



1
00:00:39,350 --> 00:00:36,950
okay well this one um i do definitely

2
00:00:41,270 --> 00:00:39,360
have a better view from up here

3
00:00:42,790 --> 00:00:41,280
through the microscope and what you see

4
00:00:45,510 --> 00:00:42,800
in the middle the big spot in the middle

5
00:00:47,270 --> 00:00:45,520
is actually a spot where the where there

6
00:00:49,430 --> 00:00:47,280
is no drop in other ones we have a drop

7
00:00:51,350 --> 00:00:49,440
with a hole in it and you can actually

8
00:00:52,950 --> 00:00:51,360
see i can see um

9
00:00:53,750 --> 00:00:52,960
small crystals

10
00:00:55,670 --> 00:00:53,760
on

11
00:00:58,310 --> 00:00:55,680
as i focus up and down through the drop

12
00:00:59,990 --> 00:00:58,320
i can see a small needle-like crystals

13
00:01:01,830 --> 00:01:00,000

all the way around the edge of that drop

14

00:01:04,229 --> 00:01:01,840

many many many of them

15

00:01:06,950 --> 00:01:04,239

i see actually a lot of crystals some of

16

00:01:11,590 --> 00:01:06,960

them are very nice they're long and thin

17

00:01:15,510 --> 00:01:13,190

i think that one on the left they can

18

00:01:17,350 --> 00:01:15,520

see also is that on the far left is

19

00:01:19,670 --> 00:01:17,360

probably the biggest one

20

00:01:21,910 --> 00:01:19,680

and but there are several that size and

21

00:01:23,429 --> 00:01:21,920

i'm still trying to discern if all the

22

00:01:25,270 --> 00:01:23,439

stuff in the background which is pretty

23

00:01:28,390 --> 00:01:25,280

dark to them and trying to see if that

24

00:01:29,350 --> 00:01:28,400

is precipitate or if those are crystals

25

00:01:31,109 --> 00:01:29,360

but i think i'm going to look at the

26

00:01:33,429 --> 00:01:31,119

other samples and see if this gives me

27

00:01:34,870 --> 00:01:33,439

any clues if their crystals are very

28

00:01:39,510 --> 00:01:34,880

very very small but i think it's

29

00:01:42,389 --> 00:01:41,030

in the middle of this picture you can

30

00:01:44,069 --> 00:01:42,399

see

31

00:01:45,510 --> 00:01:44,079

a couple of them about four of them that

32

00:01:47,190 --> 00:01:45,520

have grown together but for the most

33

00:01:49,030 --> 00:01:47,200

part these are isolated and seem to be

34

00:01:51,749 --> 00:01:49,040

growing by themselves although you can

35

00:02:06,630 --> 00:01:51,759

also see the smattering of smaller

36

00:02:11,750 --> 00:02:09,749

the crystals are not as big

37

00:02:18,710 --> 00:02:11,760

it actually does not look really nearly

38

00:02:22,949 --> 00:02:19,910

i don't see

39

00:02:24,470 --> 00:02:22,959

precipitants per se although it's tough

40

00:02:26,390 --> 00:02:24,480

to say because the crystals there's a

41

00:02:42,869 --> 00:02:26,400

lot of very very very small crystals

42

00:02:45,910 --> 00:02:44,390

friends actually wearing what everyone

43

00:02:56,710 --> 00:02:45,920

has decided is their favorite shirt

44

00:03:04,869 --> 00:02:58,070

you can tell it's not the first time

45

00:03:13,350 --> 00:03:06,070

yeah but it's probably the first time

46

00:03:13,360 --> 00:03:41,110

you've got a point there

47

00:03:50,149 --> 00:03:43,110

i'm doing well do you guys have a

48

00:03:50,159 --> 00:03:52,710

not yet

49

00:04:02,309 --> 00:03:54,470

well i was hoping to send you up some

50

00:04:06,309 --> 00:04:04,470

i thought you

51
00:04:08,070 --> 00:04:06,319
might might all be interested in what

52
00:04:10,550 --> 00:04:08,080
we're doing with this uh

53
00:04:11,910 --> 00:04:10,560
video that you're downlinking to us

54
00:04:14,229 --> 00:04:11,920
um

55
00:04:15,429 --> 00:04:14,239
probably uh you get a frame up there

56
00:04:17,670 --> 00:04:15,439
about every

57
00:04:19,349 --> 00:04:17,680
eight or sixteen seconds and uh things

58
00:04:20,629 --> 00:04:19,359
seems to go pretty slow but what we've

59
00:04:22,710 --> 00:04:20,639
done is uh

60
00:04:25,430 --> 00:04:22,720
taken these images and made a

61
00:04:28,550 --> 00:04:25,440
a movie of the uh speed up movie

62
00:04:29,990 --> 00:04:28,560
about times 24 of the gfsc results and

63
00:04:31,990 --> 00:04:30,000

which you can see

64

00:04:33,749 --> 00:04:32,000

a lot of the evolution of these complex

65

00:04:35,110 --> 00:04:33,759

turbulent flows that we're interested in

66

00:04:37,030 --> 00:04:35,120

to learn about

67

00:04:39,909 --> 00:04:37,040

things like solar dynamics and mantle

68

00:04:39,919 --> 00:04:45,270

so get out your popcorn here it goes

69

00:04:51,909 --> 00:04:46,390

okay could you go ahead and roll the

70

00:04:56,390 --> 00:04:54,150

um what you can see in this imagery is

71

00:04:58,469 --> 00:04:56,400

on the top of the frame is the equator

72

00:05:01,110 --> 00:04:58,479

of the gffc and the bottom

73

00:05:03,909 --> 00:05:01,120

of the frame is the pole

74

00:05:04,870 --> 00:05:03,919

and if you look closely you can see

75

00:05:06,790 --> 00:05:04,880

a lot of

76

00:05:08,230 --> 00:05:06,800

structures that almost look vertical at

77

00:05:09,909 --> 00:05:08,240

the top of the picture and these are

78

00:05:11,590 --> 00:05:09,919

called the banana cells and they're the

79

00:05:13,110 --> 00:05:11,600

kind of pet for

80

00:05:15,029 --> 00:05:13,120

theorists of

81

00:05:16,629 --> 00:05:15,039

solar convection it's a model that has

82

00:05:18,230 --> 00:05:16,639

enough symmetry that the motions are

83

00:05:19,590 --> 00:05:18,240

fairly simple

84

00:05:21,270 --> 00:05:19,600

but what you can see as well is that

85

00:05:22,950 --> 00:05:21,280

there's a lot of turbulence on the lower

86

00:05:24,710 --> 00:05:22,960

half of the image

87

00:05:27,110 --> 00:05:24,720

and it's a bit surprising to us that

88

00:05:29,350 --> 00:05:27,120

this turbulence is so easy to excite and

89

00:05:31,749 --> 00:05:29,360

spreads rapidly up from the south pole

90

00:05:34,230 --> 00:05:31,759

which is at the bottom of this uh image

91

00:05:36,629 --> 00:05:34,240

and comes up and erodes the uh

92

00:05:38,950 --> 00:05:36,639

the organized type of banana convection

93

00:05:41,350 --> 00:05:38,960

that we had thought we would be seeing

94

00:05:44,070 --> 00:05:41,360

up near the equator

95

00:05:46,150 --> 00:05:44,080

and columbia this is cfc standby for ga

96

00:05:51,189 --> 00:05:46,160

tv uplink of something we believe you'll

97

00:05:51,199 --> 00:05:55,909

okay we uh we're standing by

98

00:05:59,110 --> 00:05:57,270

and for the record we're really

99

00:06:02,950 --> 00:05:59,120

interested in the gffc and the astro

100

00:06:08,070 --> 00:06:05,590

welcome to cleveland

101
00:06:10,950 --> 00:06:08,080
where the temperature is in the lower

102
00:06:12,230 --> 00:06:10,960
50s a couple of hours ago we had rain

103
00:06:13,990 --> 00:06:12,240
showers

104
00:06:16,469 --> 00:06:14,000
neither team took

105
00:06:18,870 --> 00:06:16,479
batting practice but the skies right now

106
00:06:20,629 --> 00:06:18,880
have cleared the game will start on time

107
00:06:21,670 --> 00:06:20,639
the crowd's still filing into jacobs

108
00:06:23,590 --> 00:06:21,680
field for

109
00:06:25,270 --> 00:06:23,600
game five of the world series between

110
00:06:26,790 --> 00:06:25,280
the atlanta braves and the cleveland

111
00:06:27,830 --> 00:06:26,800
indians with the braves leading in the

112
00:06:34,150 --> 00:06:27,840
series

113
00:06:39,350 --> 00:06:36,950

back at jacobs field an unusual first

114

00:06:40,870 --> 00:06:39,360

pitch ceremony tonight this was friday

115

00:06:42,550 --> 00:06:40,880

at cape canaveral the launching of the

116

00:06:45,590 --> 00:06:42,560

space shuttle columbia and then earlier

117

00:06:48,070 --> 00:06:45,600

today commander ken bowersox aboard

118

00:06:49,589 --> 00:06:48,080

welcome aboard columbia we've been on

119

00:06:51,110 --> 00:06:49,599

orbit since flat friday conducting

120

00:06:53,430 --> 00:06:51,120

science experiments as part of the

121

00:06:54,790 --> 00:06:53,440

united states microgravity laboratory

122

00:06:57,189 --> 00:06:54,800

but tonight our thoughts are with the

123

00:06:59,189 --> 00:06:57,199

national pastime to the braves and to

124

00:07:07,589 --> 00:06:59,199

the indians good luck in game five of

125

00:07:11,830 --> 00:07:09,510

and then they recreated the end of that

126

00:07:14,230 --> 00:07:11,840

throw here moments ago funny thing it

127

00:07:16,230 --> 00:07:14,240

started out as a change up and wound up

128

00:07:19,670 --> 00:07:16,240

as a split finger you've heard of heavy

129

00:07:21,909 --> 00:07:19,680

fastballs that was weightless

130

00:07:24,070 --> 00:07:21,919

well ken bowsox and catherine thornton

131

00:07:26,070 --> 00:07:24,080

thanks very much for joining us this

132

00:07:27,990 --> 00:07:26,080

morning how's the view i know both of

133

00:07:30,230 --> 00:07:28,000

you have been up there a number of times

134

00:07:32,790 --> 00:07:30,240

uh the view still worth looking at to

135

00:07:36,309 --> 00:07:34,390

oh yeah the view from space is something

136

00:07:38,150 --> 00:07:36,319

i could never get tired of we've had

137

00:07:39,749 --> 00:07:38,160

some exceptionally clear patches over

138

00:07:42,309 --> 00:07:39,759

the united states that's something new

139

00:07:44,230 --> 00:07:42,319

for me got to see my hometown in indiana

140

00:07:45,749 --> 00:07:44,240

lake michigan and

141

00:07:47,830 --> 00:07:45,759

the east coast is just gorgeous

142

00:07:49,749 --> 00:07:47,840

especially in new york

143

00:07:51,990 --> 00:07:49,759

well catherine this is your fourth trip

144

00:07:57,110 --> 00:07:52,000

up there any surprises as you look down

145

00:08:00,150 --> 00:07:58,869

now the only thing that

146

00:08:02,070 --> 00:08:00,160

that i would say is a negative about

147

00:08:03,670 --> 00:08:02,080

this flight is i spend a lot of time uh

148

00:08:05,350 --> 00:08:03,680

where there are no windows we've had

149

00:08:07,110 --> 00:08:05,360

some great passes over the united states

150

00:08:08,790 --> 00:08:07,120

i've seen uh two or three of them

151
00:08:10,390 --> 00:08:08,800
although it's been cloudy over the east

152
00:08:11,909 --> 00:08:10,400
every time i've had a chance to look and

153
00:08:13,510 --> 00:08:11,919
i'm a little bit disappointed about that

154
00:08:14,790 --> 00:08:13,520
but we have another 10 days to go so

155
00:08:17,430 --> 00:08:14,800
we'll get some great passes over the

156
00:08:19,350 --> 00:08:17,440
united states well that's right 10 days

157
00:08:22,950 --> 00:08:19,360
to go from the time of this interview a

158
00:08:25,990 --> 00:08:22,960
total of 16 days but seven people on

159
00:08:28,230 --> 00:08:26,000
board like being in a small motel the

160
00:08:30,230 --> 00:08:28,240
bathrooms down the hall

161
00:08:35,430 --> 00:08:30,240
how are the accommodations with so many

162
00:08:38,870 --> 00:08:36,709
ken and i

163
00:08:40,709 --> 00:08:38,880

were on a flight with seven people and

164

00:08:42,389 --> 00:08:40,719

four spacesuits about a year and a half

165

00:08:45,030 --> 00:08:42,399

ago and it was a lot more crowded then

166

00:08:46,949 --> 00:08:45,040

this is a luxury compared to

167

00:08:49,750 --> 00:08:46,959

having just the crew module to live in

168

00:08:51,430 --> 00:08:49,760

we have essentially twice the volume and

169

00:08:53,509 --> 00:08:51,440

because we're working two shifts we have

170

00:08:54,949 --> 00:08:53,519

half the people awake at any one time so

171

00:08:56,630 --> 00:08:54,959

there's lots of room to

172

00:08:58,949 --> 00:08:56,640

roam around in up here

173

00:09:01,269 --> 00:08:58,959

well that's right you're using the cargo

174

00:09:04,470 --> 00:09:01,279

bay which is what about 60 feet long

175

00:09:07,670 --> 00:09:06,310

yeah that's correct it's about 15 feet

176

00:09:08,949 --> 00:09:07,680

by 60 feet

177

00:09:10,310 --> 00:09:08,959

but the lab module's a little bit

178

00:09:13,110 --> 00:09:10,320

shorter than that what is it kathy about

179

00:09:17,350 --> 00:09:15,190

well i want to ask you a couple of basic

180

00:09:19,670 --> 00:09:17,360

questions i know on the sky lab a few

181

00:09:21,190 --> 00:09:19,680

years back there was an experiment with

182

00:09:23,110 --> 00:09:21,200

a shower you don't have a shower on

183

00:09:27,750 --> 00:09:23,120

board how do you people keep yourselves

184

00:09:32,389 --> 00:09:30,550

well uh we do a lot of sponge bathing

185

00:09:34,710 --> 00:09:32,399

and that works pretty well you just soap

186

00:09:37,110 --> 00:09:34,720

up a rag and wipe it over your body and

187

00:09:38,870 --> 00:09:37,120

then you wet a clean rag with fresh

188

00:09:40,389 --> 00:09:38,880

water and rub that over your body

189

00:09:41,910 --> 00:09:40,399

something else you can do if you're if

190

00:09:43,350 --> 00:09:41,920

you have a lot of time is just squirt

191

00:09:45,350 --> 00:09:43,360

water on your skin

192

00:09:46,710 --> 00:09:45,360

the uh the water sticks to you because

193

00:09:48,550 --> 00:09:46,720

of the surface tension which is one of

194

00:09:50,710 --> 00:09:48,560

the things we're studying in our science

195

00:09:52,949 --> 00:09:50,720

experiments in the back and then you can

196

00:09:54,310 --> 00:09:52,959

sort of rub with your fingers to get the

197

00:09:56,630 --> 00:09:54,320

soap to come up into the water and then

198

00:09:58,470 --> 00:09:56,640

wipe off with a towel it's almost as

199

00:10:00,070 --> 00:09:58,480

good as a shower

200

00:10:02,389 --> 00:10:00,080

but i don't think you could ever beat a

201

00:10:04,710 --> 00:10:02,399

good solid earth shower

202

00:10:06,630 --> 00:10:04,720

well i'm sure that's true you know nasa

203

00:10:08,550 --> 00:10:06,640

is always bragging about the improvement

204

00:10:09,910 --> 00:10:08,560

of the food on board the shuttle and i

205

00:10:12,470 --> 00:10:09,920

remember the days when you used to

206

00:10:17,590 --> 00:10:12,480

squeeze it out of a tube is it all that

207

00:10:20,069 --> 00:10:19,030

the nowadays pretty good the best thing

208

00:10:22,230 --> 00:10:20,079

we have on board i think though is

209

00:10:23,990 --> 00:10:22,240

peanut butter and uh we just put it on

210

00:10:25,829 --> 00:10:24,000

tortillas because we don't use bread up

211

00:10:27,110 --> 00:10:25,839

here because it crumbles and we don't

212

00:10:28,790 --> 00:10:27,120

want to make a lot of crumbs in the air

213

00:10:29,829 --> 00:10:28,800

so we have peanut butter burritos quite

214

00:10:31,590 --> 00:10:29,839

a bit

215

00:10:33,190 --> 00:10:31,600

peanut butter burritos and catherine

216

00:10:34,790 --> 00:10:33,200

you're telling me the food is good up

217

00:10:37,110 --> 00:10:34,800

there if that's the best you have i

218

00:10:39,910 --> 00:10:37,120

wonder

219

00:10:41,990 --> 00:10:39,920

i would like a pizza

220

00:10:43,670 --> 00:10:42,000

well put out a call and see whether they

221

00:10:45,750 --> 00:10:43,680

deliver

222

00:10:47,430 --> 00:10:45,760

let's move on to some of the science

223

00:10:52,389 --> 00:10:47,440

you're growing potatoes up there you're

224

00:10:56,150 --> 00:10:54,389

we think it's going pretty well we do a

225

00:10:57,910 --> 00:10:56,160

video downlink of the condition of the

226

00:10:59,350 --> 00:10:57,920

plants every day and

227

00:11:00,870 --> 00:10:59,360

the pi's on the ground seem to be very

228

00:11:02,389 --> 00:11:00,880

happy with the condition

229

00:11:04,470 --> 00:11:02,399

that they're growing in

230

00:11:06,870 --> 00:11:04,480

now what's the question you're trying to

231

00:11:12,230 --> 00:11:06,880

determine whether food can indeed be

232

00:11:16,389 --> 00:11:14,630

i think there are a couple objectives of

233

00:11:19,430 --> 00:11:16,399

that one is to

234

00:11:21,350 --> 00:11:19,440

test an enclosed environment for growing

235

00:11:22,710 --> 00:11:21,360

plants up here they give them all the

236

00:11:24,470 --> 00:11:22,720

nutrients that they need the carbon

237

00:11:25,670 --> 00:11:24,480

dioxide and take away the oxygen and the

238

00:11:27,430 --> 00:11:25,680

ethylene

239

00:11:28,870 --> 00:11:27,440

the other thing is to look at how the

240

00:11:30,389 --> 00:11:28,880

plants are actually growing to get them

241

00:11:31,829 --> 00:11:30,399

back on the ground and take a look at

242

00:11:33,350 --> 00:11:31,839

them there's

243

00:11:35,110 --> 00:11:33,360

some evidence that perhaps they don't

244

00:11:36,710 --> 00:11:35,120

grow in exactly the same way that the

245

00:11:38,630 --> 00:11:36,720

starch is not synthesized in the same

246

00:11:39,910 --> 00:11:38,640

way as it is in gravity so that's

247

00:11:42,550 --> 00:11:39,920

something that we'll learn about after

248

00:11:44,710 --> 00:11:42,560

we get back to this mission so ken

249

00:11:46,150 --> 00:11:44,720

you're not going to uh chop them up boil

250

00:11:47,990 --> 00:11:46,160

them for mashed potatoes or have some

251

00:11:51,110 --> 00:11:48,000

french fries while you're taking this

252

00:11:54,389 --> 00:11:52,550

we have to hold some of the crew members

253

00:11:56,710 --> 00:11:54,399

back they want to eat those potatoes but

254

00:11:58,629 --> 00:11:56,720

we're not going to let them okay one of

255

00:12:00,550 --> 00:11:58,639

the big problems of course is adapting

256

00:12:02,069 --> 00:12:00,560

to weightlessness and frequently

257

00:12:03,750 --> 00:12:02,079

astronauts

258

00:12:07,269 --> 00:12:03,760

the dreaded

259

00:12:08,710 --> 00:12:07,279

space adaptation syndrome i know you

260

00:12:10,710 --> 00:12:08,720

don't like to talk about the health of

261

00:12:13,509 --> 00:12:10,720

the astronauts during a flight but uh is

262

00:12:17,430 --> 00:12:15,590

yeah we're all doing great everybody

263

00:12:19,030 --> 00:12:17,440

feels good and uh

264

00:12:20,790 --> 00:12:19,040

i was amazed we all felt good from the

265

00:12:22,710 --> 00:12:20,800

very beginning of the mission we had

266

00:12:23,670 --> 00:12:22,720

five brand new guys on board so they

267

00:12:24,870 --> 00:12:23,680

didn't really know how they were going

268

00:12:26,710 --> 00:12:24,880

to feel but

269

00:12:28,069 --> 00:12:26,720

i think we had some really super luck on

270

00:12:30,069 --> 00:12:28,079

this flight and

271

00:12:32,230 --> 00:12:30,079

nobody felt bad at all

272

00:12:33,990 --> 00:12:32,240

you've got a lot of free time i think

273

00:12:36,550 --> 00:12:34,000

built into your schedule or at least

274

00:12:38,389 --> 00:12:36,560

that's what the nasa schedule says free

275

00:12:40,069 --> 00:12:38,399

time for the astronauts because after

276

00:12:42,389 --> 00:12:40,079

all you're going to be up there for 16

277

00:12:47,750 --> 00:12:42,399

days what are you doing or planning to

278

00:12:53,990 --> 00:12:49,910

well the other day we spent some time

279

00:12:55,030 --> 00:12:54,000

doing a pio event for the world series

280

00:12:57,190 --> 00:12:55,040

we've been

281

00:12:58,389 --> 00:12:57,200

taking some special photographs and uh

282

00:13:00,069 --> 00:12:58,399

all of us are

283

00:13:02,389 --> 00:13:00,079

spending that time to

284

00:13:03,910 --> 00:13:02,399

to do just the things that we want to do

285

00:13:05,670 --> 00:13:03,920

it's not that we don't have work to do

286

00:13:07,910 --> 00:13:05,680

but we kind of get to elect what work we

287

00:13:10,949 --> 00:13:07,920

do so we may run around and do a special

288

00:13:12,870 --> 00:13:10,959

project clean up a special area or maybe

289

00:13:14,069 --> 00:13:12,880

tape a video for our family when we get

290

00:13:15,430 --> 00:13:14,079

back but

291

00:13:17,269 --> 00:13:15,440

it's just nice to be able to plan your

292

00:13:19,350 --> 00:13:17,279

own time once in a while

293

00:13:21,670 --> 00:13:19,360

i uh i guess i should explain that you

294

00:13:23,829 --> 00:13:21,680

sort of threw out the first ball for uh

295

00:13:25,829 --> 00:13:23,839

one of the world series games and i saw

296

00:13:28,069 --> 00:13:25,839

it here on earth and it worked well

297

00:13:30,949 --> 00:13:28,079

after you tossed the ball towards the

298

00:13:33,590 --> 00:13:30,959

camera on the columbia they cut to a

299

00:13:38,550 --> 00:13:33,600

ball falling down onto the field and it

300

00:13:41,829 --> 00:13:39,829

so well done

301
00:13:43,430 --> 00:13:41,839
well great i'm glad you enjoyed it uh my

302
00:13:45,030 --> 00:13:43,440
crew up here was saying i was having

303
00:13:46,790 --> 00:13:45,040
control problems though i don't think

304
00:13:48,230 --> 00:13:46,800
they like my pitching

305
00:13:50,230 --> 00:13:48,240
well even some of the pitchers in the

306
00:13:52,069 --> 00:13:50,240
world series have control problems so

307
00:13:53,910 --> 00:13:52,079
don't worry about that talking about the

308
00:13:56,310 --> 00:13:53,920
free time catherine do you bring books

309
00:13:58,150 --> 00:13:56,320
do you uh have an opportunity to sit and

310
00:13:59,990 --> 00:13:58,160
read a book or is your temptation to

311
00:14:04,870 --> 00:14:00,000
always go for that window whenever

312
00:14:07,910 --> 00:14:06,550
now we probably don't have as much free

313
00:14:09,189 --> 00:14:07,920

time as the schedule looks there's

314

00:14:11,590 --> 00:14:09,199

always something that needs to be done

315

00:14:13,750 --> 00:14:11,600

but i did have about three or four hours

316

00:14:15,110 --> 00:14:13,760

yesterday i believe it was and i spent

317

00:14:17,430 --> 00:14:15,120

most of time looking out the window i

318

00:14:19,110 --> 00:14:17,440

just never get tired of looking at even

319

00:14:21,269 --> 00:14:19,120

passes over the oceans you can enjoy

320

00:14:22,629 --> 00:14:21,279

looking at different cloud features and

321

00:14:24,150 --> 00:14:22,639

watching the world go by and the

322

00:14:25,590 --> 00:14:24,160

nighttime passes are particularly

323

00:14:27,670 --> 00:14:25,600

spectacular if you turn out all the

324

00:14:30,310 --> 00:14:27,680

lights you can look at the stars we can

325

00:14:32,550 --> 00:14:30,320

see the shuttle glow on the windward

326

00:14:34,470 --> 00:14:32,560

side of the shuttle and it's it's

327

00:14:36,310 --> 00:14:34,480

something you just can't get tired of

328

00:14:38,230 --> 00:14:36,320

well catherine thornton and ken bowersox

329

00:14:40,230 --> 00:14:38,240

thanks very much for being with us i was

330

00:14:43,350 --> 00:14:40,240

delighted to have this opportunity and

331

00:14:45,189 --> 00:14:43,360

so we were all delighted here on

332

00:14:47,990 --> 00:14:45,199

world news this morning in houston this

333

00:15:34,790 --> 00:14:48,000

is abc news in new york signing off and

334

00:15:38,949 --> 00:15:36,710

kathy thornton uh aboard the shuttle

335

00:15:40,949 --> 00:15:38,959

columbia currently up upping or

336

00:15:44,470 --> 00:15:40,959

increasing the amount of

337

00:15:47,030 --> 00:15:44,480

power being placed to the uh

338

00:15:48,150 --> 00:15:47,040

the heater element in the experiment

339

00:16:06,790 --> 00:15:48,160
chamber

340

00:16:10,069 --> 00:16:08,550
this particular experiment very

341

00:16:11,829 --> 00:16:10,079
important to the

342

00:16:13,990 --> 00:16:11,839
experiment team the science team from

343

00:16:15,990 --> 00:16:14,000
case western uh university

344

00:16:18,550 --> 00:16:16,000
because uh both two and three centimeter

345

00:16:21,269 --> 00:16:18,560
diameter chambers are not possible

346

00:16:25,030 --> 00:16:21,279
uh to evaluate or to conduct experiment

347

00:16:27,030 --> 00:16:25,040
runs uh while on the ground on earth

348

00:16:30,310 --> 00:16:27,040
on earth it is only possible to run this

349

00:16:34,710 --> 00:16:30,320
type of experiment with 1.2 centimeter

350

00:16:37,509 --> 00:16:34,720
size or diameter cylinder chambers

351

00:16:39,030 --> 00:16:37,519

that's the environment of the space lab

352

00:16:41,990 --> 00:16:39,040

permitting the