1
00:00:06,710 --> 00:00:03,429
cnn this is mission control houston

2
00:00:13,190 --> 00:00:06,720
please call station for voice check

3
00:00:20,390 --> 00:00:15,430
cnn this is station we've got you loud

4
00:00:25,269 --> 00:00:23,349
hey guys uh just wanted to uh ask you

5
00:00:26,790 --> 00:00:25,279
right off the bat uh

6
00:00:28,150 --> 00:00:26,800
how are things going up there now that

7
00:00:30,230 --> 00:00:28,160
you've got the

8
00:00:35,030 --> 00:00:30,240
the six of you all together makes things

9
00:00:37,910 --> 00:00:36,310
well it makes it easier to get a lot

10
00:00:39,910 --> 00:00:37,920
more done that's that's for one thing

11
00:00:41,030 --> 00:00:39,920
and it's it's awful nice to have the

12
00:00:43,030 --> 00:00:41,040
company

13
00:00:45,110 --> 00:00:43,040

we we have been training together

14
00:00:47,110 --> 00:00:45,120
actually all six of us for quite a while

15
00:00:49,190 --> 00:00:47,120
for the last several years and it's good

16
00:00:51,670 --> 00:00:49,200
to have a full team again we've been

17
00:00:54,229 --> 00:00:51,680
uh for about three months with uh just

18
00:00:55,830 --> 00:00:54,239
half strength on board space station so

19
00:00:56,830 --> 00:00:55,840
so things are things are humming along

20
00:00:59,029 --> 00:00:56,840
pretty well

21
00:01:01,110 --> 00:00:59,039
now either you guys can answer these

22
00:01:03,590 --> 00:01:01,120
questions

23
00:01:04,469 --> 00:01:03,600
it's so much has been made of the fact

24
00:01:06,950 --> 00:01:04,479
that

25
00:01:09,030 --> 00:01:06,960
with six of you up there now

26
00:01:11,510 --> 00:01:09,040
all the time hopefully

27
00:01:14,390 --> 00:01:11,520
that it'll be a lot easier to to get

28
00:01:16,310 --> 00:01:14,400
science done a lot easier to

29
00:01:19,990 --> 00:01:16,320
you know hopefully come up with some

30
00:01:21,990 --> 00:01:20,000
groundbreaking science uh that really is

31
00:01:23,350 --> 00:01:22,000
the thrust of the space station right

32
00:01:25,670 --> 00:01:23,360
now and that's

33
00:01:27,910 --> 00:01:25,680
isn't that clear that uh

34
00:01:29,350 --> 00:01:27,920
down the road you're going to be hoping

35
00:01:35,429 --> 00:01:29,360
that these are the kinds of things that

36
00:01:39,590 --> 00:01:37,990
the purposes of space station are many

37
00:01:42,069 --> 00:01:39,600
and what you're talking about is the

38
00:01:44,550 --> 00:01:42,079

utilization of space station and i like

39
00:01:46,710 --> 00:01:44,560
to break it down into two categories one

40
00:01:48,710 --> 00:01:46,720
is scientific research which you are

41
00:01:50,870 --> 00:01:48,720
well aware of and most people are

42
00:01:53,590 --> 00:01:50,880
there's a second category that i like to

43
00:01:56,310 --> 00:01:53,600
call engineering research and this is

44
00:01:59,109 --> 00:01:56,320
working out details of engineering that

45
00:02:01,590 --> 00:01:59,119
maybe we don't quite know uh everything

46
00:02:04,550 --> 00:02:01,600
there is about uh building a piece of

47
00:02:07,350 --> 00:02:04,560
equipment and and one example of that is

48
00:02:09,910 --> 00:02:07,360
our regenerative life support system

49
00:02:11,750 --> 00:02:09,920
which i fondly call the coffee machine

50
00:02:13,990 --> 00:02:11,760
where we take our urine that comes in

51
00:02:15,589 --> 00:02:14,000
from our toilet and run run it through a

52
00:02:18,949 --> 00:02:15,599
machine that goes

53
00:02:22,630 --> 00:02:18,959
makes grinding noises and then out comes

54
00:02:24,150 --> 00:02:22,640
a bag of coffee on the other side and so

55
00:02:26,869 --> 00:02:24,160
it turned yesterday's coffee into

56
00:02:29,110 --> 00:02:26,879
today's coffee and this is an amazing

57
00:02:31,830 --> 00:02:29,120
piece of equipment and we're in the

58
00:02:34,550 --> 00:02:31,840
process of figuring out how to make this

59
00:02:37,430 --> 00:02:34,560
robust and function in a way that when

60
00:02:40,869 --> 00:02:37,440
we go to mars or when we go elsewhere

61
00:02:42,869 --> 00:02:40,879
beyond low earth orbit we can count on

62
00:02:44,630 --> 00:02:42,879
having a regenerative life support

63
00:02:46,790 --> 00:02:44,640

system that works and and that's an

64
00:02:48,710 --> 00:02:46,800
example of engineering research and we

65
00:02:51,350 --> 00:02:48,720
spend a lot of our time doing

66
00:02:54,630 --> 00:02:51,360
engineering research on the systems and

67
00:02:57,190 --> 00:02:54,640
the details of space station as well as

68
00:02:58,630 --> 00:02:57,200
the scientific research

69
00:03:00,949 --> 00:02:58,640
you know you just mentioned going to

70
00:03:03,509 --> 00:03:00,959
mars and i was out in houston right

71
00:03:06,309 --> 00:03:03,519
before the holidays and spoke with one

72
00:03:08,309 --> 00:03:06,319
of your colleagues and a couple of

73
00:03:10,630 --> 00:03:08,319
medical doctors out there i know one of

74
00:03:11,990 --> 00:03:10,640
the big issues now that they are saying

75
00:03:13,830 --> 00:03:12,000
is the

76
00:03:16,390 --> 00:03:13,840
maybe the single biggest issue they have

77
00:03:18,710 --> 00:03:16,400
to resolve before going to mars is this

78
00:03:19,670 --> 00:03:18,720
eye issue that's come up with uh

79
00:03:22,149 --> 00:03:19,680
deteriorate a little bit of

80
00:03:23,509 --> 00:03:22,159
deterioration and then the change in uh

81
00:03:25,110 --> 00:03:23,519
you know the actual shape of the eye you

82
00:03:28,309 --> 00:03:25,120
guys know it as we're better than i do

83
00:03:31,030 --> 00:03:28,319
um how first off how are your eyes and

84
00:03:33,910 --> 00:03:31,040
uh and second of all you are up there

85
00:03:38,470 --> 00:03:33,920
doing some some studies uh right now on

86
00:03:41,430 --> 00:03:40,229
yeah you bet i i think it's potentially

87
00:03:43,270 --> 00:03:41,440
a threat you know the the thing that

88
00:03:45,430 --> 00:03:43,280

we're doing right now is we're actually

89
00:03:47,270 --> 00:03:45,440
quantitatively measuring a lot of the

90
00:03:48,869 --> 00:03:47,280
parameters we're able to with ultrasound

91
00:03:50,550 --> 00:03:48,879
image the back of the eye image the

92
00:03:52,789 --> 00:03:50,560
optic nerve and we effect did that for

93
00:03:55,509 --> 00:03:52,799
all of our cells over the last week or

94
00:03:57,509 --> 00:03:55,519
two we can also with through tonometry

95
00:03:59,670 --> 00:03:57,519
uh measure the actual pressure in the

96
00:04:02,470 --> 00:03:59,680
eye and that's a key thing and then we

97
00:04:04,309 --> 00:04:02,480
can also with a pan-optic sensor get

98
00:04:06,550 --> 00:04:04,319
very very detailed high-resolution

99
00:04:08,229 --> 00:04:06,560
imagery at the retina of the eye and the

100
00:04:10,630 --> 00:04:08,239
kinds of problems that have happened in

101
00:04:12,229 --> 00:04:10,640
a fairly small subsection of people that

102
00:04:15,030 --> 00:04:12,239
have flown here before

103
00:04:16,550 --> 00:04:15,040
seem to be isolated some people have it

104
00:04:18,310 --> 00:04:16,560
many people don't have any at all i

105
00:04:20,789 --> 00:04:18,320
think we came through and and our eyes

106
00:04:22,069 --> 00:04:20,799
look look very good but i think the data

107
00:04:23,350 --> 00:04:22,079
that we get right now will be really

108
00:04:24,950 --> 00:04:23,360
important to help the scientists on the

109
00:04:27,670 --> 00:04:24,960
ground try to figure out exactly what's

110
00:04:29,430 --> 00:04:27,680
going on and how to mitigate it

111
00:04:30,790 --> 00:04:29,440
i i have to ask you but you know the

112
00:04:33,110 --> 00:04:30,800
reason one of the primary reasons we

113
00:04:35,430 --> 00:04:33,120

were doing this was in advance of the

114
00:04:37,990 --> 00:04:35,440
launch of spacex

115
00:04:40,150 --> 00:04:38,000
which is going to be an incredible feat

116
00:04:42,710 --> 00:04:40,160
for a commercial company now of course

117
00:04:45,749 --> 00:04:42,720
it's delayed and i my understanding is

118
00:04:47,430 --> 00:04:45,759
it it could be a lengthy delay uh that's

119
00:04:48,790 --> 00:04:47,440
still going to be a bit disappointing to

120
00:04:51,670 --> 00:04:48,800
you guys i know you did a lot of

121
00:04:54,310 --> 00:04:51,680
practicing on on grappling

122
00:04:55,909 --> 00:04:54,320
spacex uh the dragon and when it gets

123
00:04:57,350 --> 00:04:55,919
there uh it has to be a bit

124
00:05:03,270 --> 00:04:57,360
disappointing though but obviously you

125
00:05:06,950 --> 00:05:05,590
now i i suppose on a personal level it's

126
00:05:08,790 --> 00:05:06,960
maybe just a little bit disappointing

127
00:05:10,550 --> 00:05:08,800
we've got a great consolation prize in

128
00:05:12,790 --> 00:05:10,560
the fact that we get to live and work

129
00:05:15,029 --> 00:05:12,800
here onboard space station so there's an

130
00:05:16,469 --> 00:05:15,039
awful lot of good and uh and if there's

131
00:05:18,870 --> 00:05:16,479
a little disappointment like that it's

132
00:05:21,029 --> 00:05:18,880
pretty small space flight is tough it's

133
00:05:21,749 --> 00:05:21,039
really really hard and

134
00:05:25,590 --> 00:05:21,759
to

135
00:05:27,830 --> 00:05:25,600
this and very quickly field a system

136
00:05:29,830 --> 00:05:27,840
that's going to be able to be ready to

137
00:05:32,629 --> 00:05:29,840
go on the first day planned and be

138
00:05:34,550 --> 00:05:32,639

absolutely reliable is a little bit

139
00:05:36,150 --> 00:05:34,560
unrealistic and this is the nature of

140
00:05:38,310 --> 00:05:36,160
space flight you basically are going to

141
00:05:40,310 --> 00:05:38,320
have to design and test and probably

142
00:05:41,749 --> 00:05:40,320
redesign and that's how space station

143
00:05:43,110 --> 00:05:41,759
was built that's how all the spacecraft

144
00:05:45,350 --> 00:05:43,120
that have been here and have been in

145
00:05:46,550 --> 00:05:45,360
other places have been built and it's

146
00:05:49,029 --> 00:05:46,560
always going to be tough but i think

147
00:05:52,629 --> 00:05:49,039
it's going to be absolutely worthwhile

148
00:05:54,870 --> 00:05:52,639
despite the difficulties

149
00:05:56,629 --> 00:05:54,880
i was going to say that uh

150
00:05:59,510 --> 00:05:56,639
exactly what you just said

151
00:06:01,830 --> 00:05:59,520
is that it is just proves how difficult

152
00:06:03,909 --> 00:06:01,840
space flight is particularly not just

153
00:06:06,150 --> 00:06:03,919
getting up and flying around but when

154
00:06:08,309 --> 00:06:06,160
you've got to go someplace and and

155
00:06:16,550 --> 00:06:08,319
rendezvous and then grapple that that's

156
00:06:23,990 --> 00:06:19,189
one of one of the unique things about

157
00:06:26,629 --> 00:06:24,000
spacex is is it it flies up like htv

158
00:06:28,469 --> 00:06:26,639
and uh just gets close to space station

159
00:06:30,790 --> 00:06:28,479
and then we kind of lasso it with the

160
00:06:32,950 --> 00:06:30,800
robotic arm and and bring it in the last

161
00:06:35,830 --> 00:06:32,960
10 meters and birth it to one of our

162
00:06:38,230 --> 00:06:35,840
docket parts and and this is this is a

163
00:06:40,469 --> 00:06:38,240

pretty sporting thing uh particularly

164
00:06:41,990 --> 00:06:40,479
from uh space station operations from

165
00:06:44,070 --> 00:06:42,000
our viewpoint and it's something that we

166
00:06:45,830 --> 00:06:44,080
spend a lot of time training for just

167
00:06:47,990 --> 00:06:45,840
like spacewalks we spend a lot of time

168
00:06:49,909 --> 00:06:48,000
training for maybe maybe we do a

169
00:06:54,309 --> 00:06:49,919
spacewalk maybe we don't but we're

170
00:06:57,029 --> 00:06:54,319
prepared uh for the situation

171
00:07:00,150 --> 00:06:57,039
last couple quick questions for you um

172
00:07:02,469 --> 00:07:00,160
space junk that's up there uh it seems

173
00:07:05,189 --> 00:07:02,479
as if you're and maybe it's just me but

174
00:07:07,189 --> 00:07:05,199
that you're more frequently having to

175
00:07:10,150 --> 00:07:07,199
either dodge it or

176
00:07:12,790 --> 00:07:10,160
uh you know maybe perhaps get into the

177
00:07:15,189 --> 00:07:12,800
the escape vehicles

178
00:07:16,550 --> 00:07:15,199
is it disconcerting does something need

179
00:07:18,950 --> 00:07:16,560
to be done

180
00:07:20,469 --> 00:07:18,960
to address the growing amount of space

181
00:07:22,070 --> 00:07:20,479
junk that's up there i understand

182
00:07:24,710 --> 00:07:22,080
there's a 3d movie

183
00:07:26,710 --> 00:07:24,720
out right now or a new movie out

184
00:07:32,309 --> 00:07:26,720
you know all about space junk that just

185
00:07:35,830 --> 00:07:34,230
i think it's a big threat um and it's

186
00:07:37,830 --> 00:07:35,840
something that we need to

187
00:07:39,589 --> 00:07:37,840
to be really cognizant of the future

188
00:07:42,629 --> 00:07:39,599

everybody that operates in space needs

189
00:07:44,070 --> 00:07:42,639
to be very careful about the spacecraft

190
00:07:46,150 --> 00:07:44,080
that they have here we need to be very

191
00:07:47,510 --> 00:07:46,160
responsible about it the amount of the

192
00:07:49,270 --> 00:07:47,520
amount of

193
00:07:50,790 --> 00:07:49,280
conjunctions that we're seeing right now

194
00:07:52,550 --> 00:07:50,800
and the debris avoidance maneuvers that

195
00:07:53,749 --> 00:07:52,560
we end up commanding on space station to

196
00:07:55,510 --> 00:07:53,759
avoid things

197
00:07:57,110 --> 00:07:55,520
is probably partly a reflection on the

198
00:07:58,309 --> 00:07:57,120
increase in the amount of debris that's

199
00:08:00,230 --> 00:07:58,319
out there but it's probably also a

200
00:08:01,830 --> 00:08:00,240
little bit of reflection in our ability

201
00:08:03,749 --> 00:08:01,840
or an increase in our ability to

202
00:08:05,350 --> 00:08:03,759
actually see it but still there's an

203
00:08:07,029 --> 00:08:05,360
awful lot of material that's up here

204
00:08:09,189 --> 00:08:07,039
that falls below the threshold of what

205
00:08:11,430 --> 00:08:09,199
radars can actually detect so to a

206
00:08:14,790 --> 00:08:11,440
certain degree you're operating kind of

207
00:08:16,469 --> 00:08:14,800
in the field of big sky small airplane

208
00:08:19,430 --> 00:08:16,479
mode if you were to use an aviators

209
00:08:21,990 --> 00:08:19,440
parlance so i think it's really really

210
00:08:24,869 --> 00:08:22,000
critical that we get the capability to

211
00:08:26,550 --> 00:08:24,879
monitor as best we can debris in orbit

212
00:08:30,390 --> 00:08:26,560
that we

213
00:08:31,990 --> 00:08:30,400

basically design vehicles that when

214
00:08:33,670 --> 00:08:32,000
they're reached the end of their life

215
00:08:36,550 --> 00:08:33,680
either are de-orbited and are designed

216
00:08:39,670 --> 00:08:36,560
with that capability or are re-boosted

217
00:08:42,389 --> 00:08:39,680
deorbited upwards for example and uh and

218
00:08:44,790 --> 00:08:42,399
we always have got to be ready in the

219
00:08:46,389 --> 00:08:44,800
unlikely but potentially catastrophic

220
00:08:48,630 --> 00:08:46,399
event that if we were to have a debris

221
00:08:50,389 --> 00:08:48,640
strike we have to be able to be in a

222
00:08:53,190 --> 00:08:50,399
position where we can protect the space

223
00:08:55,590 --> 00:08:53,200
station and ourselves

224
00:08:58,710 --> 00:08:55,600
running out of time 50th anniversary of

225
00:09:00,389 --> 00:08:58,720
john glenn's flight coming up historic

226
00:09:01,910 --> 00:09:00,399
uh you guys will be up there when it

227
00:09:03,910 --> 00:09:01,920
happens

228
00:09:09,910 --> 00:09:03,920
how do you feel about where we've been

229
00:09:09,920 --> 00:09:13,350
oh gosh

230
00:09:19,430 --> 00:09:17,269
i think i think we've been uh a long

231
00:09:21,030 --> 00:09:19,440
way since uh john glenn orbited the

232
00:09:23,670 --> 00:09:21,040
earth and you think about his space

233
00:09:25,430 --> 00:09:23,680
flight was such a short flight in a

234
00:09:26,230 --> 00:09:25,440
capsule that he couldn't even unstrap

235
00:09:28,230 --> 00:09:26,240
from

236
00:09:31,110 --> 00:09:28,240
and you look at what we're doing now and

237
00:09:33,829 --> 00:09:31,120
it's just amazing in terms of the

238
00:09:35,990 --> 00:09:33,839

orbital operations that are going on now

239
00:09:39,350 --> 00:09:36,000
with space station and the numbers of

240
00:09:41,269 --> 00:09:39,360
people that are flying in space and

241
00:09:46,070 --> 00:09:41,279
where it's going to go in the future who

242
00:09:51,190 --> 00:09:47,990
gentlemen thank you so very much for

243
00:09:57,350 --> 00:09:51,200
your time this is john's role with cnn

244
00:10:01,670 --> 00:09:59,509
a station this is houston acr that

245
00:10:03,350 --> 00:10:01,680
concludes the cnn portion of the event

246
00:10:05,509 --> 00:10:03,360
please stand by for a voice check from

247
00:10:11,750 --> 00:10:05,519
the associated press

248
00:10:14,790 --> 00:10:13,269
associated press is the international

249
00:10:16,630 --> 00:10:14,800
space station welcome aboard marsha

250
00:10:18,630 --> 00:10:16,640
we've got you loud and clear well good

251
00:10:20,710 --> 00:10:18,640
morning commander burbank dr pettit

252
00:10:22,470 --> 00:10:20,720
greetings from the kennedy space center

253
00:10:24,389 --> 00:10:22,480
on a beautiful morning

254
00:10:27,590 --> 00:10:24,399
um i'd like to start off a little bit

255
00:10:30,389 --> 00:10:27,600
with spacex um

256
00:10:32,389 --> 00:10:30,399
do you have any inkling insight into

257
00:10:33,829 --> 00:10:32,399
when the launch might be and whether

258
00:10:39,350 --> 00:10:33,839
either of you will still be on board

259
00:10:42,230 --> 00:10:40,949
i have not heard dates i know that there

260
00:10:43,509 --> 00:10:42,240
have been some issues that have come up

261
00:10:46,230 --> 00:10:43,519
in testing

262
00:10:48,150 --> 00:10:46,240
as as much as we would personally enjoy

263
00:10:50,630 --> 00:10:48,160

the opportunity to actually get a chance

264
00:10:52,310 --> 00:10:50,640
to grapple in birth spacex if that's not

265
00:10:54,470 --> 00:10:52,320
to be during our mission then that's

266
00:10:57,110 --> 00:10:54,480
okay we've got plenty of other things to

267
00:10:59,269 --> 00:10:57,120
uh to occupy us and and and very

268
00:11:00,630 --> 00:10:59,279
rewarding things as well but

269
00:11:02,069 --> 00:11:00,640
they'll fly when they're ready and

270
00:11:04,310 --> 00:11:02,079
they'll fly

271
00:11:06,230 --> 00:11:04,320
when they need to and whoever is here

272
00:11:08,150 --> 00:11:06,240
whether it's us or the next crew that

273
00:11:09,829 --> 00:11:08,160
crew is going to be ready as well

274
00:11:12,310 --> 00:11:09,839
well could you put the flight in

275
00:11:14,630 --> 00:11:12,320
perspective for me how you see its place

276
00:11:16,150 --> 00:11:14,640
in space history

277
00:11:24,069 --> 00:11:16,160
the big picture of

278
00:11:28,310 --> 00:11:26,150
it's always been governments it's always

279
00:11:29,910 --> 00:11:28,320
been nations that have launched payloads

280
00:11:32,150 --> 00:11:29,920
into space

281
00:11:36,389 --> 00:11:32,160
and and so this will be

282
00:11:39,269 --> 00:11:36,399
one step in the long road to human

283
00:11:42,870 --> 00:11:39,279
expansion off of the planet in the low

284
00:11:44,790 --> 00:11:42,880
earth orbit and beyond

285
00:11:47,590 --> 00:11:44,800
and and how tricky will it be to snare

286
00:11:49,590 --> 00:11:47,600
the capsule is that something that's um

287
00:11:51,030 --> 00:11:49,600
complicated or rather straightforward

288
00:11:52,150 --> 00:11:51,040

just as if

289
00:11:58,949 --> 00:11:52,160
you were going to

290
00:12:02,550 --> 00:12:00,870
i think at first order it's it's a

291
00:12:04,550 --> 00:12:02,560
fairly straightforward operation it's

292
00:12:06,230 --> 00:12:04,560
it's something that we uh that we can

293
00:12:07,509 --> 00:12:06,240
train pretty well we can simulate very

294
00:12:09,750 --> 00:12:07,519
well and in fact we now have the

295
00:12:11,269 --> 00:12:09,760
capability on board space station uh

296
00:12:13,670 --> 00:12:11,279
using a couple different computers that

297
00:12:15,110 --> 00:12:13,680
we can actually replicate the simulators

298
00:12:17,030 --> 00:12:15,120
that we use on the ground and actually

299
00:12:18,550 --> 00:12:17,040
right up until the day of

300
00:12:20,389 --> 00:12:18,560
a grapple the track and capture we'd

301
00:12:22,310 --> 00:12:20,399
call it we can actually practice that

302
00:12:24,069 --> 00:12:22,320
and go through at least the piloting

303
00:12:26,310 --> 00:12:24,079
skills of how that that go how that

304
00:12:28,310 --> 00:12:26,320
works as far as the crew coordination

305
00:12:29,990 --> 00:12:28,320
between the people that are going to be

306
00:12:31,350 --> 00:12:30,000
prime flying the arm and the person

307
00:12:32,870 --> 00:12:31,360
that's going to help them that's

308
00:12:34,949 --> 00:12:32,880
something that we also get an awful lot

309
00:12:36,949 --> 00:12:34,959
of time practicing leading up to it

310
00:12:38,389 --> 00:12:36,959
that's not to say that any vehicle that

311
00:12:40,550 --> 00:12:38,399
comes up here there's a lot of

312
00:12:42,550 --> 00:12:40,560
challenges both on the design side on

313
00:12:45,910 --> 00:12:42,560

the ground control side as well as on

314
00:12:47,829 --> 00:12:45,920
board so it is a it is a challenging

315
00:12:49,670 --> 00:12:47,839
kind of an operation from an overall

316
00:12:51,190 --> 00:12:49,680
global choreography

317
00:12:53,110 --> 00:12:51,200
standpoint but it's something that's

318
00:12:54,310 --> 00:12:53,120
absolutely doable and

319
00:12:55,590 --> 00:12:54,320
and it'll be great to see when we

320
00:12:57,829 --> 00:12:55,600
finally do it and the other beautiful

321
00:13:00,629 --> 00:12:57,839
thing about spacex is the ability to

322
00:13:01,829 --> 00:13:00,639
return cargo from space station so with

323
00:13:03,509 --> 00:13:01,839
the loss of space shuttle we haven't

324
00:13:05,030 --> 00:13:03,519
been able to do that and we've got lots

325
00:13:06,710 --> 00:13:05,040
of samples that we

326
00:13:08,310 --> 00:13:06,720
that are the result of the scientific

327
00:13:10,710 --> 00:13:08,320
research that we really need to get back

328
00:13:12,870 --> 00:13:10,720
to planet earth and having the ability

329
00:13:14,949 --> 00:13:12,880
to uh to return a vehicle like spacex is

330
00:13:17,350 --> 00:13:14,959
going to be key down the road

331
00:13:18,870 --> 00:13:17,360
uh tell me commander burbank um are you

332
00:13:21,590 --> 00:13:18,880
feeling the absence of the space

333
00:13:25,829 --> 00:13:21,600
shuttles in terms of cargo up mass

334
00:13:28,710 --> 00:13:25,839
backing down i'm just wondering if um

335
00:13:30,550 --> 00:13:28,720
if if you notice any kind of uh

336
00:13:32,389 --> 00:13:30,560
extra collection on board of stuff that

337
00:13:35,430 --> 00:13:32,399
should be going down or

338
00:13:38,310 --> 00:13:35,440

or garbage or or even just um

339
00:13:42,790 --> 00:13:38,320
becoming a going of a regular regular

340
00:13:47,269 --> 00:13:43,990
well

341
00:13:48,389 --> 00:13:47,279
certainly and it would be disingenuous

342
00:13:50,710 --> 00:13:48,399
to say otherwise

343
00:13:53,350 --> 00:13:50,720
the shuttle did all the heavy lifting

344
00:13:55,590 --> 00:13:53,360
both literally and figuratively

345
00:13:57,110 --> 00:13:55,600
for space station and it was the unique

346
00:13:59,030 --> 00:13:57,120
capability we needed to bring up big

347
00:14:00,470 --> 00:13:59,040
heavy modules to assemble them using the

348
00:14:02,550 --> 00:14:00,480
shuttle's robotic arm in conjunction

349
00:14:04,310 --> 00:14:02,560
with the station robotic arm to support

350
00:14:06,230 --> 00:14:04,320
evas that are based off the shuttle and

351
00:14:08,150 --> 00:14:06,240
even off the station

352
00:14:09,750 --> 00:14:08,160
it's not just the up mass down mass that

353
00:14:11,990 --> 00:14:09,760
we lost with the shuttle but speaking to

354
00:14:13,189 --> 00:14:12,000
that specific question it has been a

355
00:14:14,790 --> 00:14:13,199
little bit more challenging and it's

356
00:14:17,750 --> 00:14:14,800
been made more so by the loss of

357
00:14:20,629 --> 00:14:17,760
progress 44p this past summer but with

358
00:14:23,430 --> 00:14:20,639
that said we're just now ready to undock

359
00:14:25,189 --> 00:14:23,440
progress 45p here in a couple of days

360
00:14:26,949 --> 00:14:25,199
and we managed to

361
00:14:28,949 --> 00:14:26,959
uh amazingly i don't know how we did it

362
00:14:30,389 --> 00:14:28,959
but uh with the help of the russian

363
00:14:32,629 --> 00:14:30,399

specialists and

364
00:14:34,150 --> 00:14:32,639
and our russian crews and and all of us

365
00:14:35,910 --> 00:14:34,160
hunting down every little bit of trash

366
00:14:37,350 --> 00:14:35,920
that we could find on station stowe away

367
00:14:39,189 --> 00:14:37,360
almost everything that we had that

368
00:14:41,350 --> 00:14:39,199
needed to go back that we needed to at

369
00:14:43,509 --> 00:14:41,360
least get rid of to make room for the

370
00:14:45,269 --> 00:14:43,519
operation to do on board so i think

371
00:14:47,590 --> 00:14:45,279
we're getting by okay but we need to

372
00:14:49,430 --> 00:14:47,600
have as much up mass and down mass

373
00:14:51,189 --> 00:14:49,440
capability as we can to support space

374
00:14:52,550 --> 00:14:51,199
station operations at the level we need

375
00:14:55,350 --> 00:14:52,560
it

376
00:14:57,269 --> 00:14:55,360
thank you i'd like to ask you both about

377
00:14:59,509 --> 00:14:57,279
the golden anniversary next month of

378
00:15:02,069 --> 00:14:59,519
john glenn's first flight um i heard you

379
00:15:03,750 --> 00:15:02,079
discussing the other day dr pettit how

380
00:15:05,430 --> 00:15:03,760
mr glenn inspired you to become an

381
00:15:07,189 --> 00:15:05,440
astronaut and i'd like you to elaborate

382
00:15:10,790 --> 00:15:07,199
on that a little more please and you too

383
00:15:12,710 --> 00:15:10,800
commander burbank um how has john

384
00:15:14,870 --> 00:15:12,720
glenn's first flight shaped both of your

385
00:15:16,629 --> 00:15:14,880
lives i i know you were just a babe

386
00:15:19,030 --> 00:15:16,639
there commander burbank when that flight

387
00:15:21,189 --> 00:15:19,040
happened but but still it must have

388
00:15:25,430 --> 00:15:21,199

shaped you in some way as a professional

389
00:15:30,389 --> 00:15:27,829
well one thing that john glenn's flight

390
00:15:33,990 --> 00:15:30,399
did was just show that

391
00:15:35,829 --> 00:15:34,000
this was reality that that uh space

392
00:15:37,749 --> 00:15:35,839
flight moved from science fiction to

393
00:15:39,749 --> 00:15:37,759
science fact and

394
00:15:41,990 --> 00:15:39,759
there's one thing to dream as a little

395
00:15:45,430 --> 00:15:42,000
kid and as an adult it's another thing

396
00:15:46,870 --> 00:15:45,440
to have real possibilities that you can

397
00:15:48,230 --> 00:15:46,880
actually plan

398
00:15:51,030 --> 00:15:48,240
and uh

399
00:15:53,030 --> 00:15:51,040
and achieve and the one of the seminal

400
00:15:55,990 --> 00:15:53,040
things that john glenn's flight did was

401
00:15:59,030 --> 00:15:56,000
show that space flight with humans is

402
00:15:59,829 --> 00:15:59,040
possible and that we have a program that

403
00:16:02,629 --> 00:15:59,839
is

404
00:16:05,670 --> 00:16:02,639
ongoing so that a kid

405
00:16:07,670 --> 00:16:05,680
growing up and being in school could say

406
00:16:09,990 --> 00:16:07,680
i want to study hard and do math and

407
00:16:11,189 --> 00:16:10,000
science and take all the hard courses so

408
00:16:14,470 --> 00:16:11,199
that when i

409
00:16:19,430 --> 00:16:14,480
pop out of school on the other end i can

410
00:16:22,550 --> 00:16:20,790
and and i guess

411
00:16:24,310 --> 00:16:22,560
my answer to that would be all those

412
00:16:25,910 --> 00:16:24,320
early missions and and the thing that

413
00:16:27,670 --> 00:16:25,920

the one mission that stands out most of

414
00:16:30,150 --> 00:16:27,680
my mind was just before my eighth

415
00:16:31,269 --> 00:16:30,160
birthday was the apollo 11 moon landing

416
00:16:33,910 --> 00:16:31,279
and

417
00:16:35,910 --> 00:16:33,920
that was a huge impact to me personally

418
00:16:38,550 --> 00:16:35,920
and all my life i've been i guess what

419
00:16:40,310 --> 00:16:38,560
i'd call a space geek or

420
00:16:42,470 --> 00:16:40,320
an amateur astronomer somebody always

421
00:16:45,269 --> 00:16:42,480
interested in in all things space but it

422
00:16:46,790 --> 00:16:45,279
wasn't until i was already flying uh

423
00:16:48,069 --> 00:16:46,800
helicopters in the coast guard for quite

424
00:16:49,829 --> 00:16:48,079
a few years

425
00:16:51,189 --> 00:16:49,839
and that it ever occurred to me to

426
00:16:52,949 --> 00:16:51,199
actually that this was something i could

427
00:16:54,790 --> 00:16:52,959
do even as an eight-year-old or a 10 or

428
00:16:56,470 --> 00:16:54,800
12 year old i think i was

429
00:16:57,350 --> 00:16:56,480
maybe too much of a realist to think

430
00:16:58,949 --> 00:16:57,360
that

431
00:17:00,790 --> 00:16:58,959
becoming an astronaut was a possibility

432
00:17:03,350 --> 00:17:00,800
for me which is probably a good lesson

433
00:17:05,590 --> 00:17:03,360
for a lot of kids right now and

434
00:17:08,150 --> 00:17:05,600
i guess i would say that you have no

435
00:17:10,150 --> 00:17:08,160
idea what you're really capable of

436
00:17:12,150 --> 00:17:10,160
uh dr pettit i i

437
00:17:14,069 --> 00:17:12,160
was hoping you could also talk a little

438
00:17:15,829 --> 00:17:14,079

bit more about those red ball jet shoes

439
00:17:18,710 --> 00:17:15,839
of yours and that little recording of

440
00:17:20,710 --> 00:17:18,720
john glenn describing his flight um how

441
00:17:23,189 --> 00:17:20,720
old were you then and and do you

442
00:17:24,949 --> 00:17:23,199
remember do you have any recollection of

443
00:17:30,150 --> 00:17:24,959
the day that john glenn became the first

444
00:17:33,430 --> 00:17:31,750
you know

445
00:17:35,029 --> 00:17:33,440
i probably remember

446
00:17:37,350 --> 00:17:35,039
the the little record in the red ball

447
00:17:38,789 --> 00:17:37,360
jets more than john glenn's actual

448
00:17:40,470 --> 00:17:38,799
launch

449
00:17:42,390 --> 00:17:40,480
and and i can't really remember how old

450
00:17:43,830 --> 00:17:42,400
i was i could i could look at the dates

451
00:17:44,950 --> 00:17:43,840
and do the math

452
00:17:46,390 --> 00:17:44,960
um

453
00:17:48,310 --> 00:17:46,400
but uh

454
00:17:49,909 --> 00:17:48,320
the i what

455
00:17:55,750 --> 00:17:49,919
really

456
00:17:58,470 --> 00:17:55,760
were the pictures that would show up in

457
00:18:00,390 --> 00:17:58,480
life magazine and this gets back to the

458
00:18:02,470 --> 00:18:00,400
importance of sharing the experience

459
00:18:05,750 --> 00:18:02,480
with everyone and talking to people like

460
00:18:08,310 --> 00:18:05,760
you marcia that uh take

461
00:18:09,990 --> 00:18:08,320
uh interviews from people like us and

462
00:18:12,070 --> 00:18:10,000
then go out and share with the rest of

463
00:18:14,789 --> 00:18:12,080

the world because if it isn't for

464
00:18:16,950 --> 00:18:14,799
for those kinds of outlets there'd be a

465
00:18:18,470 --> 00:18:16,960
whole host of kids that wouldn't even

466
00:18:20,390 --> 00:18:18,480
know what's going on in the space

467
00:18:22,470 --> 00:18:20,400
program

468
00:18:25,190 --> 00:18:22,480
and one one more question along this

469
00:18:27,270 --> 00:18:25,200
line if i might might if i might um i'm

470
00:18:29,750 --> 00:18:27,280
assuming you've both met john glenn have

471
00:18:33,430 --> 00:18:29,760
you both met him

472
00:18:38,950 --> 00:18:35,350
absolutely

473
00:18:40,630 --> 00:18:38,960
yeah okay thank you um dr pettit you you

474
00:18:41,990 --> 00:18:40,640
had another interesting comment the

475
00:18:44,150 --> 00:18:42,000
other day when you were you said that

476
00:18:46,470 --> 00:18:44,160
you would be willing to immigrate to

477
00:18:48,549 --> 00:18:46,480
space and i've been covering this

478
00:18:51,270 --> 00:18:48,559
for a long time and never heard anyone

479
00:18:53,909 --> 00:18:51,280
go so far off that limb before and what

480
00:18:55,990 --> 00:18:53,919
is it what is it about space

481
00:18:57,510 --> 00:18:56,000
that would prompt you to want to stay

482
00:18:59,350 --> 00:18:57,520
there forever assuming you had your

483
00:19:03,350 --> 00:18:59,360
family with you and to never come back

484
00:19:09,190 --> 00:19:05,029
well you know i came to this conclusion

485
00:19:11,430 --> 00:19:09,200
during expedition 6 back in 2002 2003

486
00:19:14,230 --> 00:19:11,440
and and i talked about it then i i think

487
00:19:16,390 --> 00:19:14,240
i even wrote an essay about it which uh

488
00:19:18,070 --> 00:19:16,400

uh then we're called journals but now we

489
00:19:18,950 --> 00:19:18,080
call them blogs

490
00:19:24,630 --> 00:19:18,960
and

491
00:19:28,150 --> 00:19:24,640
in my heart when i'm in space

492
00:19:32,150 --> 00:19:28,160
and it's got to be the same kind of

493
00:19:34,070 --> 00:19:32,160
feeling that people had in the 15th and

494
00:19:36,310 --> 00:19:34,080
16th and 17th centuries when they

495
00:19:38,390 --> 00:19:36,320
decided to immigrate to the new world

496
00:19:40,950 --> 00:19:38,400
and they knew they were gonna load up

497
00:19:43,190 --> 00:19:40,960
their families and get on a ship and go

498
00:19:46,230 --> 00:19:43,200
off and never see the continental europe

499
00:19:47,190 --> 00:19:46,240
again and they were okay with that

500
00:19:48,710 --> 00:19:47,200
um

501
00:19:50,630 --> 00:19:48,720
i'm not sure about the families that

502
00:19:53,350 --> 00:19:50,640
were drugged along but they may not have

503
00:19:55,270 --> 00:19:53,360
had a choice back then

504
00:19:58,230 --> 00:19:55,280
and and that's how i feel

505
00:20:00,870 --> 00:19:58,240
inside is if we had the technology so

506
00:20:05,110 --> 00:20:00,880
that you knew you could immigrate into

507
00:20:06,390 --> 00:20:05,120
space and continue to live a normal

508
00:20:08,630 --> 00:20:06,400
life

509
00:20:11,590 --> 00:20:08,640
i would pack up everything i have on

510
00:20:15,029 --> 00:20:11,600
earth including my family and

511
00:20:16,789 --> 00:20:15,039
and move away and never come back

512
00:20:19,029 --> 00:20:16,799
well do you think that's going to happen

513
00:20:21,029 --> 00:20:19,039

in your lifetime if not you

514
00:20:22,870 --> 00:20:21,039
another astronaut in their family i mean

515
00:20:25,350 --> 00:20:22,880
is this some how far into the future do

516
00:20:27,750 --> 00:20:25,360
you see that and when you were that boy

517
00:20:30,710 --> 00:20:27,760
wanting those red ball jet shoes did you

518
00:20:32,549 --> 00:20:30,720
think that 50 years 40 years hence which

519
00:20:34,549 --> 00:20:32,559
would be today that there would be

520
00:20:37,270 --> 00:20:34,559
people living in space not just on a

521
00:20:41,750 --> 00:20:37,280
station but actually really truly being

522
00:20:46,149 --> 00:20:43,750
i think when i was a little kid those

523
00:20:47,909 --> 00:20:46,159
kind of philosophical arguments were way

524
00:20:50,230 --> 00:20:47,919
above me and i was probably more

525
00:20:52,390 --> 00:20:50,240
concerned about whether the little red

526
00:20:54,789 --> 00:20:52,400
sticker on the side of my red ball jets

527
00:20:56,310 --> 00:20:54,799
would fall off like it they did on the

528
00:20:57,270 --> 00:20:56,320
previous pair

529
00:20:59,430 --> 00:20:57,280
uh

530
00:21:03,270 --> 00:20:59,440
but

531
00:21:05,430 --> 00:21:03,280
be in

532
00:21:07,669 --> 00:21:05,440
in another 50 years

533
00:21:10,950 --> 00:21:07,679
uh you know i my crystal ball doesn't

534
00:21:14,549 --> 00:21:10,960
see that far i do think that these kinds

535
00:21:18,070 --> 00:21:14,559
of of uh concepts of the future are

536
00:21:20,470 --> 00:21:18,080
built by people starting off saying we

537
00:21:22,549 --> 00:21:20,480
want to make that happen and so if we

538
00:21:25,430 --> 00:21:22,559

want to be able to

539
00:21:27,750 --> 00:21:25,440
basically colonize places outside of

540
00:21:31,990 --> 00:21:27,760
earth it's something that we as human

541
00:21:34,149 --> 00:21:32,000
beings we as uh americans need

542
00:21:35,990 --> 00:21:34,159
to say we want to make that happen and

543
00:21:38,149 --> 00:21:36,000
then we just roll up our sleeves and we

544
00:21:41,190 --> 00:21:38,159
do it and and it'll take

545
00:21:43,270 --> 00:21:41,200
20 25 30 years of hard work to do it but

546
00:21:45,430 --> 00:21:43,280
we've got to have a plan we've got to be

547
00:21:47,830 --> 00:21:45,440
motivated and we just have to start in

548
00:21:50,390 --> 00:21:47,840
and and work on it and and that's that's

549
00:21:52,789 --> 00:21:50,400
how we'll make this future

550
00:21:53,909 --> 00:21:52,799
well i'd like to say thank you to both

551
00:21:58,789 --> 00:21:53,919
and

552
00:22:03,190 --> 00:22:01,350
thanks very much marcia you take care

553
00:22:08,870 --> 00:22:03,200
the station this is houston acr that

554
00:22:13,190 --> 00:22:11,190
and thank you cnn and associated press