1
00:00:01,256 --> 00:00:02,986
>> Kelly Humphries: With
us today we have a special

2
00:00:02,986 --> 00:00:05,476
opportunity to talk with one
of the flight controllers here

3
00:00:05,476 --> 00:00:08,476
in Mission Control
Houston, Anthony Vareha.

4
00:00:08,586 --> 00:00:09,266
Welcome aboard.

5
00:00:10,096 --> 00:00:11,226
>> Anthony Vareha:
Good to be here.

6
00:00:11,226 --> 00:00:12,566
>> Kelly Humphries:
And Anthony is one

7
00:00:12,566 --> 00:00:14,176
of the SPARTAN flight
controllers.

8
00:00:14,176 --> 00:00:17,126
There have been some changes
going on here at Mission Control

9
00:00:17,126 --> 00:00:20,496
with a few of the different
console positions changing,

10
00:00:20,496 --> 00:00:21,636
in particular in your area.

11
00:00:21,636 --> 00:00:24,866

Can you tell us a little bit
about what SPARTAN stands for

12
00:00:24,866 --> 00:00:27,646
and what you do and how
things have evolved here

13
00:00:27,646 --> 00:00:29,196
at Mission Control in your area?

14
00:00:29,626 --> 00:00:29,876
>> Anthony Vareha: OK.

15
00:00:29,876 --> 00:00:31,566
The hardest part of that
question is what SPARTAN

16
00:00:31,566 --> 00:00:32,226
stands for.

17
00:00:32,386 --> 00:00:38,326
I think it's Station Power
Articulation Thermal Analysis.

18
00:00:39,296 --> 00:00:41,136
It's one of those things
where the name sounded cool,

19
00:00:41,136 --> 00:00:44,276
and then we kind of filled
in the words to make it up.

20
00:00:44,276 --> 00:00:47,536
But I started here as a Thor
[phonetic], which is right back

21
00:00:47,536 --> 00:00:52,106
over this little divider here,
and I started here in 2007

22
00:00:52,106 --> 00:00:55,466
after doing a co-op tour at the
Kennedy Space Center working

23
00:00:55,506 --> 00:00:56,416
on [inaudible] rocket booster.

24
00:00:56,886 --> 00:00:58,776
So I was straight out of
college when I started here,

25
00:00:58,986 --> 00:01:02,126
and Thor takes care of all
the external thermal as well

26
00:01:02,126 --> 00:01:03,906
as the internal thermal,
ammonia, cooling,

27
00:01:03,906 --> 00:01:06,576
everything that,
you know, heaters

28
00:01:06,726 --> 00:01:09,006
and pumps, things like that.

29
00:01:09,526 --> 00:01:14,236
And eventually the,
as part of an effort

30
00:01:14,236 --> 00:01:15,916
to streamline our
operations here,

31
00:01:16,706 --> 00:01:20,106
the Thor officer is
being kind of devolved

32
00:01:20,106 --> 00:01:23,626

into two separate positions,
which is the SPARTAN,

33
00:01:24,026 --> 00:01:25,856
which I just named,
and then the Ethos.

34
00:01:25,856 --> 00:01:29,426
So all of the external thermal
control goes in with Falcon,

35
00:01:29,686 --> 00:01:35,136
which is the electrical systems
whereas all the internal thermal

36
00:01:35,136 --> 00:01:38,176
control goes in with what is
now called Ethos, and so they,

37
00:01:38,496 --> 00:01:41,276
that goes along with
their life support duties

38
00:01:41,276 --> 00:01:42,966
that the Eqos [phonetic]
officer used to do.

39
00:01:42,966 --> 00:01:48,236
So where once was Falcon, Thor,
and Eqos, there is now SPARTAN

40
00:01:48,576 --> 00:01:52,926
and Ethos, and so the path I
took was the SPARTAN console.

41
00:01:53,176 --> 00:01:55,206
Generally, we are
in charge at SPARTAN

42
00:01:55,206 --> 00:01:57,986

of all the electrical systems
just like Falcon used to be.

43
00:01:58,296 --> 00:02:01,156
Big rotating joints, all
the eight solar arrays,

44
00:02:01,376 --> 00:02:03,816
and now we've got the
external thermal control system

45
00:02:03,816 --> 00:02:04,456
on top of that.

46
00:02:04,786 --> 00:02:08,086
Generally, if you need
to put on a space suit

47
00:02:08,086 --> 00:02:12,716
to go fix our stuff, then
that's a SPARTAN responsibility.

48
00:02:13,186 --> 00:02:13,606
>> Kelly Humphries: OK.

49
00:02:13,606 --> 00:02:15,356
And that's exactly
what Suni Williams

50
00:02:15,356 --> 00:02:17,206
and Aki Hoshide had
to do last week.

51
00:02:17,206 --> 00:02:19,536
That's one of the reasons
we brought you on today

52
00:02:19,536 --> 00:02:23,146
so you can talk to us a little
bit about that space walk

53
00:02:23,146 --> 00:02:26,896
and what was accomplished
by the two space walkers

54
00:02:27,216 --> 00:02:30,126
and about how the
systems are doing now

55
00:02:30,126 --> 00:02:31,436
that the repairs have been made.

56
00:02:31,616 --> 00:02:31,846
>> Anthony Vareha: Sure.

57
00:02:31,896 --> 00:02:32,666
Absolutely, yeah.

58
00:02:32,666 --> 00:02:34,716
Great space walk last week.

59
00:02:34,816 --> 00:02:37,916
In general, we have a
cooling system for each

60
00:02:37,916 --> 00:02:39,476
of our solar array sets.

61
00:02:39,476 --> 00:02:40,746
There's eight solar arrays.

62
00:02:41,046 --> 00:02:42,426
Each of them has
a cooling system

63
00:02:42,426 --> 00:02:45,006
because they feed
batteries, and as we know

64
00:02:45,006 --> 00:02:48,036
from operating a cellular phone,
batteries get hot when they get,

65
00:02:48,236 --> 00:02:49,316
when they start discharging.

66
00:02:49,716 --> 00:02:51,206
So we have to keep
those batteries cool

67
00:02:51,206 --> 00:02:52,056
to keep the lights on

68
00:02:52,056 --> 00:02:53,256
and everything running
on the station.

69
00:02:53,866 --> 00:02:57,396
We noticed about sometime
middle of this year

70
00:02:57,396 --> 00:03:01,646
that a very small leak on
the two Bravo power channels,

71
00:03:01,646 --> 00:03:03,526
it's one of our very
core power channels,

72
00:03:03,526 --> 00:03:05,516
powers a lot of important stuff.

73
00:03:05,726 --> 00:03:06,966
We knew we had a
little leak there.

74
00:03:06,966 --> 00:03:09,816
That leak got a lot

bigger this summer.

75
00:03:10,286 --> 00:03:12,936
And so we decided
that, you know,

76
00:03:12,936 --> 00:03:15,696
the ISS program decided it
was a good idea to go ahead

77
00:03:16,096 --> 00:03:18,826
and send our great crew out
there who are very familiar

78
00:03:18,826 --> 00:03:21,566
with EDA's, this is their third
EDA that they did last week.

79
00:03:21,746 --> 00:03:27,406
Send them out, fix it,
and the way we are going

80
00:03:27,406 --> 00:03:30,096
about this is the
purpose of last week was

81
00:03:30,096 --> 00:03:35,596
to reroute the cooling from
the radiator we normally use

82
00:03:35,596 --> 00:03:38,026
for the two V channel
to a different radiator,

83
00:03:38,026 --> 00:03:41,616
and the reason for that
is one of the big threats,

84
00:03:41,616 --> 00:03:43,036
one of the big reasons

why something

85
00:03:43,036 --> 00:03:45,716
like cooling system space
might spring a leak is

86
00:03:45,716 --> 00:03:47,526
if a micro meteoroid hit.

87
00:03:48,606 --> 00:03:50,736
Now, there are two main parts

88
00:03:50,736 --> 00:03:53,436
of a PDTCS [inaudible]
thermal control system,

89
00:03:53,436 --> 00:03:55,686
one's a big long radiator
and one's a little pump,

90
00:03:55,856 --> 00:03:58,046
and there's some other tubes
in between there that cool,

91
00:03:58,046 --> 00:03:59,236
that actually cool some stuff,

92
00:03:59,276 --> 00:04:02,656
but that's buried underneath
some of the other components.

93
00:04:03,186 --> 00:04:04,896
Now, if you're going to pick

94
00:04:04,896 --> 00:04:08,986
which of those two pieces is
most likely to have a hole

95
00:04:08,986 --> 00:04:11,606

in it, it's probably the
45-foot long radiator sticking

96
00:04:11,606 --> 00:04:12,316
out into space.

97
00:04:12,776 --> 00:04:15,296
And so we decided that a first
troubleshooting effort would be

98
00:04:15,296 --> 00:04:19,546
to go, disconnect that
radiator, reroute some jumpers

99
00:04:19,546 --> 00:04:22,676
over to an old early external
thermal control system,

100
00:04:22,676 --> 00:04:25,826
which used to be back before the
big long truss got assembled.

101
00:04:27,316 --> 00:04:29,036
That was our main
cooling system.

102
00:04:29,746 --> 00:04:31,646
This is the PDTCS right there,

103
00:04:32,026 --> 00:04:35,906
and what that shows is the
different little components,

104
00:04:35,906 --> 00:04:38,156
including the early
ammonia servicer jumpers,

105
00:04:38,156 --> 00:04:40,196
and that's what actually we
use to reroute the cooling

106
00:04:40,196 --> 00:04:41,806
to the old external system.

107
00:04:42,246 --> 00:04:44,076
The fluid disconnect cuffling,

108
00:04:44,446 --> 00:04:46,566
which is how we disconnected
the radiator

109
00:04:46,926 --> 00:04:48,576
from the rest of the system.

110
00:04:48,576 --> 00:04:50,396
Of course, we had to shut down
the system off to do this,

111
00:04:50,676 --> 00:04:52,576
and then you see the photo
of uptake radiator, the PVR,

112
00:04:52,576 --> 00:04:54,496
and that's what we
actually think is leaking.

113
00:04:55,246 --> 00:04:57,116
The, where this is located
is way out on the end

114
00:04:57,116 --> 00:05:00,866
of the truss next to the,
it's on P6, the furthest

115
00:05:00,866 --> 00:05:01,796
down on the port side.

116
00:05:02,176 --> 00:05:04,806
We sent the crew out there

to that big long radiator,

117
00:05:04,806 --> 00:05:07,646
disconnected it, and
deployed a different radiator,

118
00:05:07,646 --> 00:05:10,416
an old radiator from the
old early external thermal

119
00:05:10,416 --> 00:05:11,086
control system.

120
00:05:11,436 --> 00:05:12,786
Here's the video
of that happening.

121
00:05:12,946 --> 00:05:15,476
And so those commands
were sent by my back room,

122
00:05:15,476 --> 00:05:19,816
a guy named Dave Kruk, and
his compatriot Romey Allyuby,

123
00:05:19,816 --> 00:05:22,966
who were both key to
our support of this EDA.

124
00:05:23,396 --> 00:05:25,806
And so this is a big
team effort from SPARTAN.

125
00:05:25,806 --> 00:05:28,466
We're really proud of the way
it came out because, you know,

126
00:05:28,466 --> 00:05:31,426
we haven't sent this, we haven't
sent these radiator commands

127
00:05:31,426 --> 00:05:31,846
in years.

128
00:05:32,086 --> 00:05:35,526
You know, if I sit in the car
for longer than six hours,

129
00:05:35,526 --> 00:05:37,426
my legs hurt, and here's a
radiator that's been bunched

130
00:05:37,426 --> 00:05:40,526
up for six years and
deployed just like it was new.

131
00:05:40,716 --> 00:05:42,426
>> Kelly Humphries: And the
reason we had this radiator is

132
00:05:42,426 --> 00:05:47,126
because that P6 truss was the
first solar array generation

133
00:05:47,126 --> 00:05:48,386
system we had on
the station, right -

134
00:05:48,386 --> 00:05:48,976
>> Anthony Vareha: Absolutely.

135
00:05:49,356 --> 00:05:52,066
Yeah. For awhile, that's
all we had, and so that's

136
00:05:52,066 --> 00:05:55,286
where we ran a small ammonia
system to cool the U.S. lab,

137

00:05:55,486 --> 00:05:57,936
and now we've got the big
external thermal control system,

138
00:05:57,936 --> 00:05:59,516
what we call the ETCS as opposed

139
00:05:59,516 --> 00:06:01,346
to the early external
thermal control system,

140
00:06:01,346 --> 00:06:02,566
which is a much bigger system.

141
00:06:02,976 --> 00:06:05,376
And so now that we don't
need that early system,

142
00:06:05,376 --> 00:06:07,616
it was just sitting out
there, had ammonia in it,

143
00:06:07,656 --> 00:06:08,476
but it wasn't running.

144
00:06:08,676 --> 00:06:11,186
Well, the parts still
worked on it,

145
00:06:11,186 --> 00:06:12,446
as we showed with the radiator.

146
00:06:12,446 --> 00:06:14,766
So we had this handy
spare radiator

147
00:06:14,766 --> 00:06:18,116
that we could hook into, and
all it took was these commands

148
00:06:18,116 --> 00:06:22,096
to deploy that radiator
in addition to all

149
00:06:22,096 --> 00:06:24,566
of the configurations and all of
the standard planning that goes

150
00:06:24,566 --> 00:06:26,626
into an EDA like what
we did last week.

151
00:06:27,166 --> 00:06:28,266
System's working great.

152
00:06:28,596 --> 00:06:32,126
We're real happy with how it,
I mean, for doing that level

153
00:06:32,326 --> 00:06:34,726
of reconfiguration of
a system that's flying

154
00:06:34,726 --> 00:06:38,296
around at 17,500 miles per hour
and for it to go as smoothly

155
00:06:38,296 --> 00:06:41,416
as it did last week is a real
testament to all the planning

156
00:06:41,416 --> 00:06:45,136
that went into from the ground
here as well as to Suni and Aki

157
00:06:45,136 --> 00:06:46,266
for doing a great
job on the EDA.

158

00:06:46,266 --> 00:06:49,506
We're going to watch this system
for the next couple of months,

159
00:06:49,696 --> 00:06:52,146
make sure that the, we're
basically doing a leak check,

160
00:06:52,146 --> 00:06:56,976
a very long leak check, and see
if we have isolated the leak

161
00:06:56,976 --> 00:06:59,456
to that radiator that we
cut off, and if that's true,

162
00:06:59,456 --> 00:07:00,666
then we might be done.

163
00:07:00,666 --> 00:07:05,646
We'll just keep running through
this new/old radiator for the,

164
00:07:05,646 --> 00:07:08,266
you know, for the duration,
until we need to reconfigure,

165
00:07:08,426 --> 00:07:09,916
but the system's working great.

166
00:07:10,556 --> 00:07:13,126
>> Kelly Humphries: Now,
people tend to think of space

167
00:07:13,126 --> 00:07:14,716
as being a really cold place,

168
00:07:15,076 --> 00:07:17,726
and so why would you need
a radiator to get rid

169
00:07:17,726 --> 00:07:19,666
of extra heat in space?

170
00:07:20,026 --> 00:07:20,646
>> Anthony Vareha:
Great question.

171
00:07:20,646 --> 00:07:23,756
So as you, yes.

172
00:07:23,756 --> 00:07:26,466
People think of space as being
cold, but space is empty.

173
00:07:26,466 --> 00:07:28,216
Space doesn't really
have a temperature.

174
00:07:28,366 --> 00:07:31,706
It's the particles inside
space that, you know,

175
00:07:31,706 --> 00:07:35,016
the errant little molecules
of whatever that are floating

176
00:07:35,016 --> 00:07:36,276
around that actually
have temperature.

177
00:07:36,276 --> 00:07:39,256
So it's really just, you
know, primarily what we deal

178
00:07:39,316 --> 00:07:41,486
with is the station and the sun.

179
00:07:41,596 --> 00:07:44,526

So the station generates
heat by having pumps running,

180
00:07:44,526 --> 00:07:46,476
by having electrical
power being generated,

181
00:07:46,806 --> 00:07:49,626
and the sun is also putting
heat onto the station.

182
00:07:49,666 --> 00:07:52,956
And we have insulation blankets
around a lot of all components

183
00:07:52,956 --> 00:07:56,156
to keep them warm, but you don't
want things to get too warm,

184
00:07:56,156 --> 00:07:58,266
and so we have to
radiate our heat away.

185
00:07:58,566 --> 00:08:00,966
There's three ways you can
get rid of heat - convection,

186
00:08:01,436 --> 00:08:06,416
radiation, and the third one.

187
00:08:07,716 --> 00:08:13,246
And the, you don't have any
other method of getting rid

188
00:08:13,246 --> 00:08:16,646
of heat when you
have no working fluid

189
00:08:16,646 --> 00:08:17,976
around you other than radiation.

190
00:08:18,026 --> 00:08:20,516
So that's why when you see
these big radiators sticking

191
00:08:20,516 --> 00:08:21,346
out the side of the station,

192
00:08:21,596 --> 00:08:23,216
that's how we get rid
of the excess heat.

193
00:08:23,526 --> 00:08:23,796
>> Kelly Humphries: OK.

194
00:08:23,796 --> 00:08:26,096
And inside those radiators
is ammonia, right -

195
00:08:26,146 --> 00:08:27,376
>> Anthony Vareha: That's
correct, and that's the fluid

196
00:08:27,376 --> 00:08:28,996
that we were rerouting
last week -

197
00:08:29,096 --> 00:08:29,526
>> Kelly Humphries: OK.

198
00:08:29,526 --> 00:08:33,006
And then inside the station
there's another system

199
00:08:33,236 --> 00:08:36,046
that transfers that heat, and
you've got a heat exchanger

200
00:08:36,046 --> 00:08:38,436

between the ammonia part
and the one that's inside,

201
00:08:38,846 --> 00:08:42,126
and as I understand, that one's
kind of a water-based system,

202
00:08:42,126 --> 00:08:45,516
and that way if you get a
leak inside, it's not harmful

203
00:08:45,516 --> 00:08:47,126
or poisonous to the
crew, right -

204
00:08:47,276 --> 00:08:47,816
>> Anthony Vareha:
That's correct.

205
00:08:47,816 --> 00:08:50,116
We run water on the inside,
ammonia on the outside,

206
00:08:50,266 --> 00:08:52,836
and we like to keep them
in those respective places

207
00:08:52,836 --> 00:08:56,946
because ammonia, the ammonia
we run is a very good coolant,

208
00:08:57,096 --> 00:08:59,006
but it is toxic to humans.

209
00:08:59,006 --> 00:09:01,626
So we keep it on the outside,
and that's why you see people

210
00:09:01,626 --> 00:09:03,666
in space suits when

they're working with it,

211
00:09:03,666 --> 00:09:05,576
or if you're working with it
on the ground, certainly a lot

212
00:09:05,576 --> 00:09:07,596
of safety protection
goes into play.

213
00:09:07,936 --> 00:09:09,556
>> Kelly Humphries: And
all of our connections,

214
00:09:09,556 --> 00:09:12,676
those quick disconnects
that the space walkers use,

215
00:09:12,676 --> 00:09:15,016
they work really well this time
around, and we didn't get a lot

216
00:09:15,016 --> 00:09:15,926
of contamination [inaudible] -

217
00:09:16,406 --> 00:09:17,096
>> Anthony Vareha: That's true.

218
00:09:17,096 --> 00:09:18,996
You know, we had just a
few little flakes come off

219
00:09:18,996 --> 00:09:21,136
of the FQDC that we
showed earlier, but,

220
00:09:21,216 --> 00:09:22,666
you know, that was expected.

221

00:09:22,666 --> 00:09:24,596
As you disconnect something,
there's just a little pocket

222
00:09:24,596 --> 00:09:26,646
of ammonia there,
but that was it.

223
00:09:26,646 --> 00:09:30,646
I mean, as far as an ammonia
EDA, this was a very clean,

224
00:09:30,646 --> 00:09:32,046
and the crew did
not have to worry

225
00:09:32,046 --> 00:09:33,586
about baking off the ammonia

226
00:09:33,586 --> 00:09:35,206
so that they didn't
bring any inside.

227
00:09:35,206 --> 00:09:37,736
We, were managed to be
able to do that just

228
00:09:37,736 --> 00:09:39,286
by having them outside,
you know,

229
00:09:39,286 --> 00:09:40,476
the sun will burn
off the ammonia.

230
00:09:40,826 --> 00:09:41,106
>> Kelly Humphries: OK.

231
00:09:41,506 --> 00:09:44,626
And then your discipline

has been really busy

232
00:09:44,626 --> 00:09:46,646
because not only were you
working on this and working

233
00:09:46,646 --> 00:09:48,756
on EDA plans and
deploying an old radiator

234
00:09:48,756 --> 00:09:50,616
that hadn't been
used for six years,

235
00:09:50,936 --> 00:09:53,146
but you had another
significant power system issue

236
00:09:53,146 --> 00:09:55,366
that we thought we might
have to do a second EDA for.

237
00:09:55,806 --> 00:09:57,676
>> Anthony Vareha: We've had
a rough couple of months.

238
00:09:57,676 --> 00:10:03,616
So you may remember EDA 18 and
19 earlier this fall where Suni

239
00:10:03,616 --> 00:10:06,396
and Aki went out and replaced
our main buss switching unit,

240
00:10:06,396 --> 00:10:09,686
MBSU 1, and that MBSU
had been acting up on us.

241
00:10:09,686 --> 00:10:12,676
So we decided it was a good idea

to take it out and replace it.

242
00:10:12,676 --> 00:10:14,996
When we took it out,
we couldn't get it back

243
00:10:14,996 --> 00:10:16,246
in because it was
stuck [inaudible],

244
00:10:16,246 --> 00:10:20,306
and so for about six days,
we had cut off access to two

245
00:10:20,306 --> 00:10:22,566
of our power channels,
1A and 1B.

246
00:10:23,906 --> 00:10:26,216
And those power channels
were working fine,

247
00:10:26,216 --> 00:10:28,406
but we had no pathway
to get the power to us.

248
00:10:28,806 --> 00:10:31,606
Now we can do smart things on
the ground by rerouting power,

249
00:10:31,606 --> 00:10:34,466
and we actually maintain
what we call copper path.

250
00:10:34,646 --> 00:10:37,716
We have the ability to on
anything we want on the station

251
00:10:37,716 --> 00:10:38,846
when something like

that happens.

252
00:10:39,206 --> 00:10:41,066
It just is a resource hit.

253
00:10:41,066 --> 00:10:43,826
You know, our power
resource officers are trained

254
00:10:43,826 --> 00:10:47,196
to distribute the loads so
that we don't have a brown out

255
00:10:47,196 --> 00:10:49,856
or something like that
because we want to make sure

256
00:10:49,856 --> 00:10:51,386
that everybody can
turn on their payloads

257
00:10:51,386 --> 00:10:53,246
and can keep all the
critical systems running.

258
00:10:54,026 --> 00:10:55,736
So we fixed that,
but in the middle

259
00:10:55,736 --> 00:10:58,276
of that while those two power
channels were unavailable,

260
00:10:58,406 --> 00:11:00,476
another power channel
went down, three alpha,

261
00:11:00,476 --> 00:11:01,466
and that one had a short.

262
00:11:01,466 --> 00:11:04,276
So there was a point at
which we were down to five

263
00:11:04,276 --> 00:11:06,856
out of eight power channels, but
we can still turn anything on.

264
00:11:07,476 --> 00:11:10,666
Since then, we've, of course,
replaced the MBSU on EDA 19.

265
00:11:10,666 --> 00:11:13,956
Suni and Aki did a great job
there as well, and then the,

266
00:11:13,956 --> 00:11:16,976
with the short, whatever
caused the short,

267
00:11:17,356 --> 00:11:18,786
it was a very large short.

268
00:11:18,786 --> 00:11:20,516
It was an 800 amp
short [inaudible].

269
00:11:20,516 --> 00:11:23,696
So whatever might cause
that probably vaporized

270
00:11:23,696 --> 00:11:25,786
when it had all that
current going through it.

271
00:11:26,116 --> 00:11:28,516
So the engineers looked at
it, we decided it was safe

272

00:11:28,516 --> 00:11:31,566
to turn things back on, we gave
it a shot, and sure enough,

273
00:11:31,826 --> 00:11:33,566
it's been running fine every
since we turned it back on.

274
00:11:34,056 --> 00:11:34,886
>> Kelly Humphries:
Well, that's great news.

275
00:11:34,886 --> 00:11:37,156
So power systems
are back stable now,

276
00:11:37,156 --> 00:11:40,366
and you're just monitoring
the results of this leak

277
00:11:40,396 --> 00:11:44,626
to make sure that you don't have
another leak with this reroute.

278
00:11:45,166 --> 00:11:45,856
>> Anthony Vareha:
Absolutely, yeah.

279
00:11:45,856 --> 00:11:47,166
We've got eight good
power channels,

280
00:11:47,376 --> 00:11:49,226
and we're keeping an
eye on 2B to make sure

281
00:11:49,226 --> 00:11:51,246
that we don't lose any
more fluid from it,

282

00:11:51,246 --> 00:11:53,486
and see where that
leak might be.

283
00:11:54,146 --> 00:11:54,446
>> Kelly Humphries: Great.

284
00:11:54,826 --> 00:11:57,456
Well, Anthony, let's talk
a little bit about you just

285
00:11:57,456 --> 00:12:01,586
so folks understand that it
takes people from everywhere

286
00:12:01,586 --> 00:12:03,426
around this country, and
the world for that matter,

287
00:12:03,426 --> 00:12:05,746
to operate the International
Space Station.

288
00:12:05,746 --> 00:12:07,556
Tell us a little bit about where
you're from and where you went

289
00:12:07,556 --> 00:12:09,746
to school and what you
studied to get here.

290
00:12:09,906 --> 00:12:10,146
>> Anthony Vareha: Sure.

291
00:12:10,256 --> 00:12:12,746
Well, I'm from Pittsburgh,
actually just outside

292
00:12:12,746 --> 00:12:14,006
of Pittsburgh a place

called Monroeville.

293
00:12:14,006 --> 00:12:15,686
>> Kelly Humphries: Do
they have power there now?

294
00:12:15,826 --> 00:12:17,376
>> Anthony Vareha: They do
have power there now, yes.

295
00:12:17,566 --> 00:12:18,596
Absolutely, yes.

296
00:12:18,826 --> 00:12:21,366
As people in the northeast
would know, it is, it's not good

297
00:12:21,366 --> 00:12:24,216
when you start losing
power systems.

298
00:12:24,276 --> 00:12:28,136
And so I went to
school in Florida

299
00:12:28,136 --> 00:12:28,856
at [inaudible] University.

300
00:12:28,856 --> 00:12:30,316
Got a degree in engineering
physics.

301
00:12:30,316 --> 00:12:32,446
It's kind of a degree
in space physics.

302
00:12:32,446 --> 00:12:34,476
I was always interested in
space from an early age.

303
00:12:34,476 --> 00:12:36,476
My mom and dad really
encouraged that.

304
00:12:36,476 --> 00:12:38,276
Bought me a bunch of space
books and things like that.

305
00:12:38,776 --> 00:12:41,126
So once I figured out that
this was a job, you know,

306
00:12:41,126 --> 00:12:43,236
working in this room is
something that was attainable,

307
00:12:43,506 --> 00:12:46,946
something that is not, you
can, you know, this is the kind

308
00:12:46,946 --> 00:12:48,966
of job you can actually
do straight out of college

309
00:12:48,966 --> 00:12:51,406
if you have a good science
and engineering background.

310
00:12:52,516 --> 00:12:54,006
And so once I found
that out, you know,

311
00:12:54,216 --> 00:12:56,366
I was doing what
I can to get here.

312
00:12:56,686 --> 00:12:58,806
Very happy that I am here
because I started here,

313
00:12:58,806 --> 00:13:02,566
as I said, 2007, and have
been really happy doing flight

314
00:13:02,566 --> 00:13:03,396
control ever since.

315
00:13:04,696 --> 00:13:06,356
>> Kelly Humphries: Well,
Anthony, thank you so much

316
00:13:06,356 --> 00:13:09,146
for coming on today and help
us understand a little bit more

317
00:13:09,146 --> 00:13:13,636
about the power systems on the
Station and how that EDA went

318
00:13:14,226 --> 00:13:18,176
and the remaining work done,
that we have to do to make sure

319
00:13:18,176 --> 00:13:21,036
that everything is, the leak
is isolated and everything.

320
00:13:21,036 --> 00:13:21,766
Continued work.

321
00:13:21,766 --> 00:13:23,836
We really appreciate
you coming on.

322
00:13:23,836 --> 00:13:26,136
We hope you come back and
tell us some more good news

323
00:13:26,136 --> 00:13:29,526

when we get a chance to finish
the analysis of all this,

324
00:13:29,936 --> 00:13:31,496
but thanks very much
for coming in today -

325
00:13:31,496 --> 00:13:32,216
>> Anthony Vareha:
It's my pleasure.

326
00:13:32,216 --> 00:13:34,806
It's really good to, I really
like to have a chance to talk

327
00:13:34,806 --> 00:13:36,316
about all the good work
that we're doing right

328
00:13:36,686 --> 00:13:37,516
down the line there that,