MUST BE
COMPLETED SO THAT THESE DOZENS

68
00:03:32,906 --> 00:03:38,406
OF SCIENTIFIC INVESTIGATIONS
CAN PROCEED: And the task is

69
00:03:38,406 --> 00:03:41,396
to maintain the space
station in due condition

70
00:03:42,086 --> 00:03:47,996
so that all the units and
all the apparati perform

71
00:03:47,996 --> 00:03:50,236
as they should, and should any

72
00:03:50,236 --> 00:03:55,936
of those break down,
to be able to fix it.

73
00:03:56,756 --> 00:03:58,826
THAT MEANS PERFORMING

REGULAR MAINTENANCE WORK,

74
00:03:59,276 --> 00:04:01,726
BEING READY TO REPAIR
HARDWARE THAT BREAKS DOWN,

75
00:04:02,156 --> 00:04:05,596
AND POSSIBLY DOING A SPACEWALK
IF NEEDED TO TEND TO EQUIPMENT

76
00:04:05,596 --> 00:04:08,556
ON THE STATION'S EXTERIOR,
ALTHOUGH NO SPACEWALKS ARE

77
00:04:08,556 --> 00:04:10,246
IN THE PLAN FOR THIS INCREMENT.

78
00:04:10,836 --> 00:04:12,266
THERE WILL BE A GOOD
BIT OF TRAFFIC

79
00:04:12,266 --> 00:04:15,756
AT THE SPACE STATION LATE THIS
YEAR: ALONG WITH THE GOINGS

80
00:04:15,756 --> 00:04:19,676
AND COMINGS OF THREE UNCREWED
RUSSIAN CARGO SHIPS, WILLIAMS,

81
00:04:19,676 --> 00:04:21,996
MALENCHENKO AND HOSHIDE
DEPART THE STATION

82
00:04:21,996 --> 00:04:24,416
IN THEIR SOYUZ SPACECRAFT
IN MID-NOVEMBER

83
00:04:24,696 --> 00:04:28,226
TO CONCLUDE EXPEDITION
33; FORD BECOMES COMMANDER

84
00:04:28,226 --> 00:04:32,486
FOR EXPEDITION 34, AND IN
EARLY DECEMBER HE AND NOVITSKIY

85
00:04:32,486 --> 00:04:36,336
AND TARELKIN WELCOME A SOYUZ
CARRYING THREE EXPERIENCED SPACE

86
00:04:36,336 --> 00:04:39,866
FLYERS: STATION VETERAN
ROMAN ROMANENKO OF ROSCOSMOS

87
00:04:40,186 --> 00:04:41,956
AND FIRST-TIME STATION
CREW MEMBERS,

88
00:04:42,206 --> 00:04:43,976
NASA ASTRONAUT TOM MARSHBURN

89
00:04:44,246 --> 00:04:47,086
AND CANADIAN SPACE AGENCY
ASTRONAUT CHRIS HADFIELD.

90
00:04:47,446 --> 00:04:50,496
THEY WILL ALL BE ON HAND TO
SUPPORT THE PLANNED ARRIVALS

91
00:04:50,756 --> 00:04:54,716
OF TWO AMERICAN COMMERCIAL
CARGO SHIPS, SPACE-X'S DRAGON

92
00:04:54,716 --> 00:04:57,246
AND ORBITAL SCIENCE
CORPORATION'S CYGNUS,

93
00:04:57,616 --> 00:04:59,656
WHICH ARE EXPANDING
THE STATION'S FLEET

94
00:04:59,656 --> 00:05:00,906
OF DELIVERY VEHICLES.

95
00:05:01,376 --> 00:05:05,606
they fly up underneath the
space station just within reach

96
00:05:05,606 --> 00:05:08,236
of our Canadarm2 robotic arm.

97
00:05:08,636 --> 00:05:13,146
We'll fly over top of the pin
and grapple that, that, uh,

98
00:05:13,486 --> 00:05:18,076
that vehicle and berth it to
the bottom port on Node 2,

99
00:05:18,376 --> 00:05:21,516
right under the U.S. segment,
and have access to the cargo.

100
00:05:22,286 --> 00:05:27,316
THOSE CARGOES-TONS OF FOOD,
FUEL, OXYGEN AND AIR, CLOTHING,

101
00:05:27,546 --> 00:05:30,566
WORK SUPPLIES, AND
SCIENCE HARDWARE-ARE VITAL

102
00:05:30,566 --> 00:05:33,256
TO MAINTAINING THE EXPEDITION
CREW MEMBERS THEMSELVES,

103
00:05:33,526 --> 00:05:36,386
AND COMPLETING THE MISSION OF
THE INTERNATIONAL SPACE STATION:

104
00:05:36,906 --> 00:05:39,406

TO PREPARE HUMAN
EXPLORERS AND THEIR TOOLS

105
00:05:39,406 --> 00:05:41,386
FOR THE DEEP SPACE
EXPLORATION MISSIONS

106
00:05:41,386 --> 00:05:44,346
THAT ARE MOVING OFF THE
DRAWING BOARDS RIGHT NOW...

107
00:05:44,346 --> 00:05:49,756
the ability of the humans to,
to not only function in space

108
00:05:49,806 --> 00:05:52,996
but be very functional when they
arrive at their destination,

109
00:05:52,996 --> 00:05:55,786
those are the kinds of things
we're learning from the science.

110
00:05:55,866 --> 00:05:59,316
Uh, fuel technologies,
fuel transfer technologies,

111
00:05:59,466 --> 00:06:02,606
and all the things we can learn
about the space environment,