



1  
00:00:06,570 --> 00:00:03,750  
good morning Michael i'm here with how

2  
00:00:10,259 --> 00:00:06,580  
it gets them in the lead Capcom and

3  
00:00:13,200 --> 00:00:10,269  
we're excited to join you today oh thank

4  
00:00:15,839 --> 00:00:13,210  
you very much we've got Clark Creek STEM

5  
00:00:18,210 --> 00:00:15,849  
Academy in acworth georgia so they would

6  
00:00:22,609 --> 00:00:18,220  
love to speak with you and ask you lots

7  
00:00:33,930 --> 00:00:22,619  
of awesome questions great we're ready

8  
00:00:36,959 --> 00:00:33,940  
excellent so go ahead with your first

9  
00:00:40,200 --> 00:00:36,969  
question go ahead resin heiress I'm

10  
00:00:45,869 --> 00:00:40,210  
happy that you're saying touch with your

11  
00:00:47,910 --> 00:00:45,879  
family smile ISS can you help me with

12  
00:00:53,130 --> 00:00:47,920  
that why not in there Mike I'm sorry can

13  
00:00:56,610 --> 00:00:53,140

we have a repeat that stay in touch with

14

00:00:58,979 --> 00:00:56,620

your families while is families on I

15

00:01:00,720 --> 00:00:58,989

think your question was how do the crew

16

00:01:04,200 --> 00:01:00,730

to stay in touch with their families in

17

00:01:06,330 --> 00:01:04,210

space and they have several ways to do

18

00:01:08,700 --> 00:01:06,340

that first they have email and they're

19

00:01:10,800 --> 00:01:08,710

able to send and receive email the

20

00:01:12,840 --> 00:01:10,810

second method they use is they actually

21

00:01:18,540 --> 00:01:12,850

have conferences set up on a weekly

22

00:01:22,140 --> 00:01:18,550

basis and those are a way that they can

23

00:01:24,480 --> 00:01:22,150

actually watch their families on TV up

24

00:01:27,630 --> 00:01:24,490

on board and the families can watch them

25

00:01:29,700 --> 00:01:27,640

on station so they have two-way video

26

00:01:31,830 --> 00:01:29,710

and voice and talk about whatever they

27

00:01:33,660 --> 00:01:31,840

want sometimes these conversations or as

28

00:01:38,970 --> 00:01:33,670

quick as 15 minutes sometimes they'll go

29

00:01:42,630 --> 00:01:38,980

on for an hour okay ah mr. haire we're

30

00:01:45,000 --> 00:01:42,640

not seeing Mission Control okay we'll go

31

00:01:47,490 --> 00:01:45,010

ahead and switch it so it'll be forced

32

00:01:49,620 --> 00:01:47,500

over so you can see it definitely have

33

00:01:51,810 --> 00:01:49,630

the children come up and speak loudly

34

00:01:56,100 --> 00:01:51,820

and clearly for the next one but great

35

00:01:58,590 --> 00:01:56,110

first question okay is there a constant

36

00:02:00,750 --> 00:01:58,600

audio connection with the ISS do their

37

00:02:03,279 --> 00:02:00,760

voices change while traveling through

38

00:02:10,130 --> 00:02:06,529

there is not a constant connection our

39

00:02:12,380 --> 00:02:10,140

satellite connection we start here in

40

00:02:14,199 --> 00:02:12,390

Houston and we have a fiber-optic link

41

00:02:16,759 --> 00:02:14,209

that goes out to White Sands New Mexico

42

00:02:20,150 --> 00:02:16,769

that connects into an up lake station

43

00:02:22,160 --> 00:02:20,160

that bounces off one of the TDRs

44

00:02:26,720 --> 00:02:22,170

satellites and then connects to the

45

00:02:29,180 --> 00:02:26,730

station so when we're in sight of those

46

00:02:30,800 --> 00:02:29,190

satellites and when the station is able

47

00:02:33,530 --> 00:02:30,810

to communicate through those satellites

48

00:02:36,050 --> 00:02:33,540

so we just a moment ago we had a 10

49

00:02:37,699 --> 00:02:36,060

minute loss of signal and we lose both

50

00:02:40,160 --> 00:02:37,709

our telemetry and our ability to

51  
00:02:42,710 --> 00:02:40,170  
communicate with the space station for

52  
00:02:45,229 --> 00:02:42,720  
that time period on a typical orbit of

53  
00:02:49,640 --> 00:02:45,239  
90 minutes you can expect that we will

54  
00:02:51,110 --> 00:02:49,650  
have about oh say 80 minutes or 50

55  
00:02:56,449 --> 00:02:51,120  
minutes 50 to 80 minutes of

56  
00:02:59,210 --> 00:02:56,459  
communication available okay good we're

57  
00:03:02,390 --> 00:02:59,220  
still not seeing Mission Control it i

58  
00:03:05,559 --> 00:03:02,400  
don't know if there's something on your

59  
00:03:07,670 --> 00:03:05,569  
in that you need to switch the screen

60  
00:03:10,000 --> 00:03:07,680  
okay we'll check into it what are you

61  
00:03:13,550 --> 00:03:10,010  
currently seeing at the moment are you

62  
00:03:15,860 --> 00:03:13,560  
still okay okay well we will switch it

63  
00:03:17,599 --> 00:03:15,870

over so that you can see a live view

64

00:03:19,270 --> 00:03:17,609

inside Mission Control so go ahead with

65

00:03:23,860 --> 00:03:19,280

your third question okay go ahead

66

00:03:28,340 --> 00:03:23,870

describe your educational background

67

00:03:30,080 --> 00:03:28,350

okay well um like most of you started

68

00:03:31,670 --> 00:03:30,090

out in grade school and went to high

69

00:03:33,400 --> 00:03:31,680

school I studied a lot of math and

70

00:03:36,530 --> 00:03:33,410

science I was pretty good in those

71

00:03:37,849 --> 00:03:36,540

subjects after graduation from high

72

00:03:41,690 --> 00:03:37,859

school I went on to the Air Force

73

00:03:43,910 --> 00:03:41,700

Academy in Colorado Springs from there I

74

00:03:47,210 --> 00:03:43,920

received a Bachelor of Science and

75

00:03:49,190 --> 00:03:47,220

mechanical engineering I went on to

76

00:03:53,150 --> 00:03:49,200

pilot training and flew in the air force

77

00:03:56,120 --> 00:03:53,160

for about 20 years during that 20 years

78

00:03:58,250 --> 00:03:56,130

I also went to the air force institute

79

00:04:00,979 --> 00:03:58,260

of technology and got a graduate degree

80

00:04:03,319 --> 00:04:00,989

in space operations so that's my

81

00:04:05,089 --> 00:04:03,329

academic credentials plus a lot of

82

00:04:13,259 --> 00:04:05,099

training along the way in the Air Force

83

00:04:21,460 --> 00:04:19,270

why were you awarded the bear award well

84

00:04:24,490 --> 00:04:21,470

the bear award is an award from the

85

00:04:26,770 --> 00:04:24,500

barrios corporation one of our private

86

00:04:30,790 --> 00:04:26,780

contractors that supports the space

87

00:04:33,909 --> 00:04:30,800

program down here and that was their top

88

00:04:44,890 --> 00:04:33,919

employee for that year so that was the

89

00:04:48,580 --> 00:04:44,900

award that was presented to me how did

90

00:04:52,870 --> 00:04:48,590

berries personaggi get get selected to

91

00:04:55,210 --> 00:04:52,880

work with vesa my can we get them to

92

00:04:59,980 --> 00:04:55,220

repeat that last question just got parts

93

00:05:08,100 --> 00:04:59,990

of it other various technology Garrett

94

00:05:11,379 --> 00:05:09,909

okay I'm still having trouble

95

00:05:14,560 --> 00:05:11,389

understanding there's thrust of your

96

00:05:17,850 --> 00:05:14,570

question I heard the word technology but

97

00:05:21,490 --> 00:05:17,860

I didn't hear the rest of the question

98

00:05:25,440 --> 00:05:21,500

how did Barrios technology gets elected

99

00:05:28,510 --> 00:05:25,450

to work with NASA ah thank you very much

100

00:05:32,110 --> 00:05:28,520

Barrios technology like many of our

101  
00:05:34,510 --> 00:05:32,120  
private contractors competes so NASA

102  
00:05:37,300 --> 00:05:34,520  
will announce a certain amount of work

103  
00:05:40,839 --> 00:05:37,310  
that they want private contractors to

104  
00:05:43,750 --> 00:05:40,849  
perform and then Barrios technology will

105  
00:05:47,560 --> 00:05:43,760  
go ahead and submit a proposal with

106  
00:05:49,659 --> 00:05:47,570  
costs and number of people and then NASA

107  
00:05:51,790 --> 00:05:49,669  
will have a review panel to look at all

108  
00:05:54,640 --> 00:05:51,800  
the proposals and select the

109  
00:05:56,800 --> 00:05:54,650  
best-qualified corporation sometimes

110  
00:05:59,860 --> 00:05:56,810  
Barrios wins these contracts sometimes

111  
00:06:03,189 --> 00:05:59,870  
they don't our made contractor here is

112  
00:06:06,270 --> 00:06:03,199  
United Space Alliance and they as well

113  
00:06:11,410 --> 00:06:06,280

as Lockheed Martin and a few others that

114

00:06:18,100 --> 00:06:14,950

my cispp opens a privatized commercial

115

00:06:23,170 --> 00:06:18,110

space travel if so how do you feel about

116

00:06:25,920 --> 00:06:23,180

this well i think it's a it's a big plus

117

00:06:29,950 --> 00:06:25,930

for america and the reason I say this is

118

00:06:33,750 --> 00:06:29,960

at one time NASA did a lot of

119

00:06:36,790 --> 00:06:33,760

aeronautics development and research and

120

00:06:39,580 --> 00:06:36,800

actual building airplanes and now we see

121

00:06:41,740 --> 00:06:39,590

that NASA in the Aeronautics still does

122

00:06:44,050 --> 00:06:41,750

a lot of technology demonstrations and

123

00:06:46,600 --> 00:06:44,060

prototypes but the work of actually

124

00:06:49,030 --> 00:06:46,610

developing commercial airplanes or

125

00:06:53,320 --> 00:06:49,040

military aircraft is turned over to

126  
00:06:56,650 --> 00:06:53,330  
private manufacturers under the auspices

127  
00:06:59,530 --> 00:06:56,660  
of the federal government so in a

128  
00:07:01,570 --> 00:06:59,540  
similar vein in the space business we're

129  
00:07:03,640 --> 00:07:01,580  
seeing more and more of the space

130  
00:07:06,250 --> 00:07:03,650  
business being a solely government

131  
00:07:14,220 --> 00:07:06,260  
operation into being a government and

132  
00:07:19,690 --> 00:07:17,350  
what was the situation that you recall I

133  
00:07:27,970 --> 00:07:19,700  
required is come from solving on the

134  
00:07:29,230 --> 00:07:27,980  
part of that dots okay well we have a

135  
00:07:33,580 --> 00:07:29,240  
lot of equipment on the space station

136  
00:07:37,530 --> 00:07:33,590  
and a lot of things a break from time to

137  
00:07:42,760 --> 00:07:37,540  
time and we form investigation teams

138  
00:07:46,000 --> 00:07:42,770

that help solve those problems so you

139

00:07:48,820 --> 00:07:46,010

know in our business here it's a lot of

140

00:07:50,650 --> 00:07:48,830

collaboration so it's not typically

141

00:07:54,280 --> 00:07:50,660

where one person comes up with the

142

00:07:56,440 --> 00:07:54,290

brilliant insight to fix something or to

143

00:07:58,600 --> 00:07:56,450

work around something but rather a group

144

00:08:01,150 --> 00:07:58,610

of individuals that work together as a

145

00:08:02,470 --> 00:08:01,160

team that no different aspects of the

146

00:08:05,320 --> 00:08:02,480

problem and they put that all together

147

00:08:07,720 --> 00:08:05,330

to come up with a solution so if you say

148

00:08:10,240 --> 00:08:07,730

the best one I think the the best part

149

00:08:12,790 --> 00:08:10,250

was I got to be on the execution team

150

00:08:15,850 --> 00:08:12,800

where we got to repair a torn solar

151  
00:08:18,700 --> 00:08:15,860  
array which involved a very dramatic EV

152  
00:08:20,920 --> 00:08:18,710  
a and some unique hardware that was

153  
00:08:24,700 --> 00:08:20,930  
designed pretty much on the fly and that

154  
00:08:31,970 --> 00:08:28,030  
what are some situations that have

155  
00:08:35,450 --> 00:08:31,980  
emergency procedures well that's a great

156  
00:08:37,580 --> 00:08:35,460  
question um you know probably in school

157  
00:08:39,920 --> 00:08:37,590  
there today you'll have you have fire

158  
00:08:42,950 --> 00:08:39,930  
drills right and so you practice going

159  
00:08:45,560 --> 00:08:42,960  
outside and getting away from a burning

160  
00:08:47,690 --> 00:08:45,570  
building and making sure everybody gets

161  
00:08:51,050 --> 00:08:47,700  
out safely well we do the same thing on

162  
00:08:54,080 --> 00:08:51,060  
Space Station we have a possibility of

163  
00:08:56,930 --> 00:08:54,090

fire hopefully we've worked to minimize

164

00:08:58,880 --> 00:08:56,940

that we also have we work with chemicals

165

00:09:02,900 --> 00:08:58,890

and research things where it may produce

166

00:09:04,940 --> 00:09:02,910

some toxic vapors and also we have a

167

00:09:07,790 --> 00:09:04,950

problem you don't have on the ground and

168

00:09:10,370 --> 00:09:07,800

that is we live inside a pressurized can

169

00:09:13,160 --> 00:09:10,380

and if that can should spring a leak

170

00:09:15,230 --> 00:09:13,170

that module will go to vacuum so our

171

00:09:18,050 --> 00:09:15,240

three big worries are rapid

172

00:09:23,570 --> 00:09:18,060

depressurization a toxic release and a

173

00:09:28,430 --> 00:09:23,580

fire how can students submit their

174

00:09:31,220 --> 00:09:28,440

experiments to the ISS well that's one

175

00:09:33,110 --> 00:09:31,230

of the areas I'm not as familiar with is

176

00:09:36,530 --> 00:09:33,120

probably I should but we do have a

177

00:09:38,630 --> 00:09:36,540

payload Operations Center in Huntsville

178

00:09:42,950 --> 00:09:38,640

Alabama they reach out to universities

179

00:09:45,410 --> 00:09:42,960

and to students around the world to help

180

00:09:47,360 --> 00:09:45,420

them in the process of getting their

181

00:09:49,460 --> 00:09:47,370

payloads on orbit but a very good

182

00:09:51,350 --> 00:09:49,470

question because that's what the space

183

00:09:58,340 --> 00:09:51,360

station is all about is doing research

184

00:10:02,990 --> 00:09:58,350

in orbit you give me if I wanted to

185

00:10:05,240 --> 00:10:03,000

become a famous and well the advice I

186

00:10:07,070 --> 00:10:05,250

would give you and that's a good

187

00:10:09,050 --> 00:10:07,080

question because I was faced with that

188

00:10:11,930 --> 00:10:09,060

same challenge when I was your age what

189

00:10:14,510 --> 00:10:11,940

do I need to do I think the most

190

00:10:17,720 --> 00:10:14,520

important thing is to do the best job

191

00:10:19,520 --> 00:10:17,730

you can in your academics today give it

192

00:10:21,470 --> 00:10:19,530

your best effort you know your teachers

193

00:10:23,450 --> 00:10:21,480

aren't there just to spoon feed you

194

00:10:26,900 --> 00:10:23,460

information there to help you in your

195

00:10:29,180 --> 00:10:26,910

education journey so it's mostly on your

196

00:10:31,940 --> 00:10:29,190

shoulders to study hard to do your

197

00:10:34,700 --> 00:10:31,950

homework and to find those areas that

198

00:10:36,320 --> 00:10:34,710

you really like doing because if you

199

00:10:36,620 --> 00:10:36,330

really enjoy doing something you're

200

00:10:39,530 --> 00:10:36,630

going to

201

00:10:41,390 --> 00:10:39,540

do a very good job at it so I think in

202

00:10:47,270 --> 00:10:41,400

the space business those areas that are

203

00:10:50,270 --> 00:10:47,280

most important our math and science yeah

204

00:10:55,580 --> 00:10:50,280

how did you work your way up to be is

205

00:10:57,110 --> 00:10:55,590

she well I'm kind of continuing on

206

00:10:59,060 --> 00:10:57,120

that's a good question you know

207

00:11:01,670 --> 00:10:59,070

continuing on a lot of people look at

208

00:11:03,980 --> 00:11:01,680

the jobs that I've done and said well

209

00:11:05,870 --> 00:11:03,990

you know if I do those same things I

210

00:11:08,540 --> 00:11:05,880

will get to the same place and that's

211

00:11:10,760 --> 00:11:08,550

not necessarily so because we like a lot

212

00:11:14,990 --> 00:11:10,770

of different people and what they bring

213

00:11:17,600 --> 00:11:15,000

to the equation I think the key thing is

214

00:11:20,990 --> 00:11:17,610

to whatever job you're given do the best

215

00:11:22,400 --> 00:11:21,000

you can at it in my case I took a path

216

00:11:25,040 --> 00:11:22,410

through the air force in flying

217

00:11:28,640 --> 00:11:25,050

airplanes and eventually after i retired

218

00:11:31,150 --> 00:11:28,650

my background was very useful down here

219

00:11:34,280 --> 00:11:31,160

working with procedures and working with

220

00:11:40,130 --> 00:11:34,290

displays and aerospace machinery those

221

00:11:42,140 --> 00:11:40,140

skills helped me a lot in this job does

222

00:11:47,510 --> 00:11:42,150

anything in space cause interference on

223

00:11:49,940 --> 00:11:47,520

the capcom console well yes there are

224

00:11:52,820 --> 00:11:49,950

certain interference problems you know

225

00:11:56,200 --> 00:11:52,830

we do have a lot of electronic equipment

226

00:11:59,120 --> 00:11:56,210

on board and we're constantly trying to

227

00:12:03,980 --> 00:11:59,130

minimize and control what kind of

228

00:12:07,460 --> 00:12:03,990

problems that that might cause in space

229

00:12:11,240 --> 00:12:07,470

we have radiation and we have solar

230

00:12:14,000 --> 00:12:11,250

flares and we have a Van Allen radiation

231

00:12:15,800 --> 00:12:14,010

belt and sometimes those charged

232

00:12:20,120 --> 00:12:15,810

particles cause problems for our

233

00:12:22,490 --> 00:12:20,130

electronics okay great i am going to

234

00:12:25,340 --> 00:12:22,500

hang up i've been advised to hang up and

235

00:12:28,310 --> 00:12:25,350

dial in so that we can maybe actually

236

00:12:32,360 --> 00:12:28,320

see Mission Control so hang up now and

237

00:12:35,630 --> 00:12:32,370

dial back in shell screen will wait for

238

00:12:38,780 --> 00:12:35,640

you when you come back okay thank you oh

239

00:12:41,150 --> 00:12:38,790

yes sir and this is Michael hair at the

240

00:12:42,680 --> 00:12:41,160

Digital Learning Network mr. gentlemen I

241

00:12:47,390 --> 00:12:42,690

hope you don't mind but I actually have

242

00:12:49,160 --> 00:12:47,400

a question for you yeah go ahead I was

243

00:12:50,329 --> 00:12:49,170

just wondering normally throughout the

244

00:12:52,519 --> 00:12:50,339

history of human space

245

00:12:55,340 --> 00:12:52,529

fight it's normally been astronauts that

246

00:12:58,519 --> 00:12:55,350

actually get the responsibility of being

247

00:13:00,499 --> 00:12:58,529

a Capcom or a capsule communicator I

248

00:13:05,600 --> 00:13:00,509

understand what the International Space

249

00:13:07,129 --> 00:13:05,610

Station you're 47 operations 365 days a

250

00:13:09,710 --> 00:13:07,139

year and we've been doing it since the

251  
00:13:11,569 --> 00:13:09,720  
year 2000 so I can see how it opens up

252  
00:13:14,179 --> 00:13:11,579  
but how did you get the opportunity to

253  
00:13:18,280 --> 00:13:14,189  
actually be a Capcom amongst those elite

254  
00:13:21,739 --> 00:13:18,290  
astronauts well i like you i saw the

255  
00:13:23,600 --> 00:13:21,749  
scheduling challenge that would be and I

256  
00:13:26,329 --> 00:13:23,610  
realized that we didn't actually have

257  
00:13:31,610 --> 00:13:26,339  
enough astronauts to conduct Capcom

258  
00:13:34,009 --> 00:13:31,620  
duties 365 days a year and three shifts

259  
00:13:35,660 --> 00:13:34,019  
we now have scaled back to smaller

260  
00:13:38,749 --> 00:13:35,670  
shifts so I knew they were going to have

261  
00:13:41,749 --> 00:13:38,759  
to change their policy and I tried to

262  
00:13:44,569 --> 00:13:41,759  
make myself as qualified as possible and

263  
00:13:46,369 --> 00:13:44,579

then we had a gal named ginger Carrick

264

00:13:49,009 --> 00:13:46,379

who is one of our senior flight

265

00:13:50,840 --> 00:13:49,019

directors now but she had spent a lot of

266

00:13:55,040 --> 00:13:50,850

time training with the first expedition

267

00:13:56,439 --> 00:13:55,050

crew and she demonstrated that with the

268

00:14:00,379 --> 00:13:56,449

right training and the white background

269

00:14:04,389 --> 00:14:00,389

you could be very effective as a Capcom

270

00:14:06,889 --> 00:14:04,399

even though you weren't day a astronaut

271

00:14:09,619 --> 00:14:06,899

all right excellent looks like Clark

272

00:14:11,179 --> 00:14:09,629

creek STEM Academy is back and I think

273

00:14:13,400 --> 00:14:11,189

they're able to see you so let's go

274

00:14:16,009 --> 00:14:13,410

ahead with your next question go ahead

275

00:14:20,179 --> 00:14:16,019

do you have security ready to protect

276

00:14:22,400 --> 00:14:20,189

secret information you know that that's

277

00:14:25,189 --> 00:14:22,410

a interesting question I know we're all

278

00:14:26,929 --> 00:14:25,199

concerned about secrets but in my case I

279

00:14:29,689 --> 00:14:26,939

don't deal a lot with secret information

280

00:14:32,150 --> 00:14:29,699

there's other people on console who have

281

00:14:34,100 --> 00:14:32,160

to that responsibility but I really

282

00:14:36,739 --> 00:14:34,110

don't you have to understand everything

283

00:14:39,169 --> 00:14:36,749

I say that goes on the radio is

284

00:14:45,350 --> 00:14:39,179

transmitted worldwide so it's probably

285

00:14:47,629 --> 00:14:45,360

best I don't know too many secrets go

286

00:14:51,110 --> 00:14:47,639

ahead what does it take to be an

287

00:14:57,870 --> 00:14:54,690

well I think the first thing is

288

00:14:59,550 --> 00:14:57,880

competency knowing your job and being

289

00:15:02,550 --> 00:14:59,560

very good at it because people are going

290

00:15:05,070 --> 00:15:02,560

to look up to you as a role model so the

291

00:15:07,590 --> 00:15:05,080

first thing is knowing what you want to

292

00:15:09,720 --> 00:15:07,600

do and then the second thing is to know

293

00:15:12,030 --> 00:15:09,730

the people that are working for you and

294

00:15:14,340 --> 00:15:12,040

to know their strengths and weaknesses

295

00:15:17,160 --> 00:15:14,350

and figure out how to use those to best

296

00:15:21,330 --> 00:15:17,170

advantage to your organization's

297

00:15:24,450 --> 00:15:21,340

objectives so I think that's the two

298

00:15:29,910 --> 00:15:24,460

aspects being very competent and knowing

299

00:15:32,820 --> 00:15:29,920

how to interact with other people do you

300

00:15:37,530 --> 00:15:32,830

ever share jokes or humorous story is

301

00:15:40,260 --> 00:15:37,540

the ISS astronauts yes I do especially

302

00:15:44,370 --> 00:15:40,270

if I know them personally you know we do

303

00:15:46,410 --> 00:15:44,380

some gentle ribbing or ridicule maybe a

304

00:15:49,380 --> 00:15:46,420

little joke but I try to keep it under

305

00:15:53,040 --> 00:15:49,390

control because you know everybody else

306

00:15:55,230 --> 00:15:53,050

who listens in on the open space groups

307

00:15:56,580 --> 00:15:55,240

they may not understand the jokes and

308

00:16:00,000 --> 00:15:56,590

they may not think they're quite as

309

00:16:01,770 --> 00:16:00,010

funny as i do or the crew does so i have

310

00:16:08,400 --> 00:16:01,780

to make sure that i do it in a

311

00:16:10,590 --> 00:16:08,410

professional way what kind of software

312

00:16:15,690 --> 00:16:10,600

does catcon use to communicate with the

313

00:16:18,360 --> 00:16:15,700

ISS okay well we use several means

314

00:16:21,000 --> 00:16:18,370

obviously we use the voice through our

315

00:16:26,280 --> 00:16:21,010

satellite links to communicate we also

316

00:16:28,020 --> 00:16:26,290

have email and we process the email we

317

00:16:29,850 --> 00:16:28,030

kind of are a filter to make sure the

318

00:16:33,330 --> 00:16:29,860

crew doesn't get too much junk email

319

00:16:35,670 --> 00:16:33,340

like we all hate at home we also have

320

00:16:37,680 --> 00:16:35,680

video so we can watch the crew as

321

00:16:40,050 --> 00:16:37,690

they're performing their work and it's

322

00:16:43,350 --> 00:16:40,060

it's really amazing if you can actually

323

00:16:45,240 --> 00:16:43,360

see what's going on how much that helps

324

00:16:50,610 --> 00:16:45,250

you understand where the crew is in

325

00:17:01,490 --> 00:16:54,840

you are noted to be a cheerleader for

326

00:17:07,320 --> 00:17:04,290

think you said cheerful leader so I

327

00:17:08,700 --> 00:17:07,330

think if you're have a smile on your

328

00:17:10,680 --> 00:17:08,710

face while you're working and you're

329

00:17:14,370 --> 00:17:10,690

happy to do that work I think that comes

330

00:17:16,910 --> 00:17:14,380

through on the radio and I'm very happy

331

00:17:19,530 --> 00:17:16,920

to be doing this job you know I think

332

00:17:23,100 --> 00:17:19,540

everyone wants a job where they feel

333

00:17:24,750 --> 00:17:23,110

that they make a difference and I think

334

00:17:26,490 --> 00:17:24,760

when I'm working here is a Capcom I'm

335

00:17:31,350 --> 00:17:26,500

making a difference to space exploration

336

00:17:38,760 --> 00:17:31,360

so that's really fun how do you make

337

00:17:40,830 --> 00:17:38,770

sure the optional sounds buzzing oh ok I

338

00:17:43,650 --> 00:17:40,840

think you're asking about supplies and

339

00:17:46,230 --> 00:17:43,660

as a Capcom I don't really play a

340

00:17:49,560 --> 00:17:46,240

primary role in that we do have an

341

00:17:52,230 --> 00:17:49,570

inventory a stowage officer and they

342

00:17:54,810 --> 00:17:52,240

have a computer database that keeps

343

00:17:59,070 --> 00:17:54,820

track of all the equipment and all of

344

00:18:02,010 --> 00:17:59,080

the items on board and they see how the

345

00:18:05,210 --> 00:18:02,020

food is going and and how much water we

346

00:18:08,670 --> 00:18:05,220

have a stockpile and they make sure that

347

00:18:10,290 --> 00:18:08,680

the next resupply mission that comes up

348

00:18:13,140 --> 00:18:10,300

brings more of the stuff we're getting

349

00:18:18,360 --> 00:18:13,150

low on but as a Capcom I don't

350

00:18:24,150 --> 00:18:18,370

particularly manage that what is it

351  
00:18:27,720 --> 00:18:24,160  
different academic subjects and why well

352  
00:18:30,900 --> 00:18:27,730  
I like both math and science and I like

353  
00:18:33,450 --> 00:18:30,910  
math because there's always a right and

354  
00:18:35,730 --> 00:18:33,460  
a wrong answer and if you do your work

355  
00:18:38,490 --> 00:18:35,740  
hard you can find that right or wrong

356  
00:18:41,100 --> 00:18:38,500  
answer it's not a maybe kind of thing or

357  
00:18:43,530 --> 00:18:41,110  
it's how you feel so I like math because

358  
00:18:46,170 --> 00:18:43,540  
you can finally feel like you

359  
00:18:48,960 --> 00:18:46,180  
accomplished something science I like

360  
00:18:51,000 --> 00:18:48,970  
that because it's pushing out the

361  
00:18:54,150 --> 00:18:51,010  
boundaries you think of the struggle of

362  
00:18:56,550 --> 00:18:54,160  
man throughout the centuries what a

363  
00:18:58,680 --> 00:18:56,560

fortunate time we live in with the

364

00:19:01,530 --> 00:18:58,690

access to the internet and

365

00:19:04,650 --> 00:19:01,540

our textbooks and our teachers to learn

366

00:19:07,380 --> 00:19:04,660

so much more than people did say even 50

367

00:19:09,060 --> 00:19:07,390

or 100 years ago so science is very

368

00:19:12,300 --> 00:19:09,070

exciting because we're constantly

369

00:19:17,490 --> 00:19:12,310

pushing out the knowledge the frontier

370

00:19:20,000 --> 00:19:17,500

of knowledge what do you recall as the

371

00:19:29,550 --> 00:19:20,010

boat difficult episode while action

372

00:19:31,790 --> 00:19:29,560

liaison between mission facility is well

373

00:19:35,040 --> 00:19:31,800

I think you know I talked earlier about

374

00:19:37,500 --> 00:19:35,050

repairing the solar array that tour

375

00:19:40,670 --> 00:19:37,510

while it was being relocated and then

376

00:19:44,970 --> 00:19:40,680

deployed and without that solar array

377

00:19:47,070 --> 00:19:44,980

being if you will secured it would

378

00:19:49,350 --> 00:19:47,080

affect whether we could rotate the solar

379

00:19:52,170 --> 00:19:49,360

arrays or not and that would compromise

380

00:19:55,740 --> 00:19:52,180

some of our power generation so I think

381

00:19:58,590 --> 00:19:55,750

being able to as a team pull together a

382

00:20:00,930 --> 00:19:58,600

plan and then executing that plan on

383

00:20:03,390 --> 00:20:00,940

orbit was probably one of the most

384

00:20:06,600 --> 00:20:03,400

amazing things who we were able to do

385

00:20:13,500 --> 00:20:06,610

here in the recent past of the space

386

00:20:19,080 --> 00:20:13,510

station deployment my you visit the ISS

387

00:20:20,490 --> 00:20:19,090

why or why not well unfortunately I

388

00:20:23,640 --> 00:20:20,500

think I'm getting a little too old to be

389

00:20:27,390 --> 00:20:23,650

picked to be an astronaut and so like

390

00:20:29,700 --> 00:20:27,400

you I'd like to go I think but right now

391

00:20:34,050 --> 00:20:29,710

I'm thinking I have to win the lottery

392

00:20:36,060 --> 00:20:34,060

so when the lottery gets up above 30

393

00:20:42,870 --> 00:20:36,070

million i buy a few tickets and hope for

394

00:20:46,860 --> 00:20:42,880

the best okay what do you see a GIS s

395

00:20:50,130 --> 00:20:46,870

legacy I'm sorry can you repeat the last

396

00:20:54,240 --> 00:20:50,140

part of that question what do you see as

397

00:20:58,710 --> 00:20:54,250

the ISS legacy well I think the legacy

398

00:21:00,450 --> 00:20:58,720

of ISS is going to be one the difficulty

399

00:21:02,490 --> 00:21:00,460

of assembling it and building it and

400

00:21:05,250 --> 00:21:02,500

designing it and I think those lessons

401  
00:21:08,190 --> 00:21:05,260  
will be used again as we go further out

402  
00:21:09,840 --> 00:21:08,200  
into the solar system the second lesson

403  
00:21:10,870 --> 00:21:09,850  
i think is the research on human

404  
00:21:13,180 --> 00:21:10,880  
adaptation

405  
00:21:15,670 --> 00:21:13,190  
to weightlessness and the environment of

406  
00:21:17,650 --> 00:21:15,680  
space so that when we do go to the Moon

407  
00:21:20,230 --> 00:21:17,660  
or Mars again or even to an asteroid

408  
00:21:22,420 --> 00:21:20,240  
will have a lot of data to work with a

409  
00:21:26,020 --> 00:21:22,430  
lot of understanding of what happens to

410  
00:21:28,780 --> 00:21:26,030  
folks who are inside a small enclosed

411  
00:21:31,030 --> 00:21:28,790  
environment for a long time and then I

412  
00:21:34,180 --> 00:21:31,040  
think the third thing is going to be the

413  
00:21:37,270 --> 00:21:34,190

research that we do and that research as

414

00:21:40,180 --> 00:21:37,280

it gets reapplied to products and

415

00:21:42,010 --> 00:21:40,190

services on the ground so I think those

416

00:21:47,230 --> 00:21:42,020

are three areas i'm looking forward to

417

00:21:48,840 --> 00:21:47,240

as we move forward in this century what

418

00:21:53,110 --> 00:21:48,850

is the road a huntsville alabama

419

00:21:55,960 --> 00:21:53,120

counterpart and capcom ISS events yeah

420

00:22:00,010 --> 00:21:55,970

huntsville is our payload operations

421

00:22:03,240 --> 00:22:00,020

control center and they have a Paycom as

422

00:22:05,950 --> 00:22:03,250

well who communicates with the crew and

423

00:22:11,080 --> 00:22:05,960

talks to them about the science and the

424

00:22:14,200 --> 00:22:11,090

payloads they're doing on orbit so we

425

00:22:16,510 --> 00:22:14,210

primarily in Houston worry about the

426  
00:22:19,480 --> 00:22:16,520  
actual systems and hardware of the space

427  
00:22:22,300 --> 00:22:19,490  
station and provide the services to the

428  
00:22:24,820 --> 00:22:22,310  
payloads folks so they worry about the

429  
00:22:26,920 --> 00:22:24,830  
payloads the experiments the science and

430  
00:22:30,040 --> 00:22:26,930  
we worry about more about the vehicle in

431  
00:22:32,470 --> 00:22:30,050  
its operation of visiting vehicles cargo

432  
00:22:35,500 --> 00:22:32,480  
ships those kinds of things we also have

433  
00:22:38,230 --> 00:22:35,510  
other control centers one in Munich that

434  
00:22:42,610 --> 00:22:38,240  
works with the European Space Agency and

435  
00:22:46,150 --> 00:22:42,620  
their experiments and scuba Japan there

436  
00:22:48,430 --> 00:22:46,160  
Jacob also works with their Japanese

437  
00:22:50,440 --> 00:22:48,440  
science and experiment and finally we

438  
00:22:53,110 --> 00:22:50,450

have the Russian glodny who has a

439

00:22:57,220 --> 00:22:53,120

similar role of communicating with the

440

00:22:59,020 --> 00:22:57,230

space station about their people alright

441

00:23:01,900 --> 00:22:59,030

we have about a minute and a half so one

442

00:23:04,980 --> 00:23:01,910

final question from Clark Creek are we

443

00:23:08,290 --> 00:23:04,990

dependent upon the Russians to deliver

444

00:23:12,700 --> 00:23:08,300

astronauts to diocese if so is this

445

00:23:15,490 --> 00:23:12,710

problem at the current time our only way

446

00:23:18,220 --> 00:23:15,500

of getting astronauts on board is using

447

00:23:22,039 --> 00:23:18,230

a Russian Soyuz vehicle we are

448

00:23:25,880 --> 00:23:22,049

continuing to develop us both

449

00:23:28,260 --> 00:23:25,890

private companies and NASA government

450

00:23:31,080 --> 00:23:28,270

vehicles that will be able to reach the

451  
00:23:34,440 --> 00:23:31,090  
space station until those vehicles are

452  
00:23:37,590 --> 00:23:34,450  
operational we will rely on them now

453  
00:23:40,500 --> 00:23:37,600  
this is a partnership and so we have the

454  
00:23:42,270 --> 00:23:40,510  
luxury of relying on the Russians for

455  
00:23:44,220 --> 00:23:42,280  
their transportation but I think

456  
00:23:46,320 --> 00:23:44,230  
everybody here at NASA would like

457  
00:23:49,289 --> 00:23:46,330  
eventually to have our own vehicle and

458  
00:23:51,919 --> 00:23:49,299  
also to open that business up to the

459  
00:23:55,529 --> 00:23:51,929  
private sector and we should mention

460  
00:23:57,180 --> 00:23:55,539  
what how was referring to was the

461  
00:23:59,610 --> 00:23:57,190  
spacecraft that can transport the crews

462  
00:24:02,190 --> 00:23:59,620  
but we do have other vehicles including

463  
00:24:04,590 --> 00:24:02,200

the newly designed dragon that can bring

464

00:24:06,600 --> 00:24:04,600

up cargo so we don't have to rely on the

465

00:24:09,149 --> 00:24:06,610

Russians for other supplies there's

466

00:24:10,919 --> 00:24:09,159

other vehicles including the ATV and in

467

00:24:13,020 --> 00:24:10,929

the Dragon spacecraft that's going to

468

00:24:15,750 --> 00:24:13,030

launch on march first so there are other

469

00:24:17,039 --> 00:24:15,760

vehicles as well thanks again Mike for

470

00:24:24,840 --> 00:24:17,049

setting this up we really enjoyed