
PORT

1
00:00:07,749 --> 00:00:05,510
for more than 14 years now without a

2
00:00:10,070 --> 00:00:07,759
break of even a single day there have

3
00:00:12,549 --> 00:00:10,080
been people living and working in space

4
00:00:15,509 --> 00:00:12,559
to get humankind ready to go out into

5
00:00:17,349 --> 00:00:15,519
deep space to find out what's out there

6
00:00:20,390 --> 00:00:17,359
today the international space station's

7
00:00:22,870 --> 00:00:20,400
expedition 42 crew is doing its part by

8
00:00:24,790 --> 00:00:22,880
focusing on science research developing

9
00:00:27,109 --> 00:00:24,800
new technologies and keeping their

10
00:00:29,029 --> 00:00:27,119
spaceship in top operating condition to

11
00:00:30,390 --> 00:00:29,039
support all the work

12
00:00:32,709 --> 00:00:30,400
anything you have in your home your air

13
00:00:34,310 --> 00:00:32,719

conditioning system whatever it might be

14
00:00:35,510 --> 00:00:34,320
over time something wears out a part

15
00:00:37,350 --> 00:00:35,520
wears out and you got to call the guy to

16
00:00:39,350 --> 00:00:37,360
come fix it well we don't we don't call

17
00:00:42,069 --> 00:00:39,360
anybody we have to fix it ourselves that

18
00:00:44,389 --> 00:00:42,079
is a major part of living in space just

19
00:00:46,229 --> 00:00:44,399
like living here on earth

20
00:00:48,389 --> 00:00:46,239
station maintenance doesn't just mean

21
00:00:50,549 --> 00:00:48,399
fixing things inside

22
00:00:53,029 --> 00:00:50,559
sometimes it means a trip out the

23
00:00:55,350 --> 00:00:53,039
airlock wilmore and flight engineer

24
00:00:57,750 --> 00:00:55,360
terry verts are planning spacewalks

25
00:00:59,830 --> 00:00:57,760
focused on new docking adapters for

26
00:01:01,430 --> 00:00:59,840
future crew vehicles when we have

27
00:01:03,590 --> 00:01:01,440
american spacecraft coming to the

28
00:01:05,830 --> 00:01:03,600
station again hopefully in a few years

29
00:01:08,469 --> 00:01:05,840
these spaceships will need to dock and

30
00:01:09,670 --> 00:01:08,479
the docking areas need to be launched

31
00:01:11,190 --> 00:01:09,680
and installed

32
00:01:12,870 --> 00:01:11,200
the only problem is

33
00:01:15,590 --> 00:01:12,880
they just don't snap on and work they

34
00:01:17,270 --> 00:01:15,600
have to have power so you the power

35
00:01:19,109 --> 00:01:17,280
cables and systems that were designed

36
00:01:21,429 --> 00:01:19,119
for the shuttle system are not the same

37
00:01:22,950 --> 00:01:21,439
for these docking adapters so eventually

38
00:01:25,429 --> 00:01:22,960

these docking adapters go on but when

39
00:01:27,190 --> 00:01:25,439
they get there they gotta have power so

40
00:01:29,270 --> 00:01:27,200
terry verts and i right now are

41
00:01:30,550 --> 00:01:29,280
scheduled to run some cables we're the

42
00:01:32,230 --> 00:01:30,560
cable guys

43
00:01:34,630 --> 00:01:32,240
it's the most cables and the longest

44
00:01:36,469 --> 00:01:34,640
cables ever in a in a 10 year long

45
00:01:38,710 --> 00:01:36,479
assembly sequence with lots of cables

46
00:01:40,710 --> 00:01:38,720
this is the most that's ever been done

47
00:01:43,190 --> 00:01:40,720
keeping the station running supports all

48
00:01:46,069 --> 00:01:43,200
the science including experiments on the

49
00:01:48,149 --> 00:01:46,079
exterior of the station that point up to

50
00:01:51,190 --> 00:01:48,159
gather cosmic particles in the search

51
00:01:53,670 --> 00:01:51,200
for dark matter or look down to observe

52
00:01:55,670 --> 00:01:53,680
earth from a unique vantage point

53
00:01:57,990 --> 00:01:55,680
inside the station the human crew

54
00:01:59,590 --> 00:01:58,000
members facilitate a wide range of

55
00:02:01,510 --> 00:01:59,600
investigations

56
00:02:03,429 --> 00:02:01,520
we're not scientists necessarily on

57
00:02:05,429 --> 00:02:03,439
board we're like lab technicians we have

58
00:02:07,670 --> 00:02:05,439
to lend our hands to the to the

59
00:02:09,669 --> 00:02:07,680
scientists to physically do a few

60
00:02:12,150 --> 00:02:09,679
tasks that of course cannot be done from

61
00:02:14,150 --> 00:02:12,160
the ground it's one of the privileges of

62
00:02:16,229 --> 00:02:14,160
being an instrument is that you really

63
00:02:18,710 --> 00:02:16,239

work with i'd say hundreds maybe it's

64
00:02:21,110 --> 00:02:18,720
more of people who are really top

65
00:02:22,550 --> 00:02:21,120
experts in their fields

66
00:02:23,350 --> 00:02:22,560
the thing about science is you never

67
00:02:25,910 --> 00:02:23,360
know

68
00:02:27,750 --> 00:02:25,920
what you're going to get and the really

69
00:02:29,589 --> 00:02:27,760
easy discoveries were all made you know

70
00:02:31,910 --> 00:02:29,599
500 years ago the apple hits the ground

71
00:02:33,509 --> 00:02:31,920
hey there's gravity you know that people

72
00:02:34,869 --> 00:02:33,519
all the low-hanging fruit so to speak

73
00:02:36,630 --> 00:02:34,879
have already been picked and so the

74
00:02:38,550 --> 00:02:36,640
science that we're doing now

75
00:02:40,229 --> 00:02:38,560
is really

76
00:02:42,949 --> 00:02:40,239
a link in a chain

77
00:02:44,869 --> 00:02:42,959
that might be a thousand links long

78
00:02:47,750 --> 00:02:44,879
this crew will work on research ranging

79
00:02:50,070 --> 00:02:47,760
from 3d printing to combustion and fire

80
00:02:51,430 --> 00:02:50,080
prevention to plant growth and physics

81
00:02:53,990 --> 00:02:51,440
and much more

82
00:02:56,790 --> 00:02:54,000
on top of all that each crew member is a

83
00:02:59,589 --> 00:02:56,800
test subject for ongoing research into

84
00:03:01,350 --> 00:02:59,599
how human bodies are affected by being

85
00:03:03,990 --> 00:03:01,360
in the space environment for a long

86
00:03:06,390 --> 00:03:04,000
period of time as will be the case for

87
00:03:07,750 --> 00:03:06,400
the human crew members on future deep

88
00:03:09,910 --> 00:03:07,760

space missions

89
00:03:12,390 --> 00:03:09,920
the trick is figuring out how a body

90
00:03:14,630 --> 00:03:12,400
that weakens in the absence of gravity

91
00:03:16,830 --> 00:03:14,640
can be strong enough to work when it

92
00:03:20,470 --> 00:03:16,840
encounters gravity again

93
00:03:23,110 --> 00:03:20,480
uh because getting used to zero gravity

94
00:03:26,229 --> 00:03:23,120
was so easy for me and then you start

95
00:03:27,910 --> 00:03:26,239
feeling yourself so comfortable

96
00:03:30,789 --> 00:03:27,920
within a couple of weeks

97
00:03:33,670 --> 00:03:30,799
after my six-month mission when i came

98
00:03:36,869 --> 00:03:33,680
back to earth i realized that earth is

99
00:03:38,949 --> 00:03:36,879
not really happy to see me and my body

100
00:03:40,390 --> 00:03:38,959
is not happy to be back to

101
00:03:42,710 --> 00:03:40,400
earth gravity

102
00:03:44,869 --> 00:03:42,720
so everything about these people is part

103
00:03:47,750 --> 00:03:44,879
of the research

104
00:03:48,789 --> 00:03:47,760
we do experiments to see how blood

105
00:03:51,830 --> 00:03:48,799
changes

106
00:03:54,789 --> 00:03:51,840
how

107
00:03:59,270 --> 00:03:54,799
bone mass changes and bone density

108
00:04:01,350 --> 00:03:59,280
changes this is a huge scope of research

109
00:04:03,990 --> 00:04:01,360
supporting the work of the crew requires

110
00:04:06,309 --> 00:04:04,000
periodic deliveries of new supplies and

111
00:04:09,110 --> 00:04:06,319
this station gets them via cargo ships

112
00:04:10,710 --> 00:04:09,120
provided by station partners and private

113
00:04:13,830 --> 00:04:10,720

contractors

114
00:04:17,430 --> 00:04:13,840
all these vehicles are necessary to

115
00:04:19,990 --> 00:04:17,440
deliver hardware to the station water

116
00:04:21,509 --> 00:04:20,000
food supplies oxygen everything that

117
00:04:23,430 --> 00:04:21,519
supports the operation of the

118
00:04:25,510 --> 00:04:23,440
international space station

119
00:04:27,990 --> 00:04:25,520
in february this crew will oversee the

120
00:04:30,870 --> 00:04:28,000
departure of the european space agency's

121
00:04:33,189 --> 00:04:30,880
final automated transfer vehicle its

122
00:04:35,670 --> 00:04:33,199
ordinary destructive plunge into the

123
00:04:38,070 --> 00:04:35,680
atmosphere will be adjusted to gather

124
00:04:40,390 --> 00:04:38,080
data for the future fiery finale of an

125
00:04:42,469 --> 00:04:40,400
even larger vehicle the international

126
00:04:44,629 --> 00:04:42,479
space station itself

127
00:04:46,629 --> 00:04:44,639
so to make absolutely and fully sure

128
00:04:49,830 --> 00:04:46,639
that we understand this we are going to

129
00:04:53,030 --> 00:04:49,840
guide htv through a shallow reentry that

130
00:04:54,629 --> 00:04:53,040
should mimic what the re-entry of the

131
00:04:57,830 --> 00:04:54,639
space station will be at some point in

132
00:04:59,670 --> 00:04:57,840
the future and we will have like i think

133
00:05:04,390 --> 00:04:59,680
i think 100 or more

134
00:05:08,390 --> 00:05:06,390
when wilmore and his soyuz crewmates

135
00:05:10,790 --> 00:05:08,400
come home in march verts becomes

136
00:05:12,629 --> 00:05:10,800
commander for expedition 43

137
00:05:14,390 --> 00:05:12,639
and when he opens the door two weeks

138
00:05:17,029 --> 00:05:14,400

later for soyuz commander gennady

139
00:05:19,749 --> 00:05:17,039
padalka he'll usher in the international

140
00:05:21,590 --> 00:05:19,759
space station's first year-long mission

141
00:05:24,469 --> 00:05:21,600
which will be completed by padalka's

142
00:05:26,310 --> 00:05:24,479
crewmates nasa astronaut scott kelly and

143
00:05:28,390 --> 00:05:26,320
cosmonaut mikhail kornienko of the

144
00:05:31,749 --> 00:05:28,400
russian federal space agency who will

145
00:05:33,590 --> 00:05:31,759
remain on board through expedition 46.

146
00:05:36,230 --> 00:05:33,600
the mission for verts shkaplerov and

147
00:05:38,070 --> 00:05:36,240
christopher reddy runs into may adding

148
00:05:40,230 --> 00:05:38,080
to the lessons learned in low earth

149
00:05:43,670 --> 00:05:40,240
orbit that will be applied to build

150
00:05:45,510 --> 00:05:43,680
humankind's future in space

151
00:05:48,070 --> 00:05:45,520
if we want to

152
00:05:49,670 --> 00:05:48,080
conduct further exploration in a robust

153
00:05:51,670 --> 00:05:49,680
manner

154
00:05:52,390 --> 00:05:51,680
those are all lessons that we needed to

155
00:05:54,550 --> 00:05:52,400
learn

156
00:05:55,909 --> 00:05:54,560
and i think it will be invaluable for