1
00:01:13,030 --> 00:01:10,469
good morning endeavor your start me up

2
00:01:15,830 --> 00:01:13,040
music this morning is from pam and mick

3
00:01:17,670 --> 00:01:15,840
for ms4

4
00:01:22,149 --> 00:01:17,680
thanks a lot ken that's a great way to

5
00:01:26,950 --> 00:01:25,109
this is mission control houston

6
00:01:29,190 --> 00:01:26,960
spacecraft communicator ken cameron

7
00:01:31,030 --> 00:01:29,200
waking the crew on board endeavour to

8
00:01:33,190 --> 00:01:31,040
the tune of start me up by the rolling

9
00:01:34,870 --> 00:01:33,200
stones today's greeting for

10
00:01:36,310 --> 00:01:34,880
mission specialist number four mark

11
00:01:40,069 --> 00:01:36,320
garno

12
00:01:44,630 --> 00:01:41,990
adelaide this is houston please call

13
00:01:46,870 --> 00:01:44,640

endeavor for a voice check

14
00:01:54,950 --> 00:01:46,880
endeavour this is adelaide how do you

15
00:01:59,270 --> 00:01:57,350
uh andrew it's uh dean brown speaking to

16
00:02:01,670 --> 00:01:59,280
you again from adelaide and at this very

17
00:02:03,109 --> 00:02:01,680
moment i think you're about to pass over

18
00:02:05,350 --> 00:02:03,119
adelaide itself

19
00:02:07,590 --> 00:02:05,360
and certainly warm greetings to you and

20
00:02:09,749 --> 00:02:07,600
the rest of the crew from all the people

21
00:02:11,510 --> 00:02:09,759
in south australia

22
00:02:13,430 --> 00:02:11,520
it's particularly a pleasure to have

23
00:02:15,990 --> 00:02:13,440
this chance to talk with you

24
00:02:22,229 --> 00:02:16,000
and so near to the end of your mission

25
00:02:26,070 --> 00:02:24,150
well i feel fine and good evening to you

26
00:02:27,430 --> 00:02:26,080
mr brown and people of south australia

27
00:02:30,229 --> 00:02:27,440
yes we are

28
00:02:31,830 --> 00:02:30,239
about to fly over adelaide it'll be uh

29
00:02:34,790 --> 00:02:31,840
night time for you but we'll still be

30
00:02:36,390 --> 00:02:34,800
sunlit and i believe if the clouds are

31
00:02:38,630 --> 00:02:36,400
clear enough which i'm not sure they are

32
00:02:41,509 --> 00:02:38,640
today you may be able to see us right

33
00:02:43,030 --> 00:02:41,519
now i think we're uh south of perth

34
00:02:45,430 --> 00:02:43,040
crossing across the

35
00:02:47,830 --> 00:02:45,440
great australian bike towards adelaide

36
00:02:48,710 --> 00:02:47,840
i'm feeling good we've had a wonderful

37
00:02:50,550 --> 00:02:48,720
mission

38
00:02:52,949 --> 00:02:50,560

we've uh done some outstanding

39
00:02:54,949 --> 00:02:52,959
experiments both uh in some technology

40
00:02:56,470 --> 00:02:54,959
and in some science and i'm sure you've

41
00:02:58,470 --> 00:02:56,480
probably seen some of the pictures that

42
00:02:59,990 --> 00:02:58,480
we've sent down of the satellites that

43
00:03:02,830 --> 00:03:00,000
we've deployed and the instructor that

44
00:03:04,949 --> 00:03:02,840
we inflated on orbit as they've really

45
00:03:06,229 --> 00:03:04,959
been uh breathtaking to watch all of

46
00:03:08,070 --> 00:03:06,239
this unfold

47
00:03:09,430 --> 00:03:08,080
uh it's been a wonderful mission i'm

48
00:03:12,630 --> 00:03:09,440
thoroughly enjoying it i'm sorry it's

49
00:03:15,910 --> 00:03:13,910
andrew

50
00:03:19,350 --> 00:03:15,920
what do you see as the next major

51
00:03:21,750 --> 00:03:19,360
challenges in space for mankind

52
00:03:23,030 --> 00:03:21,760
obviously you've had this

53
00:03:23,990 --> 00:03:23,040
challenge

54
00:03:26,710 --> 00:03:24,000
but

55
00:03:29,670 --> 00:03:26,720
over the next 20 years do you see us

56
00:03:31,670 --> 00:03:29,680
then moving out away from earth

57
00:03:33,270 --> 00:03:31,680
and to what planets

58
00:03:35,190 --> 00:03:33,280
and what do you see are some of those

59
00:03:38,949 --> 00:03:35,200
challenges that mankind will achieve

60
00:03:42,550 --> 00:03:40,710
i think the biggest immediate challenge

61
00:03:44,789 --> 00:03:42,560
facing us is to learn

62
00:03:47,430 --> 00:03:44,799
to live and function on a day-to-day

63
00:03:49,110 --> 00:03:47,440

long-term basis in space and that of

64
00:03:51,110 --> 00:03:49,120
course is what we will achieve with the

65
00:03:52,949 --> 00:03:51,120
international space station and that

66
00:03:55,270 --> 00:03:52,959
will provide a platform for which to do

67
00:03:58,229 --> 00:03:55,280
that a platform from which to

68
00:04:01,190 --> 00:03:58,239
perform uh life sciences experiments

69
00:04:03,270 --> 00:04:01,200
human habitation in space and a platform

70
00:04:05,509 --> 00:04:03,280
from which to do earth observations and

71
00:04:07,509 --> 00:04:05,519
resource monitoring and ecological

72
00:04:09,830 --> 00:04:07,519
studies of the earth something which i

73
00:04:11,190 --> 00:04:09,840
think will be profoundly important

74
00:04:12,710 --> 00:04:11,200
and after we've

75
00:04:14,789 --> 00:04:12,720
operated that facility then i think

76
00:04:17,670 --> 00:04:14,799
we'll be in a position to

77
00:04:19,990 --> 00:04:17,680
start uh further colonization of the

78
00:04:21,590 --> 00:04:20,000
solar system we'll begin i think with a

79
00:04:23,830 --> 00:04:21,600
return to the moon

80
00:04:26,550 --> 00:04:23,840
and colonization of the moon

81
00:04:29,110 --> 00:04:26,560
followed some years later by a

82
00:04:31,270 --> 00:04:29,120
colonization trip to mars it's still a

83
00:04:33,030 --> 00:04:31,280
long way off i certainly don't think

84
00:04:35,110 --> 00:04:33,040
it'll happen in my professional lifetime

85
00:04:36,390 --> 00:04:35,120
although i hope to live to see it

86
00:04:39,189 --> 00:04:36,400
but i think that's the direction that

87
00:04:41,030 --> 00:04:39,199
we're going to be going

88
00:04:43,749 --> 00:04:41,040

and you're conducting all sort of

89
00:04:47,430 --> 00:04:43,759
experience that will be useful uh to

90
00:04:49,270 --> 00:04:47,440
canadian can you give us a little bit of

91
00:04:52,550 --> 00:04:49,280
insight about the success of what you've

92
00:04:56,310 --> 00:04:53,990
yes sir i can

93
00:04:59,030 --> 00:04:56,320
one of the experiments that i've spent a

94
00:05:01,430 --> 00:04:59,040
lot of time on during this mission

95
00:05:04,310 --> 00:05:01,440
has been the commercial float zone

96
00:05:05,430 --> 00:05:04,320
furnace and that's a furnace that

97
00:05:06,950 --> 00:05:05,440
melts

98
00:05:09,510 --> 00:05:06,960
materials

99
00:05:12,629 --> 00:05:09,520
and then re-solidifies them and these

100
00:05:14,550 --> 00:05:12,639
materials are semiconductor materials

101
00:05:16,550 --> 00:05:14,560
and semiconductor materials are the

102
00:05:19,029 --> 00:05:16,560
materials that we use

103
00:05:21,510 --> 00:05:19,039
to make integrated circuits and chips

104
00:05:23,990 --> 00:05:21,520
that we use in our computers and in a

105
00:05:26,230 --> 00:05:24,000
lot of our electronic equipment and

106
00:05:27,189 --> 00:05:26,240
we're trying to make a better quality of

107
00:05:28,790 --> 00:05:27,199
crystal

108
00:05:30,150 --> 00:05:28,800
and there are two

109
00:05:33,029 --> 00:05:30,160
canadian

110
00:05:34,870 --> 00:05:33,039
scientific organizations that are flying

111
00:05:38,469 --> 00:05:34,880
crystals on our mission

112
00:05:41,270 --> 00:05:38,479
one is called canmet from ottawa and the

113
00:05:43,670 --> 00:05:41,280

other is the university of dalhousie in

114
00:05:45,110 --> 00:05:43,680
halifax and we've had some very good

115
00:05:47,430 --> 00:05:45,120
results

116
00:05:50,070 --> 00:05:47,440
with the floatzone furnace another

117
00:05:52,550 --> 00:05:50,080
experiment that is canadian on board is

118
00:05:56,150 --> 00:05:52,560
the aquatic research facility

119
00:05:59,430 --> 00:05:56,160
and this is a an experiment to study

120
00:06:01,270 --> 00:05:59,440
the effect of weightlessness on

121
00:06:04,830 --> 00:06:01,280
sea life forms

122
00:06:07,590 --> 00:06:04,840
we're carrying sea urchins

123
00:06:09,990 --> 00:06:07,600
starfish and blue clams and we're

124
00:06:12,629 --> 00:06:10,000
looking at their embryonic development

125
00:06:15,430 --> 00:06:12,639
uh up here in space and those are

126
00:06:17,510 --> 00:06:15,440
uh experiments with scientists coming

127
00:06:20,550 --> 00:06:17,520
from

128
00:06:23,189 --> 00:06:20,560
the university of british columbia and

129
00:06:25,430 --> 00:06:23,199
also once again from dalhousie

130
00:06:28,150 --> 00:06:25,440
university we also have two other

131
00:06:30,870 --> 00:06:28,160
experiments in the cargo bay which are

132
00:06:33,990 --> 00:06:30,880
uh thin organic films and another one

133
00:06:36,230 --> 00:06:34,000
semi-ar semiconductor materials the

134
00:06:38,629 --> 00:06:36,240
vapor diffusion experiment and they come

135
00:06:41,029 --> 00:06:38,639
from the university of toronto and the

136
00:07:10,870 --> 00:06:41,039
university of moncton so canada is well

137
00:07:14,950 --> 00:07:13,909
mark the houston chronicle dr lucid can

138
00:07:28,870 --> 00:07:14,960

you

139
00:07:33,110 --> 00:07:31,110
well i think i can sort of answer

140
00:07:36,309 --> 00:07:33,120
both questions at the same time because

141
00:07:38,230 --> 00:07:36,319
uh from my viewpoint i think everything

142
00:07:40,230 --> 00:07:38,240
is going along just really great i mean

143
00:07:42,070 --> 00:07:40,240
i couldn't ask for anything more out of

144
00:07:44,230 --> 00:07:42,080
a flight than what i've gotten out of

145
00:07:45,909 --> 00:07:44,240
this flight so far and if the second

146
00:07:47,510 --> 00:07:45,919
half is as good as the first half and

147
00:07:50,230 --> 00:07:47,520
all i can say is

148
00:07:51,350 --> 00:07:50,240
you just can't beat it um

149
00:07:54,790 --> 00:07:51,360
right now

150
00:07:57,110 --> 00:07:54,800
i'm feeling really good and i'm busy as

151
00:07:58,390 --> 00:07:57,120
you might know we've activated proto and

152
00:08:00,309 --> 00:07:58,400
i've gotten busy doing a lot of the

153
00:08:01,830 --> 00:08:00,319
united states experiments in that and of

154
00:08:03,830 --> 00:08:01,840
course there's a lot of activity on

155
00:08:05,830 --> 00:08:03,840
board right now because yuri and yuri

156
00:08:07,510 --> 00:08:05,840
have been doing several ebas and they're

157
00:08:10,150 --> 00:08:07,520
going to be doing another eba this

158
00:08:11,510 --> 00:08:10,160
weekend and so that keeps us all busy

159
00:08:12,869 --> 00:08:11,520
involved in that

160
00:08:14,950 --> 00:08:12,879
and

161
00:08:17,270 --> 00:08:14,960
uh it's just been a lot of fun working

162
00:08:19,189 --> 00:08:17,280
with jury and yuri and i think that

163
00:08:20,629 --> 00:08:19,199

they have helped me out tremendously and

164
00:08:21,510 --> 00:08:20,639
i hope that maybe i'll help them out a

165
00:08:23,029 --> 00:08:21,520
little bit

166
00:08:25,270 --> 00:08:23,039
and um

167
00:08:26,550 --> 00:08:25,280
all along i've always said that

168
00:08:28,550 --> 00:08:26,560
you know it doesn't make any difference

169
00:08:30,950 --> 00:08:28,560
what kind of complicated science

170
00:08:33,269 --> 00:08:30,960
experiments or complicated satellites or

171
00:08:34,790 --> 00:08:33,279
what have you that you might uh do on

172
00:08:36,389 --> 00:08:34,800
your flight what makes a flight

173
00:08:38,389 --> 00:08:36,399
memorable what makes it something that

174
00:08:40,870 --> 00:08:38,399
uh you will always remember the people

175
00:08:42,630 --> 00:08:40,880
that you work with and

176
00:08:43,829 --> 00:08:42,640
if you have you know really good people

177
00:08:45,030 --> 00:08:43,839
that you're working with and it's a

178
00:08:47,030 --> 00:08:45,040
great flight it doesn't make any

179
00:08:49,670 --> 00:08:47,040
difference what the actual work is that

180
00:08:51,910 --> 00:08:49,680
you're doing and um i just have

181
00:08:53,110 --> 00:08:51,920
absolutely wonderful people in europe to

182
00:08:55,910 --> 00:08:53,120
work with and

183
00:08:58,150 --> 00:08:55,920
it's just been going really fine

184
00:09:00,470 --> 00:08:58,160
and i have a final question

185
00:09:03,910 --> 00:09:00,480
what have you found so far that you

186
00:09:06,550 --> 00:09:03,920
would consider most insightful about

187
00:09:08,630 --> 00:09:06,560
life aboard a space station the sort of

188
00:09:10,630 --> 00:09:08,640

thing that you might like to pass along

189
00:09:12,949 --> 00:09:10,640
to future colleagues who'll be involved

190
00:09:16,310 --> 00:09:12,959
in the assembly and operation of the

191
00:09:20,310 --> 00:09:18,949
well i guess just from uh operators uh

192
00:09:21,829 --> 00:09:20,320
point of view from a person that's

193
00:09:24,790 --> 00:09:21,839
actually working here on the space

194
00:09:26,949 --> 00:09:24,800
station the thing that has sort of um

195
00:09:28,630 --> 00:09:26,959
taken up more time than i think is

196
00:09:31,190 --> 00:09:28,640
really warranted is trying to find

197
00:09:33,670 --> 00:09:31,200
things uh you know you put things

198
00:09:35,269 --> 00:09:33,680
somewhere and then forget where they are

199
00:09:36,470 --> 00:09:35,279
or things have been put somewhere and

200
00:09:38,550 --> 00:09:36,480
you don't know where they are and it

201
00:09:40,310 --> 00:09:38,560
just takes a lot of time just to get

202
00:09:41,910 --> 00:09:40,320
everything together that you need to do

203
00:09:43,350 --> 00:09:41,920
whatever activity you're going to do and

204
00:09:44,949 --> 00:09:43,360
i think that that

205
00:09:47,110 --> 00:09:44,959
some way of keeping track of just where

206
00:09:50,389 --> 00:09:47,120
things are i think it's a very very

207
00:09:52,710 --> 00:09:50,399
important activity

208
00:09:54,150 --> 00:09:52,720
hey shannon this is phil chen earth news

209
00:09:55,750 --> 00:09:54,160
i heard you talking to your family and

210
00:09:58,070 --> 00:09:55,760
friends a couple of days ago telling how

211
00:10:01,430 --> 00:09:58,080
exciting the eva looked from your point

212
00:10:04,550 --> 00:10:01,440
of view how different is it aboard me or

213
00:10:06,069 --> 00:10:04,560

where evas are just a regular normal not

214
00:10:07,750 --> 00:10:06,079
day-to-day but week-to-week occurrence

215
00:10:10,870 --> 00:10:07,760
as opposed to on a shuttle flight where

216
00:10:16,470 --> 00:10:14,150
well i don't think that it was a

217
00:10:18,949 --> 00:10:16,480
normal everyday thing for you and yuri

218
00:10:21,030 --> 00:10:18,959
to go out and do an eva i mean it was

219
00:10:22,710 --> 00:10:21,040
pretty exciting i've never had the

220
00:10:26,230 --> 00:10:22,720
privilege of watching

221
00:10:29,190 --> 00:10:26,240
an eva from uh the shuttle viewpoint now

222
00:10:31,350 --> 00:10:29,200
i saw linda and rich do their eda on 76

223
00:10:34,710 --> 00:10:31,360
but i was on the mere side i was on the

224
00:10:36,630 --> 00:10:34,720
mirror side of the hatch and i saw that

225
00:10:39,430 --> 00:10:36,640
the thing that struck me when yuri nuri

226
00:10:42,870 --> 00:10:39,440
went out and did their eba was just

227
00:10:45,110 --> 00:10:42,880
how big the station is you know um

228
00:10:47,269 --> 00:10:45,120
they're out a long ways

229
00:10:49,590 --> 00:10:47,279
and i'll admit that uh you know the

230
00:10:51,670 --> 00:10:49,600
first time that i saw yuri out on that

231
00:10:53,990 --> 00:10:51,680
long pole that the russians used to take

232
00:10:55,910 --> 00:10:54,000
uh equipment and people from one uh

233
00:10:58,150 --> 00:10:55,920
module over to the other the first time

234
00:11:00,389 --> 00:10:58,160
i saw uh yuri way out on that pole and

235
00:11:02,710 --> 00:11:00,399
going out you'll get to cause nothing to

236
00:11:04,230 --> 00:11:02,720
get to the other module uh my heart went

237
00:11:05,829 --> 00:11:04,240
up my throat just a minute and i thought

238
00:11:08,389 --> 00:11:05,839

i sure hope the other year he knows what

239
00:11:11,030 --> 00:11:08,399
he's doing as he's rotating the pole

240
00:11:14,550 --> 00:11:13,269
this is irene brown with upi for dr

241
00:11:17,350 --> 00:11:14,560
lucid

242
00:11:19,829 --> 00:11:17,360
after two months in space what issues do

243
00:11:21,990 --> 00:11:19,839
you feel need to be addressed for longer

244
00:11:28,949 --> 00:11:22,000
duration flights such as those lasting

245
00:11:33,590 --> 00:11:31,670
i really haven't had a whole lot of time

246
00:11:36,710 --> 00:11:33,600
uh to think about that

247
00:11:38,550 --> 00:11:36,720
the things that have made this uh flight

248
00:11:40,230 --> 00:11:38,560
very enjoyable for me have been the fact

249
00:11:42,389 --> 00:11:40,240
that i've had you know some regular

250
00:11:44,310 --> 00:11:42,399
contact with my family and that's

251
00:11:47,030 --> 00:11:44,320
for me that's very very important i've

252
00:11:48,790 --> 00:11:47,040
been able to talk to them

253
00:11:51,750 --> 00:11:48,800
on the radio i've been able to talk to

254
00:11:54,150 --> 00:11:51,760
them by tv the two-way video contact and

255
00:11:55,750 --> 00:11:54,160
also i've been able to get

256
00:11:58,069 --> 00:11:55,760
you know letters or messages from them

257
00:12:02,550 --> 00:11:58,079
uh by an email connection and that to me

258
00:12:02,560 --> 00:12:07,430
hang on we'll be here

259
00:12:07,440 --> 00:12:19,350
here's one one person

260
00:12:19,360 --> 00:12:27,910
us but we can't see you

261
00:12:31,509 --> 00:12:30,069
you say that there's a lot of equipment

262
00:12:50,710 --> 00:12:31,519
there and from various countries could

263
00:12:55,590 --> 00:12:53,430

which is being used by shannon mostly

264
00:12:57,670 --> 00:12:55,600
because we're preparing for evas this is

265
00:13:00,949 --> 00:12:57,680
a very interesting chamber

266
00:13:02,150 --> 00:13:00,959
uh with these black gloves in which one

267
00:13:04,710 --> 00:13:02,160
can

268
00:13:06,710 --> 00:13:04,720
uh work

269
00:13:08,949 --> 00:13:06,720
shades so you can see what's going on in

270
00:13:12,230 --> 00:13:08,959
the chamber what do we do inside we

271
00:13:18,150 --> 00:13:15,190
for uh an uh ice microgravity isolating

272
00:13:28,150 --> 00:13:20,710
various weightless experiments over here

273
00:13:32,710 --> 00:13:30,310
it's a four hour timer you have an

274
00:13:34,150 --> 00:13:32,720
experiment

275
00:13:35,269 --> 00:13:34,160
processing of some

276
00:13:36,550 --> 00:13:35,279
specimens

277
00:13:40,069 --> 00:13:36,560
honestly speaking i don't know which

278
00:13:58,710 --> 00:13:44,069
have very good visibility when the

279
00:14:02,389 --> 00:14:00,389
uh gotten rid of a lot of equipment here

280
00:14:04,550 --> 00:14:02,399
so that we could pass through here so

281
00:14:06,470 --> 00:14:04,560
it's a little bit further down there in

282
00:14:08,150 --> 00:14:06,480
a box

283
00:14:09,910 --> 00:14:08,160
maybe shannon will explain a little bit

284
00:14:21,670 --> 00:14:09,920
in more detail

285
00:14:24,069 --> 00:14:22,710
shannon

286
00:14:25,350 --> 00:14:24,079
doesn't

287
00:14:26,870 --> 00:14:25,360
want to uh

288
00:14:27,670 --> 00:14:26,880

uh be

289
00:14:29,750 --> 00:14:27,680
uh

290
00:14:35,910 --> 00:14:29,760
talking anything specific so as not to

291
00:14:35,920 --> 00:14:49,350
we just wanted to talk with you