1
00:00:00,000 --> 00:01:06,350
I

2
00:01:06,360 --> 00:01:09,120
we

3
00:01:09,130 --> 00:01:20,050
Oh

4
00:01:20,060 --> 00:01:29,690
in

5
00:01:29,700 --> 00:01:39,080
we

6
00:01:39,090 --> 00:01:46,270
yo

7
00:01:56,630 --> 00:01:53,360
good morning Kevin good morning story

8
00:02:02,090 --> 00:01:56,640
it's good to hear some really good music

9
00:02:09,830 --> 00:02:02,100
for a change well certainly is about a

10
00:02:15,140 --> 00:02:09,840
grand place as all thank you babe said

11
00:02:23,080 --> 00:02:15,150
it's one heck of a town sure is Sir it's

12
00:02:33,070 --> 00:02:25,750
I used to discovery with the internet

13
00:02:41,080 --> 00:02:38,110

and go ahead this is a question from

14
00:02:43,540 --> 00:02:41,090
castle in form of houston texas and she

15
00:02:45,850 --> 00:02:43,550
wanted to know whether the deployment of

16
00:02:49,000 --> 00:02:45,860
this teacher satellite would make the co

17
00:02:50,680 --> 00:02:49,010
a spa or eliminate it altogether the

18
00:02:52,690 --> 00:02:50,690
answer is that it will not change the

19
00:02:54,370 --> 00:02:52,700
size of the zone of exclusion the

20
00:02:55,810 --> 00:02:54,380
satellite will be checked out over the

21
00:02:58,930 --> 00:02:55,820
next several months and then be

22
00:03:01,930 --> 00:02:58,940
positioned as they already spare this is

23
00:03:04,630 --> 00:03:01,940
the last of a series of teachers

24
00:03:06,550 --> 00:03:04,640
satellites to complete the current

25
00:03:08,590 --> 00:03:06,560
network and some of the original

26
00:03:11,020 --> 00:03:08,600
satellites are reaching the end of their

27
00:03:14,140 --> 00:03:11,030
expected lifetime therefore this will be

28
00:03:57,010 --> 00:03:14,150
put into a spare position and called

29
00:04:00,940 --> 00:03:59,050
this is Mission Control Houston the

30
00:04:02,680 --> 00:04:00,950
northern coast of Australia now coming

31
00:04:11,930 --> 00:04:02,690
into view of Discovery's payload Bay

32
00:04:15,200 --> 00:04:13,670
cameras are being controlled by the

33
00:04:16,910 --> 00:04:15,210
instrumentation and communications

34
00:04:19,850 --> 00:04:16,920
officer here in the new mission control

35
00:04:21,170 --> 00:04:19,860
center as the crew continues to step

36
00:04:36,070 --> 00:04:21,180
through its post sleep activities

37
00:04:44,110 --> 00:04:40,390
on that day night outside add a portion

38
00:04:46,689 --> 00:04:44,120

of Florida we did pick up the SLF and it

39
00:04:49,480 --> 00:04:46,699
appeared to be the only cloudless spot

40
00:04:52,029 --> 00:04:49,490
in Florida and we hope that remains the

41
00:04:54,850 --> 00:04:52,039
same through Friday morning and the

42
00:04:57,790 --> 00:04:54,860
coming across Mexico during the night we

43
00:05:12,710 --> 00:04:57,800
could see cities with the naked eye but

44
00:05:17,090 --> 00:05:15,680
the BDS is made up of a device developed

45
00:05:19,250 --> 00:05:17,100
here at the Johnson Space Center that

46
00:05:21,190 --> 00:05:19,260
uses a rotating cylinder to suspend

47
00:05:23,420 --> 00:05:21,200
cells and tissues in a growth medium

48
00:05:26,060 --> 00:05:23,430
simulating some of the aspects of

49
00:05:27,530 --> 00:05:26,070
microgravity the system which is already

50
00:05:29,510 --> 00:05:27,540
being used extensively in ground-based

51
00:05:32,720 --> 00:05:29,520
research also provides for gas and

52
00:05:34,760 --> 00:05:32,730
nutrient exchange for the cells the

53
00:05:36,380 --> 00:05:34,770
purpose of this experiment on the flight

54
00:05:40,340 --> 00:05:36,390
is to demonstrate the performance of

55
00:05:41,900 --> 00:05:40,350
this bioreactor in microgravity trying

56
00:05:48,380 --> 00:05:41,910
to assess the fluid dynamic

57
00:05:49,820 --> 00:05:48,390
characteristics of the bioreactor the

58
00:05:52,640 --> 00:05:49,830
experiment and what we're seeing right

59
00:05:53,960 --> 00:05:52,650
now our colon cancer cells that are

60
00:06:05,060 --> 00:05:53,970
being grown within the bioreactor

61
00:06:09,110 --> 00:06:06,890
and discovery Houston you should have

62
00:06:11,270 --> 00:06:09,120
the first three tips pages on board and

63
00:06:18,860 --> 00:06:11,280

for Kevin we're looking at you down in

64
00:06:22,130 --> 00:06:18,870
the mid dec texting me can we use camera

65
00:06:23,870 --> 00:06:22,140
so this is previously recorded getting

66
00:06:32,410 --> 00:06:23,880
getting him ready to hold be hotel

67
00:06:37,120 --> 00:06:34,570
Discovery's crew downlinking some

68
00:06:40,660 --> 00:06:37,130
previously recorded video tape pilot

69
00:06:43,330 --> 00:06:40,670
Kevin kriegel exercising on the bicycle

70
00:06:44,830 --> 00:06:43,340
ergometer and the shuttles mid-deck to

71
00:06:52,900 --> 00:06:44,840
the right of the picture you can see the

72
00:06:58,120 --> 00:06:52,910
airlock entrance should now beginning in

73
00:07:01,750 --> 00:06:58,130
picture of dawn operating ESO no

74
00:07:39,920 --> 00:07:01,760
Lawrence a touch screen by Lee and

75
00:07:50,749 --> 00:07:42,170
and discovery we're watching time doing

76
00:07:52,879 --> 00:07:50,759
the vft or assuming some more video tape

77
00:07:54,920 --> 00:07:52,889
from the crew on board discovery this of

78
00:07:57,770 --> 00:07:54,930
commander Tom Henrik's operating the

79
00:08:03,790 --> 00:07:57,780
visual function tester equipment which

80
00:08:03,800 --> 00:08:21,690
visual stimulus

81
00:08:27,130 --> 00:08:25,390
discovery Houston for Mary Ellen we're

82
00:08:29,920 --> 00:08:27,140
happy with the amount of video we've

83
00:08:33,029 --> 00:08:29,930
received so far and just an additional

84
00:08:36,490 --> 00:08:33,039
note the the ground investigators are

85
00:08:38,920 --> 00:08:36,500
interested in the flow patterns that

86
00:08:40,480 --> 00:08:38,930
they're seeing in this phase one part of

87
00:08:47,530 --> 00:08:40,490
the experiment and are looking forward

88
00:08:49,750 --> 00:08:47,540

to phase two I'll a box and I will go

89
00:08:52,690 --> 00:08:49,760
ahead and cue up the tape to yesterday's

90
00:08:54,910 --> 00:08:52,700
and maybe to let me know you can

91
00:09:22,489 --> 00:08:54,920
initiate that from the ground we can

92
00:09:33,289 --> 00:09:25,699
and we're with you in the mid deck Kevin

93
00:09:35,359 --> 00:09:33,299
and done we got to allow clerk good day

94
00:09:38,629 --> 00:09:35,369
USA this is Houston please call

95
00:09:40,849 --> 00:09:38,639
discovery for a voice check discovery

96
00:09:45,799 --> 00:09:40,859
this is good day USA I'm Doug Stefan

97
00:09:48,469 --> 00:09:45,809
hello what mr. Kevin Pringle and have

98
00:09:50,839 --> 00:09:48,479
Don Tomas on my left local board space

99
00:09:54,649 --> 00:09:50,849
shuttle Discovery I was very exciting

100
00:09:56,539 --> 00:09:54,659
for us to be here and very exciting for

101
00:09:58,569 --> 00:09:56,549
the audience to have a a chance to have

102
00:10:00,949 --> 00:09:58,579
a conversation with you first of all

103
00:10:02,419 --> 00:10:00,959
let's talk a little to Kevin can we do

104
00:10:03,919 --> 00:10:02,429
that let's find out as much as we can

105
00:10:08,169 --> 00:10:03,929
about Kevin because this is his first

106
00:10:14,449 --> 00:10:08,179
base like correct correct that's correct

107
00:10:17,719 --> 00:10:14,459
tell us about you Kevin okay myself I

108
00:10:21,199 --> 00:10:17,729
grew up on Long Island New York I was an

109
00:10:25,999 --> 00:10:21,209
air force officer for 12 years military

110
00:10:27,949 --> 00:10:26,009
pilot test pilot I joined NASA and 1990

111
00:10:31,879 --> 00:10:27,959
was an instructor pilot no research

112
00:10:34,089 --> 00:10:31,889
pilot came an astronaut 1992 and of a

113
00:10:37,639 --> 00:10:34,099

training ever since and it's my first

114
00:10:41,929 --> 00:10:37,649
mission a married with four beautiful

115
00:10:43,699 --> 00:10:41,939
kids how long have you been training for

116
00:10:46,819 --> 00:10:43,709
this particular flight and in general

117
00:10:51,039 --> 00:10:46,829
how long have you been training for the

118
00:10:56,929 --> 00:10:53,389
well for this particular mission we

119
00:10:59,299 --> 00:10:56,939
started training about 10 months ago as

120
00:11:02,089 --> 00:10:59,309
far as being an astronaut I guess I'm

121
00:11:04,219 --> 00:11:02,099
one of the newer folks in the office

122
00:11:06,229 --> 00:11:04,229
that dreamed of being an astronaut when

123
00:11:08,449 --> 00:11:06,239
they were very little of course the

124
00:11:09,619 --> 00:11:08,459
original folks never could dream of

125
00:11:12,499 --> 00:11:09,629
being astronauts because they didn't

126
00:11:15,199 --> 00:11:12,509
know it was such a thing but I guess

127
00:11:16,669 --> 00:11:15,209
I've been hoping to be an astronaut

128
00:11:20,239 --> 00:11:16,679
since I was about eight or nine years

129
00:11:21,559 --> 00:11:20,249
old what is your specific mission Kevin

130
00:11:27,409 --> 00:11:21,569
that is the things that you're working

131
00:11:30,199 --> 00:11:27,419
on as a mission specialist okay well

132
00:11:33,259 --> 00:11:30,209
have a pilot the back up to the

133
00:11:34,780 --> 00:11:33,269
commander my primary responsibilities to

134
00:11:39,400 --> 00:11:34,790
back up the commander

135
00:11:41,740 --> 00:11:39,410
entry in the take or take care of all

136
00:11:44,500 --> 00:11:41,750
the orbiter system I've also done some

137
00:11:46,720 --> 00:11:44,510
secondary experiments just before we

138
00:11:49,750 --> 00:11:46,730

went on the air I was to take care of

139
00:11:52,090 --> 00:11:49,760
experiment called hercules which is a

140
00:11:56,920 --> 00:11:52,100
digital video camera taking pictures of

141
00:11:58,420 --> 00:11:56,930
the earth and flan and the sea now the

142
00:12:01,480 --> 00:11:58,430
things that you have to do i'm looking

143
00:12:05,650 --> 00:12:01,490
at the background on you the things that

144
00:12:07,630 --> 00:12:05,660
you have to do are they basically we

145
00:12:09,130 --> 00:12:07,640
have okay I got it I'm getting some

146
00:12:11,290 --> 00:12:09,140
communication from some of the people at

147
00:12:13,870 --> 00:12:11,300
the Mission Control the things that you

148
00:12:16,090 --> 00:12:13,880
are involved in doing are they things

149
00:12:18,310 --> 00:12:16,100
that benefit us as far as health are

150
00:12:20,380 --> 00:12:18,320
concerned I know you're working on the

151
00:12:21,640 --> 00:12:20,390
environment tell people I think some

152
00:12:24,250 --> 00:12:21,650
other people listen to this program are

153
00:12:26,770 --> 00:12:24,260
interested in the benefits that they get

154
00:12:32,020 --> 00:12:26,780
from these missions that are not well

155
00:12:34,150 --> 00:12:32,030
known okay well i right objective of

156
00:12:36,880 --> 00:12:34,160
this mission was deploy tracking and

157
00:12:39,880 --> 00:12:36,890
data relay satellite which we did on the

158
00:12:41,980 --> 00:12:39,890
first day and that satellite is used for

159
00:12:44,740 --> 00:12:41,990
space communication network and it's the

160
00:12:47,410 --> 00:12:44,750
last of a series and that was a primary

161
00:12:49,600 --> 00:12:47,420
mission for flying but we had a lot of

162
00:12:52,510 --> 00:12:49,610
extra room in the mid deck once we went

163
00:12:54,970 --> 00:12:52,520

to the expense of getting the shuttle at

164
00:12:58,690 --> 00:12:54,980
space we have these smaller experiments

165
00:13:00,250 --> 00:12:58,700
which have a lot of potential benefits

166
00:13:03,550 --> 00:13:00,260
for mankind we have one that's working

167
00:13:07,270 --> 00:13:03,560
very well at the final reactor and it's

168
00:13:08,980 --> 00:13:07,280
growing living tissue and the hopes is

169
00:13:10,690 --> 00:13:08,990
that we'll be able to grow tissue a

170
00:13:13,720 --> 00:13:10,700
little bit better here at space and

171
00:13:16,090 --> 00:13:13,730
perhaps one day be able to grow some

172
00:13:19,230 --> 00:13:16,100
replacement organs mints in the future

173
00:13:21,130 --> 00:13:19,240
will also have some crystal growth

174
00:13:23,890 --> 00:13:21,140
experiments that we're growing and we're

175
00:13:26,020 --> 00:13:23,900
able to grow bigger crystals that can be

176
00:13:28,090 --> 00:13:26,030
used for drugs to help out cancer

177
00:13:32,260 --> 00:13:28,100
research and help out patients that way

178
00:13:35,200 --> 00:13:32,270
we have another experiment that is going

179
00:13:38,470 --> 00:13:35,210
to grow a micro capsules what's that use

180
00:13:41,470 --> 00:13:38,480
for is for pills that you can take and

181
00:13:42,940 --> 00:13:41,480
that perhaps in a shot that you can take

182
00:13:44,770 --> 00:13:42,950
and instead of taking a shot every day

183
00:13:47,550 --> 00:13:44,780
for insulin maybe only have to take a

184
00:13:49,470 --> 00:13:47,560
shot once a month because it has

185
00:13:52,830 --> 00:13:49,480
a small time release capsules in it

186
00:13:56,820 --> 00:13:52,840
we're also doing another one called NIH

187
00:13:58,980 --> 00:13:56,830
which is looking at the skeletal

188
00:14:00,720 --> 00:13:58,990

structure which will help perhaps in

189
00:14:02,130 --> 00:14:00,730
people with osteoporosis so there's

190
00:14:04,050 --> 00:14:02,140
quite a few secondaries that we're

191
00:14:06,540 --> 00:14:04,060
looking at all right let's spend a few

192
00:14:08,190 --> 00:14:06,550
minutes talking to John Thomas who is on

193
00:14:11,480 --> 00:14:08,200
his second flight as a mission

194
00:14:14,370 --> 00:14:11,490
specialist on welcome to good day USA

195
00:14:15,720 --> 00:14:14,380
come on it's a pleasure to be here it's

196
00:14:17,280 --> 00:14:15,730
nice to have you here tell us a little

197
00:14:19,970 --> 00:14:17,290
about you and where you're from and the

198
00:14:23,430 --> 00:14:19,980
same sort of thing that kevin gave us i

199
00:14:25,440 --> 00:14:23,440
was born in 1955 in cleveland ohio i

200
00:14:27,960 --> 00:14:25,450
went to case western reserve university

201
00:14:29,790 --> 00:14:27,970
in Cleveland's got a bachelor's degree

202
00:14:32,579 --> 00:14:29,800
in physics went on the Cornell

203
00:14:34,950 --> 00:14:32,589
University in central New York and got

204
00:14:37,230 --> 00:14:34,960
my PhD in material science from a

205
00:14:40,140 --> 00:14:37,240
materials engineer crystallographer

206
00:14:42,269 --> 00:14:40,150
background i work for AT&T bell

207
00:14:45,300 --> 00:14:42,279
laboratories for six years in new jersey

208
00:14:47,640 --> 00:14:45,310
and moved down to houston and 1988 where

209
00:14:49,950 --> 00:14:47,650
i worked as a materials engineer I'm

210
00:14:51,480 --> 00:14:49,960
married and I have a five month old

211
00:14:54,270 --> 00:14:51,490
little boy whose home wait for me to get

212
00:14:56,280 --> 00:14:54,280
back congratulations have you as a

213
00:14:58,650 --> 00:14:56,290

matter of course or the other members of

214
00:15:00,540 --> 00:14:58,660
the crew had conversations with your

215
00:15:05,250 --> 00:15:00,550
family can you do that when you're in

216
00:15:07,950 --> 00:15:05,260
space yes we can we have one opportunity

217
00:15:10,200 --> 00:15:07,960
during the mission to have a private

218
00:15:12,000 --> 00:15:10,210
conference with our families I just had

219
00:15:13,890 --> 00:15:12,010
mine last night and i'll tell you

220
00:15:15,450 --> 00:15:13,900
brought a big smile to my face we've

221
00:15:17,250 --> 00:15:15,460
been in quarantine a week before the

222
00:15:20,280 --> 00:15:17,260
mission and then being up here for a

223
00:15:21,960 --> 00:15:20,290
week or so it's a long time away from

224
00:15:23,820 --> 00:15:21,970
home and it's good to talk to the kids

225
00:15:26,160 --> 00:15:23,830
and your wife and everybody else back

226
00:15:28,829 --> 00:15:26,170
home this makes me feel a little bit

227
00:15:30,360 --> 00:15:28,839
part of the family again your first

228
00:15:33,960 --> 00:15:30,370
mission was about a year ago at this

229
00:15:36,060 --> 00:15:33,970
time wasn't it that's right it was

230
00:15:38,430 --> 00:15:36,070
exactly a year ago that I was up on st

231
00:15:41,699 --> 00:15:38,440
s65 that was a 15-day mission last

232
00:15:43,590 --> 00:15:41,709
summer and how much different is the job

233
00:15:47,820 --> 00:15:43,600
that you're performing this time from

234
00:15:51,329 --> 00:15:47,830
what you had to do last year last summer

235
00:15:52,769 --> 00:15:51,339
I was on a Space Lab which is a science

236
00:15:55,140 --> 00:15:52,779
module that we have in the back of the

237
00:15:56,940 --> 00:15:55,150
payload Bay here and we conducted 84

238
00:15:58,340 --> 00:15:56,950

different experiments from around the

239
00:15:59,700 --> 00:15:58,350
world we had 15 different countries

240
00:16:01,800 --> 00:15:59,710
participating

241
00:16:04,620 --> 00:16:01,810
so I was busy the whole time performing

242
00:16:06,900 --> 00:16:04,630
experiments during the 15-day flight

243
00:16:08,640 --> 00:16:06,910
this mission as Kevin mentioned our

244
00:16:11,280 --> 00:16:08,650
primary objective was deploying the

245
00:16:12,990 --> 00:16:11,290
tracking and data relay satellite as you

246
00:16:14,940 --> 00:16:13,000
know this is critical for all the images

247
00:16:16,770 --> 00:16:14,950
of the hubble space telescope's every

248
00:16:18,300 --> 00:16:16,780
time you see one of those great pictures

249
00:16:19,800 --> 00:16:18,310
from Saturn or Uranus or one of the

250
00:16:21,930 --> 00:16:19,810
other planets or galaxies out there

251
00:16:23,310 --> 00:16:21,940
those are all being transmitted to the

252
00:16:25,500 --> 00:16:23,320
capabilities of the tracking and data

253
00:16:26,820 --> 00:16:25,510
relay satellite and so in this mission

254
00:16:28,260 --> 00:16:26,830
it's a little different we were

255
00:16:30,180 --> 00:16:28,270
deploying a satellite now we're working

256
00:16:32,610 --> 00:16:30,190
on these smaller mid-deck experiments

257
00:16:36,600 --> 00:16:32,620
for the remainder of our flights the

258
00:16:39,660 --> 00:16:36,610
kids that watch you in space that follow

259
00:16:42,180 --> 00:16:39,670
you are inspired usually I have been

260
00:16:44,100 --> 00:16:42,190
doing a program with NASA bringing j

261
00:16:45,540 --> 00:16:44,110
Honeycutt and Mike McCully and some

262
00:16:47,670 --> 00:16:45,550
other former astronauts around the

263
00:16:48,990 --> 00:16:47,680

schools here and there in the country

264
00:16:52,050 --> 00:16:49,000
because I believe very strongly what

265
00:16:53,250 --> 00:16:52,060
NASA does how do you fellas the people

266
00:16:55,260 --> 00:16:53,260
the men and women of the crews

267
00:16:56,940 --> 00:16:55,270
themselves get around and get your

268
00:16:59,130 --> 00:16:56,950
message around so that kids will really

269
00:17:04,320 --> 00:16:59,140
understand what you are doing while

270
00:17:06,000 --> 00:17:04,330
you're out in space well we have an

271
00:17:08,430 --> 00:17:06,010
amateur radio on board we have an

272
00:17:10,680 --> 00:17:08,440
experiment called SAR x it's the shuttle

273
00:17:12,540 --> 00:17:10,690
amateur radio experiment and it's

274
00:17:14,340 --> 00:17:12,550
specifically designed for astronauts

275
00:17:16,890 --> 00:17:14,350
here in orbit to talk to students on the

276
00:17:18,660 --> 00:17:16,900
ground and during our mission we've made

277
00:17:20,430 --> 00:17:18,670
contact we will make contact with eight

278
00:17:22,710 --> 00:17:20,440
different schools from around the world

279
00:17:24,360 --> 00:17:22,720
we've taught to Argentina we talked to a

280
00:17:26,160 --> 00:17:24,370
school yesterday Kevin did up in

281
00:17:29,040 --> 00:17:26,170
Schenectady at the Schenectady Museum

282
00:17:30,150 --> 00:17:29,050
and as I said we have eight schools that

283
00:17:32,880 --> 00:17:30,160
we're talking with students from

284
00:17:34,500 --> 00:17:32,890
answering their questions and it's so

285
00:17:36,930 --> 00:17:34,510
much fun for us to share our enthusiasm

286
00:17:39,030 --> 00:17:36,940
with them and to try to get them

287
00:17:40,710 --> 00:17:39,040
motivated to learn more about science

288
00:17:43,260 --> 00:17:40,720

and math and maybe you know become

289
00:17:45,120 --> 00:17:43,270
future astronauts here we're talking a

290
00:17:46,980 --> 00:17:45,130
mission specialist Donald Thomas is on

291
00:17:48,720 --> 00:17:46,990
his second shuttle flight and Kevin

292
00:17:51,390 --> 00:17:48,730
creeglers on his first shuttle flight

293
00:17:53,100 --> 00:17:51,400
from discovery where exactly are you if

294
00:17:55,730 --> 00:17:53,110
you look out the window tell us where

295
00:17:59,130 --> 00:17:55,740
you want what you can see right now

296
00:18:00,960 --> 00:17:59,140
right now we're coming up over southern

297
00:18:03,180 --> 00:18:00,970
Florida just heading out over the

298
00:18:05,700 --> 00:18:03,190
Caribbean we go around the earth every

299
00:18:08,460 --> 00:18:05,710
90 minutes or so and we r 160 miles

300
00:18:12,480 --> 00:18:08,470
above the earth that's kind of a low

301
00:18:17,410 --> 00:18:14,680
actually no that's about our standard

302
00:18:20,020 --> 00:18:17,420
orbit is 160 we have gone down as low as

303
00:18:23,020 --> 00:18:20,030
around 105 do it some of the earth

304
00:18:26,380 --> 00:18:23,030
observations and we'll go up to as high

305
00:18:29,140 --> 00:18:26,390
as almost 300 to service the Hubble

306
00:18:32,710 --> 00:18:29,150
Space Telescope yeah I thought that the

307
00:18:34,090 --> 00:18:32,720
average was around 200 220 230 in there

308
00:18:35,710 --> 00:18:34,100
what differs explain to the audience

309
00:18:37,660 --> 00:18:35,720
what difference it makes whether you're

310
00:18:39,160 --> 00:18:37,670
at a hundred and sixty or where there

311
00:18:41,830 --> 00:18:39,170
were two hundred miles or I know the

312
00:18:43,360 --> 00:18:41,840
300-mile thing is for the things like

313
00:18:45,580 --> 00:18:43,370

the Hubble that are out there far but

314
00:18:47,260 --> 00:18:45,590
what different sensations and what can

315
00:18:51,870 --> 00:18:47,270
you see differently at 160 miles you

316
00:18:55,060 --> 00:18:51,880
can't see it 220 last summer I was at

317
00:18:57,160 --> 00:18:55,070
160 miles up for 14 days in the last day

318
00:19:00,040 --> 00:18:57,170
of our mission we dropped down to 135

319
00:19:02,290 --> 00:19:00,050
miles and that 25 mile difference was

320
00:19:04,030 --> 00:19:02,300
just spectacular the ground seems so

321
00:19:07,210 --> 00:19:04,040
much closer to us the detail that you

322
00:19:09,760 --> 00:19:07,220
can see I could see runways and airports

323
00:19:13,240 --> 00:19:09,770
and almost the markings the numbers on

324
00:19:14,830 --> 00:19:13,250
the runway from 135 miles up so the

325
00:19:16,960 --> 00:19:14,840
farther out you go you lose a little bit

326
00:19:18,640 --> 00:19:16,970
of detail on the ground but then again

327
00:19:21,160 --> 00:19:18,650
you gain the perspective the global

328
00:19:25,299 --> 00:19:21,170
perspective of the planet Earth you have

329
00:19:26,890 --> 00:19:25,309
brought some windex with you I don't

330
00:19:28,720 --> 00:19:26,900
know that you really did but what's the

331
00:19:32,950 --> 00:19:28,730
window experiment that I've been reading

332
00:19:34,990 --> 00:19:32,960
about well the window experiment back

333
00:19:36,640 --> 00:19:35,000
Nancy Perry is setting up we've already

334
00:19:38,830 --> 00:19:36,650
done one day to take today and we'll do

335
00:19:41,380 --> 00:19:38,840
another it's a look at the environment

336
00:19:44,230 --> 00:19:41,390
and spacer space another we're at

337
00:19:46,000 --> 00:19:44,240
actually does have some molecules out

338
00:19:47,500 --> 00:19:46,010

here and so we're looking at the

339
00:19:50,710 --> 00:19:47,510
interaction of the shuttle and the

340
00:19:52,900 --> 00:19:50,720
shuttle steps with the very same tenuous

341
00:19:55,390 --> 00:19:52,910
atmosphere that we have to try to

342
00:19:57,400 --> 00:19:55,400
understand it better from just a physics

343
00:20:00,160 --> 00:19:57,410
perspective but also on a practical

344
00:20:01,840 --> 00:20:00,170
perspective when we dock with me the

345
00:20:04,540 --> 00:20:01,850
Russian space station as we did earlier

346
00:20:06,850 --> 00:20:04,550
this year and when we dock with the

347
00:20:08,680 --> 00:20:06,860
International Space Station we want to

348
00:20:11,140 --> 00:20:08,690
know what kind of effects the plumes

349
00:20:14,140 --> 00:20:11,150
will have on that station and how we can

350
00:20:19,000 --> 00:20:14,150
protect against that you have a new

351
00:20:21,460 --> 00:20:19,010
engine in Discovery do you not we sure

352
00:20:25,060 --> 00:20:21,470
do have a black one engine it worked

353
00:20:27,340 --> 00:20:25,070
like a champ it had a nipple pump on it

354
00:20:29,980 --> 00:20:27,350
which brings down the wells from a

355
00:20:32,560 --> 00:20:29,990
couple of hundred to just a handful

356
00:20:34,570 --> 00:20:32,570
which anyone does any kind of

357
00:20:37,480 --> 00:20:34,580
maintenance knows that make it a

358
00:20:41,169 --> 00:20:37,490
more reliable system as far as the

359
00:20:43,660 --> 00:20:41,179
performance from our aspect it worked

360
00:20:46,750 --> 00:20:43,670
just perfect and we're looking forward

361
00:20:49,480 --> 00:20:46,760
to putting three of them on the show I

362
00:20:51,790 --> 00:20:49,490
guess in September all right can we go

363
00:20:53,020 --> 00:20:51,800

back and talk to Kevin for second

364
00:20:55,870 --> 00:20:53,030
actually I want to talk to the two of

365
00:20:58,180 --> 00:20:55,880
you together as you live closely in the

366
00:20:59,980 --> 00:20:58,190
environment you're five people distinct

367
00:21:02,140 --> 00:20:59,990
to have all different backgrounds have

368
00:21:04,660 --> 00:21:02,150
you become friends and do you become

369
00:21:06,250 --> 00:21:04,670
friends because of the work that you do

370
00:21:07,990 --> 00:21:06,260
together or do they actually put you

371
00:21:12,720 --> 00:21:08,000
together because you all seem to work

372
00:21:16,780 --> 00:21:12,730
well together well I think it's probably

373
00:21:18,850 --> 00:21:16,790
where the traits they try to do when

374
00:21:21,250 --> 00:21:18,860
they do the selection is folks that can

375
00:21:23,230 --> 00:21:21,260
work together well as a team if it is

376
00:21:25,000 --> 00:21:23,240
closed environment and we've been

377
00:21:27,490 --> 00:21:25,010
working well together for the last nine

378
00:21:29,620 --> 00:21:27,500
months I have to correct you know that

379
00:21:31,720 --> 00:21:29,630
the backgrounds aren't that day we have

380
00:21:33,250 --> 00:21:31,730
four people from ohio and up from New

381
00:21:36,070 --> 00:21:33,260
York so I'm the only one who has to

382
00:21:40,740 --> 00:21:36,080
really try to fit in that's right this

383
00:21:44,800 --> 00:21:40,750
was a so-called Ohio crew as I recall

384
00:21:49,560 --> 00:21:44,810
that's correct well we have stations all

385
00:21:53,080 --> 00:21:49,570
over ohio columbus Toledo Dayton

386
00:21:55,419 --> 00:21:53,090
Cincinnati and suburban Cleveland area

387
00:22:00,700 --> 00:21:55,429
that are hearing you right now so it

388
00:22:03,220 --> 00:22:00,710

should be like old home week what day

389
00:22:08,440 --> 00:22:03,230
are we in Kevin would show are we in the

390
00:22:10,570 --> 00:22:08,450
fifth or sixth day of the mission I only

391
00:22:12,909 --> 00:22:10,580
had to think about that because when you

392
00:22:15,490 --> 00:22:12,919
go through 16 sunrises and sunsets every

393
00:22:18,130 --> 00:22:15,500
day it gets kind of confusing but we're

394
00:22:21,700 --> 00:22:18,140
in the latest late morning of flight day

395
00:22:24,250 --> 00:22:21,710
6 okay so you have not only the windex

396
00:22:26,200 --> 00:22:24,260
operation scheduled today but you were

397
00:22:28,630 --> 00:22:26,210
talking about Hercules and the

398
00:22:30,220 --> 00:22:28,640
bioreactor demonstration systems do

399
00:22:32,140 --> 00:22:30,230
these continue every day like tomorrow

400
00:22:33,820 --> 00:22:32,150
and then the eighth day and so forth

401
00:22:37,100 --> 00:22:33,830
will you be working on all these things

402
00:22:41,930 --> 00:22:39,770
this correct will be kept busy the rest

403
00:22:44,270 --> 00:22:41,940
of the mission doing all the secondary

404
00:22:48,080 --> 00:22:44,280
experiments skinny as much stat as we

405
00:22:51,020 --> 00:22:48,090
can for the investigators and then the

406
00:22:52,880 --> 00:22:51,030
day before landing is tasked with

407
00:22:55,340 --> 00:22:52,890
basically tidying up put the way the

408
00:22:58,970 --> 00:22:55,350
experiments and get me over there ready

409
00:23:02,630 --> 00:22:58,980
to come home and so if I asked you to

410
00:23:07,039 --> 00:23:02,640
give us the things that that this this

411
00:23:14,590 --> 00:23:07,049
experience both gone and and Kevin this

412
00:23:20,750 --> 00:23:18,590
for me personally this is my second

413
00:23:22,400 --> 00:23:20,760

flight and it's a dream come true for me

414
00:23:24,530 --> 00:23:22,410
I've wanted to be an astronaut since I

415
00:23:26,270 --> 00:23:24,540
was about six years old so they have a

416
00:23:28,460 --> 00:23:26,280
little boy who dreamed to be living it

417
00:23:31,150 --> 00:23:28,470
now is just the best thing that can

418
00:23:33,440 --> 00:23:31,160
happen to you in life on a personal note

419
00:23:35,240 --> 00:23:33,450
what I'm taking away from this mission

420
00:23:37,610 --> 00:23:35,250
is working with these great depot on the

421
00:23:39,710 --> 00:23:37,620
FCS 70 crew he's our friendship so I'll

422
00:23:41,240 --> 00:23:39,720
have the rest of my life I know and the

423
00:23:43,190 --> 00:23:41,250
images that I have in my head right now

424
00:23:45,740 --> 00:23:43,200
of the planet Earth as we go around it

425
00:23:47,120 --> 00:23:45,750
when you're flying 160 miles above it in

426
00:23:49,850 --> 00:23:47,130
the shuttle you really get a perspective

427
00:23:51,500 --> 00:23:49,860
of the earth as a planet when you can

428
00:23:54,740 --> 00:23:51,510
look out and see the moon out there you

429
00:23:56,060 --> 00:23:54,750
can see the milky way the moon also so

430
00:23:58,580 --> 00:23:56,070
you really get a sense of the solar

431
00:24:00,620 --> 00:23:58,590
system here that we're in and as we fly

432
00:24:02,450 --> 00:24:00,630
over they you know the blue water of the

433
00:24:05,120 --> 00:24:02,460
planet Earth and look over the

434
00:24:07,220 --> 00:24:05,130
continents it's just it's a great

435
00:24:10,100 --> 00:24:07,230
perspective to bring back to the to the

436
00:24:12,380 --> 00:24:10,110
planet well we want to thank you

437
00:24:14,150 --> 00:24:12,390
gentlemen we've enjoyed this this has

438
00:24:16,220 --> 00:24:14,160

been a first on good day USA and I hope

439
00:24:17,780 --> 00:24:16,230
it will not be the last I hope that to

440
00:24:19,789 --> 00:24:17,790
both of you if you want to stay in space

441
00:24:23,150 --> 00:24:19,799
are able to do so Kevin kriegel

442
00:24:26,240 --> 00:24:23,160
astronaut Don Tomas enjoying the view

443
00:24:38,890 --> 00:24:26,250
and the work from discovery Houston good

444
00:24:45,880 --> 00:24:43,330
and we are with you in the mid deck ok

445
00:24:53,260 --> 00:24:45,890
so is actually pretty recorded we're

446
00:24:54,790 --> 00:24:53,270
short up to the flight deck ok this is

447
00:24:57,040 --> 00:24:54,800
Mission Control Houston we're expecting

448
00:25:01,150 --> 00:24:57,050
guests some video tape down like video

449
00:25:03,340 --> 00:25:01,160
of the window strike reported earlier

450
00:25:04,900 --> 00:25:03,350
apparently a micrometeoroid hit the

451
00:25:07,690 --> 00:25:04,910
corner one of the shuttle windows of

452
00:25:10,780 --> 00:25:07,700
course the daylight makes a little more

453
00:25:12,370 --> 00:25:10,790
dramatic than it really is so after this

454
00:25:18,390 --> 00:25:12,380
day lit and we took some under a

455
00:25:28,930 --> 00:25:22,060
copy Tom and can you gauge any kind of

456
00:25:30,430 --> 00:25:28,940
depth it looked like maybe a 30-second

457
00:25:32,200 --> 00:25:30,440
come an inch it's just tough to tell

458
00:25:34,210 --> 00:25:32,210
them because we can't get close to it

459
00:25:35,590 --> 00:25:34,220
either fact that's about the same angle

460
00:25:42,700 --> 00:25:35,600
you're seeing here that's as close as we

461
00:25:47,680 --> 00:25:42,710
can get Jaffe ms1 said he'd be glad to

462
00:25:50,940 --> 00:25:47,690
go check it from the outside and this is

463
00:26:01,550 --> 00:25:50,950

just to show you what it is the window

464
00:26:06,200 --> 00:26:04,490
houston we did have a slight delay get

465
00:26:07,790 --> 00:26:06,210
off the ground but once we got into all

466
00:26:10,730 --> 00:26:07,800
that we're ready to go right to wood and

467
00:26:14,630 --> 00:26:10,740
one of the first things that we found on

468
00:26:16,400 --> 00:26:14,640
orbit was an extra crew member that had

469
00:26:20,120 --> 00:26:16,410
come along and we heard that there was

470
00:26:22,460 --> 00:26:20,130
some relation to this crew member that

471
00:26:25,730 --> 00:26:22,470
was also participating in the control

472
00:26:29,480 --> 00:26:25,740
activities at the new FCC as you can see

473
00:26:33,200 --> 00:26:29,490
who's happy to come along and really

474
00:26:35,710 --> 00:26:33,210
have smile at pico and at ricoh the

475
00:26:38,300 --> 00:26:35,720
first sensation as you know is the

476
00:26:40,970 --> 00:26:38,310
relaxation 2g after three cheese's are

477
00:26:42,800 --> 00:26:40,980
happy to get out of the helmet it's more

478
00:26:48,290 --> 00:26:42,810
difficult for some than others but once

479
00:26:49,910 --> 00:26:48,300
out you're floating free and right after

480
00:26:52,280 --> 00:26:49,920
we get up on all of it it's really

481
00:26:53,870 --> 00:26:52,290
important to document the condition of

482
00:26:56,600 --> 00:26:53,880
the external tank and you can see this

483
00:26:59,240 --> 00:26:56,610
crew member is doing an excellent job of

484
00:27:00,620 --> 00:26:59,250
tracking the external tank as it falls

485
00:27:07,040 --> 00:27:00,630
back to earth to burn up in the

486
00:27:10,660 --> 00:27:07,050
atmosphere that's some particular

487
00:27:16,160 --> 00:27:14,660
think so I know Mark is about six

488
00:27:18,500 --> 00:27:16,170

Americans helping us for some of

489
00:27:20,570 --> 00:27:18,510
secondary extended sisters bah our

490
00:27:22,460 --> 00:27:20,580
experiments looking at mammalian

491
00:27:39,950 --> 00:27:22,470
development and developmental changes

492
00:27:44,160 --> 00:27:42,690
my reactor is another experiment that

493
00:27:47,160 --> 00:27:44,170
this remember was helping us out with

494
00:27:49,950 --> 00:27:47,170
and during this fight we managed to go

495
00:27:51,840 --> 00:27:49,960
some outstanding human cells you mr.

496
00:27:53,790 --> 00:27:51,850
issues and you can see this crew member

497
00:28:04,710 --> 00:27:53,800
about to take that scare all cell

498
00:28:06,180 --> 00:28:04,720
culture right now think it's always a

499
00:28:08,520 --> 00:28:06,190
good idea to learn a lot always go on

500
00:28:11,220 --> 00:28:08,530
aboard we were able to make a lot more

501
00:28:14,280 --> 00:28:11,230
sarax contacts at the show amateur radio

502
00:28:16,380 --> 00:28:14,290
experiment when which we're contacting a

503
00:28:18,030 --> 00:28:16,390
school around the world and talking with

504
00:28:20,070 --> 00:28:18,040
hundreds of students trying to get them

505
00:28:21,870 --> 00:28:20,080
enthusiastic about the space program and

506
00:28:26,190 --> 00:28:21,880
get up steer towards engineering and

507
00:28:28,500 --> 00:28:26,200
science field the next experiment you'll

508
00:28:31,260 --> 00:28:28,510
feel remember monitoring is the safety

509
00:28:34,350 --> 00:28:31,270
CT which is a protein crystal growth

510
00:28:36,720 --> 00:28:34,360
experiments growing shuffle soak off the

511
00:28:39,300 --> 00:28:36,730
energy rom which is man I die alone in I

512
00:28:41,040 --> 00:28:39,310
cancer-fighting judge really excited

513
00:28:42,810 --> 00:28:41,050

about the other crystal for going and

514
00:28:45,120 --> 00:28:42,820
hopefully will bring back some good

515
00:28:52,170 --> 00:28:45,130
science annex terminus of the immersive

516
00:28:53,550 --> 00:28:52,180
Alabama at Birmingham Michael capsules

517
00:28:55,050 --> 00:28:53,560
in space and experiment we're gonna

518
00:28:57,330 --> 00:28:55,060
activate tonight let it run overnight

519
00:29:00,330 --> 00:28:57,340
which will be producing some micro

520
00:29:05,180 --> 00:29:00,340
capsules of ampicillin and hydrate which

521
00:29:12,360 --> 00:29:05,190
is a drug for the took that we use for

522
00:29:15,120 --> 00:29:12,370
antibiotics see ft lb expand meant which

523
00:29:17,970 --> 00:29:15,130
is a space peel-off experiment or flying

524
00:29:20,670 --> 00:29:17,980
fish embryos in this case medaka fish

525
00:29:22,230 --> 00:29:20,680
and looking again at developmental pages

526
00:29:24,450 --> 00:29:22,240
seduced by microgravity and we've

527
00:29:26,490 --> 00:29:24,460
already been told they've been noticing

528
00:29:30,710 --> 00:29:26,500
significant changes between the ground

529
00:29:33,570 --> 00:29:30,720
control study embryos and ours on board

530
00:29:35,460 --> 00:29:33,580
carry extra crew member is doing the

531
00:29:39,540 --> 00:29:35,470
Hercules experiment which is a digital

532
00:29:42,690 --> 00:29:39,550
video camera used to geolocate dipper

533
00:29:45,780 --> 00:29:42,700
targets on the earth and water we've got

534
00:29:48,120 --> 00:29:45,790
some good of a spectral data and also

535
00:29:49,500 --> 00:29:48,130
some technical manic data looking at the

536
00:29:53,000 --> 00:29:49,510
earth

537
00:29:56,070 --> 00:29:53,010
on the other experiments also using a

538
00:29:59,340 --> 00:29:56,080

society on type camera as in Hercules is

539
00:30:01,590 --> 00:29:59,350
the window expert looking at the flow

540
00:30:03,690 --> 00:30:01,600
field with the particles around the

541
00:30:06,900 --> 00:30:03,700
orbiter which will help us understand

542
00:30:08,400 --> 00:30:06,910
physics here is low space orbit and also

543
00:30:15,510 --> 00:30:08,410
help us with documents for three

544
00:30:17,460 --> 00:30:15,520
stations said yes to that completes it

545
00:30:19,350 --> 00:30:17,470
down wait till we hope this draw some

546
00:30:22,470 --> 00:30:19,360
attention to the secretaries that we

547
00:30:24,870 --> 00:30:22,480
have on board and we did appreciate the

548
00:30:27,270 --> 00:30:24,880
help for six crew member in bringing all

549
00:30:30,720 --> 00:30:27,280
the benefits of the secretaries to light

550
00:30:34,950 --> 00:30:30,730
and if we have any more wood for Willis

551
00:30:37,110 --> 00:30:34,960
of that ventilator copy that discovery

552
00:30:38,790 --> 00:30:37,120
and it's obvious that with the high

553
00:30:40,770 --> 00:30:38,800
level of activity on board it was handy

554
00:30:44,040 --> 00:30:40,780
having that extra crew member to help

555
00:30:47,160 --> 00:30:44,050
out we also think that we understand now

556
00:30:49,350 --> 00:30:47,170
the alignment problems with Hercules and

557
00:30:51,450 --> 00:30:49,360
we'd like you to check that your extra

558
00:30:54,650 --> 00:30:51,460
crew member is not going outside we

559
00:30:58,170 --> 00:30:54,660
think that might explain that w16

560
00:31:00,120 --> 00:30:58,180
exactly at the w 6 thing we think was

561
00:31:02,490 --> 00:31:00,130
due this crew member and were also

562
00:31:05,850 --> 00:31:02,500
suspicious of him pecking at the power

563
00:31:07,140 --> 00:31:05,860

cords for the back of cleaner I think we