



1
00:03:03,069 --> 00:03:24,720
sure

2
00:03:24,730 --> 00:03:46,110
good morning Atlanta smear

3
00:03:50,910 --> 00:03:48,210
Atlantis mere Houston you have a go for

4
00:03:53,910 --> 00:03:50,920
the next maneuver one special request

5
00:03:55,920 --> 00:03:53,920
please notify the mirror when you are in

6
00:04:19,949 --> 00:03:55,930
attitude so they can verify their

7
00:04:31,980 --> 00:04:22,839
and bill if it helps I can give you the

8
00:06:21,679 --> 00:04:37,620
we've got a day okay attachment 18 of

9
00:06:25,679 --> 00:06:23,909
atlantis bear houston we're going to

10
00:06:27,749 --> 00:06:25,689
hand over to East here in a little over

11
00:06:30,300 --> 00:06:27,759
a minute will lose k band on the east

12
00:06:32,429 --> 00:06:30,310
side we do appreciate the letting us

13
00:06:33,629 --> 00:06:32,439

visit with you on the flight deck it's

14

00:06:42,179 --> 00:06:33,639

fun watching the cameras float around

15

00:06:45,390 --> 00:06:42,189

you guys too we're really enjoying this

16

00:06:53,150 --> 00:06:45,400

bill it's a great view and an amazing

17

00:06:59,180 --> 00:06:56,210

and some very interesting news when I

18

00:07:04,220 --> 00:06:59,190

first pulled out chamber one made it a

19

00:07:07,360 --> 00:07:04,230

very delicately there was a large almost

20

00:07:10,430 --> 00:07:07,370

what looked like a crystal made of cells

21

00:07:13,520 --> 00:07:10,440

maybe the size of a golf ball a large

22

00:07:17,210 --> 00:07:13,530

three-dimensional tissue and as soon as

23

00:07:21,200 --> 00:07:17,220

I moved it it dispersed and I believed

24

00:07:24,020 --> 00:07:21,210

we're observing the that very delicate

25

00:07:26,810 --> 00:07:24,030

intermediate structure the leads to

26
00:07:29,180 --> 00:07:26,820
three-dimensional tissue formation which

27
00:07:30,350 --> 00:07:29,190
we use for our tumor modeling and are

28
00:07:32,750 --> 00:07:30,360
planning to use for our tissue

29
00:07:37,660 --> 00:07:32,760
engineering that delicate intermediate

30
00:07:52,640 --> 00:07:41,750
and Dave we copied that sounds very

31
00:07:55,910 --> 00:07:52,650
interesting commander over the eldest

32
00:07:58,400 --> 00:07:55,920
change is a crying and Atlantis's Jets

33
00:08:01,790 --> 00:07:58,410
are controlling the attitude is there

34
00:08:03,350 --> 00:08:01,800
any specific extra risk or precaution

35
00:08:05,540 --> 00:08:03,360
that needs to be taken during this

36
00:08:07,640 --> 00:08:05,550
computer changeover that exactly is

37
00:08:10,670 --> 00:08:07,650
going to be happening at that time and

38
00:08:12,380 --> 00:08:10,680

is there any other moment to moment kind

39

00:08:14,060 --> 00:08:12,390

of monitoring that's going on giving

40

00:08:18,950 --> 00:08:14,070

some of the past problems that many

41

00:08:20,630 --> 00:08:18,960

wouldn't have occurred otherwise so

42

00:08:23,060 --> 00:08:20,640

there's no risk at all when they choose

43

00:08:25,550 --> 00:08:23,070

the computer out by design when we're

44

00:08:27,200 --> 00:08:25,560

when Atlantis is docked with mia we

45

00:08:30,230 --> 00:08:27,210

control the attitude and we do that for

46

00:08:32,120 --> 00:08:30,240

a very good reason we carry fuel up to

47

00:08:34,310 --> 00:08:32,130

space but by the time we get back down

48

00:08:36,260 --> 00:08:34,320

to the runway we want the dump old fuel

49

00:08:38,900 --> 00:08:36,270

so instead of dumping it we actually use

50

00:08:40,459 --> 00:08:38,910

it for control near the core stays up on

51
00:08:42,860 --> 00:08:40,469
all dizzy and so they would like to save

52
00:08:44,810 --> 00:08:42,870
in microphones as they can so Atlantis

53
00:08:47,330 --> 00:08:44,820
always controls the stack once we're

54
00:08:48,830 --> 00:08:47,340
attached and therefore there's

55
00:08:50,210 --> 00:08:48,840
absolutely no is when they change that

56
00:08:53,600 --> 00:08:50,220
the control some beautiful mirror

57
00:08:56,300 --> 00:08:53,610
because they are not controlling let me

58
00:08:58,580 --> 00:08:56,310
ask mike foale there's been a lot of

59
00:09:00,980 --> 00:08:58,590
talk about the spektr module will you

60
00:09:02,630 --> 00:09:00,990
come back what do you and it will be

61
00:09:04,310 --> 00:09:02,640
brief 20 min and tell people about

62
00:09:05,990 --> 00:09:04,320
whether you think there's a possibility

63
00:09:08,150 --> 00:09:06,000

that the hair

64

00:09:11,240 --> 00:09:08,160

we'll ever actually be found and the

65

00:09:17,150 --> 00:09:11,250

advisability of continuing to search for

66

00:09:19,370 --> 00:09:17,160

those holes so the answer to that of

67

00:09:22,490 --> 00:09:19,380

course depends on how easy it is to find

68

00:09:24,980 --> 00:09:22,500

a hole and repair it but the EDA i did

69

00:09:27,350 --> 00:09:24,990

with Anatole the commander here on

70

00:09:28,910 --> 00:09:27,360

station Mir I told he worked very hard

71

00:09:31,190 --> 00:09:28,920

to look for that Hall in an obvious

72

00:09:33,800 --> 00:09:31,200

place and he did not find it he found

73

00:09:36,170 --> 00:09:33,810

the whole wall was in good condition it

74

00:09:37,580 --> 00:09:36,180

leads us to suspect a very very potent

75

00:09:39,530 --> 00:09:37,590

air which is if the base of the solar

76

00:09:41,240 --> 00:09:39,540

array and it's very likely that that is

77

00:09:43,760 --> 00:09:41,250

where the leak is and their materials on

78

00:09:46,730 --> 00:09:43,770

board now that Jim and his crew poor

79

00:09:48,770 --> 00:09:46,740

thought on Atlantis that will be used by

80

00:09:50,960 --> 00:09:48,780

Anatoly during a few VA to try and

81

00:09:53,480 --> 00:09:50,970

repair that area and seal it up

82

00:09:55,790 --> 00:09:53,490

basically I think that attempt will

83

00:09:58,220 --> 00:09:55,800

certainly take place I'm very soon and

84

00:09:59,960 --> 00:09:58,230

if it's successful than the chances of

85

00:10:02,750 --> 00:09:59,970

restoring spectra i think is very high

86

00:10:04,850 --> 00:10:02,760

and beyond that if that doesn't work I

87

00:10:06,590 --> 00:10:04,860

can't have it together I don't know what

88

00:10:09,200 --> 00:10:06,600

the specialists and Russia are thinking

89

00:10:11,329 --> 00:10:09,210

if it's not in that area it does seem

90

00:10:13,190 --> 00:10:11,339

that that is the most kind of it's the

91

00:10:14,960 --> 00:10:13,200

smoking gun of the whole issue because

92

00:10:17,000 --> 00:10:14,970

that is where the progress hit was on

93

00:10:18,560 --> 00:10:17,010

the solar array anyway and that's where

94

00:10:23,990 --> 00:10:18,570

the greatest force is transmitted to the

95

00:10:26,000 --> 00:10:24,000

station very very ambitious science

96

00:10:28,610 --> 00:10:26,010

schedule how confident are you that

97

00:10:30,470 --> 00:10:28,620

you're going to be able to do that and

98

00:10:32,180 --> 00:10:30,480

carry out all about science and is there

99

00:10:34,010 --> 00:10:32,190

any one thing in particular that you

100

00:10:39,350 --> 00:10:34,020

think is particularly significant that

101
00:10:41,450 --> 00:10:39,360
you really want to get to I'm glad you

102
00:10:44,270 --> 00:10:41,460
asked though we just made an observation

103
00:10:46,400 --> 00:10:44,280
a few hours ago but I'm very excited

104
00:10:50,180 --> 00:10:46,410
about I called most of the crew around

105
00:10:52,970 --> 00:10:50,190
to take a look at a structure forming in

106
00:10:55,190 --> 00:10:52,980
our tissue engineering experiment which

107
00:10:57,230 --> 00:10:55,200
we're using for cancer research which

108
00:10:59,870 --> 00:10:57,240
was a very delicate three-dimensional

109
00:11:02,540 --> 00:10:59,880
formation which would not occur on earth

110
00:11:05,100 --> 00:11:02,550
and which is the basis for our plant

111
00:11:06,710 --> 00:11:05,110
tissue engineering work for the future

112
00:11:09,690 --> 00:11:06,720
but we're already making critical

113
00:11:13,199 --> 00:11:09,700

observations and we'll plenty of time to

114

00:11:15,810 --> 00:11:13,209

do that throughout the mission let me

115

00:11:18,120 --> 00:11:15,820

ask Mike so you lost a lot of your

116

00:11:21,150 --> 00:11:18,130

sciences they're still say one thing

117

00:11:22,889 --> 00:11:21,160

that you think occurred that perhaps you

118

00:11:24,360 --> 00:11:22,899

are bringing back the information that

119

00:11:25,889 --> 00:11:24,370

couldn't have been achieved any other

120

00:11:28,069 --> 00:11:25,899

way one thing that you have to put up in

121

00:11:31,560 --> 00:11:28,079

front of people and say look what I did

122

00:11:33,090 --> 00:11:31,570

besides some of the different crises

123

00:11:34,650 --> 00:11:33,100

that I've said here are some of the

124

00:11:43,110 --> 00:11:34,660

things that I'm really bringing back to

125

00:11:45,960 --> 00:11:43,120

you unfortunately I can't think of any

126
00:11:47,370 --> 00:11:45,970
kind of big gleaming golden banner i can

127
00:11:50,340 --> 00:11:47,380
put out in front of everybody and say i

128
00:11:53,819 --> 00:11:50,350
learned from a personal point of view I

129
00:11:55,350 --> 00:11:53,829
get it a lot of experience about how to

130
00:11:57,509 --> 00:11:55,360
deal with these problems it's an

131
00:11:59,400 --> 00:11:57,519
approach to problem solving rather than

132
00:12:01,980 --> 00:11:59,410
the actual solutions of the problem in

133
00:12:04,530 --> 00:12:01,990
themselves I would have learned from

134
00:12:08,069 --> 00:12:04,540
Anatolia my Russian colleagues that just

135
00:12:10,439 --> 00:12:08,079
perseverance and working at it and not

136
00:12:13,199 --> 00:12:10,449
being flustered and working around your

137
00:12:15,630 --> 00:12:13,209
problems is a great way to approach life

138
00:12:18,090 --> 00:12:15,640

in space and I think I'm going to take

139

00:12:20,370 --> 00:12:18,100

that back with me but that's something

140

00:12:23,970 --> 00:12:20,380

people know already is just yet sort of

141

00:12:25,949 --> 00:12:23,980

read it for yourself sometimes let me

142

00:12:27,720 --> 00:12:25,959

have to nandos Olivia when the shutter

143

00:12:29,550 --> 00:12:27,730

fit would die and they disappear with

144

00:12:31,230 --> 00:12:29,560

the first order of business what's the

145

00:12:43,159 --> 00:12:31,240

first thing that you're going to ask you

146

00:12:50,159 --> 00:12:46,619

to engage in physical culture exercise

147

00:12:53,849 --> 00:12:50,169

every day for us cosmonauts as soon as

148

00:12:56,309 --> 00:12:53,859

we are in space and no matter how well

149

00:13:01,889 --> 00:12:56,319

he has been trained he's got to always

150

00:13:04,619 --> 00:13:01,899

train to land he's got to always got to

151
00:13:09,809 --> 00:13:04,629
be prepared to anticipate his eventual

152
00:13:12,659 --> 00:13:09,819
return to Earth well we got the trailer

153
00:13:15,149 --> 00:13:12,669
person though the Ritter's the one thing

154
00:13:16,679 --> 00:13:15,159
that you would like to say to all of

155
00:13:19,019 --> 00:13:16,689
those people who are concerned about

156
00:13:22,139 --> 00:13:19,029
you're going who raised some very

157
00:13:23,549 --> 00:13:22,149
legitimate issues raft words that you

158
00:13:28,949 --> 00:13:23,559
would like to say them now that you're

159
00:13:31,289 --> 00:13:28,959
actually sitting there yeah I think this

160
00:13:35,369 --> 00:13:31,299
is the time to show the Russians what

161
00:13:37,739 --> 00:13:35,379
good partners we are and this is a

162
00:13:39,929 --> 00:13:37,749
wonderful experience to be up here and

163
00:13:43,469 --> 00:13:39,939

I'm going to do my best job and I have a

164

00:13:44,879 --> 00:13:43,479

great crew on a totally improbable this

165

00:13:46,829 --> 00:13:44,889

should be a great experience for NASA

166

00:13:49,819 --> 00:13:46,839

and for our country as a whole so enjoy

167

00:13:52,379 --> 00:13:49,829

the mission and we'll keep you informed

168

00:13:54,239 --> 00:13:52,389

nevertheless how much did all the

169

00:14:00,359 --> 00:13:54,249

problems affect your ability to carry

170

00:14:02,279 --> 00:14:00,369

out your tasks on the mission oh there's

171

00:14:04,349 --> 00:14:02,289

no doubt the collision drastically

172

00:14:07,139 --> 00:14:04,359

affected the science program that I

173

00:14:09,689 --> 00:14:07,149

always meant to carry out but there are

174

00:14:11,669 --> 00:14:09,699

pluses and minuses and everything and in

175

00:14:13,139 --> 00:14:11,679

this particular case the NASA five

176

00:14:15,689 --> 00:14:13,149

flight which is what the mifi

177

00:14:17,579 --> 00:14:15,699

represented we we lost some of that

178

00:14:19,439 --> 00:14:17,589

science the right sides thats inspector

179

00:14:21,449 --> 00:14:19,449

but we gained an enormous amount of

180

00:14:23,999 --> 00:14:21,459

experience i'm looking about not just

181

00:14:26,989 --> 00:14:24,009

myself but the whole NASA team working

182

00:14:29,549 --> 00:14:26,999

with the Russians in approaching

183

00:14:31,139 --> 00:14:29,559

reestablishing power to spectra and then

184

00:14:34,139 --> 00:14:31,149

thinking about how they could actually

185

00:14:36,710 --> 00:14:34,149

repair it and get the back inside that

186

00:14:40,829 --> 00:14:36,720

volume and make it a useful module again

187

00:14:42,839 --> 00:14:40,839

and just finally from me what is is the

188

00:14:48,539 --> 00:14:42,849

future of the MIR space station do you

189

00:14:50,039 --> 00:14:48,549

think well I think stations in very good

190

00:14:51,779 --> 00:14:50,049

hands of an authority and Pavel

191

00:14:53,440 --> 00:14:51,789

Vinogradov support engineer and David

192

00:14:55,690 --> 00:14:53,450

and they will work very hard

193

00:14:57,130 --> 00:14:55,700

to reestablish the condition that the

194

00:14:59,530 --> 00:14:57,140

space station was in before the

195

00:15:02,770 --> 00:14:59,540

collision they're a long way towards

196

00:15:04,120 --> 00:15:02,780

doing that already we have one mud all

197

00:15:06,670 --> 00:15:04,130

the modules powered now that are

198

00:15:08,740 --> 00:15:06,680

accessible and david has an ambitious

199

00:15:11,620 --> 00:15:08,750

science program to carry out in the

200

00:15:15,070 --> 00:15:11,630

pirata module and anatoly has an n

201
00:15:17,920 --> 00:15:15,080
viewable number of EVs to do outside and

202
00:15:20,140 --> 00:15:17,930
also inside into spectra again who will

203
00:15:21,580 --> 00:15:20,150
repair that module so I think there's a

204
00:15:23,380 --> 00:15:21,590
good chance that in the next few months

205
00:15:25,560 --> 00:15:23,390
maybe six months you'll see a pretty

206
00:15:27,970 --> 00:15:25,570
much reestablished space station Mir

207
00:15:31,060 --> 00:15:27,980
beyond that it's hard to say I've had

208
00:15:34,060 --> 00:15:31,070
Russian news reports that new will carry

209
00:15:37,150 --> 00:15:34,070
on for at least two more years do you

210
00:15:43,990 --> 00:15:37,160
feel that a boy from Kent had to go to

211
00:15:46,300 --> 00:15:44,000
America to become an astronaut right it

212
00:15:49,180 --> 00:15:46,310
was a choice I had to take and I'm very

213
00:15:51,510 --> 00:15:49,190

glad I took it because I wanted to go

214

00:15:54,070 --> 00:15:51,520

into space and I do feel sorry for those

215

00:15:56,320 --> 00:15:54,080

children that might think they have no

216

00:15:58,210 --> 00:15:56,330

chance of doing that however I'm more

217

00:16:00,790 --> 00:15:58,220

optimistic about that now and I believe

218

00:16:02,890 --> 00:16:00,800

on the fact that this crew which

219

00:16:04,630 --> 00:16:02,900

represents a lot of nationalities and

220

00:16:07,750 --> 00:16:04,640

many more nationalities have been on

221

00:16:10,810 --> 00:16:07,760

board this space station shows that very

222

00:16:11,950 --> 00:16:10,820

much more internationally people from

223

00:16:15,130 --> 00:16:11,960

different countries are going to

224

00:16:16,840 --> 00:16:15,140

participate in work in space both on the

225

00:16:19,840 --> 00:16:16,850

space station and I hope going towards

226

00:16:23,110 --> 00:16:19,850

the moon and then landing on Mars and I

227

00:16:26,200 --> 00:16:23,120

know that NASA wants to leap that effort

228

00:16:27,970 --> 00:16:26,210

along with Russia and I think Britain

229

00:16:30,250 --> 00:16:27,980

will eventually be involved in that

230

00:16:31,600 --> 00:16:30,260

effort it's only a matter of time the

231

00:16:33,370 --> 00:16:31,610

example of what we're doing is just

232

00:16:36,010 --> 00:16:33,380

being seeing all over the world and I

233

00:16:37,630 --> 00:16:36,020

think it's impossible to deny the

234

00:16:38,950 --> 00:16:37,640

importance of that to their young