



1
00:00:21,454 --> 00:00:21,888
TO OUR FACILITY.

2
00:00:21,955 --> 00:00:22,522
WE'RE GOING TO HEAR ABOUT

3
00:00:22,589 --> 00:00:23,256
RESEARCH EXPERIMENTS HEADED UP

4
00:00:23,323 --> 00:00:23,923
TO THE INTERNATIONAL SPACE

5
00:00:23,990 --> 00:00:27,827
STATION ON THE CARDINAL RESUPPLY

6
00:00:27,894 --> 00:00:28,328
MISSION.

7
00:00:28,395 --> 00:00:30,663
WE HAVE A LOT OF GREAT

8
00:00:30,730 --> 00:00:31,898
INFORMATION TO SHARE WITH YOU.

9
00:00:31,965 --> 00:00:33,867
WE LOOK FORWARD TO YOUR

10
00:00:33,933 --> 00:00:34,267
QUESTIONS.

11
00:00:34,334 --> 00:00:36,970
I'M GOING START WITH CAMILLE

12
00:00:37,036 --> 00:00:38,371
ELAINE WITH THE PROGRAM SCIENCE

13
00:00:38,438 --> 00:00:41,274

OFFICE AND PATRICK O'NEIL WHO IS

14
00:00:41,341 --> 00:00:43,543
WITH THE CENTER FOR ADVANCEMENT

15
00:00:43,610 --> 00:00:50,183
FOR SCIENCE IN SPACE.

16
00:00:50,250 --> 00:00:50,784
>> THANK YOU, TABITHA.

17
00:00:50,850 --> 00:00:51,518
HELLO, EVERYBODY.

18
00:00:51,584 --> 00:00:56,790
IT IS GREAT TO HAVE A PACKED

19
00:01:16,342 --> 00:01:14,140
HOUSE

20
00:01:16,409 --> 00:01:17,210
WE HAVE NEW INVESTIGATIONS

21
00:01:17,277 --> 00:01:19,112
CURRENTLY GOING ON EXPEDITION

22
00:01:19,179 --> 00:01:20,447
AND 53 AND 54.

23
00:01:20,513 --> 00:01:22,849
ALL EXPERIMENTS ARE SUPPORTING A

24
00:01:22,916 --> 00:01:28,688
MULTITUDE OF DISCIPLINES

25
00:01:28,755 --> 00:01:30,423
INCLUDING BIOLOGY AND

26
00:01:30,490 --> 00:01:32,225
BIOTECHNOLOGY AND THE PHYSICAL

27
00:01:32,292 --> 00:01:34,694
SCIENCE RESEARCH AND HUMAN

28
00:01:34,761 --> 00:01:38,064
RESEARCH AND TECHNOLOGY

29
00:01:38,131 --> 00:01:38,798
DEMONSTRATION, EARTH AND SPACE

30
00:01:38,865 --> 00:01:39,699
SCIENCE AND EDUCATION.

31
00:01:39,766 --> 00:01:41,000
WE KNOW THE PRESENCE OF THE

32
00:01:41,067 --> 00:01:42,469
ASTRONAUTS INSPIRE STUDENTS.

33
00:01:42,535 --> 00:01:45,605
WE TAKE THAT OPPORTUNITY TO

34
00:01:45,672 --> 00:01:47,607
ENGAGE THEM IN THEIR SCIENCE,

35
00:01:47,674 --> 00:01:53,046
TECHNOLOGY AND ENGINEERING AND

36
00:01:53,112 --> 00:01:54,948
MATH.

37
00:01:55,014 --> 00:01:57,016
WE THIS TO DO ADVANCE OUR

38
00:01:57,083 --> 00:01:59,619

SCIENTIFIC KNOWLEDGE AND WE WANT

39

00:01:59,686 --> 00:02:05,225
TO ENABLE FUTURE SPACE

40

00:02:05,291 --> 00:02:06,326
EXPLORATION.

41

00:02:06,392 --> 00:02:08,628
WE'RE ALSO CREATING A

42

00:02:08,695 --> 00:02:09,662
MARKETPLACE AND WE HAVE RESEARCH

43

00:02:09,729 --> 00:02:12,031
THAT IMPROVES THE QUALITY OF OUR

44

00:02:12,098 --> 00:02:13,399
LIVES HERE ON EARTH.

45

00:02:13,466 --> 00:02:16,703
WE SPONSOR MANY TYPES OF

46

00:02:16,769 --> 00:02:17,303
RESEARCH.

47

00:02:17,370 --> 00:02:18,905
NASA SPONSORS RESEARCH TO

48

00:02:18,972 --> 00:02:21,741
SUPPORT OUR SCIENCE MISSIONS AND

49

00:02:21,808 --> 00:02:23,076
SPACE TECHNOLOGY MISSIONS AND

50

00:02:23,142 --> 00:02:24,143
HUMAN RESEARCH.

51
00:02:24,210 --> 00:02:26,179
WE ALSO HAVE INTERNATIONAL

52
00:02:26,246 --> 00:02:27,514
PARTNERS, INTERNATIONAL SPACE

53
00:02:27,580 --> 00:02:29,382
STAYING, SO WE DO RESEARCH THAT

54
00:02:29,449 --> 00:02:33,953
IS IN SUPPORT OF OUR

55
00:02:34,020 --> 00:02:35,822
INTERNATIONAL PARTNER NATIONAL

56
00:02:35,889 --> 00:02:36,789
GOALS.

57
00:02:36,856 --> 00:02:40,493
WE DO RESEARCH THAT SUPPORTS THE

58
00:02:40,560 --> 00:02:44,063
NATIONAL LABORATORY WHICH IS

59
00:02:44,130 --> 00:02:49,068
MANAGED BY THE CENTER FOR

60
00:02:49,135 --> 00:02:50,770
SCIENCE AND SPACE.

61
00:02:50,837 --> 00:02:53,273
PATRICK WILL TELL YOU MORE.

62
00:02:53,339 --> 00:02:54,407
>> THANK YOU VERY MUCH.

63
00:02:54,474 --> 00:02:56,476

AS CAMILLE SAID, IT IS AWESOME

64

00:02:56,543 --> 00:02:58,044

TO SEE SO MANY PEOPLE OUT HERE.

65

00:02:58,111 --> 00:03:01,147

I'M PATRICK O'NEIL AND I'M AT

66

00:03:01,214 --> 00:03:03,216

THE CENTER FOR SCIENCE AND

67

00:03:03,283 --> 00:03:03,816

SPACE.

68

00:03:03,883 --> 00:03:06,119

YOU MAY HAVE HEARD ABOUT THE

69

00:03:06,185 --> 00:03:06,786

U.S. NATIONAL LAB.

70

00:03:06,853 --> 00:03:08,521

PRIOR TO BEING HERE, HOW MANY

71

00:03:08,588 --> 00:03:10,924

PEOPLE KNEW THE ISS WAS A

72

00:03:10,990 --> 00:03:12,759

NATIONAL LABORATORY?

73

00:03:12,825 --> 00:03:13,226

WOW.

74

00:03:13,293 --> 00:03:13,693

OKAY.

75

00:03:13,760 --> 00:03:15,261

IT SEEMS EVERY SINGLE LAUNCH

76

00:03:15,328 --> 00:03:16,429

WE'RE GETTING MORE AND MORE

77

00:03:16,496 --> 00:03:17,964

PEOPLE HAS RAISE THEIR HANDS.

78

00:03:18,031 --> 00:03:20,099

IT MEANS WE'RE SENDING RESEARCH

79

00:03:20,166 --> 00:03:21,067

TO THE SPACE STATION.

80

00:03:21,134 --> 00:03:23,570

THAT'S A GREAT PROBLEM TO HAVE.

81

00:03:23,636 --> 00:03:25,672

A LITTLE BACKGROUND FOR THOSE

82

00:03:25,738 --> 00:03:27,540

THAT MAY NOT BE FAMILIAR WITH

83

00:03:27,607 --> 00:03:29,108

THE CONCEPT.

84

00:03:29,175 --> 00:03:31,978

2005 DECLARED THE NATIONAL

85

00:03:32,045 --> 00:03:34,314

LABORATORY, IT WAS TO OPEN UP

86

00:03:34,380 --> 00:03:36,950

RESEARCH CHANNELS TO NON-NASA

87

00:03:37,016 --> 00:03:37,450

INITIATIVES.

88

00:03:37,517 --> 00:03:38,685

SPECIFICALLY TO USE THE SPACE

89

00:03:38,751 --> 00:03:42,655
STATION TO BENEFIT LIFE ON

90

00:03:42,722 --> 00:03:43,056
EARTH.

91

00:03:43,122 --> 00:03:44,857
CASSIS WAS TASKED WITH MANAGING

92

00:03:44,924 --> 00:03:46,893
THE LAB IN 2011.

93

00:03:46,960 --> 00:03:49,095
I HAVE TO SAY, WE'RE ENTERING

94

00:03:49,162 --> 00:03:51,497
THE GOLDEN YEARS OF THE

95

00:03:51,564 --> 00:03:52,365
INTERNATIONAL SPACE STATION AND

96

00:03:52,432 --> 00:03:53,366
RESEARCH PERSPECTIVE.

97

00:03:53,433 --> 00:03:55,168
WE'RE EVOLVING THE STATION FOR

98

00:03:55,234 --> 00:03:56,336
THE NEEDS OF THE RESEARCH

99

00:03:56,402 --> 00:03:56,769
COMMUNITY.

100

00:03:56,836 --> 00:03:57,971
YOU'LL HEAR FROM SOME OF THE

101
00:03:58,037 --> 00:03:59,539
INDIVIDUALS WHO ARE RESPONSIBLE

102
00:03:59,606 --> 00:04:01,274
FOR COMMERCIAL FACILITIES ON THE

103
00:04:01,341 --> 00:04:02,909
STATION TODAY THAT ARE ENABLING

104
00:04:02,976 --> 00:04:04,978
MORE AND MORE ACCESS FOR

105
00:04:05,044 --> 00:04:06,813
RESEARCHERS TO BE ABLE TO

106
00:04:06,879 --> 00:04:08,281
LEVERAGE THIS INCREDIBLE

107
00:04:08,348 --> 00:04:10,450
PLATFORM TO BENEFIT LIFE ON

108
00:04:10,516 --> 00:04:10,750
EARTH.

109
00:04:10,817 --> 00:04:12,952
ON THIS PARTICULAR LAUNCH, WE DO

110
00:04:13,019 --> 00:04:14,887
HAVE A MYRIAD OF INVESTIGATIONS

111
00:04:14,954 --> 00:04:16,789
THAT ARE GOING UP, REPRESENTING

112
00:04:16,856 --> 00:04:22,061
LIFE SCIENCES AND EARTH

113
00:04:22,128 --> 00:04:22,795

OBSERVATION AND CUBE SATELLITE

114

00:04:22,862 --> 00:04:23,196

TECHNOLOGY.

115

00:04:23,262 --> 00:04:26,065

THERE'S AN ABUNDANCE OF STUDENT

116

00:04:26,132 --> 00:04:26,866

HALOS GOING UP.

117

00:04:26,933 --> 00:04:28,134

IT IS EXCITING TIME TO BE

118

00:04:28,201 --> 00:04:29,535

INVOLVED IN THE ISS RESEARCH.

119

00:04:29,602 --> 00:04:31,104

I THINK WE'RE GOING TO HEAR MORE

120

00:04:31,170 --> 00:04:32,271

ABOUT SOME OF THE PAY LOADS THAT

121

00:04:32,338 --> 00:04:34,407

WILL GO UP TODAY.

122

00:04:34,474 --> 00:04:35,274

I THINK AT THIS POINT CAMILLE

123

00:04:35,341 --> 00:04:36,776

AND I ARE HAPPY TO ANSWER

124

00:04:36,843 --> 00:04:50,490

QUESTIONS THAT THE FOLKS MIGHT

125

00:04:50,556 --> 00:04:51,491

HAVE

126
00:04:51,557 --> 00:04:53,960
>> SO YOU MENTIONED THERE ARE

127
00:04:54,027 --> 00:04:55,762
300 OR SO EXPERIMENTS ONGOING

128
00:04:55,828 --> 00:04:56,229
NEW.

129
00:04:56,295 --> 00:04:58,898
WHO DECIDES ON WHICH EXPERIMENTS

130
00:04:58,965 --> 00:05:03,302
GET INVOLVED IN THIS PROGRAM?

131
00:05:03,369 --> 00:05:04,370
>> I TALKED ABOUT THAT EARLIER

132
00:05:04,437 --> 00:05:06,472
IN THE NEWS CONFERENCE.

133
00:05:06,539 --> 00:05:08,341
WE HAVE DIFFERENT SPONSORS HAS

134
00:05:08,408 --> 00:05:09,308
SPONSOR THEIR PARTICULAR

135
00:05:09,375 --> 00:05:10,043
RESEARCH, RIGHT?

136
00:05:10,109 --> 00:05:12,478
SO FROM A NASA PERSPECTIVE THE

137
00:05:12,545 --> 00:05:15,081
RESEARCH WE DO TO ENABLE FUTURE

138
00:05:15,148 --> 00:05:17,750

SPACE EXPLORATION IS SPONSORED

139

00:05:17,817 --> 00:05:19,452

THROUGH SEVERAL MISSIONS, THE

140

00:05:19,519 --> 00:05:21,654

SCIENCE MISSION, THE SPACE

141

00:05:21,721 --> 00:05:22,655

TECHNOLOGY MISSION, THE HUMAN

142

00:05:22,722 --> 00:05:23,956

RESEARCH PROGRAM.

143

00:05:24,023 --> 00:05:25,091

THEN WE HAVE THE U.S. NATIONAL

144

00:05:25,158 --> 00:05:26,659

LAB PORTFOLIO.

145

00:05:26,726 --> 00:05:28,428

THEY DECIDE WHAT SCIENCE IS

146

00:05:28,494 --> 00:05:30,563

IMPORTANT TO THEM, THAT HAS A

147

00:05:30,630 --> 00:05:32,799

BENEFIT TO OUR LIVES HERE ON

148

00:05:32,865 --> 00:05:33,132

EARTH.

149

00:05:33,199 --> 00:05:36,602

THAT'S A WHOLE OTHER PORTFOLIO

150

00:05:36,669 --> 00:05:37,336

THAT THEY DECIDE AND THEN THE

151
00:05:37,403 --> 00:05:38,137
INTERNATIONAL PARTNERS, THEY

152
00:05:38,204 --> 00:05:40,239
DECIDE WHAT IS IMPORTANT TO THEM

153
00:05:40,306 --> 00:05:43,042
THAT SUPPORT THE NATIONAL GOALS.

154
00:05:43,109 --> 00:05:45,912
SO THOSE SPONSORS ACTUALLY

155
00:05:45,978 --> 00:05:47,847
DECIDE WHAT TYPE OF RESEARCH

156
00:05:47,914 --> 00:06:02,829
WE'LL DO ON THIS SPACE STATION.

157
00:06:02,895 --> 00:06:04,530
>> I UNDERSTAND THERE'S A CUBE

158
00:06:04,597 --> 00:06:08,134
SET LAUNCHER ON THE ISS BUT ALSO

159
00:06:08,201 --> 00:06:11,304
THE CIGNA THAT IS GOING UP HAS

160
00:06:11,370 --> 00:06:12,171
CAPACITY FOR CUBE SETS.

161
00:06:12,238 --> 00:06:13,506
I GUESS WE'RE SEEING THAT FROM

162
00:06:13,573 --> 00:06:13,806
HERE.

163
00:06:13,873 --> 00:06:16,075

WHAT IS THE LIFE OF A CUBE SET

164

00:06:16,142 --> 00:06:19,445

AFTER IT IS -- YOU KNOW ORBITED

165

00:06:19,512 --> 00:06:27,153

AND HOW LONG DO THEY TAKE TO

166

00:06:27,220 --> 00:06:27,487

DEORBIT?

167

00:06:27,553 --> 00:06:28,588

>> HOLD THAT QUESTION.

168

00:06:28,654 --> 00:06:31,390

WE HAVE THE P.I.s THAT WILL FLY

169

00:06:31,457 --> 00:06:33,493

THE CUBE SET AND IT JUST

170

00:06:33,559 --> 00:06:33,860

DEPENDS.

171

00:06:33,926 --> 00:06:44,403

THEY'LL BE ABLE TO ANSWER THAT

172

00:06:44,470 --> 00:06:46,539

QUESTION.

173

00:06:46,606 --> 00:06:48,741

>> MY NAME IS ELLIOTT YOUNG.

174

00:06:48,808 --> 00:06:50,777

YOU MENTIONED CASSIS AND THAT'S

175

00:06:50,843 --> 00:06:53,212

I BELIEVE WHERE THE FUNDING FROM

176
00:06:53,279 --> 00:06:56,048
THE STUDENT PROFILE OR PROGRAMS,

177
00:06:56,115 --> 00:06:57,650
UNIVERSITY STUDENT, IF SO, IS

178
00:06:57,717 --> 00:07:01,687
THAT GOING TO OPEN DOORS FOR

179
00:07:01,754 --> 00:07:02,722
POTENTIAL HIGH SCHOOL PROGRAMS

180
00:07:02,789 --> 00:07:04,190
AS WELL?

181
00:07:04,257 --> 00:07:06,325
>> I WOULD SAY THE VAST

182
00:07:06,392 --> 00:07:08,027
MAJORITY OF STEM PAY LOADS THAT

183
00:07:08,094 --> 00:07:10,596
ARE PART OF THE NATIONAL LAB

184
00:07:10,663 --> 00:07:11,564
MANIFEST REPRESENT HIGH SCHOOL

185
00:07:11,631 --> 00:07:13,566
STUDENTS AND MIDDLE SCHOOL,

186
00:07:13,633 --> 00:07:14,867
BASICALLY SIX TO 12.

187
00:07:14,934 --> 00:07:17,336
THAT'S WHERE WE FOCUS A LOT OF

188
00:07:17,403 --> 00:07:17,703

EFFORTS.

189

00:07:17,770 --> 00:07:19,972

AS EDUCATOR, I'M SURE YOU KNOW

190

00:07:20,039 --> 00:07:21,340

WHEN YOU'RE IN THE MIDDLE SCHOOL

191

00:07:21,407 --> 00:07:22,675

AGES, THAT'S TYPICALLY WHERE YOU

192

00:07:22,742 --> 00:07:25,978

SEE THE STUDENTS DETER FROM MATH

193

00:07:26,045 --> 00:07:26,813

AND SCIENCE.

194

00:07:26,879 --> 00:07:28,347

IF ANYTHING, WE'RE TRYING TO

195

00:07:28,414 --> 00:07:29,582

SHOW THE SPACE STATION IS

196

00:07:29,649 --> 00:07:30,650

SOMETHING YOU COULD TAKE

197

00:07:30,716 --> 00:07:31,684

ADVANTAGE OF FROM A STUDENT

198

00:07:31,751 --> 00:07:32,685

RESEARCH PERSPECTIVE.

199

00:07:32,752 --> 00:07:34,153

THERE'S A VARIETY OF PROGRAMS

200

00:07:34,220 --> 00:07:35,388

THAT WE'RE INVOLVED WITH OR THAT

201
00:07:35,454 --> 00:07:38,057
WE SPONSOR, YOU -- YOU'RE GOING

202
00:07:38,124 --> 00:07:39,959
TO HEAR ABOUT SOME TODAY.

203
00:07:40,026 --> 00:07:41,194
HAPPY TO GO AND TALK WITH YOU

204
00:07:41,260 --> 00:07:42,762
FURTHER ABOUT SOME OTHER WAYS

205
00:07:42,829 --> 00:07:44,931
THAT YOU COULD BE INVOLVED WITH

206
00:07:44,997 --> 00:07:54,373
A STEM EDUCATION STANDPOINT.

207
00:07:54,440 --> 00:08:02,481
>> THANK YOU BOTH VERY MUCH.

208
00:08:02,548 --> 00:08:02,882
[APPLAUSE].

209
00:08:02,949 --> 00:08:04,917
>> UP NEXT, WE HAVE HENRY

210
00:08:04,984 --> 00:08:06,586
MARTIN TO ANSWER THOSE BURNING

211
00:08:06,652 --> 00:08:08,988
QUESTIONS ABOUT -- ABOUT

212
00:08:09,055 --> 00:08:10,389
DEPLOYING CUBE SET.

213
00:08:10,456 --> 00:08:15,595

HENRY MARTIN WITH NANO SETS AND

214

00:08:15,661 --> 00:08:18,197

CASSIE WONG, SHE'S AN ENGINEER

215

00:08:18,264 --> 00:08:21,200

WITH ORBITAL KGK.

216

00:08:21,267 --> 00:08:24,003

>> I'M CASSIE WONG.

217

00:08:24,070 --> 00:08:25,538

I'M A SYSTEMS ENGINEER ON THE

218

00:08:25,605 --> 00:08:27,506

CRS PROGRAM.

219

00:08:27,573 --> 00:08:30,543

ITS PRIMARY MISSION IS TO

220

00:08:30,610 --> 00:08:32,478

DELIVER CARGO TO THE SPACE

221

00:08:32,545 --> 00:08:34,180

STATION AND TRANSFER TRASH ON

222

00:08:34,247 --> 00:08:36,883

THE WAY BACK IN REENTRY.

223

00:08:36,949 --> 00:08:43,756

WE'RE EXCITED FOR OE-8.

224

00:08:43,823 --> 00:08:46,058

THE MODULE, YOU COULD SEE THE

225

00:08:46,125 --> 00:08:47,193

LOWER PORTION IS THE SERVICE

226
00:08:47,260 --> 00:08:50,062
MODULE AND UPPER IS THE CARGO

227
00:08:50,129 --> 00:08:50,563
MODULES.

228
00:08:50,630 --> 00:08:54,267
THE SERVICE MODULE CONSISTS OF

229
00:08:54,333 --> 00:08:57,737
WHAT WE NEED TO FLY, THE

230
00:08:57,803 --> 00:09:00,139
COMMUNICATIONS EQUIPMENT AND

231
00:09:00,206 --> 00:09:01,874
GUIDANCE EQUIPMENT AND

232
00:09:01,941 --> 00:09:03,976
PROPULSION AND OTHER SUBSYSTEMS.

233
00:09:04,043 --> 00:09:08,347
THE OTHER MODULE HOLDING OVER

234
00:09:08,414 --> 00:09:09,916
900 FEET OF CARGO.

235
00:09:09,982 --> 00:09:12,051
SOMEBODY TOLD ME THAT HOLDS

236
00:09:12,118 --> 00:09:12,985
400,000 GOLF BALLS.

237
00:09:13,052 --> 00:09:14,220
I DON'T KNOW IF THAT PROVIDES

238
00:09:14,287 --> 00:09:16,522

MUCH OF A REFERENCE, BUT IT

239

00:09:16,589 --> 00:09:20,726

HOLDS A LOT OF CARGO.

240

00:09:20,793 --> 00:09:24,997

O8 IS DELIVER 700 POUNDS OF

241

00:09:25,064 --> 00:09:26,766

CARGO PER STATION.

242

00:09:26,832 --> 00:09:28,601

THIS IS MORE THAN TRANSPORT AND

243

00:09:28,668 --> 00:09:29,902

DELIVERY SERVICE.

244

00:09:29,969 --> 00:09:32,471

IT IS NOW A SECONDARY SCIENCE

245

00:09:32,538 --> 00:09:34,573

PLATFORM FOR THE PAY LOADS THAT

246

00:09:34,640 --> 00:09:36,108

YOU'RE GOING TO HEAR FROM TODAY.

247

00:09:36,175 --> 00:09:39,245

WE'RE EXCITED ABOUT THE ORBITAL.

248

00:09:39,312 --> 00:09:42,281

IN THE PAST WE HOSTED THE

249

00:09:42,348 --> 00:09:44,150

SAPPHIRE EXPERIMENT AND THAT

250

00:09:44,216 --> 00:09:47,320

MICRO GRAVITY ENVIRONMENT AND

251
00:09:47,386 --> 00:09:49,121
THAT'S AFTER WE DEPARTED SPACE

252
00:09:49,188 --> 00:09:51,824
STATION THE EXPERIMENT BEGAN.

253
00:09:51,891 --> 00:09:56,162
THAT WAS EXCITING FOR US.

254
00:09:56,228 --> 00:09:59,632
OE8 IS PAVING THE WAY.

255
00:09:59,699 --> 00:10:02,401
IT IS A LAB EXTENSION.

256
00:10:02,468 --> 00:10:03,970
THIS DOESN'T SEEM LIKE MUCH OF A

257
00:10:04,036 --> 00:10:06,939
BIG DEAL, BUT IF YOU THINK ABOUT

258
00:10:07,006 --> 00:10:09,709
IT, IF YOU BRING STUFF

259
00:10:09,775 --> 00:10:10,443
CONTINUALLY IN YOUR HOUSE OVER

260
00:10:10,509 --> 00:10:11,544
AND OVER, IT IS GOING TO BE

261
00:10:11,610 --> 00:10:11,844
FULL.

262
00:10:11,911 --> 00:10:14,113
WE BRING A LOT OF CARGO AND

263
00:10:14,180 --> 00:10:14,981

EXPERIMENTS TO THE SPACE STATION

264

00:10:15,047 --> 00:10:16,749

AND NOT AS MUCH COMES OUT.

265

00:10:16,816 --> 00:10:18,150

THEY ARE QUITE TIGHT FOR SPACE

266

00:10:18,217 --> 00:10:20,152

FOR RUNNING LABS AND EXPERIMENTS

267

00:10:20,219 --> 00:10:20,653

OUT THERE.

268

00:10:20,720 --> 00:10:27,493

SO BEING ABLE TO UNPACK CIGNIS

269

00:10:27,560 --> 00:10:32,932

AND THEN USE IT AS ACTIVE LAB IS

270

00:10:32,999 --> 00:10:33,733

QUITE A THING.

271

00:10:33,799 --> 00:10:39,872

WE'RE EXCITED ABOUT THAT

272

00:10:39,939 --> 00:10:40,272

OPPORTUNITY.

273

00:10:40,339 --> 00:10:42,074

WE'RE THRILLED TO PROMOTE

274

00:10:42,141 --> 00:10:43,175

INCREASING OUR KNOWLEDGE AND

275

00:10:43,242 --> 00:10:44,810

CAPABILITIES IN SPACE THROUGH

276

00:10:44,877 --> 00:10:47,813

THE USE OF CIGNIS.

277

00:10:47,880 --> 00:10:50,750

WE'RE GOING TO BE ABLE TO

278

00:10:50,816 --> 00:10:54,053

SUPPORT LIVE RODENTS TO BRING

279

00:10:54,120 --> 00:10:54,987

HIM UP FOR RESEARCH.

280

00:10:55,054 --> 00:10:56,856

WE HAVE CONCEPTS THAT GO BEYOND

281

00:10:56,922 --> 00:10:58,057

THE INTERNATIONAL SPACE STATION.

282

00:10:58,124 --> 00:11:00,326

THERE'S CONCEPTS OUT THERE OF

283

00:11:00,393 --> 00:11:04,697

USING CIGNIS AS DEEP SPACE

284

00:11:04,764 --> 00:11:06,499

HABITAT AND ALLOW IT TO BE USED

285

00:11:06,565 --> 00:11:07,867

AS HABITAT IN SPACE.

286

00:11:07,933 --> 00:11:09,602

ONE OF THE KEY PARTNERS, THOUGH,

287

00:11:09,668 --> 00:11:13,606

ON SECONDARY MISSIONS IS NANO

288

00:11:13,672 --> 00:11:17,476

REX, NANO REX HAS FLOWN WITH US

289

00:11:17,543 --> 00:11:23,716
FOR THREE MISSIONS.

290

00:11:23,783 --> 00:11:24,417
THEY'RE FLYING ON OE8.

291

00:11:24,483 --> 00:11:26,786
WE HAVE 14 CUBE SETS TO DEPLOY

292

00:11:26,852 --> 00:11:28,154
ON OE8.

293

00:11:28,220 --> 00:11:30,156
HERE TO TALK MORE ABOUT THAT IS

294

00:11:30,222 --> 00:11:32,658
HENRY FROM -- FROM NANO REX.

295

00:11:32,725 --> 00:11:35,027
>> THANK YOU, KATHY.

296

00:11:35,094 --> 00:11:40,466
HEY, GOOD AFTERNOON EVERYBODY,

297

00:11:40,533 --> 00:11:42,168
I'M HENRY FROM NANO REX.

298

00:11:42,234 --> 00:11:44,303
I'LL TALK ABOUT WHAT WE HAVE ON

299

00:11:44,370 --> 00:11:45,638
BOARD, IT INCLUDES THE OUTSIDE

300

00:11:45,704 --> 00:11:48,908
AND INSIDE OF CIGNIS.

301
00:11:48,974 --> 00:11:49,575
I HAVE SLIDES.

302
00:11:49,642 --> 00:11:55,214
COULD WE THROW THOSE UP, PLEASE.

303
00:11:55,281 --> 00:11:58,617
WE HAVE STUFF ON INSIDE AND

304
00:11:58,684 --> 00:11:58,951
OUTSIDE.

305
00:11:59,018 --> 00:11:59,385
THAT'S COOL.

306
00:11:59,452 --> 00:12:01,654
I'M GOING TO FOCUS ON OUTSIDE

307
00:12:01,720 --> 00:12:03,322
STUFF AND THEN INSIDE.

308
00:12:03,389 --> 00:12:05,324
I'M GOING TO FOCUS ON OUR

309
00:12:05,391 --> 00:12:06,692
HARDWARE AND MY JOB IS TO GET

310
00:12:06,759 --> 00:12:09,462
THE SATELLITES THAT THE PAYLOAD

311
00:12:09,528 --> 00:12:12,698
DEVELOPERS MADE INTO ORBIT.

312
00:12:12,765 --> 00:12:15,668
IF WE LOOK HERE, HERE'S THE

313
00:12:15,734 --> 00:12:16,102

SATELLITE.

314

00:12:16,168 --> 00:12:18,170

THESE SATELLITES ARE BEING

315

00:12:18,237 --> 00:12:21,006

INTEGRATED IN OUR CLEAN ROOM IN

316

00:12:21,073 --> 00:12:21,874

HOUSTON TO THE EXTERNAL

317

00:12:21,941 --> 00:12:25,111

SATELLITE DEPLOYER WHICH GOES ON

318

00:12:25,177 --> 00:12:27,913

THE SERVICE MODULE OF CIGNIS.

319

00:12:27,980 --> 00:12:29,615

GO TO THE NEXT MODEL.

320

00:12:29,682 --> 00:12:30,683

WE HAVE 14 TOTAL.

321

00:12:30,749 --> 00:12:31,684

HERE IT IS AGAIN.

322

00:12:31,750 --> 00:12:36,222

YOU COULD GO TO THE NEXT SLIDE.

323

00:12:36,288 --> 00:12:36,555

PLEASE.

324

00:12:36,622 --> 00:12:38,190

SO ONCE THEY'RE ALL DONE, WE'VE

325

00:12:38,257 --> 00:12:39,692

DONE 14 TOTAL, IT IS LONG HOURS

326

00:12:39,758 --> 00:12:41,427

AND LONG DAYS, IT IS A LOT OF

327

00:12:41,494 --> 00:12:42,061

HARD WORK.

328

00:12:42,128 --> 00:12:44,230

A LOT OF PAPERWORK, BUT THAT'S

329

00:12:44,296 --> 00:12:44,530

OKAY.

330

00:12:44,597 --> 00:12:46,098

ONCE WE'RE DONE, THAT'S THE LAST

331

00:12:46,165 --> 00:12:49,001

TIME ANYBODY OF IS GOING TO

332

00:12:49,068 --> 00:12:50,302

TOUCH THOSE SATELLITES.

333

00:12:50,369 --> 00:12:51,604

THEY'RE NO MORE HANDS ON PEOPLE.

334

00:12:51,670 --> 00:12:54,306

WE PUT THEM IN A BOX AND SHIP IT

335

00:12:54,373 --> 00:12:55,274

FROM HOUSTON TO HERE.

336

00:12:55,341 --> 00:12:56,809

EVERYBODY IS HAPPY ABOUT IT.

337

00:12:56,876 --> 00:12:58,944

ONCE IT IS HERE, IT IS ANOTHER

338

00:12:59,011 --> 00:12:59,345

GAME-TIME.

339

00:12:59,411 --> 00:13:00,045

NEXT SLIDE.

340

00:13:00,112 --> 00:13:00,379

PLEASE.

341

00:13:00,446 --> 00:13:01,614

AND THIS IS A VIDEO.

342

00:13:01,680 --> 00:13:02,948

THIS IS KIND OF COOL.

343

00:13:03,015 --> 00:13:05,751

THIS IS A TIME LAPSE VIDEO OF

344

00:13:05,818 --> 00:13:09,054

HOW WE INSTALL THIS THING ON THE

345

00:13:09,121 --> 00:13:11,123

SIDE OF THE MODULE OF THE

346

00:13:11,190 --> 00:13:11,490

CIGNIS.

347

00:13:11,557 --> 00:13:14,393

SEE THE PANEL WHERE THEY WRAP

348

00:13:14,460 --> 00:13:14,793

THE BAG UP.

349

00:13:14,860 --> 00:13:20,799

THE BOX ON THE BOTTOM LEFT IS

350

00:13:20,866 --> 00:13:21,100

THERE.

351
00:13:21,167 --> 00:13:22,568
THEY HAVE A FANTASTIC TEAM AND

352
00:13:22,635 --> 00:13:23,502
WHAT HAPPENS HERE, IT IS

353
00:13:23,569 --> 00:13:26,939
ESSENTIALLY, WE TAKE THE BOX, WE

354
00:13:27,006 --> 00:13:28,541
MOUNT IT ON THE OUTSIDE AND

355
00:13:28,607 --> 00:13:31,377
COVER IT IN A BLANKET AND IT

356
00:13:31,443 --> 00:13:32,645
STAYS WARM AND EVERYBODY IS

357
00:13:32,711 --> 00:13:32,945
HAPPY.

358
00:13:33,012 --> 00:13:33,412
THAT'S IT.

359
00:13:33,479 --> 00:13:34,947
THAT'S ALSO THE LAST TIME THAT

360
00:13:35,014 --> 00:13:36,182
ANYBODY WILL EVER TOUCH IT.

361
00:13:36,248 --> 00:13:37,950
ONCE IT IS THERE, KEEP IN MIND,

362
00:13:38,017 --> 00:13:39,952
IT NEVER GOES THROUGH THE INSIDE

363
00:13:40,019 --> 00:13:41,520

OF THE ISS.

364

00:13:41,587 --> 00:13:44,456

IT HANGS OUT WITH THE CIGNIS

365

00:13:44,523 --> 00:13:48,460

UNTIL IT IS DONE AND THE CIGNIS

366

00:13:48,527 --> 00:13:50,629

WILL UNLOAD ALL THE CARGO AND

367

00:13:50,696 --> 00:13:52,131

TRASH AND WASTE AND INSTEAD OF

368

00:13:52,198 --> 00:13:56,101

IT BURNING UP IMMEDIATELY, THE

369

00:13:56,168 --> 00:14:03,108

CIGNIS TRAVELS TO A FURTHER

370

00:14:03,175 --> 00:14:03,409

ORBIT.

371

00:14:03,475 --> 00:14:06,178

WHAT THE CIGNIS DOES IS USE THE

372

00:14:06,245 --> 00:14:07,913

PROP TO GO TO 500 AND YOUR

373

00:14:07,980 --> 00:14:09,248

QUESTION ABOUT LIFE-TIME.

374

00:14:09,315 --> 00:14:13,652

THAT'S COOL, HIGHER ORBIT MEANS

375

00:14:13,719 --> 00:14:14,553

HIGHER LIFE-TIME.

376

00:14:14,620 --> 00:14:17,489

THEY BURN UP AND IT CLEANS

377

00:14:17,556 --> 00:14:17,823

ITSELF.

378

00:14:17,890 --> 00:14:20,459

IF YOU GO TO 500 KILOMETRES, WE

379

00:14:20,526 --> 00:14:21,694

ESTIMATE YOU GET THREE TO FIVE

380

00:14:21,760 --> 00:14:22,695

YEARS OF LIFE-TIME.

381

00:14:22,761 --> 00:14:24,563

IF YOU GO DIRECTLY FROM THE ISS,

382

00:14:24,630 --> 00:14:26,632

IT IS NINE MONTHS TO A YEAR.

383

00:14:26,699 --> 00:14:27,933

WITH THAT EXTRA TIME, YOU COULD

384

00:14:28,000 --> 00:14:31,704

GET MORE SCIENCE AND VALUE.

385

00:14:31,770 --> 00:14:34,240

SOME CUSTOMERS ARE DOING

386

00:14:34,306 --> 00:14:36,542

STRAIGHT RESEARCH.

387

00:14:36,609 --> 00:14:38,644

SOME USE IT OR SELL IT TO PEOPLE

388

00:14:38,711 --> 00:14:39,878

FOR VARIOUS USES.

389

00:14:39,945 --> 00:14:42,214

THAT'S GREAT ABOUT CIGNIS.

390

00:14:42,281 --> 00:14:43,782

THIS IS THE FOURTH TIME WE'VE

391

00:14:43,849 --> 00:14:45,484

DONE THIS.

392

00:14:45,551 --> 00:14:47,753

IT IS TOTALLY FULL AS KATHY SAID

393

00:14:47,820 --> 00:14:49,722

BEFORE WE WERE NOT ABLE TO FILL

394

00:14:49,788 --> 00:14:51,423

IT BUT WE'RE CURRENTLY

395

00:14:51,490 --> 00:14:52,758

DISPLAYING THE FULL CAPABILITY

396

00:14:52,825 --> 00:14:54,360

OF THE SYSTEM.

397

00:14:54,426 --> 00:14:58,864

IF YOU GO TO THE NEXT SLIDE.

398

00:14:58,931 --> 00:14:59,999

IT IS DONE.

399

00:15:00,065 --> 00:15:00,633

IT LEADS.

400

00:15:00,699 --> 00:15:01,600

ABOVE THE GREEN LIGHT.

401
00:15:01,667 --> 00:15:03,369
THAT'S OUR THING.

402
00:15:03,435 --> 00:15:05,104
I THINK IT IS EARLY 6 OR 5.

403
00:15:05,170 --> 00:15:06,939
GO TO THE NEXT SLIDE PLEASE.

404
00:15:07,006 --> 00:15:08,374
AND SO THERE THEY ARE, THE CREW

405
00:15:08,440 --> 00:15:08,974
IS HAPPY.

406
00:15:09,041 --> 00:15:11,076
THEY GET TO WATCH IT AND SEE THE

407
00:15:11,143 --> 00:15:12,011
WHITE BOX.

408
00:15:12,077 --> 00:15:12,344
COOL.

409
00:15:12,411 --> 00:15:13,612
NEXT SLIDE, PLEASE.

410
00:15:13,679 --> 00:15:14,013
ALL RIGHT.

411
00:15:14,079 --> 00:15:16,181
SO THIS IS A VIDEO OF -- OF HOW

412
00:15:16,248 --> 00:15:17,349
THIS ACTUALLY WORKS.

413
00:15:17,416 --> 00:15:19,952

RIGHT NOW, IT IS AT 500

414

00:15:20,019 --> 00:15:20,686

KILOMETRES, YOU COULD SEE THE

415

00:15:20,753 --> 00:15:22,221

EARTH ORBITING AT THE BACK

416

00:15:22,288 --> 00:15:22,521

THERE.

417

00:15:22,588 --> 00:15:22,955

IT IS NEAT.

418

00:15:23,022 --> 00:15:25,557

GIVE IT A SECOND.

419

00:15:25,624 --> 00:15:28,494

YOU COULD SEE THERE'S THREE

420

00:15:28,560 --> 00:15:28,994

DOORS.

421

00:15:29,061 --> 00:15:30,829

EACH HAS A SATELLITE IN THE

422

00:15:30,896 --> 00:15:33,098

SILOS AND ONCE ORBITAL ISSUES

423

00:15:33,165 --> 00:15:36,468

THE COMMANDS, HOPEFULLY WILL GO

424

00:15:36,535 --> 00:15:39,638

IN A SECOND, THE DOOR WILL OPEN

425

00:15:39,705 --> 00:15:40,973

AND OUT COME CUBE SETS.

426
00:15:41,040 --> 00:15:43,242
WE'LL DO IT IN A PHASED

427
00:15:43,309 --> 00:15:43,609
APPROACH.

428
00:15:43,676 --> 00:15:45,611
WAIT A FEW HOURS AND DEPLOY THE

429
00:15:45,678 --> 00:15:46,345
REST.

430
00:15:46,412 --> 00:15:49,148
THAT'S IT FOR -- FOR THE

431
00:15:49,214 --> 00:15:49,615
EXTERNAL STUFF.

432
00:15:49,682 --> 00:15:51,283
OUR CUSTOMERS INCLUDE

433
00:15:51,350 --> 00:15:53,052
UNIVERSITIES, RESEARCH CENTERS,

434
00:15:53,118 --> 00:15:54,620
WHO YOU WILL HEAR FROM SOON.

435
00:15:54,687 --> 00:15:58,157
THE NRO OFFICE OF -- OF BASE

436
00:15:58,223 --> 00:16:01,193
LAUNCH AS WELL AS A COMMERCIAL

437
00:16:01,260 --> 00:16:02,528
CUSTOMER WHERE WE CONTINUE TO

438
00:16:02,594 --> 00:16:03,696

CONTRIBUTE TO THEIR

439

00:16:03,762 --> 00:16:05,130
CONSTELLATION ON ORBIT.

440

00:16:05,197 --> 00:16:15,174
THE LEMURS OUT OF ASPIRE GLOBAL

441

00:16:15,240 --> 00:16:15,641
OUT OF GLASCO.

442

00:16:15,708 --> 00:16:17,376
NEXT SLIDE, I THINK THAT'S IT

443

00:16:17,443 --> 00:16:18,110
FOR ME.

444

00:16:18,177 --> 00:16:21,547
WE HAVE ONE THAT IS A BIOLOGICAL

445

00:16:21,613 --> 00:16:21,914
SATELLITE.

446

00:16:21,980 --> 00:16:23,182
IT IS COOL.

447

00:16:23,248 --> 00:16:25,918
FIRST FOR US.

448

00:16:25,984 --> 00:16:28,153
MANY FIRST FOR NANO REX.

449

00:16:28,220 --> 00:16:31,357
WITH THAT, I COULD TURN IT OVER.

450

00:16:31,423 --> 00:16:32,491
>> THANK YOU.

451
00:16:32,558 --> 00:16:32,891
[APPLAUSE].

452
00:16:32,958 --> 00:16:34,026
>> IF YOU HAVE A QUESTION,

453
00:16:34,093 --> 00:16:35,527
PLEASE RAISE YOUR HAND AND WAIT

454
00:16:35,594 --> 00:16:36,995
FOR THE MICROPHONE TO REACH YOU.

455
00:16:37,062 --> 00:16:38,764
IF YOU'RE FOLLOWING ALONG ON

456
00:16:38,831 --> 00:16:42,034
NASA'S SOCIAL CHANNELS, JUST USE

457
00:16:42,101 --> 00:16:44,136
THE HASH TAG, ASK NASA.

458
00:16:44,203 --> 00:16:45,337
WE HAVE ONE RIGHT NOW.

459
00:16:45,404 --> 00:16:48,173
>> THIS QUESTION CAME IN

460
00:16:48,240 --> 00:16:51,276
THROUGH HASH TAG ASK NASA.

461
00:16:51,343 --> 00:16:54,980
THE QUESTION IS FROM@SKY FIRE

462
00:16:55,047 --> 00:16:55,247
774.

463
00:16:55,314 --> 00:16:57,449

IS THERE A SPECIFIC ORDER OF

464

00:16:57,516 --> 00:16:59,251

LOADING SUPPLIES ON THE ROCKET?

465

00:16:59,318 --> 00:17:00,886

>> VERY GOOD QUESTION.

466

00:17:00,953 --> 00:17:01,987

YES, THERE IS.

467

00:17:02,054 --> 00:17:03,255

CERTAINLY THING THAT ARE CLOSER

468

00:17:03,322 --> 00:17:04,890

TO THE DOOR ARE MORE ACCESSIBLE

469

00:17:04,957 --> 00:17:06,492

TO THE ASTRONAUTS AND SO NASA

470

00:17:06,558 --> 00:17:09,762

GIVES US A PRIORITY FOR WHAT

471

00:17:09,828 --> 00:17:11,063

INSTALLED AND BASED ON WHAT THEY

472

00:17:11,130 --> 00:17:11,930

TAKE OUT.

473

00:17:11,997 --> 00:17:14,867

CERTAINLY THE CREW STARTS IN THE

474

00:17:14,933 --> 00:17:15,601

FRONT AND THEY GO TOWARDS THE

475

00:17:15,667 --> 00:17:15,901

BACK.

476
00:17:15,968 --> 00:17:17,936
THAT'S GIVEN TO US BY NASA WITH

477
00:17:18,003 --> 00:17:19,505
-- INSTALL THIS IN A CERTAIN

478
00:17:19,571 --> 00:17:19,805
ORDER.

479
00:17:19,872 --> 00:17:21,273
WE FOLLOW THAT ACCORDINGLY.

480
00:17:21,340 --> 00:17:25,210
THERE'S ALSO WHAT IS CONSIDERED

481
00:17:25,277 --> 00:17:27,279
LATE LOAD CARGO, THINGS THAT ARE

482
00:17:27,346 --> 00:17:31,150
TIME CRITICAL, THOSE ARE

483
00:17:31,216 --> 00:17:32,151
INSTALLED LATER IN THE FLOW.

484
00:17:32,217 --> 00:17:34,620
>> YOU DIDN'T TELL US WHAT IT

485
00:17:34,686 --> 00:17:34,887
IS.

486
00:17:34,953 --> 00:17:37,656
>> SO THIS IS A -- A SATELLITE

487
00:17:37,723 --> 00:17:39,525
DEPLOYER THAT WE USE ON THE

488
00:17:39,591 --> 00:17:40,659

INSIDE OF THE ISS.

489

00:17:40,726 --> 00:17:42,361

A LITTLE DIFFERENT FROM THE

490

00:17:42,428 --> 00:17:44,863

OUTSIDE, IT GOES ON AIR LOCK

491

00:17:44,930 --> 00:17:46,865

SLIDE TABLE ON THE JAAP PLEASE

492

00:17:46,932 --> 00:17:48,066

AIR LOCK MODEL.

493

00:17:48,133 --> 00:17:49,535

WE TAKE THESE SATELLITES, ONE

494

00:17:49,601 --> 00:17:51,170

LIKE THIS AND LIKE THIS, ON THE

495

00:17:51,236 --> 00:17:52,604

GROUND WE PUT THEM AS WE CALL

496

00:17:52,671 --> 00:17:53,472

IT, IN THE CAN.

497

00:17:53,539 --> 00:17:58,677

WE PUT IT IN HERE AND THEN THEY

498

00:17:58,744 --> 00:18:01,547

LOAD IT ON THEIR CIGNIS.

499

00:18:01,613 --> 00:18:03,682

THE CREW PULLS IT OUT AND PUT IT

500

00:18:03,749 --> 00:18:05,751

ON A SLIDE TABLE, THERE'S EIGHT

501
00:18:05,818 --> 00:18:09,054
OF THESE, THE JAPANESE ROBOTIC

502
00:18:09,121 --> 00:18:10,956
ARM WILL COME AND POINT IT AWAY.

503
00:18:11,023 --> 00:18:13,892
THEY CLICK A BUTTON AND THE

504
00:18:13,959 --> 00:18:16,495
DOORS OPEN AND OUT GOES THE CUBE

505
00:18:16,562 --> 00:18:16,762
SET.

506
00:18:16,829 --> 00:18:19,298
WE'RE LAUNCHING ONE OF THESE AND

507
00:18:19,364 --> 00:18:21,567
LAUNCHING ANOTHER ONE WITH

508
00:18:21,633 --> 00:18:23,502
E-CHEM SET AND HAS WILL JOIN A

509
00:18:23,569 --> 00:18:24,670
CURRENT COMPLEMENT OF THREE

510
00:18:24,736 --> 00:18:28,006
OTHERS ON ORBIT ONE FROM GODARD

511
00:18:28,073 --> 00:18:30,809
AND ONE FROM JPL AND PENN STATE

512
00:18:30,876 --> 00:18:31,210
UNIVERSITY.

513
00:18:31,276 --> 00:18:32,911

THEY WILL PERFORM THEIR AIR LOCK

514

00:18:32,978 --> 00:18:34,279

OPERATIONS HOPEFULLY LATER THIS

515

00:18:34,346 --> 00:18:34,580

MONTH.

516

00:18:34,646 --> 00:18:37,149

THAT WILL BE OUR -- OUR 13TH

517

00:18:37,216 --> 00:18:37,516

MISSION.

518

00:18:37,583 --> 00:18:39,585

SO WE SHOULD GET CLOSE TO 200

519

00:18:39,651 --> 00:18:41,920

CUBE SETS AND THEN ONCE WE --

520

00:18:41,987 --> 00:18:45,991

ONCE WE DEPLOY FROM THE CIGNIS.

521

00:18:46,058 --> 00:18:48,093

WE WILL HAVE HIT OVER 200.

522

00:18:48,160 --> 00:18:50,896

>> BEFORE WE CAME UP EARLIER,

523

00:18:50,963 --> 00:18:52,965

THIS IS ONE THAT HAS FLOWN.

524

00:18:53,031 --> 00:18:54,099

>> THAT'S TRUE.

525

00:18:54,166 --> 00:18:55,968

WE REUSE ALL OF THIS STUFF.

526
00:18:56,034 --> 00:19:05,077
I WISH WE COULD REUSE CIGNIS BUT

527
00:19:05,143 --> 00:19:07,446
WE CAN'T.

528
00:19:07,513 --> 00:19:08,213
>> ANY OTHER QUESTIONS IN THE

529
00:19:08,280 --> 00:19:08,514
ROOM.

530
00:19:08,580 --> 00:19:11,917
>> I HAVE A QUICK QUESTION.

531
00:19:11,984 --> 00:19:13,886
I'M BRIAN MYER.

532
00:19:13,952 --> 00:19:17,155
ARE THE CUBE SETS EJECTED

533
00:19:17,222 --> 00:19:18,457
MECHANICALLY OR THROUGH

534
00:19:18,524 --> 00:19:19,658
PROIMPULSIVE METHOD.

535
00:19:19,725 --> 00:19:21,460
IT IS A SPRING, WHAT HAPPENS IS

536
00:19:21,527 --> 00:19:24,396
THE WHOLE SYSTEM IS LOADED

537
00:19:24,463 --> 00:19:25,197
BEFORE AGAINST THE DOORS AND

538
00:19:25,264 --> 00:19:26,899

WHEN THE DOORS OPEN, THAT SPRING

539

00:19:26,965 --> 00:19:28,433

WORKS EVERY TIME, PUSHES THEM

540

00:19:28,500 --> 00:19:29,434

RIGHT OUT.

541

00:19:29,501 --> 00:19:32,137

BUT PROPULSION IS A GOOD THING

542

00:19:32,204 --> 00:19:34,506

YOU MENTIONED BECAUSE TWO OF THE

543

00:19:34,573 --> 00:19:38,443

SATELLITES WE'RE FLYING WHICH

544

00:19:38,510 --> 00:19:40,979

YOU'LL HEAR HAS A SMALL WATER

545

00:19:41,046 --> 00:19:41,313

SYSTEM.

546

00:19:41,380 --> 00:19:43,282

IT IS NOT ONLY THE FIRST TIME WE

547

00:19:43,348 --> 00:19:44,750

FLY PROP TO THE STATION BUT THIS

548

00:19:44,816 --> 00:19:46,818

GOES ABOVE THE ISS WHICH IS A

549

00:19:46,885 --> 00:19:48,320

FIRST FOR EVERYBODY, US AND

550

00:19:48,387 --> 00:19:49,388

INCLUDING THE WHOLE PROGRAM.

551
00:19:49,454 --> 00:19:51,890
>> WE HAVE TIME FOR ONE MORE

552
00:19:51,957 --> 00:19:52,257
QUESTION.

553
00:19:52,324 --> 00:19:54,693
DO WE HAVE ONE IN THE ROOM?

554
00:19:54,760 --> 00:19:57,896
ANYTHING FROM ASK NASA?

555
00:19:57,963 --> 00:19:58,196
OKAY.

556
00:19:58,263 --> 00:19:59,031
THANK YOU BOTH.

557
00:19:59,097 --> 00:20:04,036
>> THANKS.

558
00:20:04,102 --> 00:20:06,238
[APPLAUSE].

559
00:20:06,305 --> 00:20:09,408
>> OUR NEXT SPEAKER IS ELWOOD

560
00:20:09,474 --> 00:20:11,777
WHO IS THE DEPUTY PROGRAM

561
00:20:11,843 --> 00:20:14,246
MANAGER OF THE SMALL SPACE

562
00:20:14,313 --> 00:20:15,080
TECHNOLOGY PROGRAM.

563
00:20:15,147 --> 00:20:15,881

>> HELLO, EVERYONE.

564

00:20:15,948 --> 00:20:17,349

I'M HAPPY TO BE HERE.

565

00:20:17,416 --> 00:20:19,585

THE SPACE TECHNOLOGY MISSION

566

00:20:19,651 --> 00:20:21,653

DIRECTOR THROUGH THE SMALL

567

00:20:21,720 --> 00:20:22,654

SPACECRAFT TECHNOLOGY PROGRAM

568

00:20:22,721 --> 00:20:23,722

WOULD BE FLYING THREE SPACECRAFT

569

00:20:23,789 --> 00:20:26,892

ON THIS PARTICULAR MISSION AND

570

00:20:26,959 --> 00:20:28,260

THEY'RE BOTH GOING TO BE --

571

00:20:28,327 --> 00:20:30,529

GOING TO BE DEMONSTRATED

572

00:20:30,596 --> 00:20:31,530

ADVANCED COMMUNICATION SYSTEMS.

573

00:20:31,597 --> 00:20:32,965

YOU'LL SEE VIDEOS THAT WILL COME

574

00:20:33,031 --> 00:20:34,533

UP SHORTLY THAT WILL -- THAT

575

00:20:34,600 --> 00:20:37,936

WILL ACTUALLY SHOW YOU WHAT THE

576
00:20:38,003 --> 00:20:38,971
PROJECTED FLIGHT SEQUENCE WILL

577
00:20:39,037 --> 00:20:41,773
LOOK LIKE FOR BOTH OF THEM.

578
00:20:41,840 --> 00:20:45,077
THESE ARE -- THESE ARE MODELS OF

579
00:20:45,143 --> 00:20:46,211
THE TWO SPACECRAFT.

580
00:20:46,278 --> 00:20:49,114
THE FIRST ONE IS THE INTEGRATED

581
00:20:49,181 --> 00:20:51,350
SOLAR REFLECTOR RAY

582
00:20:51,416 --> 00:20:52,017
COMMUNICATIONS SATELLITE.

583
00:20:52,084 --> 00:20:53,518
THIS OTHER ONE, THERE WILL BE

584
00:20:53,585 --> 00:20:56,922
TWO OF THESE, OCSD.

585
00:20:56,989 --> 00:20:59,024
OPTICAL COMMUNICATIONS AND

586
00:20:59,091 --> 00:21:00,292
SENSOR DEMONSTRATION SATELLITE.

587
00:21:00,359 --> 00:21:03,362
THIS ONE, THE OPTICAL

588
00:21:03,428 --> 00:21:04,963

COMMUNICATIONS SATELLITE WILL

589

00:21:05,030 --> 00:21:11,269

DEMONSTRATE THE FIRST TIME IN

590

00:21:11,336 --> 00:21:12,270

THE SMALL PLATFORM LASER

591

00:21:12,337 --> 00:21:12,738

COMMUNICATIONS.

592

00:21:12,804 --> 00:21:15,040

THEY USE TECHNOLOGY THAT IS

593

00:21:15,107 --> 00:21:16,775

SIMILAR TO THE TERRESTERIAL

594

00:21:16,842 --> 00:21:17,175

TECHNOLOGY.

595

00:21:17,242 --> 00:21:18,810

IT'LL HAVE A CAPABILITY TO

596

00:21:18,877 --> 00:21:19,711

DEMONSTRATE COMMUNICATION SPEEDS

597

00:21:19,778 --> 00:21:21,246

THROUGH OPTICAL COMMUNICATIONS

598

00:21:21,313 --> 00:21:25,083

UP TO ABOUT 200 MEG BITS PER

599

00:21:25,150 --> 00:21:28,887

SECT WHICH IS AN ADVANCEMENT FOR

600

00:21:28,954 --> 00:21:31,857

SMALL SATELLITES AND THEN THE

601
00:21:31,923 --> 00:21:34,092
ISARA WILL USE K BAND

602
00:21:34,159 --> 00:21:35,661
COMMUNICATIONS TO DEMONSTRATE

603
00:21:35,727 --> 00:21:37,429
HIGH BANDWIDTH COMMUNICATION

604
00:21:37,496 --> 00:21:37,763
SPEEDS.

605
00:21:37,829 --> 00:21:40,532
THAT VIDEO?

606
00:21:40,599 --> 00:21:40,832
OKAY.

607
00:21:40,899 --> 00:21:46,838
THE FIRST ONE SHOULD BE ISARA.

608
00:21:46,905 --> 00:21:47,139
IT IS.

609
00:21:47,205 --> 00:21:50,976
THIS -- THIS IS -- THIS IS THE

610
00:21:51,043 --> 00:21:54,279
ISARA AFTER IT IS EJECTED FROM

611
00:21:54,346 --> 00:21:56,815
THE CANISTER, WE CALL IT.

612
00:21:56,882 --> 00:21:58,817
THE UNIQUE THING ABOUT THIS IS

613
00:21:58,884 --> 00:22:01,019

THAT THE SOLAR ARRAY WHICH IS ON

614

00:22:01,086 --> 00:22:02,554

ONE SIDE AND THE ANTENNA ON THE

615

00:22:02,621 --> 00:22:03,221

OTHER SIDE.

616

00:22:03,288 --> 00:22:04,890

THIS IS THE SOLAR ARRAY SIDE

617

00:22:04,956 --> 00:22:05,724

THAT YOU'LL SEE.

618

00:22:05,791 --> 00:22:08,527

THAT WILL DEPLOY AFTER THE

619

00:22:08,593 --> 00:22:10,562

SPACECRAFT IS STABILIZED.

620

00:22:10,629 --> 00:22:12,597

THE PARTICULAR ORBIT IT'LL PASS

621

00:22:12,664 --> 00:22:15,200

OVER A GROUND STATION THAT IS

622

00:22:15,267 --> 00:22:20,038

LOCATED NEAR JPL IN -- IN

623

00:22:20,105 --> 00:22:20,806

SOUTHERN CALIFORNIA.

624

00:22:20,872 --> 00:22:22,674

AND THE SYSTEM WILL -- WILL --

625

00:22:22,741 --> 00:22:27,479

WILL START TRANSMITTING THEIR --

626
00:22:27,546 --> 00:22:28,180
THEIR RADIO TRANSMISSION OVER

627
00:22:28,246 --> 00:22:30,716
THE GROUND STATION THERE AND --

628
00:22:30,782 --> 00:22:35,087
WITH THAT, IT'LL -- WE HAVE FIVE

629
00:22:35,153 --> 00:22:37,255
MONTHS OR SO OF LIFE-TIME.

630
00:22:37,322 --> 00:22:40,125
WE LOOK AT DOWNLOADING SOME DATA

631
00:22:40,192 --> 00:22:41,993
AT THIS HIGH BANDWIDTH SPEED.

632
00:22:42,060 --> 00:22:44,563
AND THIS IS THE -- THE GROUND

633
00:22:44,629 --> 00:22:48,667
STATION OVER -- OVER JPL.

634
00:22:48,734 --> 00:22:49,367
NEXT ONE.

635
00:22:49,434 --> 00:22:51,403
THE NEXT VIDEO YOU'RE GOING TO

636
00:22:51,470 --> 00:23:00,011
SEE WILL BE OCSD.

637
00:23:00,078 --> 00:23:02,647
HERE IT IS.

638
00:23:51,296 --> 00:23:19,998



639
00:23:57,435 --> 00:24:00,105
THERE'S THE GROUND STATION

640
00:24:00,172 --> 00:24:00,939
THERE.

641
00:24:01,006 --> 00:24:02,574
OVER MOUNT WILSON.

642
00:24:02,641 --> 00:24:05,443
HERE'S THE MANEUVERING PORTION

643
00:24:05,510 --> 00:24:06,645
THAT I SPOKE OF.

644
00:24:06,711 --> 00:24:09,714
THEY'LL GET TO A POSITION

645
00:24:09,781 --> 00:24:16,688
ROUGHLY ABOUT 200 METRES FROM

646
00:24:16,755 --> 00:24:17,088
EACH OTHER.

647
00:24:17,155 --> 00:24:17,789
THIS IS NOT DONE FROM THE

648
00:24:17,856 --> 00:24:18,123
GROUND.

649
00:24:18,190 --> 00:24:21,560
THIS IS AN IMPORTANT FEATURE.

650
00:24:21,626 --> 00:24:22,327
SO WE'RE HOPING THAT THESE

651
00:24:22,394 --> 00:24:24,729
DEMONSTRATIONS CAN

652
00:24:24,796 --> 00:24:25,530
[INDISCERNIBLE] THE MISSION.

653
00:24:25,597 --> 00:24:27,232
THESE ARE CAPABILITIES THAT WILL

654
00:24:27,299 --> 00:24:29,301
NOT ONLY ENHANCE THE

655
00:24:29,367 --> 00:24:31,269
CAPABILITIES OF THE CUBE SET

656
00:24:31,336 --> 00:24:33,071
PLATFORM IN OF ITSELF BUT IT'LL

657
00:24:33,138 --> 00:24:37,375
ALSO BE USED, IT CAN BE USED IN

658
00:24:37,442 --> 00:24:40,345
A CROSS CUTTING FASHION ACROSS

659
00:24:40,412 --> 00:24:42,614
OTHER SCIENCE MISSIONS THAT THEY

660
00:24:42,681 --> 00:24:48,653
HOPE TO WORK ON AND FOR FUTURE

661
00:24:48,720 --> 00:24:51,089
NASA MISSIONS.

662
00:24:58,463 --> 00:24:51,990
>> THANK YOU.

663
00:24:58,530 --> 00:24:58,864

[APPLAUSE].

664

00:24:58,930 --> 00:25:00,932

>> IF YOU HAVE A QUESTION IN

665

00:25:00,999 --> 00:25:02,567

THE ROOM, WAIT FOR THE MIC.

666

00:25:02,634 --> 00:25:07,939

IF YOU FOLLOW ALONG ON THE NASA

667

00:25:08,006 --> 00:25:10,842

OFFICIAL CHANNEL, PLEASE USE THE

668

00:25:10,909 --> 00:25:13,945

HASH TAG ASK NASA.

669

00:25:14,012 --> 00:25:15,847

>> WHILE THE SATELLITES IN

670

00:25:15,914 --> 00:25:20,385

ORBIT, WHAT IS THE TIME THAT

671

00:25:20,452 --> 00:25:25,123

THEY'LL BE IN WITH THE GROUND

672

00:25:25,190 --> 00:25:25,490

STATION?

673

00:25:25,557 --> 00:25:29,427

>> THEY'LL HAVE FOUR TO TEN

674

00:25:29,494 --> 00:25:31,263

MINUTES PER PASS.

675

00:25:31,329 --> 00:25:39,271

IT DEPENDS ON GROUND SPEED AND

676
00:25:39,337 --> 00:25:39,604
PASSING.

677
00:25:39,671 --> 00:25:42,474
THEY'LL DO SLEWING OVER AS WELL

678
00:25:42,540 --> 00:25:44,242
TO MAXIMIZE THE CONTENT PERIOD.

679
00:25:44,309 --> 00:25:47,045
>> THE NEXT QUESTION IS FROM

680
00:25:47,112 --> 00:25:48,346
ASK NASA.

681
00:25:48,413 --> 00:25:50,415
SO THIS QUESTION IS HOW MANY --

682
00:25:50,482 --> 00:25:54,586
HOW MANY MVPS DO CURRENT SMALL

683
00:25:54,653 --> 00:25:56,721
SATELLITES TRANSMIT THE RS WAVE?

684
00:25:56,788 --> 00:25:58,590
>> THAT'S A GOOD QUESTION.

685
00:25:58,657 --> 00:26:02,861
WE'RE -- WE'RE TYPICALLY USING

686
00:26:02,928 --> 00:26:10,335
UHF AND LOWER TRANSMISSION

687
00:26:10,402 --> 00:26:14,439
SPEEDS, 9.6KILO BITS, SO YOU

688
00:26:14,506 --> 00:26:17,175

COULD IMAGINE SEVERAL ORDERS OF

689

00:26:17,242 --> 00:26:18,677

MAGNITUDE AND WE'RE IN THE

690

00:26:18,743 --> 00:26:20,245

GIGAHERTZ RANGE FOR THIS, SO IT

691

00:26:20,312 --> 00:26:23,348

IS VERY HIGH-SPEED.

692

00:26:23,415 --> 00:26:28,153

AT LEAST IN ORDER OF 9 TO 2 IN

693

00:26:28,219 --> 00:26:30,322

THE K BAND.

694

00:26:30,388 --> 00:26:31,690

QUESTION OVER THERE.

695

00:26:31,756 --> 00:26:34,859

>> HELLO, WE WERE AT NASA

696

00:26:34,926 --> 00:26:36,561

GODARD LAST WEEK AND LEARNED

697

00:26:36,628 --> 00:26:37,929

ABOUT ANOTHER NASA MISSION FOR

698

00:26:37,996 --> 00:26:39,130

LASER COMMUNICATION BETWEEN A

699

00:26:39,197 --> 00:26:40,699

GROUND STATION AND THE

700

00:26:40,765 --> 00:26:41,633

SATELLITES AND INTERNATIONAL

701
00:26:41,700 --> 00:26:43,702
SPACE STATION, IS THIS LASER

702
00:26:43,768 --> 00:26:44,736
COMMUNICATION IN ANY WAY RELATED

703
00:26:44,803 --> 00:26:47,872
TO THAT ONE OR IS THIS A

704
00:26:47,939 --> 00:26:49,975
SEPARATE AND INDEPENDENT

705
00:26:50,041 --> 00:26:50,408
INVESTIGATION?

706
00:26:50,475 --> 00:26:51,076
>> THIS IS INDEPENDENT.

707
00:26:51,142 --> 00:26:53,411
WE FUNDED THIS SEVERAL YEARS

708
00:26:53,478 --> 00:26:53,712
AGO.

709
00:26:53,778 --> 00:26:58,116
THE THING THAT WAS INTERESTING

710
00:26:58,183 --> 00:26:58,817
ABOUT THIS SYSTEM, THEY USE

711
00:26:58,883 --> 00:27:01,720
COMBINATION OF EXTRATERRESTRIAL

712
00:27:01,786 --> 00:27:02,854
BASED SYSTEMS AS WELL AS -- AS

713
00:27:02,921 --> 00:27:05,123

WELL AS MORE -- MORE -- MORE

714

00:27:05,190 --> 00:27:06,691

SPACE BASED APPLICATIONS.

715

00:27:06,758 --> 00:27:09,694

THEY'VE BEEN ABLE TO -- TO GET

716

00:27:09,761 --> 00:27:12,998

IN A COMPACT FORMAT.

717

00:27:13,064 --> 00:27:15,400

THE LASER ITSELF IS VERY SMALL.

718

00:27:15,467 --> 00:27:17,869

THIS IS 1.5 CUBE SET.

719

00:27:17,936 --> 00:27:21,806

THEY LOOKED AT THIS FROM THE

720

00:27:21,873 --> 00:27:26,177

PERSPECTIVE OF POWER AND MASS.

721

00:27:26,244 --> 00:27:29,080

>> DO WE HAVE ANYTHING FROM ASK

722

00:27:29,147 --> 00:27:30,348

NASA?

723

00:27:30,415 --> 00:27:31,483

THAT'S IT.

724

00:27:37,055 --> 00:27:31,883

THANK YOU.

725

00:27:37,122 --> 00:27:39,724

[APPLAUSE].

726
00:27:39,791 --> 00:27:43,261
>> OUR NEXT SPEAKER IS STEFAN,

727
00:27:43,328 --> 00:27:44,729
HE'S FROM AMES RESEARCH CENTER.

728
00:27:44,796 --> 00:27:47,532
>> HELLO.

729
00:27:47,599 --> 00:27:48,900
GREAT TO BE HERE TODAY.

730
00:27:48,967 --> 00:27:52,303
HAPPY VETERANS DAY.

731
00:27:52,370 --> 00:27:53,705
I KNOW WE A FEW VETERANS AROUND

732
00:27:53,772 --> 00:27:54,439
I'VE SPOKEN TO.

733
00:27:54,506 --> 00:27:57,742
I'M TALKING -- LIKE TO TALK

734
00:27:57,809 --> 00:28:13,691
ABOUT E-CAM SET, E-COLI AND

735
00:28:13,758 --> 00:28:16,461
MICROBAL SATELLITE.

736
00:28:16,528 --> 00:28:18,930
IT IS SPACE LIFE AND PHYSICAL

737
00:28:18,997 --> 00:28:20,432
SCIENCES THAT SPONSOR THIS

738
00:28:20,498 --> 00:28:20,732

TODAY.

739

00:28:20,799 --> 00:28:22,500

IT IS -- IT IS -- IT IS OUR GOAL

740

00:28:22,567 --> 00:28:28,006

TO -- TO -- TO -- TO ENABLE --

741

00:28:28,073 --> 00:28:31,309

ENABLE SCIENCE -- ENABLE

742

00:28:31,376 --> 00:28:34,179

DISCOVERY FOR NEW SCIENTIFIC

743

00:28:34,245 --> 00:28:34,512

METHODS.

744

00:28:34,579 --> 00:28:36,915

WITH THAT SAID, WE'RE STUDYING

745

00:28:36,981 --> 00:28:38,149

ANTIBIOTIC RESISTANCE FOR A

746

00:28:38,216 --> 00:28:39,851

NUMBER OF REASONS.

747

00:28:39,918 --> 00:28:41,252

ONE IS THE ASTRONAUTS HAVE --

748

00:28:41,319 --> 00:28:44,089

HAVE SOME -- SOME IMMUNE

749

00:28:44,155 --> 00:28:51,563

SUPPRESSION ISSUES IN SPACE.

750

00:28:51,629 --> 00:28:58,503

THERE IS SPECIFICALLY A TYPE OF

751

00:28:58,570 --> 00:29:06,511

ECOLE -- E-COLI.

752

00:29:06,578 --> 00:29:08,012

ONE HAS A STRESS RESPONSE AND

753

00:29:08,079 --> 00:29:10,982

THE OTHER MUTANT HAS A DELETED

754

00:29:11,049 --> 00:29:11,282

GENE.

755

00:29:11,349 --> 00:29:14,953

THE KNOCKDOWN EFFECT FROM THE

756

00:29:15,019 --> 00:29:15,687

ANTIBIOTIC IS DIFFERENT FROM

757

00:29:15,753 --> 00:29:16,488

BOTH TYPES AND WE'LL COMPARE

758

00:29:16,554 --> 00:29:19,691

FROM UP IN SPACE AND MICRO

759

00:29:19,757 --> 00:29:22,727

GRAVITY VERSUS, THE 1G

760

00:29:22,794 --> 00:29:23,795

ENVIRONMENT ON THE EARTH.

761

00:29:23,862 --> 00:29:25,063

WE'LL HAVE A PARALLEL EXPERIMENT

762

00:29:25,130 --> 00:29:26,564

ON THE GROUND.

763

00:29:26,631 --> 00:29:29,467

THE SATELLITE ITSELF, THE -- THE

764

00:29:29,534 --> 00:29:33,671

EXPERIMENT WAS DESIGNED BY

765

00:29:33,738 --> 00:29:38,710

DR. AC MATINE AT STANFORD

766

00:29:38,776 --> 00:29:39,177

UNIVERSITY.

767

00:29:39,244 --> 00:29:41,446

I LIKE TO PUT UP SLIDES, IF WE

768

00:29:41,513 --> 00:29:42,046

HAVE THOSE.

769

00:29:42,113 --> 00:29:44,149

HERE'S THE ACTUAL SPACECRAFT.

770

00:29:44,215 --> 00:29:45,650

THE SPACECRAFT ITSELF IS

771

00:29:45,717 --> 00:29:48,086

BASICALLY THE SIZE OF TWO LOAVES

772

00:29:48,153 --> 00:29:49,053

OF BREAD.

773

00:29:49,120 --> 00:29:53,758

IT IS 23 POUNDS OR 10 1/2

774

00:29:53,825 --> 00:29:54,526

KILOGRAMS.

775

00:29:54,592 --> 00:29:55,960

IT HAS TWO COMMUNICATION SYSTEMS

776
00:29:56,027 --> 00:29:56,694
ON IT.

777
00:29:56,761 --> 00:30:00,698
ONE IS A UHF RADIO WHICH WILL BE

778
00:30:00,765 --> 00:30:01,533
-- WILL BE COMMUNICATING WITH

779
00:30:01,599 --> 00:30:03,067
THE HAM RADIO COMMUNITY AROUND

780
00:30:03,134 --> 00:30:05,103
THE WORLD AND WILL HAVE A -- A

781
00:30:05,170 --> 00:30:08,239
SYSTEM ON IT TO -- TO DO

782
00:30:08,306 --> 00:30:08,606
OUTREACH.

783
00:30:08,673 --> 00:30:10,642
HAM RADIO OPERATORS CAN HELP US

784
00:30:10,708 --> 00:30:12,110
FIND THE SPACECRAFT IN THE FIRST

785
00:30:12,177 --> 00:30:16,080
FOUR DAYS OF LAUNCH.

786
00:30:16,147 --> 00:30:17,815
THAT'S A GREAT PROGRAM.

787
00:30:17,882 --> 00:30:19,317
THE UNIVERSITY WILL COMMUNICATE

788
00:30:19,384 --> 00:30:22,053

WITH US AND DO MISSION

789

00:30:22,120 --> 00:30:22,453
OPERATIONS.

790

00:30:22,520 --> 00:30:25,089
SO WITHIN THIS, ONE-THIRD OF THE

791

00:30:25,156 --> 00:30:28,526
SPACECRAFT HOUSES A -- A

792

00:30:28,593 --> 00:30:28,927
LABORATORY.

793

00:30:28,993 --> 00:30:34,265
WITHIN THAT LABORATORY, WE HAVE

794

00:30:34,332 --> 00:30:38,937
A MICRO LAB.

795

00:30:39,003 --> 00:30:42,373
THIS IS EXPERIMENT CANISTER.

796

00:30:42,440 --> 00:30:43,808
ONE ATMOSPHERE CANISTER.

797

00:30:43,875 --> 00:30:45,476
ELECTRONICS FOR DETECTION AND

798

00:30:45,543 --> 00:30:46,744
MEASUREMENT OF DIFFERENT PHASES

799

00:30:46,811 --> 00:30:50,448
OF THE EXPERIMENT.

800

00:30:50,515 --> 00:30:53,651
THERE WILL BE 3 48-HOUR PHASES

801
00:30:53,718 --> 00:30:54,385
OF THE EXPERIMENT.

802
00:30:54,452 --> 00:30:56,788
WE'LL FEED THEM AND ADMINISTER

803
00:30:56,854 --> 00:30:57,822
ANTIBIOTIC AND WATCH A STRESS

804
00:30:57,889 --> 00:31:00,158
RESPONSE WITH AN INDICATOR THAT

805
00:31:00,225 --> 00:31:03,328
MEASURES ENZYME ACTIVITY OR

806
00:31:03,394 --> 00:31:06,698
METABOLIC CHANGE AS -- AS

807
00:31:06,764 --> 00:31:08,766
ENZYMES ARE EXPRESSING WHAT IS

808
00:31:08,833 --> 00:31:11,970
THE TWO DIFFERENT STRESS

809
00:31:12,036 --> 00:31:14,205
RESPONSES AFTER ANTIBIOTICS IS

810
00:31:14,272 --> 00:31:14,639
ADMINISTERED.

811
00:31:14,706 --> 00:31:15,807
NEXT SLIDE.

812
00:31:15,873 --> 00:31:17,141
WITHIN THE CANISTER WE HAVE A

813
00:31:17,208 --> 00:31:18,509

NUMBER OF ITEMS.

814

00:31:18,576 --> 00:31:20,078

IT LOOKS LIKE A SPAGHETTI.

815

00:31:20,144 --> 00:31:21,479

LOOKS LIKE A MESS HERE.

816

00:31:21,546 --> 00:31:24,782

WE -- WE -- WE COMPACT THAT ALL

817

00:31:24,849 --> 00:31:29,687

DOWN AND THERE'S A VERY PRECISE

818

00:31:29,754 --> 00:31:30,355

PACKING ORDER.

819

00:31:30,421 --> 00:31:33,858

SO WITHIN THAT WE HAVE A NUMBER

820

00:31:33,925 --> 00:31:35,893

OF CUSTOM BLOOD BAGS THAT WE

821

00:31:35,960 --> 00:31:36,961

DEVELOPED, THAT CARRIES THE

822

00:31:37,028 --> 00:31:41,065

LIQUID WE SEND THROUGH THE

823

00:31:41,132 --> 00:31:41,966

SYSTEM.

824

00:31:42,033 --> 00:31:42,700

NEXT SLIDE.

825

00:31:42,767 --> 00:31:44,602

SO THIS IS -- THIS IS AFTER THE

826

00:31:44,669 --> 00:31:47,572

EXPERIMENT HAS -- HAS ACTUALLY

827

00:31:47,639 --> 00:31:50,408

BEEN ACTIVATED AND GONE THROUGH

828

00:31:50,475 --> 00:31:53,911

A NUMBER OF STEPS.

829

00:31:53,978 --> 00:31:59,450

THIS WILL LAST ABOUT 150 HOURS.

830

00:31:59,517 --> 00:32:01,019

IF WE COULD PAN BACK.

831

00:32:01,085 --> 00:32:02,954

CAN THE CAMERA COME BACK TO ME

832

00:32:03,021 --> 00:32:04,522

FOR A MOMENT?

833

00:32:04,589 --> 00:32:05,189

THANK YOU.

834

00:32:05,256 --> 00:32:06,624

WE HAVE THIS CANISTER AND -- AND

835

00:32:06,691 --> 00:32:08,159

-- AND THIS IS ROUGHLY THE SIZE

836

00:32:08,226 --> 00:32:11,095

OF THE LABORATORY THAT WE'LL BE

837

00:32:11,162 --> 00:32:11,429

FLYING.

838

00:32:11,496 --> 00:32:13,898

IT -- IT CONNECTS UP WITH THE

839

00:32:13,965 --> 00:32:15,033

REST OF THE SPACECRAFT.

840

00:32:15,099 --> 00:32:16,834

THE WHOLE SYSTEM OPERATES OFF

841

00:32:16,901 --> 00:32:19,203

THREE TO TEN WATTS OF POWER

842

00:32:19,270 --> 00:32:23,975

COMPARED TO INCANDESCENT LIGHT

843

00:32:24,042 --> 00:32:28,479

BULB, THIS IS AMAZING.

844

00:32:28,546 --> 00:32:30,181

IT IS 37 DEGREE CENTIGRADE EVEN

845

00:32:30,248 --> 00:32:31,816

WITH EXTREME ENVIRONMENT OF

846

00:32:31,883 --> 00:32:33,284

SPACE, HUNDREDS OF DEGREES SWING

847

00:32:33,351 --> 00:32:36,187

OUTSIDE THE SPACECRAFT ON THE

848

00:32:36,254 --> 00:32:37,255

SURFACE TEMPERATURES AND WE'RE

849

00:32:37,322 --> 00:32:40,158

ABLE TO MAINTAIN THIS AT HUMAN

850

00:32:40,224 --> 00:32:42,293

BODY TEMPERATURE.

851
00:32:42,360 --> 00:32:47,332
WITHIN THAT, WE HAVE PUMPS AND

852
00:32:47,398 --> 00:32:49,067
VALVES, VERY PRECISE PUMPING AND

853
00:32:49,133 --> 00:32:50,301
METRING WHERE WE MIX THE

854
00:32:50,368 --> 00:32:52,103
ANTIBIOTIC IN THE SYSTEM AND

855
00:32:52,170 --> 00:32:53,771
ADMINISTER DOSES OF HIGH AND

856
00:32:53,838 --> 00:32:58,376
MEDIUM AND LOW AND CONTROL WHICH

857
00:32:58,443 --> 00:32:59,677
WOULD BE NO ANTIBIOTICS.

858
00:32:59,744 --> 00:33:04,649
THIS IS AN EXAMPLE OF A -- OF A

859
00:33:04,716 --> 00:33:08,753
MICRO FLOREX CARD.

860
00:33:08,820 --> 00:33:10,922
IT HAS 48 WILL PLATES AND ABOUT

861
00:33:10,988 --> 00:33:12,323
48 LITTLE EXPERIMENT WELLS THAT

862
00:33:12,390 --> 00:33:15,259
ARE THE SIZE OF AN ERASER HEAD

863
00:33:15,326 --> 00:33:15,560

HERE.

864

00:33:15,626 --> 00:33:22,200

IT CONTAINS DIFFERENT E-COLI

865

00:33:22,266 --> 00:33:23,368

EXPERIMENTS, WE HAVE PHOTO

866

00:33:23,434 --> 00:33:25,670

DETECTORS THAT SHINE THROUGH.

867

00:33:25,737 --> 00:33:29,574

THE CHANNEL DETECTORS HERE THAT

868

00:33:29,640 --> 00:33:30,975

EVEN A SMALL ANT WOULDN'T BE

869

00:33:31,042 --> 00:33:32,310

ABLE TO CRAWL THROUGH IT.

870

00:33:32,377 --> 00:33:34,412

AS WE GO ON, I'LL SHOW YOU A

871

00:33:34,479 --> 00:33:38,282

BUILD-UP OF WHAT WE DO.

872

00:33:38,349 --> 00:33:39,650

WE HEATERS THAT WE ADD AND THIS

873

00:33:39,717 --> 00:33:41,319

KEEPS AT VERY EVEN DISTRIBUTION

874

00:33:41,386 --> 00:33:42,887

OF HEAT AROUND THE SYSTEM AND ON

875

00:33:42,954 --> 00:33:43,588

AND ON.

876

00:33:43,654 --> 00:33:45,623

WE START BUILDING UP MORE

877

00:33:45,690 --> 00:33:46,023

COMPONENTS.

878

00:33:46,090 --> 00:33:48,659

THEN YOU GET TO THE VALVING

879

00:33:48,726 --> 00:33:50,395

SYSTEM AND ALL OF THIS WORKS

880

00:33:50,461 --> 00:33:51,629

WITH THE CIRCUIT BOARD WITH AN

881

00:33:51,696 --> 00:33:54,065

AUTOMATED PROGRAM.

882

00:33:54,132 --> 00:33:57,368

THE SYSTEM IS AUTONOMOUS AND

883

00:33:57,435 --> 00:33:58,903

WILL RUN EVERY STEP OF THE

884

00:33:58,970 --> 00:33:59,303

EXPERIMENT.

885

00:33:59,370 --> 00:34:03,007

WE WILL BASICALLY HAVE CENIKOR

886

00:34:03,074 --> 00:34:04,108

UNIVERSITY TO INTERVENE IF

887

00:34:04,175 --> 00:34:05,309

THERE'S AN ISSUE.

888

00:34:05,376 --> 00:34:07,078

MOSTLY THEIR JOB IS TO -- TO

889

00:34:07,145 --> 00:34:19,290

DOWNLOAD DATA WHICH IS ABOUT A

890

00:34:19,357 --> 00:34:19,824

MEGABYTE FILE.

891

00:34:19,891 --> 00:34:21,826

I HAVE A VIDEO SHOW TODAY AS

892

00:34:21,893 --> 00:34:22,593

WELL.

893

00:34:22,660 --> 00:34:31,169

COULD WE SHOW IT?

894

00:34:31,235 --> 00:34:32,870

YEAH.

895

00:34:32,937 --> 00:34:33,604

THIS IS UPLOADING THE EXPERIMENT

896

00:34:33,671 --> 00:34:34,372

THAT WILL GO UP ON THE FLIGHT

897

00:34:34,439 --> 00:34:34,739

TOMORROW.

898

00:34:34,806 --> 00:34:37,074

AND THE -- THE -- THE BUILD-UP

899

00:34:37,141 --> 00:34:40,178

OF THE SATELLITE, BASICALLY THIS

900

00:34:40,244 --> 00:34:41,412

CONTAINER HAS BEEN LOADED IN AT

901
00:34:41,479 --> 00:34:41,813
THIS POINT.

902
00:34:41,879 --> 00:34:43,514
THERE'S SOLAR PANELS WE ADD

903
00:34:43,581 --> 00:34:47,885
WHICH REDUCES THE POWER FOR THE

904
00:34:47,952 --> 00:34:49,687
MISSION AND WE HAVE BATTERY

905
00:34:49,754 --> 00:34:50,021
SYSTEMS.

906
00:34:50,087 --> 00:34:51,389
WE HAVE A RADIO IN THERE THAT IS

907
00:34:51,456 --> 00:34:54,892
A PACKED ANTENNA AND WE

908
00:34:54,959 --> 00:34:56,160
COMMUNICATE DOWN TO CENIKOR

909
00:34:56,227 --> 00:34:56,928
UNIVERSITY.

910
00:34:56,994 --> 00:35:00,264
HAUS OCTOBER 25th, ACTUALLY

911
00:35:00,331 --> 00:35:07,672
LOADING INTO THE NANO REX

912
00:35:07,738 --> 00:35:08,473
DEPLOYER THAT WILL BE USED.

913
00:35:08,539 --> 00:35:10,241

IT WILL BE UNLOADED BY THE

914

00:35:10,308 --> 00:35:10,641
ASTRONAUTS.

915

00:35:10,708 --> 00:35:12,877
THEY WILL PUT IT THROUGH THE GYM

916

00:35:12,944 --> 00:35:14,645
AIR LOCK AND -- AND AFTER THIS,

917

00:35:14,712 --> 00:35:19,417
THEY'LL DEPLOY IT.

918

00:35:19,484 --> 00:35:26,224
THERE'S ANIMATION OF IT

919

00:35:26,290 --> 00:35:26,591
DEPLOYING.

920

00:35:26,657 --> 00:35:29,694
SO THEY DEPLOY AND THEN FOUR-DAY

921

00:35:29,760 --> 00:35:32,830
STABILIZATION PHASE.

922

00:35:32,897 --> 00:35:33,631
AFTER THAT, MICRO GRAVITY WILL

923

00:35:33,698 --> 00:35:35,066
BE ENOUGH FOR US TO RUN THE

924

00:35:35,132 --> 00:35:35,833
EXPERIMENT.

925

00:35:35,900 --> 00:35:38,369
IT COULD HAPPEN EARLIER BUT WE

926
00:35:38,436 --> 00:35:40,438
HAVE PERMANENT MAGNETS TO HELP

927
00:35:40,505 --> 00:35:41,005
WITH THIS.

928
00:35:41,072 --> 00:35:42,173
THIS IS THE TEARDOWN OF THE

929
00:35:42,240 --> 00:35:43,875
LABORATORY AS WELL.

930
00:35:43,941 --> 00:35:46,410
THIS IS IT MICRO FLUID AS IT

931
00:35:46,477 --> 00:35:47,311
WOULD SIT.

932
00:35:47,378 --> 00:35:50,481
WE'LL GO THROUGH EACH ONE OF

933
00:35:50,548 --> 00:35:51,282
THESE WELLS AND PING EACH WELL

934
00:35:51,349 --> 00:35:55,953
AND STORE THE DATA.

935
00:35:56,020 --> 00:36:00,057
HERE'S THE DIFFERENT BAGS THAT

936
00:36:00,124 --> 00:36:01,359
WE'LL CARRY.

937
00:36:01,425 --> 00:36:02,793
ALOMAR BLUE A BUFFER SOLUTION.

938
00:36:02,860 --> 00:36:07,164

THEN THE BACTERIA THEMSELVES

939

00:36:07,231 --> 00:36:07,965

WILL ADMINISTER THE ANTIBIOTIC

940

00:36:08,032 --> 00:36:11,135

AND THIS IS THE MOST IMPORTANT

941

00:36:11,202 --> 00:36:13,037

PHASE, THE STRESS RESPONSE.

942

00:36:13,104 --> 00:36:15,306

ANTIBIOTIC IN THEIR STRESS

943

00:36:15,373 --> 00:36:21,913

RESPONSE IN GENERAL, THE E-COLI

944

00:36:21,979 --> 00:36:23,648

STRESS RESPONSE IS WHAT WE'RE

945

00:36:23,714 --> 00:36:24,515

WATCHING.

946

00:36:24,582 --> 00:36:27,451

E-COLI ARE CAPABLE OF BECOMING

947

00:36:27,518 --> 00:36:32,156

-- OF -- OF -- OF SURVIVAL --

948

00:36:32,223 --> 00:36:34,025

UPPING THEIR SURVIVAL CAPABILITY

949

00:36:34,091 --> 00:36:35,259

WHEN THEY'RE STRESSED.

950

00:36:35,326 --> 00:36:38,162

WE WATCH THAT MECHANISM

951
00:36:38,229 --> 00:36:39,797
GENETICALLY.

952
00:36:39,864 --> 00:36:44,302
A GENE CALLED RPOS.

953
00:36:44,368 --> 00:36:48,639
SPECIFICALLY THE IMMUNOLOGYIST

954
00:36:48,706 --> 00:36:51,542
AT STANFORD WANTS TO LOOK AT

955
00:36:51,609 --> 00:36:52,376
THIS GENE.

956
00:36:52,443 --> 00:36:55,980
IT DOES SOMETHING DIFFERENT IN

957
00:36:56,047 --> 00:36:57,682
SPACE, WE MAY WANT TO DEVELOP

958
00:36:57,748 --> 00:37:00,451
COUNTER MEASURE FOR THAT TO

959
00:37:00,518 --> 00:37:04,188
KNOCK DOWN INFECTION.

960
00:37:04,255 --> 00:37:11,529
THIS IS CALLED CYSTITIS, IT IS A

961
00:37:11,596 --> 00:37:12,730
URINARY TRACK INFECTION.

962
00:37:12,797 --> 00:37:14,832
WHAT WE LEARN IN SPACE MAY ALLOW

963
00:37:14,899 --> 00:37:17,735

US TO KEY IN ON A SPECIFIC

964

00:37:17,802 --> 00:37:20,538

PATHWAY TO HELP DESIGN MORE

965

00:37:20,605 --> 00:37:22,173

EFFECTIVE ANTIBIOTICS AND

966

00:37:22,239 --> 00:37:26,711

ELIMINATE THE ANTIBIOTIC

967

00:37:26,777 --> 00:37:27,111

RESISTANCE.

968

00:37:27,178 --> 00:37:28,746

WITH THAT SAID I'LL STOP AND

969

00:37:28,813 --> 00:37:29,447

ANSWER QUESTIONS.

970

00:37:29,513 --> 00:37:30,247

>> THANK YOU.

971

00:37:30,314 --> 00:37:31,616

AGAIN, IF YOU HAVE A QUESTION IN

972

00:37:31,682 --> 00:37:33,351

THE ROOM, PLEASE RAISE YOUR HAND

973

00:37:33,417 --> 00:37:35,519

AND WAIT FOR THE MICROPHONE, IF

974

00:37:35,586 --> 00:37:40,558

YOU'RE FOLLOWING ALONG ON NASA'S

975

00:37:40,625 --> 00:37:43,761

SOCIAL MEDIA CHANNELS, PLEASE

976

00:37:43,828 --> 00:37:46,998

USE THE HASH TAG, ASK NASA.

977

00:37:47,064 --> 00:37:49,867

>> MY NAME IS CHRISTINA AND I'M

978

00:37:49,934 --> 00:37:51,502

FROM NASA SOCIAL, I HAD A

979

00:37:51,569 --> 00:37:51,869

QUESTION.

980

00:37:51,936 --> 00:37:53,537

YOU TALKED ABOUT DOING THE

981

00:37:53,604 --> 00:37:55,072

ANTIBIOTIC RESEARCH BUT HAVE YOU

982

00:37:55,139 --> 00:37:57,541

DONE ANYTHING WITH AFTER MARS?

983

00:37:57,608 --> 00:38:00,244

>> WHAT WAS THE QUESTION?

984

00:38:00,311 --> 00:38:02,613

>> HAVE YOU DONE RESEARCH WITH

985

00:38:02,680 --> 00:38:05,049

AFTER MERS BINDING WITH THE

986

00:38:05,116 --> 00:38:05,383

E-COLI.

987

00:38:05,449 --> 00:38:06,784

>> NO, I'M AN ENGINEER, THAT

988

00:38:06,851 --> 00:38:11,122

WOULD BE BETTER ANSWERED BY THE

989

00:38:11,188 --> 00:38:13,057

P.I., THE PRINCIPAL

990

00:38:13,124 --> 00:38:13,491

INVESTIGATOR.

991

00:38:13,557 --> 00:38:15,092

HE'S AT STANFORD AND I COULD

992

00:38:15,159 --> 00:38:20,498

DIRECT HIM TO ANSWER THAT

993

00:38:20,564 --> 00:38:20,865

QUESTION.

994

00:38:20,931 --> 00:38:26,337

ANY OTHER QUESTIONS?

995

00:38:26,404 --> 00:38:27,672

>> [INDISCERNIBLE]?

996

00:38:27,738 --> 00:38:29,640

>> THE QUESTION IS, ARE WE

997

00:38:29,707 --> 00:38:37,448

DETERMINING -- DETERMINING THE

998

00:38:37,515 --> 00:38:39,383

DOSAGE AMOUNT AND THE

999

00:38:39,450 --> 00:38:39,850

EFFECTIVENESS?

1000

00:38:39,917 --> 00:38:40,584

WE HAVE RUN THIS EXPERIMENT NINE

1001
00:38:40,651 --> 00:38:41,152
TIMES ON THE GROUND.

1002
00:38:41,218 --> 00:38:42,787
WE LOOK AT THE KNOCKDOWN OR

1003
00:38:42,853 --> 00:38:45,289
KNOCKDOWN EFFECT ON THE E-COLI

1004
00:38:45,356 --> 00:38:46,924
AND ITS STRESS RESPONSE.

1005
00:38:46,991 --> 00:38:50,828
WE LOOK AT ENZYME ACTIVITY WITH

1006
00:38:50,895 --> 00:38:52,329
THE DYE.

1007
00:38:52,396 --> 00:38:55,099
IF YOU NOTICE, THERE'S A PINK

1008
00:38:55,166 --> 00:38:56,767
COLOR TO THE CARD AFTERWARD.

1009
00:38:56,834 --> 00:38:59,070
WE SPECIFICALLY DIALED IN -- IN

1010
00:38:59,136 --> 00:39:03,708
-- ITS MICRO GRAMS OF ANTIBIOTIC

1011
00:39:03,774 --> 00:39:05,409
FOR THE SIZE OF THE VOLUME.

1012
00:39:05,476 --> 00:39:07,511
IT IS VERY TUNED.

1013
00:39:07,578 --> 00:39:09,980

EVEN OUR PUMPING CAPABILITY AND

1014

00:39:10,047 --> 00:39:11,348

MIXING, IT HAS BEEN TESTED ON

1015

00:39:11,415 --> 00:39:12,516

THE GROUND EXTENSIVELY TO

1016

00:39:12,583 --> 00:39:13,951

DETERMINE HOW MUCH.

1017

00:39:14,018 --> 00:39:16,120

ROUGHLY A TEASPOON OF -- OF

1018

00:39:16,187 --> 00:39:19,824

VOLUME OR LIQUID IS PUMPED

1019

00:39:19,890 --> 00:39:20,624

THROUGH THE CARD IN EACH STEP OR

1020

00:39:20,691 --> 00:39:29,366

PHASE WHEN WE PUT IT THROUGH.

1021

00:39:29,433 --> 00:39:32,136

>> JEFF, SPACE NEWS, WHAT IS

1022

00:39:32,203 --> 00:39:34,004

BENEFIT DOING THIS IN A CUBE SET

1023

00:39:34,071 --> 00:39:35,172

AND WHAT CAN YOU DO THERE THAT

1024

00:39:35,239 --> 00:39:37,007

YOU CAN'T DO IN THE STATION?

1025

00:39:37,074 --> 00:39:37,942

>> GREAT QUESTION.

1026
00:39:38,008 --> 00:39:40,077
FOR THAT MATTER, WE COULD DO

1027
00:39:40,144 --> 00:39:42,246
THIS ON THE SPACE STATION AND --

1028
00:39:42,313 --> 00:39:44,014
AND -- AND SO THIS CANISTER, WE

1029
00:39:44,081 --> 00:39:47,118
DID TALK ABOUT PUTTING IT -- AND

1030
00:39:47,184 --> 00:39:49,553
THERE VERY WELL MAY BE A FOLLOW

1031
00:39:49,620 --> 00:39:50,855
ON MISSION, I DON'T KNOW, THAT

1032
00:39:50,921 --> 00:39:51,989
WOULD INCLUDE THIS CANISTER ON

1033
00:39:52,056 --> 00:39:52,990
THE SPACE STATION.

1034
00:39:53,057 --> 00:39:54,391
BUT THERE'S ADVANTAGES FOR THE

1035
00:39:54,458 --> 00:39:54,725
FUTURE.

1036
00:39:54,792 --> 00:39:57,862
WHEN WE GO TO -- GO TO PAST

1037
00:39:57,928 --> 00:39:59,263
LOWER ORBIT AND RADIATION

1038
00:39:59,330 --> 00:40:01,265

ENVIRONMENT OF SPACE, WE -- YOU

1039

00:40:01,332 --> 00:40:04,168

WANT TO TAKE THE LOWEST MASS

1040

00:40:04,235 --> 00:40:06,437

SYSTEM AS POSSIBLE AND CUBE SETS

1041

00:40:06,504 --> 00:40:07,805

LEND THEMSELVES TO THE FUTURE.

1042

00:40:07,872 --> 00:40:09,907

YOU WOULD WANT -- WANT TO DEPLOY

1043

00:40:09,974 --> 00:40:11,776

A CUBE SET POTENTIALLY WITH

1044

00:40:11,842 --> 00:40:12,877

LOOKING AT THE RADIATION EFFECTS

1045

00:40:12,943 --> 00:40:15,412

IN THE FUTURE.

1046

00:40:15,479 --> 00:40:17,148

BASICALLY BASELINE HOW WE DO

1047

00:40:17,214 --> 00:40:19,750

THIS IN LOWER ORBIT AND MOVE

1048

00:40:19,817 --> 00:40:22,353

FORWARD TO MAYBE THE SAME

1049

00:40:22,419 --> 00:40:27,358

EXPERIMENT OR WITH ADD-ONES WITH

1050

00:40:27,424 --> 00:40:29,593

LOW MASS CUBE SET TO ANSWER THE

1051
00:40:29,660 --> 00:40:30,661
QUESTION WITH RADIATION ADDED.

1052
00:40:30,728 --> 00:40:33,230
THERE'S A FOLLOW ON MISSION

1053
00:40:33,297 --> 00:40:36,200
CALLED BUY YES CENTENNIAL, IT IS

1054
00:40:36,267 --> 00:40:38,035
NOT EXACTLY LIKE THIS BUT IT

1055
00:40:38,102 --> 00:40:40,104
USES THINGS LIKE WE DO HERE.

1056
00:40:40,171 --> 00:40:41,105
THERE'S LIFE DETECTION IN THE

1057
00:40:41,172 --> 00:40:43,440
FUTURE THAT WE'RE TALKING ABOUT.

1058
00:40:43,507 --> 00:40:44,508
LESSONS LEARNED WITH THESE

1059
00:40:44,575 --> 00:40:49,613
SYSTEMS MAY BE BE KEY TO GOING

1060
00:40:49,680 --> 00:40:55,252
TO ENCELIDUS AND LIFE DETECTION

1061
00:40:55,319 --> 00:40:56,020
AND LIKE THAT.

1062
00:40:56,086 --> 00:40:59,857
I'M NOT SAYING IT IS EXACT COPY

1063
00:40:59,924 --> 00:41:02,626

BUT WHAT WE'RE LEARNING AS

1064

00:41:02,693 --> 00:41:04,094

RESEARCHERS TO DESIGN THIS

1065

00:41:04,161 --> 00:41:06,163

SYSTEM MAY WELL HAVE ANSWER FOR

1066

00:41:06,230 --> 00:41:08,532

LIFE DETECTION IN OTHER MOONS IN

1067

00:41:08,599 --> 00:41:10,935

THE SOLAR SYSTEM OR OTHER

1068

00:41:11,001 --> 00:41:11,802

PLANETARY BODIES.

1069

00:41:11,869 --> 00:41:13,971

>> WE HAVE TIME FOR TWO MORE

1070

00:41:14,038 --> 00:41:14,338

QUESTIONS.

1071

00:41:14,405 --> 00:41:18,809

I BELIEVE WE HAD ONE IN THE

1072

00:41:18,876 --> 00:41:19,476

FRONT, IN THE MIDDLE OF THE

1073

00:41:19,543 --> 00:41:19,777

ROOM.

1074

00:41:19,844 --> 00:41:25,216

WE'LL COME BACK TO AN ASK NASA

1075

00:41:25,282 --> 00:41:28,786

QUESTION.

1076
00:41:28,853 --> 00:41:29,220
>> THANK YOU.

1077
00:41:29,286 --> 00:41:29,787
MY NAME IS DANIEL.

1078
00:41:29,854 --> 00:41:43,234
YOU GUYS ARE LOOKING AT GENE

1079
00:41:43,300 --> 00:41:45,202
TRANSFER LIKE GENE

1080
00:41:45,269 --> 00:41:45,669
TRANSFORMATION.

1081
00:41:45,736 --> 00:41:46,403
AND WONDER IF THIS IS DIFFERENT

1082
00:41:46,470 --> 00:41:46,904
IN MICRO GRAVITY.

1083
00:41:46,971 --> 00:41:47,638
>> WE'RE SPECIFICALLY TARGETING

1084
00:41:47,705 --> 00:41:48,105
THIS ONE GENE.

1085
00:41:48,172 --> 00:41:50,441
IMAGINE, WE REMOVED THE OTHER

1086
00:41:50,507 --> 00:41:53,110
VARIABLES HERE.

1087
00:41:53,177 --> 00:41:54,745
THE HUMAN BODY IS NOT INVOLVED,

1088
00:41:54,812 --> 00:41:56,881

WHAT WE LEARN FROM THIS

1089

00:41:56,947 --> 00:41:57,882

MECHANISM WITHOUT THE IMMUNE

1090

00:41:57,948 --> 00:42:01,318

SYSTEM INVOLVED, WE LOOK AT THE

1091

00:42:01,385 --> 00:42:01,952

GENETIC RESPONSE.

1092

00:42:02,019 --> 00:42:03,721

IN SCIENCE SOMETIMES YOU WANT TO

1093

00:42:03,787 --> 00:42:05,122

REMOVE OTHER VARIABLES THAT MAY

1094

00:42:05,189 --> 00:42:07,024

BE CONFUSING TO ANSWERS.

1095

00:42:07,091 --> 00:42:10,094

THIS DOES THAT FOR THAT.

1096

00:42:10,160 --> 00:42:11,061

SPECIFICALLY WHAT YOU'RE TALKING

1097

00:42:11,128 --> 00:42:13,497

ABOUT PROBABLY WOULD BE A WHOLE

1098

00:42:13,564 --> 00:42:15,232

DIFFERENT EXPERIMENT DESIGN.

1099

00:42:15,299 --> 00:42:20,004

SORRY I DON'T HAVE A GOOD EXACT

1100

00:42:20,070 --> 00:42:22,406

ANSWER FOR YOU.

1101
00:42:22,473 --> 00:42:26,076
BUT THE DOCTOR AT STANFORD WOULD

1102
00:42:26,143 --> 00:42:28,545
BE ABLE TO ANSWER THAT.

1103
00:42:28,612 --> 00:42:31,448
>> THIS IS FROM ASK NASA, WHAT

1104
00:42:31,515 --> 00:42:34,718
IS THE COMPOSITION OF THE E CAN

1105
00:42:34,785 --> 00:42:35,052
CASING?

1106
00:42:35,119 --> 00:42:37,488
IT LOOKS LIKE SOLID GOLD.

1107
00:42:37,554 --> 00:42:43,761
>> I CAN -- I CAN GUARANTEE YOU

1108
00:42:43,827 --> 00:42:46,330
IT IS FLASHY AND LOOKS LIKE

1109
00:42:46,397 --> 00:42:46,630
GOLD.

1110
00:42:46,697 --> 00:42:47,498
PROBABLY WOULDN'T BE ABLE TO

1111
00:42:47,564 --> 00:42:50,567
PICK IT UP LIKE THIS IF IT WAS

1112
00:42:50,634 --> 00:42:50,868
FOLD.

1113
00:42:50,935 --> 00:42:52,503

IT IS ALUMINUM AND PLATED WITH

1114

00:42:52,569 --> 00:42:54,305

GOLD FOR THERMAL PROPERTIES.

1115

00:42:54,371 --> 00:42:57,441

ONE OF THE MANY THINGS WE DO

1116

00:42:57,508 --> 00:42:59,076

WITH THE SPACECRAFT IS OBSERVE

1117

00:42:59,143 --> 00:43:00,010

SENSITIVITY CHARACTERISTICS ON

1118

00:43:00,077 --> 00:43:01,011

THE SPACECRAFT.

1119

00:43:01,078 --> 00:43:08,018

FOR THIS CHALLENGE AND WE DO

1120

00:43:08,085 --> 00:43:13,424

THERMAL MODELS ON THIS.

1121

00:43:13,490 --> 00:43:16,226

EVERY MINUTE OF THE MISSION WAS

1122

00:43:16,293 --> 00:43:16,560

MODELED.

1123

00:43:16,627 --> 00:43:17,928

THIS SURFACE WAS PICKED.

1124

00:43:17,995 --> 00:43:21,799

IF YOU LOOK AT THE FIRST IMAGE I

1125

00:43:21,865 --> 00:43:22,566

SHOWED OF THE SPACECRAFT, YOU'LL

1126
00:43:22,633 --> 00:43:26,036
SEE A COPPERISH LOOK INSTEAD OF

1127
00:43:26,103 --> 00:43:26,337
GOLD.

1128
00:43:26,403 --> 00:43:27,805
THAT IS BECAUSE IT IS COPPERISH.

1129
00:43:27,871 --> 00:43:29,373
THROUGH DIFFERENT PHASES AND

1130
00:43:29,440 --> 00:43:30,941
DOING THINGS LIKE -- CAN'T GET

1131
00:43:31,008 --> 00:43:32,109
INTO ALL OF THE DETAILS OF HOW

1132
00:43:32,176 --> 00:43:33,444
WE DO THIS.

1133
00:43:33,510 --> 00:43:35,579
BUT LONG STORY SHORT, WE ADJUST

1134
00:43:35,646 --> 00:43:36,914
THERMAL PROPERTIES.

1135
00:43:36,981 --> 00:43:38,682
THAT'S THE REASON IT IS THAT

1136
00:43:38,749 --> 00:43:38,983
COLOR.

1137
00:43:46,357 --> 00:43:42,519
>> THANK YOU.

1138
00:43:46,423 --> 00:43:47,124

[APPLAUSE].

1139

00:43:47,191 --> 00:43:48,692

>> NEXT UP, WE HAVE MICHELE

1140

00:43:48,759 --> 00:43:50,361

LUCAS WHO IS THE FOUNDER AND

1141

00:43:50,427 --> 00:43:53,998

PRESIDENT AT HIGHER ORBITS ALONG

1142

00:43:54,064 --> 00:43:57,601

WITH ABIGAIL YOUNGER A STUDENT

1143

00:43:57,668 --> 00:44:00,938

WHO PARTICIPATES IN HIGHER

1144

00:44:01,005 --> 00:44:01,271

ORBITS.

1145

00:44:01,338 --> 00:44:02,706

>> GOOD AFTERNOON, WE'RE SO

1146

00:44:02,773 --> 00:44:04,074

EXCITED TO BE HERE.

1147

00:44:04,141 --> 00:44:06,276

AS MENTIONED I'M MICHELE LUCAS.

1148

00:44:06,343 --> 00:44:07,978

WE'RE A NONPROFIT THAT USES

1149

00:44:08,045 --> 00:44:10,047

SPACE AS A LAUNCHPAD TO GET

1150

00:44:10,114 --> 00:44:11,348

STUDENTS MORE INTERESTED IN STEM

1151
00:44:11,415 --> 00:44:12,449
WHILE BUILDING LEADERSHIP AND

1152
00:44:12,516 --> 00:44:13,717
TEAMWORK AND COMMUNICATION

1153
00:44:13,784 --> 00:44:14,051
SKILLS.

1154
00:44:14,118 --> 00:44:15,719
I'M ALSO THE PROGRAM DIRECTOR

1155
00:44:15,786 --> 00:44:17,087
FOR OUR GOPHER LAUNCH PROGRAM.

1156
00:44:17,154 --> 00:44:18,856
IT IS A TWO OR THREE DAY EVENT

1157
00:44:18,922 --> 00:44:21,025
WHERE STUDENTS GET TO WORK WITH

1158
00:44:21,091 --> 00:44:22,326
AN ASTRONAUT FOR THE ENTIRE

1159
00:44:22,393 --> 00:44:24,561
EVENT AND THEY COMPETE TO HAVE

1160
00:44:24,628 --> 00:44:26,430
THEIR EXPERIMENT IDEA FLOWN IN

1161
00:44:26,497 --> 00:44:26,730
SPACE.

1162
00:44:26,797 --> 00:44:27,865
WE HAVE SLIDES THAT WILL POP UP

1163
00:44:27,931 --> 00:44:30,200

HERE WITH PHOTOS FROM ONE OF OUR

1164

00:44:30,267 --> 00:44:30,534

EVENTS.

1165

00:44:30,601 --> 00:44:32,603

THE EXPERIMENT WE'RE GOING TO

1166

00:44:32,669 --> 00:44:33,604

TALK TO YOU TODAY ABOUT IS

1167

00:44:33,670 --> 00:44:35,739

BECAUSE OF A GREAT SPONSORSHIP

1168

00:44:35,806 --> 00:44:38,409

OF ORBITAL ACK, THEY SPONSORED

1169

00:44:38,475 --> 00:44:39,843

ONE OF OUR DIVISIONS, WHAT

1170

00:44:39,910 --> 00:44:41,578

HAPPENS IN A DIVISION, THERE'S

1171

00:44:41,645 --> 00:44:42,146

MULTIPLE EVENTS.

1172

00:44:42,212 --> 00:44:44,415

WE PICK A WINNER FROM EACH

1173

00:44:44,481 --> 00:44:44,715

EVENT.

1174

00:44:44,782 --> 00:44:46,617

THE OVERALL DIVISION WINNER HAS

1175

00:44:46,683 --> 00:44:50,654

THEIR EXPERIMENT FLOWN TO SPACE.

1176
00:44:50,721 --> 00:44:51,555
THAT'S THE SNAKE EXPERIMENT FOR

1177
00:44:51,622 --> 00:44:52,122
THIS.

1178
00:44:52,189 --> 00:44:59,196
THE TEAM HAS FIVE TEAM MEMBER,

1179
00:44:59,263 --> 00:44:59,997
ABBY HERE.

1180
00:45:00,064 --> 00:45:01,999
THEN NICOLAS IS HERE, AND

1181
00:45:02,066 --> 00:45:03,500
THERE'S OTHERS AROUND THIS WEEK.

1182
00:45:03,567 --> 00:45:05,002
THEY'RE IN THESE PHOTOS.

1183
00:45:05,069 --> 00:45:06,937
WE WORK WITH SPACE TANGO TO GET

1184
00:45:07,004 --> 00:45:08,372
THE EXPERIMENT BUILT AND

1185
00:45:08,439 --> 00:45:10,107
MANIFESTED AND FOR THOSE OF YOU

1186
00:45:10,174 --> 00:45:12,109
WHO WERE ASKING QUESTIONS ABOUT

1187
00:45:12,176 --> 00:45:13,944
FUNDING AND PROGRAMS LIKE THIS,

1188
00:45:14,011 --> 00:45:15,913

THIS IS SOMEWHAT OF A STANDARD

1189

00:45:15,979 --> 00:45:17,948

SUMMER CAMP WHERE JOHNNY OR SUZY

1190

00:45:18,015 --> 00:45:20,150

CAN CHOOSE TO ATTEND AND WE RUN

1191

00:45:20,217 --> 00:45:23,187

THESE ALL ACROSS THE COUNTRY.

1192

00:45:23,253 --> 00:45:24,855

WE'RE VERY BEHOLDING TO THE

1193

00:45:24,922 --> 00:45:27,291

SUPPORT OF OTHERS WHO ARE REALLY

1194

00:45:27,357 --> 00:45:32,062

BIG BELIEVERS IN STEM, SUCH AS A

1195

00:45:32,129 --> 00:45:33,964

C K AND TANGO AND THEIR WORK

1196

00:45:34,031 --> 00:45:34,565

FROM US.

1197

00:45:34,631 --> 00:45:37,568

YOU DON'T WANT TO HEAR FROM ME,

1198

00:45:37,634 --> 00:45:39,436

YOU WANT TO HEAR ABOUT THE

1199

00:45:39,503 --> 00:45:40,003

SCIENCE.

1200

00:45:40,070 --> 00:45:43,373

I'LL TURN THIS OVER TO ABBY

1201
00:45:43,440 --> 00:45:51,682
YONKERS WHO WILL TELL YOU ABOUT

1202
00:45:51,748 --> 00:45:53,117
08.

1203
00:45:53,183 --> 00:45:56,153
>> I'M ABIGAIL YONKERS.

1204
00:45:56,220 --> 00:45:57,955
I AM GREATLY APPRECIATIVE AND

1205
00:45:58,021 --> 00:45:59,323
HONORED TO BE GIVEN THIS

1206
00:45:59,389 --> 00:46:01,391
OPPORTUNITY FROM HIGHER ORBITS.

1207
00:46:01,458 --> 00:46:03,460
BACK IN FEBRUARY WHEN I MET MY

1208
00:46:03,527 --> 00:46:05,662
NONGROUP MEMBERS FOR THE FIRST

1209
00:46:05,729 --> 00:46:08,031
TIME, THEY WERE GIVEN FIVE HOURS

1210
00:46:08,098 --> 00:46:09,199
OVER TWO-DAY PERIOD TO GET

1211
00:46:09,266 --> 00:46:11,935
TESTED IN THE ENVIRONMENT.

1212
00:46:12,002 --> 00:46:14,471
GIVEN THE REQUIREMENTS OF THE

1213
00:46:14,538 --> 00:46:18,108

EXPERIMENT WE BRAIN STORMED AND

1214

00:46:18,175 --> 00:46:19,743

WITH THE HELP OF THE TEACHER, WE

1215

00:46:19,810 --> 00:46:21,645

CAME UP WITH THE IDEA OF PLANT

1216

00:46:21,712 --> 00:46:22,980

GROWTH IN SPACE.

1217

00:46:23,046 --> 00:46:24,248

WE PROCEEDED TO BRAINSTORM

1218

00:46:24,314 --> 00:46:25,549

DIFFERENT VARIABLES THAT WE

1219

00:46:25,616 --> 00:46:26,817

COULD TEST WITHIN THE PROCESS OF

1220

00:46:26,884 --> 00:46:27,718

GROWING PLANTS.

1221

00:46:27,784 --> 00:46:29,686

WE CAME ACROSS THE PROCESS

1222

00:46:29,753 --> 00:46:31,088

CALLED NITROGEN FIXATION.

1223

00:46:31,155 --> 00:46:34,525

YOU MAY BE ASKING, WHAT IS

1224

00:46:34,591 --> 00:46:37,861

NITROGEN FIXATION, THE ANSWER IS

1225

00:46:37,928 --> 00:46:38,228

COOL.

1226
00:46:38,295 --> 00:46:39,830
IT IS A PROCESS IN WHICH PLANTS

1227
00:46:39,897 --> 00:46:42,399
THAT CONTAIN A BACTERIA THAT CAN

1228
00:46:42,466 --> 00:46:43,901
FIX NITROGEN IN THE EARTH

1229
00:46:43,967 --> 00:46:46,637
ATMOSPHERE AND TURN IT INTO

1230
00:46:46,703 --> 00:46:54,611
OTHER USABLE COMPOUNDS SUCH AS

1231
00:46:54,678 --> 00:47:00,417
NITRATE AND AMMONIA.

1232
00:47:00,484 --> 00:47:02,085
IT IS ALSO A NATURAL

1233
00:47:02,152 --> 00:47:02,486
FERTILIZERS.

1234
00:47:02,553 --> 00:47:04,688
WE WERE INTRIGUED.

1235
00:47:04,755 --> 00:47:07,591
WE THOUGHT THIS IS A NATURALLY

1236
00:47:07,658 --> 00:47:08,358
OCCURRING PROCESS.

1237
00:47:08,425 --> 00:47:12,196
WHAT WILL CHANGE IF WE PUT IT IN

1238
00:47:12,262 --> 00:47:13,797

A MICRO ENVIRONMENT?

1239

00:47:13,864 --> 00:47:16,099

WE TESTED IT WHEN IT GETS PUT

1240

00:47:16,166 --> 00:47:17,668

BACK IN THE SOIL AND COMPARE IT

1241

00:47:17,734 --> 00:47:21,038

TO THE PROJECT GOING ON HERE ON

1242

00:47:21,104 --> 00:47:21,872

EARTH, BY DOING THIS, WE HAVE A

1243

00:47:21,939 --> 00:47:22,873

CONSTANT IN THE EXPERIMENT AND

1244

00:47:22,940 --> 00:47:25,042

SEE IF GRAVITY REALLY PLAYS A

1245

00:47:25,108 --> 00:47:28,278

ROLE IN THE FIXATION PROCESS.

1246

00:47:28,345 --> 00:47:29,846

ORIGINALLY, WE PLANNED OUR

1247

00:47:29,913 --> 00:47:32,049

PROJECT TO BE USED WITH PEANUT

1248

00:47:32,115 --> 00:47:36,453

PLANTS BUT DUE TO THE SMALL SIZE

1249

00:47:36,520 --> 00:47:44,127

OF THE CUBE LAB, THE OUTCOME IS

1250

00:47:44,194 --> 00:47:44,861

UNCHANGED.

1251
00:47:44,928 --> 00:47:47,497
IT HAD SEVERAL SPOTTED CLOVERS,

1252
00:47:47,564 --> 00:47:50,500
THERE'S A VIDEO LATER ON.

1253
00:47:50,567 --> 00:47:51,368
IT LOOKS COOL.

1254
00:47:51,435 --> 00:47:54,037
THERE'S ALL KIND OF SENSORS THAT

1255
00:47:54,104 --> 00:47:55,872
MONITOR VISUALLY THE PLANTS AND

1256
00:47:55,939 --> 00:47:58,842
NITRATES THAT ARE BEING PUT BACK

1257
00:47:58,909 --> 00:47:59,810
IN THE SOIL.

1258
00:47:59,876 --> 00:48:02,913
ALONG WITH ALL OF THE SENSORS,

1259
00:48:02,980 --> 00:48:07,117
WE HAVE A CAMERA WHICH WE

1260
00:48:07,184 --> 00:48:09,052
ORIGINALLY DIDN'T CALL FOR, BUT

1261
00:48:09,119 --> 00:48:12,522
IT LOOKED REALLY COOL.

1262
00:48:12,589 --> 00:48:16,126
MY TEAM HOPE FOR THE EXPERIMENT

1263
00:48:16,193 --> 00:48:22,132

IS TO INHABIT INHABITABLE

1264

00:48:22,199 --> 00:48:22,699

ENVIRONMENT.

1265

00:48:22,766 --> 00:48:25,202

WE HOPE OUR KIDS OUR AGE WILL BE

1266

00:48:25,269 --> 00:48:26,670

EXPOSED TO THIS GREAT PROGRAM

1267

00:48:26,737 --> 00:48:28,538

LIKE HIGHER ORBITS.

1268

00:48:28,605 --> 00:48:34,011

I NEVER DREAMED OF SPENDING

1269

00:48:34,077 --> 00:48:36,380

MICRO CLOVERS UP TO TEST THE

1270

00:48:36,446 --> 00:48:36,680

SOIL.

1271

00:48:36,747 --> 00:48:39,650

IT IS AMAZE WHAT WE GET TO

1272

00:48:39,716 --> 00:48:41,051

EXPERIENCE THIS WEEK HERE IN

1273

00:48:41,118 --> 00:48:43,220

D.C. AND WE'RE ALL JUST SO

1274

00:48:43,287 --> 00:48:43,587

HONORED.

1275

00:48:43,654 --> 00:48:45,522

SO THANK YOU HIGHER ORBITS.

1276
00:48:45,589 --> 00:48:48,692
THANK YOU, NASA AND THANK YOU

1277
00:48:48,759 --> 00:48:57,434
ORBITAL HDK.

1278
00:48:57,501 --> 00:48:57,834
[APPLAUSE].

1279
00:48:57,901 --> 00:48:59,102
>> WE HAVE A QUICK VIDEO THAT

1280
00:48:59,169 --> 00:49:00,137
CAN ROLL AS WE ANSWER QUESTIONS.

1281
00:49:00,203 --> 00:49:02,005
THIS IS TESTED ON THE GROUND, SO

1282
00:49:02,072 --> 00:49:04,374
YOU COULD SEE WHAT IT LOOKS LIKE

1283
00:49:04,441 --> 00:49:08,779
WHEN THE MICRO CLOVERS GROW.

1284
00:49:08,845 --> 00:49:11,248
THIS IS 1G ENVIRONMENT.

1285
00:49:11,315 --> 00:49:12,649
YOU COULD ACCESS THIS FROM HOME.

1286
00:49:12,716 --> 00:49:15,152
THEY'LL BE ABLE TO LOG IN AND

1287
00:49:15,218 --> 00:49:16,620
GET IT THEMSELVES.

1288
00:49:16,687 --> 00:49:21,692

GREAT, WITH THAT WE OPEN TO

1289

00:49:21,758 --> 00:49:22,492

QUESTIONS.

1290

00:49:22,559 --> 00:49:24,428

PLEASE RAISE YOUR HANDS OR USE

1291

00:49:24,494 --> 00:49:32,035

HASH TAG ASK NASA.

1292

00:49:32,102 --> 00:49:33,837

>> SPACE INSIDER, MY QUESTION

1293

00:49:33,904 --> 00:49:36,139

IS FOR THE YOUNG LADY HERE.

1294

00:49:36,206 --> 00:49:37,974

HOW DID YOU GET STARTED?

1295

00:49:38,041 --> 00:49:40,177

YOU LOOK -- I MEAN, I FEEL OLD,

1296

00:49:40,243 --> 00:49:44,114

SO OLD LOOKING AT YOU.

1297

00:49:44,181 --> 00:49:44,548

YOU'RE --

1298

00:49:44,614 --> 00:49:47,284

>> OLD [INDISCERNIBLE].

1299

00:49:47,351 --> 00:49:48,752

>> YOU'RE SO YOUNG, WHAT MADE

1300

00:49:48,819 --> 00:49:51,621

YOU DECIDE TO GET STARTED IN

1301
00:49:51,688 --> 00:49:51,922
THIS?

1302
00:49:51,988 --> 00:49:53,857
>> MY HIGH SCHOOL, MY GEOMETRY

1303
00:49:53,924 --> 00:49:55,492
TEACHER SAW THIS BECAUSE IT WAS

1304
00:49:55,559 --> 00:49:56,660
HOSTED AT MY OLD HIGH SCHOOL.

1305
00:49:56,727 --> 00:49:58,295
I HAD JUST STARTED TO GET KIND

1306
00:49:58,362 --> 00:49:59,296
OF INTERESTED IN SPACE.

1307
00:49:59,363 --> 00:50:00,430
I THOUGHT IT WAS PRETTY COOL.

1308
00:50:00,497 --> 00:50:02,065
I WAS TALKING TO HIM ABOUT IT.

1309
00:50:02,132 --> 00:50:04,301
SO LONG AS I WENT TO THE CAMP I

1310
00:50:04,368 --> 00:50:04,601
KNEW.

1311
00:50:04,668 --> 00:50:07,571
I'VE BEEN JUST SO INSPIRED.

1312
00:50:07,637 --> 00:50:09,706
I WANT TO BE AEROSPACE ENGINEER

1313
00:50:09,773 --> 00:50:10,941

WHEN I'M OLDER.

1314

00:50:11,007 --> 00:50:12,175

IT CAME THROUGH EXPOSURE AT MY

1315

00:50:12,242 --> 00:50:12,676

HIGH SCHOOL.

1316

00:50:12,743 --> 00:50:13,977

>> FOLLOW-UP QUESTION, WHEN YOU

1317

00:50:14,044 --> 00:50:16,380

GOT STARTED IN THIS, DID YOU

1318

00:50:16,446 --> 00:50:22,819

THINK YOU WOULD ATTEND A MAZZA

1319

00:50:23,620 --> 00:50:25,789

-- NASA LAUNCH?

1320

00:50:25,856 --> 00:50:26,623

>> NO WAY.

1321

00:50:26,690 --> 00:50:27,824

I WAS FREAKED OUT.

1322

00:50:27,891 --> 00:50:29,326

WE WERE SO HONORED.

1323

00:50:29,393 --> 00:50:30,927

I NEVER SAW MYSELF DOING THIS.

1324

00:50:30,994 --> 00:50:33,830

IT IS ABSOLUTELY CRAZY AND

1325

00:50:33,897 --> 00:50:34,498

REALLY COOL.

1326

00:50:34,564 --> 00:50:34,931

THANK YOU.

1327

00:50:34,998 --> 00:50:36,400

>> AGAIN, IF YOU HAVE A

1328

00:50:36,466 --> 00:50:37,334

QUESTION IN THE ROOM, PLEASE

1329

00:50:37,401 --> 00:50:38,602

RAISE YOUR HAND.

1330

00:50:38,668 --> 00:50:40,137

WE HAVE ONE QUESTION NOW FROM

1331

00:50:40,203 --> 00:50:41,104

ASK NASA.

1332

00:50:41,171 --> 00:50:41,638

>> THANKS.

1333

00:50:41,705 --> 00:50:44,040

THE QUESTION IS HOW CAN TEACHERS

1334

00:50:44,107 --> 00:50:45,208

REGISTER THEIR CLASS TO

1335

00:50:45,275 --> 00:50:49,012

PARTICIPATE IN THE CUBE SET

1336

00:50:49,079 --> 00:50:49,379

PROGRAMS?

1337

00:50:49,446 --> 00:50:50,981

>> I CAN'T SPEAK TO CUBE SET,

1338

00:50:51,047 --> 00:50:54,050

CUBE SETS ARE DIFFERENT THAN

1339

00:50:54,117 --> 00:50:58,722

CUBE LABS.

1340

00:50:58,789 --> 00:51:03,026

CUBE SETS LAUNCH AND CUBE SETS

1341

00:51:03,093 --> 00:51:03,493

ARE IN THE LAB.

1342

00:51:03,560 --> 00:51:04,795

WE HAVE PROGRAMS ACROSS THE

1343

00:51:04,861 --> 00:51:05,128

COUNTRY.

1344

00:51:05,195 --> 00:51:07,464

WE WANT PROGRAMS IN OTHER

1345

00:51:07,531 --> 00:51:07,831

LOCATIONS.

1346

00:51:07,898 --> 00:51:12,903

WHEN I WAS THREE I FELL IN LOVE

1347

00:51:12,969 --> 00:51:13,303

WITH SPACE.

1348

00:51:13,370 --> 00:51:15,806

I WORKED AT NASA FOR A BUNCH OF

1349

00:51:15,872 --> 00:51:18,809

YEARS, I WANTED TO BRING THIS TO

1350

00:51:18,875 --> 00:51:21,745

BACKYARDS OF STUDENTS.

1351
00:51:21,812 --> 00:51:25,348
I KNOW ABBY WANTS TO GO TO SPACE

1352
00:51:25,415 --> 00:51:29,653
CAMP BUT ORIGINALLY WE DIDN'T

1353
00:51:29,719 --> 00:51:29,953
KNOW.

1354
00:51:30,020 --> 00:51:31,087
>> I THINK WE HAVE TIME FOR ONE

1355
00:51:31,154 --> 00:51:32,122
MORE QUESTION.

1356
00:51:32,189 --> 00:51:37,160
IF YOU HAVE A QUESTION, PLEASE

1357
00:51:37,227 --> 00:51:42,032
RAISE YOUR HAND.

1358
00:51:42,098 --> 00:51:43,233
>> A QUESTION ON HOW THE

1359
00:51:43,300 --> 00:51:46,603
EXPERIMENT IS RUN INSIDE THE

1360
00:51:46,670 --> 00:51:47,471
ISS?

1361
00:51:47,537 --> 00:51:50,240
MONITORED OR DONE REMOTELY?

1362
00:51:50,307 --> 00:51:53,109
>> THIS IS BEAUTY OF AUTOMATION

1363
00:51:53,176 --> 00:51:54,845

AND THINGS CREATED BY SPACE

1364

00:51:54,911 --> 00:51:55,145

TANGO.

1365

00:51:55,212 --> 00:51:57,013

THE ABILITY TO HAVE EXPERIMENTS

1366

00:51:57,080 --> 00:51:58,348

GOING THAT DON'T REQUIRE CREW

1367

00:51:58,415 --> 00:51:58,648

TIME.

1368

00:51:58,715 --> 00:51:59,883

THAT WAY WE COULD GET MORE

1369

00:51:59,950 --> 00:52:00,517

SCIENCE DONE.

1370

00:52:00,584 --> 00:52:02,252

THIS IS GOING TO BE START WITH A

1371

00:52:02,319 --> 00:52:05,222

COMMAND FROM SPACE TANGO, THAT

1372

00:52:05,288 --> 00:52:06,923

GOES THROUGH MARSHALL

1373

00:52:06,990 --> 00:52:10,460

SPACEFLIGHT CENTER AND THE

1374

00:52:10,527 --> 00:52:14,698

CHANNELS AND THEN THE VIDEO

1375

00:52:14,764 --> 00:52:17,100

DOWNLOADED, THERE'S NO NEED FOR

1376
00:52:17,167 --> 00:52:18,335
THE CREW EXCEPT WHEN THEY TAKE

1377
00:52:18,401 --> 00:52:22,906
IT OUT OF CIGNIS.

1378
00:52:22,973 --> 00:52:27,110
WE GET 30 DAYS OF DATA WITHOUT

1379
00:52:27,177 --> 00:52:27,711
CREW TIME.

1380
00:52:27,777 --> 00:52:28,745
>> WE HAVE ANOTHER QUESTION.

1381
00:52:28,812 --> 00:52:30,914
WE OPEN IT UP TO CAMILLE TO

1382
00:52:30,981 --> 00:52:31,948
ANSWER THE QUESTION.

1383
00:52:32,015 --> 00:52:33,550
>> IT IS FOR ABBY.

1384
00:52:33,617 --> 00:52:35,919
WHAT WOULD YOU TELL OTHER YOUNG

1385
00:52:35,986 --> 00:52:37,020
WOMEN LIKE YOURSELF?

1386
00:52:37,087 --> 00:52:38,922
HOW THEY COULD BE INSPIRED BY

1387
00:52:38,989 --> 00:52:40,657
SCIENCE AND SPACE AND -- AND

1388
00:52:40,724 --> 00:52:41,992

FUTURE ENGINEERING?

1389

00:52:42,058 --> 00:52:43,293

>> DON'T BE INTIMIDATED.

1390

00:52:43,360 --> 00:52:44,794

I WALKED INTO THIS CAMP AND I

1391

00:52:44,861 --> 00:52:46,763

WAS ONE OF TWO GIRLS.

1392

00:52:46,830 --> 00:52:48,698

THERE'S LIKE AT LEAST 50 OTHER

1393

00:52:48,765 --> 00:52:48,999

GUYS.

1394

00:52:49,065 --> 00:52:51,034

I ACTUALLY APPLIED FOR ANOTHER

1395

00:52:51,101 --> 00:52:55,872

CAMP SCHOLARSHIP IN -- IS IT IN

1396

00:52:55,939 --> 00:52:56,573

ALABAMA?

1397

00:52:56,640 --> 00:52:58,008

IN ALABAMA.

1398

00:52:58,074 --> 00:53:00,110

I HAD TO WRITE ABOUT WHAT

1399

00:53:00,176 --> 00:53:01,077

INSPIRED ME.

1400

00:53:01,144 --> 00:53:04,114

I DEFINE THEM DIFFERENTLY.

1401
00:53:04,180 --> 00:53:05,415
I THINK ANYONE WHO TAKES PART

1402
00:53:05,482 --> 00:53:06,883
AND HELPS AND HAS PART OF

1403
00:53:06,950 --> 00:53:08,285
ANYTHING THAT GOES INTO IT AND

1404
00:53:08,351 --> 00:53:12,422
MARY JACKSON, ONE OF THE FIRST

1405
00:53:12,489 --> 00:53:13,957
BLACK WOMEN AEROSPACE ENGINEERS

1406
00:53:14,024 --> 00:53:15,225
IS WHO I PUT DOWN.

1407
00:53:15,292 --> 00:53:17,093
YOU CAN'T BE INTIMIDATED.

1408
00:53:17,160 --> 00:53:18,395
YOU CAN'T BE AFRAID OR FEEL OUT

1409
00:53:18,461 --> 00:53:20,463
OF PLACE, BECAUSE YOU DO BELONG

1410
00:53:20,530 --> 00:53:22,365
IN THE FIELD AND THE WORLD OF

1411
00:53:22,432 --> 00:53:22,732
SCIENCE.

1412
00:53:22,799 --> 00:53:26,870
IT IS VAST.

1413
00:53:26,937 --> 00:53:27,504

IT IS GREAT.

1414

00:53:27,571 --> 00:53:29,606

JUST DON'T BE AFRAID.

1415

00:53:29,673 --> 00:53:30,040

[APPLAUSE].

1416

00:53:30,106 --> 00:53:32,676

>> I HAVE TO QUICKLY SAY, IT --

1417

00:53:32,742 --> 00:53:34,477

IT WAS INTERESTING, THIS EVENT

1418

00:53:34,544 --> 00:53:36,146

WAS THE ONLY EVENT WHERE WE HAD

1419

00:53:36,212 --> 00:53:37,981

SUCH A LOW TURNOUT OF GIRL.

1420

00:53:38,048 --> 00:53:39,282

WE ONLY HAD THREE.

1421

00:53:39,349 --> 00:53:41,785

WE ACTUALLY AVERAGE BETWEEN 35

1422

00:53:41,851 --> 00:53:44,254

AND 40 PERCENT FEMALE AT ALL OF

1423

00:53:44,321 --> 00:53:45,722

OUR EVENTS.

1424

00:53:45,789 --> 00:53:47,324

ABBY WAS -- IT WAS ODD YOU WERE

1425

00:53:47,390 --> 00:53:49,459

ONE OF THE FEW GIRLS.

1426
00:53:49,526 --> 00:53:52,429
AS YOU COULD TELL SHE'S AMAZING

1427
00:53:52,495 --> 00:53:53,029
YOUNG LADY.

1428
00:53:53,096 --> 00:53:54,798
THEY ARE ALL AMAZING.

1429
00:53:54,864 --> 00:53:56,499
IF YOU SEE THEM, ASK THEM

1430
00:53:56,566 --> 00:53:57,667
QUESTIONS, THEY WOULD LOVE TO

1431
00:53:57,734 --> 00:53:58,468
CHAT WITH YOU.

1432
00:53:58,535 --> 00:54:03,106
>> THANK YOU BOTH.

1433
00:54:03,173 --> 00:54:08,778
WE HAVE ONE FINAL SPEAKER.

1434
00:54:08,845 --> 00:54:10,280
[APPLAUSE].

1435
00:54:10,347 --> 00:54:12,682
>> KEITH IS THE CEO OF SPACE

1436
00:54:12,749 --> 00:54:14,918
TECHNOLOGY AND ADVANCED RESEARCH

1437
00:54:14,985 --> 00:54:15,885
SYSTEMS INCORPORATED.

1438
00:54:15,952 --> 00:54:17,420

>> THANK YOU VERY MUCH FOR

1439

00:54:17,487 --> 00:54:18,888

HAVING US HERE TODAY.

1440

00:54:18,955 --> 00:54:19,689

AMAZING PRESENTATION.

1441

00:54:19,756 --> 00:54:22,759

ROUGH TO FOLLOW THAT ONE.

1442

00:54:22,826 --> 00:54:24,260

WE'LL SEE HOW IT GOES.

1443

00:54:24,327 --> 00:54:25,762

YES, MY NAME IS HEITH MILLS.

1444

00:54:25,829 --> 00:54:30,333

I'M THE CEO OF -- OF STARS, THE

1445

00:54:30,400 --> 00:54:39,142

-- THE -- I'M CEO OF STARS, WITH

1446

00:54:39,209 --> 00:54:39,876

SPACE TECHNOLOGY AND ADVANCED

1447

00:54:39,943 --> 00:54:40,410

RESEARCH SYSTEMS.

1448

00:54:40,477 --> 00:54:41,611

WE HAVE UNIQUE CAPACITY TO

1449

00:54:41,678 --> 00:54:44,147

PROVIDE AN ENVIRONMENT WITHIN --

1450

00:54:44,214 --> 00:54:46,282

WITHIN THE SPACE STATION TO

1451
00:54:46,349 --> 00:54:48,084
PRESENT YOUR RESEARCH IN TO THE

1452
00:54:48,151 --> 00:54:49,986
MICRO GRAVITY ENVIRONMENT.

1453
00:54:50,053 --> 00:54:52,055
NOW HAD IS DONE THROUGH AND IS

1454
00:54:52,122 --> 00:54:53,923
WHAT WAS SAID BEFORE, REMOTE

1455
00:54:53,990 --> 00:54:54,257
ACCESS.

1456
00:54:54,324 --> 00:54:56,426
WE DO THIS SO THAT WE ALSO LIMIT

1457
00:54:56,493 --> 00:54:58,628
THE AMOUNT OF CREW TIME THAT

1458
00:54:58,695 --> 00:54:59,462
GOES FORWARD.

1459
00:54:59,529 --> 00:55:00,563
I HAVE SEAT OF SLIDES THAT I

1460
00:55:00,630 --> 00:55:02,098
LIKE TO START OFF WITH HERE TO

1461
00:55:02,165 --> 00:55:03,600
SHOW A LITTLE BIT MORE ABOUT

1462
00:55:03,667 --> 00:55:05,502
WHAT WE DO AND WHAT WE COULD

1463
00:55:05,568 --> 00:55:06,770

OFFER AT STARS.

1464

00:55:06,836 --> 00:55:14,210

WE WOULD GO TO THE FIRST SLIDE.

1465

00:55:14,277 --> 00:55:16,112

AS THAT COMES UP IN A FEW

1466

00:55:16,179 --> 00:55:17,580

SECONDS, THERE IT GOES THERE.

1467

00:55:17,647 --> 00:55:19,349

THAT'S STARS, THAT'S OUR MOTTO

1468

00:55:19,416 --> 00:55:21,151

OUT THERE AND LAID OUT FOR YOU.

1469

00:55:21,217 --> 00:55:22,585

IF WE GO TO THE NEXT SLIDE, I

1470

00:55:22,652 --> 00:55:23,953

WANT TO SHOW ONE KEY POINT.

1471

00:55:24,020 --> 00:55:38,601

MY BACKGROUND, I'M A MOLECULAR

1472

00:55:38,668 --> 00:55:39,502

MICRO BIOLOGIST.

1473

00:55:39,569 --> 00:55:40,303

WE VIEWED THIS AS ABILITY TO DO

1474

00:55:40,370 --> 00:55:41,037

RESEARCH IN A NEW ENVIRONMENT.

1475

00:55:41,104 --> 00:55:41,871

WHAT YOU SHOW ON HERE, WHAT

1476
00:55:41,938 --> 00:55:42,839
WE'RE TRYING TO DO AS A COMPANY

1477
00:55:42,906 --> 00:55:44,674
IS MOVE YOUR ADVANCED RESEARCH,

1478
00:55:44,741 --> 00:55:46,443
YOUR RESEARCH THAT YOU DO HERE

1479
00:55:46,509 --> 00:55:49,579
ON EARTH, NEXT SLIDE, UP TO THE

1480
00:55:49,646 --> 00:55:50,346
INTERNATIONAL SPACE STATION.

1481
00:55:50,413 --> 00:55:53,116
IN DOING SO, WHAT WE'RE TRYING

1482
00:55:53,183 --> 00:55:54,918
TO BUILD UPON IS A MECHANISM

1483
00:55:54,984 --> 00:55:56,686
WHERE YOU COULD TRANSLATE YOUR

1484
00:55:56,753 --> 00:55:58,154
RESEARCH, YOUR HARD WORK AND THE

1485
00:55:58,221 --> 00:55:59,956
TIME SPENT ON EARTH DOING ALL OF

1486
00:56:00,023 --> 00:56:01,157
THE EXPERIMENTS THAT YOU'RE

1487
00:56:01,224 --> 00:56:02,459
DOING INTO A NEW ENVIRONMENT TO

1488
00:56:02,525 --> 00:56:04,928

BE ABLE TO PROVIDE CONNECTIVITY

1489

00:56:04,994 --> 00:56:12,469

BETWEEN WHAT HAPPENS ON THE

1490

00:56:12,535 --> 00:56:13,236

INTERNATIONAL SPACE STATION AND

1491

00:56:13,303 --> 00:56:13,903

WHAT IS DONE ON EARTH.

1492

00:56:13,970 --> 00:56:15,705

TO DO THIS, WE HAVE THE STARS

1493

00:56:15,772 --> 00:56:17,040

ONE EXPERIMENT FACILITY.

1494

00:56:17,107 --> 00:56:18,308

NOW THE STARS ONE EXPERIMENT

1495

00:56:18,374 --> 00:56:19,743

FACILITY IS A LOCKER INSERT FOR

1496

00:56:19,809 --> 00:56:22,078

THOSE ENGINEERS OUT THERE.

1497

00:56:22,145 --> 00:56:24,013

THIS FITS INTO THE -- INTO THE

1498

00:56:24,080 --> 00:56:27,383

U.S. NATIONAL LAB AND PROVIDES

1499

00:56:27,450 --> 00:56:27,984

US COMMAND AND CONTROL

1500

00:56:28,051 --> 00:56:29,953

CAPABILITIES ON EARTH IN A

1501
00:56:30,019 --> 00:56:30,587
TEMPERATURE CONTROLLED

1502
00:56:30,653 --> 00:56:31,855
ENVIRONMENT, BECAUSE AS YOU

1503
00:56:31,921 --> 00:56:32,589
KNOW, CONTROLLING THE

1504
00:56:32,655 --> 00:56:34,457
TEMPERATURE ALLOWS YOU TO REALLY

1505
00:56:34,524 --> 00:56:36,826
CONSTRAIN YOUR EXPERIMENTS

1506
00:56:36,893 --> 00:56:39,729
WHETHER YOU'RE DOING MICRO

1507
00:56:39,796 --> 00:56:42,198
BIOLOGY OR STEM CELLS, BIOFUELS,

1508
00:56:42,265 --> 00:56:43,967
WHATEVER YOUR EXPERIMENT MAY BE,

1509
00:56:44,033 --> 00:56:45,335
YOU HAVE TO MAKE SURE YOUR

1510
00:56:45,401 --> 00:56:46,402
ENVIRONMENT IS COMPLETELY

1511
00:56:46,469 --> 00:56:47,103
TEMPERATURE CONTROLLED.

1512
00:56:47,170 --> 00:56:48,004
NEXT SLIDE, PLEASE.

1513
00:56:48,071 --> 00:56:51,141

A LITTLE BIT OF A CLOSE-UP OF

1514

00:56:51,207 --> 00:56:53,109

THE STARS ONE FACILITY, YOU SEE

1515

00:56:53,176 --> 00:56:54,577

THREE MAIN PORTIONS OF IT.

1516

00:56:54,644 --> 00:56:56,813

ON THE RIGHT SIDE, YOU SEE THE

1517

00:56:56,880 --> 00:56:57,647

STATIC RACK.

1518

00:56:57,714 --> 00:56:59,482

THE STATIC RACK, THIS IS WHERE

1519

00:56:59,549 --> 00:57:01,284

THE EXPERIMENTS ARE EXPOSED TO

1520

00:57:01,351 --> 00:57:02,318

MICRO GRAVITY.

1521

00:57:02,385 --> 00:57:03,720

THE WHEEL YOU SEE IN THE BACK

1522

00:57:03,787 --> 00:57:06,489

LEFT CORNER, WHAT YOU'RE SEEING

1523

00:57:06,556 --> 00:57:08,558

HERE IS A CENTRIFUGE.

1524

00:57:08,625 --> 00:57:10,760

IT SPENT TIME TO GET UP TO MICRO

1525

00:57:10,827 --> 00:57:15,131

GRAVITY AND WE TURN GRAVITY BACK

1526
00:57:15,198 --> 00:57:15,398
ON.

1527
00:57:15,465 --> 00:57:17,934
THOSE POOR CELLS AND POOR

1528
00:57:18,001 --> 00:57:20,136
BIOLOGY GOES BACK TO A LOW

1529
00:57:20,203 --> 00:57:21,404
GRAVITY ENVIRONMENT.

1530
00:57:21,471 --> 00:57:22,939
THIS IS KEY, BECAUSE ANY

1531
00:57:23,006 --> 00:57:23,973
DIFFERENCE YOUR EXPERIMENT

1532
00:57:24,040 --> 00:57:25,842
EXPERIENCES IN SPACE IN THIS

1533
00:57:25,909 --> 00:57:26,876
ENVIRONMENT, IN OUR TEMPERATURE

1534
00:57:26,943 --> 00:57:27,844
CONTROLLED ENVIRONMENT, WE COULD

1535
00:57:27,911 --> 00:57:30,914
LIMIT THE VARIABLE TO ONE THING,

1536
00:57:30,980 --> 00:57:31,247
GRAVITY.

1537
00:57:31,314 --> 00:57:32,982
SO ANY TEMPERATURE VARIANCES.

1538
00:57:33,049 --> 00:57:40,890

ANY RADIATION VARIANCES, ANY

1539

00:57:40,957 --> 00:57:44,494

VIBRATIONAL NOISE WITHIN THE

1540

00:57:44,561 --> 00:57:47,430

STATION, YOU WILL BE ALLOWED TO

1541

00:57:47,497 --> 00:57:50,166

HAVE BETTER RESULTS IN THE FINAL

1542

00:57:50,233 --> 00:57:50,567

EXPERIMENT.

1543

00:57:50,633 --> 00:57:53,069

RIGHT IN THE FRONT BOTTOM LEFT

1544

00:57:53,136 --> 00:57:55,138

CORNER, YOU SEE AN EMPTY SPACE.

1545

00:57:55,205 --> 00:57:58,041

THIS ALLOWS LARGER CUBE LABS AND

1546

00:57:58,107 --> 00:58:01,978

ADVANCED LAB CAPABILITIES,

1547

00:58:02,045 --> 00:58:04,113

ESPECIALLY THOSE PRODUCED BY

1548

00:58:04,180 --> 00:58:05,114

SPACE PHARMA.

1549

00:58:05,181 --> 00:58:07,050

THAT'S THE STARS ONE FACILITY,

1550

00:58:07,116 --> 00:58:10,787

THAT'S WHAT WE HAVE CURRENTLY ON

1551
00:58:10,854 --> 00:58:11,221
STATION.

1552
00:58:11,287 --> 00:58:14,490
THE NEXT SLIDE SHOWS MISS PEGGY

1553
00:58:14,557 --> 00:58:17,393
WITSON PLUGGING IN THE

1554
00:58:17,460 --> 00:58:21,631
EXPERIMENT FACILITY INTO THE

1555
00:58:21,698 --> 00:58:22,999
LAB, AND WE HAD A SUCCESSFUL

1556
00:58:23,066 --> 00:58:25,301
LAUNCH AND PEGGY WAS ABLE TO

1557
00:58:25,368 --> 00:58:27,337
SUCCESSFULLY INSTALL OUR

1558
00:58:27,403 --> 00:58:28,004
PLATFORM IN THE LAB.

1559
00:58:28,071 --> 00:58:31,307
WE WERE ABLE TO TURN IT ON AND

1560
00:58:31,374 --> 00:58:32,909
COMMUNICATE WITH IT.

1561
00:58:32,976 --> 00:58:34,677
THERE WAS TENSE MOMENTS THERE

1562
00:58:34,744 --> 00:58:36,312
AND WE WERE EXTREMELY HAPPY TO

1563
00:58:36,379 --> 00:58:37,547

SEE THAT THIS THING PLUGGED IN

1564

00:58:37,614 --> 00:58:40,049

AND TURNED ON AND WE'RE READY TO

1565

00:58:40,116 --> 00:58:42,218

START DOING A LOT OF REALLY COOL

1566

00:58:42,285 --> 00:58:42,585

RESEARCH.

1567

00:58:42,652 --> 00:58:43,486

NEXT SLIDE, PLEASE.

1568

00:58:43,553 --> 00:58:45,755

NOW TO DO THOSE, WE HAVE PARTNER

1569

00:58:45,822 --> 00:58:46,155

COMPANIES.

1570

00:58:46,222 --> 00:58:48,458

WE'RE WORKING WITH BOTH AIRBUS

1571

00:58:48,524 --> 00:58:57,166

AND KAISER TALIA AND PROVIDES US

1572

00:58:57,233 --> 00:58:57,867

MECHANISMS TO DO ALL KIND OF

1573

00:58:57,934 --> 00:58:58,268

EXPERIMENTS.

1574

00:58:58,334 --> 00:58:59,068

CLOSED ECOSYSTEMS AND DIFFERENT

1575

00:58:59,135 --> 00:59:01,537

CAN TYPES OF CELLS IN THESE.

1576
00:59:01,604 --> 00:59:02,472
NEXT SLIDE, WE COULD ALSO DO

1577
00:59:02,538 --> 00:59:05,541
MIXING AND PROVIDE AN ACCESS TO

1578
00:59:05,608 --> 00:59:08,044
-- TO MIX DIFFERENT FLUIDS AND

1579
00:59:08,111 --> 00:59:10,046
FEED YOURSELF AND YOUR

1580
00:59:10,113 --> 00:59:11,147
EXPERIMENTS, PRESERVE THEM AND

1581
00:59:11,214 --> 00:59:13,950
FREEZE THEM AS A BACKGROUND IN

1582
00:59:14,017 --> 00:59:15,585
MOLECULAR MICRO BIOLOGY, I WANT

1583
00:59:15,652 --> 00:59:17,287
TO MAKE SURE WHEN THESE

1584
00:59:17,353 --> 00:59:18,755
EXPERIMENTS GO UP AND COME DOWN,

1585
00:59:18,821 --> 00:59:20,223
THE EXPERIMENT IS CONSTRAINED

1586
00:59:20,290 --> 00:59:21,824
PROPERLY SO ALL OF THIS HARD

1587
00:59:21,891 --> 00:59:23,893
WORK THAT YOU HAVE DONE OVER ALL

1588
00:59:23,960 --> 00:59:25,695

OF THESE YEARS TO GET READY FOR

1589

00:59:25,762 --> 00:59:26,562

FLIGHT, THE EXPERIMENT COMES

1590

00:59:26,629 --> 00:59:28,031

BACK THE WAY YOU WANTED IT TO

1591

00:59:28,097 --> 00:59:29,098

COME BACK.

1592

00:59:29,165 --> 00:59:32,101

WE TAKE REALLY GOOD EFFORT IN

1593

00:59:32,168 --> 00:59:33,736

DOING THAT WITHOUT THE NEED FOR

1594

00:59:33,803 --> 00:59:35,371

CREW INTERACTION, WHICH MEANS WE

1595

00:59:35,438 --> 00:59:37,006

GET TO FLY MORE EXPERIMENTS AND

1596

00:59:37,073 --> 00:59:38,408

DO MORE RESEARCH AND EVERYBODY

1597

00:59:38,474 --> 00:59:40,209

GETS TO LEARN MORE ABOUT WHAT

1598

00:59:40,276 --> 00:59:42,178

MICRO GRAVITY HAS IN STORE.

1599

00:59:42,245 --> 00:59:44,180

WITH THE NEXT SLIDE, WE

1600

00:59:44,247 --> 00:59:45,281

INTRODUCE SPACE PHARMA.

1601
00:59:45,348 --> 00:59:47,650
WE HAVE A COUPLE OF INDIVIDUALS

1602
00:59:47,717 --> 00:59:49,185
FROM SPACE PHARMA HERE TODAY

1603
00:59:49,252 --> 00:59:50,887
THAT HAS BEEN WORKING HARD OVER

1604
00:59:50,954 --> 00:59:54,657
THE LAST WEEK THAT ALLOWED US TO

1605
00:59:54,724 --> 00:59:56,826
PRODUCE A NEW CUBE LAB, THIS IS

1606
00:59:56,893 --> 00:59:59,429
THE FIRST TIME IT HAS BEEN FLOWN

1607
00:59:59,495 --> 01:00:01,597
INSIDE THE INTERNATIONAL SPACE

1608
01:00:01,664 --> 01:00:01,998
STATION.

1609
01:00:02,065 --> 01:00:04,300
IT IS EXTERNAL AS FREE FLYING

1610
01:00:04,367 --> 01:00:06,369
SATELLITE AND FLYING NOW DUE TO

1611
01:00:06,436 --> 01:00:07,470
SUCCESSFUL LAUNCH IN FEBRUARY.

1612
01:00:07,537 --> 01:00:09,238
WE'RE HAPPY TO HAVE THEM AND

1613
01:00:09,305 --> 01:00:10,740

HAVE -- HAVE THIS CUBE LAB GOING

1614

01:00:10,807 --> 01:00:12,075
INTO OUR NEW FACILITY.

1615

01:00:12,141 --> 01:00:13,009
NEXT SLIDE, PLEASE.

1616

01:00:13,076 --> 01:00:14,377
AND THIS IS A QUICK LOOK AT THE

1617

01:00:14,444 --> 01:00:15,178
DESIGN OF IT.

1618

01:00:15,244 --> 01:00:17,680
THE CUBE LAB IS ABOUT THE SAME

1619

01:00:17,747 --> 01:00:19,415
SIZE OF WHAT YOU SEE UP HERE

1620

01:00:19,482 --> 01:00:21,718
WITH THE SOLID GOLD ONE.

1621

01:00:21,784 --> 01:00:23,286
WHICH IT WAS.

1622

01:00:23,353 --> 01:00:23,686
[LAUGHTER].

1623

01:00:23,753 --> 01:00:24,921
YOU WOULDN'T BE LEAVING HERE

1624

01:00:24,988 --> 01:00:25,555
WITH IT.

1625

01:00:25,621 --> 01:00:29,826
BUT WHAT THIS PROVIDES IS THE

1626
01:00:29,892 --> 01:00:33,396
MECHANISM TO -- TO HOUSE UNIQUE

1627
01:00:33,463 --> 01:00:33,997
EXPERIMENTS WITHIN OUR

1628
01:00:34,063 --> 01:00:34,564
EXPERIMENT FACILITY.

1629
01:00:34,630 --> 01:00:36,699
NEXT SLIDE, PLEASE.

1630
01:00:36,766 --> 01:00:38,434
THIS SHOWS WHAT IT LOOKS LIKE

1631
01:00:38,501 --> 01:00:42,405
BEFORE WE PLUGGED IT INTO THE

1632
01:00:42,472 --> 01:00:43,873
TRANSPORT MECHANISM TO GET IT UP

1633
01:00:43,940 --> 01:00:44,974
TO THE INTERNATIONAL SPACE

1634
01:00:45,041 --> 01:00:45,341
STATION.

1635
01:00:45,408 --> 01:00:46,142
NEXT SLIDE.

1636
01:00:46,209 --> 01:00:47,944
THIS IS THE KEY PART.

1637
01:00:48,011 --> 01:00:50,346
INSIDE THE -- THE EXPERIMENT,

1638
01:00:50,413 --> 01:00:54,017

INSIDE THE SPMG, THE SPACE

1639

01:00:54,083 --> 01:00:57,620

PHARMA MICRO GRAVITY LAB, INSIDE

1640

01:00:57,687 --> 01:01:00,656

WHAT YOU HAVE IS A CAPACITY TO

1641

01:01:00,723 --> 01:01:02,358

RUN FOUR DIFFERENT CAN

1642

01:01:02,425 --> 01:01:06,696

INDIVIDUAL EXPERIMENTS.

1643

01:01:06,763 --> 01:01:07,330

AUTONOMOUS, YOU COULD MIX

1644

01:01:07,397 --> 01:01:08,064

DIFFERENT FLUIDS AND SEE HOW

1645

01:01:08,131 --> 01:01:08,531

THEY INTERACT.

1646

01:01:08,598 --> 01:01:12,835

THE FUN PART IT HAS A MICRO

1647

01:01:12,902 --> 01:01:17,373

SCOPE AND SPECTRO THERMOMETER

1648

01:01:17,440 --> 01:01:19,542

AND IT SHOWS WHAT IS HAPPENING

1649

01:01:19,609 --> 01:01:21,210

AND HOW IT IS RESPONDING TO

1650

01:01:21,277 --> 01:01:24,480

MICRO GRAVITY.

1651
01:01:24,547 --> 01:01:29,185
THIS PROVIDES US REALLY UNIQUE

1652
01:01:29,252 --> 01:01:29,752
CAPABILITIES ON ORBIT.

1653
01:01:29,819 --> 01:01:31,154
WE COULD BRING IT BACK DOWN AND

1654
01:01:31,220 --> 01:01:32,288
THERE'S EXTREME ADVANTAGE TO

1655
01:01:32,355 --> 01:01:34,357
DOING WORK INSIDE THE STATION.

1656
01:01:34,424 --> 01:01:35,892
YOU COULD BRING THE SAMPLES BACK

1657
01:01:35,958 --> 01:01:37,093
DOWN AND ANALYZE THEM.

1658
01:01:37,160 --> 01:01:38,628
WITH THAT, WE COULD BRING IT

1659
01:01:38,694 --> 01:01:40,363
BACK DOWN.

1660
01:01:40,430 --> 01:01:41,998
YOU COULD DO YOUR METABOLITES,

1661
01:01:42,065 --> 01:01:43,232
AS ONE OF THE EXPERIMENTS WILL

1662
01:01:43,299 --> 01:01:46,636
DO HERE SHORTLY, YOU COULD DO

1663
01:01:46,702 --> 01:01:49,272

THE MORPHOLOGY EXPERIMENTS AND

1664

01:01:49,338 --> 01:01:53,476

LOOK AT IT IN REALTIME WITH THE

1665

01:01:53,543 --> 01:01:56,546

MICROSCOPE AND SPECTROMETER.

1666

01:01:56,612 --> 01:01:57,947

THAT'S WHAT WE'RE ABLE TO DO.

1667

01:01:58,014 --> 01:02:01,384

WE HAVE FUN AND I GET TO

1668

01:02:01,451 --> 01:02:04,320

EMBARRASS THE SPACE PHARMA GUYS

1669

01:02:04,387 --> 01:02:06,489

BY PUTTING THEIR NAMES ON TV.

1670

01:02:06,556 --> 01:02:13,096

WE WANT TO PROCESS IT HERE AND

1671

01:02:13,162 --> 01:02:16,732

THANK THE GROUP AT WALLOPS THAT

1672

01:02:16,799 --> 01:02:17,867

GOT EVERYTHING READY TO BE ABLE

1673

01:02:17,934 --> 01:02:19,535

TO ESTABLISH THE HIGH LEVEL OF

1674

01:02:19,602 --> 01:02:24,040

SCIENCE WE'RE ABLE TO DO.

1675

01:02:24,107 --> 01:02:26,943

I LIKE TO THANK THEM.

1676
01:02:27,009 --> 01:02:30,246
WE HAND THESE OVER TO THE COLD

1677
01:02:30,313 --> 01:02:33,416
STORE TEAM AND THE BIOLOGIST

1678
01:02:33,483 --> 01:02:38,254
CREEPS ME OUT, IT IS STILL COLD

1679
01:02:38,321 --> 01:02:39,856
STORE, NOT MY RULES.

1680
01:02:39,922 --> 01:02:41,891
HAVE THE ABILITY TO PLUG IT INTO

1681
01:02:41,958 --> 01:02:43,326
MERLIN WHICH IS SHOWN ON THE

1682
01:02:43,392 --> 01:02:44,160
RIGHT SIDE.

1683
01:02:44,227 --> 01:02:45,795
WE'RE ONE OF THE POWERED SPOTS

1684
01:02:45,862 --> 01:02:48,164
ON ORBIT GOING UP.

1685
01:02:48,231 --> 01:02:49,432
IT IS TEMPERATURE CONTROLLED FOR

1686
01:02:49,499 --> 01:02:51,234
THE ENTIRE ASSET PORTION OF IT.

1687
01:02:51,300 --> 01:02:53,069
IT WILL PLUG INTO THE STARS ONE

1688
01:02:53,136 --> 01:02:57,006

EXPERIMENT FACILITY, KEPT AT 37

1689

01:02:57,073 --> 01:02:57,707

DEGREES AND WE WILL FEATURE

1690

01:02:57,773 --> 01:02:59,609

THREE DIFFERENT BIG EXPERIMENTS

1691

01:02:59,675 --> 01:03:00,409

ON THESE.

1692

01:03:00,476 --> 01:03:07,984

THREE I WANT TO TALK ABOUT NOW.

1693

01:03:08,050 --> 01:03:09,452

ONE IS DONE BY OLARICH.

1694

01:03:09,519 --> 01:03:12,655

HE AND THE TEAM HERE, THEY'RE

1695

01:03:12,722 --> 01:03:18,127

LOOKING AT MICRO FAJ CELLS, AND

1696

01:03:18,194 --> 01:03:20,129

THESE ARE CELLS THAT AFFECT YOUR

1697

01:03:20,196 --> 01:03:20,763

IMMUNE SYSTEM.

1698

01:03:20,830 --> 01:03:22,565

THIS HELPS YOU UNDERSTAND WHAT

1699

01:03:22,632 --> 01:03:25,134

HAPPENS WHEN YOU GET TO MICRO

1700

01:03:25,201 --> 01:03:25,468

GRAVITY.

1701
01:03:25,535 --> 01:03:27,203
HOW DOES IT CHANGE AND RESPOND?

1702
01:03:27,270 --> 01:03:28,371
ASTRONAUTS COME BACK AND

1703
01:03:28,437 --> 01:03:29,705
COMPLAIN OF SICKNESS, COMPLAIN

1704
01:03:29,772 --> 01:03:35,244
OF ILL EFFECTS OF BEING IN MICRO

1705
01:03:35,311 --> 01:03:35,578
GRAVITY.

1706
01:03:35,645 --> 01:03:44,654
WHAT ARE MORPHOLOGICAL CHANGES?

1707
01:03:44,720 --> 01:03:46,122
WE'LL SEE HOW THE CELLS CHANGE

1708
01:03:46,189 --> 01:03:47,957
DURING MICRO GRAVITY AND

1709
01:03:48,024 --> 01:03:49,358
EXPOSURE TO MICRO GRAVITY.

1710
01:03:49,425 --> 01:03:51,928
BECAUSE THEY COME BACK, THEY

1711
01:03:51,994 --> 01:03:54,764
LOOK AT METABOLITES AND WHAT THE

1712
01:03:54,830 --> 01:03:56,599
CELLS DO AND HOW THEY CHANGE IN

1713
01:03:56,666 --> 01:03:58,100

THE ENVIRONMENT WHEN THEY'RE

1714

01:03:58,167 --> 01:03:58,434
GROWING.

1715

01:03:58,501 --> 01:04:00,236
WE'LL BE ABLE TO DETECT THAT

1716

01:04:00,303 --> 01:04:03,206
DURING THE RETURN MISSION.

1717

01:04:03,272 --> 01:04:03,940
THAT'S ONE EXPERIMENT THAT IS

1718

01:04:04,006 --> 01:04:04,307
HAPPENING.

1719

01:04:04,373 --> 01:04:05,775
I HAVE A SHORT VIDEO UP NEXT

1720

01:04:05,841 --> 01:04:08,945
THAT WILL SHOW A LITTLE BIT

1721

01:04:09,011 --> 01:04:10,880
ABOUT ONE OF THE OTHER

1722

01:04:10,947 --> 01:04:17,053
EXPERIMENTS BEING HOSTED BY

1723

01:04:17,119 --> 01:04:17,787
SPMG.

1724

01:04:17,853 --> 01:04:22,825
THERE'S AUDIO.

1725

01:04:27,630 --> 01:04:23,459



1726

01:04:27,697 --> 01:04:29,799

>> WHAT STARS ONE IS ABLE TO DO

1727

01:04:29,865 --> 01:04:30,766

IS PROVIDE ENVIRONMENT FOR

1728

01:04:30,833 --> 01:04:31,400

TEMPERATURE CONTROLLED

1729

01:04:31,467 --> 01:04:32,735

EXPERIMENTS TO BE CONDUCTED ON

1730

01:04:32,802 --> 01:04:34,136

THE INTERNATIONAL SPACE STATION.

1731

01:04:34,203 --> 01:04:39,575

A RESEARCHER FROM NASA IS

1732

01:04:39,642 --> 01:04:43,746

LOOKING AT -- HOW STEF LOW CAULK

1733

01:04:43,813 --> 01:04:46,515

CAUSES HAS GROWN.

1734

01:04:46,582 --> 01:04:52,888

IN LOWER GRAVITY, IT LOSES

1735

01:04:52,955 --> 01:04:53,256

PATHOGENS.

1736

01:04:53,322 --> 01:04:56,692

WE TALK ABOUT NEW THERAPEUTICS.

1737

01:04:56,759 --> 01:04:58,694

>> SO WHAT THIS EXPERIMENT IS,

1738

01:04:58,761 --> 01:05:03,432

AND DR. SARAH WALLACE FROM JSG

1739

01:05:03,499 --> 01:05:06,168

IS THE LEAD PI ON THIS.

1740

01:05:06,235 --> 01:05:08,404

WHAT HER WORK HAS SHOWN IS THAT

1741

01:05:08,471 --> 01:05:13,042

MICRO GRAVITY HAS A UNIQUE

1742

01:05:13,109 --> 01:05:17,113

EFFECT ON STAFF LOW CAUCUS.

1743

01:05:17,179 --> 01:05:20,816

AND STAFF LOW CAUCUS OREOS IS

1744

01:05:20,883 --> 01:05:26,122

CURRENTLY RESIDENT ON 30 PERCENT

1745

01:05:26,188 --> 01:05:30,726

OF THE POPULATION.

1746

01:05:30,793 --> 01:05:34,230

NOW WHAT STAFF DOES, IF YOU

1747

01:05:34,297 --> 01:05:35,464

SCRATCH YOUR SKIN OR YOU HAVE A

1748

01:05:35,531 --> 01:05:38,167

BOO-BOO, THE STAFF CAN GET IN

1749

01:05:38,234 --> 01:05:40,670

YOUR SKIN AND CAUSE INFECTION.

1750

01:05:40,736 --> 01:05:43,773

HOSPITALS HAVE ISSUE WITH STAPH

1751
01:05:43,839 --> 01:05:44,173
INFECTION.

1752
01:05:44,240 --> 01:05:45,908
ONE THING THAT WE'VE SHOWN IN

1753
01:05:45,975 --> 01:05:48,511
SIX YEARS, MIKEIOGRAPH TI

1754
01:05:48,577 --> 01:05:53,282
REDUCES THE PATHOGENS OF STAPH.

1755
01:05:53,349 --> 01:05:53,849
INTERESTING.

1756
01:05:53,916 --> 01:05:56,419
SO, IF YOU FIND A MECHANISM TO

1757
01:05:56,485 --> 01:06:01,691
TURN OFF THE PATHOGEN TI OF

1758
01:06:01,757 --> 01:06:02,992
STAPH ORROUS, WOULDN'T THAT BE A

1759
01:06:03,059 --> 01:06:03,793
GOOD THING.

1760
01:06:03,859 --> 01:06:13,169
TO LOOK AT MECHANISMS TO TURN

1761
01:06:13,235 --> 01:06:14,370
OFF STAPH PATHOGENS, YOU'RE

1762
01:06:14,437 --> 01:06:16,072
TALKING ABOUT NEW MEDICINES THAT

1763
01:06:16,138 --> 01:06:18,240

COULD BE PRODUCED BECAUSE YOU

1764

01:06:18,307 --> 01:06:20,910

UNDERSTAND THE MOLECULAR MAKEUP

1765

01:06:20,976 --> 01:06:21,377

OF THE CELLS.

1766

01:06:21,444 --> 01:06:23,045

GO TO SPACE AND BRING IT BACK

1767

01:06:23,112 --> 01:06:25,181

DOWN AND ANALYZE THE MOLECULAR

1768

01:06:25,247 --> 01:06:27,116

CONTENT OF THAT CELL.

1769

01:06:27,183 --> 01:06:28,384

THAT'S WHAT SARAH IS TRYING TO

1770

01:06:28,451 --> 01:06:31,320

DO AND WE'RE TRYING TO HELP HER

1771

01:06:31,387 --> 01:06:33,823

DO WHILE -- WHILE -- FOR

1772

01:06:33,889 --> 01:06:35,424

FACILITATING HER RESEARCH ON

1773

01:06:35,491 --> 01:06:35,791

STATION.

1774

01:06:35,858 --> 01:06:37,860

THAT'S WHAT WE'RE DOING ON THIS

1775

01:06:37,927 --> 01:06:38,260

EXPERIMENT.

1776

01:06:38,327 --> 01:06:41,931

WE REALLY THANK ORBITAL FOR A

1777

01:06:41,997 --> 01:06:43,833

CHANCE TO DO THIS AND THANK

1778

01:06:43,899 --> 01:06:44,967

CASSIS TO GET THIS TO SPACE AND

1779

01:06:45,034 --> 01:06:48,838

THANK OUR TEAM AND THE STAFF --

1780

01:06:48,904 --> 01:06:51,941

AND THE -- THE SPACE PHARMA GUYS

1781

01:06:52,007 --> 01:06:54,276

TO HELP US GET IT BUILT THIS

1782

01:06:54,343 --> 01:06:56,579

WEEK AND THE DOCTOR'S CREW FOR

1783

01:06:56,645 --> 01:06:59,615

LOADING THE CELLS AND GETTING

1784

01:06:59,682 --> 01:07:01,917

EVERYTHING TOGETHER.

1785

01:07:01,984 --> 01:07:05,654

AND ESPECIALLY FOR THE WALLOP

1786

01:07:05,721 --> 01:07:09,792

GROUP TO GET IT SUCCESSFUL.

1787

01:07:09,859 --> 01:07:11,594

THANK YOU SO MUCH.

1788

01:07:11,660 --> 01:07:11,994

[APPLAUSE].

1789

01:07:12,061 --> 01:07:13,295

>> THANK YOU, WE HAVE TIME FOR

1790

01:07:13,362 --> 01:07:14,397

FEW QUESTIONS IN THE ROOM.

1791

01:07:14,463 --> 01:07:16,132

WE'LL START HERE AND ALSO IF

1792

01:07:16,198 --> 01:07:18,167

YOU'RE FOLLOWING ALONG, ON NASA

1793

01:07:18,234 --> 01:07:20,035

OFFICIAL CHANNELS, ASK YOUR

1794

01:07:20,102 --> 01:07:25,341

QUESTIONS USING THE HASH TAG,

1795

01:07:25,408 --> 01:07:28,144

ASK NASA.

1796

01:07:28,210 --> 01:07:30,479

>> HEY, THERE, I'M SARAH WITH

1797

01:07:30,546 --> 01:07:32,281

THE NASA SOCIAL CREW TODAY.

1798

01:07:32,348 --> 01:07:34,483

FOR THE INVESTIGATIONS THAT DO

1799

01:07:34,550 --> 01:07:36,051

REQUIRE CREW INTERVENTION, HOW

1800

01:07:36,118 --> 01:07:37,486

DO YOU GET DIRECTIONS TO THEM?

1801
01:07:37,553 --> 01:07:40,356
DO YOU SEND THEM A BOOK?

1802
01:07:40,423 --> 01:07:43,392
DO YOU VIDEO WITH THEM AHEAD OF

1803
01:07:43,459 --> 01:07:43,692
TIME?

1804
01:07:43,759 --> 01:07:44,960
HOW DO YOU KNOW THEY'LL BE

1805
01:07:45,027 --> 01:07:47,696
CONDUCTED WITH THE PARAMETERS

1806
01:07:47,763 --> 01:07:48,130
YOU NEED?

1807
01:07:48,197 --> 01:07:49,765
>> THERE'S MEETINGS LEADING UP

1808
01:07:49,832 --> 01:07:51,367
TO THE MISSION, WITH THE CREW

1809
01:07:51,434 --> 01:07:53,502
OFFICE AND WITH -- WITH MEMBERS

1810
01:07:53,569 --> 01:07:57,440
AT MARSHALL THAT MANAGE THE

1811
01:07:57,506 --> 01:07:59,475
PAYLOAD SYSTEMS AND WE PROVIDE

1812
01:07:59,542 --> 01:08:02,311
OPS CONTROLS FOR NASA AND THAT

1813
01:08:02,378 --> 01:08:04,914

IS MARSHALLED OR RADIOEDED UP TO

1814

01:08:04,980 --> 01:08:06,515

THE CREW OR DIRECTED WITH THE

1815

01:08:06,582 --> 01:08:07,049

CREW.

1816

01:08:07,116 --> 01:08:09,485

EVERY SINGLE BIT IS SCRIPTED

1817

01:08:09,552 --> 01:08:11,720

WITH -- WITH PHOTOGRAPHS, WITH

1818

01:08:11,787 --> 01:08:14,423

INSTRUCTIONS, VERBAL -- WRITTEN

1819

01:08:14,490 --> 01:08:15,357

INSTRUCTIONS, SO THE CREW KNOWS

1820

01:08:15,424 --> 01:08:18,727

EVERY SINGLE PIECE OF MOVEMENT

1821

01:08:18,794 --> 01:08:19,462

THAT WE NEED THEM TO DO TO BE

1822

01:08:19,528 --> 01:08:21,230

ABLE TO PROPERLY EXECUTE THE

1823

01:08:21,297 --> 01:08:21,664

EXPERIMENTS.

1824

01:08:21,730 --> 01:08:22,865

THEY'RE VERY -- VERY INTRIGUED

1825

01:08:22,932 --> 01:08:24,433

WITH THE EXPERIMENTS THAT WE'RE

1826
01:08:24,500 --> 01:08:24,934
PROVIDING THEM.

1827
01:08:25,000 --> 01:08:26,135
THEY'RE HAVING FUN UP THERE.

1828
01:08:26,202 --> 01:08:28,237
THEY ENJOY DOING THESE

1829
01:08:28,304 --> 01:08:29,505
EXPERIMENTS, AT LEAST THAT'S

1830
01:08:29,572 --> 01:08:30,339
WHAT THEY TELL US.

1831
01:08:30,406 --> 01:08:32,441
THEY ENJOY DOING THIS AND

1832
01:08:32,508 --> 01:08:33,342
UNDERSTANDING IT IS THE PROPER

1833
01:08:33,409 --> 01:08:33,843
WAY.

1834
01:08:33,909 --> 01:08:37,112
FOR THEM, THEY UNDERSTAND THAT

1835
01:08:37,179 --> 01:08:39,782
THERE'S BEEN A LOT OF EFFORT PUT

1836
01:08:39,849 --> 01:08:41,183
IN THE EXPERIMENTS, FROM THE

1837
01:08:41,250 --> 01:08:42,751
GROUND AND THE PAYLOAD

1838
01:08:42,818 --> 01:08:43,652

DEVELOPERS AND THEY REALLY WANT

1839

01:08:43,719 --> 01:08:46,021

TO TAKE A LOT OF TIME TO DO THE

1840

01:08:46,088 --> 01:08:48,524

EXPERIMENTS PROPERLY.

1841

01:08:48,591 --> 01:08:49,258

SO -- THEY'RE INTERESTED IN IT.

1842

01:08:49,325 --> 01:08:51,227

THEY WANT TO LEARN.

1843

01:08:51,293 --> 01:08:51,961

WE INTERACT WITH THE PAYLOAD

1844

01:08:52,027 --> 01:08:53,562

PROVIDERS AND THE DEVELOPERS AND

1845

01:08:53,629 --> 01:08:55,598

IN MARSHALL TO MAKE SURE THE

1846

01:08:55,664 --> 01:08:57,032

INSTRUCTIONS ARE CORRECTLY

1847

01:08:57,099 --> 01:08:58,134

PROCESSED TO THE CREW.

1848

01:08:58,200 --> 01:09:02,137

>> WE HAVE ANOTHER QUESTION IN

1849

01:09:02,204 --> 01:09:03,172

THE ROOM.

1850

01:09:03,239 --> 01:09:04,573

WE HAVE A QUESTION FROM ASK

1851
01:09:04,640 --> 01:09:09,745
NASA, THIS IS OUR FINAL

1852
01:09:09,812 --> 01:09:11,146
QUESTION.

1853
01:09:11,213 --> 01:09:13,115
QUESTIONS FROM ASK, ON SPACE

1854
01:09:13,182 --> 01:09:13,415
NEWS.

1855
01:09:13,482 --> 01:09:15,451
I'M CONFUSED ABOUT THE TOTAL

1856
01:09:15,518 --> 01:09:20,189
NUMBER OF CUBE SETS ON BOARD

1857
01:09:20,256 --> 01:09:22,258
CIGNISI I KNOW 13 WILL BE

1858
01:09:22,324 --> 01:09:23,692
DEPLOYED BUT HOW MANY ARE

1859
01:09:23,759 --> 01:09:26,695
LAUNCHED FROM THE KIBO AIR LOCK?

1860
01:09:26,762 --> 01:09:31,000
>> TOTAL CUBE SETS, 14 ON

1861
01:09:31,066 --> 01:09:31,800
OUTSIDE AND THEN WE'RE LAUNCHING

1862
01:09:31,867 --> 01:09:36,672
TWO ON THE INSIDE AND THOSE TWO

1863
01:09:36,739 --> 01:09:43,913

WILL JOIN THREE MORE ON SPACE

1864

01:09:43,979 --> 01:09:46,148
EX12 AND WILL BE DEPLOYED FROM

1865

01:09:46,215 --> 01:09:48,150
THE AIR LOCK, HOPEFULLY THIS

1866

01:09:48,217 --> 01:09:48,450
MONTH.

1867

01:09:48,517 --> 01:09:48,951
>> THANK YOU.

1868

01:09:49,018 --> 01:09:54,990
>> IF I COULD SAY ONE MORE

1869

01:09:55,057 --> 01:09:58,794
THING, THE TRANSDUCTION

1870

01:09:58,861 --> 01:10:00,162
QUESTION, WHOEVER SAID THAT,

1871

01:10:00,229 --> 01:10:01,163
LET'S TALK.

1872

01:10:01,230 --> 01:10:02,798
>> THANK YOU FOR JOINING AND

1873

01:10:02,865 --> 01:10:03,732
FOR ASKING GREAT QUESTIONS.

1874

01:10:03,799 --> 01:10:06,535
WE'RE EXCITED FOR TOMORROW'S

1875

01:10:06,602 --> 01:10:06,902
LAUNCH.

1876

01:10:06,969 --> 01:10:09,471

7:37 A.M. EASTERN STANDARD TIME.

1877

01:10:09,538 --> 01:10:11,941

NASA TV COVERAGE STARTS AT 7:00

1878

01:10:12,007 --> 01:10:22,351

A.M. FOLLOW ALONG ON