



Dawn Ceres Arrival

March 2, 2015 9 a.m. PT (noon ET, 1700 UTC)

Jim Green

Director, Planetary Science Division
NASA Headquarters, Washington

Robert Mase

Dawn Project Manager, JPL

Carol Raymond

Dawn Deputy Principal Investigator, JPL



LIVE FROM

Jet Propulsion Laboratory
California Institute of Technology



1
00:00:16,215 --> 00:00:11,244
>>> GOOD MORNING, AND WELCOME.

2
00:00:17,917 --> 00:00:16,282
I'M JANE PLAT WITH NASA'S JET

3
00:00:18,518 --> 00:00:17,984
PROPULSION LABORATORY IN

4
00:00:20,920 --> 00:00:18,585
PASADENA, CALIFORNIA.

5
00:00:24,290 --> 00:00:20,987
IN LESS THAN A WEEK, NASA'S DAWN

6
00:00:25,825 --> 00:00:24,357
SPACECRAFT WILL ARRIVE AT THE

7
00:00:27,226 --> 00:00:25,892
DWARF PLANET CERES.

8
00:00:28,361 --> 00:00:27,293
I'D LIKE TO INTRODUCE THREE

9
00:00:29,595 --> 00:00:28,428
SPEAKERS WHO WILL TELL YOU MORE

10
00:00:31,130 --> 00:00:29,662
ABOUT THE HISTORIC MISSION.

11
00:00:32,632 --> 00:00:31,197
JOINING US FROM NASA

12
00:00:35,902 --> 00:00:32,699
HEADQUARTERS IN WASHINGTON WILL

13
00:00:39,205 --> 00:00:35,969

BE JIM GREEN, AND HE IS THE

14

00:00:40,006 --> 00:00:39,272

DIRECTOR OF NASA'S PLANETARY

15

00:00:41,207 --> 00:00:40,073

SCIENCE DIVISION.

16

00:00:43,576 --> 00:00:41,274

WE WILL HEAR FROM TWO SPEAKERS

17

00:00:46,813 --> 00:00:43,643

HERE AT JPL, AS WELL, AND THEY

18

00:00:48,981 --> 00:00:46,880

ARE ROBERT NASE, THE DAWN

19

00:00:52,218 --> 00:00:49,048

PROJECT MANAGER, AND CAROL

20

00:00:52,852 --> 00:00:52,285

RAYMOND, THE DAWN DEPUTY

21

00:00:54,387 --> 00:00:52,919

PRINCIPAL INVESTIGATOR.

22

00:00:56,856 --> 00:00:54,454

BEFORE WE GET STARTED, I'D LIKE

23

00:00:58,925 --> 00:00:56,923

TO INTRODUCE OUR JPL DIRECTOR,

24

00:01:03,563 --> 00:00:58,992

DR. CHARLES AWACHI, WHO WILL

25

00:01:04,197 --> 00:01:03,630

MAKE SOME BRIEF OPENING REMARKS.

26

00:01:06,699 --> 00:01:04,264

>>> GOOD MORNING.

27

00:01:09,735 --> 00:01:06,766

THIS IS A VERY EXCITING WEEK IN

28

00:01:10,136 --> 00:01:09,802

OUR QUEST OF EXPLORING AND

29

00:01:11,537 --> 00:01:10,203

DISCOVERY.

30

00:01:13,139 --> 00:01:11,604

BY THE END OF THIS WEEK AS IT

31

00:01:14,674 --> 00:01:13,206

WAS MENTIONED, DAWN WILL ARRIVE

32

00:01:15,708 --> 00:01:14,741

TO CERES.

33

00:01:17,009 --> 00:01:15,775

FIRST MISSION EVER TO

34

00:01:19,078 --> 00:01:17,076

INVESTIGATE A DWARF PLANET.

35

00:01:21,981 --> 00:01:19,145

IT WILL NOT ONLY VISIT, BUT WE

36

00:01:24,784 --> 00:01:22,048

ARE PLANNING TO MOVE IN AND STAY

37

00:01:25,151 --> 00:01:24,851

AND EXPLORE THAT OBJECT FOR A

38

00:01:26,519 --> 00:01:25,218

YEAR.

39

00:01:27,286 --> 00:01:26,586
AND BEYOND THAT WILL STAY FOR A

40

00:01:29,989 --> 00:01:27,353
LONG TIME AROUND IT.

41

00:01:31,257 --> 00:01:30,056
HERE IN THE ROOM, THERE ARE

42

00:01:32,925 --> 00:01:31,324
SEVERAL DAWN TEAM MEMBERS.

43

00:01:35,294 --> 00:01:32,992
SOME HAVE WORKED ON THIS MISSION

44

00:01:37,396 --> 00:01:35,361
FOR MORE THAN A DECADE.

45

00:01:38,898 --> 00:01:37,463
AND SOME ARE RELATIVELY NEW OR

46

00:01:39,699 --> 00:01:38,965
THIS IS THEIR FIRST MISSION,

47

00:01:40,900 --> 00:01:39,766
SPACE MISSION.

48

00:01:44,170 --> 00:01:40,967
THEY ALL SHOULD BE VERY PROUD OF

49

00:01:45,638 --> 00:01:44,237
THIS AMAZING ACCOMPLISHMENT.

50

00:01:48,608 --> 00:01:45,705
IN ADDITION TO BEING THE FIRST

51
00:01:51,043 --> 00:01:48,675
MISSION TO ORBIT A DWARF PLANET,

52
00:01:53,479 --> 00:01:51,110
DAWN REPRESENTS THE FIRST TIME A

53
00:01:54,080 --> 00:01:53,546
SPACECRAFT ACTUALLY WENT TO

54
00:01:56,015 --> 00:01:54,147
ALIEN OBJECTS.

55
00:01:57,817 --> 00:01:56,082
WE HAD VESTA A FEW YEARS AGO,

56
00:02:00,820 --> 00:01:57,884
AND NOW WE'RE GETTING TO CERES.

57
00:02:02,522 --> 00:02:00,887
THIS OF MADE POSSIBLE BY -- THIS

58
00:02:03,823 --> 00:02:02,589
WAS MADE POSSIBLE BIKE AN

59
00:02:06,526 --> 00:02:03,890
ELECTRIC PROPULSION SYSTEM.

60
00:02:07,760 --> 00:02:06,593
OF COURSE WE ARE VERY EXCITED TO

61
00:02:09,462 --> 00:02:07,827
ARRIVE AT CERES SO WE CAN

62
00:02:12,632 --> 00:02:09,529
UNRAVEL THE MYSTERY OF THE

63
00:02:14,233 --> 00:02:12,699

BRIGHT SPOTS THAT YOU SEE IN THE

64

00:02:16,302 --> 00:02:14,300

PICTURES, AS WELL AS MANY OTHER

65

00:02:18,004 --> 00:02:16,369

FEATURES THAT WILL BE DESCRIBED

66

00:02:18,504 --> 00:02:18,071

TO YOU IN THIS PRESENTATION

67

00:02:20,773 --> 00:02:18,571

LATER.

68

00:02:23,543 --> 00:02:20,840

EVERY TIME WE VISIT A NEW

69

00:02:24,744 --> 00:02:23,610

OBJECT, BE IT THE PLANET OR A

70

00:02:25,144 --> 00:02:24,811

SATELLITE, WE ARE ALWAYS

71

00:02:26,913 --> 00:02:25,211

SURPRISED.

72

00:02:30,249 --> 00:02:26,980

AND WE'RE LOOKING FORWARD FOR

73

00:02:31,851 --> 00:02:30,316

MORE SURPRISES THAT WE ARE GOING

74

00:02:32,218 --> 00:02:31,918

TO FIND AS WE ARE EXPLORING

75

00:02:33,819 --> 00:02:32,285

CERES.

76
00:02:36,055 --> 00:02:33,886
THIS MORNING YOU WILL BE SEEING

77
00:02:38,024 --> 00:02:36,122
IMAGES, NEW IMAGES AND ROTATION

78
00:02:38,391 --> 00:02:38,091
MOVIES OF CERES PRESENTED BY THE

79
00:02:42,295 --> 00:02:38,458
SPEAKERS.

80
00:02:45,398 --> 00:02:42,362
DAWN IS ONE OF ALMOST 20

81
00:02:47,867 --> 00:02:45,465
MISSIONS MANAGED BY JPL THAT ARE

82
00:02:48,267 --> 00:02:47,934
EXPLOING THE SOLAR SYSTEM AND

83
00:02:50,203 --> 00:02:48,334
BEYOND.

84
00:02:51,237 --> 00:02:50,270
WE'RE TOUT ANSWER FUNDAMENTAL

85
00:02:54,207 --> 00:02:51,304
QUESTIONS ABOUT HOW OUR SOLAR

86
00:02:55,041 --> 00:02:54,274
SYSTEM ORIGINATED AND CHANGED

87
00:02:56,542 --> 00:02:55,108
OVER TIME.

88
00:02:58,611 --> 00:02:56,609

PLEASE JOIN ME IN WELCOMING JIM

89
00:03:06,519 --> 00:02:58,678
GREEN, THE DIRECTOR OF PLANETARY

90
00:03:08,054 --> 00:03:06,586
SCIENCE AT NASA HEADQUARTERS.

91
00:03:08,921 --> 00:03:08,121
>> GOOD MORNING, I AM JUST

92
00:03:11,891 --> 00:03:08,988
DELIGHTED THAT DAWN IS NOW RIGHT

93
00:03:14,694 --> 00:03:11,958
ON THE DOORSTEP OF CERES.

94
00:03:15,895 --> 00:03:14,761
YOU KNOW, DAWN IS PART OF WHAT

95
00:03:19,532 --> 00:03:15,962
WE CALL OUR DISCOVERY PROGRAM,

96
00:03:20,433 --> 00:03:19,599
ONE OF MANY MISSIONS THAT OUR

97
00:03:21,867 --> 00:03:20,500
PRINCIPAL INVESTIGATOR LED.

98
00:03:25,371 --> 00:03:21,934
THE PRINCIPAL INVESTIGATOR ON

99
00:03:28,641 --> 00:03:25,438
DAWN IS CHRIS RUSSELL FROM UCLA.

100
00:03:30,209 --> 00:03:28,708
AND CHRIS HAS PUT TOGETHER A

101
00:03:31,544 --> 00:03:30,276
FABULOUS TEAM BOTH NATIONAL

102
00:03:33,646 --> 00:03:31,611
SCIENTISTS BUT ALSO

103
00:03:34,080 --> 00:03:33,713
INTERNATIONAL TEAM MEMBERS AND

104
00:03:38,551 --> 00:03:34,147
INSTRUMENTS.

105
00:03:42,555 --> 00:03:38,618
DAWN IS JUST A TREMENDOUSLY

106
00:03:44,624 --> 00:03:42,622
EXCITING SPACECRAFT AND UNIQUE.

107
00:03:45,992 --> 00:03:44,691
IT HAS ION ENGINES AND IS THE

108
00:03:47,660 --> 00:03:46,059
ONLY ONE WE'VE EVER LAUNCHED TO

109
00:03:54,133 --> 00:03:47,727
BE ABLE TO ORBIT TWO BODIES, AND

110
00:03:56,469 --> 00:03:54,200
IN THIS CASE VESTA AND CERES.

111
00:03:58,738 --> 00:03:56,536
DAWN, AS IT'S NAMED, IS NOT AN

112
00:03:59,038 --> 00:03:58,805
ACRONYM WHICH IS MOST UNUSUAL AT

113
00:03:59,872 --> 00:03:59,105

NASA.

114

00:04:01,540 --> 00:03:59,939

DAWN REALLY TROEFERS WHEN THE

115

00:04:02,608 --> 00:04:01,607

MISSION IS ALL -- REFERS TO WHAT

116

00:04:06,412 --> 00:04:02,675

THE MISSION IS ALL ABOUT.

117

00:04:07,613 --> 00:04:06,479

AND THAT IS GOING BACK IN TIME,

118

00:04:11,584 --> 00:04:07,680

VISITING THE BASIC REALM NANCE

119

00:04:12,818 --> 00:04:11,651

OF OBJECTS THAT COME TOGETHER TO

120

00:04:14,687 --> 00:04:12,885

FORM OUR PLANETS.

121

00:04:18,624 --> 00:04:14,754

SO JUPITER'S KEPT THESE PIECES

122

00:04:22,128 --> 00:04:18,691

APART TESTIMONY'S ALLOWED US NOW

123

00:04:23,262 --> 00:04:22,195

TO GET TO THEM, AND WE'RE GOING

124

00:04:24,730 --> 00:04:23,329

TO BE REALLY EXCITED ABOUT

125

00:04:25,931 --> 00:04:24,797

VISITING CERES AND PUTTING THIS

126
00:04:29,969 --> 00:04:25,998
IN CONTEXT WITH WHAT WE KNOW

127
00:04:34,473 --> 00:04:30,036
ABOUT VESTA AND THE OTHER

128
00:04:35,641 --> 00:04:34,540
ASTEROIDS.ADIEU, ROBERT

129
00:04:37,109 --> 00:04:35,708
MACE WILL TALK TO US ABOUT HOW

130
00:04:39,779 --> 00:04:37,176
DAWN IS GOING TO ACCOMPLISH

131
00:04:40,046 --> 00:04:39,846
GETTING IN ORBIT.

132
00:04:40,846 --> 00:04:40,113
BOB?

133
00:04:43,416 --> 00:04:40,913
>> THANK YOU, JIM.

134
00:04:44,884 --> 00:04:43,483
GOOD MORNING, MY NAME IS BOB

135
00:04:46,285 --> 00:04:44,951
MAYS, AND I'M EXCITED TO BE HERE

136
00:04:47,720 --> 00:04:46,352
TO TELL YOU ABOUT ONE OF THE

137
00:04:49,755 --> 00:04:47,787
COOLEST MISSIONS TO ONE OF THE

138
00:04:50,256 --> 00:04:49,822

LAST UNEXPLORED WORLDS IN THE

139

00:04:51,524 --> 00:04:50,323

SOLAR SYSTEM.

140

00:04:54,026 --> 00:04:51,591

BEYOND THE ORBIT OF MARS BUT

141

00:04:56,162 --> 00:04:54,093

BEFORE YOU GET TO JUPITER IS THE

142

00:04:57,029 --> 00:04:56,229

MAIN ASTEROID BELT AND A PLANET

143

00:05:01,801 --> 00:04:57,096

YOU'VE PROBABLY NEVER HEARD OF

144

00:05:03,569 --> 00:05:01,868

NAMED CERES.

145

00:05:04,904 --> 00:05:03,636

IT WAS DISCOVERED IN 1801 AND

146

00:05:07,473 --> 00:05:04,971

FOR YEARS WAS CONSIDER A PLANET.

147

00:05:09,008 --> 00:05:07,540

LATER IT WAS CALLED AN ASTEROID.

148

00:05:10,176 --> 00:05:09,075

MORE RECENTLY IT WAS CLARIFIED

149

00:05:12,078 --> 00:05:10,243

AS A DWARF PLANET.

150

00:05:13,512 --> 00:05:12,145

WHILE IT MAY BE LABELED AT

151
00:05:15,581 --> 00:05:13,579
DWARF, AT 600 MILES ACROSS, IT'S

152
00:05:15,881 --> 00:05:15,648
THE GIANT OF THE MAIN ASTEROID

153
00:05:16,749 --> 00:05:15,948
BELT.

154
00:05:18,617 --> 00:05:16,816
BEHIND SUBCOMMITTEE ONE OF THE

155
00:05:19,218 --> 00:05:18,684
BEST IMAGES THAT WE HAVE OF THIS

156
00:05:20,820 --> 00:05:19,285
MYSTERIOUS WORLD.

157
00:05:24,023 --> 00:05:20,887
THIS WAS TAKEN JUST A FEW DAYS

158
00:05:26,592 --> 00:05:24,090
AGO WITH THE DAWN SPACECRAFT.

159
00:05:27,093 --> 00:05:26,659
DAWN'S MISSION IS TO EXPLORE THE

160
00:05:29,462 --> 00:05:27,160
ICY WORLD.

161
00:05:31,364 --> 00:05:29,529
WE LAUNCHED BACK IN 2007, AND

162
00:05:36,035 --> 00:05:31,431
FOR THE LAST 7.5 YEARS, WE'VE

163
00:05:37,937 --> 00:05:36,102

BEEN TRAVELING TO GET TO CERES.

164

00:05:39,071 --> 00:05:38,004

LATER THIS WEEK WE'LL BE

165

00:05:41,374 --> 00:05:39,138

CAPTURED INTO ORBIT AND BE THE

166

00:05:41,707 --> 00:05:41,441

FIRST MISSION TO REACH A DWARF

167

00:05:43,709 --> 00:05:41,774

PLANET.

168

00:05:46,312 --> 00:05:43,776

THE CAPTURE WILL OCCUR EARLY

169

00:05:47,179 --> 00:05:46,379

FRIDAY, MARCH 6th, ABOUT 4:20

170

00:05:49,682 --> 00:05:47,246

A.M. LOCAL TIME.

171

00:05:50,316 --> 00:05:49,749

NOW THE CAPTURE ITSELF WILL

172

00:05:52,151 --> 00:05:50,383

OCCUR AT A TIME WHEN THE

173

00:05:53,319 --> 00:05:52,218

SPACECRAFT IS NOT

174

00:05:54,987 --> 00:05:53,386

COMMUNICATING WITH THE EARTH,

175

00:05:56,889 --> 00:05:55,054

BUT SEVERAL HOURS LATER, THE

176

00:05:58,391 --> 00:05:56,956

SPACECRAFT WILL SEND A SIGNAL IN

177

00:06:00,092 --> 00:05:58,458

THE DEEP SPACE NETWORK OF GROWN

178

00:06:02,995 --> 00:06:00,159

ANTENNAS WILL RECEIVE THE SIGNAL

179

00:06:04,163 --> 00:06:03,062

AND CONFIRM THAT INDEED DAWN HAS

180

00:06:05,664 --> 00:06:04,230

CAPTURED INTO ORBIT.

181

00:06:07,099 --> 00:06:05,731

TODAY I'LL GIVE YOU A LITTLE

182

00:06:09,368 --> 00:06:07,166

BACKGROUND ON DAWN AND TELL YOU

183

00:06:11,937 --> 00:06:09,435

HOW WE GOT HERE, AND THEN CAROL

184

00:06:13,572 --> 00:06:12,004

RAYMOND WILL SHOW YOU SOME OF

185

00:06:14,874 --> 00:06:13,639

THE LATEST IMAGES, DESCRIBE THE

186

00:06:16,442 --> 00:06:14,941

SCIENCE AND WHAT WE HOPE TO

187

00:06:19,044 --> 00:06:16,509

LEARN AT CERES.

188

00:06:19,678 --> 00:06:19,111

NOW TO GET THERE IS NO SMALL

189

00:06:20,946 --> 00:06:19,745

FEAT.

190

00:06:22,982 --> 00:06:21,013

CERES IS ABOUT THREE TIMES

191

00:06:23,682 --> 00:06:23,049

FARTHER FROM THE SUN THAN THE

192

00:06:25,217 --> 00:06:23,749

EARTH IS.

193

00:06:26,919 --> 00:06:25,284

TO CAPTURE ENOUGH ENERGY AT

194

00:06:29,655 --> 00:06:26,986

THOSE GREAT DISTANCES, DAWN HAS

195

00:06:29,989 --> 00:06:29,722

THESE TREMENDOUSLY LONG SOLAR

196

00:06:31,957 --> 00:06:30,056

ARRAYS.

197

00:06:34,093 --> 00:06:32,024

THE WING SPAN IS ABOUT 65 FEET

198

00:06:36,095 --> 00:06:34,160

FROM TIP TO TIP, ABOUT THE

199

00:06:38,130 --> 00:06:36,162

DISTANCE FROM PITCHER'S NOUN

200

00:06:39,965 --> 00:06:38,197

HOME PLATE ON -- MOUND TO HOME

201
00:06:40,666 --> 00:06:40,032
PLATE ON A PROFESSIONAL

202
00:06:43,035 --> 00:06:40,733
PITCHER'S MOUND.

203
00:06:43,803 --> 00:06:43,102
THAT MAKES DAWN THE LARGEST

204
00:06:44,804 --> 00:06:43,870
INTERPLANETARY SPACECRAFT THAT

205
00:06:47,540 --> 00:06:44,871
NASA HAS LAUNCHED.

206
00:06:48,207 --> 00:06:47,607
OUR JOURNEY IS MADE POSSIBLE BY

207
00:06:49,842 --> 00:06:48,274
ICON PROPULSION.

208
00:06:50,643 --> 00:06:49,909
THIS ADVANCED SOUNDING

209
00:06:52,111 --> 00:06:50,710
TECHNOLOGY HAS ACTUALLY BEEN

210
00:06:54,346 --> 00:06:52,178
AROUND IN CONCEPT FOR DECADES.

211
00:06:57,716 --> 00:06:54,413
YOU PROBABLY HEARD IT IN SCIENCE

212
00:06:58,117 --> 00:06:57,783
FICTION AND "STAR WARS" AND

213
00:06:59,685 --> 00:06:58,184

"STAR TREK."

214

00:07:02,488 --> 00:06:59,752

AND WHILE WE'RE DEEPLY SADDENED

215

00:07:03,656 --> 00:07:02,555

AT THE LOSS OF ONE OF OUR

216

00:07:05,558 --> 00:07:03,723

FAVORITE ACTORS, IT WAS MR.

217

00:07:07,827 --> 00:07:05,625

SPOCK WHO POINTED OUT THE ALIEN

218

00:07:08,994 --> 00:07:07,894

SHIP WITH THE ADVANCED ION

219

00:07:12,498 --> 00:07:09,061

PROPULSION TECHNOLOGY THAT WAS

220

00:07:14,733 --> 00:07:12,565

FAR MORE ADVANCED THAN ANYTHING

221

00:07:16,635 --> 00:07:14,800

THAT THEY HAD ON THE ENTERPRISE.

222

00:07:19,205 --> 00:07:16,702

AS WE ROLL THE FIRST ANIMATION,

223

00:07:20,940 --> 00:07:19,272

YOU'LL SEE THAT THE

224

00:07:21,740 --> 00:07:21,007

HYPER-EFFICIENT ION ENERGY EMITS

225

00:07:26,846 --> 00:07:21,807

A COOL BLUE GLOW.

226

00:07:29,281 --> 00:07:26,913

THIS IS DUE TO THE ZENON GAS.

227

00:07:32,885 --> 00:07:29,348

THE ATOMS ARE IONIZED AND

228

00:07:34,587 --> 00:07:32,952

ACCELERATED TO THRUSTER AT HIGH

229

00:07:36,188 --> 00:07:34,654

VELOCITIES.

230

00:07:37,490 --> 00:07:36,255

THE ION ENGINE PRODUCED LOW

231

00:07:38,924 --> 00:07:37,557

THRUST, ABOUT AS MUCH AS THIS

232

00:07:39,225 --> 00:07:38,991

PIECE OF PAPER PUSHING ON MY

233

00:07:40,726 --> 00:07:39,292

HAND.

234

00:07:42,761 --> 00:07:40,793

TO PUT IT IN TERMS WE RELATE TO,

235

00:07:44,363 --> 00:07:42,828

WE GO FROM ZERO TO 60 IN ABOUT

236

00:07:47,533 --> 00:07:44,430

HOUR DAYS.

237

00:07:49,902 --> 00:07:47,600

HOWEVER -- IN ABOUT FOUR DAYS.

238

00:07:51,170 --> 00:07:49,969

HOWEVER, IAN ENGINES ARE TEN

239

00:07:51,804 --> 00:07:51,237

TIMES MORE EFFICIENT THAN

240

00:07:53,405 --> 00:07:51,871

CONVENTIONAL SYSTEMS.

241

00:07:54,440 --> 00:07:53,472

WE CAN CONTINUE TO THRUST AND

242

00:07:57,109 --> 00:07:54,507

ACCELERATE FOR DAYS AND WEEKS

243

00:07:58,410 --> 00:07:57,176

AND MONTHS, WHEREAS DAWN HAS NOW

244

00:08:02,548 --> 00:07:58,477

FOR MORE THAN FIVE YEARS TO

245

00:08:04,683 --> 00:08:02,615

GENERATE TREMENDOUS VELOCITIES.

246

00:08:05,684 --> 00:08:04,750

WITH THE 1,000 POUNDS OF

247

00:08:06,418 --> 00:08:05,751

PROPELLANT ON BOARD, DAWN HAS

248

00:08:10,956 --> 00:08:06,485

ALREADY ACCOMPLISHED MORE THAN

249

00:08:11,290 --> 00:08:11,023

2,000 MILES PER HOUR OF VELOCITY

250

00:08:13,459 --> 00:08:11,357

CHANGE.

251
00:08:14,627 --> 00:08:13,526
TO PUT THAT IN CONTEXT, THAT'S

252
00:08:16,695 --> 00:08:14,694
MORE THAN IT FOLKS GET A VEHICLE

253
00:08:18,364 --> 00:08:16,762
FROM THE -- IT TAKES TO GET A

254
00:08:19,198 --> 00:08:18,431
VEHICLE TO THE SURFACE OF THE

255
00:08:21,033 --> 00:08:19,265
EARTH TO THE SPACE STATION.

256
00:08:23,536 --> 00:08:21,100
THIS ION PRO-PULLING ENABLES US

257
00:08:24,870 --> 00:08:23,603
TO -- PROPULSION ENABLES US TO

258
00:08:26,205 --> 00:08:24,937
DO THINGS AND GO PLACES THAT

259
00:08:28,674 --> 00:08:26,272
WOULD BE EXTREMELY EXPENSIVE OR

260
00:08:30,676 --> 00:08:28,741
COMPLETELY IMPOSSIBLE TO DO.

261
00:08:32,511 --> 00:08:30,743
DAWN REALLY CAPITALIZES ON THE

262
00:08:36,615 --> 00:08:32,578
INNOVATIVE TECHNOLOGY TO DELIVER

263
00:08:38,183 --> 00:08:36,682

BIG SCIENCE ON A SMALL BUDGET.

264

00:08:39,652 --> 00:08:38,250

NOW DAWN AND CERES ARE EACH

265

00:08:41,053 --> 00:08:39,719

TRAVELING AROUND THE SUN AT

266

00:08:42,388 --> 00:08:41,120

THOUSANDS OF MILES PER HOUR, BUT

267

00:08:45,691 --> 00:08:42,455

RELATIVE TO EACH OTHER THEY

268

00:08:47,693 --> 00:08:45,758

APPEAR TO BE MOVING SLOWLY.

269

00:08:50,596 --> 00:08:47,760

AS WE ROLL THE NEXT VIDEO,

270

00:08:52,965 --> 00:08:50,663

YOU'LL SEE THE SPACECRAFT EASE

271

00:08:53,899 --> 00:08:53,032

UP NEXT TO CERES AND BE GENTLY

272

00:08:55,935 --> 00:08:53,966

CAPTURED INTO ORBIT.

273

00:08:58,604 --> 00:08:56,002

AT ITS CLOSEST APPROACH, DAWN IS

274

00:08:59,672 --> 00:08:58,671

WITHIN ABOUT 25,000 MILES OF

275

00:09:03,108 --> 00:08:59,739

CERES, ABOUT TEN TIMES CLOSER

276

00:09:04,944 --> 00:09:03,175

THAN THE MOON IS TO THE EARTH.

277

00:09:06,412 --> 00:09:05,011

THEN OVER THE NEXT MONTH, WE'LL

278

00:09:09,848 --> 00:09:06,479

RESHAPE THE ORBIT, AND WE'LL GET

279

00:09:10,316 --> 00:09:09,915

READY TO BEGIN THE PRIME SCIENCE

280

00:09:12,251 --> 00:09:10,383

PHASE.

281

00:09:13,752 --> 00:09:12,318

NOTE THAT THE SPACECRAFT

282

00:09:16,755 --> 00:09:13,819

APPROACH ON THE LIT SIDE OF THE

283

00:09:17,556 --> 00:09:16,822

PLANET AND THEN WENT OVER TO THE

284

00:09:18,791 --> 00:09:17,623

DARK SIDE.

285

00:09:21,260 --> 00:09:18,858

WE'VE BEEN TAKING IMAGES THE

286

00:09:22,528 --> 00:09:21,327

LAST SEVERAL WEEKS OF CERES

287

00:09:23,729 --> 00:09:22,595

NICELY LIT UP IN FRONT OF US.

288

00:09:24,930 --> 00:09:23,796

HOWEVER, WE'RE NOW THE DARK

289

00:09:26,231 --> 00:09:24,997

SIDE, SO WE'RE GOING TO HAVE A

290

00:09:28,300 --> 00:09:26,298

BLACKOUT FOR ABOUT THE NEXT

291

00:09:30,402 --> 00:09:28,367

MONTH UNTIL WE GET BACK TOWARD

292

00:09:32,738 --> 00:09:30,469

THE LIT SIDE OF THE BODY.

293

00:09:34,506 --> 00:09:32,805

THEN THE FLOODGATES WILL OPEN

294

00:09:35,374 --> 00:09:34,573

WHEN WE GET TO THE FIRST SCIENCE

295

00:09:37,009 --> 00:09:35,441

ORBIT IN LATE APRIL.

296

00:09:38,277 --> 00:09:37,076

IF WE COULD ROLL THE THIRD

297

00:09:39,778 --> 00:09:38,344

ANIMATION, YOU'LL SEE THAT ONE

298

00:09:42,247 --> 00:09:39,845

THE PRIME SCIENCE CAMPAIGN

299

00:09:43,015 --> 00:09:42,314

BEGINS, THE MISSION PROFILE WILL

300

00:09:44,717 --> 00:09:43,082

ALTERNATE BETWEEN TAKING DATA

301
00:09:46,752 --> 00:09:44,784
WITH ALL OF OUR INSTRUMENTS AND

302
00:09:49,655 --> 00:09:46,819
USING THE ION ENGINE TO SPIRAL

303
00:09:50,923 --> 00:09:49,722
DOWN TO LOWER AND LOWER ORBITS.

304
00:09:53,392 --> 00:09:50,990
OUR MISSION DESIGNERS HAVE

305
00:09:55,160 --> 00:09:53,459
PLANNED A SEQUENCE OF FOUR LOWER

306
00:09:57,796 --> 00:09:55,227
AND LOWER ORBITS AND WILL GET TO

307
00:09:59,698 --> 00:09:57,863
OUR FINAL ORBIT IN DECEMBER OF

308
00:10:00,933 --> 00:09:59,765
THIS YEAR AT JUST 235 MILES

309
00:10:02,101 --> 00:10:01,000
ABOVE THE SURFACE.

310
00:10:04,269 --> 00:10:02,168
AGAIN, FOR CONTEXT, THAT'S JUST

311
00:10:04,970 --> 00:10:04,336
A LITTLE BIT LOWER THAN THE

312
00:10:07,306 --> 00:10:05,037
INTERNATIONAL SPACE STATION

313
00:10:08,641 --> 00:10:07,373

ORBITS AROUND THE EARTH.

314

00:10:10,909 --> 00:10:08,708
FROM THIS VANTAGE POINT, DAWN

315

00:10:12,811 --> 00:10:10,976
WILL ACQUIRE ITS HIGHEST DETAIL

316

00:10:14,747 --> 00:10:12,878
AND HIGHEST RESOLUTION IMAGES OF

317

00:10:15,714 --> 00:10:14,814
THE SURFACE.

318

00:10:18,017 --> 00:10:15,781
THE PRIME SCIENCE CAMPAIGN WILL

319

00:10:20,119 --> 00:10:18,084
LAST THROUGH JUNE OF 2016 WHICH

320

00:10:21,253 --> 00:10:20,186
WILL PROVIDE -- 2016 WHICH WILL

321

00:10:22,688 --> 00:10:21,320
PROVIDE ENOUGH TIME FOR DAWN TO

322

00:10:23,088 --> 00:10:22,755
ACCOMPLISH ALL OF ITS SCIENTIFIC

323

00:10:25,357 --> 00:10:23,155
OBJECTIVES.

324

00:10:26,158 --> 00:10:25,424
SO TO WRAP UP, THE SPACECRAFT'S

325

00:10:28,460 --> 00:10:26,225
IN EXCELLENT CONDITION.

326

00:10:29,194 --> 00:10:28,527

THE APPROACH HAS GONE FLAWLESSLY

327

00:10:31,063 --> 00:10:29,261

SO FAR.

328

00:10:35,167 --> 00:10:31,130

AND OUR OUTSTANDING TEAM HAS

329

00:10:39,471 --> 00:10:35,234

DAWN ON COURSE AND ON SCHEDULE

330

00:10:41,006 --> 00:10:39,538

FOR ITS RENDEZVOUS WITH CERES.

331

00:10:43,308 --> 00:10:41,073

I'LL HAND IT OVER TO CAROL

332

00:10:44,510 --> 00:10:43,375

RAYMOND TO TALK ABOUT THE

333

00:10:44,877 --> 00:10:44,577

SIGNIFICANT WORLD WE'RE ABOUT TO

334

00:10:46,145 --> 00:10:44,944

EXPLORE.

335

00:10:48,080 --> 00:10:46,212

>> THANK YOU, BOB.

336

00:10:48,814 --> 00:10:48,147

GOOD MORNING, EVERYONE.

337

00:10:51,717 --> 00:10:48,881

WHILE CERES HAS REALLY SURPRISED

338

00:10:52,985 --> 00:10:51,784

US AND PRODUCED THE -- THE FIRST

339

00:10:54,753 --> 00:10:53,052

IMAGES HAVE PRODUCED PUZZLING

340

00:10:59,258 --> 00:10:54,820

FEATURES THAT'S GOTTEN THE TEAM

341

00:10:59,992 --> 00:10:59,325

AND I THINK MANY PEOPLE VERY

342

00:11:01,427 --> 00:11:00,059

EXCITED.

343

00:11:04,163 --> 00:11:01,494

IN FIRST MOVIE THIS I'M SHOWING,

344

00:11:05,531 --> 00:11:04,230

THIS IS A MOVIE THAT WAS

345

00:11:06,799 --> 00:11:05,598

OBTAINED ON FEBRUARY 19th, WHEN

346

00:11:08,067 --> 00:11:06,866

THE SPACECRAFT STOPPED

347

00:11:10,636 --> 00:11:08,134

THRUSTING, TURNED ITS CAMERA

348

00:11:13,005 --> 00:11:10,703

TOWARD CERES, AND WATCHED CERES

349

00:11:14,606 --> 00:11:13,072

FOR A FULL 9.1-HOUR ROTATION.

350

00:11:17,342 --> 00:11:14,673

HAS A RESOLUTION OF ABOUT FOUR

351
00:11:18,610 --> 00:11:17,409
KILOMETERS PER PIXEL OR ABOUT

352
00:11:20,512 --> 00:11:18,677
2.2 MILES PER PIXEL.

353
00:11:21,947 --> 00:11:20,579
AND ONE OF THE FIRST THINGS YOU

354
00:11:24,383 --> 00:11:22,014
NOTICE LOOKING AT IT STANDS OUT

355
00:11:24,883 --> 00:11:24,450
VERY CLEARLY IS HOW ROUND CERES

356
00:11:27,219 --> 00:11:24,950
IS.

357
00:11:29,922 --> 00:11:27,286
AND CERES' ROUNDNESS IS ONE OF

358
00:11:31,523 --> 00:11:29,989
ITS PLANETARY CHARACTERISTICS.

359
00:11:33,459 --> 00:11:31,590
WE ALSO KNOW THAT CERES IS MUCH

360
00:11:36,395 --> 00:11:33,526
LIGHTER THAN THE ROCKY PLANETS.

361
00:11:37,596 --> 00:11:36,462
SO WE KNOW IT RETAINED A LOT OF

362
00:11:38,363 --> 00:11:37,663
WATER AND LIGHT VOLATILE

363
00:11:44,636 --> 00:11:38,430

ELEMENTS THAT WERE PRESENT IN

364

00:11:44,970 --> 00:11:44,703

THE SOLAR NEBULA WHEN CERES WAS

365

00:11:46,672 --> 00:11:45,037

FORMED.

366

00:11:49,074 --> 00:11:46,739

AND IN THIS SENSE IT'S LIKE THE

367

00:11:54,780 --> 00:11:49,141

ICY MOONS OF THE OUTER SOLAR

368

00:11:56,548 --> 00:11:54,847

SYSTEM, OBJECTS LIKE EUROROPA.

369

00:11:59,084 --> 00:11:56,615

THE MOON AND VESTA HAVE MELTED

370

00:12:00,519 --> 00:11:59,151

AND BOILED OFF THE WATER AND THE

371

00:12:03,756 --> 00:12:00,586

LIGHT ELEMENTS, AND LEAVING THEM

372

00:12:05,524 --> 00:12:03,823

DRY AND ROCKY.

373

00:12:06,725 --> 00:12:05,591

SO ITSELF CHARLES AND JIM

374

00:12:08,393 --> 00:12:06,792

MENTIONED, ONE OF THE PRIME

375

00:12:12,631 --> 00:12:08,460

MOTIVATIONS OF THE DAWN MISSION

376

00:12:14,299 --> 00:12:12,698

IS TO EXAMINE THESE BUILDING

377

00:12:17,069 --> 00:12:14,366

BLOCKS OF THE PLANETS VESTA AND

378

00:12:17,936 --> 00:12:17,136

CERES WHICH ARE TWO INTACT

379

00:12:18,804 --> 00:12:18,003

PROTOPLANETS FROM THE DAWN OF

380

00:12:21,707 --> 00:12:18,871

THE SOLAR SYSTEM.

381

00:12:26,044 --> 00:12:21,774

SO THEY'RE LITERALLY FOSSILS

382

00:12:27,446 --> 00:12:26,111

THAT WE CAN INVESTIGATE TO

383

00:12:28,947 --> 00:12:27,513

REALLY UNDERSTAND THE PROCESSES

384

00:12:30,749 --> 00:12:29,014

THAT WERE GOING ON AT THAT TIME.

385

00:12:31,750 --> 00:12:30,816

IN THIS IMAGE MOSAIC, IT'S A

386

00:12:34,453 --> 00:12:31,817

FLAT MAP MADE FROM THE DATA THAT

387

00:12:37,356 --> 00:12:34,520

YOU SAW IN THE MOVIE, AND IN THE

388

00:12:38,657 --> 00:12:37,423

INITIAL VIEWS OF CERES, WE SUE

389

00:12:40,793 --> 00:12:38,724

MANY STLANCHLG FEATURES.

390

00:12:43,662 --> 00:12:40,860

WE SEE SMOOTH AREAS, SOME AREAS

391

00:12:48,433 --> 00:12:43,729

THAT ARE CHAOTICALLY FRACTURED,

392

00:12:49,668 --> 00:12:48,500

AND WE SEE CRATERS OF ALL SIZES.

393

00:12:51,537 --> 00:12:49,735

THE SHAPES AND SIZES OF THE

394

00:12:53,939 --> 00:12:51,604

CRATERS WILL ALLOW US TO TEST

395

00:12:57,342 --> 00:12:54,006

THE HYPOTHESIS THAT THERE IS A

396

00:13:00,512 --> 00:12:57,409

SUBSURFACE ICE LAYER ON CERES.

397

00:13:06,351 --> 00:13:00,579

OF PARTICULAR INTEREST ARE THE

398

00:13:07,085 --> 00:13:06,418

BRIGHT SPOTS WHICH APPEAR MAINLY

399

00:13:08,754 --> 00:13:07,152

IN LOW LATITUDES AND STAND OUT

400

00:13:10,856 --> 00:13:08,821

AGAINST CERES' DARK SURFACE.

401
00:13:14,760 --> 00:13:10,923
IN THE NEXT GRAPHIC, WE WILL

402
00:13:15,060 --> 00:13:14,827
FOCUS ON THE TWO VERY BRIGHT

403
00:13:17,129 --> 00:13:15,127
SPOTS.

404
00:13:20,232 --> 00:13:17,196
NOW SUFFICE IT TO SAY THESE

405
00:13:23,769 --> 00:13:20,299
SPOTS WERE EXTREMELY SURPRISING

406
00:13:26,071 --> 00:13:23,836
TO THE TEAM, AND THEY HAVE BEEN

407
00:13:27,739 --> 00:13:26,138
PUZZLING TO THE TEAM AND TO

408
00:13:30,809 --> 00:13:27,806
EVERYBODY WHO'S SEEN THEM.

409
00:13:32,978 --> 00:13:30,876
THEY SHOW UP IN A 92-KILOMETER

410
00:13:33,812 --> 00:13:33,045
CRATER THAT'S ABOUT 19 DEGREES

411
00:13:36,348 --> 00:13:33,879
NORTH LATITUDE.

412
00:13:37,883 --> 00:13:36,415
THE SPOT IN THE CENTER IS ABOUT

413
00:13:39,952 --> 00:13:37,950

TWICE AS BRIGHT AS THE SPOT ON

414

00:13:41,820 --> 00:13:40,019

THE SIDE OF THE CRATER.

415

00:13:43,055 --> 00:13:41,887

AND AS YET IT HAS NOT BEEN

416

00:13:45,290 --> 00:13:43,122

RESOLVED, MEANING IT'S SMALLER

417

00:13:45,591 --> 00:13:45,357

THAN THE FOUR-KILOMETER PIXEL

418

00:13:48,293 --> 00:13:45,658

SIZE.

419

00:13:49,328 --> 00:13:48,360

BUT ITS APPARENT BRIGHTNESS IS

420

00:13:52,965 --> 00:13:49,395

ALREADY OFF SCALE, IT'S

421

00:13:53,832 --> 00:13:53,032

CONSISTENT WITH HIGHLY

422

00:13:56,602 --> 00:13:53,899

REFLECTIVE MATERIALS WHICH MAY

423

00:13:58,136 --> 00:13:56,669

CONTAIN ICE OR SALTS.

424

00:14:00,672 --> 00:13:58,203

SO THIS EXTREME BRIGHTNESS WAS

425

00:14:03,275 --> 00:14:00,739

REALLY UNEXPECTED, BUT IN 2014,

426

00:14:06,211 --> 00:14:03,342

IT WAS REPORTED THAT THE

427

00:14:08,213 --> 00:14:06,278

EUROPEAN SPACE AGENCY'S HERSCHEL

428

00:14:09,648 --> 00:14:08,280

SPACE OBSERVATORY DETECTED WATER

429

00:14:11,116 --> 00:14:09,715

VAPOR AROUND CERES COMING FROM

430

00:14:12,818 --> 00:14:11,183

TWO LONGITUDE SECTORS.

431

00:14:15,754 --> 00:14:12,885

THIS CRATER IS LOCATED IN ONE OF

432

00:14:17,356 --> 00:14:15,821

THOSE LONGITUDE SECTORS, SO IT

433

00:14:19,391 --> 00:14:17,423

MIGHT BE RELATED TO THE WATER

434

00:14:20,959 --> 00:14:19,458

VAPOR EMISSION.

435

00:14:23,462 --> 00:14:21,026

AND ITS ASSOCIATION WITH THE

436

00:14:26,031 --> 00:14:23,529

IMPACT CRATER MAY INDICATE THE

437

00:14:28,901 --> 00:14:26,098

IMPACT HEATING RESULTED IN

438

00:14:30,469 --> 00:14:28,968

EXPOSURE OF UNDERLYING ICE, ITS

439

00:14:33,972 --> 00:14:30,536

VAPOR SITUATION, AND PERHAPS

440

00:14:35,908 --> 00:14:34,039

WE'RE -- VAPORIZATION, AND

441

00:14:37,109 --> 00:14:35,975

PERHAPS WE'RE SEEING A DEPOSIT

442

00:14:37,676 --> 00:14:37,176

LEFT BEHIND THAT'S RICH IN

443

00:14:39,378 --> 00:14:37,743

MATERIAL LIKE SALTS.

444

00:14:40,779 --> 00:14:39,445

THE TEAM IS REALLY, REALLY

445

00:14:42,481 --> 00:14:40,846

EXCITED ABOUT THIS FEATURE

446

00:14:45,550 --> 00:14:42,548

BECAUSE IT IS UNIQUE IN THE

447

00:14:48,720 --> 00:14:45,617

SOLAR SYSTEM.

448

00:14:50,322 --> 00:14:48,787

AND WE WILL BE REVEALING ITS

449

00:14:51,356 --> 00:14:50,389

TRUE NATURE AS WE GET CLOSER AND

450

00:14:52,791 --> 00:14:51,423

CLOSER TO THE SURFACE.

451
00:14:56,461 --> 00:14:52,858
SO THE MYSTERY WILL BE SOLVED.

452
00:14:57,462 --> 00:14:56,528
BUT IT IS ONE THAT'S GOT US ON

453
00:15:00,465 --> 00:14:57,529
THE EDGE OF OUR SEATS.

454
00:15:02,167 --> 00:15:00,532
NOW IN THE NEXT GRAPHIC, I'LL

455
00:15:03,335 --> 00:15:02,234
FOCUS ON A LARGE BASIN WHICH IS

456
00:15:06,505 --> 00:15:03,402
OUTLINED IN THE BOX HERE.

457
00:15:07,506 --> 00:15:06,572
THIS BASIN IS ABOUT 300

458
00:15:09,541 --> 00:15:07,573
KILOMETERS ACROSS.

459
00:15:10,208 --> 00:15:09,608
AND I FOCUS ON THIS BECAUSE IT

460
00:15:12,611 --> 00:15:10,275
LOOKS RATHER SMOOTH.

461
00:15:13,378 --> 00:15:12,678
WE EXPECTED THE SURFACE OF CERES

462
00:15:15,714 --> 00:15:13,445
WOULD BE SMOOTH.

463
00:15:17,683 --> 00:15:15,781

ESPECIALLY AROUND THE EQUATOR

464

00:15:18,350 --> 00:15:17,750

BECAUSE WE EXPECT A SUBSURFACE

465

00:15:20,953 --> 00:15:18,417

ICE LAYER.

466

00:15:21,954 --> 00:15:21,020

AND AS THE TEMPERATURE OF CERES

467

00:15:24,056 --> 00:15:22,021

SURFACE, ICE CAN SLOW.

468

00:15:26,658 --> 00:15:24,123

AND OVER TIME, CRATERS CAN

469

00:15:26,992 --> 00:15:26,725

RELAX, SO BASICALLY THEY GET

470

00:15:29,928 --> 00:15:27,059

ERASED.

471

00:15:30,395 --> 00:15:29,995

AND THIS BASIN HAS SUCH

472

00:15:32,197 --> 00:15:30,462

CHARACTERISTICS.

473

00:15:34,032 --> 00:15:32,264

HAS A VERY FAINT OUTLINE OF A

474

00:15:35,968 --> 00:15:34,099

RIM, IT'S NOT AS DEEP AS WE

475

00:15:36,568 --> 00:15:36,035

WOULD EXPECT FOR AN IMPACT

476
00:15:38,670 --> 00:15:36,635
CRATER.

477
00:15:39,371 --> 00:15:38,737
AND IT ACTUALLY SHOWS SOME

478
00:15:40,872 --> 00:15:39,438
MOUNDS INSIDE.

479
00:15:42,741 --> 00:15:40,939
HAS A SMOOTH APPEARANCE.

480
00:15:45,444 --> 00:15:42,808
SO THIS MAY BE AN EXAMPLE OF ONE

481
00:15:47,612 --> 00:15:45,511
OF THESE RELAXED BASINS.

482
00:15:49,114 --> 00:15:47,679
WE ALSO SEE SIMILAR SHALLOW

483
00:15:51,616 --> 00:15:49,181
CRATERS NEARBY.

484
00:15:54,019 --> 00:15:51,683
SO THIS MAY INDICATE A DISTINCT

485
00:15:55,253 --> 00:15:54,086
-- REGION OF DISTINCT GEOLOGIC

486
00:15:56,989 --> 00:15:55,320
PROCESSES.

487
00:15:58,090 --> 00:15:57,056
AND AS DAWN GOES THROUGH ITS

488
00:16:00,525 --> 00:15:58,157

COMPREHENSIVE MAPPING, WE'LL

489

00:16:01,660 --> 00:16:00,592

OBTAIN THE DATA THAT WE NEED TO

490

00:16:02,661 --> 00:16:01,727

UNDERSTAND WHAT THIS COMPLEX

491

00:16:07,265 --> 00:16:02,728

STRUCTURE IS TELLING US ABOUT

492

00:16:08,967 --> 00:16:07,332

THE SUBSURFACE.

493

00:16:11,703 --> 00:16:09,034

IN THE NEXT MOVIE, I WANTED TO

494

00:16:13,071 --> 00:16:11,770

TURN BACK TO VESTA AND GIVE YOU

495

00:16:15,073 --> 00:16:13,138

A COUPLE OF HIGHLIGHTS.

496

00:16:17,042 --> 00:16:15,140

SO THIS MOVIE DEMONSTRATES THE

497

00:16:19,177 --> 00:16:17,109

RESULTS OF DAWN'S 14-MONTH

498

00:16:20,879 --> 00:16:19,244

INVESTIGATION OF VESTA THAT

499

00:16:23,048 --> 00:16:20,946

REVEALED A COMPLEX WORLD GIANT

500

00:16:24,449 --> 00:16:23,115

IMPACT BASINS, TECTONIC

501
00:16:25,984 --> 00:16:24,516
FRACTURING, A DIVERSITY OF

502
00:16:27,319 --> 00:16:26,051
SURFACE MINERALS, AND

503
00:16:29,554 --> 00:16:27,386
SIGNIFICANTLY DAWN DISCOVERED

504
00:16:32,290 --> 00:16:29,621
HYDROGEN ON THE SURFACE OF THIS

505
00:16:35,127 --> 00:16:32,357
DRY, ROCKY PROTOPLANET.

506
00:16:36,728 --> 00:16:35,194
AND IT -- THE HYDROGEN IS

507
00:16:38,063 --> 00:16:36,795
ASSOCIATED WITH DARK CARBON-

508
00:16:39,698 --> 00:16:38,130
RICH MATERIAL WHICH WE BELIEVE

509
00:16:43,235 --> 00:16:39,765
WAS DELIVERED TO THE SURFACE OF

510
00:16:44,870 --> 00:16:43,302
VESTA BY IMPACTS OF WET

511
00:16:46,705 --> 00:16:44,937
VOLATILE-RICH ASTEROIDS.

512
00:16:48,206 --> 00:16:46,772
ASTEROIDS LIKE CERES.

513
00:16:49,975 --> 00:16:48,273

SO IF THESE ASTEROIDS WERE

514

00:16:51,476 --> 00:16:50,042

DELIVERING VOLATILES TO VESTA,

515

00:16:53,812 --> 00:16:51,543

THEY ALSO WERE DELIVERING THOSE

516

00:16:55,580 --> 00:16:53,879

-- THE WATER TO THE INNER

517

00:16:56,915 --> 00:16:55,647

PLANETS INCLUDING THE EARTH.

518

00:16:58,316 --> 00:16:56,982

AND THIS IS ONE OF THE

519

00:17:01,053 --> 00:16:58,383

CONNECTIONS THAT WE WANT TO MAKE

520

00:17:04,222 --> 00:17:01,120

WITH THE DAWN MISSION.

521

00:17:07,526 --> 00:17:04,289

IN THE NEXT VIDEO, THIS

522

00:17:10,028 --> 00:17:07,593

DEMONSTRATES A FLYOVER OF THE

523

00:17:12,064 --> 00:17:10,095

68-KILOMETER MARCH CRATE OR

524

00:17:13,198 --> 00:17:12,131

VESTA WHERE WE SAW EVIDENCE OF

525

00:17:15,000 --> 00:17:13,265

GASES ESCAPING FROM THE CENTER

526
00:17:16,501 --> 00:17:15,067
OF THE CRATER LEAVING THESE

527
00:17:20,005 --> 00:17:16,568
TELLTALE PITS.

528
00:17:22,040 --> 00:17:20,072
AND THE GAS, LIKELY WATER VAPOR

529
00:17:27,512 --> 00:17:22,107
WAS RELEASED BY IMPACT SHOCK

530
00:17:28,747 --> 00:17:27,579
HEATING RELEASING THE WATER FROM

531
00:17:29,948 --> 00:17:28,814
THE DARK MATERIAL THAT WAS

532
00:17:33,018 --> 00:17:30,015
BURIED IN THE SURFACE.

533
00:17:33,718 --> 00:17:33,085
OUR EXPLORING OF CERES IS GOING

534
00:17:35,120 --> 00:17:33,785
TO REVEAL A SIMILAR DATA SET

535
00:17:36,121 --> 00:17:35,187
FROM WHICH WE WILL BE ABLE TO

536
00:17:37,756 --> 00:17:36,188
ANSWER THE MANY QUESTIONS THAT

537
00:17:41,359 --> 00:17:37,823
ARE BEING RAISED BY THE IMAGES

538
00:17:45,697 --> 00:17:41,426

WE'RE SEEING TODAY.

539

00:17:48,667 --> 00:17:45,764

MY LAST GRAPHIC IS ANOTHER MOVIE

540

00:17:49,301 --> 00:17:48,734

WHICH HAS BEEN ENHANCED TO SHOW

541

00:17:51,470 --> 00:17:49,368

THE SURFACE RELIEF.

542

00:17:52,437 --> 00:17:51,537

AND OVER THE COURSE OF 16

543

00:17:55,540 --> 00:17:52,504

MONTHS, DAWN WILL COLLECT

544

00:17:59,644 --> 00:17:55,607

COMPREHENSIVE DATA SETS ON CERES

545

00:18:02,380 --> 00:17:59,711

REVEALING ITS SHAPE, SURFACE

546

00:18:03,748 --> 00:18:02,447

FEATURES, THE MINERALOLOGY AND

547

00:18:05,350 --> 00:18:03,815

ELEMENTAL COSM ZIG, WHETHER THE

548

00:18:06,118 --> 00:18:05,417

SURFACE -- ELEMENTAL

549

00:18:08,920 --> 00:18:06,185

COMPOSITION, WHETHER THE SURFACE

550

00:18:15,727 --> 00:18:08,987

IS ACTIVE, AND HOW CERES FORMED.

551
00:18:18,163 --> 00:18:15,794
WE CAN UNDERSTAND WHAT ROLE

552
00:18:18,763 --> 00:18:18,230
BUILDING BLOCKS BLOCKS CERES HAD

553
00:18:19,231 --> 00:18:18,830
IN FORMING PLANETARY

554
00:18:19,898 --> 00:18:19,298
NEIGHBORHOODS.

555
00:18:23,301 --> 00:18:19,965
CERES WILL BE REVEALED IN

556
00:18:24,636 --> 00:18:23,368
STUNNING DETAIL JUST LIKE VESTA.

557
00:18:25,403 --> 00:18:24,703
NOW I'LL TURN IT BACK TO JANE

558
00:18:25,937 --> 00:18:25,470
FOR QUESTIONS.

559
00:18:29,674 --> 00:18:26,004
>> ALL RIGHT.

560
00:18:30,242 --> 00:18:29,741
THANK YOU, CAROL AND BOB AND JIM

561
00:18:31,042 --> 00:18:30,309
AND CHARLES.

562
00:18:35,480 --> 00:18:31,109
WE'RE GOING TO TAKE QUESTIONS

563
00:18:36,515 --> 00:18:35,547

BOTH FROM THE AUDITORIUM HERE AT

564

00:18:37,716 --> 00:18:36,582

JPL AND VIA THE PHONE LINES,

565

00:18:39,184 --> 00:18:37,783

REPORTERS IN VARIOUS LOCATIONS.

566

00:18:43,688 --> 00:18:39,251

DO WE HAVE A QUESTION HERE AT

567

00:18:45,290 --> 00:18:43,755

JPL TO START THINGS OFF?

568

00:18:46,758 --> 00:18:45,357

IF SO, PLEASE RAISE YOUR HAND

569

00:18:47,025 --> 00:18:46,825

AND WAIT FOR THE MIKE TO COME TO

570

00:18:48,426 --> 00:18:47,092

YOU.

571

00:18:54,833 --> 00:18:48,493

WHEN YOU GET THE MIKE, STATE

572

00:18:59,371 --> 00:18:54,900

YOUR NAME AND MEDIA AFFILIATION.

573

00:18:59,671 --> 00:18:59,438

OKAY, LET'S GET A MIKE OVER

574

00:19:00,505 --> 00:18:59,738

HERE.

575

00:19:02,974 --> 00:19:00,572

I SHOULD MENTION THAT IF YOU'RE

576
00:19:04,509 --> 00:19:03,041
ON THE PHONE AND WOULD LIKE TO

577
00:19:07,546 --> 00:19:04,576
ASK A QUESTION, PRESS STAR-ONE

578
00:19:08,713 --> 00:19:07,613
SO THE OPERATOR CAN GET YOU INTO

579
00:19:09,047 --> 00:19:08,780
THE QUEUE.

580
00:19:10,882 --> 00:19:09,114
ALICIA?

581
00:19:12,050 --> 00:19:10,949
>> ALICIA CHANG FROM A.P.

582
00:19:13,752 --> 00:19:12,117
ROBERT, CAN YOU GIVE MORE

583
00:19:15,220 --> 00:19:13,819
DETAILS ABOUT FRIDAY'S TIMELINE?

584
00:19:15,554 --> 00:19:15,287
WHEN DO YOU EXPECT TO GET A

585
00:19:16,988 --> 00:19:15,621
SIGNAL?

586
00:19:18,957 --> 00:19:17,055
DO YOU EXPECT ANY DRAMATIC

587
00:19:19,958 --> 00:19:19,024
MOMENT DURING THE ORBIT CAPTURE?

588
00:19:20,458 --> 00:19:20,025

THANKS.

589

00:19:22,861 --> 00:19:20,525

>> ALL RIGHT.

590

00:19:24,062 --> 00:19:22,928

SO THE QUESTION IS WHEN WILL WE

591

00:19:25,897 --> 00:19:24,129

GET THE SIGNAL, AND WHAT WILL

592

00:19:27,832 --> 00:19:25,964

THE MOMENT BE LIKE.

593

00:19:28,700 --> 00:19:27,899

SO AS I DESCRIBED, THE CAPTURE

594

00:19:30,268 --> 00:19:28,767

EVENT ITSELF IS GOING TO OCCUR

595

00:19:31,836 --> 00:19:30,335

AT A TIME WHEN THE SPACECRAFT'S

596

00:19:32,304 --> 00:19:31,903

NOT IN COMMUNICATION WITH THE

597

00:19:33,905 --> 00:19:32,371

EARTH.

598

00:19:34,940 --> 00:19:33,972

AND SO THERE WILL BE LITERALLY

599

00:19:38,376 --> 00:19:35,007

NOTHING TO WATCH AT THE TIME

600

00:19:40,178 --> 00:19:38,443

THAT IT HAPPENS.

601
00:19:43,448 --> 00:19:40,245
SO THERE WON'T BE THE TYPE OF

602
00:19:44,216 --> 00:19:43,515
DRAMATIC MISSION CONTROL ROOM

603
00:19:50,589 --> 00:19:44,283
EVENT THAT YOU HAVE PERHAPS SEEN

604
00:19:51,690 --> 00:19:50,656
SOME OTHER MISSIONS.

605
00:19:53,425 --> 00:19:51,757
LATER IN THE DAY, LATER THAT

606
00:19:54,626 --> 00:19:53,492
MORNING, WE'LL HAVE A TRACK WITH

607
00:19:56,027 --> 00:19:54,693
THE DEEP SPACE NETWORK.

608
00:19:57,295 --> 00:19:56,094
THE SIGNAL WILL COME BACK.

609
00:19:59,431 --> 00:19:57,362
AROUND EARLY AFTERNOON IS WHEN

610
00:20:00,332 --> 00:19:59,498
WE'LL GET THE CONFIRMATION OF

611
00:20:03,568 --> 00:20:00,399
SIGNAL AND REALLY THAT WILL BE

612
00:20:07,205 --> 00:20:03,635
THE TIME AT WHICH WE SAY INDEED

613
00:20:08,573 --> 00:20:07,272

CAPTURE HAS OCCURRED AT THE

614

00:20:09,107 --> 00:20:08,640

PREVIOUS TIME.

615

00:20:13,111 --> 00:20:09,174

>> OKAY.

616

00:20:13,445 --> 00:20:13,178

WE HAVE A QUESTION IN THE SECOND

617

00:20:14,679 --> 00:20:13,512

ROW.

618

00:20:16,181 --> 00:20:14,746

>> THANK YOU.

619

00:20:18,250 --> 00:20:16,248

HI, ROD PYLE FROM SPACE.COM.

620

00:20:20,151 --> 00:20:18,317

I HATE TO ASK YOU TO SPECULATE,

621

00:20:21,586 --> 00:20:20,218

BUT WHAT KIND OF GEOLOGICAL

622

00:20:23,521 --> 00:20:21,653

ACTIVITY DO YOU THINK WE MIGHT

623

00:20:27,826 --> 00:20:23,588

EXPECT, AND HOW MUCH OF THAT

624

00:20:28,927 --> 00:20:27,893

WILL BE DUE TO TIDAL FORCES AND

625

00:20:31,396 --> 00:20:28,994

OTHER THINGS?

626
00:20:32,998 --> 00:20:31,463
>> SO FIRST OF ALL, THERE AREN'T

627
00:20:33,331 --> 00:20:33,065
STRONG TIDAL FORCES AFFECTING

628
00:20:37,435 --> 00:20:33,398
CERES.

629
00:20:39,804 --> 00:20:37,502
BUT CERES IS MUCH CLOSER TO THE

630
00:20:41,539 --> 00:20:39,871
SUN THAN THE JUPITER MOONS OR

631
00:20:44,542 --> 00:20:41,606
MOONS OF THE OUTER SOLAR SYSTEM.

632
00:20:44,876 --> 00:20:44,609
SO THE MAIN ENERGY SOURCE IS

633
00:20:46,911 --> 00:20:44,943
SOLAR.

634
00:20:49,347 --> 00:20:46,978
WHAT KIND OF ACTIVITY OR

635
00:20:51,149 --> 00:20:49,414
PROCESSES THAT WE WOULD EXPECT

636
00:20:53,818 --> 00:20:51,216
IS, AS I MENTIONED BEFORE, THAT

637
00:20:56,021 --> 00:20:53,885
THE ICE MAY BE HAVE THE ABILITY

638
00:20:56,988 --> 00:20:56,088

TO BLOW TO BECAUSE IT'S WARMER

639

00:21:00,892 --> 00:20:57,055

-- TO FLOW BECAUSE IT'S WARMER

640

00:21:06,598 --> 00:21:00,959

THAN THE ICY MOONS.

641

00:21:07,265 --> 00:21:06,665

AND THERE IS A POSSIBILITY OF

642

00:21:08,033 --> 00:21:07,332

CONVECTION THAT COULD BE

643

00:21:09,434 --> 00:21:08,100

BRINGING MATERIAL UP FROM THE

644

00:21:13,271 --> 00:21:09,501

ROCKY CORE TO THE SURFACE.

645

00:21:15,540 --> 00:21:13,338

SO WE ARE LOOKING FOR EVIDENCE

646

00:21:22,714 --> 00:21:15,607

OF MATERIAL ON THE SURFACE THAT

647

00:21:23,515 --> 00:21:22,781

APPEARS TO HAVE ORIGINATED AT

648

00:21:25,050 --> 00:21:23,582

THE WATER/ROCK BOUNDARY BECAUSE

649

00:21:26,351 --> 00:21:25,117

WE SUSPECT THERE WAS A

650

00:21:26,651 --> 00:21:26,418

SUBSURFACE OCEAN EARLY ON IN

651
00:21:27,552 --> 00:21:26,718
CERES.

652
00:21:28,887 --> 00:21:27,619
THOSE ARE THE TYPES OF THINGS

653
00:21:30,488 --> 00:21:28,954
WE'RE LOOKING FOR AND ANY KIND

654
00:21:33,658 --> 00:21:30,555
OF CRACKING OF THE SURFACE WHICH

655
00:21:34,526 --> 00:21:33,725
MIGHT INDICATE THAT THERE'S SOME

656
00:21:36,961 --> 00:21:34,593
COMMUNICATION BETWEEN THE

657
00:21:37,862 --> 00:21:37,028
SUBSURFACE AND THE SURFACE.

658
00:21:38,997 --> 00:21:37,929
>> WE'RE GOING TO TAKE A

659
00:21:39,297 --> 00:21:39,064
QUESTION FROM THE PHONE LINES

660
00:21:44,803 --> 00:21:39,364
NOW.

661
00:21:45,303 --> 00:21:44,870
THIS ONE COMES FROM MIKE WALL AT

662
00:21:47,972 --> 00:21:45,370
SPACE.COM.

663
00:21:48,406 --> 00:21:48,039

MIKE?

664

00:21:49,074 --> 00:21:48,473

>> HI, GUYS.

665

00:21:50,842 --> 00:21:49,141

THANK YOU FOR DOING THIS.

666

00:21:52,243 --> 00:21:50,909

THIS IS REALLY EXCITING FOR ALL

667

00:21:54,112 --> 00:21:52,310

OF US WHO ARE FINALLY GOING TO

668

00:21:56,214 --> 00:21:54,179

GET A LOOK AT CERES.

669

00:21:57,349 --> 00:21:56,281

YEAH, YOU MENTIONED, CAROL, THAT

670

00:22:00,485 --> 00:21:57,416

THERE WERE PLUMES KIND OF

671

00:22:03,688 --> 00:22:00,552

OBSERVED ON CERES.

672

00:22:05,056 --> 00:22:03,755

DO YOU GUYS HAVE ANY -- ANY

673

00:22:07,192 --> 00:22:05,123

PLANS TO ACTUALLY INVESTIGATE

674

00:22:07,492 --> 00:22:07,259

THOSE PLUMES, TO TRY TO CONFIRM

675

00:22:11,429 --> 00:22:07,559

THEM?

676
00:22:12,697 --> 00:22:11,496
CAN DAWN ACTUALLY CONFIRM IF

677
00:22:14,466 --> 00:22:12,764
THERE ARE PLUMES OR IF THE

678
00:22:15,300 --> 00:22:14,533
PLUMES WERE THE RESULT OF A

679
00:22:17,202 --> 00:22:15,367
METEORITE IMPACT?

680
00:22:18,069 --> 00:22:17,269
WHAT ARE YOUR PLANS GOING

681
00:22:22,006 --> 00:22:18,136
FORWARD WITH THAT DURING YOUR

682
00:22:26,945 --> 00:22:22,073
TIME IN ORBIT AROUND CERES?

683
00:22:28,580 --> 00:22:27,012
>> SO FIRST OF ALL, THE -- WHAT

684
00:22:32,617 --> 00:22:28,647
HERSCHEL SAW DOESN'T NECESSARILY

685
00:22:34,219 --> 00:22:32,684
INDICATE THERE ARE PLUMES.

686
00:22:41,626 --> 00:22:34,286
THE RATE OF WATER VAPOR MISSION

687
00:22:42,994 --> 00:22:41,693
THEY INFERRED WAS VERY LOW.

688
00:22:43,762 --> 00:22:43,061

IF ANYTHING, THERE WOULD BE

689

00:22:47,132 --> 00:22:43,829

FAINT JETS COMING FROM THE

690

00:22:50,568 --> 00:22:47,199

SURFACE IF THEY ARE LOCALIZED.

691

00:22:54,773 --> 00:22:50,635

DAWN'S INSTRUMENTATION IS NOT --

692

00:22:59,043 --> 00:22:54,840

IS NOT MEANT TO LOOK FOR THESE

693

00:22:59,444 --> 00:22:59,110

KINDS OF FEATURES OR TRANSIENT

694

00:23:00,945 --> 00:22:59,511

PHENOMENON.

695

00:23:04,516 --> 00:23:01,012

BUT WE ARE USING OUR PAYLOAD TO

696

00:23:05,917 --> 00:23:04,583

DO THE BEST JOB WE CAN TO LOOK

697

00:23:07,886 --> 00:23:05,984

FOR THEM.

698

00:23:09,087 --> 00:23:07,953

SO WE WILL BE MAKING

699

00:23:10,155 --> 00:23:09,154

OBSERVATIONS IN FORWARD

700

00:23:12,223 --> 00:23:10,222

SCATTERED LIGHT TO LOOK FOR DUST

701
00:23:13,858 --> 00:23:12,290
THAT'S BEEN LEVITATED FROM THE

702
00:23:17,529 --> 00:23:13,925
SURFACE BY GAS EMISSIONS.

703
00:23:20,498 --> 00:23:17,596
AND OF COURSE, WE CAN USE OUR IR

704
00:23:22,066 --> 00:23:20,565
SPECTROMETER TO LOOK FOR WATER

705
00:23:22,967 --> 00:23:22,133
VAPOR IN A TENUOUS ATMOSPHERE

706
00:23:24,569 --> 00:23:23,034
AROUND CERES.

707
00:23:29,641 --> 00:23:24,636
WE PIG MAKING THOSE MEASUREMENTS

708
00:23:34,446 --> 00:23:29,708
AS WE GET INTO OUR FIRST SCIENCE

709
00:23:35,447 --> 00:23:34,513
ORBIT LATE IN APRIL.

710
00:23:36,381 --> 00:23:35,514
OUR NEXT QUESTION FROM ELLEN

711
00:23:37,682 --> 00:23:36,448
BOYLE FROM NBC NEWS.

712
00:23:38,516 --> 00:23:37,749
GOOD MORNING, ELLEN.

713
00:23:39,517 --> 00:23:38,583

>> GOOD MORNING.

714

00:23:39,984 --> 00:23:39,584

I THINK THIS IS PROBABLY FOR

715

00:23:43,955 --> 00:23:40,051

CAROL.

716

00:23:44,255 --> 00:23:44,022

I WANTED TO ASK ABOUT THE BRIGHT

717

00:23:45,590 --> 00:23:44,322

SPOTS.

718

00:23:46,724 --> 00:23:45,657

IT LOOKS AS IF THERE'S A

719

00:23:52,797 --> 00:23:46,791

REFLECTION THAT COMES STRAIGHT

720

00:23:54,065 --> 00:23:52,864

IN TO CERES' CAMERA ON THE EDGE.

721

00:23:54,432 --> 00:23:54,132

I GUESS THAT'S REFLECTED

722

00:23:55,600 --> 00:23:54,499

SUNLIGHTS.

723

00:23:56,868 --> 00:23:55,667

IS THERE ANY REASON, HAVE YOU

724

00:23:57,168 --> 00:23:56,935

FIGURED OUT THE GEOMETRY FOR

725

00:24:01,439 --> 00:23:57,235

THAT?

726

00:24:03,508 --> 00:24:01,506

IT SOUND AS IF THERE REALLY

727

00:24:04,676 --> 00:24:03,575

WON'T BE ANY OBSERVATIONS WHICH

728

00:24:05,810 --> 00:24:04,743

CERES IS ON THE DARK SIDE.

729

00:24:08,880 --> 00:24:05,877

SHOULD OUR EXPECTATION BE THAT

730

00:24:12,584 --> 00:24:08,947

THERE WON'T BE ANY IMAGERY UNTIL

731

00:24:12,951 --> 00:24:12,651

SOMETIME IN APRIL?

732

00:24:13,918 --> 00:24:13,018

THANK YOU.

733

00:24:16,054 --> 00:24:13,985

>> YEAH, THAT'S CORRECT.

734

00:24:19,324 --> 00:24:16,121

WE'RE NOT GOING TO BE GETTING

735

00:24:21,159 --> 00:24:19,391

ANY NEW DATA UNTIL WE EMERGE

736

00:24:23,461 --> 00:24:21,226

FROM THIS TRIP AROUND THE DARK

737

00:24:25,763 --> 00:24:23,528

SIDE OF CERES.

738

00:24:28,399 --> 00:24:25,830

SO AS WE GET INTO OUR FIRST

739

00:24:32,170 --> 00:24:28,466

SCIENCE ORBIT, THE RC3 ORBIT, WE

740

00:24:33,004 --> 00:24:32,237

WILL BE GETTING BETTER

741

00:24:36,975 --> 00:24:33,071

RESOLUTION, AND IN ADDITION

742

00:24:38,510 --> 00:24:37,042

WE'RE WORKING ON THE CORRECTION

743

00:24:40,745 --> 00:24:38,577

TO THE IMAGE DATA TO MAKE SURE

744

00:24:42,780 --> 00:24:40,812

THAT WE'RE TAKING INTO ACCOUNT

745

00:24:48,853 --> 00:24:42,847

HOW THE GEOMETRY AFFECTS HOW WE

746

00:24:50,388 --> 00:24:48,920

SEE THINGS ON THE SURFACE.

747

00:24:51,489 --> 00:24:50,455

WE'RE STILL IN EARLY STAGES OF

748

00:24:54,926 --> 00:24:51,556

HAVING AN ACCURATE PICTURE OF

749

00:24:59,764 --> 00:24:54,993

WHAT THE REFLECTIVE

750

00:25:01,633 --> 00:24:59,831

CHARACTERISTICS ARE.

751
00:25:07,805 --> 00:25:01,700
OUR NEXT QUESTION BY PHONE LINE

752
00:25:08,139 --> 00:25:07,872
IS FROM ALEXANDER WHIKSY AT

753
00:25:09,073 --> 00:25:08,206
NATURE.

754
00:25:09,407 --> 00:25:09,140
>> THIS IS ALSO FOR CAROL RAY

755
00:25:12,043 --> 00:25:09,474
MANNED.

756
00:25:12,377 --> 00:25:12,110
I WANTED TO ASK SPECIFICALLY --

757
00:25:14,012 --> 00:25:12,444
RAYMOND.

758
00:25:15,980 --> 00:25:14,079
I WANTED TO ASK ABOUT THE

759
00:25:16,447 --> 00:25:16,047
POSSIBILITY OF CRYOVULCANNISM IN

760
00:25:20,919 --> 00:25:16,514
BRIGHT SPOTS.

761
00:25:24,155 --> 00:25:20,986
THE PRESS RELEASE LAST WEEK

762
00:25:25,156 --> 00:25:24,222
SUGGESTED THAT VOLCANIC

763
00:25:26,357 --> 00:25:25,223

PROCESSES MIGHT BE IN PLACE.

764

00:25:28,660 --> 00:25:26,424

HOW WOULD IT DIFFER FROM, FOR

765

00:25:34,966 --> 00:25:28,727

INSTANCE, EXPOSING ICE FROM A

766

00:25:37,101 --> 00:25:35,033

METER YEARITE IMPACT.

767

00:25:39,304 --> 00:25:37,168

>> A CRY -- METEORITE IMPACT.

768

00:25:40,104 --> 00:25:39,371

>> A CRYOVOLCANO WOULD OCCUR IN

769

00:25:41,606 --> 00:25:40,171

A STRUCTURAL FEATURE.

770

00:25:45,944 --> 00:25:41,673

WE WOULD EXPECT TO SEE A MOUNDED

771

00:25:50,448 --> 00:25:46,011

FEATURE ON THE SURFACE, SOME

772

00:25:51,215 --> 00:25:50,515

SORT OF DEPOSIT AROUND A CENTRAL

773

00:25:54,085 --> 00:25:51,282

EVENT OR CRACK.

774

00:25:57,422 --> 00:25:54,152

IN THE CASE OF THIS CRATER, WHAT

775

00:26:00,391 --> 00:25:57,489

WE CAN SAY IS THAT THE BRIGHTEST

776

00:26:05,029 --> 00:26:00,458

SPOT IS NOT ASSOCIATED WITH A

777

00:26:05,997 --> 00:26:05,096

POSITIVE RELIEF FEATURE, I.E., A

778

00:26:13,671 --> 00:26:06,064

MOUND OR A PEAK.

779

00:26:15,139 --> 00:26:13,738

SO IT'S NOT A CRYOVOLCANO IS NOT

780

00:26:15,707 --> 00:26:15,206

AT THE TOP OF THE LIST FOR THAT

781

00:26:16,407 --> 00:26:15,774

FEATURE.

782

00:26:17,241 --> 00:26:16,474

OKAY, WE HAVE MORE QUESTIONS

783

00:26:19,110 --> 00:26:17,308

FROM THE PHONE.

784

00:26:22,347 --> 00:26:19,177

WE'LL GET TO THOSE IN A SECOND.

785

00:26:25,049 --> 00:26:22,414

AGAIN, IF ANYBODY HERE AT JPL

786

00:26:25,350 --> 00:26:25,116

DOES HAVE A QUESTION, RAISE YOUR

787

00:26:28,353 --> 00:26:25,417

HAND.

788

00:26:28,853 --> 00:26:28,420

RIGHT NOW WE'RE GOING TO GO TO A

789

00:26:33,358 --> 00:26:28,920

PHONE QUESTION.

790

00:26:33,958 --> 00:26:33,425

AND THAT IS FROM ROBERT HOLTZ AT

791

00:26:34,926 --> 00:26:34,025

"WALL STREET JOURNAL."

792

00:26:37,862 --> 00:26:34,993

>> HI, THANK YOU FOR MAKING TIME

793

00:26:40,898 --> 00:26:37,929

FOR ALL THIS.

794

00:26:43,067 --> 00:26:40,965

I WONDER IF YOU COULD REVIEW THE

795

00:26:46,938 --> 00:26:43,134

BACKGROUND FOR ME ON TWO ISSUES.

796

00:26:49,207 --> 00:26:47,005

ONE, WHAT'S THE CURRENT STATE OF

797

00:26:51,676 --> 00:26:49,274

THE EVIDENCE FOR SUBSURFACE ICE

798

00:27:03,488 --> 00:26:51,743

AND THE THOUGHT THAT THERE WAS

799

00:27:04,555 --> 00:27:03,555

AT ONE TIME A PRIMORDIAL OCEAN,

800

00:27:06,424 --> 00:27:04,622

QUESTION MARK FOR CAROL I THINK.

801
00:27:08,226 --> 00:27:06,491
>> WE KNOW BEFORE DAWN ARRIVED

802
00:27:09,994 --> 00:27:08,293
AT CAREERES FROM ITS SHAPE WHICH

803
00:27:11,562 --> 00:27:10,061
WAS DETERMINED -- CERES FROM ITS

804
00:27:12,363 --> 00:27:11,629
SHAPE WHICH WAS DETERMINED FROM

805
00:27:14,866 --> 00:27:12,430
HUBBLE SPACE TELESCOPE AND THE

806
00:27:17,201 --> 00:27:14,933
DENSITY OF CERES, WE KNOW CERES

807
00:27:18,069 --> 00:27:17,268
RETAINED A LOT OF VOLATILES, AS

808
00:27:20,138 --> 00:27:18,136
I MENTIONED.

809
00:27:24,375 --> 00:27:20,205
ITS SHAPE IS CONSISTENT WITH THE

810
00:27:26,444 --> 00:27:24,442
-- WITH A DIFFERENTIATION INTO A

811
00:27:26,444 --> 00:27:26,511
ROCKY CORE AND AN ICEMAN TELE.

812
00:27:26,511 --> 00:27:28,913
AND IF YOU -- ICE
MANTLE.