



1  
00:00:04,690 --> 00:00:02,919  
we're here in the space station flight

2  
00:00:07,300 --> 00:00:04,700  
control room and today joining us is a

3  
00:00:09,730 --> 00:00:07,310  
special guest how get suleman who is the

4  
00:00:11,530 --> 00:00:09,740  
lead Capcom as well as the chief

5  
00:00:13,749 --> 00:00:11,540  
engineer for the Capcom thanks so much

6  
00:00:15,789 --> 00:00:13,759  
for joining us I'm glad to be here

7  
00:00:17,080 --> 00:00:15,799  
Nicole it's been a busy day here in the

8  
00:00:19,269 --> 00:00:17,090  
flight control room so we're really glad

9  
00:00:20,980 --> 00:00:19,279  
you're here to kind of talk to us so a

10  
00:00:22,300 --> 00:00:20,990  
lot of people have heard about Capcom's

11  
00:00:23,769 --> 00:00:22,310  
they're familiar with that console

12  
00:00:25,630 --> 00:00:23,779  
position I always describe it as the

13  
00:00:26,830 --> 00:00:25,640

voice of the flight control team but can

14

00:00:30,009 --> 00:00:26,840

you tell us a little bit more about what

15

00:00:31,900 --> 00:00:30,019

that job entails well really we're just

16

00:00:34,150 --> 00:00:31,910

another member of the team we work for

17

00:00:35,920 --> 00:00:34,160

the flight director but our job is to

18

00:00:38,220 --> 00:00:35,930

listen to what all the experts on the

19

00:00:41,080 --> 00:00:38,230

control team are talking about

20

00:00:42,670 --> 00:00:41,090

understand as best we can what impact

21

00:00:45,070 --> 00:00:42,680

that will have on the crew and then

22

00:00:46,960 --> 00:00:45,080

communicate those impacts sometimes

23

00:00:48,550 --> 00:00:46,970

those impacts are significant and we

24

00:00:51,640 --> 00:00:48,560

have to have the crew react to those

25

00:00:53,320 --> 00:00:51,650

problems or issues and so we try to boil

26

00:00:56,260 --> 00:00:53,330

it down to the essential information

27

00:00:58,900 --> 00:00:56,270

that perhaps the controllers are talking

28

00:01:01,180 --> 00:00:58,910

in a language that is not familiar to

29

00:01:03,160 --> 00:01:01,190

the crew and we translate that into

30

00:01:05,650 --> 00:01:03,170

information that's useful and then I get

31

00:01:07,570 --> 00:01:05,660

that they can act on the other thing

32

00:01:09,040 --> 00:01:07,580

that I think is important that some

33

00:01:10,930 --> 00:01:09,050

people may not realize about the Capcom

34

00:01:12,940 --> 00:01:10,940

position is that you are representing

35

00:01:14,230 --> 00:01:12,950

the crew office you're working behind

36

00:01:16,630 --> 00:01:14,240

the scenes on days that you're not on

37

00:01:18,580 --> 00:01:16,640

console on procedures and that type of

38

00:01:19,990 --> 00:01:18,590

thing you have the chief role for that

39

00:01:21,910 --> 00:01:20,000

within the Capcom office can you talk a

40

00:01:25,420 --> 00:01:21,920

little bit about that scope of the job

41

00:01:27,820 --> 00:01:25,430

yeah we have a whole group of engineers

42

00:01:30,370 --> 00:01:27,830

that support the crew and review their

43

00:01:33,100 --> 00:01:30,380

procedures and displays and make sure

44

00:01:35,620 --> 00:01:33,110

that those are as good as we can make

45

00:01:37,810 --> 00:01:35,630

them a lot of the work we do we're

46

00:01:41,080 --> 00:01:37,820

scheduling continually doing that work

47

00:01:44,550 --> 00:01:41,090

so we have particular expertise that we

48

00:01:47,800 --> 00:01:44,560

bring to that equation we have a

49

00:01:50,950 --> 00:01:47,810

increment lead Capcom they follow the

50

00:01:52,980 --> 00:01:50,960

crew scheduling they participate and

51  
00:01:55,660 --> 00:01:52,990  
give input to the scheduling process

52  
00:01:57,370 --> 00:01:55,670  
also we review the procedures that are

53  
00:01:59,080 --> 00:01:57,380  
going to be uplink to the crew to make

54  
00:02:01,660 --> 00:01:59,090  
sure that they're easy to understand

55  
00:02:03,330 --> 00:02:01,670  
they have the proper illustrations the

56  
00:02:07,160 --> 00:02:03,340  
proper call outs and all that

57  
00:02:09,870 --> 00:02:07,170  
information as part of our job

58  
00:02:13,350 --> 00:02:09,880  
earlier today for the crew they actually

59  
00:02:16,740 --> 00:02:13,360  
did the full-on integrated sim the

60  
00:02:18,570 --> 00:02:16,750  
onboard training as it were to simulate

61  
00:02:21,360 --> 00:02:18,580  
or replicated on board emergency and

62  
00:02:23,160 --> 00:02:21,370  
this morning's was replicating a ammonia

63  
00:02:25,770 --> 00:02:23,170

leak in the Destiny lab can you tell us

64

00:02:28,110 --> 00:02:25,780

a little bit about how those sims are

65

00:02:29,520 --> 00:02:28,120

created and what types of things go into

66

00:02:30,690 --> 00:02:29,530

these sims when they're doing them with

67

00:02:35,160 --> 00:02:30,700

the flight control team in the onboard

68

00:02:37,380 --> 00:02:35,170

crew sure the onboard training is just

69

00:02:39,990 --> 00:02:37,390

an extension of the normal crew training

70

00:02:42,030 --> 00:02:40,000

that they have on the ground but now

71

00:02:44,430 --> 00:02:42,040

they're actually in the environment up

72

00:02:47,670 --> 00:02:44,440

there and this is an opportunity to

73

00:02:50,370 --> 00:02:47,680

refresh that training to give the the

74

00:02:52,710 --> 00:02:50,380

crew and the ground team a chance to

75

00:02:56,009 --> 00:02:52,720

work together as you know there's three

76

00:02:59,640 --> 00:02:56,019

basic emergencies a toxic release a fire

77

00:03:01,440 --> 00:02:59,650

event or a depressurization and because

78

00:03:03,690 --> 00:03:01,450

we're in the environment of space these

79

00:03:05,940 --> 00:03:03,700

take on a different characteristic than

80

00:03:07,440 --> 00:03:05,950

people might be used to if you had a

81

00:03:10,770 --> 00:03:07,450

fire in your house the first reaction

82

00:03:14,789 --> 00:03:10,780

would be to leave the house we can't do

83

00:03:16,500 --> 00:03:14,799

that if you have a toxic release again

84

00:03:19,500 --> 00:03:16,510

it'd be best to probably get out of the

85

00:03:21,360 --> 00:03:19,510

house but we can't do that and what we

86

00:03:23,910 --> 00:03:21,370

have to do is we have to isolate the

87

00:03:26,819 --> 00:03:23,920

problem to a particular module and make

88

00:03:30,810 --> 00:03:26,829

sure the crew is in a safe area and then

89

00:03:34,050 --> 00:03:30,820

after the initial incident is taken care

90

00:03:36,870 --> 00:03:34,060

of then we take remediation action and

91

00:03:40,199 --> 00:03:36,880

so this these onboard crew training

92

00:03:42,870 --> 00:03:40,209

exercises are just that practice so the

93

00:03:45,270 --> 00:03:42,880

crew is a very proficient and should

94

00:03:49,710 --> 00:03:45,280

something like this happen on orbit they

95

00:03:52,259 --> 00:03:49,720

can react quickly and effectively one

96

00:03:54,060 --> 00:03:52,269

thing I noticed about the scenario today

97

00:03:56,849 --> 00:03:54,070

was that the crew did not know until

98

00:03:58,349 --> 00:03:56,859

they started that's when it you know is

99

00:03:59,789 --> 00:03:58,359

revealed to them what the scenario is

100

00:04:02,940 --> 00:03:59,799

which of course you know to replicate

101  
00:04:05,160 --> 00:04:02,950  
the legis the urgency of the situation

102  
00:04:06,870 --> 00:04:05,170  
is it the same for the flight control

103  
00:04:08,699 --> 00:04:06,880  
team here do they likewise not know what

104  
00:04:12,240 --> 00:04:08,709  
the scenario is until it's all about to

105  
00:04:14,610 --> 00:04:12,250  
start that we're evolving these training

106  
00:04:17,280 --> 00:04:14,620  
sessions and this is one of the first

107  
00:04:17,670 --> 00:04:17,290  
where the crew is sort of surprised by

108  
00:04:21,270 --> 00:04:17,680  
what

109  
00:04:24,150 --> 00:04:21,280  
the scenario is in their earliest

110  
00:04:25,890 --> 00:04:24,160  
training and earlier in the program we

111  
00:04:28,110 --> 00:04:25,900  
had these things well scripted out

112  
00:04:30,090 --> 00:04:28,120  
people had an opportunity to read

113  
00:04:33,090 --> 00:04:30,100

through the scripts to understand them

114

00:04:34,620 --> 00:04:33,100

and then ask questions and all that now

115

00:04:37,080 --> 00:04:34,630

we're moving up to more advanced

116

00:04:39,930 --> 00:04:37,090

scenarios where the crew doesn't know

117

00:04:42,420 --> 00:04:39,940

and all that we eventually make it to

118

00:04:45,180 --> 00:04:42,430

the point where there'll be some trusted

119

00:04:47,310 --> 00:04:45,190

agents and only they will know and it'll

120

00:04:49,469 --> 00:04:47,320

be surprised both to the ground team and

121

00:04:51,540 --> 00:04:49,479

the folks on work we're still working

122

00:04:54,060 --> 00:04:51,550

out the details on how to conduct those

123

00:04:55,950 --> 00:04:54,070

kind of training sessions well it seems

124

00:04:57,510 --> 00:04:55,960

you know really exciting to be here in

125

00:04:59,219 --> 00:04:57,520

the room clearly everybody was fully

126

00:05:03,029 --> 00:04:59,229

engaged and getting a lot out of it so

127

00:05:05,580 --> 00:05:03,039

very valuable exercise yes I mean all of

128

00:05:07,499 --> 00:05:05,590

these training sessions we try to make

129

00:05:10,080 --> 00:05:07,509

them as realistic as possible because

130

00:05:12,480 --> 00:05:10,090

that's the way you learn where their

131

00:05:16,020 --> 00:05:12,490

gaps and where the faults are in your

132

00:05:18,330 --> 00:05:16,030

procedure so if you don't practice the

133

00:05:20,310 --> 00:05:18,340

way you plan to execute you can have

134

00:05:22,890 --> 00:05:20,320

this mismatch in it can come back to be

135

00:05:24,719 --> 00:05:22,900

a problem in the real incident it's

136

00:05:26,879 --> 00:05:24,729

always been fascinating to me too that

137

00:05:28,770 --> 00:05:26,889

the crew training you know pre-flight

138

00:05:30,570 --> 00:05:28,780

they actually have them in the mock-ups

139

00:05:32,760 --> 00:05:30,580

in the modules complete with smoke

140

00:05:36,510 --> 00:05:32,770

donning the masks so it is very very

141

00:05:39,029 --> 00:05:36,520

realistic yes that's true and one of the

142

00:05:41,520 --> 00:05:39,039

things we see when people put masks on

143

00:05:44,219 --> 00:05:41,530

is it compromises their ability to

144

00:05:46,460 --> 00:05:44,229

communicate between themselves and with

145

00:05:48,870 --> 00:05:46,470

the ground we get sort of that muffled

146

00:05:51,719 --> 00:05:48,880

you know put your hand over your mouth

147

00:05:54,719 --> 00:05:51,729

kind of conversation so that puts an

148

00:05:58,230 --> 00:05:54,729

additional stress in addition to the

149

00:06:01,020 --> 00:05:58,240

stress that comes with the tenseness of

150

00:06:02,969 --> 00:06:01,030

the of the situation on board moving on

151

00:06:05,580 --> 00:06:02,979

to a lighter topic why don't you tell us

152

00:06:07,170 --> 00:06:05,590

what's what's the most fun or something

153

00:06:09,180 --> 00:06:07,180

unexpected that we might not think is

154

00:06:13,050 --> 00:06:09,190

the most enjoyable aspect of being a

155

00:06:16,409 --> 00:06:13,060

Capcom well I guess the thing that's

156

00:06:19,610 --> 00:06:16,419

been kind of fun for me is the fact that

157

00:06:22,560 --> 00:06:19,620

I think I've introduced the the

158

00:06:25,230 --> 00:06:22,570

Chancellor of Germany the Prime Minister

159

00:06:27,510 --> 00:06:25,240

of Japan the president of the united

160

00:06:29,820 --> 00:06:27,520

states have introduced all these people

161

00:06:30,650 --> 00:06:29,830

to the crew on orbit over the years that

162

00:06:33,530 --> 00:06:30,660

I've been

163

00:06:36,500 --> 00:06:33,540

doing this so that's kind of a kick when

164

00:06:39,200 --> 00:06:36,510

you think about it that you know were of

165

00:06:41,960 --> 00:06:39,210

big interest of national leaders and

166

00:06:44,110 --> 00:06:41,970

they want to talk to our crew and we get

167

00:06:46,760 --> 00:06:44,120

to play a small role in that process

168

00:06:48,110 --> 00:06:46,770

absolutely we've had lots of VIPs and

169

00:06:50,030 --> 00:06:48,120

dignitaries and the occasional

170

00:06:52,370 --> 00:06:50,040

celebrities that come through so I

171

00:06:54,230 --> 00:06:52,380

hadn't thought about that aspect what

172

00:06:55,850 --> 00:06:54,240

about the flip side of that what's the

173

00:06:59,030 --> 00:06:55,860

most challenging aspect of being a

174

00:07:01,550 --> 00:06:59,040

Capcom well the most challenging aspect

175

00:07:04,250 --> 00:07:01,560

is just to communicate effectively all

176

00:07:07,400 --> 00:07:04,260

the time you know we serve fairly long

177

00:07:10,220 --> 00:07:07,410

shifts we serve odd hours and to try to

178

00:07:13,900 --> 00:07:10,230

keep on top of situations to try to

179

00:07:17,570 --> 00:07:13,910

juggle all the activities that we do

180

00:07:20,210 --> 00:07:17,580

managing the cruise timeline thinking of

181

00:07:23,210 --> 00:07:20,220

the particular ways to help the crew out

182

00:07:27,730 --> 00:07:23,220

and try to stay ahead of them those are

183

00:07:30,320 --> 00:07:27,740

the challenging aspects of the job and

184

00:07:32,030 --> 00:07:30,330

one thing I've always been curious the

185

00:07:33,770 --> 00:07:32,040

Capcom's are responsible for knowing a

186

00:07:35,540 --> 00:07:33,780

lot of the same systems in a lot of

187

00:07:37,370 --> 00:07:35,550

cases they do the sims for the

188

00:07:39,110 --> 00:07:37,380

spacewalks with the crew so that

189

00:07:40,760 --> 00:07:39,120

everybody is a really integrated team so

190

00:07:42,800 --> 00:07:40,770

I think that's another kind of the

191

00:07:44,390 --> 00:07:42,810

unseen side of the story that you know

192

00:07:46,370 --> 00:07:44,400

capcom's are really responsible for a

193

00:07:48,380 --> 00:07:46,380

lot yeah I mean that's really the key

194

00:07:52,400 --> 00:07:48,390

expertise that we bring to the control

195

00:07:54,800 --> 00:07:52,410

team is the mindset of the crew and all

196

00:07:57,230 --> 00:07:54,810

of our other controllers here are

197

00:07:59,030 --> 00:07:57,240

experts in their particular systems

198

00:08:01,990 --> 00:07:59,040

whether that be thermal control or

199

00:08:04,640 --> 00:08:02,000

environmental control or attitude

200

00:08:07,580 --> 00:08:04,650

control of the vehicle we bring the

201  
00:08:09,950 --> 00:08:07,590  
expertise of the crew perspective and so

202  
00:08:12,590 --> 00:08:09,960  
that means not only knowing how the crew

203  
00:08:14,600 --> 00:08:12,600  
does their job but also some of the

204  
00:08:17,120 --> 00:08:14,610  
personalities of the crews and how they

205  
00:08:19,130 --> 00:08:17,130  
like to work so when we have some

206  
00:08:21,380 --> 00:08:19,140  
decisions in real time about whether we

207  
00:08:23,390 --> 00:08:21,390  
should work a little late today or save

208  
00:08:26,000 --> 00:08:23,400  
that work for tomorrow is the person

209  
00:08:28,250 --> 00:08:26,010  
tired or whatever we help make that

210  
00:08:31,909 --> 00:08:28,260  
decision help contribute to making that

211  
00:08:33,230 --> 00:08:31,919  
decision one last question in your

212  
00:08:35,270 --> 00:08:33,240  
previous life you were with the Air

213  
00:08:36,680 --> 00:08:35,280

Force and you've had a lot of flying

214

00:08:38,060 --> 00:08:36,690

experience can you tell us a little bit

215

00:08:40,790 --> 00:08:38,070

about your background in the path to

216

00:08:41,900 --> 00:08:40,800

working here at NASA well like a lot of

217

00:08:44,150 --> 00:08:41,910

people I molding

218

00:08:46,580 --> 00:08:44,160

to remember the early missions of space

219

00:08:49,430 --> 00:08:46,590

and I can remember Apollo 8 going around

220

00:08:51,680 --> 00:08:49,440

the moon and when I watched that on

221

00:08:53,450 --> 00:08:51,690

Christmas Eve you know I was just

222

00:08:56,120 --> 00:08:53,460

mesmerised and thought this would be

223

00:08:57,890 --> 00:08:56,130

something that I wanted to do and when I

224

00:08:59,420 --> 00:08:57,900

looked around all that at all the

225

00:09:02,510 --> 00:08:59,430

astronauts at that point they were all

226

00:09:05,300 --> 00:09:02,520

military test pilots and so I thought my

227

00:09:07,760 --> 00:09:05,310

path to getting into space would be to

228

00:09:09,740 --> 00:09:07,770

become a military test pilot and so I

229

00:09:12,200 --> 00:09:09,750

went to the Air Force Academy got a

230

00:09:15,020 --> 00:09:12,210

degree in mechanical engineering went on

231

00:09:17,690 --> 00:09:15,030

to fly a lot of different airplanes some

232

00:09:19,970 --> 00:09:17,700

most are no longer being flown by the

233

00:09:22,160 --> 00:09:19,980

air force tried to do the best I could

234

00:09:25,070 --> 00:09:22,170

in all those I went to graduate school

235

00:09:26,450 --> 00:09:25,080

got a degree in space operations and

236

00:09:28,460 --> 00:09:26,460

then came down here to work at the

237

00:09:31,280 --> 00:09:28,470

kennett are at the Johnson Space Center

238

00:09:34,310 --> 00:09:31,290

for two years in the training division

239

00:09:37,370 --> 00:09:34,320

and then we kind of decided after

240

00:09:40,520 --> 00:09:37,380

challenger two separate military space

241

00:09:44,000 --> 00:09:40,530

from civilian space and I went back to

242

00:09:47,180 --> 00:09:44,010

flying in Korea and then back in America

243

00:09:50,660 --> 00:09:47,190

I served in the first Gulf War fly-in

244

00:09:52,730 --> 00:09:50,670

f-15s and then eventually ended up as an

245

00:09:56,060 --> 00:09:52,740

instructor pilot teaching new students

246

00:09:58,120 --> 00:09:56,070

in out in lubbock texas and then after I

247

00:10:00,680 --> 00:09:58,130

retired I came back down here and

248

00:10:03,200 --> 00:10:00,690

eventually worked into the job I have

249

00:10:05,030 --> 00:10:03,210

today as a Capcom it's fascinating

250

00:10:07,160 --> 00:10:05,040

background thanks so much for taking

251

00:10:09,950 --> 00:10:07,170

time to join us again this is he'll get