



1
00:00:51,600 --> 00:01:08,469
tell me

2
00:01:12,390 --> 00:01:10,630
good morning endeavor your wake up music

3
00:01:15,510 --> 00:01:12,400
this morning is a special message for

4
00:01:21,590 --> 00:01:17,670
good morning p.r also and thank you very

5
00:01:25,749 --> 00:01:23,830
this is mission control houston on board

6
00:01:26,390 --> 00:01:25,759
endeavor the six-member crew is awake

7
00:01:29,190 --> 00:01:26,400
now

8
00:01:31,670 --> 00:01:29,200
their wake-up music this morning

9
00:01:33,510 --> 00:01:31,680
gloria estefan's version of hold me for

10
00:03:36,869 --> 00:01:33,520
pilot kurt brown

11
00:03:41,190 --> 00:03:39,990
and andy the ps says to tell you thanks

12
00:03:43,830 --> 00:03:41,200
uh

13
00:03:46,149 --> 00:03:43,840

all your words have been very helpful in

14

00:03:47,910 --> 00:03:46,159

describing this since you have a view of

15

00:03:49,509 --> 00:03:47,920

these crystals that we don't have here

16

00:03:51,910 --> 00:03:49,519

on the ground

17

00:03:53,509 --> 00:03:51,920

even with the video that we get

18

00:04:04,789 --> 00:03:53,519

and they really appreciate all the

19

00:04:14,789 --> 00:04:07,589

abc this is houston please call

20

00:04:27,030 --> 00:04:17,349

hello endeavor this is abc do you hear

21

00:04:31,749 --> 00:04:29,830

and we're yes to you from about 180

22

00:04:33,909 --> 00:04:31,759

miles up in space

23

00:04:35,030 --> 00:04:33,919

just crossing over central america right

24

00:04:38,230 --> 00:04:35,040

now

25

00:04:39,830 --> 00:04:38,240

and with me i have uh

26
00:04:41,510 --> 00:04:39,840
three of the crew members and three of

27
00:04:43,189 --> 00:04:41,520
the six crew members

28
00:04:45,189 --> 00:04:43,199
on endeavor

29
00:04:47,830 --> 00:04:45,199
um

30
00:04:50,150 --> 00:04:47,840
there's uh dan burch from new york

31
00:04:51,909 --> 00:04:50,160
and of course you know uh andy thomas

32
00:04:54,390 --> 00:04:51,919
from uh

33
00:04:56,790 --> 00:04:54,400
from south australia i'd just like to

34
00:04:57,909 --> 00:04:56,800
tell you that we've had a very busy and

35
00:05:00,070 --> 00:04:57,919
productive

36
00:05:02,550 --> 00:05:00,080
five days on orbit here

37
00:05:04,790 --> 00:05:02,560
and andy has just done an outstanding

38
00:05:06,870 --> 00:05:04,800

tremendous job as payload commander for

39

00:05:19,749 --> 00:05:06,880

all the experiments here

40

00:05:24,469 --> 00:05:21,430

and andy had a part in recording the

41

00:05:26,150 --> 00:05:24,479

data for that and also a small

42

00:05:27,510 --> 00:05:26,160

satellite test unit

43

00:05:29,670 --> 00:05:27,520

which uh

44

00:05:31,029 --> 00:05:29,680

and he also participated in uh data

45

00:05:34,070 --> 00:05:31,039

takes on that

46

00:05:35,430 --> 00:05:34,080

and the other part the major part uh

47

00:05:48,629 --> 00:05:35,440

has been

48

00:05:52,790 --> 00:05:50,469

i wonder if you could tell us andy what

49

00:05:57,189 --> 00:05:52,800

it was like flying over australia and in

50

00:06:01,430 --> 00:05:59,510

uh it was great we flew over south

51

00:06:03,590 --> 00:06:01,440

australia about uh

52

00:06:04,870 --> 00:06:03,600

20 minutes ago and it was the sun was

53

00:06:06,469 --> 00:06:04,880

setting and

54

00:06:08,790 --> 00:06:06,479

it was shining on

55

00:06:10,309 --> 00:06:08,800

the gulf there and i could see

56

00:06:12,070 --> 00:06:10,319

the outline of the coast and i could

57

00:06:16,230 --> 00:06:12,080

make out the city of adelaide it was

58

00:06:16,240 --> 00:06:30,309

how much detail could you see

59

00:06:33,590 --> 00:06:31,990

quite clearly

60

00:06:35,749 --> 00:06:33,600

and i could see some of the coast

61

00:06:38,870 --> 00:06:35,759

beaches quite clearly as a white line

62

00:06:40,309 --> 00:06:38,880

we're about 180 miles up though so uh

63

00:06:42,390 --> 00:06:40,319

it's hard to see and we're moving very

64

00:06:45,830 --> 00:06:42,400

quickly too we can only had the view for

65

00:06:48,230 --> 00:06:45,840

a couple of minutes before it was gone

66

00:06:50,629 --> 00:06:48,240

with weightlessness in the in the cabin

67

00:06:55,670 --> 00:06:50,639

there how difficult is it to move around

68

00:06:59,589 --> 00:06:57,749

i see my boomerang

69

00:07:00,550 --> 00:06:59,599

it stays somewhere where i can't get to

70

00:07:02,469 --> 00:07:00,560

it

71

00:07:03,909 --> 00:07:02,479

moving around is very easy

72

00:07:05,510 --> 00:07:03,919

in fact it's a little bit too easy you

73

00:07:07,749 --> 00:07:05,520

have to be careful because you can end

74

00:07:10,309 --> 00:07:07,759

up uh moving too quickly and bouncing

75

00:07:25,670 --> 00:07:10,319

into things

76

00:07:29,589 --> 00:07:27,350

well i understand you've just had your

77

00:07:33,270 --> 00:07:29,599

breakfast uh what was on the nasa menu

78

00:07:37,270 --> 00:07:34,870

uh i had

79

00:07:39,350 --> 00:07:37,280

granola with blueberries uh some

80

00:07:41,589 --> 00:07:39,360

scrambled eggs

81

00:07:48,950 --> 00:07:41,599

a breakfast roll some juice and some

82

00:07:52,309 --> 00:07:50,550

all right thank you very much andy

83

00:07:54,950 --> 00:07:52,319

thomas it's been a pleasure to talk to

84

00:07:56,469 --> 00:07:54,960

you we wish you bon voyage and we hope

85

00:07:59,909 --> 00:07:56,479

to see you safe back on earth and

86

00:08:02,950 --> 00:08:01,270

thank you very much for the greetings

87

00:08:05,029 --> 00:08:02,960

and my greetings to everyone in adelaide

88

00:08:08,150 --> 00:08:05,039

and i look forward to visiting soon as

89

00:08:10,550 --> 00:08:09,110

now

90

00:08:16,150 --> 00:08:10,560

if you let go of the side there what

91

00:08:16,160 --> 00:08:35,350

standby we'll demonstrate

92

00:08:35,360 --> 00:09:23,910

try doing that

93

00:09:28,389 --> 00:09:26,230

the third experiment uh

94

00:09:30,790 --> 00:09:28,399

is the liquid thermal type experiment

95

00:09:32,389 --> 00:09:30,800

and that is a basically an experiment

96

00:09:33,190 --> 00:09:32,399

that is using

97

00:09:34,870 --> 00:09:33,200

uh

98

00:09:36,870 --> 00:09:34,880

liquid potassium

99

00:09:39,269 --> 00:09:36,880

as a cooling fluid

100

00:09:42,070 --> 00:09:39,279

basically in normal refrigerants on the

101
00:09:43,750 --> 00:09:42,080
ground we use freon and freon is used in

102
00:09:45,670 --> 00:09:43,760
refrigerators and air conditioning to

103
00:09:48,070 --> 00:09:45,680
carry heat from where the work is being

104
00:09:50,870 --> 00:09:48,080
done the excess heat it goes to an

105
00:09:54,150 --> 00:09:50,880
evaporator uh gets cooled off and a

106
00:09:56,949 --> 00:09:54,160
condensation coil and the heat is uh

107
00:09:58,389 --> 00:09:56,959
dispelled but the transport medium is

108
00:09:59,990 --> 00:09:58,399
primarily freon up here we're

109
00:10:03,110 --> 00:10:00,000
experimenting with using liquid

110
00:10:05,590 --> 00:10:03,120
potassium which may be more efficient uh

111
00:10:23,990 --> 00:10:05,600
a more efficient carrier of

112
00:10:28,389 --> 00:10:25,670
but right now we're going to talk and

113
00:10:31,190 --> 00:10:28,399

say special greetings from westchester

114

00:10:33,350 --> 00:10:31,200

and from yonkers we're saying hello to

115

00:10:35,030 --> 00:10:33,360

younger native mario ronco it's good to

116

00:10:37,110 --> 00:10:35,040

talk to you also we want to say that

117

00:10:39,829 --> 00:10:37,120

cardinal hayes high school is giving you

118

00:10:41,990 --> 00:10:39,839

a special hello as well mario when you

119

00:10:51,190 --> 00:10:42,000

were a school boy were astronauts your

120

00:10:54,470 --> 00:10:52,389

and uh

121

00:10:56,949 --> 00:10:54,480

when i was younger i had a couple of

122

00:10:58,870 --> 00:10:56,959

role models actually several uh growing

123

00:11:00,550 --> 00:10:58,880

up in the bronx of course uh mickey

124

00:11:02,150 --> 00:11:00,560

mantle and joe dimaggio were a couple of

125

00:11:04,790 --> 00:11:02,160

role models for me

126

00:11:07,829 --> 00:11:04,800

and uh when i got a little bit older as

127

00:11:10,310 --> 00:11:07,839

the space program started to take shape

128

00:11:12,069 --> 00:11:10,320

uh of course uh alex shepard and john

129

00:11:14,550 --> 00:11:12,079

glenn and yuri gagarin

130

00:11:17,030 --> 00:11:14,560

when they first went into space uh i saw

131

00:11:19,110 --> 00:11:17,040

those uh gentlemen go up

132

00:11:20,870 --> 00:11:19,120

and uh saw the good work that nasa and

133

00:11:23,590 --> 00:11:20,880

the scientists were doing and i was

134

00:11:26,069 --> 00:11:23,600

quite excited by it and uh right then

135

00:11:27,750 --> 00:11:26,079

and there i i made the decision uh that

136

00:11:30,630 --> 00:11:27,760

i wanted to be an astronaut of course it

137

00:11:34,069 --> 00:11:30,640

was until uh 35 or so years later that

138

00:11:37,910 --> 00:11:35,590

i know that there are a number of

139

00:11:39,430 --> 00:11:37,920

important experiments going on could one

140

00:11:41,590 --> 00:11:39,440

of you and it makes no difference

141

00:11:44,470 --> 00:11:41,600

actually who sort of addressed the issue

142

00:11:53,350 --> 00:11:44,480

of which may be the most important if if

143

00:11:57,670 --> 00:11:55,829

yeah we have a variety of experiments in

144

00:11:58,550 --> 00:11:57,680

a module we're carrying in the payload

145

00:12:00,870 --> 00:11:58,560

bay

146

00:12:02,470 --> 00:12:00,880

called a space hab module there's 12

147

00:12:04,949 --> 00:12:02,480

experiments in there

148

00:12:06,629 --> 00:12:04,959

perhaps the most significant ones are

149

00:12:10,310 --> 00:12:06,639

crystal growth experiments which are

150

00:12:14,389 --> 00:12:12,310

improved higher quality

151
00:12:17,430 --> 00:12:14,399
crystal materials that can be used for

152
00:12:19,269 --> 00:12:17,440
semiconductor applications such as

153
00:12:21,430 --> 00:12:19,279
integrated circuits like you might use

154
00:12:22,790 --> 00:12:21,440
in a computer in a home telephone in a

155
00:12:25,190 --> 00:12:22,800
video camera

156
00:12:26,230 --> 00:12:25,200
or a radio or some such uh instrument

157
00:12:28,870 --> 00:12:26,240
like that

158
00:12:30,790 --> 00:12:28,880
in addition we've been carrying uh

159
00:12:33,269 --> 00:12:30,800
another payload out of the payload bay

160
00:12:35,910 --> 00:12:33,279
we've carried an antenna structure which

161
00:12:37,750 --> 00:12:35,920
we deployed on orbit and inflated with

162
00:12:39,430 --> 00:12:37,760
gas to prove that you can make large

163
00:12:41,350 --> 00:12:39,440

space structures with an inflation

164

00:12:43,030 --> 00:12:41,360

principle and we've deployed another

165

00:12:45,750 --> 00:12:43,040

small satellite which we're going to be

166

00:12:48,230 --> 00:12:45,760

tracking in the following days to see

167

00:12:50,629 --> 00:12:48,240

how well it stabilizes itself in orbit

168

00:12:52,150 --> 00:12:50,639

so this plane carries a number of really

169

00:12:54,710 --> 00:12:52,160

interesting experiments in space

170

00:12:56,470 --> 00:12:54,720

technology and space science

171

00:12:58,310 --> 00:12:56,480

which is the most important thing you're

172

00:13:07,190 --> 00:12:58,320

doing in this particular mission

173

00:13:11,430 --> 00:13:09,590

the direct answer to that uh

174

00:13:13,750 --> 00:13:11,440

question tom is

175

00:13:16,150 --> 00:13:13,760

the the gain experiment or the gps

176

00:13:19,910 --> 00:13:16,160

attitude and navigation experiment uh

177

00:13:22,310 --> 00:13:19,920

that experiment uh is using uh the

178

00:13:24,870 --> 00:13:22,320

global positioning system constellation

179

00:13:27,430 --> 00:13:24,880

of satellites and their information to

180

00:13:29,190 --> 00:13:27,440

determine the attitude of the space

181

00:13:31,110 --> 00:13:29,200

shuttle we have inertial measuring units

182

00:13:33,750 --> 00:13:31,120

which you asked about earlier on board

183

00:13:35,509 --> 00:13:33,760

which would do that normally for us but

184

00:13:37,350 --> 00:13:35,519

in the future we'd like to be able to

185

00:13:39,990 --> 00:13:37,360

use gps

186

00:13:42,069 --> 00:13:40,000

as a as a replacement or as an addition

187

00:13:43,590 --> 00:13:42,079

to or as a supplement to those inertial

188

00:13:45,750 --> 00:13:43,600

measuring units

189

00:13:47,269 --> 00:13:45,760

if the information from this experiment

190

00:13:50,069 --> 00:13:47,279

is accurate enough

191

00:13:53,030 --> 00:13:50,079

then we don't have to carry as many

192

00:13:55,430 --> 00:13:53,040

redundant imus on board we can we can

193

00:13:57,430 --> 00:13:55,440

maybe get away with carrying one or two

194

00:13:59,189 --> 00:13:57,440

instead of the tripoli redundant set

195

00:14:01,910 --> 00:13:59,199

that we have and use the information

196

00:14:04,310 --> 00:14:01,920

from gps so that translates to a weight

197

00:14:06,710 --> 00:14:04,320

savings when you try to get something as