



1
00:01:28,320 --> 00:01:31,429
okay

2
00:01:31,439 --> 00:01:37,749
good morning andy

3
00:01:40,310 --> 00:01:39,030
good morning

4
00:01:44,870 --> 00:01:40,320
and how are you just buying marine corps

5
00:01:44,880 --> 00:02:47,910
i'm always great on the marine corps day

6
00:02:52,869 --> 00:02:50,790
as you can see we got the second copy of

7
00:05:39,350 --> 00:02:52,879
the flight plan thanks

8
00:05:39,360 --> 00:05:42,790
okay dave go ahead

9
00:05:46,870 --> 00:05:45,029
okay as you know uh just as the

10
00:05:47,830 --> 00:05:46,880
satellite departed we

11
00:05:50,150 --> 00:05:47,840
uh

12
00:05:52,310 --> 00:05:50,160
disabled auto reconfiguration and

13
00:05:54,629 --> 00:05:52,320

therefore we should understand fully the

14

00:05:57,430 --> 00:05:54,639

configuration of the satellite and in

15

00:06:00,310 --> 00:05:57,440

our few passes we've made we've gotten

16

00:06:02,629 --> 00:06:00,320

two-way calm with esto through estell

17

00:06:04,950 --> 00:06:02,639

and we've found some unusual unexpected

18

00:06:07,270 --> 00:06:04,960

configurations on the satellite

19

00:06:09,990 --> 00:06:07,280

first of all as you know there are three

20

00:06:12,150 --> 00:06:10,000

modes we can command to the satellite

21

00:06:14,150 --> 00:06:12,160

two of those modes do not require the

22

00:06:15,909 --> 00:06:14,160

onboard satellite computer and we are

23

00:06:18,550 --> 00:06:15,919

successful in commanding with those

24

00:06:20,230 --> 00:06:18,560

modes only

25

00:06:22,629 --> 00:06:20,240

mode three which requires the computer

26
00:06:24,950 --> 00:06:22,639
we were unable to command

27
00:06:28,629 --> 00:06:24,960
and we are not able to reset the onboard

28
00:06:34,710 --> 00:06:30,790
we were able to turn rope on

29
00:06:36,469 --> 00:06:34,720
sla on the pvlas flashing and the

30
00:06:38,950 --> 00:06:36,479
ammeter on

31
00:06:41,029 --> 00:06:38,960
we cannot command the drbs we've turned

32
00:06:42,710 --> 00:06:41,039
on the earth sensors

33
00:06:44,950 --> 00:06:42,720
and we've gotten good response to all

34
00:06:46,710 --> 00:06:44,960
this based on bus currents to our

35
00:06:48,870 --> 00:06:46,720
commanding

36
00:06:50,870 --> 00:06:48,880
but our data does indicate we've had a

37
00:06:56,710 --> 00:06:50,880
global ram

38
00:06:58,629 --> 00:06:56,720

maybe the ram itself or uh interactions

39

00:07:03,830 --> 00:06:58,639

inter

40

00:07:07,029 --> 00:07:03,840

the the computer that doesn't appear to

41

00:07:09,029 --> 00:07:07,039

be running is required for amc amcs

42

00:07:10,550 --> 00:07:09,039

processing

43

00:07:12,150 --> 00:07:10,560

and um

44

00:07:13,189 --> 00:07:12,160

so we feel that that's not working

45

00:07:16,550 --> 00:07:13,199

correctly

46

00:07:18,870 --> 00:07:16,560

the xy gyros are running although the z

47

00:07:20,550 --> 00:07:18,880

gyro and the skew gyro we found powered

48

00:07:22,469 --> 00:07:20,560

off

49

00:07:24,230 --> 00:07:22,479

in terms of the nitrogen system and this

50

00:07:26,629 --> 00:07:24,240

was unexpected

51
00:07:29,110 --> 00:07:26,639
in terms of the nitrogen system the tank

52
00:07:31,510 --> 00:07:29,120
pressure reads near zero the take

53
00:07:34,150 --> 00:07:31,520
temperatures are very cold

54
00:07:35,830 --> 00:07:34,160
both consistent with a depletion of

55
00:07:38,629 --> 00:07:35,840
onboard nitrogen

56
00:07:41,510 --> 00:07:38,639
and our data indicated that both inline

57
00:07:43,749 --> 00:07:41,520
thrusters one and two and both main isil

58
00:07:46,390 --> 00:07:43,759
valves are open

59
00:07:48,309 --> 00:07:46,400
and depleted gas

60
00:07:49,909 --> 00:07:48,319
this is interesting because the onboard

61
00:07:51,990 --> 00:07:49,919
computer itself

62
00:07:53,189 --> 00:07:52,000
did not have the capability as you know

63
00:07:54,150 --> 00:07:53,199

to command

64

00:07:57,029 --> 00:07:54,160

both

65

00:07:59,670 --> 00:07:57,039

sets of inlines and isos open and our

66

00:08:02,070 --> 00:07:59,680

data indicates they are open

67

00:08:03,350 --> 00:08:02,080

we have another estel pass coming up in

68

00:08:05,189 --> 00:08:03,360

a little while we're going to make

69

00:08:07,110 --> 00:08:05,199

contact again

70

00:08:09,670 --> 00:08:07,120

we're going to command the isil valves

71

00:08:11,029 --> 00:08:09,680

closed along with the inline thruster

72

00:08:13,510 --> 00:08:11,039

valves

73

00:08:14,950 --> 00:08:13,520

and we're going to monitor response and

74

00:08:16,710 --> 00:08:14,960

try to be more certain that we're

75

00:08:20,070 --> 00:08:16,720

actually interacting with the satellite

76

00:08:22,629 --> 00:08:20,080

and not just seeing aberrant data

77

00:08:24,390 --> 00:08:22,639

the bus voltage is so good all above 30

78

00:08:27,189 --> 00:08:24,400

volts

79

00:08:29,589 --> 00:08:27,199

well the main bus is at 29.6 but the

80

00:08:31,670 --> 00:08:29,599

battery volts are above 30.

81

00:08:33,430 --> 00:08:31,680

we should have enough battery life to

82

00:08:35,909 --> 00:08:33,440

keep communicating with the satellite

83

00:08:38,149 --> 00:08:35,919

for one or two more days

84

00:08:39,750 --> 00:08:38,159

so we'll keep you status there's has

85

00:08:49,670 --> 00:08:39,760

been an event on the satellite that we

86

00:08:54,710 --> 00:08:51,670

okay i copy all that and appreciate the

87

00:08:56,710 --> 00:08:54,720

call on that and also i guess the

88

00:08:58,630 --> 00:08:56,720

one in it that comes up you'll give us a

89

00:09:02,310 --> 00:08:58,640

call sometime about fighting i guess

90

00:11:17,990 --> 00:09:04,070

absolutely we'll keep you informed and

91

00:11:21,910 --> 00:11:19,990

right i asked a group of sixth graders

92

00:11:23,190 --> 00:11:21,920

from wright denney elementary school in

93

00:11:25,030 --> 00:11:23,200

west virginia to come up with some

94

00:11:26,630 --> 00:11:25,040

questions for you today and many of

95

00:11:28,630 --> 00:11:26,640

these students want to know if you were

96

00:11:31,269 --> 00:11:28,640

ever scared during the mission let me

97

00:11:33,750 --> 00:11:31,279

direct that one to uh to jeff hoffman

98

00:11:35,509 --> 00:11:33,760

and to scott horowitz jeff you seemed

99

00:11:37,350 --> 00:11:35,519

pretty agitated when you reported the

100

00:11:43,750 --> 00:11:37,360

broken tether to mission control last

101

00:11:48,550 --> 00:11:45,990

well um

102

00:11:50,630 --> 00:11:48,560

it was a huge surprise i mean i i think

103

00:11:53,030 --> 00:11:50,640

what what you heard in my voice was

104

00:11:54,790 --> 00:11:53,040

definitely an urgency that uh

105

00:11:57,509 --> 00:11:54,800

that we may well have to do something

106

00:12:00,630 --> 00:11:57,519

and of course uh we've always known that

107

00:12:03,269 --> 00:12:00,640

if the tether breaks and it breaks

108

00:12:05,030 --> 00:12:03,279

uh at a long distance away from the the

109

00:12:06,870 --> 00:12:05,040

shuttle you know the tether is stretched

110

00:12:09,030 --> 00:12:06,880

a little bit when it's in space so it's

111

00:12:10,949 --> 00:12:09,040

like a it's like a huge rubber band that

112

00:12:12,550 --> 00:12:10,959

you've pulled out

113

00:12:14,470 --> 00:12:12,560

and if it breaks

114

00:12:17,430 --> 00:12:14,480

uh away from the shuttle then we've got

115

00:12:19,269 --> 00:12:17,440

that huge coiled rubber band coming down

116

00:12:22,470 --> 00:12:19,279

at us and we've got to do something

117

00:12:24,389 --> 00:12:22,480

about it uh that that's why

118

00:12:26,629 --> 00:12:24,399

andy allen is as soon as i called tether

119

00:12:28,150 --> 00:12:26,639

break rushed over to the window threw

120

00:12:29,430 --> 00:12:28,160

the camera out of the way i threw my

121

00:12:32,230 --> 00:12:29,440

camera away

122

00:12:34,550 --> 00:12:32,240

and uh you know we were ready to

123

00:12:35,430 --> 00:12:34,560

uh look at the tether coming back at us

124

00:12:39,030 --> 00:12:35,440

and

125

00:12:40,870 --> 00:12:39,040

clear of it

126
00:12:42,870 --> 00:12:40,880
you hardly have time to get scared in a

127
00:12:45,269 --> 00:12:42,880
situation like that because you really

128
00:12:47,030 --> 00:12:45,279
have to act and if you're

129
00:12:49,030 --> 00:12:47,040
if you're really scared then you can't

130
00:12:50,629 --> 00:12:49,040
do anything but we were certainly uh

131
00:12:53,990 --> 00:12:50,639
surprised

132
00:12:56,710 --> 00:12:54,000
uh very quickly we realized that uh the

133
00:12:58,470 --> 00:12:56,720
tether had broke right at the shuttle so

134
00:13:00,629 --> 00:12:58,480
instead of coming back towards it was

135
00:13:03,269 --> 00:13:00,639
moving away from us and we and the

136
00:13:05,030 --> 00:13:03,279
shuttle were in no danger and uh and at

137
00:13:07,590 --> 00:13:05,040
that point

138
00:13:10,150 --> 00:13:07,600

it was uh of course it was a big shock

139

00:13:12,470 --> 00:13:10,160

and uh our responsibility then is to

140

00:13:14,870 --> 00:13:12,480

collect data and to try to photograph

141

00:13:16,550 --> 00:13:14,880

what's going on so that we can uh figure

142

00:13:18,629 --> 00:13:16,560

out after the mission what happened let

143

00:13:21,110 --> 00:13:18,639

me let me talk to umberto and mauricio a

144

00:13:23,509 --> 00:13:21,120

little bit about the tethered satellite

145

00:13:25,269 --> 00:13:23,519

what did you learn during the five hours

146

00:13:30,790 --> 00:13:25,279

that it operated before it broke away

147

00:13:36,389 --> 00:13:33,430

well i would say that we learn a lot

148

00:13:39,269 --> 00:13:36,399

about the electrode dynamic tether

149

00:13:41,030 --> 00:13:39,279

in fact we were able to generate power

150

00:13:44,710 --> 00:13:41,040

up to

151

00:13:48,069 --> 00:13:44,720

uh one kilowatt i would say so

152

00:13:50,550 --> 00:13:48,079

the experiment was running uh

153

00:13:51,829 --> 00:13:50,560

nominally and they were gathering a lot

154

00:13:54,389 --> 00:13:51,839

of data

155

00:13:56,470 --> 00:13:54,399

and i think that in fact even though the

156

00:13:58,150 --> 00:13:56,480

the debtor broke and we never got on

157

00:14:01,910 --> 00:13:58,160

station

158

00:14:04,949 --> 00:14:01,920

we had quite a good data to analyze uh

159

00:14:05,750 --> 00:14:04,959

for for a while and we we can surely

160

00:14:08,629 --> 00:14:05,760

uh

161

00:14:11,350 --> 00:14:08,639

assess much better the behavior of the

162

00:14:13,350 --> 00:14:11,360

of together at this eyeball that was

163

00:14:15,269 --> 00:14:13,360

never done before

164

00:14:17,350 --> 00:14:15,279

and i want to to

165

00:14:20,150 --> 00:14:17,360

to point at the fact that this kind of

166

00:14:22,790 --> 00:14:20,160

experiment is impossible to to do on

167

00:14:24,710 --> 00:14:22,800

earth so this is really the only the

168

00:14:42,230 --> 00:14:24,720

only place where you can do an

169

00:14:45,750 --> 00:14:43,910

is still working i think it's

170

00:14:47,829 --> 00:14:45,760

extraordinary despite all that it's been

171

00:14:49,750 --> 00:14:47,839

through it's still operating we have

172

00:14:50,870 --> 00:14:49,760

ground contact with it and i want to

173

00:14:53,829 --> 00:14:50,880

point out

174

00:14:55,269 --> 00:14:53,839

uh it's something which obviously we we

175

00:14:56,790 --> 00:14:55,279

would have preferred people not get a

176

00:14:58,550 --> 00:14:56,800

chance to see this but we have a

177

00:15:00,629 --> 00:14:58,560

satellite up there now with 20

178

00:15:03,189 --> 00:15:00,639

kilometers of tether on it

179

00:15:06,069 --> 00:15:03,199

and it will be visible from the ground

180

00:15:08,389 --> 00:15:06,079

uh it should be an absolutely awesome

181

00:15:09,430 --> 00:15:08,399

sight because the 20 kilometers of

182

00:15:11,590 --> 00:15:09,440

tether

183

00:15:12,550 --> 00:15:11,600

assuming that it's all strung out will

184

00:15:13,590 --> 00:15:12,560

be

185

00:15:15,509 --> 00:15:13,600

uh

186

00:15:18,870 --> 00:15:15,519

will be definitely visible to the naked

187

00:15:20,710 --> 00:15:18,880

eye and it will be the only time in most

188

00:15:22,949 --> 00:15:20,720

for most people that they'll ever be

189

00:15:24,550 --> 00:15:22,959

able to see something in earth orbit

190

00:15:26,550 --> 00:15:24,560

that's other than a point of light

191

00:15:27,829 --> 00:15:26,560

they'll actually see a line moving

192

00:15:29,990 --> 00:15:27,839

through the sky

193

00:15:32,629 --> 00:15:30,000

people in the southern united states so

194

00:15:33,590 --> 00:15:32,639

i hope newspapers and

195

00:15:36,550 --> 00:15:33,600

tv

196

00:15:38,629 --> 00:15:36,560

programs like yours will uh

197

00:15:41,509 --> 00:15:38,639

contact the the people who make the

198

00:15:43,110 --> 00:15:41,519

orbital predictions let people know

199

00:15:44,870 --> 00:15:43,120

all over the world when they're able to

200

00:15:47,030 --> 00:15:44,880

see the tethered satellite going over

201
00:15:48,550 --> 00:15:47,040
because it it will be an absolutely

202
00:15:50,389 --> 00:15:48,560
awesome sight

203
00:15:52,870 --> 00:15:50,399
in fact this is the largest man-made

204
00:16:02,310 --> 00:15:52,880
object that's ever been in space i guess

205
00:16:07,509 --> 00:16:04,949
all right i am um i've got a question uh

206
00:16:09,590 --> 00:16:07,519
from me for jeff what is the best thing

207
00:16:12,949 --> 00:16:09,600
that has happened to you on this mission

208
00:16:15,110 --> 00:16:13,829
i know there's been a lot of

209
00:16:19,350 --> 00:16:15,120
disappointments but i'm sure there's

210
00:16:22,949 --> 00:16:20,470
well

211
00:16:25,189 --> 00:16:22,959
we had taken the challenge of of getting

212
00:16:26,629 --> 00:16:25,199
this satellite deployed and i think all

213
00:16:28,150 --> 00:16:26,639

of us uh

214

00:16:30,550 --> 00:16:28,160

had this

215

00:16:32,949 --> 00:16:30,560

wonder about what was it gonna look like

216

00:16:35,670 --> 00:16:32,959

to see 20 kilometers of tether you know

217

00:16:39,030 --> 00:16:35,680

sometimes when i i'm driving uh home to

218

00:16:41,590 --> 00:16:39,040

work and i see a skyline of houston and

219

00:16:43,749 --> 00:16:41,600

it's about 13 miles away

220

00:16:45,509 --> 00:16:43,759

and uh and i think gosh that's a long

221

00:16:47,829 --> 00:16:45,519

way and we're actually gonna have a

222

00:16:50,949 --> 00:16:47,839

tether strung out

223

00:16:53,030 --> 00:16:50,959

shuttle and the satellite that's that's

224

00:16:55,670 --> 00:16:53,040

13 miles long

225

00:16:57,670 --> 00:16:55,680

it's it's just extraordinary and we've

226

00:17:00,949 --> 00:16:57,680

now actually seen that with with our

227

00:17:01,829 --> 00:17:00,959

eyes and and we've uh we've actually

228

00:17:04,069 --> 00:17:01,839

shown

229

00:17:06,789 --> 00:17:04,079

that all of our systems work to get it

230

00:17:07,909 --> 00:17:06,799

out there and i think i think we're very

231

00:17:09,829 --> 00:17:07,919

very

232

00:17:12,549 --> 00:17:09,839

happy that we were able to get that far

233

00:17:14,710 --> 00:17:12,559

obviously um we only

234

00:17:16,710 --> 00:17:14,720

succeeded in part of the journey we

235

00:17:17,909 --> 00:17:16,720

would have preferred to get to the end