
GOLD
AWARD
JAXA

1
00:00:07,730 --> 00:00:02,450
station this is WDIV in Detroit how do

2
00:00:09,620 --> 00:00:07,740
you hear me WDIV in Detroit this is

3
00:00:11,930 --> 00:00:09,630
International Space Station dan burbank

4
00:00:13,220 --> 00:00:11,940
I've got you loud and clear all right

5
00:00:14,870 --> 00:00:13,230
thank you very much commander for

6
00:00:16,700 --> 00:00:14,880
joining us this morning the

7
00:00:19,580 --> 00:00:16,710
International Space Station is obviously

8
00:00:21,320 --> 00:00:19,590
a laboratory for research in a

9
00:00:22,580 --> 00:00:21,330
weightless environment tell me about

10
00:00:27,950 --> 00:00:22,590
some of the experiments that are going

11
00:00:29,419 --> 00:00:27,960
on during this mission well some of the

12
00:00:30,950 --> 00:00:29,429
experiments actually at least on the

13
00:00:32,569 --> 00:00:30,960

NASA side involve trying to figure out

14
00:00:34,850 --> 00:00:32,579
how to keep humans safe and productive

15
00:00:36,319 --> 00:00:34,860
for a long period of time and space long

16
00:00:38,660 --> 00:00:36,329
enough to go to the moon and stay there

17
00:00:40,190 --> 00:00:38,670
long enough to go to Mars and so some of

18
00:00:43,400 --> 00:00:40,200
the experiments we do look kind of

19
00:00:45,350 --> 00:00:43,410
holistically at changes in the heart

20
00:00:48,200 --> 00:00:45,360
changes in the muscles changes in the

21
00:00:49,639 --> 00:00:48,210
bones and we exercise an awful lot and

22
00:00:51,830 --> 00:00:49,649
we've got to various different controls

23
00:00:53,750 --> 00:00:51,840
that we do for four different

24
00:00:54,889 --> 00:00:53,760
investigations all of the astronauts

25
00:00:56,930 --> 00:00:54,899
that are training right now that are

26
00:00:58,369 --> 00:00:56,940
flying aboard the the u.s. segment of

27
00:01:00,680 --> 00:00:58,379
the International Space Station our

28
00:01:03,410 --> 00:01:00,690
century ultra essentially ultrasound

29
00:01:05,509 --> 00:01:03,420
technicians so we'll do ultrasound scans

30
00:01:08,480 --> 00:01:05,519
of our heart ultrasound scans of blood

31
00:01:10,750 --> 00:01:08,490
vessels muscles that's one example and

32
00:01:13,219 --> 00:01:10,760
we can basically very quantitatively

33
00:01:14,750 --> 00:01:13,229
determine how what changes progress over

34
00:01:18,530 --> 00:01:14,760
the course of a long duration expedition

35
00:01:20,179 --> 00:01:18,540
aboard Space Station and you just

36
00:01:22,100 --> 00:01:20,189
mentioned about the NASA side there are

37
00:01:26,660 --> 00:01:22,110
other research experiments going on as

38
00:01:28,730 --> 00:01:26,670

well are there not we have a total of

39
00:01:30,710 --> 00:01:28,740
about 200 experiments going on while

40
00:01:32,420 --> 00:01:30,720
we're here doing this one expedition so

41
00:01:33,950 --> 00:01:32,430
there's an awful lot I don't even know

42
00:01:36,230 --> 00:01:33,960
where I would start but there's plenty

43
00:01:38,390 --> 00:01:36,240
of work going on and life sciences the

44
00:01:40,940 --> 00:01:38,400
human research like I just describes one

45
00:01:42,289 --> 00:01:40,950
small piece of which physical sciences

46
00:01:43,910 --> 00:01:42,299
we've got a combustion integrated rack

47
00:01:46,069 --> 00:01:43,920
in the u.s. laboratory that we're

48
00:01:48,050 --> 00:01:46,079
working on earlier today we're actually

49
00:01:49,520 --> 00:01:48,060
earlier this week and the goal of that

50
00:01:51,830 --> 00:01:49,530
at least the experiment we currently

51
00:01:54,859 --> 00:01:51,840
have loaded up right now is to look at

52
00:01:56,359 --> 00:01:54,869
flammability issues for materials that

53
00:01:58,069 --> 00:01:56,369
we have aboard the International Space

54
00:02:00,530 --> 00:01:58,079
Station materials that we would use in

55
00:02:02,660 --> 00:02:00,540
future aircraft or spacecraft so that

56
00:02:04,520 --> 00:02:02,670
the idea is to figure out what the

57
00:02:06,410 --> 00:02:04,530
flammability boundary is for various

58
00:02:08,749 --> 00:02:06,420
fuels various kinds of exposed to

59
00:02:10,639 --> 00:02:08,759
various kind of atmospheres and there's

60
00:02:12,979 --> 00:02:10,649
a whole host of other things to probably

61
00:02:13,820 --> 00:02:12,989
be too long to get into today but it's

62
00:02:15,650 --> 00:02:13,830
quite a place

63
00:02:17,090 --> 00:02:15,660

and an awful lot going on certainly

64
00:02:19,130 --> 00:02:17,100
plenty for the three people we currently

65
00:02:22,690 --> 00:02:19,140
have that's why we're especially happy

66
00:02:24,800 --> 00:02:22,700
to get three more folks aboard tomorrow

67
00:02:26,930 --> 00:02:24,810
been up there in that weightless

68
00:02:32,180 --> 00:02:26,940
environment for 38 days how are you

69
00:02:33,650 --> 00:02:32,190
holding up physically not too bad for

70
00:02:35,150 --> 00:02:33,660
know a guy I think I think we're doing

71
00:02:37,340 --> 00:02:35,160
actually very well we've got one new

72
00:02:42,110 --> 00:02:37,350
piece of equipment that's that does a

73
00:02:43,790 --> 00:02:42,120
great job of basically replicating a gym

74
00:02:45,700 --> 00:02:43,800
that you might have on the ground that

75
00:02:47,780 --> 00:02:45,710
you could use with free weights

76
00:02:50,180 --> 00:02:47,790
cardiovascular all the rest of it and

77
00:02:52,520 --> 00:02:50,190
that will allow us to have loads for

78
00:02:54,740 --> 00:02:52,530
squats and deadlifts and things like

79
00:02:56,840 --> 00:02:54,750
that up to as high as 600 pounds I

80
00:02:58,460 --> 00:02:56,850
haven't gotten near that yet but it's

81
00:03:00,620 --> 00:02:58,470
some capability that we have never had

82
00:03:03,350 --> 00:03:00,630
onboard the space station previous to

83
00:03:06,110 --> 00:03:03,360
this and a great treadmill actually a

84
00:03:07,640 --> 00:03:06,120
couple of them and an exercise bicycle

85
00:03:10,070 --> 00:03:07,650
all the equipment that we have that we

86
00:03:11,810 --> 00:03:10,080
use frequently is vibration isolated

87
00:03:14,180 --> 00:03:11,820
from the space station the goal being to

88
00:03:15,560 --> 00:03:14,190

keep us healthy but also not to

89
00:03:17,120 --> 00:03:15,570
interrupt all the sensitive experiments

90
00:03:22,009 --> 00:03:17,130
that we have going out throughout this

91
00:03:23,449 --> 00:03:22,019
entire 400 foot long space station as

92
00:03:25,100 --> 00:03:23,459
you've just mentioned the key to

93
00:03:27,350 --> 00:03:25,110
enduring long-term exposure to a

94
00:03:28,550 --> 00:03:27,360
weightless environment is exercise can

95
00:03:30,560 --> 00:03:28,560
you tell me about your exercise routine

96
00:03:35,780 --> 00:03:30,570
in terms of how many hours a day or

97
00:03:37,400 --> 00:03:35,790
what's the requirement well the standard

98
00:03:40,130 --> 00:03:37,410
for us is basically an hour and a half

99
00:03:42,170 --> 00:03:40,140
of weights a day and one hour of

100
00:03:45,259 --> 00:03:42,180
cardiovascular we can do more if we have

101
00:03:47,090 --> 00:03:45,269
the opportunity we often on occasion

102
00:03:49,040 --> 00:03:47,100
will do a little bit less that time does

103
00:03:50,330 --> 00:03:49,050
account some setup and it does account

104
00:03:52,820 --> 00:03:50,340
for a little bit of cleanup afterwards

105
00:03:54,290 --> 00:03:52,830
but it's a pretty aggressive schedule in

106
00:03:56,030 --> 00:03:54,300
fact I think we're seeing crews that are

107
00:03:57,979 --> 00:03:56,040
coming up to space right now that are

108
00:04:00,320 --> 00:03:57,989
returning back to earth after six-month

109
00:04:02,720 --> 00:04:00,330
mission with almost no loss and perhaps

110
00:04:04,430 --> 00:04:02,730
some gain and muscle capability and

111
00:04:06,900 --> 00:04:04,440
cardiovascular endurance that's

112
00:04:09,000 --> 00:04:06,910
something we haven't seen

113
00:04:11,910 --> 00:04:09,010

one thing that you and I have in common

114
00:04:14,550 --> 00:04:11,920
is that we both turned 50 this year so

115
00:04:16,830 --> 00:04:14,560
20 years ago if I had asked you could

116
00:04:19,590 --> 00:04:16,840
you have possibly envisioned at age 50

117
00:04:26,010 --> 00:04:19,600
spending four months aboard a permanent

118
00:04:27,770 --> 00:04:26,020
orbiting space station no way Paul I 20

119
00:04:31,200 --> 00:04:27,780
years ago was before I joined NASA and

120
00:04:33,420 --> 00:04:31,210
and even after i joined nasa i joined us

121
00:04:35,040 --> 00:04:33,430
at thinking about flying on space

122
00:04:37,500 --> 00:04:35,050
shuttle for shorter duration missions

123
00:04:39,120 --> 00:04:37,510
but having done two of those i can tell

124
00:04:41,310 --> 00:04:39,130
you that it wasn't long enough for me

125
00:04:42,690 --> 00:04:41,320
and our missions a little bit shorter

126
00:04:44,610 --> 00:04:42,700
than we planned it's not quite six

127
00:04:48,180 --> 00:04:44,620
months but it'll be four months and it

128
00:04:50,610 --> 00:04:48,190
is absolutely spectacular it is i I'm

129
00:04:52,560 --> 00:04:50,620
not going to want to come back to Planet

130
00:04:53,910 --> 00:04:52,570
Earth afterwards I will want to see my

131
00:04:56,760 --> 00:04:53,920
family I want to do all the other things

132
00:04:58,590 --> 00:04:56,770
we can do but the opportunity to float

133
00:04:59,850 --> 00:04:58,600
over to these windows and look at Planet

134
00:05:01,530 --> 00:04:59,860
Earth going by beneath us the

135
00:05:03,030 --> 00:05:01,540
opportunity to participate in this kind

136
00:05:07,230 --> 00:05:03,040
of research that we're doing on board is

137
00:05:08,760 --> 00:05:07,240
just the dream of a lifetime well as a

138
00:05:10,020 --> 00:05:08,770

meteorologist I can tell you that being

139
00:05:11,760 --> 00:05:10,030
able to pour it over to that window must

140
00:05:12,930 --> 00:05:11,770
be an amazing experience look down and

141
00:05:14,850 --> 00:05:12,940
see the cloud patterns and see our

142
00:05:17,460 --> 00:05:14,860
beautiful planet and you just mentioned

143
00:05:19,800 --> 00:05:17,470
the space shuttle now as we move to the

144
00:05:21,870 --> 00:05:19,810
end of 2011 we look back on the ending

145
00:05:23,880 --> 00:05:21,880
of that shuttle program but we also look

146
00:05:29,970 --> 00:05:23,890
ahead so what do you envision is the

147
00:05:31,530 --> 00:05:29,980
future of human space exploration lets

148
00:05:32,580 --> 00:05:31,540
you move from this point on first off I

149
00:05:33,960 --> 00:05:32,590
would just encourage people to

150
00:05:35,340 --> 00:05:33,970
understand that there's an awful lot

151
00:05:37,320 --> 00:05:35,350
going on in the International Space

152
00:05:39,060 --> 00:05:37,330
Station the shuttle did what the shuttle

153
00:05:41,340 --> 00:05:39,070
was designed to do what it was perfectly

154
00:05:43,140 --> 00:05:41,350
designed to do and that was to build

155
00:05:44,820 --> 00:05:43,150
this nearly million pound Space Station

156
00:05:46,620 --> 00:05:44,830
low-earth orbit so now we have this

157
00:05:48,060 --> 00:05:46,630
capability to do all the research that

158
00:05:49,950 --> 00:05:48,070
we need to answer the questions to be

159
00:05:51,390 --> 00:05:49,960
able to leave low-earth orbit and do the

160
00:05:54,330 --> 00:05:51,400
things that we really want to do as an

161
00:05:55,740 --> 00:05:54,340
agency and I think as a people so in the

162
00:05:57,390 --> 00:05:55,750
near term we've got an awful lot of work

163
00:06:00,170 --> 00:05:57,400

to do on Space Station at least out to

164
00:06:03,630 --> 00:06:00,180
2020 and beyond but we're also basically

165
00:06:05,820 --> 00:06:03,640
turning over to commercial industry the

166
00:06:07,620 --> 00:06:05,830
piece of the puzzle of spaceflight that

167
00:06:09,240 --> 00:06:07,630
involves at least for the United States

168
00:06:10,560 --> 00:06:09,250
getting from low Earth or getting from

169
00:06:12,900 --> 00:06:10,570
the surface of the planet to low Earth

170
00:06:15,810 --> 00:06:12,910
orbit and I think this the time is right

171
00:06:18,270 --> 00:06:15,820
to do that and NASA is now taking up the

172
00:06:20,200 --> 00:06:18,280
mantle to leave low-earth orbit and go

173
00:06:22,210 --> 00:06:20,210
on to the moon asteroids and on to Mars

174
00:06:24,070 --> 00:06:22,220
to do that we need a giant rocket and

175
00:06:25,809 --> 00:06:24,080
that's in work to do that we need a

176
00:06:27,820 --> 00:06:25,819
different kind of spacecraft that's in

177
00:06:29,110 --> 00:06:27,830
development as well and for folks that

178
00:06:30,520 --> 00:06:29,120
are listening right now I'd really

179
00:06:32,650 --> 00:06:30,530
encourage them for the young folks that

180
00:06:35,409 --> 00:06:32,660
want to get in this business the time

181
00:06:37,540 --> 00:06:35,419
has never been better and I think NASA's

182
00:06:39,249 --> 00:06:37,550
got a tremendously bright future and we

183
00:06:41,379 --> 00:06:39,259
need their brains their energy and we

184
00:06:42,820 --> 00:06:41,389
need them to come and fly in space and

185
00:06:47,050 --> 00:06:42,830
do the research on Space Station and

186
00:06:48,460 --> 00:06:47,060
beyond a personal question you knew the

187
00:06:49,600 --> 00:06:48,470
moment you saw the schedule for this

188
00:06:51,370 --> 00:06:49,610

mission that you were going to be

189
00:06:52,510 --> 00:06:51,380
working over the holidays and that's

190
00:06:55,180 --> 00:06:52,520
tough front anybody to be away from

191
00:06:56,620 --> 00:06:55,190
their family i I'm sure you're prepared

192
00:07:02,950 --> 00:06:56,630
for this but it's a little tough to be

193
00:07:04,480 --> 00:07:02,960
away from home I think that's probably

194
00:07:06,279 --> 00:07:04,490
the hardest part the hardest part about

195
00:07:07,810 --> 00:07:06,289
training for a space flight at least on

196
00:07:09,670 --> 00:07:07,820
International Space Station and it's the

197
00:07:11,620 --> 00:07:09,680
hardest thing about about being in space

198
00:07:13,060 --> 00:07:11,630
but it's a little bit different and

199
00:07:14,890 --> 00:07:13,070
quite a lot better than it was in the

200
00:07:17,020 --> 00:07:14,900
past and we can talk to our families

201
00:07:19,180 --> 00:07:17,030
every day couple times a day if if if

202
00:07:20,950 --> 00:07:19,190
our time permits and we can see them at

203
00:07:23,980 --> 00:07:20,960
least one time a week on a you know on a

204
00:07:26,379 --> 00:07:23,990
computer screen so that goes a long way

205
00:07:28,719 --> 00:07:26,389
towards making us feel connected and

206
00:07:30,909 --> 00:07:28,729
close to them and the families there

207
00:07:33,010 --> 00:07:30,919
been there you know all along the way

208
00:07:34,240 --> 00:07:33,020
for me for an awful long time leading up

209
00:07:36,430 --> 00:07:34,250
to this mission and throughout the

210
00:07:39,040 --> 00:07:36,440
mission and one of the tremendous

211
00:07:40,629 --> 00:07:39,050
rewards after the mission is done will

212
00:07:42,969 --> 00:07:40,639
be to get to return to them and spend

213
00:07:44,950 --> 00:07:42,979

some good quality time with them during

214
00:07:47,740 --> 00:07:44,960
the holidays during thanksgiving during

215
00:07:49,180 --> 00:07:47,750
during Christmastime and new years we'll

216
00:07:50,709 --> 00:07:49,190
be talking and seeing all of our

217
00:07:52,899 --> 00:07:50,719
families you know each of us all the

218
00:07:54,370 --> 00:07:52,909
crew members aboard Space Station and so

219
00:07:58,839 --> 00:07:54,380
it's not going to be like being a long

220
00:08:00,459 --> 00:07:58,849
ways away and one last question I see

221
00:08:01,959 --> 00:08:00,469
that you're from Massachusetts so I'm

222
00:08:03,490 --> 00:08:01,969
going to assume that you're a Patriots

223
00:08:08,770 --> 00:08:03,500
fan what do you think about a lion

224
00:08:10,390 --> 00:08:08,780
Patriots Super Bowl I think that'd be

225
00:08:12,939 --> 00:08:10,400
great I think to be great I think it'd

226
00:08:14,680 --> 00:08:12,949
be great to have a Patriots Super Bowl

227
00:08:19,300 --> 00:08:14,690
winner but but we'll see how that all

228
00:08:21,010 --> 00:08:19,310
plays out and and I just like to go back

229
00:08:22,120 --> 00:08:21,020
one one quick thing because I know your

230
00:08:24,459 --> 00:08:22,130
meteorologist and I think you're

231
00:08:26,999 --> 00:08:24,469
probably also a little bit interested in

232
00:08:28,990 --> 00:08:27,009
astronomy most meteorologist I think our

233
00:08:30,760 --> 00:08:29,000
every time that we look out this window

234
00:08:33,279 --> 00:08:30,770
or we look out the windows and the

235
00:08:34,959 --> 00:08:33,289
cupola we're absolutely amazed and

236
00:08:37,779 --> 00:08:34,969
and the same thing goes for being on

237
00:08:39,610 --> 00:08:37,789
board a space shuttle and i would say

238
00:08:41,259 --> 00:08:39,620

that two nights ago I probably saw the

239
00:08:43,120 --> 00:08:41,269
most amazing thing I have ever seen in

240
00:08:44,650 --> 00:08:43,130
space and that's saying an awful lot

241
00:08:46,720 --> 00:08:44,660
because every day is filled with amazing

242
00:08:48,910 --> 00:08:46,730
things and that was we were flying over

243
00:08:50,710 --> 00:08:48,920
Tasmania we had actually just seen the

244
00:08:53,079 --> 00:08:50,720
storms in the South Pacific over the

245
00:08:55,059 --> 00:08:53,089
Philippines and it was nighttime

246
00:08:57,430 --> 00:08:55,069
thunderstorms lighting up the entire sky

247
00:08:59,050 --> 00:08:57,440
and then just before the Sun came up the

248
00:09:02,499 --> 00:08:59,060
earth slim was you know lit up as a

249
00:09:04,030 --> 00:09:02,509
sliver of blue and in purple and then

250
00:09:06,069 --> 00:09:04,040
there was this long green arc that

251
00:09:08,470 --> 00:09:06,079
extended probably 10 degrees or so from

252
00:09:10,420 --> 00:09:08,480
the horizon actually from the

253
00:09:12,879 --> 00:09:10,430
perspective of the cupola which in which

254
00:09:14,439 --> 00:09:12,889
case were upside down up up you know in

255
00:09:16,720 --> 00:09:14,449
my field of view upwards in fact it

256
00:09:19,930 --> 00:09:16,730
disappeared behind the gym at least 10

257
00:09:21,639 --> 00:09:19,940
degrees i think twenty earth 20 moon

258
00:09:23,860 --> 00:09:21,649
diameters if you think about it in those

259
00:09:26,530 --> 00:09:23,870
terms and i had no idea what it was he

260
00:09:28,120 --> 00:09:26,540
was a long green glowing arc and turns

261
00:09:30,400 --> 00:09:28,130
out it end up being ended up being a

262
00:09:32,769 --> 00:09:30,410
comet that somebody in Tasmania had seen

263
00:09:35,259 --> 00:09:32,779

about the same time comet lovejoy that

264
00:09:37,210 --> 00:09:35,269
had passed about 140,000 kilometres from

265
00:09:38,889 --> 00:09:37,220
the surface of the Sun when it

266
00:09:40,509 --> 00:09:38,899
disappeared behind the Sun I think

267
00:09:42,430 --> 00:09:40,519
astronomers thought it would not appear

268
00:09:44,259 --> 00:09:42,440
again it probably would burn up but it's

269
00:09:45,490 --> 00:09:44,269
probably the most spectacular thing you

270
00:09:47,949 --> 00:09:45,500
can imagine and from the vantage point

271
00:09:49,480 --> 00:09:47,959
of space it's different than seeing it

272
00:09:51,879 --> 00:09:49,490
from Planet Earth because there's no

273
00:09:53,860 --> 00:09:51,889
intervening atmosphere to see so we took

274
00:09:55,629 --> 00:09:53,870
some really neat pictures last night a

275
00:09:58,210 --> 00:09:55,639
bit about a hundred or so that we hope

276
00:09:59,319 --> 00:09:58,220
to make a movie out of but just wanted

277
00:10:03,069 --> 00:09:59,329
to toss that out in case you're

278
00:10:04,269 --> 00:10:03,079
interested it's quite a place very very

279
00:10:05,980 --> 00:10:04,279
interested well we're out of time

280
00:10:07,420 --> 00:10:05,990
commander Burbank I really appreciate

281
00:10:09,100 --> 00:10:07,430
your taking the time there's a lot of

282
00:10:11,199 --> 00:10:09,110
support for nasa and its programs here

283
00:10:13,000 --> 00:10:11,209
in Detroit the University of Michigan is

284
00:10:14,710 --> 00:10:13,010
a hotbed of researchers working directly

285
00:10:17,889 --> 00:10:14,720
with NASA and you may recall the Apollo

286
00:10:19,300 --> 00:10:17,899
15 crew with an entire U of M crew so on

287
00:10:20,699 --> 00:10:19,310
behalf of all of us here in the Detroit

288
00:10:23,230 --> 00:10:20,709

area we certainly wish you a successful

289
00:10:24,910 --> 00:10:23,240
remainder of the mission very very safe

290
00:10:29,470 --> 00:10:24,920
travels home and very happy holiday to

291
00:10:31,780 --> 00:10:29,480
you Paul thank you so much who's great

292
00:10:34,480 --> 00:10:31,790
having you aboard and all my best to you

293
00:10:36,189 --> 00:10:34,490
to the team there at WDIV and to to all

294
00:10:40,059 --> 00:10:36,199
the folks in Detroit Merry Christmas

295
00:10:42,460 --> 00:10:40,069
Happy New Year to you station this is