



1
00:01:01,661 --> 00:00:56,856
>> HELLO AND WELCOME TO THE

2
00:01:02,095 --> 00:01:01,728
INSIGHT PRELAUNCH PRAOEF

3
00:01:05,465 --> 00:01:02,162
BRIEFING.

4
00:01:08,267 --> 00:01:05,532
MY NAME IS STEPHANIE L. SMITH.

5
00:01:11,671 --> 00:01:08,334
I'M WITH THE JET PROPULSION

6
00:01:13,005 --> 00:01:11,738
LABORATORY AND WE'RE HERE TODAY

7
00:01:13,940 --> 00:01:13,072
AND WE'LL GET TO KNOW THE

8
00:01:15,274 --> 00:01:14,007
MISSION AND SOME OF THE PEOPLE

9
00:01:17,543 --> 00:01:15,341
BEHIND THE MISSION AND WHEN I

10
00:01:19,345 --> 00:01:17,610
SAY HISTORIC I MEAN IT.

11
00:01:24,016 --> 00:01:19,412
THIS SPACECRAFT WILL BE THE

12
00:01:26,886 --> 00:01:24,083
FIRST TO STUDY THE INTERIORF

13
00:01:27,887 --> 00:01:26,953

THE FIRST WEST COAST

14

00:01:30,623 --> 00:01:27,954

INTERPLANETARY LAUNCH EVER.

15

00:01:33,025 --> 00:01:30,690

SO THAT'S WHY WE'RE ALL HERE

16

00:01:34,827 --> 00:01:33,092

TODAY IN THE NASA HANGAR AT

17

00:01:37,463 --> 00:01:34,894

VANDENBERG AIR FORCE BASE WITH

18

00:01:45,238 --> 00:01:37,530

OVER 100 MEMBERS OF THE MEDIA

19

00:01:47,173 --> 00:01:45,305

AND CREDENTIALLED MEDIA.

20

00:01:48,341 --> 00:01:47,240

WE'LL TAKE QUESTIONS FROM THE

21

00:01:51,244 --> 00:01:48,408

HOUSE AND FROM SOCIAL MEDIA AND

22

00:01:54,213 --> 00:01:51,311

ON THE REPORTERS ON THE PHONE,

23

00:01:56,415 --> 00:01:54,280

PLEASE PRESS STAR ONE TO GET IN

24

00:01:57,216 --> 00:01:56,482

THE CUE.

25

00:01:58,818 --> 00:01:57,283

SO, BEFORE THIS MISSION TAKES

26
00:02:01,087 --> 00:01:58,885
OFF FROM THE GOLDEN STATE TO THE

27
00:02:03,055 --> 00:02:01,154
RED PLANET WE'LL TAKE A MINUTE

28
00:02:04,657 --> 00:02:03,122
TODAY TO TALK ABOUT THE SCIENCE

29
00:02:06,959 --> 00:02:04,724
GOALS AND THE INSTRUMENTATION

30
00:02:07,326 --> 00:02:07,026
AND LAUNCH LOGISTICS OF INSIGHT

31
00:02:08,961 --> 00:02:07,426
0.

32
00:02:11,297 --> 00:02:09,028
HOW DOES I ALL FIT TOGETHER?

33
00:02:14,167 --> 00:02:11,364
TO GIVE US AN OVERVIEW OF WHAT

34
00:02:16,169 --> 00:02:14,234
INWILL DO AND HOW IT FITS INTO

35
00:02:18,070 --> 00:02:16,236
NASA's OVERALL PLANS FOR

36
00:02:19,138 --> 00:02:18,137
EXPLORATION BOTH MARS AND MORE

37
00:02:25,745 --> 00:02:19,205
IMPORTANTLY PLANETARY

38
00:02:28,714 --> 00:02:25,812

EXPLORATION WE HAVE NASA'S CHIEF

39

00:02:29,815 --> 00:02:28,781

SCIENTIST'S JIM GREEN

40

00:02:31,284 --> 00:02:29,882

TELLS THESE FOLKSUT WHAT YOU

41

00:02:32,752 --> 00:02:31,351

DO AND WHAT INSIGHT WILL DO.

42

00:02:33,819 --> 00:02:32,819

>> WELL, WELCOME TO THE

43

00:02:36,322 --> 00:02:33,886

PRELAUNCH BRIEFING BECAUSE THIS

44

00:02:39,892 --> 00:02:36,389

IS REALLY A FANTASTIC MISSION.

45

00:02:41,260 --> 00:02:39,959

IT'S A PLANETARY MISSION FROM

46

00:02:43,829 --> 00:02:41,327

THE DISCOVERY PROGRAM.

47

00:02:45,598 --> 00:02:43,896

THE DISCOVERY PROGRAM IS ALL

48

00:02:51,270 --> 00:02:45,665

ABOUT DOING FIRST, GETTING TO

49

00:02:53,139 --> 00:02:51,337

PLACES THAT WE BEEN BEFORE

50

00:02:56,309 --> 00:02:53,206

AND THIS MOTION WILL PROBE THE

51
00:02:59,979 --> 00:02:56,376
INTERIOR OF ANOTHER PLANET

52
00:03:02,248 --> 00:03:00,046
GIVING US THE IDEA OF THE CORE

53
00:03:03,716 --> 00:03:02,315
AND MANTLE AND CRUX AND TO

54
00:03:05,184 --> 00:03:03,783
COMPARE THAT WITH THE EARTH.

55
00:03:08,054 --> 00:03:05,251
THIS IS A FUNDAMENTAL IMPORTANCE

56
00:03:10,556 --> 00:03:08,121
FOR US TO UNDERSTAND THE ORIGIN

57
00:03:14,560 --> 00:03:10,623
OF OUR SOLAR SYSTEM AND HOW IT

58
00:03:16,229 --> 00:03:14,627
BECAME THE WAY IT IS TODAY.

59
00:03:21,734 --> 00:03:16,296
IN ADDITION TO FUNDAMENTAL

60
00:03:24,804 --> 00:03:21,801
PLANETARY SCIENCE, THIS MISSION

61
00:03:26,572 --> 00:03:24,871
I VIEW IS FEET FORWARD TO HUMAN

62
00:03:27,940 --> 00:03:26,639
EXPLORATION ON MARS.

63
00:03:29,175 --> 00:03:28,007

WE KNOW THAT MARS QUAKES.

64

00:03:34,580 --> 00:03:29,242

WE KNOW THAT.

65

00:03:36,515 --> 00:03:34,647

WE HAVE SEEN AVALANCHES FROM THE

66

00:03:38,017 --> 00:03:36,582

MARS RECONNAISSANCE ORBITER.

67

00:03:41,354 --> 00:03:38,084

SOMETHING HAS HAPPENED THAT

68

00:03:43,456 --> 00:03:41,421

PRODUCES IT.

69

00:03:45,691 --> 00:03:43,523

IN ADDITION TO THAT, METEORITES

70

00:03:47,493 --> 00:03:45,758

MAKE TO THE SURFACE AND IMPACT

71

00:03:48,761 --> 00:03:47,560

IT CAUSING QUAKES.

72

00:03:52,231 --> 00:03:48,828

WHAT IS THAT RATE?

73

00:03:52,565 --> 00:03:52,298

WHAT ARE THE MARS QUAKES ALL

74

00:03:54,033 --> 00:03:52,632

ABOUT?

75

00:03:57,937 --> 00:03:54,100

AND THIS MISSION WILL TAKE A

76

00:04:00,506 --> 00:03:58,004

GOOD LOOK AT ALL THOSE ASPECTS.

77

00:04:02,341 --> 00:04:00,573

FOR HUMAN EXPLORATION, HERE IN

78

00:04:04,443 --> 00:04:02,408

CALIFORNIA IN PARTICULAR, YOU

79

00:04:06,345 --> 00:04:04,510

KNOW WE NEED TO BE ABLE TO BUILD

80

00:04:07,980 --> 00:04:06,412

THE STRUCTURES NECESSARY TO

81

00:04:09,615 --> 00:04:08,047

WITHSTAND THE ENVIRONMENTS THAT

82

00:04:11,851 --> 00:04:09,682

WE'RE IN.

83

00:04:13,219 --> 00:04:11,918

THIS IS VERY QUAKE-PRONE AREA OF

84

00:04:15,054 --> 00:04:13,286

THE COUNTRY.

85

00:04:17,290 --> 00:04:15,121

BUT HOW QUAKE-PRONE IS MARS?

86

00:04:19,792 --> 00:04:17,357

THAT'S AUNDAMENTAL INFORMATION

87

00:04:22,528 --> 00:04:19,859

THAT WE NEED TO KNOW AS HUMANS

88

00:04:26,632 --> 00:04:22,595

THAT EXPLORE MARS.

89

00:04:28,901 --> 00:04:26,699
NOW, EVERYTHING IN THE SOLAR

90

00:04:30,936 --> 00:04:28,968
SYSTEM, THESE LARGE PLANETS PUT

91

00:04:32,605 --> 00:04:31,003
TOGETHER ARE STILL COOLING OFF

92

00:04:34,940 --> 00:04:32,672
AND THAT INCLUDES MARS.

93

00:04:36,442 --> 00:04:35,007
THE HEAT PROBE WILL GO DOWN AND

94

00:04:36,842 --> 00:04:36,509
MEASURE THAT TEMPERATURE

95

00:04:37,610 --> 00:04:36,909
DIFFERENCE.

96

00:04:38,944 --> 00:04:37,677
THAT TEMPERATURE DIFFERENCE

97

00:04:41,180 --> 00:04:39,011
COULD BE LARGE COULD BE SMALL,

98

00:04:43,916 --> 00:04:41,247
BUT IS AN IMPORTANT PART OF

99

00:04:44,317 --> 00:04:43,983
KNOWLEDGE OF HOW THIS PLANET IS

100

00:04:46,152 --> 00:04:44,384
EVOLVING.

101
00:04:48,888 --> 00:04:46,219
AND CAN IT GIVE US INFORMATION

102
00:04:51,524 --> 00:04:48,955
ABOUT HOW WE MIGHT USE THAT HEAT

103
00:04:54,393 --> 00:04:51,591
DIFFERENTIAL TO HEAT A HABITAT.

104
00:05:00,166 --> 00:04:54,460
WE KNOW THE TEMPERATURE ON MARS

105
00:05:01,133 --> 00:05:00,233
IN ONE DAY, 170 DEGREES

106
00:05:04,370 --> 00:05:01,200
FAHRENHEIT IN ONE DAY.

107
00:05:06,839 --> 00:05:04,437
AND WE HAVE TO BE ABLE AS LIVING

108
00:05:07,139 --> 00:05:06,906
ON WORKING ON MARS TO SURVIVE

109
00:05:09,542 --> 00:05:07,206
THAT.

110
00:05:12,211 --> 00:05:09,609
HOW CAN OUR RESOURCES THAT WE

111
00:05:13,879 --> 00:05:12,278
DISCOVER ON MARS ENABLE THAT.

112
00:05:15,548 --> 00:05:13,946
SO THIS MISSION DOES SO MANY

113
00:05:17,350 --> 00:05:15,615

FUNDAMENTAL THINGS, NOT ONLY IN

114

00:05:19,618 --> 00:05:17,417

PLANETARY SCIENCE BUT HUMAN

115

00:05:19,952 --> 00:05:19,685

EXPLORATION AND A VERY POPULAR

116

00:05:23,823 --> 00:05:20,019

MISSION.

117

00:05:25,458 --> 00:05:23,890

HOW POPULAR?

118

00:05:29,028 --> 00:05:25,525

WELL, WE ASKED PEOPLE IF THEY'D

119

00:05:29,362 --> 00:05:29,095

LIKE TO ADD THEIR NAME TO A

120

00:05:30,396 --> 00:05:29,429

CHIP.

121

00:05:33,999 --> 00:05:30,463

HERE'S ONE OF THE CHIPS.

122

00:05:37,870 --> 00:05:34,066

THIS IS WHAT IT LOOKS LIKE.

123

00:05:39,338 --> 00:05:37,937

AND THE RESPONSE WAS

124

00:05:43,476 --> 00:05:39,405

UNBELIEVABLE.

125

00:05:45,511 --> 00:05:43,543

2.4 MILLION NAMES ARE ON THIS

126

00:05:46,245 --> 00:05:45,578

CHIP AND IT IS AFFIXED TO THE

127

00:05:47,046 --> 00:05:46,312

SURFACE OF THE SPACECRAFT.

128

00:05:48,581 --> 00:05:47,113

HOW COOL IS THAT.

129

00:05:50,483 --> 00:05:48,648

I HOPE YOU'RE ONE OF THEM.

130

00:05:52,752 --> 00:05:50,550

IT'S TOO LATE TO PUT YOUR NAME

131

00:05:54,754 --> 00:05:52,819

ON THIS ONE.

132

00:05:55,521 --> 00:05:54,821

IT'S ALREADY IN THE FAIRING

133

00:05:56,889 --> 00:05:55,588

READY TO GO AND SATURDAY WE'LL

134

00:05:57,656 --> 00:05:56,956

LAUNCH IT.

135

00:05:59,525 --> 00:05:57,723

THAT'S THE PLAN.

136

00:06:01,227 --> 00:05:59,592

SO WITH THAT, MAY I TAKE A

137

00:06:01,727 --> 00:06:01,294

QUESTION OR TWO?

138

00:06:05,898 --> 00:06:01,794

>> ABSOLUTELY.

139

00:06:08,067 --> 00:06:05,965
INSIGHT YOU'LL PROBABLY BE ABLE

140

00:06:09,902 --> 00:06:08,134
TO GET YOUR NAME ON MARS 2020.

141

00:06:11,904 --> 00:06:09,969
SO FILE THAT AWAY.

142

00:06:15,841 --> 00:06:11,971
LET'S TAKE SOME QUESTIONS IN THE

143

00:06:18,844 --> 00:06:15,908
HOUSE.

144

00:06:20,413 --> 00:06:18,911
ANY QUESTIONS FOR JIM?

145

00:06:21,313 --> 00:06:20,480
WE HAVE A REPORTER ON THE PHONE

146

00:06:28,587 --> 00:06:21,380
LINE.

147

00:06:30,122 --> 00:06:28,654
LET'S GO TO THE PHONE THE

148

00:06:31,657 --> 00:06:30,189
IF WE HAVE A PHONE CONNECTION

149

00:06:35,294 --> 00:06:31,724
PLEASE STATE YOUR NAME AND

150

00:06:37,229 --> 00:06:35,361
AFFILIATION.

151
00:06:38,864 --> 00:06:37,296
>> ELIZABETH HOWL, SPACE.COM.

152
00:06:39,331 --> 00:06:38,931
>> GO AHEAD.

153
00:06:41,467 --> 00:06:39,398
>> THANK YOU.

154
00:06:42,701 --> 00:06:41,534
MR. GREEN, I WOULD LIKE TO KNOW

155
00:06:46,972 --> 00:06:42,768
IF YOU COULD TALK A LIT ABOUT

156
00:06:49,041 --> 00:06:47,039
THE DECISION PROCESS BACK IN

157
00:06:50,109 --> 00:06:49,108
DECEMBER 2015 AFTER LEAK

158
00:06:52,311 --> 00:06:50,176
OCCURRED ON THE MARS INSIGHT.

159
00:06:53,913 --> 00:06:52,378
IF YOU COULD TALK ABOUT THE

160
00:06:55,047 --> 00:06:53,980
MISSION GOING AT THAT TIME AS

161
00:06:57,583 --> 00:06:55,114
OPPOSED TO STOPPING IT WHICH WAS

162
00:06:58,017 --> 00:06:57,650
ONE OF THE THINGS THAT WAS BEING

163
00:06:58,884 --> 00:06:58,084

CONSIDERED.

164

00:07:00,186 --> 00:06:58,951

IF YOU COULD LET US KNOW HOW

165

00:07:01,854 --> 00:07:00,253

THAT DECISION WAS MADE AND HOW

166

00:07:06,091 --> 00:07:01,921

YOU DECIDED TO GO FORWARD.

167

00:07:08,093 --> 00:07:06,158

>> THE QUESTION IS REALLY ALL

168

00:07:10,463 --> 00:07:08,160

ABOUT IS PLANETARY WINDOWS.

169

00:07:12,598 --> 00:07:10,530

WHEN WE SELECT A MISSIONO BE

170

00:07:14,366 --> 00:07:12,665

COMPLETED WE HAVE IN MIND THAT

171

00:07:14,800 --> 00:07:14,433

IT IS GOING IN A PARTICULAR

172

00:07:16,902 --> 00:07:14,867

WINDOW.

173

00:07:17,736 --> 00:07:16,969

PLANETARY WINDOWS ARE A

174

00:07:19,505 --> 00:07:17,803

BLESSING.

175

00:07:22,107 --> 00:07:19,572

THAT MEANS WE HAVE TO GET IT

176
00:07:24,176 --> 00:07:22,174
TOGETHER TO BE ABLE TO LAUNCH

177
00:07:25,344 --> 00:07:24,243
BUT IT'S ALSO A CURSE.

178
00:07:27,947 --> 00:07:25,411
WHEN NOT EVERYTHING IS TOGETHER

179
00:07:30,049 --> 00:07:28,014
AND NOT WORKING WELL AND WE MISS

180
00:07:32,184 --> 00:07:30,116
THAT WINDOW WE HAVE TO WAIT FOR

181
00:07:33,686 --> 00:07:32,251
THE NEXT ONE.

182
00:07:35,688 --> 00:07:33,753
SO FOR MARS, FOR EVERYTHING TO

183
00:07:40,559 --> 00:07:35,755
LINE UP AGAIN THAT ALLOWS US TO

184
00:07:43,496 --> 00:07:40,626
LAUNCH TO MARS, THAT WINDOW IS

185
00:07:44,897 --> 00:07:43,563
EVERY 26 MONTHS.

186
00:07:47,666 --> 00:07:44,964
SO OUR WINDOW STARTS THIS

187
00:07:48,968 --> 00:07:47,733
SATURDAY, MAY FIFTH, AND WILL GO

188
00:07:50,202 --> 00:07:49,035

UNTIL JUNE 8TH.

189

00:07:52,338 --> 00:07:50,269

THAT'S IT.

190

00:07:54,874 --> 00:07:52,405

IF WE CAN'T LAUNCH INSIGHT THEN

191

00:07:57,109 --> 00:07:54,941

WE WAIT 26 MONTHS.

192

00:07:59,778 --> 00:07:57,176

BUT INDEED, THE PREVIOUS WINDOW

193

00:08:01,280 --> 00:07:59,845

THAT WE WERE PLANNING TO LAUNCH

194

00:08:01,647 --> 00:08:01,347

INSIGHT WE COULDN'T GET IT ALL

195

00:08:05,751 --> 00:08:01,714

TOGETHER.

196

00:08:06,452 --> 00:08:05,818

THAT ACTUALLY HAPPENS EVERY ONCE

197

00:08:07,920 --> 00:08:06,519

IN A WHILE.

198

00:08:10,055 --> 00:08:07,987

THIS BUSINESS IS TOUGH AND THESE

199

00:08:11,924 --> 00:08:10,122

ARE ONE OF A KIND MISSIONSINGS

200

00:08:14,793 --> 00:08:11,991

AND MAKING EXTRAORDINARILY

201
00:08:17,897 --> 00:08:14,860
IMPORTANT OBSERVATIONS AND

202
00:08:19,698 --> 00:08:17,964
INDEED THE SCIENTIFIC BASIS OF

203
00:08:21,300 --> 00:08:19,765
THIS MISSION AND ITS IMPORTANCE

204
00:08:23,869 --> 00:08:21,367
THAT FEEDS FORWARD NOT ONLY IN

205
00:08:25,571 --> 00:08:23,936
PLANETARY SCIENCE BUT IN HUMAN

206
00:08:28,040 --> 00:08:25,638
EXPLORATION WAS A FACTOR IN THE

207
00:08:29,808 --> 00:08:28,107
DECISION TO KEEP THINGS GOING,

208
00:08:31,877 --> 00:08:29,875
TO COMPLETE THE INSTRUMENTATION

209
00:08:34,547 --> 00:08:31,944
AND GET IT READY FOR LAUNCH.

210
00:08:38,083 --> 00:08:34,614
AND THAT ENABLES US RIGHT NOW TO

211
00:08:41,387 --> 00:08:38,150
BE IN THE POSITION WE'RE IN.

212
00:08:43,856 --> 00:08:41,454
WITH A SPACECRAFT SITTING ON TOP

213
00:08:55,601 --> 00:08:43,923

OF AN ATLAS READY TO GO TO MARS

214

00:08:57,469 --> 00:08:55,668

AND EVERYTHING IS IN TOP SHAPE.

215

00:08:59,338 --> 00:08:57,536

>> THANK U.

216

00:09:00,172 --> 00:08:59,405

>> THERS A FULL SCALE MOCK-UP

217

00:09:01,941 --> 00:09:00,239

IN OUR SET TODAY.

218

00:09:06,645 --> 00:09:02,008

TO TALK LITTLE BIT MORE ABOUT

219

00:09:07,479 --> 00:09:06,712

THE DESIGN, BUILD AND SPACECRAFT

220

00:09:09,348 --> 00:09:07,546

HEALTH OF THE ACTUAL FLIGHT

221

00:09:11,417 --> 00:09:09,415

HARDWARE WHICH IS TUCKED INSIDE

222

00:09:11,784 --> 00:09:11,484

OF THE PAYLOAD FAIRING RIGHT

223

00:09:15,955 --> 00:09:11,851

NOW.

224

00:09:19,258 --> 00:09:16,022

PLEASE WELCOME TO THE STAGE TOM

225

00:09:21,226 --> 00:09:19,325

HOFFMAN AND STU THE INSIDE

226

00:09:21,560 --> 00:09:21,293

PRODUCT MANAGER FROM LOCKHEED

227

00:09:23,862 --> 00:09:21,627

SPACE.

228

00:09:26,332 --> 00:09:23,929

>> THANK YOU, STEPHANIE.

229

00:09:29,501 --> 00:09:26,399

WHAT YOU SEE IN FRONT OF HERE IS

230

00:09:31,437 --> 00:09:29,568

THE FULLY DEPLOYED SPACECRAFT SO

231

00:09:33,539 --> 00:09:31,504

YOU HAVE THE SOLAR ARRAYS AND

232

00:09:35,841 --> 00:09:33,606

YOU HAVE THE LANDER LEGS ALL AS

233

00:09:37,176 --> 00:09:35,908

IT WILL BE ON THE SURFACE.

234

00:09:38,410 --> 00:09:37,243

I'LL EXPLAIN IN JUST A MINUTE

235

00:09:38,911 --> 00:09:38,477

ABOUT HOW THIS IS ON THE ROCKET

236

00:09:40,112 --> 00:09:38,978

RIGHT NOW.

237

00:09:41,981 --> 00:09:40,179

BEFORE I DO THAT I WANT TO SAY

238

00:09:42,715 --> 00:09:42,048

I'M REALLY, REALLY EXCITED.

239

00:09:47,453 --> 00:09:42,782

I'M GOING TO MARS.

240

00:09:49,755 --> 00:09:47,520

I HOPE YOU GUYS EXCITED TOO?

241

00:09:50,456 --> 00:09:49,822

ARE YOU EXCITED TO GO TO MARS?

242

00:09:53,759 --> 00:09:50,523

COME ON!

243

00:09:54,860 --> 00:09:53,826

THIS HAS BEEN A LABOR OF LOVE

244

00:09:56,629 --> 00:09:54,927

FOR ME FOR SEVEN YEARS.

245

00:09:58,397 --> 00:09:56,696

I'VE BEEN ON THE PROJECT SINCE

246

00:10:00,099 --> 00:09:58,464

THE VERY BEGINNING AND WE WASHED

247

00:10:02,301 --> 00:10:00,166

HARD TO GET TO THIS POINT AND I

248

00:10:04,303 --> 00:10:02,368

CAN'T DESCRIBE HOW VERY EXCITED

249

00:10:06,939 --> 00:10:04,370

I AM TO SEE US AT THIS POINT

250

00:10:08,540 --> 00:10:07,006

READY TO GO OFF TO MARS, READY

251
00:10:09,575 --> 00:10:08,607
TO SEND THIS TO ANOTHER PLANET.

252
00:10:12,511 --> 00:10:09,642
IT'S GOING TO BE AWESOME.

253
00:10:14,413 --> 00:10:12,578
LIKE I SAID, THIS IS WHAT WE

254
00:10:16,515 --> 00:10:14,480
LOOK LIKE ONCE WE DEPLOYED AND

255
00:10:16,915 --> 00:10:16,582
FULLY TO TAKE OUR SCIENCE ON

256
00:10:18,550 --> 00:10:16,982
MARS.

257
00:10:19,051 --> 00:10:18,617
BEFORE THAT WE START OUT

258
00:10:20,986 --> 00:10:19,118
DIFFERENT.

259
00:10:24,590 --> 00:10:21,053
RIGHT NOW ON THE ROCKET WE HAVE

260
00:10:25,457 --> 00:10:24,657
THE SOLAR ARRAYS ARE FOLDED UP

261
00:10:27,226 --> 00:10:25,524
UNDERNEATH THE DECK AND THESE

262
00:10:29,128 --> 00:10:27,293
LEGS ARE ALL TUCKED UP HERE SO

263
00:10:34,967 --> 00:10:29,195

IT'S VERY COMPACT AND IN FACT WE

264

00:10:36,835 --> 00:10:35,034

HAVE AN ARROW SHELL AROUND US

265

00:10:38,270 --> 00:10:36,902

WHICH CONSISTS A HEAT SHIELD AND

266

00:10:39,104 --> 00:10:38,337

BACK SHELF AND A CRUISE A STAGE

267

00:10:40,539 --> 00:10:39,171

ON TOP AS WELL.

268

00:10:42,074 --> 00:10:40,606

THAT'S WHAT IS IN THE ROCKET

269

00:10:45,144 --> 00:10:42,141

RIGHT NOW READY TO GO TO MARS.

270

00:10:46,311 --> 00:10:45,211

ONE OF THE COOL THINGS FOR ME

271

00:10:48,047 --> 00:10:46,378

BEING A NATIVE CALIFORNIAN IS

272

00:10:50,215 --> 00:10:48,114

THIS THE FIRST TIME EVER WE'RE

273

00:10:51,383 --> 00:10:50,282

DOING THESE INTER PLANETARY

274

00:10:54,086 --> 00:10:51,450

LAUNCH FROM THE WEST COAST.

275

00:10:55,654 --> 00:10:54,153

WE'RE FINALLY BREAKING THE

276
00:10:58,357 --> 00:10:55,721
MONOPOLY THE EAST COAST HAS HAD

277
00:11:02,661 --> 00:10:58,424
ON INTERPLANETARY LAUNCHES.

278
00:11:03,062 --> 00:11:02,728
IT'S EXCITING FOR ME TO HAVE THE

279
00:11:04,763 --> 00:11:03,129
OPPORTUNITY.

280
00:11:06,999 --> 00:11:04,830
WHAT I LIKE TO DO IS PLAY A

281
00:11:08,000 --> 00:11:07,066
VIDEO AND WHAT'S THAT'S GOING TO

282
00:11:10,269 --> 00:11:08,067
SHOWU IS WHAT THE LAUNCH

283
00:11:11,737 --> 00:11:10,336
LOOKS LIKE AND HOPEFULLY IT'S AS

284
00:11:13,072 --> 00:11:11,804
CLEAR AS THE VIDEO SHOWS IT TO

285
00:11:16,542 --> 00:11:13,139
BE IN A COUPLE OF DAYS.

286
00:11:20,713 --> 00:11:16,609
WE'RE ALL TUCKED UP IN THIS.

287
00:11:22,548 --> 00:11:20,780
ONE OF THE COOL THINGS, IF

288
00:11:24,016 --> 00:11:22,615

YOU'RE IN SOUTHERN CALIFORNIA AT

289

00:11:30,289 --> 00:11:24,083

4:05 ON SATURDAY YOU'LL BE ABLE

290

00:11:33,225 --> 00:11:30,356

TO SEE THIS FROM Y BACKYARD.

291

00:11:34,426 --> 00:11:33,292

WE'LL SHOW YOU WHAT THE VIEW IS.

292

00:11:36,295 --> 00:11:34,493

ANYWHERE FROM CENTRAL CALIFORNIA

293

00:11:37,963 --> 00:11:36,362

FROM THIS AREA ALL THE WAY DOWN

294

00:11:39,698 --> 00:11:38,030

TO MEXICO YOU SHOULD GET A GOOD

295

00:11:39,998 --> 00:11:39,765

VIEW OF THE SPACECRAFT AT THAT

296

00:11:41,500 --> 00:11:40,065

TIME.

297

00:11:43,268 --> 00:11:41,567

IT'S GOING TO BE THE BRIGHTEST

298

00:11:43,669 --> 00:11:43,335

OBJECT IN THE SKY AND QUITE

299

00:11:44,937 --> 00:11:43,736

SPECTACULAR.

300

00:11:48,040 --> 00:11:45,004

SET YOUR ALARMS AND GET UP AND

301
00:11:50,976 --> 00:11:48,107
WATCH THIS IF YOU DON'T HAPPEN

302
00:11:52,811 --> 00:11:51,043
SO, ONCE W GET THAT LAUNCH OFF

303
00:11:55,481 --> 00:11:52,878
WE HAVE TO GET TO MARS.

304
00:11:58,217 --> 00:11:55,548
WE HAVE 6.5 MONTH CRUISE.

305
00:11:59,818 --> 00:11:58,284
DURING THAT TIME WE DO

306
00:12:01,820 --> 00:11:59,885
TRAJECTORY CORRECTION MANEUVERS.

307
00:12:04,857 --> 00:12:01,887
WHAT THOSE DO, IT ALLOWS US TO

308
00:12:06,391 --> 00:12:04,924
LAND ON THE SURFACE OF MARS ON

309
00:12:07,059 --> 00:12:06,458
NOVEMBER 25TH OF THIS YEAR WHICH

310
00:12:08,827 --> 00:12:07,126
IS CYBER MONDAY.

311
00:12:11,630 --> 00:12:08,894
SO AGAIN, IF YOU DON'T HAVE --

312
00:12:12,998 --> 00:12:11,697
IF YOU'RE SHOPPING ONL AND

313
00:12:14,933 --> 00:12:13,065

DOING YOUR HOLID SHOPPING AND

314

00:12:16,468 --> 00:12:15,000

YOU WANT TO SEE SOMETHING ELSE,

315

00:12:16,835 --> 00:12:16,535

YOU CAN PUT THAT ON YOUR OTHER

316

00:12:18,303 --> 00:12:16,902

SCREEN.

317

00:12:18,771 --> 00:12:18,370

IF YOU'RE AT WORK YOU'RE NOT

318

00:12:20,339 --> 00:12:18,838

DOING THAT.

319

00:12:21,340 --> 00:12:20,406

YOU'RE MAYBE DOING THAT ON YOUR

320

00:12:22,975 --> 00:12:21,407

PERSONAL COMPUTER.

321

00:12:24,276 --> 00:12:23,042

BUT PUT THAT ON AND YOU CAN SEE

322

00:12:28,113 --> 00:12:24,343

US LAND.

323

00:12:28,847 --> 00:12:28,180

WE'LL LAND ABOUT NOON ON THE

324

00:12:29,982 --> 00:12:28,914

26TH OF NOVEMBER.

325

00:12:30,983 --> 00:12:30,049

PACIFIC TIME.

326

00:12:33,352 --> 00:12:31,050

THAT'S GOING TO BE COOL.

327

00:12:35,921 --> 00:12:33,419

ONCE WE GET THERE WE HAVE TOO

328

00:12:37,022 --> 00:12:35,988

THRO WHAT WE CALL ENTRY

329

00:12:39,024 --> 00:12:37,089

DECENT AND LANDING PHASE.

330

00:12:40,893 --> 00:12:39,091

THAT'S WHERE WE START AT 12500

331

00:12:42,027 --> 00:12:40,960

MILES AN HOUR AND WITHIN 6.5

332

00:12:42,828 --> 00:12:42,094

MINUTES WE GET DOWN TO FIVE

333

00:12:44,863 --> 00:12:42,895

MILES AN HOUR TO LAND.

334

00:12:47,699 --> 00:12:44,930

I HAVE A VIDEO TO SHOW YOU

335

00:12:49,234 --> 00:12:47,766

THAT'S DESCRIBING THAT PROCESS

336

00:12:52,337 --> 00:12:49,301

SO YOU CAN SEE WE'RE COMING IN

337

00:12:56,341 --> 00:12:52,404

VERY HOT LITERALLY.

338

00:12:56,775 --> 00:12:56,408

WE USE THIS SHELL TO TAKE THE

339

00:12:59,344 --> 00:12:56,842

HEAT OFF.

340

00:13:03,448 --> 00:12:59,411

WE'RE STILL GOING AT SUPERSONIC

341

00:13:03,816 --> 00:13:03,515

SEEDS WHEN WE POP OFF THE

342

00:13:06,084 --> 00:13:03,883

PARACHUTE.

343

00:13:07,486 --> 00:13:06,151

ONCE WE GET DOWN TO A GOOD SPEED

344

00:13:09,054 --> 00:13:07,553

WE DROP OFF THE HEAT SHIELD AND

345

00:13:10,856 --> 00:13:09,121

THEN WE START ACQUIRING THE

346

00:13:12,257 --> 00:13:10,923

GROUND WITH OUR RADAR.

347

00:13:14,459 --> 00:13:12,324

THAT'S TELLING US WHAT OUR

348

00:13:16,695 --> 00:13:14,526

VELOCITY IS AND WE GET DOWN TO

349

00:13:17,930 --> 00:13:16,762

THE RIGHT VELOCITY AND HIS

350

00:13:19,464 --> 00:13:17,997

ACECRAFT FREE FALLS FOR A

351
00:13:21,033 --> 00:13:19,531
WHILE AND THEN USES THE RETRO

352
00:13:23,402 --> 00:13:21,100
ROCKETS TO SLOW IT DOWN TO FIVE

353
00:13:32,277 --> 00:13:23,469
MILES AN HOUR WITH THE LEGS

354
00:13:33,512 --> 00:13:32,344
POPPED OUT IN THIS CON FORTYING

355
00:13:35,180 --> 00:13:33,579
RACE.

356
00:13:36,949 --> 00:13:35,247
WE HAVE TO TAKE THESE SOLAR

357
00:13:38,984 --> 00:13:37,016
ARRAYS AND DEPLOY THEM.

358
00:13:41,453 --> 00:13:39,051
BUT THEHE NEXT STEP WE

359
00:13:42,821 --> 00:13:41,520
HAVE TO ACTUALLY DEPLOY THESE

360
00:13:45,791 --> 00:13:42,888
ELEMENTS, INSTRUMENTS THERE AND

361
00:13:46,692 --> 00:13:45,858
THE DECK TO THE GROUND.

362
00:13:48,894 --> 00:13:46,759
IT'S BASICALLY A SECOND DECENT

363
00:13:51,430 --> 00:13:48,961

AND LANDING FOR US.

364

00:13:52,664 --> 00:13:51,497

WE'RE ABOUT A METER OR SO, THREE

365

00:13:53,966 --> 00:13:52,731

FEET FROM THE GROUND BUT WE HAVE

366

00:13:55,434 --> 00:13:54,033

TO GET THAT LAST LITTLE BIT AND

367

00:13:56,501 --> 00:13:55,501

THAT WILL TAKE US A LITTLE BIT

368

00:13:57,936 --> 00:13:56,568

OF TIME.

369

00:13:59,004 --> 00:13:58,003

IT SEEMS LIKE THAT SHOULD BE

370

00:14:01,006 --> 00:13:59,071

PRETTY SIMPLE.

371

00:14:02,875 --> 00:14:01,073

WHAT WE ARE GG TOO ONCE WE

372

00:14:04,977 --> 00:14:02,942

LAND WE'LL TAKE SOME PICTURES OF

373

00:14:07,212 --> 00:14:05,044

WHAT THE TRAIN LOOKS LIKE.

374

00:14:09,615 --> 00:14:07,279

WE HAVE A TEST BED.

375

00:14:10,849 --> 00:14:09,682

WE'LL REPRODUCE THAT TRAIN

376

00:14:12,451 --> 00:14:10,916

EXACTLY IN THE TEST BED AND

377

00:14:13,752 --> 00:14:12,518

PRACTICE DEPLOYING EACH AND OF

378

00:14:14,920 --> 00:14:13,819

THE INSTRUMENTS OVER AND OVER

379

00:14:15,754 --> 00:14:14,987

AND OVER AGAIN TO MAKE SURE WE

380

00:14:17,489 --> 00:14:15,821

GET IT RIGHT.

381

00:14:20,158 --> 00:14:17,556

THAT'S GOING TO TAKE US ABOUT

382

00:14:21,026 --> 00:14:20,225

TWO MONTHS ROUGHLY TO GET THE

383

00:14:21,960 --> 00:14:21,093

INSTRUMENTS FROM THEK DOWN

384

00:14:23,762 --> 00:14:22,027

TO THE GR.

385

00:14:24,096 --> 00:14:23,829

I WISH IT IT WAS ABOUT FIVE

386

00:14:25,530 --> 00:14:24,163

MINUTES.

387

00:14:27,132 --> 00:14:25,597

BUT ACTUALLY I HAVE A VERY THAT

388

00:14:28,233 --> 00:14:27,199

GOES REALLY, REALLY FAST AND I

389

00:14:29,735 --> 00:14:28,300

WISH IT WENT THIS FAST.

390

00:14:31,103 --> 00:14:29,802

IF WE SHOW THE NEXT VIDEO IT

391

00:14:32,070 --> 00:14:31,170

GIVES YOU AN IDEA WHAT THE

392

00:14:35,407 --> 00:14:32,137

DEPLOYMENT PROCESS IS.

393

00:14:39,444 --> 00:14:35,474

YOU CAN SEE SOLAR ARRAYS ARE

394

00:14:41,747 --> 00:14:39,511

DEPLOYED AND WE'RE PUTTING THE

395

00:14:46,351 --> 00:14:41,814

SIZE MONITOR DOWN FIRST AND THEN

396

00:14:47,920 --> 00:14:46,418

WE TAKE THE WIND AND THERMAL

397

00:14:49,488 --> 00:14:47,987

SHIELD AND WE PLACE IT OVER TOP

398

00:14:51,623 --> 00:14:49,555

OF IT AND THAT BASICALLY INNOT

399

00:14:52,457 --> 00:14:51,690

SOL LATES IT FROM THE

400

00:14:57,963 --> 00:14:52,524

ENVIRONMENT AS WELL AS WE CAN ON

401
00:14:58,463 --> 00:14:58,030
MARS AND THAT'S WHAT IS GOING ON

402
00:15:00,999 --> 00:14:58,530
RIGHT NOW.

403
00:15:03,635 --> 00:15:01,066
AND THEN ONCE EVERYTHING IS

404
00:15:04,903 --> 00:15:03,702
LOOKING GOOD THEN WE HE TAKE OFF

405
00:15:06,171 --> 00:15:04,970
THE HEAT PHYSICAL

406
00:15:06,638 --> 00:15:06,238
PROPERTIES PACKAGE AND PUT IT

407
00:15:08,407 --> 00:15:06,705
DOWN NEXT.

408
00:15:10,709 --> 00:15:08,474
THAT WHOLE PROCESS, I WISH IT

409
00:15:12,878 --> 00:15:10,776
WENT AS FAST AS THIS VIDEO.

410
00:15:13,211 --> 00:15:12,945
IT WOULD MAKE MY LIFE A LOT

411
00:15:15,414 --> 00:15:13,278
BETTER.

412
00:15:16,515 --> 00:15:15,481
MY HAIR WOULD BE A DIFFERENT

413
00:15:18,150 --> 00:15:16,582

KIND OF BLOND AS IT IS NOW.

414

00:15:20,285 --> 00:15:18,217

BUT IT DOESN'T WORK THAT FAST.

415

00:15:21,954 --> 00:15:20,352

NOW WE'RE SET FOR THE SCIENTISTS

416

00:15:23,188 --> 00:15:22,021

TO START TO GET THE SCIENCE THEY

417

00:15:24,890 --> 00:15:23,255

WANT AND THE WHOLE REASON BEHIND

418

00:15:26,725 --> 00:15:24,957

THE MISSION AND YOU'LL HEAR A

419

00:15:28,260 --> 00:15:26,792

LOT ABOUTAT IN A LITTLE BIT.

420

00:15:30,228 --> 00:15:28,327

BEFORE I GET ON TO THAT, I DID

421

00:15:32,531 --> 00:15:30,295

WANT TO SAY IT'S REALLY -- THIS

422

00:15:32,998 --> 00:15:32,598

IS REALLY AN INTERNATIONAL

423

00:15:43,508 --> 00:15:33,065

COLLABORATION.

424

00:15:45,777 --> 00:15:43,575

THERE'S PEOPLE FROM ALL OVER THE

425

00:15:49,681 --> 00:15:45,844

WORLD WE OF INSTRUMENTS FROM OUR

426
00:15:52,918 --> 00:15:49,748
INTERNATIONAL PARTNERS AND WE

427
00:15:55,220 --> 00:15:52,985
ACTUALLY HAVE OUR SPACECRAFT IS

428
00:15:56,588 --> 00:15:55,287
BEING BUILT BY LOCKHEED MARTIN

429
00:15:57,823 --> 00:15:56,655
IN DENVER.

430
00:15:59,558 --> 00:15:57,890
ONE THING JUST A PERSONAL THING

431
00:16:00,459 --> 00:15:59,625
WITH STU AND I, THIS IS THE

432
00:16:03,095 --> 00:16:00,526
SECOND MISSION WE'VE WORKED

433
00:16:04,429 --> 00:16:03,162
TOGETHER SO WE'VE BEEN ON THIS

434
00:16:05,097 --> 00:16:04,496
FOR SEVEN YEARS, TOGETHER OVER

435
00:16:07,432 --> 00:16:05,164
TEN YEARS.

436
00:16:08,867 --> 00:16:07,499
WE WORKED THE PREVIOUS DISCOVERY

437
00:16:11,303 --> 00:16:08,934
MISSION WHICH WAS A MISSION TO

438
00:16:13,238 --> 00:16:11,370

THE MOO GRAVITY MAPPING.

439

00:16:14,106 --> 00:16:13,305

IT'S GREAT TO BE ABLE TO WORK

440

00:16:20,979 --> 00:16:14,173

WITH STU AGAIN.

441

00:16:21,747 --> 00:16:21,046

>> THANK YOU VERY MUCH, TOM.

442

00:16:23,982 --> 00:16:21,814

APPRECIATE IT.

443

00:16:26,184 --> 00:16:24,049

BECAUSE LOCKHEED MARTIN HAS

444

00:16:29,888 --> 00:16:26,251

WORKED ON 20 PREVIOUS MARS

445

00:16:31,923 --> 00:16:29,955

MISSIONS SOMEONE ASKED ME

446

00:16:32,257 --> 00:16:31,990

RECE DO I CONSIDER

447

00:16:33,525 --> 00:16:32,324

ROUTINE.

448

00:16:37,662 --> 00:16:33,592

AND I'LL STEAL A LITTLE BIT FROM

449

00:16:39,064 --> 00:16:37,729

TOM HANKS HERE IN APOLLO 13.

450

00:16:40,165 --> 00:16:39,131

THERE IS NOTHING ROUTINE ABOUT

451
00:16:40,766 --> 00:16:40,232
GOING TO MARS ESPECIALLY LANDING

452
00:16:42,634 --> 00:16:40,833
ON MARS.

453
00:16:44,903 --> 00:16:42,701
AND THIS IS A TOUGH MISSION AND

454
00:16:47,572 --> 00:16:44,970
WE'RE HAPPY TO BE PART OF IT.

455
00:16:49,775 --> 00:16:47,639
AS TOM MENTIONED, I'VE BEEN ON

456
00:16:51,243 --> 00:16:49,842
THE PROGRAM FROM CRADLE TO GRAVE

457
00:16:53,311 --> 00:16:51,310
FOR ABOUT SEVEN YEARS NOW AND I

458
00:16:54,112 --> 00:16:53,378
CAN PERSONALLY ATTEST ON

459
00:16:55,380 --> 00:16:54,179
SATURDAY MORNING, THE

460
00:16:57,315 --> 00:16:55,447
ANTICIPATION AND THE EXCITEMENT

461
00:16:59,184 --> 00:16:57,382
IS GOING TO BE SECOND TO NONE.

462
00:17:03,121 --> 00:16:59,251
SO I'M REALLY LOOKING TO GETTING

463
00:17:04,923 --> 00:17:03,188

THIS THING OFF THE GROUND.

464

00:17:08,994 --> 00:17:04,990

LET'S TALK A LITTLE BIT ABOUT

465

00:17:11,063 --> 00:17:09,061

WHAT LOCKHEED MARTIN'S ROLE WAS.

466

00:17:12,764 --> 00:17:11,130

THREE PHASES THAT WE PARTICIPATE

467

00:17:14,032 --> 00:17:12,831

IN ARE THE DESIGN AND

468

00:17:15,600 --> 00:17:14,099

DEVELOPMENT THE SPACECRAFT

469

00:17:17,469 --> 00:17:15,667

COMPONENT AND THE INTEGRATION

470

00:17:18,036 --> 00:17:17,536

AND TEST PHASE AND THEN THE

471

00:17:20,572 --> 00:17:18,103

FLIGHT OPERATIONS.

472

00:17:21,873 --> 00:17:20,639

SO FOR THE DESIGN AND

473

00:17:23,075 --> 00:17:21,940

DEVELOPMENT, THOSE OF YOU THAT

474

00:17:24,876 --> 00:17:23,142

OF BEEN INVOLVED IN THE MARS

475

00:17:26,178 --> 00:17:24,943

PROGRAM FOR QUITE SOME TIME OR

476
00:17:28,080 --> 00:17:26,245
COVERING IT YOU PROBABLY NOTICE

477
00:17:30,348 --> 00:17:28,147
THIS LOOKS A LOT LIKE PHOENIX

478
00:17:31,216 --> 00:17:30,415
LANDER WHICH LAUNCHED IN 2007

479
00:17:33,552 --> 00:17:31,283
AND THAT'S INTENTIONAL.

480
00:17:36,088 --> 00:17:33,619
ONE OF OUR STRATEGIES IS TO

481
00:17:38,824 --> 00:17:36,155
BUILD ON OUR PREVIOUS SUCCESSES

482
00:17:40,392 --> 00:17:38,891
SO WE'RE MINIMIZING THE RISK AND

483
00:17:41,726 --> 00:17:40,459
MAINTAINING THE RISK POSTURE WE

484
00:17:43,562 --> 00:17:41,793
WANT TO ON THESE MISSIONS.

485
00:17:46,264 --> 00:17:43,629
SOME OF THE THINGS THAT ARE

486
00:17:47,999 --> 00:17:46,331
INHERITED DIRECTLY FROM PHOENIX

487
00:17:49,701 --> 00:17:48,066
ARE THE BASIC STRUCTURAL LAYOUT

488
00:17:51,269 --> 00:17:49,768

OF THE LANDER HERE, THE THREE

489

00:17:52,070 --> 00:17:51,336

LEGS THAT DEPLOY DURING THE

490

00:17:57,075 --> 00:17:52,137

DECENT AND LANDING PHASE.

491

00:17:58,844 --> 00:17:57,142

YOU CAN SEE THE DECENT THRUSTERS

492

00:18:00,779 --> 00:17:58,911

UNDERNEATH HERE AND THE FUEL

493

00:18:02,581 --> 00:18:00,846

TANG AND ST ENTIRE PROPULSION

494

00:18:04,116 --> 00:18:02,648

SYSTEM IS THE SAME AS PHOENIX.

495

00:18:05,784 --> 00:18:04,183

HOWEVER THERE ARE QUITE A FEW

496

00:18:06,284 --> 00:18:05,851

THINGS THAT ARE DIFFERENT FROM

497

00:18:07,352 --> 00:18:06,351

PHOENIX.

498

00:18:08,887 --> 00:18:07,419

INSIDE THE INTERIOR OF THE

499

00:18:10,956 --> 00:18:08,954

LANDER WHICH YOU CAN'T SEE FROM

500

00:18:13,492 --> 00:18:11,023

THIS VIEW ARE THE FLIGHT

501
00:18:15,727 --> 00:18:13,559
ELECTRONS, THE AVIONICS.

502
00:18:17,262 --> 00:18:15,794
POWER COMPONENTS AND THE FLIGHT

503
00:18:19,598 --> 00:18:17,329
COMPUTER THOSE ARE INHAIR ITTED

504
00:18:21,733 --> 00:18:19,665
FROM N, THE ONE THAT

505
00:18:24,202 --> 00:18:21,800
LAUNCHED IF 2013.

506
00:18:26,338 --> 00:18:24,269
WE HAVE MODERNIZED THE ELECTRONS

507
00:18:28,807 --> 00:18:26,405
SINCE THE PHOENIX ERA.

508
00:18:31,676 --> 00:18:28,874
ANOTHER THING OF INTEREST HERE

509
00:18:34,980 --> 00:18:31,743
IS THIS MISSION UNLIKE PHOENIX

510
00:18:36,882 --> 00:18:35,047
HAS A TELE COMMUNICATION SYSTEM.

511
00:18:38,416 --> 00:18:36,949
THIS IS THE ANTENNA THAT GOES

512
00:18:39,451 --> 00:18:38,483
DIRECT TO EARTH WITH A RADIO

513
00:18:42,287 --> 00:18:39,518

SCIENCE BEACON AND THE PURPOSE

514

00:18:42,988 --> 00:18:42,354

OF THAT IS ACTUALLY AS A SCIENCE

515

00:18:44,089 --> 00:18:43,055

INVESTIGATION.

516

00:18:45,390 --> 00:18:44,156

BRUCE WILL TALK ABOUT THIS

517

00:18:47,792 --> 00:18:45,457

DURING THE SCIENCE BUT ONE OF

518

00:18:49,995 --> 00:18:47,859

THE CASES WHERE THE SPACECRAFT

519

00:18:51,296 --> 00:18:50,062

COMPONENT ACTUALLY DOUBLES AS A

520

00:18:52,564 --> 00:18:51,363

SCIENCE INVESTIGATION.

521

00:18:54,132 --> 00:18:52,631

THE SECOND PHASE THAT WE GET

522

00:18:55,667 --> 00:18:54,199

INVOLVED IN IS THE INTEGRATION

523

00:18:59,538 --> 00:18:55,734

AND TEST AS THE COMPONENTS COME

524

00:19:02,774 --> 00:18:59,605

IN WE HAVE TO ASSEMBLE THE

525

00:19:07,312 --> 00:19:02,841

FLIGHT SYSTEM AND TEST IT.

526
00:19:07,879 --> 00:19:07,379
SO IF WE COULD ROLL THE

527
00:19:09,814 --> 00:19:07,946
INTEGRATION VIDEO.

528
00:19:11,917 --> 00:19:09,881
ALL OF THIS WAS FILMED IN THE

529
00:19:14,319 --> 00:19:11,984
DENVER FACILITIES.

530
00:19:16,154 --> 00:19:14,386
THERE YOU SEE IT IN A HANG DOWN

531
00:19:17,923 --> 00:19:16,221
MODE.

532
00:19:19,624 --> 00:19:17,990
THIS IS THE CRUISE STAGE WHICH

533
00:19:21,760 --> 00:19:19,691
GETS US TO THE PLANET NOT SHOWN

534
00:19:24,763 --> 00:19:21,827
HERE ON THE STAGE.

535
00:19:26,031 --> 00:19:24,830
THIS IS EARLY ONHE SCIENCE

536
00:19:28,066 --> 00:19:26,098
DECK BEFORE ANY OF THEM HAVE

537
00:19:31,803 --> 00:19:28,133
BEEN INSTALLED.

538
00:19:35,307 --> 00:19:31,870

HERE IS OUR THERMAL BACK CHAMBER

539

00:19:37,008 --> 00:19:35,374

HERE AND CAN SEE IT'S A LONG

540

00:19:39,411 --> 00:19:37,075

DEEP CHAMBER AND SPENDS ABOUT

541

00:19:44,983 --> 00:19:39,478

TWO WEEKS IN THIS TO MAKE SURE

542

00:19:52,691 --> 00:19:45,050

WE CAN SURVIVE THE RIGORS AND

543

00:19:53,992 --> 00:19:52,758

THERMAL EXTREMES.

544

00:19:55,994 --> 00:19:54,059

ONE OF THE FIRST THINGS WE DO

545

00:19:58,330 --> 00:19:56,061

AFTER TOUCHDOWN IS DEPLOY THE

546

00:20:01,533 --> 00:19:58,397

TWO SOLAR ARRAYS SO YOU CAN SEE

547

00:20:04,402 --> 00:20:01,600

THIS IS THE FINAL TEST WE DID IN

548

00:20:06,171 --> 00:20:04,469

DENVER BEFORE PACKING UP THE

549

00:20:08,373 --> 00:20:06,238

ARRAYS AND SEALING THEM AND THIS

550

00:20:10,041 --> 00:20:08,440

IS THE FINAL OPERATION IN

551
00:20:11,276 --> 00:20:10,108
DENVER, THE YELLOWISH COMPONENT

552
00:20:13,044 --> 00:20:11,343
IS THE HEAT SHIELD THAT GETS

553
00:20:14,713 --> 00:20:13,111
INSTALLED OVER THE TOP OF THE

554
00:20:18,183 --> 00:20:14,780
BACK SHELL AND THEN IT GETS PUT

555
00:20:28,927 --> 00:20:18,250
INTO SHIPPING CONTAINER AND

556
00:20:29,261 --> 00:20:28,994
FLOWN OUT HERE VIA A C 17

557
00:20:32,530 --> 00:20:29,328
FLIGHT.

558
00:20:34,099 --> 00:20:32,597
THE THE SPACECRAFT TEAM WILL BE

559
00:20:37,235 --> 00:20:34,166
PARTICIPATING FROM DENVER IN OUR

560
00:20:38,903 --> 00:20:37,302
MISSION SUPPORT AREA DOING THE

561
00:20:40,538 --> 00:20:38,970
COMMANDING AND TELEMETRY

562
00:20:41,640 --> 00:20:40,605
MONITORING AND SO FORTH, SO

563
00:20:42,707 --> 00:20:41,707

WE'LL BE INVOLVED IN THE MISSION

564

00:20:44,142 --> 00:20:42,774

AND SPACECRAFT ELEMENT FROM THE

565

00:20:45,844 --> 00:20:44,209

ENTIRE LAUNCH PERIOD ALL THE WAY

566

00:20:48,146 --> 00:20:45,911

TO THE END OF MISSION.

567

00:20:50,048 --> 00:20:48,213

SO I'M GOING TO WRAP UP BY

568

00:20:52,017 --> 00:20:50,115

SAYING, THANK YOU A BIG

569

00:20:53,852 --> 00:20:52,084

SHOUTOUT TO ALL THE HUNDREDS OF

570

00:20:54,719 --> 00:20:53,919

MEN AND WOMAN AT LOCKHEED MARTIN

571

00:20:56,221 --> 00:20:54,786

THAT MADE IT HAPPEN.

572

00:21:00,191 --> 00:20:56,288

IT WAS NOT AN EASY TASK.

573

00:21:01,626 --> 00:21:00,258

I WANT TO SAY THANK YOU TO JPL

574

00:21:03,795 --> 00:21:01,693

FOR ALLOWING LOCKHEED MARTIN TO

575

00:21:05,430 --> 00:21:03,862

BE PART OF THE TEAM AND IT'S

576

00:21:06,631 --> 00:21:05,497

GOING TO BE A GREAT MISSION.

577

00:21:19,878 --> 00:21:06,698

WE'RE PROUD TO BE A PART OF IT

578

00:21:21,379 --> 00:21:19,945

AND WE ARE GO FOR LAUNCH.

579

00:21:22,947 --> 00:21:21,446

>> IF YOU HAVE A QUESTION,

580

00:21:24,115 --> 00:21:23,014

PLEASE RAISE YOUR HAND AND WAIT

581

00:21:25,016 --> 00:21:24,182

FOR A MICROPHONE RUNNER TO GET

582

00:21:33,458 --> 00:21:25,083

TO YOU.

583

00:21:37,662 --> 00:21:33,525

CAN WE GET ONE RIGHT DOWN HERE.

584

00:21:38,463 --> 00:21:37,729

STATE YOUR NAME AND AFFILIATION.

585

00:21:40,665 --> 00:21:38,530

>> HI.

586

00:21:45,537 --> 00:21:40,732

IS IT BETTER OR EASIER TO GO TO

587

00:21:47,706 --> 00:21:45,604

MARS FROM POLAR ORBIT AND WHY?

588

00:21:49,874 --> 00:21:47,773

>> IT'S ACTUAL -- WE'RE GOING TO

589

00:21:51,910 --> 00:21:49,941
END UP GOING -- DOING ONE ORBIT

590

00:21:54,412 --> 00:21:51,977
LIKE A POLAR ORBIT AND MAKE A

591

00:21:56,948 --> 00:21:54,479
LEFT TURN ON OUR WAY TO MARS.

592

00:21:59,284 --> 00:21:57,015
SORE ESSENTIALLY GETTING OUT

593

00:22:00,719 --> 00:21:59,351
AT THE SAME TRAJECTORY AS IF WE

594

00:22:01,052 --> 00:22:00,786
LAUNCHED FROM KENNEDY SPACE

595

00:22:02,153 --> 00:22:01,119
CENTER.

596

00:22:03,688 --> 00:22:02,220
THERE IS A BIG ADVANTAGE GETTING

597

00:22:04,956 --> 00:22:03,755
OUT NEAR THE EQUATOR.

598

00:22:06,057 --> 00:22:05,023
SINCE WE'RE NOT CLOSE HERE

599

00:22:09,260 --> 00:22:06,124
OBVIOUSLY WE NEED TO GET THERE.

600

00:22:13,098 --> 00:22:09,327
WE DO THAT WITH AN ORBIT AROUND

601
00:22:20,004 --> 00:22:13,165
THE EARTH AND THEN A LEFT TURN.

602
00:22:21,272 --> 00:22:20,071
>> WE'LL TAKE ANOTHER MEDIA ESTI

603
00:22:25,543 --> 00:22:21,339
COULD YOU ELABORATE FOR HOW LONG

604
00:22:27,145 --> 00:22:25,610
YOU THINK YOU WILL BE ABLE TO

605
00:22:29,314 --> 00:22:27,212
RECEIVE DATA?

606
00:22:32,016 --> 00:22:29,381
>> SO, THIS MISSION IS DESIGNED

607
00:22:32,884 --> 00:22:32,083
TO LAST ONE MARS YEAR, SO THAT'S

608
00:22:39,624 --> 00:22:32,951
26 EARTH MONTHS.

609
00:22:39,624 --> 00:22:40,492
BUT THERE'S NOTHING THAT IS LIFE

610
00:22:43,261 --> 00:22:41,126
LIMITING ON THE SYSTEM.

611
00:22:44,696 --> 00:22:43,328
BUT ONE MARS YEAR IS OUR PLAN.

612
00:22:49,701 --> 00:22:44,763
>> LOOKS LIKE WE HAVE SOCIAL

613
00:22:50,802 --> 00:22:49,768

MEDIA QUESTIONS ON THIS SIDE OF

614

00:22:52,937 --> 00:22:50,869

THE HOUSE.

615

00:22:53,204 --> 00:22:53,004

IF YOU COULD GO TO THE FRONT

616

00:22:54,105 --> 00:22:53,271

ROW.

617

00:22:57,742 --> 00:22:54,172

>> HI.

618

00:22:59,310 --> 00:22:57,809

MY NAME IS MADDY GARCIA.

619

00:22:59,878 --> 00:22:59,377

I'M FROM M.I.T. REPRESENTING

620

00:23:01,980 --> 00:22:59,945

STUDENTS RIGHT NOW.

621

00:23:04,783 --> 00:23:02,047

I HAVE A QUESTION FOR YOU ABOUT

622

00:23:05,717 --> 00:23:04,850

THE THRUSTERS.

623

00:23:07,218 --> 00:23:05,784

AFTER SPEAKING WITH LOCKHEED

624

00:23:10,121 --> 00:23:07,285

MARTIN REPRESENTATIVE EARLIER I

625

00:23:10,522 --> 00:23:10,188

LEARNED THERE ARE NO REDUNDANT

626
00:23:14,492 --> 00:23:10,589
THRUSTERS.

627
00:23:16,694 --> 00:23:14,559
I GUESS WITH SUCH A HIGH RISK

628
00:23:19,063 --> 00:23:16,761
MANEUVER WITH HAVING A PRO PULL

629
00:23:24,102 --> 00:23:19,130
SHIV LANDING, HOW DO YOU JUSTIFY

630
00:23:24,469 --> 00:23:24,169
NOT HAV ANY CK-UP

631
00:23:29,874 --> 00:23:24,536
THRUSTERS?

632
00:23:30,208 --> 00:23:29,941
>> WE DON'T CONSIDER A HIGH RISK

633
00:23:33,812 --> 00:23:30,275
THERE.

634
00:23:34,245 --> 00:23:33,879
WE CAN'T ACTUALLY TOLERATE SOME

635
00:23:36,014 --> 00:23:34,312
OUTAGE THERE.

636
00:23:39,184 --> 00:23:36,081
BUT THE MAIN COMPONENTS OF THE

637
00:23:41,653 --> 00:23:39,251
THRUSTER, THE REASON WE DO THE

638
00:23:43,054 --> 00:23:41,720

PRO PULL SHIV LANDING IS BECAUSE

639

00:23:45,590 --> 00:23:43,121

PHOENIX DID IT AND ALMOST 40

640

00:23:47,926 --> 00:23:45,657

YEARS BEFORE THAT VIKING DID IT.

641

00:23:53,398 --> 00:23:47,993

OBVIOUSLY AIR BAGS HAVE BEEN

642

00:23:55,600 --> 00:23:53,465

USED OR SKY CRAN, BUT THE PRO

643

00:23:56,968 --> 00:23:55,667

PULSIVE LANDING IS WHAT WE USED

644

00:23:58,503 --> 00:23:57,035

AT LOCKHEED MARTIN AND IT'S

645

00:24:00,939 --> 00:23:58,570

READY TO GO.

646

00:24:02,841 --> 00:24:01,006

>> AEROSPACE AMERICA, GO AHEAD

647

00:24:05,643 --> 00:24:02,908

ON THE PHONE LINES.

648

00:24:07,479 --> 00:24:05,710

>> THANK YOU.

649

00:24:09,681 --> 00:24:07,546

NASA INSIGHTS WILL DIG DEEPER

650

00:24:15,086 --> 00:24:09,748

INTO MARS THAN HUMANS HAVE DID

651
00:24:17,355 --> 00:24:15,153
YOU GO ON ANOTHER WORLD.

652
00:24:22,527 --> 00:24:17,422
IT LEAVES THAT DRIVING SPIKE.

653
00:24:24,095 --> 00:24:22,594
ARE THERE ANY CONTINGENCY PLANS

654
00:24:25,697 --> 00:24:24,162
IN CASE THE GROUND IS TOUGHER

655
00:24:28,433 --> 00:24:25,764
THANANPATED?

656
00:24:30,435 --> 00:24:28,500
>> ACTUALLY THIS IS GOING TO BE

657
00:24:31,936 --> 00:24:30,502
GOOD FOR THE NEXT SPEAKER.

658
00:24:34,806 --> 00:24:32,003
WE FEEL CONFIDENT WE'RE GOING TO

659
00:24:36,508 --> 00:24:34,873
A PLACE ON MARS WHERE WE WILL

660
00:24:38,610 --> 00:24:36,575
SUCCESSFULLY PENETRATE.

661
00:24:40,311 --> 00:24:38,677
EVEN IF WE HIT ROCKS, AS LONG AS

662
00:24:41,613 --> 00:24:40,378
THEY'RE NOT FLAT WE HAVE A GOOD

663
00:24:43,248 --> 00:24:41,680

CHANCE GETTING PAST THOSE AND

664

00:24:45,116 --> 00:24:43,315

GETTING DOWN TO THE DEPTH WE

665

00:24:47,252 --> 00:24:45,183

WANT WHICH IS ABOUT TEN FEET.

666

00:24:49,921 --> 00:24:47,319

THE GOAL IS 16 FEET.

667

00:24:51,155 --> 00:24:49,988

BUTTILLMAN WILL TALK A LOT

668

00:24:52,290 --> 00:24:51,222

ABOUT THE HEAT PHYSICAL

669

00:24:53,358 --> 00:24:52,357

PROPERTIES PACKAGE COMING UP IN

670

00:24:54,893 --> 00:24:53,425

THE NEXT SECTION.

671

00:25:01,599 --> 00:24:54,960

>> WE HAVE ANOTHER QUESTION ON

672

00:25:04,602 --> 00:25:01,666

THE PHONE LINES.

673

00:25:07,171 --> 00:25:04,669

GO AHEAD.

674

00:25:08,072 --> 00:25:07,238

>> CAN YOU HEAR US?

675

00:25:08,273 --> 00:25:08,139

>> YEAH.

676

00:25:10,208 --> 00:25:08,340

HI

677

00:25:12,510 --> 00:25:10,275

THANKS FOR TAKG MY CALL.

678

00:25:16,981 --> 00:25:12,577

I WANTED TO ASK, HOW MANY

679

00:25:17,282 --> 00:25:17,048

MISSIONS HAVE THERE BEEN TO

680

00:25:20,151 --> 00:25:17,349

MARS?

681

00:25:24,556 --> 00:25:20,218

IS UP UNTIL NOW EITHER BY WAY OF

682

00:25:25,456 --> 00:25:24,623

LANDERS, ORBITERS AND ROVERS?

683

00:25:29,294 --> 00:25:25,523

DOES SOMEBODY KNOW?

684

00:25:30,061 --> 00:25:29,361

>> I THINK THE ANSWER IS 21.

685

00:25:31,429 --> 00:25:30,128

U.S. SSIONS.

686

00:25:33,431 --> 00:25:31,496

DOES THAT SOUND RIGHT?

687

00:25:35,066 --> 00:25:33,498

>> THAT SOUNDS GOOD RIGHT.

688

00:25:36,701 --> 00:25:35,133

>> WE'LL GO WITH 21.

689

00:25:38,303 --> 00:25:36,768

>> WE'LL GET THAT NUMBER FOR YOU

690

00:25:38,636 --> 00:25:38,370

AFTER THE SHOW.

691

00:25:40,371 --> 00:25:38,703

OKAY.

692

00:25:41,806 --> 00:25:40,438

THANKS VERY MUCH, GUYS.

693

00:25:47,111 --> 00:25:41,873

BIG ROUND APPLAUSE FOR TIM AND

694

00:25:49,414 --> 00:25:47,178

STU AND ENGINEERING OF INSIGHT.

695

00:25:51,683 --> 00:25:49,481

SO, AT 4.5 BILLION YEARS OLD AND

696

00:25:53,184 --> 00:25:51,783

IS NOT ONE VISIT TO THE DOCTOR,

697

00:25:55,753 --> 00:25:53,251

WE CAN ALL AGREE THAT

698

00:25:56,020 --> 00:25:55,820

MARS IS OVERDUE FOR A CHECK OF

699

00:25:57,855 --> 00:25:56,087

UP.

700

00:25:58,790 --> 00:25:57,922

SO INSIGHT WILL BE CHECKING THE

701
00:25:59,891 --> 00:25:58,857
PULSE AND REFLEXES AND

702
00:26:02,060 --> 00:25:59,958
TEMPERATURE OF THE PLANET AND

703
00:26:05,096 --> 00:26:02,127
TELL US MORE ABOUT THOSE SCIENCE

704
00:26:06,998 --> 00:26:05,163
GOALS PLEASE WELCOME TO THE

705
00:26:09,434 --> 00:26:07,065
STAGE BRUCE, THE INSIGHT

706
00:26:10,668 --> 00:26:09,501
PRINCIPAL INVESTIGATOR FROM THE

707
00:26:13,471 --> 00:26:10,735
JET PROPULSION LABORATORY.

708
00:26:16,140 --> 00:26:13,538
AFTER HE SAYS A FEW RKS, WE

709
00:26:21,379 --> 00:26:16,207
KEY MEMBERS OF THE

710
00:26:22,981 --> 00:26:21,446
SCIENCE TEAM, DEPUTY PROJECT

711
00:26:30,521 --> 00:26:23,048
MANAGER, THE INVESTIGATION LEAD

712
00:26:33,424 --> 00:26:30,588
FROM IPGP AND THE HP

713
00:26:36,527 --> 00:26:33,491

INVESTIGATION LEAD FROM DLR.

714

00:26:42,500 --> 00:26:36,594

BRUCE, HOW LONG HAVE YOU BEEN

715

00:26:42,834 --> 00:26:42,567

WORKING TO PUT A SIZE MOW METER

716

00:26:45,837 --> 00:26:42,901

ON MARS?

717

00:26:46,337 --> 00:26:45,904

>> I GUESS I WAS THERE ON THE

718

00:26:47,672 --> 00:26:46,404

FIRST DATE.

719

00:26:49,007 --> 00:26:47,739

I'VE BEEN ACTUALLY -- BEFORE

720

00:26:50,141 --> 00:26:49,074

THERE WAS A SPACECRAFT AND

721

00:26:51,676 --> 00:26:50,208

BEFORE THERE WERE INSTRUMENTS

722

00:26:53,645 --> 00:26:51,743

THERE'S THE SCIENTIFIC QUESTION

723

00:27:02,520 --> 00:26:53,712

AND THOSE SCIENTIFIC QUESTIONS

724

00:27:03,121 --> 00:27:02,587

THE BEGINNING OF THE LY SINCE

725

00:27:04,956 --> 00:27:03,188

EXPLORATION.

726

00:27:06,324 --> 00:27:05,023

THOSE QUESTIONS ARE SOMETHING

727

00:27:10,061 --> 00:27:06,391

INTRIGUED ME IN GRADUATE SCHOOL.

728

00:27:11,963 --> 00:27:10,128

AND LATE '80S AND EARLY '90S, I

729

00:27:16,267 --> 00:27:12,030

STARTED WORKING ON THE MISSIONS

730

00:27:19,737 --> 00:27:16,334

AND THIS PARTICULAR MISSION

731

00:27:21,639 --> 00:27:19,804

REALLY STARTED CG INTO PLAY

732

00:27:22,373 --> 00:27:21,706

AND IDEAS COMING TOGETHER IN THE

733

00:27:25,209 --> 00:27:22,440

EARLY 2000's.

734

00:27:26,344 --> 00:27:25,276

I'VE BEEN WORKING ON THIS MORE

735

00:27:30,815 --> 00:27:26,411

THAN 25 YEARS YOU CAN IMAGINE

736

00:27:32,150 --> 00:27:30,882

JUST HOW INCREDIBLY EXCITING IT

737

00:27:35,353 --> 00:27:32,217

IS FOR ME TO BE HERE TODAY.

738

00:27:36,888 --> 00:27:35,420

NOT 25 YEARS AND NOT TWO DAYS

739

00:27:39,757 --> 00:27:36,955
FROM LAUNCHING TO MARS.

740

00:27:40,992 --> 00:27:39,824
THIS IS REALLY AMAZING.

741

00:27:43,494 --> 00:27:41,059
AN THE SCIENCE THAT WE WANT TO

742

00:27:47,932 --> 00:27:43,561
DO WITH THIS MISSION, THE REASON

743

00:27:49,333 --> 00:27:47,999
WE'RE GOING TO MARS IS REALLY A

744

00:27:51,469 --> 00:27:49,400
SCIENCE OF UNDERSTANDING THE

745

00:27:52,704 --> 00:27:51,536
EARLY SOLAR SYSTEM AND HOW

746

00:27:53,204 --> 00:27:52,771
PLANETS FORM AND HOW ROCKY

747

00:27:57,608 --> 00:27:53,271
PLANETS FORM.

748

00:28:00,044 --> 00:27:57,675
AND THE WAY WE CAN DO THIS IS BY

749

00:28:02,547 --> 00:28:00,111
USING THE FACT THAT THE

750

00:28:03,981 --> 00:28:02,614
TERRESTRIAL PLANETS SAVE CERTAIN

751

00:28:05,516 --> 00:28:04,048

SIMILARITIES AND FORMED IN

752

00:28:08,786 --> 00:28:05,583

BASICALLY THE SAME WAYS AND

753

00:28:11,522 --> 00:28:08,853

TODAY WE KNOW THAT MARS, VENUS,

754

00:28:12,990 --> 00:28:11,589

THE EARTH AND MERCURY ALL HAVE

755

00:28:19,797 --> 00:28:13,057

THE SAME BASIC STRUCTURE.

756

00:28:22,867 --> 00:28:19,864

THEY HAVE A DENSE, HEAVY IRON

757

00:28:24,602 --> 00:28:22,934

NICKEL CORE AND ROCKY MANTLE

758

00:28:28,406 --> 00:28:24,669

WITH DENSE SILICON ROCKS, ROCKS

759

00:28:30,541 --> 00:28:28,473

THAT HAVE BEEN PUSHED TOGETHER

760

00:28:31,876 --> 00:28:30,608

AND THE AT TOM SQUEEZED TOGETHER

761

00:28:34,145 --> 00:28:31,943

AND A TRUST OF LIGHTER ROCKS,

762

00:28:35,246 --> 00:28:34,212

ROCKS THAT YOU CAN ACTUALLY PICK

763

00:28:36,514 --> 00:28:35,313

UP AND THROW AT PEOPLE.

764

00:28:38,683 --> 00:28:36,581

THESE ARE A LITTLE BIT DIFFERENT

765

00:28:40,084 --> 00:28:38,750

THAN THE ROCKS THAT MAKE UP THE

766

00:28:42,086 --> 00:28:40,151

BULK OF THE PLANET AND YET, THE

767

00:28:43,321 --> 00:28:42,153

PLANET IS FORMED FROM THE SAME

768

00:28:46,124 --> 00:28:43,388

KIND OF STUFF.

769

00:28:54,565 --> 00:28:46,191

THEY'RE FORMED FRO METEORITES

770

00:28:56,834 --> 00:28:54,632

AND COMET TERRI STUFF.

771

00:28:59,904 --> 00:28:56,901

THAT PROCESS THAT WE KNOW SORT

772

00:29:01,572 --> 00:28:59,971

OF GENERALLY HOW THAT WORKS IS

773

00:29:03,207 --> 00:29:01,639

CALLED DIFFERENTIATION WHEN THE

774

00:29:04,442 --> 00:29:03,274

PLANETS FIRST FORM, THEY MELT,

775

00:29:06,511 --> 00:29:04,509

EITHER COMPLETELY OR PARTIALLY

776

00:29:08,713 --> 00:29:06,578

AND THEN THEY START TO SEPARATE.

777

00:29:10,181 --> 00:29:08,780

THE HEAVY STUFF SINKS TO THE

778

00:29:13,251 --> 00:29:10,248

BOTTOM AND THE LIGHT STUFF

779

00:29:14,685 --> 00:29:13,318

FLOATS TO THE TOP AND THAT

780

00:29:15,052 --> 00:29:14,752

PROCESS SOUNDS RELATIVELY

781

00:29:15,887 --> 00:29:15,119

SIMPLE.

782

00:29:17,522 --> 00:29:15,954

WHAT HAPPENS OF COURSE IS THAT

783

00:29:19,290 --> 00:29:17,589

IT STARTS GETTING MIXED UP AND

784

00:29:20,158 --> 00:29:19,357

WE DON'T REALLY EXACTLY HOW THAT

785

00:29:21,359 --> 00:29:20,225

WORKS.

786

00:29:23,294 --> 00:29:21,426

SO, WE WANT TO UNDERSTAND WHERE

787

00:29:24,996 --> 00:29:23,361

THE EARTH CAME FROM AND WHERE

788

00:29:27,331 --> 00:29:25,063

THE PLANET THAT WE LIVED ON AND

789

00:29:28,699 --> 00:29:27,398

HOW IT CAME TO BE THE WAY IT IS

790

00:29:31,569 --> 00:29:28,766

TODAY AND TART LOOKING AT

791

00:29:32,737 --> 00:29:31,636

EARTH'S HISTORY AND WE RUN INTO

792

00:29:34,639 --> 00:29:32,804

A BRICK WALL BECAUSE THE EARTH

793

00:29:36,407 --> 00:29:34,706

IS SO ACTIVE THAT THE EVIDENCE

794

00:29:40,711 --> 00:29:36,474

OF ALL THOSE PROCESSES HAS

795

00:29:44,015 --> 00:29:40,778

GOTTEN BASICALLY ERASED BY PLATE

796

00:29:46,350 --> 00:29:44,082

TECTONICS AND FIFTYINGIOUS

797

00:29:54,292 --> 00:29:46,417

MANTLE CONVEX.

798

00:29:54,725 --> 00:29:54,359

BY VIGORIOUS WE'RE TALKING ABOUT

799

00:29:55,693 --> 00:29:54,792

MILLIMETERS.

800

00:29:56,761 --> 00:29:55,760

THE EARTH DOESN'T HAVE THAT

801
00:29:59,764 --> 00:29:56,828
EVIDENCE ANYMORE.

802
00:30:01,165 --> 00:29:59,831
WE WENT TO THE MOON AND THE MOON

803
00:30:02,533 --> 00:30:01,232
HAS LOTS OF EVIDENCE.

804
00:30:04,302 --> 00:30:02,600
IT FROZE ITSELF PRETTY EARL HE

805
00:30:06,304 --> 00:30:04,369
ON BUT IT's SO SMALL THAT THE

806
00:30:08,639 --> 00:30:06,371
PRESSURES AND TEMPERATURES

807
00:30:10,842 --> 00:30:08,706
INSIDE ARE ONLY CHARACTERISTIC

808
00:30:12,276 --> 00:30:10,909
OF THE EARTH DOWN TO 100, 150

809
00:30:16,647 --> 00:30:12,343
MILES OR SO.

810
00:30:20,318 --> 00:30:16,714
SO THE VAST BULK OF THE EARTH's

811
00:30:22,119 --> 00:30:20,385
INTERIOR UNDERWENT PROCESSES

812
00:30:22,453 --> 00:30:22,186
THAT NEVER, EVER WENT ON THE

813
00:30:26,824 --> 00:30:22,520

MOON.

814

00:30:27,158 --> 00:30:26,891

WE CALL IT THE GOLDIE LOCKS

815

00:30:28,459 --> 00:30:27,225

PLANET.

816

00:30:29,560 --> 00:30:28,526

IT'S NOT TOO BIG OR SMALL BUT

817

00:30:32,964 --> 00:30:29,627

JUST RIGHT.

818

00:30:33,965 --> 00:30:33,031

IT'S UNDER GONE THE PROCESS

819

00:30:36,901 --> 00:30:34,032

PLANETARY DIFFERENTIATION THAT

820

00:30:38,102 --> 00:30:36,968

THE EARTH DID, BUT ABOUT 20, 50

821

00:30:39,770 --> 00:30:38,169

MILE YEARS AFTER IT WAS FORMED

822

00:30:42,073 --> 00:30:39,837

IT JUST KIND OF STOPPED AND WE

823

00:30:44,809 --> 00:30:42,140

HAVE LOTS OF GEOLOGY GOING ON

824

00:30:47,078 --> 00:30:44,876

THE SURFACE BUT ALL THOSE FINGER

825

00:30:47,945 --> 00:30:47,145

PRINTS AND EARLY PROCESSES ARE

826

00:30:50,848 --> 00:30:48,012

STILL RETAINED.

827

00:30:54,118 --> 00:30:50,915

THAT'S WHY WE WANT TO GO MEASURE

828

00:30:55,386 --> 00:30:54,185

THE FUNDAMENTAL PERIMETER THE

829

00:30:57,255 --> 00:30:55,453

THICKNESS OF THE CRUST WHICH

830

00:30:59,991 --> 00:30:57,322

GIVES US THE AMOUNT OF SCUM, IF

831

00:31:01,292 --> 00:31:00,058

YOU WILL, THAT FLOATS TO THE

832

00:31:04,028 --> 00:31:01,359

SURFACE, THE SIZE AND THE

833

00:31:05,696 --> 00:31:04,095

DENSITY OF THE CORE WHICH TELLS

834

00:31:07,598 --> 00:31:05,763

US HOW MUCH IRON SUNK DOWN TO

835

00:31:08,399 --> 00:31:07,665

THE CENTER AND HOW MUCH OTHER

836

00:31:10,768 --> 00:31:08,466

ELEMENTS WERE BROUGHT WITH IT

837

00:31:13,771 --> 00:31:10,835

BECAUSE WE THINK IT'S NOT PURE

838

00:31:15,973 --> 00:31:13,838

IRON BECAUSE IF IT WAS IT WOULD

839

00:31:17,508 --> 00:31:16,040

BE FROZEN SOLID TODAY.

840

00:31:18,376 --> 00:31:17,575

SINCE WE HAVE ANOTHER THINGS

841

00:31:22,413 --> 00:31:18,443

MIXED IN.

842

00:31:22,980 --> 00:31:22,480

IT ALLOWS THE CORE TO STAY

843

00:31:24,482 --> 00:31:23,047

MOLTEN.

844

00:31:27,018 --> 00:31:24,549

IT LOWERS THE TEMPERATURE JUST

845

00:31:28,986 --> 00:31:27,085

LIKE WHEN YOU THROW SALT ON A

846

00:31:31,188 --> 00:31:29,053

FROZEN SIDEWALK IT MELTS THE

847

00:31:35,960 --> 00:31:31,255

SNOW ON THE SIDEWALK.

848

00:31:37,428 --> 00:31:36,027

WE WE WANT TO KNOW THE DYNAMICS

849

00:31:38,930 --> 00:31:37,495

WHICH IS RELATED THE AMOUNT

850

00:31:40,398 --> 00:31:38,997

OF ENERGY INVOLVED WHICH IS

851
00:31:44,001 --> 00:31:40,465
RELATED TO THE TEMPERATURE.

852
00:31:44,568 --> 00:31:44,068
WE DO THAT WITH THREE BASIC

853
00:31:47,405 --> 00:31:44,635
INVESTIGATIONS.

854
00:31:51,842 --> 00:31:47,472
THE FIRST IS THE SIZE MOM METER.

855
00:31:52,176 --> 00:31:51,909
THIS IS THE HEART OF THE INSIGHT

856
00:31:54,178 --> 00:31:52,243
MISSION.

857
00:31:56,914 --> 00:31:54,245
IT'S WHAT ALLOWS US TO SEE DEEP

858
00:31:59,317 --> 00:31:56,981
INTO THE PLANET AND HAVE INSIGHT

859
00:32:00,952 --> 00:31:59,384
AND USES TH SEISMIC WAVES THAT

860
00:32:01,819 --> 00:32:01,019
ARE GENERATED BY MARS QUAKES AND

861
00:32:03,888 --> 00:32:01,886
THEY'RE JUST VIBRATIONS.

862
00:32:05,022 --> 00:32:03,955
IF YOU LIVE IN CALIFORNIA,

863
00:32:06,357 --> 00:32:05,089

YOU'RE VERY FAMILIAR WITH THESE

864

00:32:07,758 --> 00:32:06,424

KINDS OF VIBRATIONS.

865

00:32:08,960 --> 00:32:07,825

BUT IT'S NOT ACTUALLY GOING TO

866

00:32:11,262 --> 00:32:09,027

MEASURE THINGS THAT ARE GOING TO

867

00:32:13,564 --> 00:32:11,329

SHAKE THE SPACECRAFT AROUND.

868

00:32:14,398 --> 00:32:13,631

IT'S MEASURING VERY SMALL

869

00:32:15,399 --> 00:32:14,465

VIBRATIONS THAT STARTED STARTED

870

00:32:16,500 --> 00:32:15,466

ON THE OTHER SIDE OF THE PLANET

871

00:32:18,903 --> 00:32:16,567

AND TRAVELED ALL THE WAY THROUGH

872

00:32:20,638 --> 00:32:18,970

AND COME BACK UP TO THE SURFACE

873

00:32:21,973 --> 00:32:20,705

UNDERNEATH THE SPACECRAFT.

874

00:32:23,274 --> 00:32:22,040

THOSE VIBRATIONS BY THE TIME

875

00:32:23,874 --> 00:32:23,341

THEY GET TO INSIGHT THEY'RE

876

00:32:28,379 --> 00:32:23,941

VERY, VERY SMALL.

877

00:32:29,013 --> 00:32:28,446

WE DO THIS ON THE EARTH MORE OR

878

00:32:31,082 --> 00:32:29,080

LESS ROUTINELY.

879

00:32:32,550 --> 00:32:31,149

HERE IN CALIFORNIA WE PICK UP

880

00:32:34,385 --> 00:32:32,617

EARTHQUAKES FROM JAPAN AND

881

00:32:37,688 --> 00:32:34,452

MIDDLE OF THE OCEAN AND EUROPE

882

00:32:40,958 --> 00:32:37,755

MANY TIMES A DAY.

883

00:32:43,861 --> 00:32:41,025

THAT'S CONSIDERED ROUTINE.

884

00:32:44,161 --> 00:32:43,928

IT'S NOT QUITE SO ROUTINE ON

885

00:32:45,963 --> 00:32:44,228

MARS.

886

00:32:56,073 --> 00:32:46,030

WE'RE GOING TO MEASURE SO SMALL

887

00:32:58,809 --> 00:32:56,140

ON THE SCALE AN ATOM.

888

00:32:59,243 --> 00:32:58,876

SO IT'S A VERY, VERY PRECISE

889

00:33:03,047 --> 00:32:59,310
MEASUREMENT.

890

00:33:04,648 --> 00:33:03,114
AND SO, WE HAVE OUR SIZE MOM

891

00:33:06,484 --> 00:33:04,715
METER AND WE PUT THE WINDSHIELD

892

00:33:08,119 --> 00:33:06,551
OVER IT TO KEEP IT FROM BLOWING

893

00:33:13,924 --> 00:33:08,186
AROUND AND WE HAVE OTHER SENSORS

894

00:33:16,827 --> 00:33:13,991
TO KEEP TRACK OF WEATHER AND

895

00:33:18,763 --> 00:33:16,894
MAGNETIC FIELD VARIATIONS.

896

00:33:19,797 --> 00:33:18,830
WHEN WE GET THE SEISMIC WAVES IT

897

00:33:22,500 --> 00:33:19,864
TURNS OUT AS THEY TRAVEL THROUGH

898

00:33:24,301 --> 00:33:22,567
THE PLANET THEY ACTUALLY PICK UP

899

00:33:26,237 --> 00:33:24,368
INFORMATION ALONG THE WAY.

900

00:33:27,071 --> 00:33:26,304
WHEN THEY TRAVEL THROUGH ROCKS

901
00:33:28,105 --> 00:33:27,138
DIFFERENT ROCKS EFFECT THE WAY

902
00:33:29,507 --> 00:33:28,172
IT IN DIFFERENT WAYS.

903
00:33:31,342 --> 00:33:29,574
WHEN THEY COME BACK UP, ALL

904
00:33:34,612 --> 00:33:31,409
THOSE LITTLE WIGGLES YOU SEE ON

905
00:33:35,846 --> 00:33:34,679
SIZE MOW GRAMS AFTER AN

906
00:33:37,615 --> 00:33:35,913
EARTHQUAKE, SCIENTISTS KNOW HOW

907
00:33:40,017 --> 00:33:37,682
TO TAKE THE SHAPES FROM THE

908
00:33:41,052 --> 00:33:40,084
WIGGLES AND FREQUENCY AND

909
00:33:42,686 --> 00:33:41,119
AMPLITUDE AND POLARIZATION AND

910
00:33:46,957 --> 00:33:42,753
THE TIMING AND ALL KINDS OF

911
00:33:48,859 --> 00:33:47,024
PROPERTIES AND IT OUT THAT

912
00:33:52,596 --> 00:33:48,926
THE WAVES HAVE PICKED UP ALONG

913
00:33:55,599 --> 00:33:52,663

THE PATH AND FINALLY AFTER WE'VE

914

00:33:57,835 --> 00:33:55,666

GOTTEN IT, WE CAN PUT TOGETHER A

915

00:33:59,103 --> 00:33:57,902

THREE DIMENSIONAL VIEW FROM THE

916

00:34:00,371 --> 00:33:59,170

INSIDE OF MARS.

917

00:34:03,808 --> 00:34:00,438

SECOND IS HEAT FLOW AND PHYSICAL

918

00:34:08,679 --> 00:34:03,875

PROPERTIES PACKAGE AND THIS IS

919

00:34:10,114 --> 00:34:08,746

THE MOLE THAT GOES DOWN DEEP

920

00:34:12,016 --> 00:34:10,181

INTO THE MARTIAN CRUST -- NOT

921

00:34:13,684 --> 00:34:12,083

THE CRUST BUT THE SOIL, ABOUT

922

00:34:14,752 --> 00:34:13,751

FIVE METERS OR 16 FEET AND

923

00:34:15,853 --> 00:34:14,819

MEASURES NOT JUST THE

924

00:34:17,888 --> 00:34:15,920

TEMPERATURE DOWN THERE BUT

925

00:34:20,791 --> 00:34:17,955

MEASURES THE TEMPERATURE ALL THE

926
00:34:22,259 --> 00:34:20,858
WAY ALONG THE HOLE THAT IT HAD

927
00:34:24,929 --> 00:34:22,326
GONE DOWN AND THE INSTRUMENT IS

928
00:34:26,564 --> 00:34:24,996
NOT THE MOLE THAT PULLS IT DOWN.

929
00:34:32,203 --> 00:34:26,631
YOU THE INSTRUMENT IS ACTUALLY

930
00:34:32,570 --> 00:34:32,270
THE CABLE THAT IT PULLS BEHIND

931
00:34:34,138 --> 00:34:32,637
IT.

932
00:34:35,506 --> 00:34:34,205
BASICALLY IT ALLOWS US TO

933
00:34:39,610 --> 00:34:35,573
UNDERSTAND THE HEAT BUDGET OF

934
00:34:41,078 --> 00:34:39,677
THE PLANET AND THE ENERGY BUDGET

935
00:34:43,614 --> 00:34:41,145
THAT'S DRIVEN THE EVOLUTION OF

936
00:34:45,449 --> 00:34:43,681
THE PLANET THE LAST 4.5, BILLION

937
00:34:47,384 --> 00:34:45,516
YEARS AND FINALLY WE HAVE OUR

938
00:34:48,519 --> 00:34:47,451

RADIO SCIENCE EXPERIMENT AND

939

00:34:50,955 --> 00:34:48,586

THAT'S NOT AN INSTRUMENT BUT THE

940

00:34:53,157 --> 00:34:51,022

RADIO TRANSMITTER ON THE

941

00:34:55,759 --> 00:34:53,224

ECRAFT AND HAS A COUPLE OF

942

00:34:56,594 --> 00:34:55,826

ANTENNAS, THESE LITTLE THINGS

943

00:34:59,930 --> 00:34:56,661

HERE. THEY LOOK AT THE MORNING

944

00:35:04,034 --> 00:34:59,997

AND THE EVENING HORIZON AS EARTH

945

00:35:05,736 --> 00:35:04,101

RISES AND SETS AND IT

946

00:35:06,637 --> 00:35:05,803

COMMUNICATES WITH THE DEEP SPACE

947

00:35:09,039 --> 00:35:06,704

NETWORK STATIONS.

948

00:35:11,041 --> 00:35:09,106

THOSE BIG DISHES WHICH A

949

00:35:11,442 --> 00:35:11,108

TRANSMITTER RADIO WAVE UP TO THE

950

00:35:15,880 --> 00:35:11,509

SPACECRAFT.

951
00:35:17,014 --> 00:35:15,947
WHEN WE RECEIVE IT HERE, WE

952
00:35:18,149 --> 00:35:17,081
SOMETHING THAT SENDS IT BACK

953
00:35:19,550 --> 00:35:18,216
DOWN TO EARTH WITHOUT A BREAK IN

954
00:35:25,222 --> 00:35:19,617
THE SIGNAL.

955
00:35:25,523 --> 00:35:25,289
IT'S VIBRATING THREE OR 5 GIGA

956
00:35:27,691 --> 00:35:25,590
HERTZ.

957
00:35:28,792 --> 00:35:27,758
IT COMES BACK DOWN AND BY

958
00:35:31,028 --> 00:35:28,859
ANALYZING THE DOPPLER SHIFT AND

959
00:35:34,565 --> 00:35:31,095
THE TIMING WE CAN TRACK THE

960
00:35:36,834 --> 00:35:34,665
LOCATION OF THE SPACECRAFT AT

961
00:35:37,668 --> 00:35:36,901
I DON'T KNOW, 60 MILLION,

962
00:35:41,071 --> 00:35:37,735
100 MILLION MILES AN AWAY WITH

963
00:35:48,245 --> 00:35:41,138

AN ACCURACY OF SOMETHING AROUND

964

00:35:49,346 --> 00:35:48,312

A FOOT OR SO.

965

00:35:51,549 --> 00:35:49,413

YOU CAN MAKE THOSE DETERMINATION

966

00:35:53,217 --> 00:35:51,616

AND WE TRACK IT DURING THE DAY

967

00:35:54,652 --> 00:35:53,284

AND AS THE PLANET ROTATES IT

968

00:35:57,388 --> 00:35:54,719

GOES THROUGH AN ARC AND WE CAN

969

00:35:59,523 --> 00:35:57,455

THEN FIGURE O WHERE THE NORTH

970

00:36:00,624 --> 00:35:59,590

POLE OF MARS IS POINTING TO A

971

00:36:01,392 --> 00:36:00,691

REALLY HIGH DEGREE OFACK

972

00:36:03,494 --> 00:36:01,459

CONTRACT AND I OVER THE COURSE

973

00:36:06,163 --> 00:36:03,561

OF THE 80-TWOER WE CAN WATCH

974

00:36:07,131 --> 00:36:06,230

THAT NORTH POLE WOBBLE JUST A

975

00:36:08,332 --> 00:36:07,198

LITTLE BIT BECAUSE OF THE CORE

976

00:36:10,334 --> 00:36:08,399

SLOSHING AROUND INSIDE THE

977

00:36:12,303 --> 00:36:10,401

PLANET AND THAT'S WHAT GIVES A

978

00:36:14,572 --> 00:36:12,370

VERY, VERY TIGHT CONCENTRATE ON

979

00:36:17,975 --> 00:36:14,639

THE SIZE OF THE CORE AND DENSITY

980

00:36:19,376 --> 00:36:18,075

AND ITS COMPOSITION.

981

00:36:21,579 --> 00:36:19,443

THAT TELLS US THE STRUCTURE OF

982

00:36:23,981 --> 00:36:21,646

MARS, THE STRUCTURE OF MARS

983

00:36:25,082 --> 00:36:24,048

TELLS US SOMETHING ABOUT THE

984

00:36:27,184 --> 00:36:25,149

PROCESSES THAT PUT THAT TOGETHER

985

00:36:29,019 --> 00:36:27,251

AND WE CAN PUT THOSE INTO OUR

986

00:36:32,656 --> 00:36:29,086

MODELS AND EXTRAPOLATE THE EARTH

987

00:36:34,792 --> 00:36:32,723

AND UNDERSTAND HOW IT FORMED

988

00:36:36,227 --> 00:36:34,859

FOUR . \$5 BILLION AGO AND THAT'S

989

00:36:39,396 --> 00:36:36,294

THE CRUX BEHIND THE MISSION.

990

00:36:40,564 --> 00:36:39,463

>> MUCH INSIDE OF ITS PAYLOAD

991

00:36:42,199 --> 00:36:40,631

FAIRING WE'RE JAM PACKING A LOT

992

00:36:43,234 --> 00:36:42,266

OF AWESOME INTO A VERY SMALL

993

00:36:45,636 --> 00:36:43,301

SPACE AND TIME THIS AFTERNOON.

994

00:36:47,538 --> 00:36:45,703

AND I WANT TO MAKE SURE THAT WE

995

00:36:50,040 --> 00:36:47,605

GET A FEW MINUTES, A COUPLE

996

00:36:52,910 --> 00:36:50,107

MINUTES WITH EACH OF OUR SCIENCE

997

00:36:54,378 --> 00:36:52,977

TEAM KEY MEMBERS HERE, SO LET'S

998

00:36:56,981 --> 00:36:54,445

TURN IT OVER TO YOU.

999

00:37:01,018 --> 00:36:57,048

WANT TO SAY A FEW WORDS?

1000

00:37:01,385 --> 00:37:01,085

>> GOOD AFTERNOON,D

1001
00:37:06,323 --> 00:37:01,452
GENTLEMEN.

1002
00:37:08,759 --> 00:37:06,390
SO, I'M THE DEPUTY OF THE

1003
00:37:10,394 --> 00:37:08,826
PROJECT MANAGER.

1004
00:37:12,830 --> 00:37:10,461
WHAT A GREAT DAY TO BE ALL

1005
00:37:18,569 --> 00:37:12,897
TOGETHER CLOSE TO THE LAUNCH AND

1006
00:37:24,241 --> 00:37:18,636
I'M VERY PROUD TO REPRESENT THE

1007
00:37:28,445 --> 00:37:24,308
FRENCH AGENCY SPACE TEAM.

1008
00:37:30,381 --> 00:37:28,512
SO, I JUST WANT TO FOCUS ON TWO

1009
00:37:34,285 --> 00:37:30,448
CHALLENGES WE SUCCEEDED.

1010
00:37:40,491 --> 00:37:34,352
THE FIRST ONE IS FOR THE FRENCH

1011
00:37:42,293 --> 00:37:40,558
AGENCY TO CALL THE NEXT FIVE

1012
00:37:45,896 --> 00:37:42,360
COUNTRIES.

1013
00:37:56,206 --> 00:37:45,963

THAT THEY PROVIDE FOR US THE

1014

00:38:01,211 --> 00:37:56,273

SYSTEM AND GREAT RETURN AND

1015

00:38:02,746 --> 00:38:01,278

PROVIDES ELECTRONIC BUS.

1016

00:38:40,050 --> 00:38:02,813

IT'S INSIDE.

1017

00:38:43,220 --> 00:38:40,117

YOU CAN SEE IT.

1018

00:39:04,274 --> 00:38:43,287

SO, ANOTHER CHALLENGE WE FACE IS

1019

00:39:04,675 --> 00:39:04,341

TO VALIDATE THE

1020

00:39:10,280 --> 00:39:04,742

FUNCTIONS.

1021

00:39:12,983 --> 00:39:10,347

WE UF IT IS EASY TO ADD IT AD

1022

00:39:14,518 --> 00:39:13,050

TO BE ABLE TO VALIDATE THAT

1023

00:39:18,922 --> 00:39:14,585

BECAUSE YOU KNOW ON MARS THE

1024

00:39:19,223 --> 00:39:18,989

TEMPERATURE COULD BE VERY, VERY

1025

00:39:26,330 --> 00:39:19,290

COLD.

1026
00:39:39,677 --> 00:39:26,397
WHICH YOU CAN SEE ON THE PICTURE

1027
00:39:46,683 --> 00:39:45,816
TO BE ABLE TO TILT OUR

1028
00:40:09,072 --> 00:39:46,750
INSTRUMENTS.

1029
00:40:15,245 --> 00:40:09,139
WE ALSO IT'S AN SILL 54 MINE WE

1030
00:40:18,215 --> 00:40:15,312
WORKED WITH IT AND WE CAN

1031
00:40:24,955 --> 00:40:18,282
VALIDATE THE EQUIPMENT AND WE

1032
00:40:29,359 --> 00:40:25,022
CAN SAY WHICH.

1033
00:40:32,896 --> 00:40:29,426
AND FINALLY, WE DO THE TEST IN

1034
00:40:36,934 --> 00:40:32,963
LOCKHEED MARTIN AND IT WAS A

1035
00:40:38,769 --> 00:40:37,001
GREAT FOR OTHER TEAMS TO

1036
00:40:43,073 --> 00:40:38,836
PARTICIPATE IN THE TEST.

1037
00:40:44,675 --> 00:40:43,140
IT'S AROUND 250 PEOPLE, WOMEN

1038
00:40:46,677 --> 00:40:44,742

AND MEN IN GENERAL WHO

1039

00:40:56,220 --> 00:40:46,744

PARTICIPATE IN THIS CHALLENGE

1040

00:40:58,288 --> 00:40:56,287

AND GET READY TO LAUNCH ON

1041

00:41:02,659 --> 00:40:58,355

SATURDAY.

1042

00:41:09,800 --> 00:41:02,726

IT WAS VERY WONDERFUL ADVENTURE

1043

00:41:15,572 --> 00:41:09,867

LIKE WE LIKE IT AND FOR YOU AND

1044

00:41:18,642 --> 00:41:15,639

ALL THE TEAM.

1045

00:41:19,142 --> 00:41:18,709

>> THANK YOU VERY MUCH.

1046

00:41:21,845 --> 00:41:19,209

ALL RIGHT.

1047

00:41:22,212 --> 00:41:21,912

WE JUST GOT A COUPLE MINUTES

1048

00:41:26,750 --> 00:41:22,279

HERE.

1049

00:41:27,684 --> 00:41:26,817

>> HELLO.

1050

00:41:31,021 --> 00:41:27,751

I'M THE LEADER.

1051
00:41:35,292 --> 00:41:31,088
WITH THE FIRST SLIDE SO I WILL

1052
00:41:37,461 --> 00:41:35,359
CONTINUE TO THANK GPL AND

1053
00:41:38,996 --> 00:41:37,528
ESPECIALLY ALL THE TECHNICAL

1054
00:41:41,064 --> 00:41:39,063
TEAM IN THE WORLD, YOU KNOW IN

1055
00:41:43,500 --> 00:41:41,131
MANY PLACESND OF COURSE ALL

1056
00:41:45,869 --> 00:41:43,567
THE SPACE AGENCIES WHO MADE THIS

1057
00:41:49,907 --> 00:41:45,936
MISSION POSSIBLE.

1058
00:41:54,344 --> 00:41:49,974
SO, INSIDE IT WILL REALLY BE A

1059
00:41:55,846 --> 00:41:54,411
NEW PAGE OF HISTORY.

1060
00:41:57,481 --> 00:41:55,913
WE STARTED ON THE EARTH ON 130

1061
00:42:00,817 --> 00:41:57,548
YEARS AGO AND WE STARTED IT ON

1062
00:42:03,220 --> 00:42:00,884
THE MOON 50 YEARS AGO AND WE'LL

1063
00:42:03,554 --> 00:42:03,287

START IT BY LAUNCHING TH

1064

00:42:05,055 --> 00:42:03,621
MISSION.

1065

00:42:10,227 --> 00:42:05,122
IT'S GOING TO BE A NEW PLANET

1066

00:42:14,431 --> 00:42:10,294
WHERE WE DISCOVER SOMETHING.

1067

00:42:20,904 --> 00:42:14,498
THE KEY POINT IS I WANT TO

1068

00:42:21,538 --> 00:42:20,971
CONVINCE YOU THAT WE DETECT THE

1069

00:42:24,641 --> 00:42:21,605
INSIDE OF SOMETHING.

1070

00:42:29,179 --> 00:42:24,708
I WILL ASK YOU A QUESTION.

1071

00:42:31,882 --> 00:42:29,246
WHAT IS INSIDE THIS PLANET?

1072

00:42:33,984 --> 00:42:31,949
I MAKE AN IMPACT LIKE THIS.

1073

00:42:35,719 --> 00:42:34,051
THE TELL ME IF THIS IS FULL OR

1074

00:42:37,554 --> 00:42:35,786
IF THERE IS NOTHING.

1075

00:42:38,855 --> 00:42:37,621
I GUESS YOU KNOW IMMEDIATELY THE

1076
00:42:41,592 --> 00:42:38,922
ANSWER BECAUSE YOU GOT THE SOUND

1077
00:42:43,460 --> 00:42:41,659
OF THE PLANET AND THIS SOUND

1078
00:42:48,832 --> 00:42:43,527
IS -- IT'S ALMOST LIKE SEISMIC

1079
00:42:50,701 --> 00:42:48,899
WAVE AND I WAS MAKING AN IMPACT

1080
00:42:51,935 --> 00:42:50,768
WITH MY HAND.

1081
00:42:53,770 --> 00:42:52,002
WE'LL DOT SAME THING ON MARS

1082
00:42:55,772 --> 00:42:53,837
WITH IMPACT AND OF COURSE WE

1083
00:42:59,276 --> 00:42:55,839
WILL FIND THERE IS A LOT INSIDE.

1084
00:43:02,145 --> 00:42:59,343
I HAVE A MOVIE FOR YOU

1085
00:43:02,479 --> 00:43:02,212
BECAUSE -- GIVE ME IT BACK,

1086
00:43:03,413 --> 00:43:02,546
PLEASE.

1087
00:43:04,314 --> 00:43:03,480
I AM NOT FINISHED.

1088
00:43:08,218 --> 00:43:04,381

THIS IS A QUAKE.

1089

00:43:09,820 --> 00:43:08,285

WE HAVE ONE LENDER AND WE NEED

1090

00:43:12,656 --> 00:43:09,887

TO DETECT WAVE.

1091

00:43:15,892 --> 00:43:12,723

SO THEREFORE THE POINT IS THAT

1092

00:43:17,494 --> 00:43:15,959

WE WILL ADD A QUAKE.

1093

00:43:20,464 --> 00:43:17,561

AND THE NICE THING IS THAT WE

1094

00:43:22,532 --> 00:43:20,531

KNOW EXACTLY WHAT IS THE

1095

00:43:25,035 --> 00:43:22,599

DISTANCE OF THE PLANET.

1096

00:43:27,437 --> 00:43:25,102

SO THEREFORE WHEN WE CATCH THE

1097

00:43:29,039 --> 00:43:27,504

WAVE TWO TIMES FIRST TIME IS

1098

00:43:31,308 --> 00:43:29,106

ARRIVING FIRST AND SECOND TI

1099

00:43:32,743 --> 00:43:31,375

WHEAVE HAS MADE A FULL

1100

00:43:34,244 --> 00:43:32,810

TURN IT'S LIKE IN THE STADIUM

1101
00:43:36,680 --> 00:43:34,311
YOU GET IMMEDIATELY THE SPEED OF

1102
00:43:42,486 --> 00:43:36,747
THE WAVE AND TELLS YOU

1103
00:43:44,154 --> 00:43:42,553
EVERYTHING 23R ON THE INSIDE.

1104
00:43:46,189 --> 00:43:44,221
THE BIG PROBLEM IT'S ET WAVE

1105
00:43:48,525 --> 00:43:46,256
AFTER A FULL TURN.

1106
00:43:49,426 --> 00:43:48,592
YOU SEE THAT IT'S TEN TIMES

1107
00:43:51,161 --> 00:43:49,493
SMALLER THAN THE BIG WAVE

1108
00:43:52,496 --> 00:43:51,228
BECAUSE A LOT OF DISTA

1109
00:43:54,831 --> 00:43:52,563
TO GO THROUGH.

1110
00:43:56,633 --> 00:43:54,898
SO THEREFORE GIVE ME THE NEXT

1111
00:44:01,772 --> 00:43:56,700
SLIDE AND I'M DONE BECAUSE I

1112
00:44:18,522 --> 00:44:01,839
KNOW THE INTERIOR NOW.

1113
00:44:21,291 --> 00:44:18,589

I NEED TO DETECT NEXT SLIDE THIS

1114

00:44:25,829 --> 00:44:21,358

IS WHAT YOU SEE HERE. BUT ON

1115

00:44:29,666 --> 00:44:25,896

THE TOP OF THAT WE WILL PUT THE

1116

00:44:32,002 --> 00:44:29,733

WINDSHIELD TO PROTECT.

1117

00:44:41,778 --> 00:44:32,069

THIS IS ALMOST LIKE A

1118

00:44:42,379 --> 00:44:41,845

POSSIBLE -- THIS IS SOMETHING WE

1119

00:44:53,590 --> 00:44:42,446

GO.

1120

00:44:55,358 --> 00:44:53,657

NEXT ONE.

1121

00:44:57,828 --> 00:44:55,425

FOR THE FIRST TIME WE WILL

1122

00:44:58,862 --> 00:44:57,895

DEPLOY WITH SOMETHING ON THE

1123

00:45:02,199 --> 00:44:58,929

SHEER FAITH OF THE PLANET.

1124

00:45:07,170 --> 00:45:02,266

THE THIS WAS MADE ON THE MOON BY

1125

00:45:07,838 --> 00:45:07,237

AN ASTRONAUT ON THE APOLLO, 11,

1126

00:45:10,340 --> 00:45:07,905

12, 14, 15 AND 17.

1127

00:45:14,444 --> 00:45:10,407

HERE WE HAVE THE ROBOT BUT WE

1128

00:45:38,668 --> 00:45:14,511

HAVE THE ARM OF THE ROBOT AND

1129

00:45:40,303 --> 00:45:38,735

THAT GUY WILL DO THE JOB FOR

1130

00:45:42,939 --> 00:45:40,370

EARTH.

1131

00:45:43,907 --> 00:45:43,006

THEY USE INTERNAL HEAT AS

1132

00:45:49,579 --> 00:45:43,974

EVERYBODY IN CALIFORNIA SHOULD

1133

00:45:50,714 --> 00:45:49,646

KNOW WE CAN SEE IT ALL OVER THE

1134

00:45:53,416 --> 00:45:50,781

PLACE.

1135

00:45:55,852 --> 00:45:53,483

I SPENT MOST OF MY SCIENTIFIC

1136

00:45:56,853 --> 00:45:55,919

CAREER STUDYING THE INTERNAL

1137

00:45:58,121 --> 00:45:56,920

HEAT OF PLAN SET AND THANKS TO

1138

00:46:01,424 --> 00:45:58,188

THIS MISSION AND ALL THE

1139

00:46:06,029 --> 00:46:01,491

WONDERFUL PEOPLE I HAVE A CHANCE

1140

00:46:07,964 --> 00:46:06,096

OF MEASURING THE CHARACTERIZING

1141

00:46:10,100 --> 00:46:08,031

MARS AS AN ENGINE JUST AS

1142

00:46:12,602 --> 00:46:10,167

THERMAL ENGINEER WOULD DO THAT

1143

00:46:16,273 --> 00:46:12,669

WOULD USE THE HEAT RADIATING

1144

00:46:17,440 --> 00:46:16,340

FROM THE MOTOR TO STUDY THE PACE

1145

00:46:20,443 --> 00:46:17,507

AT WHICH THE MOTOR IS RUNNING

1146

00:46:26,449 --> 00:46:20,510

AND THAT'S WHAT WE ARE ING.

1147

00:46:42,666 --> 00:46:26,516

OW ARE WE GOING DO THIS?

1148

00:46:44,134 --> 00:46:42,733

THIS IS OUR EXPERIMENT.

1149

00:46:44,968 --> 00:46:44,201

IT CARRIES BEHIND IT AND THAT

1150

00:46:48,205 --> 00:46:45,035

WILL MEASURE THE TEMPERATURE.

1151
00:46:48,872 --> 00:46:48,272
I HAVE A VIDEO TO SHOW YOU HOW

1152
00:46:51,541 --> 00:46:48,939
THIS ALL WORKS.

1153
00:46:52,642 --> 00:46:51,608
CAN WE HAVE THE VIDEO.

1154
00:46:54,878 --> 00:46:52,709
HERE WE SEE THE MOLE IN THE

1155
00:46:55,212 --> 00:46:54,945
TOWER AND TO THE LEFT WE SEE THE

1156
00:46:58,248 --> 00:46:55,279
HAMMER.

1157
00:46:58,515 --> 00:46:58,315
YOU SEE THAT HAMMER IS PULLED

1158
00:47:01,084 --> 00:46:58,582
UP.

1159
00:47:03,887 --> 00:47:01,151
AND IT'S HAMMERING ON TO THE

1160
00:47:07,290 --> 00:47:03,954
ANVIL AND IT IS DRIVEN BY A

1161
00:47:10,093 --> 00:47:07,357
SPRING THAT IS COMPRESSED AS THE

1162
00:47:13,096 --> 00:47:10,160
MOTOR DRIVES THE HAMMER UP.

1163
00:47:15,632 --> 00:47:13,163

WE'RE NOT GOING IN AT ONCE BUT

1164

00:47:18,101 --> 00:47:15,699

STOPPING EVERY TWO FEET OR SO TO

1165

00:47:18,835 --> 00:47:18,168

TAKE A MEASUREMENT OF THE

1166

00:47:23,106 --> 00:47:18,902

CONDUCTIVITY OF THE SOIL.

1167

00:47:23,874 --> 00:47:23,173

WE DO THAT BY HEATING THE MOLE

1168

00:47:25,909 --> 00:47:23,941

AND MEASURE THE TEMPERATURE OF

1169

00:47:50,934 --> 00:47:25,976

THE MOLE ITS AS A MEASURE OF

1170

00:47:52,302 --> 00:47:51,001

THE HEAT ESCAPING FROM THE MOLE.

1171

00:47:54,504 --> 00:47:52,369

TAKING THE TEMPERATURE RADIANT

1172

00:47:55,972 --> 00:47:54,571

TIMES THE THERMAL CONDUCTIVITY

1173

00:48:01,411 --> 00:47:56,039

GIVES US THE HEAT FLOW.

1174

00:48:02,145 --> 00:48:01,478

VERY SIMPLE AND VERY

1175

00:48:04,347 --> 00:48:02,212

STRAIGHTFORWARD AND DIFFICULT

1176
00:48:05,515 --> 00:48:04,414
THE DEVIL IS IN THE DETAILS.

1177
00:48:06,716 --> 00:48:05,582
THANK YOU VERY MUCH AND I'M

1178
00:48:07,384 --> 00:48:06,783
READY TO TAKE QUESTIONS.

1179
00:48:09,352 --> 00:48:07,451
>> ALL RIGHT.

1180
00:48:10,220 --> 00:48:09,419
SO WE'VE GOT TIME FOROU CAN

1181
00:48:12,155 --> 00:48:10,287
HANG ON TO THAT.

1182
00:48:13,223 --> 00:48:12,222
WE GOT TIME FOR JUST A COUPLE OF

1183
00:48:18,762 --> 00:48:13,290
QUESTIONS HERE IN THE HOUSE.

1184
00:48:22,198 --> 00:48:18,829
LET's GET A MICROPHONE OVER HERE

1185
00:48:22,933 --> 00:48:22,265
AND THEN ON DECK MICROPHONE ON

1186
00:48:25,302 --> 00:48:23,000
THIS SIDE.

1187
00:48:25,969 --> 00:48:25,369
>> I'M WITH THE CANADIAN

1188
00:48:27,871 --> 00:48:26,036

BROADCASTING SITUATION.

1189

00:48:28,772 --> 00:48:27,938

THE QUESTION IS REGARDING THE

1190

00:48:31,374 --> 00:48:28,839

SIZE MOM METER.

1191

00:48:34,811 --> 00:48:31,441

NORMALLY 'S PUT ON A BEDROCK

1192

00:48:35,111 --> 00:48:34,878

AND HERE IT'S ON THE SURFACE OF

1193

00:48:40,283 --> 00:48:35,178

MARS.

1194

00:48:51,094 --> 00:48:40,350

HOW CONFIDENT ARE YOU TO GET

1195

00:48:52,595 --> 00:48:51,161

GOOD RESULTS.

1196

00:48:53,863 --> 00:48:52,662

THE PEM IT THE FACT THAT

1197

00:48:55,632 --> 00:48:53,930

THE WAVES ARE NOT ABLE TO GO

1198

00:48:56,967 --> 00:48:55,699

THROUGH.

1199

00:48:58,501 --> 00:48:57,034

THE PROBLEM IS THAT THE METER IS

1200

00:49:00,770 --> 00:48:58,568

ABLE TO MOVE A LITTLE BIT.

1201
00:49:03,239 --> 00:49:00,837
THIS IS WHY WE COVER IT WITH A

1202
00:49:06,276 --> 00:49:03,306
SHIELD AND HERE YOU SEE WE HAVE

1203
00:49:07,577 --> 00:49:06,343
A SYSTEM WHICH WILL RELIEVE THE

1204
00:49:08,578 --> 00:49:07,644
TENSION OF THE CABLE TO THE SIZE

1205
00:49:10,213 --> 00:49:08,645
MOW METER.

1206
00:49:14,117 --> 00:49:10,280
WE HAVE MADE THE MODEL AND WE

1207
00:49:16,353 --> 00:49:14,184
HAVE MADE TESTS AND WE VERY

1208
00:49:16,753 --> 00:49:16,420
CONFIDENT TO MEET THE

1209
00:49:18,722 --> 00:49:16,820
REQUIREMENT.

1210
00:49:19,456 --> 00:49:18,789
>> WE HAD ONE QUESTION ON THE

1211
00:49:20,690 --> 00:49:19,523
SIDE OF THE HOUSE.

1212
00:49:25,295 --> 00:49:20,757
>> HI.

1213
00:49:27,430 --> 00:49:25,362

I'M WONDERING IF IT WILL TELL US

1214

00:49:29,733 --> 00:49:27,497

ABOUT THE ICE BELOW THE SURFACE

1215

00:49:32,569 --> 00:49:29,800

ON MARS AND IF THAT WILL HELP US

1216

00:49:33,203 --> 00:49:32,636

DRILLING FOR WATER IN FUTURE

1217

00:49:35,271 --> 00:49:33,270

MANNED MISSIONS?

1218

00:49:36,773 --> 00:49:35,338

>> BRUCE, DO YOU WANT TOAKE A

1219

00:49:40,210 --> 00:49:36,840

CRACK AT THAT AND FOR FUTURE

1220

00:49:41,277 --> 00:49:40,277

MISSIONS WE'LL TURN IT OVER TO

1221

00:49:43,146 --> 00:49:41,344

NASA HEADQUARTERS.

1222

00:49:44,614 --> 00:49:43,213

>> THE PLACE WHERE IT'S LANDING

1223

00:49:46,349 --> 00:49:44,681

IS JUST REALLY CLOSE TO THE

1224

00:49:48,218 --> 00:49:46,416

EQUATOR OF MARS.

1225

00:49:49,486 --> 00:49:48,285

ALL OF OUR CALCULATIONS OF THE

1226
00:49:51,354 --> 00:49:49,553
STABILITY OF ICE INDICATES THAT

1227
00:49:54,491 --> 00:49:51,421
WE DON'T EXPECT ICE TO BE

1228
00:49:56,459 --> 00:49:54,558
PRESENT BELOW INSIGHT.

1229
00:49:58,495 --> 00:49:56,526
SEISMICALLY IT'S POSSIBLE TO

1230
00:50:01,231 --> 00:49:58,562
DETECT ICE ALTHOUGH OUR

1231
00:50:02,432 --> 00:50:01,298
PARTICULAR EXPERIMENT ISN'T

1232
00:50:02,832 --> 00:50:02,499
OPTIMIZED FOR THAT KIND OF

1233
00:50:06,302 --> 00:50:02,899
DETECTION.

1234
00:50:09,039 --> 00:50:06,369
IF THERE WAS A VERY THICK LAYER

1235
00:50:10,306 --> 00:50:09,106
OF ICE -- BY THICK I MEAN

1236
00:50:12,008 --> 00:50:10,373
FRACTIONS OF A MILE AND NOT MANY

1237
00:50:15,045 --> 00:50:12,075
FEET THAT WOULD PROBABLY EFFECT

1238
00:50:17,814 --> 00:50:15,112

THE SEISMIC WAVES AND ALLOW US

1239

00:50:18,581 --> 00:50:17,881

TO TEASE THAT INFORON OUT OF

1240

00:50:22,419 --> 00:50:18,648

THE DATA.

1241

00:50:23,420 --> 00:50:22,486

BUT WE DON'T EXPECT TO HAVE THAT

1242

00:50:24,220 --> 00:50:23,487

IN THIS PARTICULAR MISSION

1243

00:50:24,621 --> 00:50:24,287

BECAUSE OF THE LOCATION WE'RE

1244

00:50:31,528 --> 00:50:24,688

GOING TO.

1245

00:50:31,961 --> 00:50:31,595

>> AND WE COULD SEE IT IN THE

1246

00:50:33,963 --> 00:50:32,028

CONDUCTIVITY.

1247

00:50:36,566 --> 00:50:34,030

>> WE'VE GOT A QUESTION ON THE

1248

00:50:36,966 --> 00:50:36,633

PHONE LINES FROM IRIS

1249

00:50:37,534 --> 00:50:37,033

TELEVISION.

1250

00:50:39,202 --> 00:50:37,601

GO AHEAD.

1251
00:50:43,773 --> 00:50:39,269
>> THANK YOU VERY MUC

1252
00:50:47,677 --> 00:50:43,840
THEME OF THE MAN WHO INVENTED

1253
00:50:49,846 --> 00:50:47,744
SIZE MONTHLY SKWREU, I'M SORRY,

1254
00:50:51,214 --> 00:50:49,913
BUT THIS NEW FORMAT HAS TOLD ME

1255
00:50:59,756 --> 00:50:51,281
A LITTLE BIT.

1256
00:51:01,157 --> 00:50:59,823
IF I MAY ASK THE ENGINE ERRS AND

1257
00:51:03,993 --> 00:51:01,224
DR. GREEN THE QUESTION, AGAIN

1258
00:51:07,397 --> 00:51:04,060
GOING BACK TO THE FIRST QUESTION

1259
00:51:08,865 --> 00:51:07,464
OF THE SESSION, WHAT HAPPENED

1260
00:51:13,436 --> 00:51:08,932
WITH THE SIZE MOM METER THAT

1261
00:51:16,372 --> 00:51:13,503
CAUSED A TWO YEAR DELAY AND FOR

1262
00:51:17,373 --> 00:51:16,439
DR. GREEN, DID NASA AT SOME

1263
00:51:19,342 --> 00:51:17,440

STAGE CONSIDER CANCELLING THIS

1264

00:51:21,744 --> 00:51:19,409

MISSION AS A RESULT?

1265

00:51:26,282 --> 00:51:21,811

>> I CAN PROBABLY ANSWER THAT.

1266

00:51:26,583 --> 00:51:26,349

>> DGREEN IS NO LONGER IN THE

1267

00:51:27,784 --> 00:51:26,650

HOUSE.

1268

00:51:28,518 --> 00:51:27,851

>> I WAS VERY INVOLVED IN BOTH

1269

00:51:31,154 --> 00:51:28,585

THOSE PROCESSES.

1270

00:51:33,690 --> 00:51:31,221

THE THING THAT CAUSED US TO

1271

00:51:38,094 --> 00:51:33,757

DELAY THE LAUNCH IN 2015 WAS A

1272

00:51:41,698 --> 00:51:38,161

PROBLEM WITH THE SIZE MOM METER.

1273

00:51:44,000 --> 00:51:41,765

THEY'RE KEPT IN VERY HARD VACUUM

1274

00:51:45,368 --> 00:51:44,067

INSIDE A SPHER CAVITYUT

1275

00:51:47,070 --> 00:51:45,435

NEED TO BE ABLE TO GET THE

1276
00:51:49,239 --> 00:51:47,137
SIGNALS IN AND OUT AND THE POWER

1277
00:51:51,207 --> 00:51:49,306
IN AND OUT THROUGH THAT CAVITY.

1278
00:51:51,574 --> 00:51:51,274
WE HAVE WHAT WE HAVE FEED

1279
00:51:55,278 --> 00:51:51,641
THROUGHES.

1280
00:51:56,613 --> 00:51:55,345
ONE OF THOSE WAS NOT CAPABLE OF

1281
00:51:57,647 --> 00:51:56,680
MAINTAINING ITSELF UNDER THE

1282
00:52:00,517 --> 00:51:57,714
LARGE TEMPERATURE STREAMS.

1283
00:52:05,121 --> 00:52:00,584
SO WHEN WE TESTED IT AT MARS

1284
00:52:06,289 --> 00:52:05,188
CONDITIONS GOING DOWN MINUS 100

1285
00:52:10,660 --> 00:52:06,356
DEGREE20 DEGREESELSIUS IT

1286
00:52:11,961 --> 00:52:10,727
DEVELOPED A TINY CRACK AND

1287
00:52:14,531 --> 00:52:12,028
STARTED LEAKING.

1288
00:52:17,600 --> 00:52:14,598

IT'S A VERY SMALL LEAK.

1289

00:52:21,137 --> 00:52:17,667

IF YOU HAD A LEAK IN YOUR TIRE

1290

00:52:21,771 --> 00:52:21,204

IT WOULD VERY 50 YEARS TO SEE A

1291

00:52:23,640 --> 00:52:21,838

ONE PSI DIFFERENCE.

1292

00:52:24,574 --> 00:52:23,707

BUT THIS WAS ENOUGH TO UPSET THE

1293

00:52:26,376 --> 00:52:24,641

WHOLE APPLE CART.

1294

00:52:27,343 --> 00:52:26,443

WE TRIED TO FIX IT AND HAD A

1295

00:52:28,645 --> 00:52:27,410

LIMITED AMOUNT OF TIME.

1296

00:52:30,313 --> 00:52:28,712

BUT THE KINDS OF THINGS THAT

1297

00:52:33,249 --> 00:52:30,380

WE'RE TRYING TO USE TO PATCH IT

1298

00:52:34,517 --> 00:52:33,316

AGAIN HAD TO BE ABLE TO

1299

00:52:37,420 --> 00:52:34,584

WITHSTAND THESE HUGE TEMPERATURE

1300

00:52:40,356 --> 00:52:37,487

EXTREMES AND WE FINALLY REALIZED

1301
00:52:41,491 --> 00:52:40,423
WE WERE NOT GOING TO BE ABLE TO

1302
00:52:43,393 --> 00:52:41,558
DO A CONFIDENT JOB OF PATCHING

1303
00:52:45,361 --> 00:52:43,460
THIS AND WE WOULD BE CERTAIN IT

1304
00:52:47,096 --> 00:52:45,428
WAS GOING TO BE WORKING ON MARS

1305
00:52:51,568 --> 00:52:47,163
AND DECIDED IT IT WAS GOING TO

1306
00:52:53,269 --> 00:52:51,635
BE MUCH MORE PRUDENT TO STOP AND

1307
00:52:54,637 --> 00:52:53,336
NOT DO SOMETHING WITH MARS THAT

1308
00:52:55,705 --> 00:52:54,704
WE'RE UNSURE OF BUT STEP BACK

1309
00:52:56,606 --> 00:52:55,772
AND SEE WHETHER WE COULD DO

1310
00:52:59,108 --> 00:52:56,673
SOMETHING ABOUT IT.

1311
00:53:02,478 --> 00:52:59,175
WE WENT TO NASA A FEW MONTHS

1312
00:53:04,480 --> 00:53:02,545
LATER WITH A PLAN FOR FIXING

1313
00:53:06,583 --> 00:53:04,547

THIS AND WE HAD -- I THINK WE

1314

00:53:07,951 --> 00:53:06,650

PUT TOGETHER A VERY SOLID PLAN

1315

00:53:09,752 --> 00:53:08,018

FOR SHOWING THAT WE COULD FIX IT

1316

00:53:11,154 --> 00:53:09,819

AND WE COULD FIX IT IN PLENTY OF

1317

00:53:13,156 --> 00:53:11,221

TIMEND TEST IT TO THE LEVEL

1318

00:53:19,562 --> 00:53:13,223

THAT WE WOULD NOT HAVE ANY DOUBT

1319

00:53:21,931 --> 00:53:19,629

ABOUT IT ONCE WE GOT TO THE

1320

00:53:24,033 --> 00:53:21,998

SPACECRAFT AND BETWEEN THE PLAN

1321

00:53:26,436 --> 00:53:24,100

AND AS JIM SAID THE IMPORTANCE

1322

00:53:28,905 --> 00:53:26,503

OF THE SCIENCE THAT THIS MISSION

1323

00:53:31,874 --> 00:53:28,972

WAS GOING TO RETURN, IS NASA

1324

00:53:32,909 --> 00:53:31,941

MADE A DECISION TO ALLOWS US TO

1325

00:53:34,377 --> 00:53:32,976

FORWARD.

1326

00:53:36,713 --> 00:53:34,444

THEY WATCHED US VERY CAREFULLY

1327

00:53:39,282 --> 00:53:36,780

AS YOU CAN IMAGINE.

1328

00:53:49,726 --> 00:53:39,349

THEY WATCHED THE PROGRESS OF THE

1329

00:53:51,094 --> 00:53:49,793

SIZE MOM METER TO MAKE SURE WE

1330

00:53:52,895 --> 00:53:51,161

HAD EXTRA MARGIN AND EXTRA

1331

00:53:54,397 --> 00:53:52,962

ABILITY TO MAINTAIN THIS VACUUM.

1332

00:53:54,797 --> 00:53:54,464

I HOPE T ANSW YOUR

1333

00:53:55,265 --> 00:53:54,864

QUESTION.

1334

00:53:56,733 --> 00:53:55,332

>> ALL RIGHT.

1335

00:54:01,304 --> 00:53:56,800

WITH THAT A ROUND APPLAUSE FOR

1336

00:54:01,771 --> 00:54:01,371

OUR SCIENCE PLANL.

1337

00:54:03,573 --> 00:54:01,838

[APPLAUSE]

1338

00:54:07,744 --> 00:54:03,640

WE'RE HERE FOR A LAUNCH AND TELL

1339

00:54:10,113 --> 00:54:07,811

US MORE ABOUT THE ATLAS 5401

1340

00:54:13,816 --> 00:54:10,180

PLEASE WELCOME TO THE STAGE TWO

1341

00:54:16,286 --> 00:54:13,883

OF NASA'S STEELY-EYED MISSILE

1342

00:54:20,556 --> 00:54:16,353

MEN TIM DUNNAUNCH DIRECTOR AND

1343

00:54:25,028 --> 00:54:20,623

SCOTT MESSER, THE ULA AND DELTA

1344

00:54:27,830 --> 00:54:25,095

TWO PROGRAM MANAGER FROM KSC.

1345

00:54:31,334 --> 00:54:27,897

>> WHO IS EXCITED?

1346

00:54:31,634 --> 00:54:31,401

EXCITEMENT OVER HERE. ALL

1347

00:54:33,036 --> 00:54:31,701

RIGHT.

1348

00:54:35,071 --> 00:54:33,103

I KNOW WHERE THE SOCIAL MEDIA

1349

00:54:35,371 --> 00:54:35,138

FOLKS ARE SO I'LL FOCUS ON YOU

1350

00:54:36,939 --> 00:54:35,438

GUYS.

1351
00:54:40,076 --> 00:54:37,006
THESEPROFESSIONAL MEDIA GUYS IT

1352
00:54:40,343 --> 00:54:40,143
TAKES A LOT TO GET THEM EXCITED.

1353
00:54:42,679 --> 00:54:40,410
WOW.

1354
00:54:44,981 --> 00:54:42,746
I MEAN, THAT ROCKET OVER THERE,

1355
00:54:47,183 --> 00:54:45,048
THIS AMAZING SPACECRAFT, WE GOT

1356
00:54:49,552 --> 00:54:47,250
IT ALL BUNDLED UP TOGETHER.

1357
00:54:52,855 --> 00:54:49,619
IT'S JUST ABOUT TWO MILES FROM

1358
00:54:54,657 --> 00:54:52,922
HERE SOUTH UP ON THE HILL.

1359
00:54:58,961 --> 00:54:54,724
VANDENBERG AIR FORCE BASE.

1360
00:55:00,596 --> 00:54:59,028
I LIVE IN FLORIDA AND I GETO

1361
00:55:01,831 --> 00:55:00,663
COME TO CALIFORNIA AND FIRST

1362
00:55:02,432 --> 00:55:01,898
TIME EVER LAUNCH A MISSION TO

1363
00:55:04,801 --> 00:55:02,499

MARS.

1364

00:55:12,475 --> 00:55:04,868

THIS IS THRILLING.

1365

00:55:20,883 --> 00:55:12,542

WHAT'S AMAZING, IS OCCASIONALLY

1366

00:55:23,353 --> 00:55:20,950

THE STEALLY-EYED SCIENTISTS SAY,

1367

00:55:25,555 --> 00:55:23,420

YOU CAN SENSE OUR AIR FORCE TEAM

1368

00:55:28,458 --> 00:55:25,622

AND THE WING AND EVEN -- THIS

1369

00:55:30,560 --> 00:55:28,525

TAKES A LOT TO GET FOLKS IN

1370

00:55:32,362 --> 00:55:30,627

WASHINGTON, D.C. -- NASA

1371

00:55:35,198 --> 00:55:32,429

HEADQUARTERS IS EVEN EXCITED.

1372

00:55:35,965 --> 00:55:35,265

RIGHT, DENNIS?

1373

00:55:38,234 --> 00:55:36,032

ALL RIGHT.

1374

00:55:39,969 --> 00:55:38,301

I'M TIM DUNN AND I'M EXCITED

1375

00:55:41,170 --> 00:55:40,036

HUMBLED AND HONORED TO BE THE

1376
00:55:46,142 --> 00:55:41,237
LAUNCH DIRECTOR FOR THIS MISSION

1377
00:55:47,577 --> 00:55:46,209
AND I STAND BEFORE YOU AND I

1378
00:55:49,879 --> 00:55:47,644
JUST REPRESENT A HUGE

1379
00:55:51,681 --> 00:55:49,946
ORGANIZATION CALLED NASA LAUNCH

1380
00:55:54,517 --> 00:55:51,748
SERVICES PROGRAM.

1381
00:55:54,917 --> 00:55:54,584
AND LSP TAKES CARE OF YOU, THE

1382
00:55:56,586 --> 00:55:54,984
TAXPAYER.

1383
00:55:58,187 --> 00:55:56,653
HOW DO WE DO THAT?

1384
00:56:01,457 --> 00:55:58,254
WE MATCH UP REQUIREMENTS LIKE

1385
00:56:03,292 --> 00:56:01,524
THIS BEAUTIFUL SPACECRAFT THAT

1386
00:56:04,761 --> 00:56:03,359
NEEDS TO GO TO MARS WHOSE

1387
00:56:05,094 --> 00:56:04,828
CKETS LIKE THE MIGHTY ATLAS

1388
00:56:09,031 --> 00:56:05,161

FIVE.

1389

00:56:13,236 --> 00:56:09,098

THE SO WHAT WE DO WE COMPETE

1390

00:56:15,104 --> 00:56:13,303

THOSE REQUIREMENTS ACROSS THE

1391

00:56:17,173 --> 00:56:15,171

LAUNCH INDUSTRY AND IN THIS CASE

1392

00:56:18,674 --> 00:56:17,240

THE UNITED LAUNCH ALLIANCES AND

1393

00:56:21,043 --> 00:56:18,741

THAT GOLD STANDARD ROCKET THAT

1394

00:56:22,178 --> 00:56:21,110

IS AN INCREDIBLE, INCREDIBLE

1395

00:56:24,414 --> 00:56:22,245

CAPABILITY THAT WE HAVE.

1396

00:56:26,082 --> 00:56:24,481

OF THIS TEAM.THRILLED TO BE PART

1397

00:56:27,517 --> 00:56:26,149

SO I JUS WANT BE TO TAKE OH

1398

00:56:29,652 --> 00:56:27,584

JUST A MOMENT TO TELL YOU WHERE

1399

00:56:31,721 --> 00:56:29,719

WE'VE COME FROM IN THE LAST --

1400

00:56:33,823 --> 00:56:31,788

IN THE RECENT HISTORY AND WHAT'S

1401
00:56:34,424 --> 00:56:33,890
GOING TO HAPPEN LESS THAN TWO

1402
00:56:36,092 --> 00:56:34,491
DAYS FROM NOW.

1403
00:56:41,330 --> 00:56:36,159
SO LET'S LOOK AT SOME VIDEO

1404
00:56:42,965 --> 00:56:41,397
HERE. OKAY, THERE'S THE MIGHTY

1405
00:56:45,435 --> 00:56:43,032
ATLAS FIRST STAGE ON ITS WAY OUT

1406
00:56:49,272 --> 00:56:45,502
TO SPACE LAUNCH COMPLEX THREE.

1407
00:56:49,672 --> 00:56:49,339
UP THE HILL HERE ON SOUTH

1408
00:56:52,508 --> 00:56:49,739
VANDENBERG.

1409
00:56:55,344 --> 00:56:52,575
THAT'S A QUICK SEQUENCE OF THE

1410
00:56:56,913 --> 00:56:55,411
ERECTION GOING INTO THE LAUNCH

1411
00:56:59,982 --> 00:56:56,980
MOUNT THERE AT SLICK THREE.

1412
00:57:02,385 --> 00:57:00,049
OKAY, THAT IS THE ISA TRANSITION

1413
00:57:04,187 --> 00:57:02,452

STRUCTURE THAT TAKES US FROM THE

1414

00:57:05,788 --> 00:57:04,254

FIRST STAGE DOWN TO THE SECOND

1415

00:57:08,925 --> 00:57:05,855

STAGE AND HERE IS THE SECOND

1416

00:57:12,395 --> 00:57:08,992

STAGE OF AN ATLASFIVE.

1417

00:57:15,698 --> 00:57:12,462

THIS IS CALLED CENTAUR.

1418

00:57:17,633 --> 00:57:15,765

IT'S GOT AN INCREDIBLE

1419

00:57:19,101 --> 00:57:17,700

PERFORMING SPACE VEHICLE.

1420

00:57:21,637 --> 00:57:19,168

THERE'S YOUR SECOND STAGE.

1421

00:57:24,273 --> 00:57:21,704

GOING UP, WE ERECTED THE FIRST

1422

00:57:27,643 --> 00:57:24,340

AND SECOND STAGE BACK IN MARCH.

1423

00:57:29,111 --> 00:57:27,710

SO JUST UNDER TWO MONTHS AGO WE

1424

00:57:31,848 --> 00:57:29,178

WERE PUTTING IT ALL TOGE.

1425

00:57:34,350 --> 00:57:31,915

YOU SEE THE PROFESSIONALS IN

1426
00:57:35,318 --> 00:57:34,417
AN AND THAT'S WHAT IT'S ALL

1427
00:57:39,655 --> 00:57:35,385
ABOUT RIGHT THERE.

1428
00:57:41,123 --> 00:57:39,722
THAT'S THE SPACECRAFT INSIGHT

1429
00:57:42,992 --> 00:57:41,190
INCAPSULATED IN THE METAL

1430
00:57:45,995 --> 00:57:43,059
FAIRING, THE FOUR METER FAIRING

1431
00:57:49,799 --> 00:57:46,062
BEING ERECTED.

1432
00:57:50,833 --> 00:57:49,899
A LITTLE BIT OF A FOGGY DAY AND

1433
00:57:52,201 --> 00:57:50,900
THERE WE ARE.

1434
00:57:52,902 --> 00:57:52,268
BEAUTIFUL SHOT OF SOME OF THE

1435
00:57:58,007 --> 00:57:52,969
ARTWORK THERE.

1436
00:57:58,374 --> 00:57:58,074
ON THE SIDE OF THE PAYLOAD

1437
00:57:58,741 --> 00:57:58,441
FAIRING.

1438
00:57:59,742 --> 00:57:58,808

ALL RIGHT.

1439

00:58:00,877 --> 00:57:59,809

SO THERE'S MY VIDEO.

1440

00:58:05,114 --> 00:58:00,944

THAT WHAT HE THE ROCKET LOOKS

1441

00:58:05,414 --> 00:58:05,181

LIKE INSIDE THE MOBILE SERVICE

1442

00:58:06,983 --> 00:58:05,481

TOWER.

1443

00:58:08,317 --> 00:58:07,050

WHAT HAVE WE BEEN DOING JUST

1444

00:58:10,820 --> 00:58:08,384

THIS WEEK WE DID A FLIGHT

1445

00:58:12,455 --> 00:58:10,887

READINESS REVIEW ON MONDAY AND

1446

00:58:12,788 --> 00:58:12,522

MISSION DRESS REHEARSAL ON

1447

00:58:14,757 --> 00:58:12,855

TUESDAY.

1448

00:58:16,425 --> 00:58:14,824

THE ENTIRE LAUNCH TEAM ALL

1449

00:58:17,460 --> 00:58:16,492

AGENCIES, WE ARE PRIMED AND

1450

00:58:20,296 --> 00:58:17,527

READY AND JUST THIS MORNING WE

1451
00:58:26,936 --> 00:58:20,363
DID THE LAUNCH READINESS REVIEW

1452
00:58:28,471 --> 00:58:27,003
AND WE GOT GO's FROM ALL

1453
00:58:30,273 --> 00:58:28,538
ORGANIZATIONS THAT HAD A VESTED

1454
00:58:36,512 --> 00:58:30,340
INTEREST IN LAUNCHING INSIGHT.

1455
00:58:38,714 --> 00:58:36,579
SO WE ARE GO FOR LAUNCH.

1456
00:58:39,815 --> 00:58:38,781
MOVING FORWARD, TOMORROW IS

1457
00:58:42,685 --> 00:58:39,882
FRIDAY.

1458
00:58:46,656 --> 00:58:42,752
THE SO, MAY THE 4TH BE WITH YOU.

1459
00:58:50,092 --> 00:58:46,723
WHAT I TOLD THE LAUNCH TEAM WAS,

1460
00:58:51,661 --> 00:58:50,159
MAY THE 4TH BE WITH YOU DURING

1461
00:58:52,595 --> 00:58:51,728
YOUR CREW REST DAY BECAUSE WE'LL

1462
00:58:55,765 --> 00:58:52,662
ALL GET RESTED UP YOU ARING DID

1463
00:58:59,335 --> 00:58:55,832

THE DAY BECAUSE IT'S AN

1464

00:59:00,536 --> 00:58:59,402
OVERNIGHT LAUNCH.

1465

00:59:01,370 --> 00:59:00,603
4:45 A.M. IS THE TIME.

1466

00:59:02,171 --> 00:59:01,437
IT'S TOUGH BECAUSE YOU'RE

1467

00:59:03,639 --> 00:59:02,238
WORKING ALL NIGHT.

1468

00:59:07,743 --> 00:59:03,706
THE HARD TO GO TO SLEEP TOMORROW

1469

00:59:11,347 --> 00:59:07,810
BUT WE'LL TRY TO GET SOME REST.

1470

00:59:13,816 --> 00:59:11,414
SO THEN, WE GOT TO GET IN ON

1471

00:59:14,817 --> 00:59:13,883
CONSOLE AND MOVE THAT MOBILE

1472

00:59:16,652 --> 00:59:14,884
SERVICE TOWER THAT SURROUNDS IT

1473

00:59:19,155 --> 00:59:16,719
AND BACK THAT AWAY AND THAT'S

1474

00:59:19,689 --> 00:59:19,222
GOING TO HAPPEN AROUND MIDNIGHT

1475

00:59:21,724 --> 00:59:19,756
TOMORROW NIGHT.

1476
01:00:17,747 --> 00:59:21,791
FIRST THING SATURDAY MORNING AND

1477
01:00:19,248 --> 01:00:17,814
THEN PUT ALL THE CRYOGENIC ALLIA

1478
01:00:20,316 --> 01:00:19,315
THIS IS A GREAT VEHICLE AS TIM

1479
01:00:22,151 --> 01:00:20,383
HAS MENTIONED THAT IS OUT THERE.

1480
01:00:25,154 --> 01:00:22,218
IT IS THE401.

1481
01:00:25,655 --> 01:00:25,221
THE WE HAVE SEVERAL DIFFERENT

1482
01:00:30,092 --> 01:00:25,722
CONFIGURATIONS.

1483
01:00:31,927 --> 01:00:30,159
THE ATLAS 401 HAS A FOUR METER

1484
01:00:35,231 --> 01:00:31,994
FAIRING UP HERE AT THE TOP TO

1485
01:00:37,099 --> 01:00:35,298
HOUSE THE SPACECRAFT AND PROTECT

1486
01:00:39,368 --> 01:00:37,166
IT UNTIL WE GET OUT OF THE

1487
01:00:45,107 --> 01:00:39,435
ATMOSPHERE AND FOUR METER BODY

1488
01:00:48,844 --> 01:00:45,174

AND DOESN'T HAVE ANY SOLID ET MO

1489

01:00:50,479 --> 01:00:48,911

THE THE UNITED LAUNCH ALLIANCE

1490

01:00:52,314 --> 01:00:50,546

OUT OF THE 2128 LAUNCHES 37 OF

1491

01:00:55,184 --> 01:00:52,381

THOSE HAVE BEEN WITH THE 401.

1492

01:00:57,186 --> 01:00:55,251

THIS IS BY FAR THE WORKHORSE OF

1493

01:00:59,255 --> 01:00:57,253

OUR ATLAS FAMILY. ALMOST HALF OF

1494

01:01:01,724 --> 01:00:59,322

THE ATLAS VEHICLES HAVE LAUNCHED

1495

01:01:03,826 --> 01:01:01,791

THIS CONFIGURATION WHICH IS

1496

01:01:04,727 --> 01:01:03,893

VERY, VERY -- IT HAS BEEN A VERY

1497

01:01:06,996 --> 01:01:04,794

GOOD VEHICLE FORUS.

1498

01:01:08,297 --> 01:01:07,063

AND FOR CUSTOMERS.

1499

01:01:10,866 --> 01:01:08,364

SO, ONE OF THE QUESTIONS THAT

1500

01:01:12,034 --> 01:01:10,933

KEEPS COMING UP, YOU MIGHT HAVE

1501
01:01:15,705 --> 01:01:12,101
HEARD THIS IS THE FIRST

1502
01:01:16,272 --> 01:01:15,772
PLANETARY LAUNCH FROM THE WEST

1503
01:01:19,275 --> 01:01:16,339
COAST.

1504
01:01:20,509 --> 01:01:19,342
A LOT OF PEOPLE KEEP ASKING, WHY

1505
01:01:24,213 --> 01:01:20,576
IS THAT?

1506
01:01:25,681 --> 01:01:24,280
AND JUST IN SIMPLE TERMS, NASA

1507
01:01:26,449 --> 01:01:25,748
SENT US A PROPOSE TOTAL LAUNCH

1508
01:01:29,585 --> 01:01:26,516
IN 2016.

1509
01:01:31,787 --> 01:01:29,652
E WENT AND LOOKED AT OUR

1510
01:01:33,122 --> 01:01:31,854
MANIFEST OUT ON THE EAST COAST

1511
01:01:37,326 --> 01:01:33,189
AND IT WAS A LITTLE CROWDED AND

1512
01:01:38,527 --> 01:01:37,393
WE FELT LIKE GETTING A VEHICLE

1513
01:01:41,197 --> 01:01:38,594

OUT HERE WOULD BE A GREAT IDEA

1514

01:01:42,465 --> 01:01:41,264

AND GET OUT OF THAT CONGESTION

1515

01:01:43,666 --> 01:01:42,532

OF THE MANIFEST.

1516

01:01:45,634 --> 01:01:43,733

BECAUSE THIS SPACECRAFT WAS

1517

01:01:47,670 --> 01:01:45,701

ORIGINALLY SIZED FOR A DELTA

1518

01:01:50,840 --> 01:01:47,737

TWO, AND WE WERE GOING TO

1519

01:01:52,475 --> 01:01:50,907

PROPOSE AND LAUNCH ON AN ATLAS

1520

01:01:52,875 --> 01:01:52,542

401 WE HAD PLENTY OF PERFORMANCE

1521

01:01:55,411 --> 01:01:52,942

DO THAT.

1522

01:01:57,646 --> 01:01:55,478

WE DECIDED TO GO AHEAD AND

1523

01:02:00,349 --> 01:01:57,713

PROPOSE THAT AND NASA LIKED IT

1524

01:02:00,616 --> 01:02:00,416

AND EVERYBODY IS EXCITED ABOUT

1525

01:02:01,717 --> 01:02:00,683

IT.

1526

01:02:04,420 --> 01:02:01,784

WE GOT A SHORT VIDEO HERE THAT

1527

01:02:05,654 --> 01:02:04,487

WILL SHOW YOU WHAT'S GOING TO

1528

01:02:06,856 --> 01:02:05,721

HAPPEN TOMORROW MORNING -- OR

1529

01:02:08,858 --> 01:02:06,923

SAOEUPL SORRY, SATURDAY MORNING.

1530

01:02:38,587 --> 01:02:08,925

IF WE COULD ROLL THAT VIDEO AND

1531

01:02:41,357 --> 01:02:38,654

SHOW WHAT'S ENGINE SHUTS DOWN AT

1532

01:02:42,691 --> 01:02:41,424

AND SIX SECONDS LATER THE ATLAS

1533

01:02:43,926 --> 01:02:42,758

CENTAUR SEPARATION SYSTEM

1534

01:02:45,561 --> 01:02:43,993

ACTIVATES TO RELEASE THE BOOTER

1535

01:02:49,198 --> 01:02:45,628

STAGE AND THE VEHICLE NOW WEIGHS

1536

01:02:51,400 --> 01:02:49,265

A LITTLE MORE THAN 7% OF WHAT IT

1537

01:02:53,469 --> 01:02:51,467

DID AT LIFTOFF.

1538

01:02:54,904 --> 01:02:53,536

4:20 THE FIRST CENTAUR MAIN

1539

01:02:56,605 --> 01:02:54,971

ENGINE BURNING BEGINS.

1540

01:02:58,908 --> 01:02:56,672

AND APPROXIMATELY FOUR MINUTES

1541

01:03:01,443 --> 01:02:58,975

AND 28 SECONDS, IS PAYLOAD

1542

01:03:05,080 --> 01:03:01,510

FAIRING IS JETTED AND 13 MINUTES

1543

01:03:06,415 --> 01:03:05,147

AND 16 SECONDS CUT OFF OF THE

1544

01:03:08,150 --> 01:03:06,482

CENTAUR MAIN ENGINE OCCURS.

1545

01:03:09,385 --> 01:03:08,217

AT NEARLY ONE HOUR AND 15

1546

01:03:12,588 --> 01:03:09,452

MINUTES THE CENTAUR MAIN ENGINE

1547

01:03:14,490 --> 01:03:12,655

IS RESTARTED FOR THE SECOND AND

1548

01:03:16,058 --> 01:03:14,557

FINAL BURN.

1549

01:03:18,160 --> 01:03:16,125

APPROXIMATELY FOUR MINUTES AND

1550

01:03:20,162 --> 01:03:18,227

49 SECONDS LATER THE FINAL

1551
01:03:22,598 --> 01:03:20,229
CUTOFF OF THE MAIN ENGINE

1552
01:03:24,900 --> 01:03:22,665
OCCURS.

1553
01:03:26,235 --> 01:03:24,967
1:28 OTHER .40 SECONDS THEY

1554
01:03:28,571 --> 01:03:26,302
RELEASE THE INSIGHT SPACECRAFT

1555
01:03:33,375 --> 01:03:28,638
ON ITS JOURNEY TO MARS.

1556
01:03:34,076 --> 01:03:33,442
MARCO A SEPARATES 1:29 INTO

1557
01:03:39,815 --> 01:03:34,143
FLIGHTL FOLLOWED 48 SECONDS

1558
01:03:40,115 --> 01:03:39,882
LATER BY THE SEPARN OF

1559
01:03:41,317 --> 01:03:40,182
MARCO.

1560
01:03:44,053 --> 01:03:41,384
SO IT WAS MENTIONED EARLIER

1561
01:03:47,890 --> 01:03:44,120
THERE HAD BEEN A LOT OF MISSIONS

1562
01:03:49,391 --> 01:03:47,957
TO MARS AND BY OUR ACCOUNT, ALL

1563
01:03:51,961 --> 01:03:49,458

OF THE MISSIONS THAT HAVE GONE

1564

01:03:53,996 --> 01:03:52,028

TO MARS SINCE 1960 HAVE LAUNCHED

1565

01:04:00,002 --> 01:03:54,063

ON A ULA OR HERITAGE VEHICLE.

1566

01:04:01,437 --> 01:04:00,069

SO WE ARE VERY PROUD OF OUR

1567

01:04:04,173 --> 01:04:01,504

HISTORY WITH THE MARS PROGRAM.

1568

01:04:06,642 --> 01:04:04,240

AS I MENTIONED EARLIER 100% OF

1569

01:04:07,443 --> 01:04:06,709

THE MISSIONS HAVE BEEN

1570

01:04:10,546 --> 01:04:07,510

SUCCESSFUL IN THE LAST TEN YEARS

1571

01:04:12,414 --> 01:04:10,613

SO WE'RE THRILLED TO BE PART OF

1572

01:04:13,349 --> 01:04:12,481

THIS AND OFFER THAT AGAIN TO OUR

1573

01:04:15,117 --> 01:04:13,416

CUSTOMERS AND WE'RE VERY PROUD

1574

01:04:18,587 --> 01:04:15,184

AND WANT TO SAY THANK YOU TO ALL

1575

01:04:21,156 --> 01:04:18,654

THE MISSION PARTNERS, NASA, TO

1576
01:04:22,658 --> 01:04:21,223
LOCKHEED MARTIN A JPL AND

1577
01:04:24,159 --> 01:04:22,725
EVERY ONE FOR LETTING US TO BE

1578
01:04:26,829 --> 01:04:24,226
PART OF THE WONDERFUL AND

1579
01:04:32,234 --> 01:04:26,896
EXCITING MISSION AND IN

1580
01:04:33,269 --> 01:04:32,301
CONCLUSION I'LL SAY GO ATLAS AND

1581
01:04:35,037 --> 01:04:33,336
GO INSIGHT.

1582
01:04:37,206 --> 01:04:35,104
>> I UNDERSTAND WE HAVE SOME

1583
01:04:37,673 --> 01:04:37,273
SOCIAL MEDIA QUESTIONS AND ASK

1584
01:04:42,211 --> 01:04:37,740
NASA QUESTIONS.

1585
01:04:44,046 --> 01:04:42,278
IF WE COULD G A MICROPHONE

1586
01:04:45,581 --> 01:04:44,113
DOWN HERE FROM THE NASA HEAD

1587
01:04:48,117 --> 01:04:45,648
QUART ERSZ SOCIAL MEDIA TEAM.

1588
01:04:50,619 --> 01:04:48,184

YOU CAN SUBMIT THOSE ONLINE WITH

1589

01:04:52,221 --> 01:04:50,686

THE #ASKNASA.

1590

01:04:53,589 --> 01:04:52,288

THOSE WE CAN'T GET TO WILL BE

1591

01:04:55,557 --> 01:04:53,656

ANSWERING MORE ONLINE LATER AND

1592

01:04:55,891 --> 01:04:55,624

ALSO IN LAUNCH COMMENTARY.

1593

01:04:58,427 --> 01:04:55,958

JASON?

1594

01:05:00,596 --> 01:04:58,494

>> FIRST QUESTION HERE COMES

1595

01:05:02,998 --> 01:05:00,663

FROM TWITTER USER TRACY.

1596

01:05:04,033 --> 01:05:03,065

HOW MUCH DO THEY COORATE WITH

1597

01:05:05,968 --> 01:05:04,100

THE UNITED STATES AIR FORCE AND

1598

01:05:06,302 --> 01:05:06,035

CAN YOU TALK ABOUT THAT A LITTLE

1599

01:05:07,836 --> 01:05:06,369

BIT?

1600

01:05:10,105 --> 01:05:07,903

>> WE COORDINATE WITH OUR

1601
01:05:12,408 --> 01:05:10,172
PARTNERS IN THE AIR FORCE A LOT.

1602
01:05:13,442 --> 01:05:12,475
WE HAVE A TERRIFIC PARTNERSHIP

1603
01:05:15,844 --> 01:05:13,509
ON BOTH RANGES.

1604
01:05:16,145 --> 01:05:15,911
HERE WE ARE AT THE 30TH SPACE

1605
01:05:18,714 --> 01:05:16,212
WING.

1606
01:05:21,317 --> 01:05:18,781
THE INCREDIBLE HOSTS.

1607
01:05:23,285 --> 01:05:21,384
VANDENBERG IS A WONDERFUL PLACE.

1608
01:05:27,556 --> 01:05:23,352
I HAVE, WHEN WORKING A MISSION

1609
01:05:30,159 --> 01:05:27,623
AT VANDENBERG, PROBABLY AT LEAST

1610
01:05:30,526 --> 01:05:30,226
WEEKLY NORMALLY MULTIPLE WEEKLY

1611
01:05:31,560 --> 01:05:30,593
CONTACTS.

1612
01:05:34,263 --> 01:05:31,627
THE YOU'RE GOING TO HEAR FROM

1613
01:05:35,898 --> 01:05:34,330

THE WING COMMANDER HERE AT THE

1614

01:05:37,533 --> 01:05:35,965

30TH SPACE WING IN A LITTLE BIT.

1615

01:05:40,169 --> 01:05:37,600

HIS TEAM IS AMAZING.

1616

01:05:41,303 --> 01:05:40,236

THE LEVEL OF SUPPORT THEY

1617

01:05:42,338 --> 01:05:41,370

PROVIDE FOR BOTH AIR FORCE

1618

01:05:45,040 --> 01:05:42,405

MISSIONS OBVIOUSLY BUT FOR OTHER

1619

01:05:45,874 --> 01:05:45,107

MISSIONS AND FOR THE SCIENCE

1620

01:05:47,242 --> 01:05:45,941

MISSIONS AND FOR C

1621

01:05:50,245 --> 01:05:47,309

MISSIONS AS WELL.

1622

01:05:51,647 --> 01:05:50,312

THERE IS A TREMENDOUS AMOUNT OF

1623

01:05:55,117 --> 01:05:51,714

COORDINATION AT MY LEVEL.

1624

01:05:56,719 --> 01:05:55,184

AT NASA HEADQUARTERS LEVEL TO

1625

01:05:57,720 --> 01:05:56,786

AIR FORCE PENTAGON HREPL AND

1626
01:05:59,254 --> 01:05:57,787
AIR FORCE HIGHER HEADQUARTERS

1627
01:06:04,059 --> 01:05:59,321
LEVEL.

1628
01:06:05,728 --> 01:06:04,126
IT'S A GREAT PARTNERSHIP.

1629
01:06:08,230 --> 01:06:05,795
>> COUPLE OF FOLKS ARE ASKING,

1630
01:06:09,231 --> 01:06:08,297
WHAT FACTORS ARE DETERMINING THE

1631
01:06:10,799 --> 01:06:09,298
LAUNCH GOING FROM CALIFORNIA

1632
01:06:12,167 --> 01:06:10,866
INSTEAD OF FLORIDA AND WHY

1633
01:06:14,403 --> 01:06:12,234
AREN'T LAUNCHES FROM THE WEST

1634
01:06:17,206 --> 01:06:14,470
COAST TO THE PLANETS AS COMMON

1635
01:06:18,907 --> 01:06:17,273
AS LAUNCHES FROM THE EAST COAST?

1636
01:06:21,443 --> 01:06:18,974
>> SO, I CAN TAKE THAT.

1637
01:06:28,417 --> 01:06:21,510
WHEN NASA PUTS OUT A REQUEST FOR

1638
01:06:29,585 --> 01:06:28,484

A PROPOAL HE MAKE AN HE HAVE

1639

01:06:32,221 --> 01:06:29,652

TORATCH THE VEHICLE.

1640

01:06:35,224 --> 01:06:32,288

THE INSIGHT SPACECRAFT IS A

1641

01:06:37,459 --> 01:06:35,291

LITTLE SMALLER AND IS EASILY

1642

01:06:40,429 --> 01:06:37,526

FITS INTO OUR ATLAS 401.

1643

01:06:41,697 --> 01:06:40,496

SO, ONE OF THE REASONS WHY WE

1644

01:06:42,798 --> 01:06:41,764

TRADITIONALLY HAVE LAUNCHED

1645

01:06:46,335 --> 01:06:42,865

EUPBLTSER PLANETARY MISSIONS

1646

01:06:48,337 --> 01:06:46,402

FROM THE EAST COAST IS BECAUSE

1647

01:06:49,438 --> 01:06:48,404

WHEN WE DO THAT WE GET TO TAKE

1648

01:06:52,908 --> 01:06:49,505

ADVANTAGE OF THE ROTATION OF THE

1649

01:07:00,382 --> 01:06:52,975

EARTH.

1650

01:07:02,217 --> 01:07:00,449

IT'S LIKE JUMPING OFF A ROTATION

1651
01:07:02,951 --> 01:07:02,284
DISK GOING IN THE DIRECTION THE

1652
01:07:04,286 --> 01:07:03,018
DISK IS GOING.

1653
01:07:05,554 --> 01:07:04,353
YOU DON'T HAVE TO HAVE AS MUCH

1654
01:07:08,857 --> 01:07:05,621
POWER IN YOUR VEHICLE.

1655
01:07:11,660 --> 01:07:08,924
IN THIS CASE BECAUSE THE ATLAS

1656
01:07:13,862 --> 01:07:11,727
401 HAD ENOUGH PERFORMANCE WE

1657
01:07:19,435 --> 01:07:13,929
WERE ABLE TO DO THAT OFF THE

1658
01:07:21,737 --> 01:07:19,502
WEST COAST WHERE WE'RE ABLE TO

1659
01:07:22,137 --> 01:07:21,804
DO THAT IN THE OPPOSITE

1660
01:07:23,338 --> 01:07:22,204
DIRECTION.

1661
01:07:25,174 --> 01:07:23,405
WE DON'T GET TO TAKE AS MUCH

1662
01:07:26,575 --> 01:07:25,241
ADVANTAGE OF THE ROTATION OF THE

1663
01:07:31,447 --> 01:07:26,642

EARTH.

1664

01:07:31,780 --> 01:07:31,514

THAT'S WHY WE'RE DOING INSIGHT

1665

01:07:32,948 --> 01:07:31,847

HERE.

1666

01:07:36,785 --> 01:07:33,048

>> ASTIC.

1667

01:07:39,555 --> 01:07:36,852

DO WE HAVE Y OTHER QUESTIONS

1668

01:07:39,855 --> 01:07:39,622

HERE IN THE ROOM ON THE MEDIA

1669

01:07:41,223 --> 01:07:39,922

SIDE?

1670

01:07:42,858 --> 01:07:41,290

WE HAVE A SOCIAL MEDIA QUESTION

1671

01:07:54,436 --> 01:07:42,925

DOWN HERE IN THE FRONT.

1672

01:07:57,606 --> 01:07:54,503

LET'S WAIT FOR A MICROPHONE.

1673

01:07:58,040 --> 01:07:57,673

>> I'M A PUBLIC DEFENDER FROM

1674

01:08:00,008 --> 01:07:58,107

PHILADELPHIA.

1675

01:08:01,844 --> 01:08:00,075

I SAW THAT MARCO A AND B WILL BE

1676

01:08:03,879 --> 01:08:01,911

LAUNCHING WITH THE INSIGHT.

1677

01:08:05,047 --> 01:08:03,946

YOU CAN TELL US ABOUT THE MARCO

1678

01:08:05,414 --> 01:08:05,114

CUBES AND WHAT THEY ADD TO THE

1679

01:08:07,182 --> 01:08:05,481

MISSION?

1680

01:08:09,118 --> 01:08:07,249

>> WE'LL HAVE A LITTLE SEGMENT

1681

01:08:11,353 --> 01:08:09,185

ABOUT MARCO, SO WHY DON'T WE

1682

01:08:13,589 --> 01:08:11,420

HANG ON TO THAT ONE FOR WHEN WE

1683

01:08:17,626 --> 01:08:13,656

GO TO Q & A THEN.

1684

01:08:22,898 --> 01:08:17,693

ANY QUESTIONS ON THIS SIDE OR AN

1685

01:08:26,368 --> 01:08:22,965

ONE TO MY RIGHT.

1686

01:08:30,305 --> 01:08:26,435

OKAY.

1687

01:08:32,407 --> 01:08:30,372

>> IF THE INSIGHT MISSION -- IF

1688

01:08:33,876 --> 01:08:32,474

THE WINGED DOUGH -- THE LAUNCH

1689

01:08:35,978 --> 01:08:33,943

GOES BEYOND THE MISSION WINDOW

1690

01:08:38,514 --> 01:08:36,045

IS THERE A POSSIBILITY TO PUT

1691

01:08:40,849 --> 01:08:38,581

INSIGHT OBJECT TO AER ROCKET

1692

01:08:42,951 --> 01:08:40,916

AND LAUNCH FROM THE EAST COAST

1693

01:08:44,620 --> 01:08:43,018

OR EVEN HERE?

1694

01:08:47,422 --> 01:08:44,687

>> NOT UNTIL 26 MONTHS FROM NOW.

1695

01:08:48,790 --> 01:08:47,489

SO THAT WOULD BE -- IF WE ARE

1696

01:08:49,958 --> 01:08:48,857

NOT ABLE TO LAUNCH FOR SOME

1697

01:08:52,761 --> 01:08:50,025

REALLY BAD REASON.

1698

01:08:54,596 --> 01:08:52,828

WE HAVE 35 OPPORTUNITIES BETWEEN

1699

01:08:55,998 --> 01:08:54,663

SATURDAY AND JUNE 8TH THAT'S A

1700

01:08:57,866 --> 01:08:56,065

LOT OF CHANCES TO LAUNCH.

1701
01:08:59,735 --> 01:08:57,933
BUT IN A REALLY BAD SITUATION

1702
01:09:00,969 --> 01:08:59,802
WE'D HAVE TO WAIT FORHAT NEXT

1703
01:09:04,039 --> 01:09:01,036
MARS WINDOW.

1704
01:09:08,944 --> 01:09:04,106
>> ARE I WOULD JUST ADD, IS THE

1705
01:09:10,913 --> 01:09:09,011
ATLAS PERFORMANCE WOULD INDICATE

1706
01:09:11,780 --> 01:09:10,980
WE HAVE ABOUT 95, 98%

1707
01:09:21,456 --> 01:09:11,847
PROBABILITY IN GETTING OFF IN

1708
01:09:26,862 --> 01:09:21,523
THE NEXT TWO DAYS.

1709
01:09:28,130 --> 01:09:26,929
ONE MORE QUESTION RIGHT DOWN

1710
01:09:30,332 --> 01:09:28,197
HERE.

1711
01:09:34,336 --> 01:09:30,399
>> MY QUESTION IS, WILL THE DATA

1712
01:09:37,439 --> 01:09:34,403
RECEIVED BE PUBLISHED OPENLY?

1713
01:09:39,074 --> 01:09:37,506

>> SO, THE SCIENCE DATA FROM

1714

01:09:41,343 --> 01:09:39,141

INSIGHT, I'M GOING TO TURN THAT

1715

01:09:43,378 --> 01:09:41,410

BACK OVER TO ONE OF -- MOST OF

1716

01:09:47,816 --> 01:09:43,445

THIS DATA IS GOING TO END I

1717

01:09:50,152 --> 01:09:47,883

THE PUBLIC DOMAIN.

1718

01:09:54,423 --> 01:09:50,219

>> ALL THE SCIENCE DATA FROM

1719

01:09:55,057 --> 01:09:54,490

NASA MISSIONS ENDS UP IN THE

1720

01:09:57,960 --> 01:09:55,124

PUBLIC DOMAIN.

1721

01:10:00,262 --> 01:09:58,027

I HAVE SIGNED A DOCUMENT SAYING

1722

01:10:03,599 --> 01:10:00,329

THAT I DO SOLEMNLY SWEAR ALL OF

1723

01:10:05,767 --> 01:10:03,666

OUR DATA WILL BE ON THE INTERNET

1724

01:10:07,636 --> 01:10:05,834

IN THE PLANETARY DATA SYSTEM

1725

01:10:17,312 --> 01:10:07,703

REPOSITORY IN LESS THAN SIX

1726

01:10:20,349 --> 01:10:17,379

MONTHS AFTER WE ACQUIRE IT.

1727

01:10:23,252 --> 01:10:20,416

OUR GOAL IS TO PUSH OUT DATA

1728

01:10:25,287 --> 01:10:23,319

WITHIN A MATTER OF WEEKS OF

1729

01:10:26,722 --> 01:10:25,354

ACQUISITION AND THE IMAGES WE

1730

01:10:28,123 --> 01:10:26,789

GET FROM H WE HOPE TO GET

1731

01:10:29,224 --> 01:10:28,190

THEM ON THE INTERNET WITHIN DAYS

1732

01:10:31,727 --> 01:10:29,291

OF ACQUISITION.

1733

01:10:32,894 --> 01:10:31,794

SO, YES, THE DATA THAT'S COMING

1734

01:10:36,098 --> 01:10:32,961

DOWN FROM INSIGHT BELONGS TO

1735

01:10:36,898 --> 01:10:36,165

EVERYBODY AND BELONGS TO THE

1736

01:10:39,067 --> 01:10:36,965

TAXPAYERS OF THE UNITED STATES

1737

01:10:41,737 --> 01:10:39,134

AND TAXPAYERS OF EUROPE AND THE

1738

01:10:42,971 --> 01:10:41,804

WHOLE WORLD AND PUSH IT OUT AS

1739

01:10:45,140 --> 01:10:43,038

FAST AS WE CAN.

1740

01:10:46,942 --> 01:10:45,207

>> ALL THESE DATA ARE YOURS AND

1741

01:10:47,676 --> 01:10:47,009

WITH THAT THANK YOU SO MUCH TO

1742

01:10:52,214 --> 01:10:47,743

TIM AND SCOTT.

1743

01:10:54,016 --> 01:10:52,281

G ROUND OF APPLAUSE FOR THEM.

1744

01:10:55,517 --> 01:10:54,083

[APPLAUSE]

1745

01:10:55,917 --> 01:10:55,584

>> A LOT OF TALK ABOUT THE

1746

01:11:00,522 --> 01:10:55,984

AIR FORCE.

1747

01:11:02,157 --> 01:11:00,589

WE WOULD NOT BE BE LIFTING OFF

1748

01:11:04,126 --> 01:11:02,224

THIS PLANET IF WEREN'T FOR THE

1749

01:11:05,227 --> 01:11:04,193

30TH SPACE WING AT VANDENBERG

1750

01:11:09,131 --> 01:11:05,294

AIR FORCE BASE.

1751
01:11:15,137 --> 01:11:09,198
LET'S BRING UP TWO MEMBERS OF

1752
01:11:17,539 --> 01:11:15,204
THE THE SPACE WING.

1753
01:11:18,807 --> 01:11:17,606
COLONEL MICHAEL HUFF, THE SPACE

1754
01:11:21,476 --> 01:11:18,874
LAUNCH COMMANDER OF THE 30TH

1755
01:11:22,511 --> 01:11:21,543
SPACE WING AND JOINED BY FIRST

1756
01:11:24,546 --> 01:11:22,578
LIEUTENANT CHRISTINA WILLIAMS,

1757
01:11:25,314 --> 01:11:24,613
THE WEATHER OFFICER.

1758
01:11:28,083 --> 01:11:25,381
THANK YOU.

1759
01:11:28,383 --> 01:11:28,150
>> CAN YOU HEAR ME?

1760
01:11:31,186 --> 01:11:28,450
OKAY.

1761
01:11:32,821 --> 01:11:31,253
ONE, I APPRECIATE YOU GETTING MY

1762
01:11:35,223 --> 01:11:32,888
NAME RIGHT.

1763
01:11:38,260 --> 01:11:35,290

THE HOUGH.

1764

01:11:40,662 --> 01:11:38,327

THANKS FOR THAT.

1765

01:11:42,230 --> 01:11:40,729

COLONEL MIKE HOUGH.

1766

01:11:44,833 --> 01:11:42,297

I'VE BEEN IN THE SEAT NOW FOR

1767

01:11:46,535 --> 01:11:44,900

JUST CLOSE TO A YEAR.

1768

01:11:47,769 --> 01:11:46,602

AND YOU HEARD THE TERM

1769

01:11:53,275 --> 01:11:47,836

EXCITEMENT AND OF COURSE THAT'S

1770

01:12:00,716 --> 01:11:53,342

EXACTLY WHAT WE FEEL IN

1771

01:12:03,618 --> 01:12:00,783

SUPPORTING THIS LAUNCH.

1772

01:12:05,354 --> 01:12:03,685

I'M GOING TO BE INSIDE AND

1773

01:12:06,888 --> 01:12:05,421

SITTING AND I HATE I WON'T BE

1774

01:12:09,791 --> 01:12:06,955

ABLE TO SEE IT LIVE.

1775

01:12:10,992 --> 01:12:09,858

AND I TELL YOU TOO, BECAUSE

1776
01:12:12,994 --> 01:12:11,059
LIEUTENANT WILLIAMS WILL CATCH

1777
01:12:14,963 --> 01:12:13,061
THIS ONE IN A SECOND I'M GLAD

1778
01:12:16,832 --> 01:12:15,030
THE SCREEN.SEE THEUAL ON

1779
01:12:18,166 --> 01:12:16,899
ANYBODY WHO HAS BEEN TO CENTRAL

1780
01:12:20,369 --> 01:12:18,233
COAST, CALIFORNIA, KNOWS WE GET

1781
01:12:22,104 --> 01:12:20,436
A PRETTY GOOD MARINE LAYER.

1782
01:12:25,440 --> 01:12:22,171
AT LEAST YOU CAN SAY YOU SAW A

1783
01:12:26,808 --> 01:12:25,507
LAUNCH BY LOOKING AT THAT VIDEO.

1784
01:12:31,880 --> 01:12:26,875
BUT I THINK WE'RE GOING TO HAVE

1785
01:12:34,683 --> 01:12:31,947
SOME MARINE LAYER COMING OUT.

1786
01:12:36,284 --> 01:12:34,750
>> OUR MISSION HERE IS WE HELP

1787
01:12:38,487 --> 01:12:36,351
SUPPORT THESE LAUNCHES.

1788
01:12:40,021 --> 01:12:38,554

OF COURSE WE RELY ON THE EXPERTS

1789

01:12:41,723 --> 01:12:40,088

THAT YOU HEARD FROM UNITED

1790

01:12:44,226 --> 01:12:41,790

LAUNCH ALLIANCE AND OF COURSE

1791

01:12:47,462 --> 01:12:44,293

FROM NASA AND MANY OTHER LAUNCH

1792

01:12:47,896 --> 01:12:47,529

PROVIDERS HERE ON THE WESTERN

1793

01:12:49,998 --> 01:12:47,963

RANGE.

1794

01:12:51,366 --> 01:12:50,065

OUR ROLE HERE, MY ROLE IS TO

1795

01:12:53,335 --> 01:12:51,433

OPERATE THIS THING CALLED THE

1796

01:12:55,103 --> 01:12:53,402

WESTERN RANGE AND IN WHAT I

1797

01:12:57,205 --> 01:12:55,170

LIKEN IT TO IS THAT WE HAVE

1798

01:12:59,908 --> 01:12:57,272

THESE LAUNCH PROVIDERS COMEN

1799

01:13:00,242 --> 01:12:59,975

AND I QUOTE, UNQUOTE, THEY PLUG

1800

01:13:03,111 --> 01:13:00,309

IN.

1801
01:13:04,613 --> 01:13:03,178
WE PROVIDE THEM THE

1802
01:13:05,847 --> 01:13:04,680
INFRASTRUCTURE AND POWER AND

1803
01:13:08,316 --> 01:13:05,914
COMMUNICATIONS AND THEN THE

1804
01:13:09,751 --> 01:13:08,383
TELEMETRY AND RADAR AND THE

1805
01:13:11,920 --> 01:13:09,818
OPTICS TO BE ABLE TO SUPPORT

1806
01:13:14,423 --> 01:13:11,987
THAT LAUNCH AND ALSO PROVIDE --

1807
01:13:15,991 --> 01:13:14,490
WE'RE RESPONSIBLE FOR PUBLIC

1808
01:13:23,732 --> 01:13:16,058
SAFETY AND SECURITY AS WELL.

1809
01:13:29,204 --> 01:13:23,799
TEAM OF AIRMEN OUT THERE WHO ARE

1810
01:13:31,840 --> 01:13:29,271
DOING THE GROUNDWORK TO MAKE

1811
01:13:33,341 --> 01:13:31,907
THAT SECTION BUT HAVE DEFENDERS,

1812
01:13:35,343 --> 01:13:33,408
MY SECURITY FORCES WHO ARE OUT

1813
01:13:37,045 --> 01:13:35,410

THERE AND THEY SWEEP THE AREA

1814

01:13:38,313 --> 01:13:37,112

AND KEEP IT SAFE AND SECURE.

1815

01:13:39,681 --> 01:13:38,380

IT'S A LITTLE BIT ABOUT ME.

1816

01:13:40,115 --> 01:13:39,748

HOW ABOUT OVER TO.

1817

01:13:40,315 --> 01:13:40,182

THE

1818

01:13:42,517 --> 01:13:41,249

>> ALL RIGHT.

1819

01:13:43,885 --> 01:13:42,584

THANK YOU.

1820

01:13:45,620 --> 01:13:43,952

IT'S CRAZY TO THINK THAT SOME

1821

01:13:46,621 --> 01:13:45,687

PEOPLE HAVE BEEN WORKING ON THIS

1822

01:13:49,424 --> 01:13:46,688

FOR SEVEN YEARS BECAUSE I'VE

1823

01:13:49,891 --> 01:13:49,491

ONLY BEEN WORKING ON IT FOR TWO

1824

01:13:51,193 --> 01:13:49,958

MONTHS.

1825

01:13:53,061 --> 01:13:51,260

BUT I'M FIRST LIEUTENANT

1826
01:13:54,095 --> 01:13:53,128
CHRISTINA WILLIAMS ASK I'M THE

1827
01:13:55,864 --> 01:13:54,162
LAUNCH OFFICER.

1828
01:13:59,267 --> 01:13:55,931
I'M ORIGINALLY FROM WISCONSIN.

1829
01:14:00,936 --> 01:13:59,334
I HAVE A DEGREE IN METROLOGY

1830
01:14:02,737 --> 01:14:01,003
FROM THE UNIVERSITY OF WISCONSIN

1831
01:14:04,739 --> 01:14:02,804
MADISON AND BEEN IN THE A NORS

1832
01:14:06,741 --> 01:14:04,806
FOR 3.5 AND BEEN AT VANDENBERG

1833
01:14:10,078 --> 01:14:06,808
FOR ABOUT FIVE MONTHS.

1834
01:14:11,847 --> 01:14:10,145
AS AN LAUNCH WEATHER OFFICER MY

1835
01:14:15,617 --> 01:14:11,914
JOB WILL BE TO LEAD A TEAM.

1836
01:14:17,886 --> 01:14:15,684
WE PROVIDE PRELAUNCH SUPPORT

1837
01:14:19,554 --> 01:14:17,953
WITH OUR FORECAST LEADING UP TO

1838
01:14:21,590 --> 01:14:19,621

THE LAUNCH AS WELL AS SUPPORT ON

1839

01:14:24,759 --> 01:14:21,657

DAY OF LAUNCH.

1840

01:14:26,628 --> 01:14:24,826

I WORK -- WEPERATE OUT OF FOUR

1841

01:14:26,962 --> 01:14:26,695

LOCATIONS FOR THE -- ON DAY OF

1842

01:14:29,130 --> 01:14:27,029

LAUNCHL.

1843

01:14:30,165 --> 01:14:29,197

I'LL BE WORKING IN THE WESTERN

1844

01:14:32,200 --> 01:14:30,232

RANGE OPERATION CONTROL CENTER

1845

01:14:37,038 --> 01:14:32,267

WHICH IS WHERE THE MAIN WEATHER

1846

01:14:42,277 --> 01:14:37,105

HUB ON DAY OF LAUNCH AND

1847

01:14:46,515 --> 01:14:42,344

FORECASTERS WILL BE WORKING OUT

1848

01:14:49,518 --> 01:14:46,582

OF THE WEATHER STATION.

1849

01:14:53,588 --> 01:14:49,585

BALLOON EDITORS AND CONTRACTORS

1850

01:14:57,392 --> 01:14:53,655

EDITING THE DATA AND WE'LL HAVE

1851
01:14:58,159 --> 01:14:57,459
OBSERVERS AT A SITE A MILE AWAY

1852
01:15:08,236 --> 01:14:58,226
TAKING OBSERVATIONS.

1853
01:15:09,671 --> 01:15:08,303
THREE DAYS LEADINGRT OUR L

1854
01:15:12,474 --> 01:15:09,738
MINUS THREE DAY FORECAST AND

1855
01:15:14,976 --> 01:15:12,541
TOMORROW I'LL BE SENDING OUT OUR

1856
01:15:16,678 --> 01:15:15,043
L MINUS ONE DAY FORECAST.

1857
01:15:20,282 --> 01:15:16,745
WE GIVE A BRIEF OVERVIEW WHAT

1858
01:15:26,288 --> 01:15:20,349
TYPE OF WEATHER WE'RE EXPECTING

1859
01:15:26,721 --> 01:15:26,355
FOR LIFTOFF OR T ZERO AND USE

1860
01:15:29,491 --> 01:15:26,788
IRCONSTRAINTS.

1861
01:15:30,158 --> 01:15:29,558
WHAT THESE ARE ARE THE

1862
01:15:33,595 --> 01:15:30,225
LIKELIHOOD THAT A CERTAIN

1863
01:15:34,095 --> 01:15:33,662

CONSTRAINT WILL BE VIOLATED OR

1864

01:15:35,163 --> 01:15:34,162

EXCEEDED.

1865

01:15:36,264 --> 01:15:35,230

KEEP THAT IN MIND FOR LATER IN

1866

01:15:39,834 --> 01:15:36,331

THE HE HAVE PWRAOG.

1867

01:15:41,436 --> 01:15:39,901

WE LOOK AT THE CURRENT

1868

01:15:44,139 --> 01:15:41,503

SATELLITE, CURRENTLY WE'RE

1869

01:15:45,974 --> 01:15:44,206

SEEING A RIDGE BUILDING IN WITH

1870

01:15:49,244 --> 01:15:46,041

AN UPPER LEVEL TROUGH WELL WEST

1871

01:15:50,278 --> 01:15:49,311

OF THE REGION WHICH IS MOVING

1872

01:15:52,013 --> 01:15:50,345

SLOWLY TOWARD US.

1873

01:15:52,414 --> 01:15:52,080

THERE IS FOG OFF THE COAST OF

1874

01:15:53,848 --> 01:15:52,481

CALIFORNIA.

1875

01:15:56,985 --> 01:15:53,915

AS I'M SURE YOU SAW THIS MORNING

1876

01:15:58,653 --> 01:15:57,052

THERE WAS FOG OVERLAND AS WELL.

1877

01:15:59,921 --> 01:15:58,720

LOOKING IT HE LAUNCH DAY

1878

01:16:02,357 --> 01:15:59,988

FORECAST, WE'RE EXPECTING WINDS

1879

01:16:05,160 --> 01:16:02,424

OUT OF THE NORTH AT 7-10 KNOTS

1880

01:16:06,628 --> 01:16:05,227

WITH TEMPERATURES IN THE LOW

1881

01:16:09,164 --> 01:16:06,695

50S.

1882

01:16:10,498 --> 01:16:09,231

VISIBILITY IS EXPECTED TO BE

1883

01:16:11,800 --> 01:16:10,565

ONE-HALF TO ONE STATUE MILES DUE

1884

01:16:13,568 --> 01:16:11,867

TO FOG AS WE'RE EXPECTINGHAT

1885

01:16:16,538 --> 01:16:13,635

LAY YOR FOG TO IMPACT THE

1886

01:16:18,273 --> 01:16:16,605

PAD AT T ZERO.

1887

01:16:20,375 --> 01:16:18,340

FOR AN OVERALL PROBABILITY OF

1888

01:16:22,577 --> 01:16:20,442

VIOLATION OR P.O. V.WE'RE

1889

01:16:24,446 --> 01:16:22,644
EXPECTING 80% DUE TO THE

1890

01:16:25,847 --> 01:16:24,513
REQUIRED RANGE SAFETY LAUNCH

1891

01:16:29,084 --> 01:16:25,914
VISIBILITY CONSTRAINTS.

1892

01:16:30,685 --> 01:16:29,151
ALL OTHER MANDATORY RANGE SAFETY

1893

01:16:36,257 --> 01:16:30,752
AND LAUNCH AGENCY CONSTRAINTS

1894

01:16:37,759 --> 01:16:36,324
HAVE A POV OF 0%.

1895

01:16:40,762 --> 01:16:37,826
FOR OUR SCRUB DAY FORECAST,

1896

01:16:43,031 --> 01:16:40,829
WE'RE EXPECTING TO SEE HIGH

1897

01:16:45,100 --> 01:16:43,098
PRESSURE MOVE ANDING OUT AS THE

1898

01:16:46,901 --> 01:16:45,167
UPPER LEVEL TROUGH MAKES ITS WAY

1899

01:16:49,971 --> 01:16:46,968
TOWARD US HOUF IT WILL NOT

1900

01:16:50,271 --> 01:16:50,038
EFFECT THE WEATHER WHO ARE TOO

1901
01:16:52,607 --> 01:16:50,338
MUCH.

1902
01:16:54,342 --> 01:16:52,674
WINDS WILL SHIRT WILL BE OUT OF

1903
01:16:58,046 --> 01:16:54,442
THE NORTH WEST AND TEMPERATURES

1904
01:16:59,347 --> 01:16:58,113
IN THE LOW 50 WITH VISIBILITY

1905
01:17:00,915 --> 01:16:59,414
THREE QUARTERS TO 1.5 MILES.

1906
01:17:01,249 --> 01:17:00,982
SLIGHTLY IMPROVED BUT STILL NOT

1907
01:17:03,885 --> 01:17:01,316
GREAT.

1908
01:17:05,286 --> 01:17:03,952
SO STILL ASSIGNING THAT 80%

1909
01:17:07,656 --> 01:17:05,353
PROBABILITY OF VIOLATION DUE TO

1910
01:17:09,124 --> 01:17:07,723
THE RANGE SAFETY REQUIRED LAUNCH

1911
01:17:10,191 --> 01:17:09,191
VISIBILITY CONSTRAINTS.

1912
01:17:12,360 --> 01:17:10,258
I KNOW 80%.

1913
01:17:13,795 --> 01:17:12,427

THAT'S A BIG NUMBER, RIGHT?

1914

01:17:16,264 --> 01:17:13,862

IS IT DOES NOT MEAN THAT WE

1915

01:17:18,900 --> 01:17:16,331

WON'T LAUNCH BECAUSE OF WEATHER.

1916

01:17:20,068 --> 01:17:18,967

, WHAT IT IS, WE -- LIKE I

1917

01:17:21,036 --> 01:17:20,135

SAID, YOU PROBABLY SAW THIS

1918

01:17:22,771 --> 01:17:21,103

MORNING, THERE IS FOG THAT

1919

01:17:25,273 --> 01:17:22,838

HAPPENS ALONG THE COAST.

1920

01:17:32,647 --> 01:17:25,340

IT'S A COMMON EVENT HERE,

1921

01:17:34,015 --> 01:17:32,714

ESPECIALLY THIS TIME OF YEAR.

1922

01:17:36,918 --> 01:17:34,082

CONSTRAINT IS FOR SAFETY BUT

1923

01:17:38,687 --> 01:17:36,985

THEY HAVE WAYS OF MITIGATING IT.

1924

01:17:40,455 --> 01:17:38,754

I'M SAYING THERE IS AN 80%

1925

01:17:42,691 --> 01:17:40,522

CHAN YOU'LL NOT BE ABLE TO SEE

1926

01:17:45,126 --> 01:17:42,758

THE ROCKET LAUNCH AT LIFTOFF.

1927

01:17:45,460 --> 01:17:45,193

MANY SO THIS IS ALL I HAVE FOR

1928

01:17:47,796 --> 01:17:45,527

WEATHER.

1929

01:17:48,863 --> 01:17:47,863

>> WHICH IS WHY I'M GLAD YOU SAW

1930

01:17:50,365 --> 01:17:48,930

THAT VIDEO.

1931

01:17:51,332 --> 01:17:50,432

>> BEFORE YOU CRUSH ALL MY

1932

01:17:52,267 --> 01:17:51,399

DREAMS I'M STILL GOING TO HEAR

1933

01:17:55,136 --> 01:17:52,334

IT AND FEEL IT.

1934

01:17:55,470 --> 01:17:55,203

I'M GOING TO FEEL IT MY BONES,

1935

01:17:56,037 --> 01:17:55,537

RIGHT?

1936

01:18:00,075 --> 01:17:56,104

>> OH, YEAH.

1937

01:18:01,643 --> 01:18:00,142

EVEN THOUGH WE'LL BE INDOORS

1938

01:18:02,677 --> 01:18:01,710

FURTHER AWAY, WE'LL ALSO FEEL IT

1939

01:18:25,867 --> 01:18:02,744

AS WELL INSIDE.

1940

01:18:28,670 --> 01:18:25,934

AND THAT'S A GREAT THING.

1941

01:18:29,504 --> 01:18:28,737

MAYBE DOES THIS BRING IN A LOT

1942

01:18:31,873 --> 01:18:29,571

OF JOBS?

1943

01:18:33,408 --> 01:18:31,940

>> SO, I WON'T SPEAK TO THE

1944

01:18:35,210 --> 01:18:33,475

ECONOMIC IMPACT OVERALL.

1945

01:18:37,378 --> 01:18:35,277

YOU CAN SEE BY THE -- THIS IS

1946

01:18:38,947 --> 01:18:37,445

THE FIRST TIME BY THE WAY THAT

1947

01:18:39,814 --> 01:18:39,014

STOOD UP IN FRONT OF A CROWD AND

1948

01:18:41,750 --> 01:18:39,881

TALKED ABOUT A MISSION.

1949

01:18:42,550 --> 01:18:41,817

YOU CAN SEE THIS ONE HAS A

1950

01:18:48,022 --> 01:18:42,617

LITTLE MORE IMPORTANCE THAN WHAT

1951

01:18:50,425 --> 01:18:48,089

WE HAVE DONE IN THE PAST.

1952

01:18:51,760 --> 01:18:50,492

OUR FIRST INTERPLANETARY LAUNCH

1953

01:18:56,297 --> 01:18:51,827

FROM VANDENBERG AIR FORCE BASE,

1954

01:18:57,132 --> 01:18:56,364

AGAIN, TO ME A LAUNCH IS A LUNCH

1955

01:18:58,967 --> 01:18:57,199

IS A LUNCH.

1956

01:19:03,571 --> 01:18:59,034

BUT BECAUSE THIS ONE IS SO

1957

01:19:05,640 --> 01:19:03,638

HISTORIC LIKE YOU SAID, THAT I

1958

01:19:06,040 --> 01:19:05,707

IT'S JUST GARNERED A LOT OF

1959

01:19:07,275 --> 01:19:06,107

ATTENTION.

1960

01:19:08,643 --> 01:19:07,342

YEAH THERE ARE A LOT OF PEOPLE

1961

01:19:08,977 --> 01:19:08,710

COMING IN AND VIEWING THE

1962

01:19:15,116 --> 01:19:09,044

LAUNCH.

1963

01:19:22,290 --> 01:19:15,183

BUT I DON'T HAVE AN ANSWER FOR

1964

01:19:24,092 --> 01:19:22,357

YOU AS FAR AS LONG TERM.

1965

01:19:26,594 --> 01:19:24,159

FROM AN AIR FORCE STANDPOINT I

1966

01:19:27,028 --> 01:19:26,661

DON'T TRACK THAT FROM A MILITARY

1967

01:19:28,196 --> 01:19:27,095

STANDPOINT.

1968

01:19:30,331 --> 01:19:28,263

>> WE'LL GO TO A REPORTER

1969

01:19:32,801 --> 01:19:30,398

QUESTION ON THE PHONE LINE.

1970

01:19:37,839 --> 01:19:32,868

AVIATION WEEK.

1971

01:19:48,850 --> 01:19:37,906

GO AHEAD.

1972

01:19:51,419 --> 01:19:48,917

>> THANKS VERY MUCH.

1973

01:19:52,520 --> 01:19:51,486

BASED ON OTHER FACTORS NOT

1974

01:19:56,791 --> 01:19:52,587

INCLUDING WHETHER PEOPLE ON THE

1975

01:19:57,058 --> 01:19:56,858

GROUND WILL BE ABLE TO SEE IT OR

1976

01:19:58,993 --> 01:19:57,125

NOT?

1977

01:20:00,295 --> 01:19:59,060

>> IF YOU'RE TALKING ABOUT

1978

01:20:02,463 --> 01:20:00,362

VISIBILITY ITSELF WE ARE

1979

01:20:02,730 --> 01:20:02,530

ANTICIPATING IT TO BE BAD THAT

1980

01:20:06,334 --> 01:20:02,797

DAY.

1981

01:20:07,335 --> 01:20:06,401

THE EXPECTING IT TO BE ONE-HALF

1982

01:20:09,470 --> 01:20:07,402

TO ONE STATUE MILE.

1983

01:20:11,840 --> 01:20:09,537

THE PROBABILITY OF VIOLATI FOR

1984

01:20:12,907 --> 01:20:11,907

THAT SPECIFIC CNTRATE IS AT

1985

01:20:14,509 --> 01:20:12,974

80%.

1986

01:20:15,877 --> 01:20:14,576

THERE'S AN 80% CHANCE WE'LL HAVE

1987

01:20:18,213 --> 01:20:15,944

VISIBILITY DOWN THAT LOW AND YOU

1988

01:20:20,782 --> 01:20:18,280

WON'T BE ABLE TO SEE THE LAUNCH.

1989

01:20:22,383 --> 01:20:20,849

HOWEVER FOR THE LAUNCH TO HAPPEN

1990

01:20:24,986 --> 01:20:22,450

WE'RE ANTICIPATING FOR ALL OTHER

1991

01:20:26,254 --> 01:20:25,053

RANGE SAFETY AND USER

1992

01:20:43,705 --> 01:20:26,321

CONSTRAINTS THAT THE PROBABILITY

1993

01:20:45,440 --> 01:20:43,772

OF VIOLATION IS 0%.

1994

01:20:46,941 --> 01:20:45,507

THE LAUNCH WILL STILL BE

1995

01:20:47,308 --> 01:20:47,008

SUCCESSFUL AND NOT IMPACTED BY

1996

01:20:48,009 --> 01:20:47,375

WEATHER.

1997

01:20:48,843 --> 01:20:48,076

>> THERE I THINK WE'VE GOT

1998

01:20:49,310 --> 01:20:48,910

ANOTHER QUESTION ON THIS SIDE OF

1999

01:20:55,083 --> 01:20:49,377

THE HOUSE.

2000

01:20:56,117 --> 01:20:55,150

IF WE COULD GET A MICROPHONE.

2001
01:20:56,951 --> 01:20:56,184
THANK YOU.

2002
01:20:58,386 --> 01:20:57,018
FRP

2003
01:20:59,287 --> 01:20:58,453
>> JUST A POINT OF

2004
01:21:02,190 --> 01:20:59,354
CLARIFICATION.

2005
01:21:03,758 --> 01:21:02,257
SO, WE KNOW THAT GOOD CHANCE WE

2006
01:21:05,793 --> 01:21:03,825
WON'T SEE THE LAUNCH ANYWHERE

2007
01:21:06,995 --> 01:21:05,860
AROUND THE LAUNCH PAD.

2008
01:21:08,796 --> 01:21:07,062
THE QUESTION THOUGH THROUGHOUT

2009
01:21:10,365 --> 01:21:08,863
SOUTHERN CALIFORNIA WHEN IT GETS

2010
01:21:11,232 --> 01:21:10,432
TO THE HIGHER ELEVATIONS WILL IT

2011
01:21:13,001 --> 01:21:11,299
BE SEEN.

2012
01:21:15,136 --> 01:21:13,068
>> WE ARE ANTICIPATING THIS FOG

2013
01:21:17,939 --> 01:21:15,203

TO BE VERY SHALLOW.

2014

01:21:18,439 --> 01:21:18,006

ONLY ABOUT 200 TO 600 FEET ABOVE

2015

01:21:19,741 --> 01:21:18,506

THE PAD.

2016

01:21:21,476 --> 01:21:19,808

AS SOON AS IT REACHES ABOVE

2017

01:21:24,379 --> 01:21:21,543

THAT, THEN IF YOU'RE STANDING

2018

01:21:27,382 --> 01:21:24,446

FAR ENOUGH AWAY OR AT A DISTANCE

2019

01:21:27,749 --> 01:21:27,449

YOU SHOULD BE ABLE TO SEE THE

2020

01:21:28,616 --> 01:21:27,816

ROCKET.

2021

01:21:30,818 --> 01:21:28,683

>> YOU RECOMMEND FOR PEOPLE TO

2022

01:21:31,719 --> 01:21:30,885

ET UP AT 4 O'CLOCK IN THE

2023

01:21:32,921 --> 01:21:31,786

MORNING IT MIGHT BE WORTH

2024

01:21:37,091 --> 01:21:32,988

SEEING, RIGHT?

2025

01:21:40,728 --> 01:21:37,158

>> IF YOU STAND ABOVE 600 FEET

2026

01:21:42,363 --> 01:21:40,795

THEN YES.

2027

01:21:46,401 --> 01:21:42,430

>> WE'VE GOT ANOTHER QUESTION

2028

01:21:47,735 --> 01:21:46,468

RIGHT DOWN HERE IN FRONT.

2029

01:21:48,870 --> 01:21:47,802

>> HI.

2030

01:21:50,638 --> 01:21:48,937

STEVEN CLARK.

2031

01:21:51,039 --> 01:21:50,705

ANOTHER CLARIFICATION ON THE

2032

01:21:55,777 --> 01:21:51,106

VISIBILITY.

2033

01:21:58,813 --> 01:21:55,844

WHAT ARE SOME OF THE MIIGATIONS

2034

01:22:00,281 --> 01:21:58,880

IF SOMEONE CAN SPEAK ABOUT THAT

2035

01:22:00,715 --> 01:22:00,348

TO WAVE THE CONSTRAINT FOR

2036

01:22:04,052 --> 01:22:00,782

VISIBILITY.

2037

01:22:05,453 --> 01:22:04,119

>> SO WE LOOK TO OUR LAUNCH

2038

01:22:08,289 --> 01:22:05,520

PARTNER AND SO -- WE HAVE A LOT

2039

01:22:08,723 --> 01:22:08,356

OF THINGS THAT MONITOR THE

2040

01:22:11,025 --> 01:22:08,790

ROCKETS.

2041

01:22:14,262 --> 01:22:11,092

IF ONE OF THOSE SHOULD FAIL WE

2042

01:22:16,097 --> 01:22:14,329

HAVE TO HAVE VISIBILITY FOR

2043

01:22:18,066 --> 01:22:16,164

SAFETY STANDPOINTS.

2044

01:22:19,867 --> 01:22:18,133

THEN THE AIR FORCE WOULD SAY,

2045

01:22:22,437 --> 01:22:19,934

YES, NOW W HAVE TO HAVE

2046

01:22:25,406 --> 01:22:22,504

VISIBILITY AND NOW YOU WOULD

2047

01:22:27,208 --> 01:22:25,473

HAVE AN 80% CHANCE OF IT.

2048

01:22:28,343 --> 01:22:27,275

AS YOU HEARD THE LIEUTENANT TALK

2049

01:22:30,111 --> 01:22:28,410

ABOUT THAT THERE'S NOTHING ELSE

2050

01:22:31,813 --> 01:22:30,178

GETTING IN THE WAY OF THIS

2051
01:22:35,883 --> 01:22:31,880
LAUNCH, SO WE ARE CLEAN FROM

2052
01:22:40,054 --> 01:22:35,950
THAT STANDPOINT.

2053
01:22:41,389 --> 01:22:40,121
NOW IF ULA OR NASA SAID TO US,

2054
01:22:43,624 --> 01:22:41,456
WE HA TO HAVE VISIBILITY ON

2055
01:22:45,426 --> 01:22:43,691
THIS LAUNCH THEN WE WOULD ABIDE

2056
01:22:46,761 --> 01:22:45,493
AND LISTEN TO THEM AND SAY,

2057
01:22:47,729 --> 01:22:46,828
GOTCHA AND THEN WE'D BE AT THAT

2058
01:22:48,563 --> 01:22:47,796
POINT OF 80%.

2059
01:22:49,464 --> 01:22:48,630
BUT NOTHING STANDING IN THE WAY

2060
01:22:50,298 --> 01:22:49,531
OF THAT RIGHT NOW.

2061
01:22:52,000 --> 01:22:50,365
>> FANTASTIC.

2062
01:22:53,001 --> 01:22:52,067
A BIG ROUND OF APPLAUSE FOR OUR

2063
01:23:00,375 --> 01:22:53,068

FRIENDS FROM THE 30TH SPACE

2064

01:23:01,009 --> 01:23:00,442

WING.

2065

01:23:04,579 --> 01:23:01,076

[APPLAUSE]

2066

01:23:06,981 --> 01:23:04,646

>> AS YOU SAW IN THAT ULA VIDEO

2067

01:23:08,216 --> 01:23:07,048

EARLIER IN THE SHOW, INSIGHT IS

2068

01:23:10,985 --> 01:23:08,283

NOT THE ONLY SPACECRAFT THAT'S

2069

01:23:14,255 --> 01:23:11,052

SET TO LAUNCH ON MAY FIFTH.

2070

01:23:15,390 --> 01:23:14,322

THERE ARE TWO SMALL ONES, MARS

2071

01:23:16,824 --> 01:23:15,457

CUBED ONE OR MARCO.

2072

01:23:20,862 --> 01:23:16,891

COME ON UP HERE, GUYS BECAUSE

2073

01:23:22,797 --> 01:23:20,929

WE'VE GOT A VERY LOVELY --

2074

01:23:23,898 --> 01:23:22,864

ANOTHER FULL SCALE MODEL BELIEVE

2075

01:23:26,234 --> 01:23:23,965

IT NOT.

2076
01:23:28,836 --> 01:23:26,301
T OUR INSIGHT LANDER AND THEN

2077
01:23:31,372 --> 01:23:28,903
WE'VE GOT MARS CUBE ONE.

2078
01:23:32,874 --> 01:23:31,439
MARCO THIS IS A TECH DEMO.

2079
01:23:35,243 --> 01:23:32,941
SMALL SIZE DOES NOT BELIE ITS

2080
01:23:38,513 --> 01:23:35,310
BIG GOALS.

2081
01:23:40,848 --> 01:23:38,580
LET's BRING THIS OUT.

2082
01:23:43,084 --> 01:23:40,915
>> MY NAME IS ANN I'M WORKING ON

2083
01:23:45,386 --> 01:23:43,151
THE MARCO MISSION.

2084
01:23:46,287 --> 01:23:45,486
THIS IS A FULL SIZED REPLICA OF

2085
01:23:48,122 --> 01:23:46,354
THE MARCO SPACECRAFT.

2086
01:23:51,125 --> 01:23:48,189
AS YOU CAN SEE IT's

2087
01:23:53,961 --> 01:23:51,192
SIGNIFICANTLY SMALLER THAN

2088
01:23:54,896 --> 01:23:54,028

INSIGHT.

2089

01:23:58,199 --> 01:23:54,963

IT'S A SIX CUBE SET.

2090

01:24:00,535 --> 01:23:58,266

IT'S A TEN BY TEN BY TEN BY TEN

2091

01:24:02,737 --> 01:24:00,602

CENTIMETER CUBE AND EACH ONE

2092

01:24:06,808 --> 01:24:02,804

WEIGHS ABOUT 30 POUNDS BUT WHEN

2093

01:24:08,843 --> 01:24:06,875

IT'S ALL FOLDED UP IT'S THE SIZE

2094

01:24:10,745 --> 01:24:08,910

OF A CEREAL BOX.

2095

01:24:13,448 --> 01:24:10,812

MARCO IS A TECHNOLOGY TESTIMONY

2096

01:24:15,650 --> 01:24:13,515

STRAEUGS AND FIRST OPPORTUNITY

2097

01:24:22,223 --> 01:24:15,717

FOR A CUBE WITH THIS TECHNOLOGY

2098

01:24:22,657 --> 01:24:22,290

TO FLY ON AN INTERPLANETARY

2099

01:24:24,425 --> 01:24:22,724

TRAJECTORY.

2100

01:24:27,462 --> 01:24:24,492

THERE ARE THREE MAIN

2101
01:24:30,298 --> 01:24:27,529
TECHNOLOGIES AND ONE IS A PRO

2102
01:24:31,365 --> 01:24:30,365
PULL SHUN SYSTEM FOR

2103
01:24:32,800 --> 01:24:31,432
.

2104
01:24:34,735 --> 01:24:32,867
THE PROPELLANT ON BOARD IS THE

2105
01:24:37,705 --> 01:24:34,802
SAME YOU WOULD FIND INSIDE A

2106
01:24:40,141 --> 01:24:37,772
FIRE EXTINGUISHER AND FOR THOSE

2107
01:24:48,649 --> 01:24:40,208
OF YOU WHO HAVE SEEN THE MOVIE

2108
01:24:54,021 --> 01:24:48,716
WALLY, THE MAIN CHARACTER FLIES

2109
01:24:55,690 --> 01:24:54,088
AROUND ON A FIRE EXTINKER SO WE

2110
01:24:58,860 --> 01:24:55,757
NAMED THEM WALLY.

2111
01:25:00,862 --> 01:24:58,927
THE OTHER TWO WERE DEVELOPED

2112
01:25:02,930 --> 01:25:00,929
SPECIFICALLY IN-HOUSE AT JPL TO

2113
01:25:06,134 --> 01:25:02,997

FLY ON THIS MISSION ARE ONE OF

2114

01:25:09,737 --> 01:25:06,201

THE RADIO -- ABOUT THE SIZE OF A

2115

01:25:12,340 --> 01:25:09,804

SOFTBALL AND DESIGNED TO FIT IN

2116

01:25:14,742 --> 01:25:12,407

A FORM FACTOR BUT ALSO BE ABLE

2117

01:25:16,844 --> 01:25:14,809

TO INTERFACE WITH THE DEEP SPACE

2118

01:25:21,115 --> 01:25:16,911

NETWORK.

2119

01:25:23,384 --> 01:25:21,182

THAT IS A BIG DEAL BECAUSE IN

2120

01:25:24,952 --> 01:25:23,451

INTERPLANETARY SPACE

2121

01:25:27,155 --> 01:25:25,019

COMMUNICATION IS A CHALLENGE

2122

01:25:27,488 --> 01:25:27,222

THEY HAVE NOT HAD TO DEAL WITH

2123

01:25:28,456 --> 01:25:27,555

BEFORE.

2124

01:25:30,558 --> 01:25:28,523

THEY'RE MUCH FARTHER AWAY FROM

2125

01:25:33,294 --> 01:25:30,625

EARTH AND THEY HAVE TO FIGURE

2126
01:25:34,962 --> 01:25:33,361
OUT HOW TO RANGE AND DETERMINE

2127
01:25:37,832 --> 01:25:35,029
TH ORBIT OF THE CUBE.

2128
01:25:40,134 --> 01:25:37,899
THAT RADIO ENABLES THIS MISSION

2129
01:25:41,969 --> 01:25:40,201
TO DO THAT.

2130
01:25:43,671 --> 01:25:42,036
THIS, THE HIGH GAIN ANTENNA IS

2131
01:25:45,907 --> 01:25:43,738
ANOTHER TECHNOLOGY THAT WAS

2132
01:25:47,808 --> 01:25:45,974
DEVELOPED AT JPL.

2133
01:25:48,109 --> 01:25:47,875
IT'S CALLED A PASSIVE PHASED

2134
01:25:50,711 --> 01:25:48,176
ARRAY.

2135
01:25:53,581 --> 01:25:50,778
YOU CAN SEE THE CIRCULAR PATTERN

2136
01:25:56,450 --> 01:25:53,648
ON HERE WHEN THE RADIO SENDS A

2137
01:25:56,751 --> 01:25:56,517
SIGNAL AND ILLUMINATES THIS

2138
01:25:58,686 --> 01:25:56,818

PANEL.

2139

01:26:01,122 --> 01:25:58,753

THE SIGNAL IS FOCUSED JUST LIKE

2140

01:26:02,757 --> 01:26:01,189

IT WAS COMING OUTS OF A

2141

01:26:05,059 --> 01:26:02,824

PARABOLIC DISH.

2142

01:26:07,128 --> 01:26:05,126

BUT BECAUSE IT IS FLAT LIKE THIS

2143

01:26:08,996 --> 01:26:07,195

IT CAN STOW IN A VERY SMALL

2144

01:26:12,066 --> 01:26:09,063

VOLUME WHICH IS IDEAL FOR

2145

01:26:14,368 --> 01:26:12,133

LAUNCHING A CUBE SET IN A BOX.

2146

01:26:15,937 --> 01:26:14,435

A SOME OTHER THINGS ARE SOLAR

2147

01:26:18,239 --> 01:26:16,004

PANELS AND THESE DEPLOY AT THE

2148

01:26:20,808 --> 01:26:18,306

BEGINNING OTHE MON AND

2149

01:26:23,110 --> 01:26:20,875

GENERATES ABOUT 40 WATTS AT

2150

01:26:26,480 --> 01:26:23,177

EARTH AND 17 WATTS NEAR MARS AND

2151

01:26:30,218 --> 01:26:26,547

ANTENNA AT THE BOTTOM.

2152

01:26:33,554 --> 01:26:30,285

IF MARCO IS SUCCESSFUL IT'S A

2153

01:26:37,091 --> 01:26:33,621

TECHNOLOGY DEMONSTRATION.

2154

01:26:38,326 --> 01:26:37,158

BUT AS IT FLIES BY, IF

2155

01:26:43,030 --> 01:26:38,393

EVERYTHING GOES WELL AND

2156

01:26:45,633 --> 01:26:43,097

TIMED PERFECTLY, THIS ANTENNA IS

2157

01:26:48,536 --> 01:26:45,700

DESIGNED TO RECEIVE SIGNALS FROM

2158

01:26:51,906 --> 01:26:48,603

INSIGHT AS INSIGHT GOES THROUGH

2159

01:26:53,774 --> 01:26:51,973

ITS DESCENT AND LANDING PHASE.

2160

01:26:57,278 --> 01:26:53,841

THE RADIO IS ON BOARD AND

2161

01:27:01,015 --> 01:26:57,345

TRANSMITS THAT BACK DIRECTLY TO

2162

01:27:03,150 --> 01:27:01,082

EARTH OVER IT WITH THIS ANTENNA.

2163

01:27:05,386 --> 01:27:03,217

I'M GOING TO TURN IT OVER TO

2164

01:27:25,539 --> 01:27:05,453

ANDY SKPO TALK ABOUT THE MARCO

2165

01:27:26,540 --> 01:27:25,606

MISSION AND THE CUBE SET

2166

01:27:28,376 --> 01:27:26,607

PARADIGM.

2167

01:27:30,678 --> 01:27:28,443

THEY GROW IN CAPABILITY EACH AND

2168

01:27:32,680 --> 01:27:30,745

IS EVERY YEAR.

2169

01:27:33,948 --> 01:27:32,747

WITH ALMOST 700 FLYING AROUND

2170

01:27:35,416 --> 01:27:34,015

THE EARTH.

2171

01:27:36,417 --> 01:27:35,483

THEY'RE FLYING ABOUT 800

2172

01:27:39,020 --> 01:27:36,484

KILOMETERS ABOVE THE SURFACE.

2173

01:27:42,790 --> 01:27:39,087

WITH MARCO WE'RE SENDING OUR TWO

2174

01:27:43,858 --> 01:27:42,857

SPACE CRAFTS APPROXIMATELY 158

2175

01:27:45,192 --> 01:27:43,925

MILLION KILOMETERS AWAY FROM

2176
01:27:47,061 --> 01:27:45,259
EARTH.

2177
01:27:49,897 --> 01:27:47,128
THIS IS A SIGNIFICANT DISTANCE

2178
01:27:50,364 --> 01:27:49,964
AND WHY THIS IS A TECHNOLOGY

2179
01:27:51,165 --> 01:27:50,431
DEMONSTRATION.

2180
01:27:52,933 --> 01:27:51,232
ALL THE THINGS THAT NEED TO GO

2181
01:27:54,902 --> 01:27:53,000
RIGHT ALONG THE WAY.

2182
01:27:56,871 --> 01:27:54,969
AS ANNIE MENTIONED WE NEED TO BE

2183
01:27:59,940 --> 01:27:56,938
ABLE TO COMMUNICATE AND NAVIGATE

2184
01:28:01,742 --> 01:28:00,007
AND MANEUVER IN THE DEEP SPACE

2185
01:28:02,843 --> 01:28:01,809
ENVIRONMENT AWAY FROM EARTH AND

2186
01:28:05,212 --> 01:28:02,910
DEALING WITH THE LIFETIME DELAY

2187
01:28:05,646 --> 01:28:05,279
AND ALL THE OER ISSUES WE

2188
01:28:07,515 --> 01:28:05,713

HAVE.

2189

01:28:08,983 --> 01:28:07,582
ON SATURDAY, WE'LL BE LAUNCHING

2190

01:28:11,018 --> 01:28:09,050
WITH THE INSIGHT MISSION AND

2191

01:28:12,320 --> 01:28:11,085
APPROXIMATELY 90 MINUTES AFTER

2192

01:28:14,255 --> 01:28:12,387
LAUNCH ONCE INSIGHT SEPARATES

2193

01:28:17,224 --> 01:28:14,322
FROM THAT UPPER STAGE THE TWO

2194

01:28:18,893 --> 01:28:17,291
MARCO SPACECRAFT WILL POP UP.

2195

01:28:19,827 --> 01:28:18,960
I HAVE A SHORT VIDEO THAT WILL

2196

01:28:22,430 --> 01:28:19,894
SHOW YOU THAT EXPLAIN SOME OF

2197

01:28:24,432 --> 01:28:22,497
THE DETAILS OF EARLY LAUNCH.

2198

01:28:26,567 --> 01:28:24,499
MARCO A WILL POP OUT FIRST FROM

2199

01:28:26,934 --> 01:28:26,634
THE CARRIER OF THE CENTAUR UPPER

2200

01:28:29,003 --> 01:28:27,001
STAGE.

2201
01:28:30,004 --> 01:28:29,070
AND FROM THAT SIDE IT WILL

2202
01:28:32,807 --> 01:28:30,071
SLOWLY DRIFT OFF.

2203
01:28:35,242 --> 01:28:32,874
IT WILL ROTATE 180 DEGREES AND

2204
01:28:37,712 --> 01:28:35,309
THEN DEPLOY THE SPACECRAFT.

2205
01:28:39,480 --> 01:28:37,779
EACH OF THESE WILL BE FLYING OUT

2206
01:28:40,848 --> 01:28:39,547
TOWARDS MARS INDEPENDENT FROM

2207
01:28:42,683 --> 01:28:40,915
INSIGHT ITSELF OVER THE

2208
01:28:44,085 --> 01:28:42,750
FOLLOWING 6.5 MONTHS.

2209
01:28:47,355 --> 01:28:44,152
IN THE EARLY MINUTES OF THE

2210
01:28:49,623 --> 01:28:47,422
MISSION ITSELF, WILL START TO

2211
01:28:52,693 --> 01:28:49,690
DEPLOY OUR SOLAR PANELS.

2212
01:28:54,795 --> 01:28:52,760
THE SOLAR PANELS WILL DEPLOY OFF

2213
01:28:56,964 --> 01:28:54,862

ON THE RIGHT HAND SIDE AND BURN

2214

01:28:59,033 --> 01:28:57,031

TO DEPLOY THEM ON LEFT-HAND SIDE

2215

01:29:00,835 --> 01:28:59,100

AND THESE ARE CRITICAL FOR

2216

01:29:03,104 --> 01:29:00,902

RECHARGING THE BATTERIES AS THEY

2217

01:29:03,471 --> 01:29:03,171

HAVE BEEN POWERED OFF SINCE LATE

2218

01:29:05,940 --> 01:29:03,538

FEBRUARY.

2219

01:29:08,776 --> 01:29:06,007

AFTER THE SOLAR PANELS ARE

2220

01:29:12,880 --> 01:29:08,843

DEPLOYED WE'LL CHECK OUT ALL THE

2221

01:29:15,816 --> 01:29:12,947

ANTENNAS THAT WE SEE BEFORE YOU.

2222

01:29:17,918 --> 01:29:15,883

FOLLOWED SOON BY THE UHF ANTENNA

2223

01:29:18,786 --> 01:29:17,985

WHICH COMES OFF THE BOTTOM SIDE

2224

01:29:20,588 --> 01:29:18,853

OF THE SPACECRAFT.

2225

01:29:21,489 --> 01:29:20,655

EACH OF THESE ARE CRITICAL TO

2226
01:29:23,424 --> 01:29:21,556
PROVIDE COMMUNICATION AS WE'RE

2227
01:29:25,860 --> 01:29:23,491
GOING AWAY FROM EARTH BUT ONCE

2228
01:29:29,797 --> 01:29:25,927
WE GET NEAR MARS TO BE ABLE TO

2229
01:29:31,499 --> 01:29:29,864
SUPPORT THE INSIGHT PRIMERY

2230
01:29:35,369 --> 01:29:31,566
SPACECRAFT, IT WLL BROADCAST UP

2231
01:29:36,737 --> 01:29:35,436
TO THE SPACECRAFT WHICH WILL

2232
01:29:38,839 --> 01:29:36,804
RELAY THEM OUT THE ANTENNA AND

2233
01:29:39,173 --> 01:29:38,906
SEND IT DOWN TO THE 70 METER

2234
01:29:41,642 --> 01:29:39,240
DISH.

2235
01:29:44,779 --> 01:29:41,709
WE DO NOT NEED TO WAIT UNTIL IT

2236
01:29:46,714 --> 01:29:44,846
TESTS OUT THIS RELAY SYSTEM.

2237
01:29:47,648 --> 01:29:46,781
WE'LL BE WORKING WITH THE STATE

2238
01:29:50,351 --> 01:29:47,715

UNIVERSITY AS WE'RE CLOSER TO

2239

01:29:50,684 --> 01:29:50,418

CHECK OUT THE SYSTEM ALONG THE

2240

01:29:53,921 --> 01:29:50,751

WAY.

2241

01:29:55,790 --> 01:29:53,988

THE MARCO SPACECRAFT ARE REALLY

2242

01:29:57,491 --> 01:29:55,857

A COLLABORATION BUT FOR MANY

2243

01:29:59,026 --> 01:29:57,558

OTHER COMMERCIAL AND UNIVERSITY

2244

01:30:00,261 --> 01:29:59,093

ACADEMIC ENTITY THAT ARE OUT

2245

01:30:00,661 --> 01:30:00,328

THERE IN ORDER TO PULL THIS

2246

01:30:03,564 --> 01:30:00,728

TOGETHER.

2247

01:30:05,299 --> 01:30:03,631

IT IS REALLY A COLLABORATION OF

2248

01:30:06,567 --> 01:30:05,366

THE ENTIRE CUBE SET COMMUNITY

2249

01:30:09,603 --> 01:30:06,634

AND BUILDING UPON ALL THE EFFORT

2250

01:30:11,772 --> 01:30:09,670

THAT HAS BEEN DONE THAT ALLOWS

2251
01:30:13,541 --> 01:30:11,839
US TO TAKE THE FIRST CUBE SETS

2252
01:30:15,342 --> 01:30:13,608
OUT TO DEEP SPA AND WE'RE

2253
01:30:18,245 --> 01:30:15,409
LOOKING FORRD TO RIDING ALONG

2254
01:30:22,416 --> 01:30:18,312
WITH INSIGHT.

2255
01:30:23,584 --> 01:30:22,483
>> I WAS SO EXCITED GETTING YOUR

2256
01:30:26,520 --> 01:30:23,651
FULL SCALE MODELING.

2257
01:30:29,523 --> 01:30:26,587
THIS IS ANDY CLASH, THE MARCO

2258
01:30:30,324 --> 01:30:29,590
CHIEF ENGINEER FROM THE JET

2259
01:30:31,258 --> 01:30:30,391
PROPULSION LABORATORY.

2260
01:30:34,094 --> 01:30:31,325
DOES ANYBODY HAVE ANY QUESTIONS

2261
01:30:43,571 --> 01:30:34,161
FOR ANDY OR ANNIE?

2262
01:30:47,308 --> 01:30:43,638
YES, RIGHT DOWN HERE IN FRONT.

2263
01:30:52,546 --> 01:30:47,375

RIGHT HERE IN THE FRONT ROW.

2264

01:30:55,382 --> 01:30:52,613

>> HI, MY NAME IS ATHENA.

2265

01:30:57,451 --> 01:30:55,449

I'M WONDERING, SEEING THE FUTURE

2266

01:30:58,752 --> 01:30:57,518

WITH HUMANS COLONIZING RS.

2267

01:30:59,987 --> 01:30:58,819

DO YOU SEE THIS TYPE OF

2268

01:31:02,823 --> 01:31:00,054

TECHNOLOGY FOR SATELLITES BEING

2269

01:31:04,158 --> 01:31:02,890

ABLE TO BE USED TO COMMUNICATE

2270

01:31:05,593 --> 01:31:04,225

TO THOSE LIVING ON MARS FOR

2271

01:31:09,497 --> 01:31:05,660

THEIR TECHNOLOGY SINCE THIS IS

2272

01:31:09,997 --> 01:31:09,564

ABLE TO PICK UP SIGNALS FOR THE

2273

01:31:12,500 --> 01:31:10,064

INSIGHT MISSION?

2274

01:31:13,434 --> 01:31:12,567

>> OUR PARTICULAR SPACECRAFT ARE

2275

01:31:16,070 --> 01:31:13,501

DEMONSTRATING WHAT WE MIGHT BE

2276
01:31:17,071 --> 01:31:16,137
ABLE TO USE IN THE FUTURE.

2277
01:31:18,973 --> 01:31:17,138
SMALL SPACECRAFT OVERALL ARE

2278
01:31:20,941 --> 01:31:19,040
VERY GOOD AT FOCUSED MISSIONS.

2279
01:31:22,810 --> 01:31:21,008
THEY CAN DO ONE THING AND DO

2280
01:31:25,579 --> 01:31:22,877
THAT ONE THING VERY, VERY WELL

2281
01:31:26,380 --> 01:31:25,646
ON HERE. SO WE'RE EXCITED HOW

2282
01:31:28,148 --> 01:31:26,447
CAPABILITY MAY GROW BUT

2283
01:31:31,685 --> 01:31:28,215
EVERYTHING THAT WE HAVE THAT IS

2284
01:31:31,986 --> 01:31:31,752
SO SMALL DOES ONE THING VERY

2285
01:31:32,419 --> 01:31:32,053
WELL.

2286
01:31:33,888 --> 01:31:32,486
>> OKAY.

2287
01:31:34,188 --> 01:31:33,955
AND WE'VE GOT ANOTHER QUESTION

2288
01:31:39,994 --> 01:31:34,255

THERE.

2289

01:31:42,796 --> 01:31:40,061

AND THEN WE'LL TAKE A COUPLE OF

2290

01:31:44,431 --> 01:31:42,863

ASK NASA QUESTIONS.

2291

01:31:45,966 --> 01:31:44,498

>> THIS IS SUCH AN EXCITING NEW

2292

01:31:48,269 --> 01:31:46,033

KNOLL SKWREUFPLT WHAT'S THE NEXT

2293

01:31:49,837 --> 01:31:48,336

STEP AFTER THIS MISSION FOR THE

2294

01:31:55,142 --> 01:31:49,904

TECHNOLOGY IF IT'S SUCCESSFUL?

2295

01:31:56,610 --> 01:31:55,209

>> SO THERE ARE ACTUALLY

2296

01:31:58,512 --> 01:31:56,677

-- SO THE FIRST LAUNCH OF THE

2297

01:32:01,348 --> 01:31:58,579

SPACE LAUNCH SYSTEM THERE ARE 13

2298

01:32:01,348 --> 01:32:02,316

CUBE SETS OF THIS SIZE THAT ARE

2299

01:32:06,420 --> 01:32:04,685

MANIFESTS AND HALF OF THEM ARE

2300

01:32:07,821 --> 01:32:06,487

USING THE SAME RADIO TECHNOLOGY

2301
01:32:09,890 --> 01:32:07,888
THAT IS ON MARCO.

2302
01:32:11,158 --> 01:32:09,957
AND I'M WORKING ON AT LEAST ONE

2303
01:32:13,394 --> 01:32:11,225
OF THEM.

2304
01:32:17,097 --> 01:32:13,461
BUT YEAH, THIS TECHNOLOGY EVEN

2305
01:32:17,965 --> 01:32:17,164
BEFORE IT FLIES IS BEING USED BY

2306
01:32:20,701 --> 01:32:18,032
FUTURE MISSIONS.

2307
01:32:21,001 --> 01:32:20,768
>> OKAY.

2308
01:32:21,969 --> 01:32:21,068
JASON?

2309
01:32:26,407 --> 01:32:22,036
>> ALL RIGHT.

2310
01:32:28,275 --> 01:32:26,474
COMING IN ON ASK NASA THERE

2311
01:32:30,878 --> 01:32:28,342
IS A QUESTION FROM TWITTER USER,

2312
01:32:33,414 --> 01:32:30,945
WILL THEY BE MONITORED AT ALL

2313
01:32:33,714 --> 01:32:33,481

AFTER COMPLETING THE FLY BY OF

2314

01:32:36,684 --> 01:32:33,781

MARS?

2315

01:32:38,285 --> 01:32:36,751

>> SOON AFTER THE FLY BY OF

2316

01:32:39,920 --> 01:32:38,352

MARS, THEY'LL ATTEMPT TO

2317

01:32:41,422 --> 01:32:39,987

REBROADCAST THE SAME DATA BACK

2318

01:32:43,490 --> 01:32:41,489

DOWN TO EARTH WITHIN THE FIRST

2319

01:32:47,061 --> 01:32:43,557

COUPLE OF WEEKS PAST THE MARS

2320

01:32:48,228 --> 01:32:47,128

FLY BY ON THER WILL BE

2321

01:32:50,464 --> 01:32:48,295

CHECKING OUT THE AND THAT WILL

2322

01:32:52,333 --> 01:32:50,531

BE THE END OF THE PRIMARY

2323

01:32:54,268 --> 01:32:52,400

MISSION FOR THE MARCOS.

2324

01:32:55,536 --> 01:32:54,335

>> AND WE HAVE ONE GO BACK.

2325

01:32:56,136 --> 01:32:55,603

WE HAVE OUR MARCO QUESTION

2326

01:33:01,041 --> 01:32:56,203

EARLIER IN THE SHOW.

2327

01:33:01,342 --> 01:33:01,108

I WANT TO MAKE SURE WE GET IT IN

2328

01:33:01,942 --> 01:33:01,409

NOW.

2329

01:33:03,243 --> 01:33:02,009

ALL RIGHT.

2330

01:33:07,014 --> 01:33:03,310

WELL THEN ANY OTHER QUESTIONS.

2331

01:33:07,448 --> 01:33:07,081

ANY OTHER QUESTNS FOR RCO?

2332

01:33:11,085 --> 01:33:07,515

ALL RIGHT.

2333

01:33:11,885 --> 01:33:11,152

WE GOT ONE IN THE BACK THERE.

2334

01:33:13,787 --> 01:33:11,952

>> HI.

2335

01:33:17,057 --> 01:33:13,854

COULD YOU TALK A LITTLE ABOUT

2336

01:33:20,594 --> 01:33:17,124

HOW MARCO OR EPBTS ITSELF USING

2337

01:33:22,396 --> 01:33:20,661

CONSTELLATIONS?

2338

01:33:25,199 --> 01:33:22,463

>> LIKE MANY OTHER SPACECRAFT

2339

01:33:30,070 --> 01:33:25,266

OUT THERE USES STARS AND STAR

2340

01:33:31,572 --> 01:33:30,137

IDENTIFY HOW ITS ORIENTED WITH

2341

01:33:33,440 --> 01:33:31,639

RESPECT TO THE STARS AND PASS

2342

01:33:33,841 --> 01:33:33,507

THAT ON TO THE BROADER

2343

01:33:34,908 --> 01:33:33,908

SPACECRAFT.

2344

01:33:37,478 --> 01:33:34,975

ONCE WE HAVE THE KNOWLEDGE WE

2345

01:33:39,713 --> 01:33:37,545

USE SMALL REACTION WHEELS, SMALL

2346

01:33:41,115 --> 01:33:39,780

SPINNING WHEELS ON BOARD ALONG

2347

01:33:42,950 --> 01:33:41,182

WITH THIS SYSTEM THAT ANNIE

2348

01:33:43,751 --> 01:33:43,017

DESCRIBED IN ORDER TO TURN

2349

01:33:45,953 --> 01:33:43,818

OURSELVES TO WHERE WE'D LIKE TO

2350

01:33:47,021 --> 01:33:46,020

BE ORIENTED ALONG THE WAY.

2351

01:33:54,228 --> 01:33:47,088

>> ALL RIGHT.

2352

01:33:54,561 --> 01:33:54,295

AND WITH THAT, THANK YOU MARCO

2353

01:33:55,663 --> 01:33:54,628

TEAM.

2354

01:33:58,399 --> 01:33:55,730

[APPLAUSE]

2355

01:33:59,767 --> 01:33:58,466

>> I KNOW WE HAD MORE ASK NASA

2356

01:34:01,602 --> 01:33:59,834

QUESTIONS THAN WE GOT TO.

2357

01:34:03,671 --> 01:34:01,669

WE'LL BE ANSWERING THOSE ONLINE

2358

01:34:05,272 --> 01:34:03,738

ON THE VARIOUS NETWORKS THAT

2359

01:34:06,540 --> 01:34:05,339

THEY CAME IN ON AFTER THE SHOW

2360

01:34:08,142 --> 01:34:06,607

AND ALSO WE'LL BE REFERRING TO

2361

01:34:10,477 --> 01:34:08,209

SOME OF THEM TO THE SUBJECT

2362

01:34:11,011 --> 01:34:10,544

MATTER EXPERTS IN LAUNCH

2363

01:34:12,680 --> 01:34:11,078

COMMENTARY.

2364

01:34:14,948 --> 01:34:12,747

Y CAN INTERACT WITH THE

2365

01:34:16,050 --> 01:34:15,015

MISSION DIRECTLY ONLINE ON

2366

01:34:21,655 --> 01:34:16,117

SOCIAL MEDIA.

2367

01:34:22,389 --> 01:34:21,722

SO JUST GO TO THE HANDLE

2368

01:34:23,624 --> 01:34:22,456

@NASAINSIGHT ON BOTH FACEBOOK

2369

01:34:25,826 --> 01:34:23,691

AND TWITTER AND GET YOUR

2370

01:34:27,294 --> 01:34:25,893

QUESTIONS ANSWERED THROUGH

2371

01:34:28,195 --> 01:34:27,361

LAUNCH AND THROUGH CRUISE AND

2372

01:34:29,530 --> 01:34:28,262

LANDING AND SURFACE OPERATIONS.

2373

01:34:32,332 --> 01:34:29,597

IF YOU WANT TO FIND OUT MORE,

2374

01:34:38,338 --> 01:34:32,399

PLEASE VISIT THE MISSION ONLINE

2375

01:34:38,872 --> 01:34:38,405

AT MARS.NASA.GOV/INSIGHT OR

2376

01:34:41,408 --> 01:34:38,939

NASA.GOV/INSIGHT.

2377

01:34:43,711 --> 01:34:41,475

THE LAUNCH WINDOW FOR IN SIGHT

2378

01:34:46,513 --> 01:34:43,778

OPENS SATURDAY, MAY FIFTH.

2379

01:34:50,918 --> 01:34:46,580

WE'LL BE BACK HERE LIVE ON NASA

2380

01:34:53,387 --> 01:34:50,985

TV AND ALL THE ONLINE SIMULCASTS

2381

01:34:56,023 --> 01:34:53,454

STARTING AT 3:30 PACIFIC

2382

01:35:01,328 --> 01:34:56,090

DAYLIGHT TIME WITH THE LAUNCH

2383

01:35:01,662 --> 01:35:01,395

EXPECTED NO EARLIER THAN

2384

01:35:04,398 --> 01:35:01,729

4:35PDT.

2385

01:35:11,371 --> 01:35:04,465

WITH THAT WE'LL SEE YOU ONLINE