



1
00:00:00,000 --> 00:00:59,280

I

2
00:01:09,040 --> 00:01:05,229

good morning endeavor the naval officers

3
00:01:10,570 --> 00:01:09,050

around here on coastal there you go the

4
00:01:13,030 --> 00:01:10,580

naval officers down here on council

5
00:01:15,790 --> 00:01:13,040

would like to wish their maritime

6
00:01:17,560 --> 00:01:15,800

members of the crew smooth sailing for

7
00:01:22,200 --> 00:01:17,570

endeavor for the rest of the days you

8
00:01:24,580 --> 00:01:22,210

maneuver in proximity to spam stew and

9
00:02:21,880 --> 00:01:24,590

mark and Andy we're with you in space

10
00:02:30,540 --> 00:02:24,520

they said Park endeavor good morning

11
00:02:33,010 --> 00:02:30,550

good morning Andy space at park with you

12
00:02:35,890 --> 00:02:33,020

good morning let you know burning the

13
00:02:39,430 --> 00:02:35,900

midnight oil I guess I'm ready to give

14

00:02:53,050 --> 00:02:39,440

you the status briefs anytime get ready

15

00:03:00,340 --> 00:02:53,060

to copy I'm ready anytime Andy the

16

00:03:05,830 --> 00:03:00,350

suicide lad is on its way we copy sounds

17

00:03:07,870 --> 00:03:05,840

great and you said ever it looks like it

18

00:03:09,699 --> 00:03:07,880

has a bit of a tip-off after it left the

19

00:03:25,850 --> 00:03:09,709

field of view I'll Pan the camera up see

20

00:03:30,650 --> 00:03:27,980

as you'll see this to exit towards left

21

00:03:33,650 --> 00:03:30,660

side of the screen here in this field

22

00:03:36,970 --> 00:03:33,660

looks pretty stable as i mentioned got

23

00:03:50,780 --> 00:03:40,700

will pass that on Mary we got a nice

24

00:03:54,679 --> 00:03:53,270

Deborah Houston that's a super zoomed in

25

00:04:14,280 --> 00:03:54,689

image now that's really helping us out

26
00:04:18,150 --> 00:04:15,839
ever we're going to give you another

27
00:04:22,409 --> 00:04:18,160
view that we took from the flight deck

28
00:04:24,390 --> 00:04:22,419
here copy we're getting that other view

29
00:05:06,220 --> 00:04:24,400
now and we have about another 30 seconds

30
00:05:09,670 --> 00:05:08,290
this is Mission Control Houston this

31
00:05:11,410 --> 00:05:09,680
television is live from endeavour

32
00:05:13,630 --> 00:05:11,420
looking at the attitude measurement

33
00:05:16,120 --> 00:05:13,640
system for Pam stew in the cargo bay

34
00:05:18,870 --> 00:05:16,130
again have pointed towards the fams to

35
00:05:36,150 --> 00:05:18,880
satellite as endeavour crosses over the

36
00:05:40,030 --> 00:05:38,620
he said if okay well have downlink the

37
00:05:46,050 --> 00:05:40,040
downlink you're getting hours from the

38
00:05:50,620 --> 00:05:48,190

this is Mission Control Houston this

39

00:05:56,350 --> 00:05:50,630

television is a live shot of the Pam's

40

00:05:58,720 --> 00:05:56,360

to satellite this have you taken of my

41

00:06:00,940 --> 00:05:58,730

camera pointed out the window of the

42

00:06:10,180 --> 00:06:00,950

space hab module Pam's to satellite

43

00:06:11,980 --> 00:06:10,190

about 2,200 feet from endeavor and

44

00:06:19,630 --> 00:06:11,990

endeavour Houston we are we're ready for

45

00:06:21,970 --> 00:06:19,640

your downlink at this time okay this is

46

00:06:28,480 --> 00:06:21,980

John Manley in Montreal do we have you

47

00:06:31,210 --> 00:06:28,490

endeavour this is john kenneth commander

48

00:06:35,110 --> 00:06:31,220

of the spaceship endeavor we're talking

49

00:06:37,180 --> 00:06:35,120

to you about 150 miles in space and

50

00:06:40,750 --> 00:06:37,190

we're currently flying over the pacific

51
00:06:42,820 --> 00:06:40,760
ocean headed for hawaii i was like it

52
00:06:45,670 --> 00:06:42,830
just give you a little recap of what

53
00:06:47,800 --> 00:06:45,680
we've done the last few days let me

54
00:06:50,770 --> 00:06:47,810
introduce the crew that's which we have

55
00:06:54,430 --> 00:06:50,780
for the six crew members we know Marc

56
00:06:58,090 --> 00:06:54,440
Garneau tomorrow night and in the back

57
00:07:00,880 --> 00:06:58,100
and comment and dan burisch and we've

58
00:07:05,770 --> 00:07:00,890
had a very productive and busy for days

59
00:07:12,550 --> 00:07:05,780
in our space flight to date on the last

60
00:07:15,160 --> 00:07:12,560
Monday we deployed the little ant eggs

61
00:07:17,980 --> 00:07:15,170
from N&N went very well and then

62
00:07:21,190 --> 00:07:17,990
yesterday we're on the boot and Mark did

63
00:07:24,280 --> 00:07:21,200

just an absolutely superb job traveling

64

00:07:28,720 --> 00:07:24,290

in and putting inside the payload Bay

65

00:07:31,510 --> 00:07:28,730

that's part that's part man tennis then

66

00:07:33,550 --> 00:07:31,520

sports satellite Retta and I will

67

00:07:39,400 --> 00:07:33,560

dismays it how easy he made that look

68

00:07:43,620 --> 00:07:39,410

with the Canadian arms on another busy

69

00:07:46,660 --> 00:07:43,630

day today with a small satellite that

70

00:07:47,500 --> 00:07:46,670

deploy and and rendezvous with that went

71

00:07:51,030 --> 00:07:47,510

very warm

72

00:07:54,130 --> 00:07:51,040

and we're looking forward to another

73

00:07:56,710 --> 00:07:54,140

about six days of productive ever here

74

00:07:58,540 --> 00:07:56,720

on this science technology and some

75

00:08:03,190 --> 00:07:58,550

microgravity science and technology

76

00:08:06,580 --> 00:08:03,200

demonstration site mark perhaps you

77

00:08:09,220 --> 00:08:06,590

could pick up on some of the continents

78

00:08:11,470 --> 00:08:09,230

that the commander made and tell us a

79

00:08:13,150 --> 00:08:11,480

bit about the Canadian scientific

80

00:08:15,340 --> 00:08:13,160

experiments that you're carrying with

81

00:08:20,050 --> 00:08:15,350

you and how you expect to see these

82

00:08:22,120 --> 00:08:20,060

carried out in the next few days well

83

00:08:24,370 --> 00:08:22,130

mr. Manley in fact I'm spending a good

84

00:08:28,170 --> 00:08:24,380

part of my time on an experiment which

85

00:08:30,460 --> 00:08:28,180

is a joint Canadian us and german

86

00:08:32,530 --> 00:08:30,470

experiment it's canadian land it's

87

00:08:36,250 --> 00:08:32,540

called the commercial floats on furnace

88

00:08:38,770 --> 00:08:36,260

and basically it involves processing

89

00:08:41,440 --> 00:08:38,780

some semiconductor materials heating

90

00:08:44,980 --> 00:08:41,450

them up in a furnace and then melting

91

00:08:46,660 --> 00:08:44,990

them and in this particular case we have

92

00:08:49,600 --> 00:08:46,670

the advantage of doing what we call

93

00:08:52,440 --> 00:08:49,610

container less processing in other words

94

00:08:54,880 --> 00:08:52,450

the heating up in the melting of the

95

00:08:58,300 --> 00:08:54,890

material itself does not make contact

96

00:09:01,090 --> 00:08:58,310

with the container also because we're in

97

00:09:03,190 --> 00:09:01,100

microgravity we don't have usual

98

00:09:05,500 --> 00:09:03,200

convective effects that are due to

99

00:09:09,310 --> 00:09:05,510

gravity so we have the opportunity of

100

00:09:12,880 --> 00:09:09,320

melting and then reforming a material

101
00:09:16,270 --> 00:09:12,890
with a better crystal structure and with

102
00:09:17,980 --> 00:09:16,280
greater purity and that furnace has been

103
00:09:20,620 --> 00:09:17,990
working pretty well since the beginning

104
00:09:22,150 --> 00:09:20,630
of a flight and will continue to do so

105
00:09:25,180 --> 00:09:22,160
until the end of the flight in our

106
00:09:28,750 --> 00:09:25,190
scientists in Canada from Ottawa and

107
00:09:31,210 --> 00:09:28,760
from Halifax who have samples on board

108
00:09:32,860 --> 00:09:31,220
that we are processing and hopefully we

109
00:09:35,950 --> 00:09:32,870
will be able to come back with some

110
00:09:37,540 --> 00:09:35,960
materials that have a crystal structure

111
00:09:39,910 --> 00:09:37,550
that is better than anything that has

112
00:09:42,940 --> 00:09:39,920
ever been produced I'm also doing an

113
00:09:46,210 --> 00:09:42,950

experiment called the aquatic research

114

00:09:50,080 --> 00:09:46,220

facility in fact 23 laid beside me by my

115

00:09:52,840 --> 00:09:50,090

right knee and it contains again a

116

00:09:55,570 --> 00:09:52,850

Canadian except in this case it contains

117

00:09:58,030 --> 00:09:55,580

sea urchins which are part of an

118

00:09:58,780 --> 00:09:58,040

American contribution as well as star

119

00:10:02,890 --> 00:09:58,790

shells

120

00:10:06,700 --> 00:10:02,900

and blue clams and what we're doing here

121

00:10:09,880 --> 00:10:06,710

is looking at what effect the absence of

122

00:10:12,640 --> 00:10:09,890

gravity has on the development the very

123

00:10:16,120 --> 00:10:12,650

early embryonic development of these

124

00:10:18,160 --> 00:10:16,130

green aquatic species what we're trying

125

00:10:21,670 --> 00:10:18,170

to do is to understand whether gravity

126

00:10:25,510 --> 00:10:21,680

plays a major role in the formation of

127

00:10:27,850 --> 00:10:25,520

these species which as you know are

128

00:10:32,590 --> 00:10:27,860

primarily their outer cells are

129

00:10:35,260 --> 00:10:32,600

primarily formed of minerals and what we

130

00:10:38,200 --> 00:10:35,270

learn here could have implications in

131

00:10:41,530 --> 00:10:38,210

terms of telling us more about what is

132

00:10:44,890 --> 00:10:41,540

important bone formation and then

133

00:10:47,260 --> 00:10:44,900

indirectly possibly help us know more

134

00:10:49,810 --> 00:10:47,270

about things like osteoporosis which

135

00:10:52,630 --> 00:10:49,820

affect older people so there those are

136

00:10:55,840 --> 00:10:52,640

two of the main experiments from Canada

137

00:10:58,750 --> 00:10:55,850

and there are also two under experiments

138

00:11:01,900 --> 00:10:58,760

say in the cargo bay in get away special

139

00:11:04,390 --> 00:11:01,910

canisters that both have to do with both

140

00:11:08,350 --> 00:11:04,400

sensing material semiconductor materials

141

00:11:10,720 --> 00:11:08,360

and thin organic films and they are from

142

00:11:12,940 --> 00:11:10,730

the University of Toronto and from the

143

00:11:18,730 --> 00:11:12,950

University of Moncton so Canada is well

144

00:11:20,760 --> 00:11:18,740

represented on this flight mark me say

145

00:11:24,280 --> 00:11:20,770

to you and to your colleagues there are

146

00:11:27,370 --> 00:11:24,290

there are several million Canadians who

147

00:11:29,080 --> 00:11:27,380

are watching you and who are longing to

148

00:11:30,760 --> 00:11:29,090

have the experience that you're having

149

00:11:32,590 --> 00:11:30,770

one of them happens to be the minister

150

00:11:35,230 --> 00:11:32,600

of industry but I know there are lots of

151
00:11:37,150 --> 00:11:35,240
others as well what what would you say

152
00:11:43,110 --> 00:11:37,160
what you've been up twice would you like

153
00:11:45,700 --> 00:11:43,120
to go again so I have to say that

154
00:11:47,380 --> 00:11:45,710
there's no other job that I would prefer

155
00:11:51,010 --> 00:11:47,390
to do than the one that I'm doing right

156
00:11:54,730 --> 00:11:51,020
now I also am very conscious of the fact

157
00:11:56,260 --> 00:11:54,740
that a very fortunate person I know a

158
00:11:58,780 --> 00:11:56,270
lot of people who would like to go into

159
00:12:01,330 --> 00:11:58,790
space and possibly some time in the

160
00:12:03,370 --> 00:12:01,340
future it will be commonplace and it

161
00:12:07,060 --> 00:12:03,380
unfortunately at this time it's still

162
00:12:10,090 --> 00:12:07,070
early days of the space program but it's

163
00:12:10,900 --> 00:12:10,100

that it's a far cry from what it was

164

00:12:14,290 --> 00:12:10,910

that

165

00:12:16,900 --> 00:12:14,300

25 or 30 years ago when I was a teenager

166

00:12:18,160 --> 00:12:16,910

so things have changed dramatically and

167

00:12:20,110 --> 00:12:18,170

I'm sure they will change in the future

168

00:12:22,780 --> 00:12:20,120

and for those who do want to become

169

00:12:26,020 --> 00:12:22,790

astronauts that possibility does exist

170

00:12:29,500 --> 00:12:26,030

it requires a lot of hard work and

171

00:12:33,850 --> 00:12:29,510

determination and a lot of focus and but

172

00:12:36,220 --> 00:12:33,860

it is something that is accessible let

173

00:12:38,260 --> 00:12:36,230

me take you back to all of you on behalf

174

00:12:41,020 --> 00:12:38,270

of the government of canada how

175

00:12:43,150 --> 00:12:41,030

enormously proud that we are that we are

176

00:12:47,500 --> 00:12:43,160

sharing in this in this great

177

00:12:49,720 --> 00:12:47,510

international experiment that mark

178

00:12:53,470 --> 00:12:49,730

you're there as as our representatives

179

00:12:55,960 --> 00:12:53,480

as Canadians we envy you but we also

180

00:12:58,180 --> 00:12:55,970

admire you and your source of great

181

00:13:00,790 --> 00:12:58,190

pride to us we wish you a very

182

00:13:02,680 --> 00:13:00,800

successful voyage a safe returned earth

183

00:13:04,210 --> 00:13:02,690

and I know the Prime Minister had hoped

184

00:13:06,460 --> 00:13:04,220

mark that he could do this particular

185

00:13:08,080 --> 00:13:06,470

uplink with you and we we weren't able

186

00:13:11,230 --> 00:13:08,090

to coordinate it with his schedule in

187

00:13:14,230 --> 00:13:11,240

Western Canada but I extend to you and

188

00:13:16,000 --> 00:13:14,240

to your fellow crew members the the

189

00:13:18,100 --> 00:13:16,010

Prime Minister's greetings and best

190

00:13:23,110 --> 00:13:18,110

wishes and we're looking forward to

191

00:13:25,420 --> 00:13:23,120

seeing you on your return thank you very

192

00:13:27,400 --> 00:13:25,430

much Minister manly on behalf of all of

193

00:13:35,980 --> 00:13:27,410

us it was a pleasure talking to you and

194

00:13:38,830 --> 00:13:35,990

to Canadians important endeavour Houston

195

00:13:41,320 --> 00:13:38,840

as usual another superb job by the

196

00:13:44,350 --> 00:13:41,330

Endeavour crew we certainly enjoyed that

197

00:13:48,550 --> 00:13:44,360

then we're just very pleased to hear

198

00:13:59,210 --> 00:13:48,560

from Minister manly and the best wishes

199

00:13:59,220 --> 00:14:07,300

bill you should have a change of it here

200

00:14:14,900 --> 00:14:10,939

listen words just escaped me when I see

201

00:14:16,249 --> 00:14:14,910

a picture like this one usually for this

202

00:14:18,439 --> 00:14:16,259

point of view we'd like to be looking

203

00:14:20,869 --> 00:14:18,449

here through this window but that's not

204

00:14:44,119 --> 00:14:20,879

to be at the moment so we'll just take a

205

00:14:48,929 --> 00:14:47,039

then as the shuttle rises on the space