



1  
00:01:04,100 --> 00:01:06,900  
ALL THIS INFORMATION WILL BE  
AVAILABLE TODAY AND OVER THE

2  
00:01:06,900 --> 00:01:10,100  
NEXT SEVERAL DAYS WEEKS AND  
MONTHS.

3  
00:01:10,100 --> 00:01:20,640  
BEFORE WE GET STARTED LET ME  
INTRODUCE YOU TO OUR PANELISTS.

4  
00:01:20,640 --> 00:01:30,130  
FIRST UP, JOHN BRUNSFELD FIVE  
TIME ASTRONAUT AND LET ME ADD

5  
00:01:30,130 --> 00:01:34,420  
THAT NEW HORIZONS IS ONE OF  
ALMOST 100 MISSIONS UNDER HIS

6  
00:01:34,420 --> 00:01:35,460  
PORTFOLIO.

7  
00:01:35,460 --> 00:01:37,540  
ALLEN STERN.

8  
00:01:37,540 --> 00:01:44,250  
PRINCIPAL INVESTIGATORS FOR  
HORIZONS FOR THE INSTITUTE IN

9  
00:01:44,250 --> 00:01:47,240  
BOULDER, COLORADO.

10  
00:01:47,240 --> 00:01:53,670  
GLEN FOUNTAIN, PROJECT MANAGER  
FOR THE MISSION AT JOHNS HOPKINS

11  
00:01:53,670 --> 00:01:58,799  
LABORATORY.

12

00:01:58,799 --> 00:02:05,350

AND CATHY ALT KEN A SCIENTIST IN  
BOULDER.

13

00:02:05,350 --> 00:02:07,060

WITH THAT I'LL TURN IT OVER TO  
JOHN.

14

00:02:07,060 --> 00:02:10,750

>> THANK YOU VERY MUCH, IT  
REALLY IS INCREDIBLY EXCITING TO

15

00:02:10,750 --> 00:02:17,540

BE HERE ON THIS EVE OF OUR PLUTO  
FLY BY WE'RE 21 HOURS, 17

16

00:02:17,540 --> 00:02:22,090

MINUTES, 38 SECONDS AWAY, BUT  
WHO IS COUNTING.

17

00:02:22,090 --> 00:02:32,019

OUR MISSION AT NASA IS TO  
INNOVATE, DISCOVER.

18

00:02:32,019 --> 00:02:37,900

INNOVATIVE SPACECRAFT IS  
EXPLORING A NEW REALM OF OUR

19

00:02:37,900 --> 00:02:41,910

SOLAR SYSTEM AND ONE THAT HAS  
ALREADY PRODUCED A NUMBER OF

20

00:02:41,910 --> 00:02:46,790

DISCOVERIES AND I AM POSITIVE  
WILL CREATE ENORMOUS BUZZ IN THE

21

00:02:46,790 --> 00:02:49,110

SCIENTIFIC WORLD.

22

00:02:49,110 --> 00:02:54,960

IT CHARACTERIZES THE ESSENCE OF  
WHAT WE DO AT NASA.

23

00:02:54,960 --> 00:02:57,870

I'M EXCITED ABOUT THIS MISSION  
FOR A NUMBER OF REASONS.

24

00:02:57,870 --> 00:03:01,960

YOU KNOW, ONE OF WHICH IS IT IS  
IN FACT OPENING UP A NEW REALM

25

00:03:01,960 --> 00:03:06,040

OF EXPLORATION, NOT ONLY FOR  
PLUTO BUT WHERE IT GOES

26

00:03:06,040 --> 00:03:07,040

AFTERWARDS.

27

00:03:07,040 --> 00:03:13,209

WE'RE LOOKING FOR LOTS OF  
OPPORTUNITIES AND INSPIRATION.

28

00:03:13,209 --> 00:03:20,239

IT'S A BUZZ HERE AT THE JOHNS  
HOPKINS APPLIED PHYSICS LAB WITH

29

00:03:20,239 --> 00:03:23,150

LOTS OF SCIENTISTS AND  
ENGINEERS.

30

00:03:23,150 --> 00:03:26,760

WHAT THIS MISSION IS ALL ABOUT  
IS THE EXTRAORDINARY THINGS NASA

31

00:03:26,760 --> 00:03:30,990

CAN DO AS A TEAM WITH OUR  
PARTNERS, WITH TAXPAYER

32

00:03:30,990 --> 00:03:33,729  
INVESTMENT TO PRODUCE WONDERFUL  
SCIENCE.

33  
00:03:33,729 --> 00:03:36,799  
SCIENCE THAT ANSWERS QUESTIONS  
ABOUT WHERE WE COME FROM, WHERE

34  
00:03:36,799 --> 00:03:42,140  
WE'RE GOING, AND IN ESSENCE,  
TRYING TO ANSWER EVEN A BIGGER

35  
00:03:42,140 --> 00:03:44,340  
QUESTION, WHICH IS ARE WE ALONE  
IN THE UNIVERSE.

36  
00:03:44,340 --> 00:03:49,600  
THE PLUTO SYSTEM IS A FOSSIL  
REMNANT OF THE BEGINNINGS OF OUR

37  
00:03:49,600 --> 00:03:50,750  
SOLAR SYSTEM.

38  
00:03:50,750 --> 00:03:56,070  
WE'LL LEARN ABOUT WHERE WE'RE  
COMING FROM IN TERMS OF THE

39  
00:03:56,070 --> 00:03:58,459  
BUILDING BLOCKS OF THE SOLAR  
SYSTEM.

40  
00:03:58,459 --> 00:04:00,840  
WITH THAT I'D LIKE TO TURN IT  
OVER TO OUR PRINCIPAL

41  
00:04:00,840 --> 00:04:02,259  
INVESTIGATOR ALLEN STERN.

42  
00:04:02,259 --> 00:04:05,549  
>> GOOD MORNING, EVERYBODY.

43

00:04:05,549 --> 00:04:07,930

IT SOUNDS LIKE SCIENCE FICTION  
BUT IT'S NOT.

44

00:04:07,930 --> 00:04:12,080

TOMORROW MORNING, THE UNITED  
STATES SPACECRAFT WILL FLY BY

45

00:04:12,080 --> 00:04:16,090

THE PLUTO SYSTEM AND MAKE  
HISTORY.

46

00:04:16,090 --> 00:04:20,930

I THINK THIS IS A GREAT EXAMPLE  
OF A GREAT SOCIETY AND A GREAT

47

00:04:20,930 --> 00:04:23,750

NATION AND WHAT GREAT NATIONS  
DO.

48

00:04:23,750 --> 00:04:26,811

AND I HAVE TO TELL YOU, THE DATA  
THAT WE'RE GOING TO PRODUCE, IN

49

00:04:26,811 --> 00:04:30,180

FACT THE DATA WE'RE ALREADY  
PRODUCING, IS A GIFT FOR THE

50

00:04:30,180 --> 00:04:34,150

AGES, TO ALL MAN KIND.

51

00:04:34,150 --> 00:04:37,470

THE SCIENCE THAT WE'VE ALREADY  
MADE AND IF WE CAN SHOW THE

52

00:04:37,470 --> 00:04:42,190

APPROACH VIDEO, IS ALREADY MOUTH  
WATERING.

53  
00:04:42,190 --> 00:04:46,510  
THE PLUTO SYSTEM IS ENCHANTING  
IN ITS STRANGENESS AND ALIEN

54  
00:04:46,510 --> 00:04:47,510  
BEAUTY.

55  
00:04:47,510 --> 00:04:50,759  
IT'S SHOWING US TREMENDOUS  
DIVERSITY BETWEEN THE TWO

56  
00:04:50,759 --> 00:04:54,440  
PLANETS IN THE SYSTEM AND  
THEY'RE MOONS.

57  
00:04:54,440 --> 00:05:00,010  
WE ARE ALREADY SEEING A COMPLEX  
AND NUANCED SURFACES THAT TELL

58  
00:05:00,010 --> 00:05:06,410  
US OF A HISTORY FOR THESE TWO  
BODIES THAT IS PROBABLY BEYOND

59  
00:05:06,410 --> 00:05:10,410  
OUR WILDEST DREAMS ON A SCIENCE  
TEAM.

60  
00:05:10,410 --> 00:05:13,460  
PLUTO HAS NOT DISAPPOINTED.

61  
00:05:13,460 --> 00:05:17,460  
I WANT TO TELL YOU A FEW THINGS  
THAT ARE NEW THAT ARE JUST BEING

62  
00:05:17,460 --> 00:05:18,900  
RELEASED NOW.

63  
00:05:18,900 --> 00:05:21,940  
THAT WE HAVE LEARNED IN THE LAST

48 HOURS.

64

00:05:21,940 --> 00:05:26,940  
WE HAVE DISCOVERED THAT WE ARE  
ALREADY DETECTING NITROGEN

65

00:05:26,940 --> 00:05:31,040  
ESCAPING FROM PLUTO'S ATMOSPHERE  
AND THE IMPORTANT PART OF THAT

66

00:05:31,040 --> 00:05:34,810  
IS IT WAS DISCOVERED FIVE DAYS  
AGO MUCH FURTHER FROM PLUTO THAN

67

00:05:34,810 --> 00:05:37,010  
WE ANTICIPATED.

68

00:05:37,010 --> 00:05:40,060  
THIS MAY MEAN THAT PLUTO'S  
ESCAPE RATE IS HIGHER THAN

69

00:05:40,060 --> 00:05:42,070  
MODELS THAT'S SHOWN.

70

00:05:42,070 --> 00:05:44,380  
OR IT MAY MEAN THAT THE  
TRANSPORT MECHANISM IS DIFFERENT

71

00:05:44,380 --> 00:05:45,560  
THAN WHAT WE ANTICIPATED.

72

00:05:45,560 --> 00:05:52,250  
WE HAVE ALSO DISCOVERED THAT THE  
PUNITIVE POLAR CAP ON PLUTO'S

73

00:05:52,250 --> 00:05:55,370  
NORTH POLE IS, IN FACT, JUST  
THAT.

74

00:05:55,370 --> 00:06:03,960  
WE NOW HAVE COMPOSITIONAL  
SPECTROSCOPY.

75  
00:06:03,960 --> 00:06:07,530  
IT IS AN ICY POLAR CAP AFTER  
ALL.

76  
00:06:07,530 --> 00:06:15,870  
OUR ULTIMATE VIOLET WHO LEADS  
OUR ATMOSPHERE TEAM WILL HAVE

77  
00:06:15,870 --> 00:06:20,120  
MORE TO SAY ABOUT THAT IN THE  
COMING DAY OR SO.

78  
00:06:20,120 --> 00:06:23,030  
WE'VE DISCOVERED PLUTO'S A  
LITTLE BIT LARGER THAN WE

79  
00:06:23,030 --> 00:06:24,270  
ANTICIPATED.

80  
00:06:24,270 --> 00:06:26,590  
WE NOW HAVE GOOD MEASUREMENTS OF  
ITS DIAMETER.

81  
00:06:26,590 --> 00:06:28,570  
AND ITS RADIUS.

82  
00:06:28,570 --> 00:06:38,160  
ITS RADIUS IS 1,185 KILOMETERS  
PLUS OR MINUS TEN.

83  
00:06:38,160 --> 00:06:41,060  
IT HAS IMPORTANT SCIENTIFIC  
IMPLICATIONS.

84  
00:06:41,060 --> 00:06:44,750  
BECAUSE IT'S LARGER AND WE'VE

KNOWN ITS MASS FOR A LONG TIME.

85

00:06:44,750 --> 00:06:48,610

THAT MEANS IT'S A LITTLE LESS  
DENSE WHICH WILL RAISE THE

86

00:06:48,610 --> 00:06:53,240

FRACTION OF ICE IN THE INTERIOR  
THAT MODELERS WILL NEED TO

87

00:06:53,240 --> 00:06:55,500

COMPENSATE THE ROCK IN THE  
INTERIOR.

88

00:06:55,500 --> 00:07:00,040

IT MEANS BECAUSE IT'S LARGER,  
THAT TROPOSPHERE THE LOWEST

89

00:07:00,040 --> 00:07:04,950

LAYER IN THE ATMOSPHERE IS  
SHALLOWER THAN SOME MODELS HAD

90

00:07:04,950 --> 00:07:06,760

PREDICTED.

91

00:07:06,760 --> 00:07:09,210

THE LARGER RADIUS HAS LARGER  
IMPLICATIONS AS WELL.

92

00:07:09,210 --> 00:07:12,639

YOU'LL BE HEARING ABOUT THOSE IN  
THE COMING DAYS.

93

00:07:12,639 --> 00:07:15,430

I'M LOOKING FORWARD TO WHAT  
WE'RE GOING TO BE DOING.

94

00:07:15,430 --> 00:07:19,870

YOU KNOW, IN JUST SPACE OF 24  
HOURS, OUR RESOLUTION ON THE

95

00:07:19,870 --> 00:07:28,860

PLANET IS GOING TO JUMP FOR 15  
KILOMETERS PER PIXEL

96

00:07:28,860 --> 00:07:32,380

TO 200  
PIXELS.

97

00:07:32,380 --> 00:07:33,940

FASTEN YOUR SEAT BELTS.

98

00:07:33,940 --> 00:07:36,569

NEW HORIZONS HAS ARRIVED AT THE  
PLUTO SYSTEM.

99

00:07:36,569 --> 00:07:39,000

>> THANKS, ALLEN.

100

00:07:39,000 --> 00:07:45,510

I'VE SAID FOR A LONG TIME THAT  
THE ENGINEERS WOULD BE HAVING

101

00:07:45,510 --> 00:07:48,770

THE EXCITEMENT ON LAUNCH AND  
SOME OF THE TRAVEL THROUGH THE

102

00:07:48,770 --> 00:07:51,639

SOLAR SYSTEM AND I'LL TELL YOU A  
LITTLE BIT ABOUT THAT.

103

00:07:51,639 --> 00:07:53,710

SOME OF OUR LAST CHALLENGES.

104

00:07:53,710 --> 00:07:58,180

BUT IT'S NOW TIME FOR THE  
SCIENTISTS TO GIVE US THE

105

00:07:58,180 --> 00:07:59,180

EXCITEMENT.

106

00:07:59,180 --> 00:08:01,930

I THINK AS YOU JUST HEARD FROM ALLEN, THEY'RE NOT GOING TO

107

00:08:01,930 --> 00:08:03,050

DISAPPOINT.

108

00:08:03,050 --> 00:08:07,260

SO I'D LIKE TO PUT UP A GRAPHIC FOR THE MOMENT JUST TO REMIND

109

00:08:07,260 --> 00:08:11,510

YOU THIS HAS BEEN A CHALLENGING MISSION.

110

00:08:11,510 --> 00:08:13,650

SOME OF YOU HAVE SEEN THIS GRAPHIC BEFORE.

111

00:08:13,650 --> 00:08:18,590

THE PHOTOGRAPHS OF THE SPACECRAFT AS IT WAS BEING

112

00:08:18,590 --> 00:08:20,652

PREPARED FOR LAUNCH BACK IN 2006.

113

00:08:20,652 --> 00:08:24,820

AND YOU CAN GET A SENSE OF IT.

114

00:08:24,820 --> 00:08:29,300

IT'S LIKE A CONCERT GRAND PIANO WITH A BIG SALAD BOWL ON TOP.

115

00:08:29,300 --> 00:08:37,180

IT HAS AN ANTENNA WHICH ALLOWS US TO COMMUTE BACK.

116

00:08:37,180 --> 00:08:42,750

WE HAVE HAD THIS SYSTEM  
OPERATING FOR 9 AND A HALF

117

00:08:42,750 --> 00:08:43,750

YEARS.

118

00:08:43,750 --> 00:08:47,090

AND ALL THIS SYSTEMS ON BOARD,  
AND THERE ARE REDUNDANT SYSTEMS

119

00:08:47,090 --> 00:08:49,830

ON BOARD, IT'S ALL WORKING.

120

00:08:49,830 --> 00:08:53,820

ALL WORKING AS IT'S PLANNED TO  
OPERATE.

121

00:08:53,820 --> 00:08:56,430

AND AS YOU HEARD, THE  
INSTRUMENTS WERE PROVIDING

122

00:08:56,430 --> 00:08:58,899

WONDERFUL DATA.

123

00:08:58,899 --> 00:09:02,630

SO I'LL TALK ABOUT WHAT ARE THE  
CHALLENGES IN THIS LAST STAGE OF

124

00:09:02,630 --> 00:09:04,579

THE MISSION.

125

00:09:04,579 --> 00:09:10,550

AND THAT IS HOW WE NAVIGATE TO  
GET TO THE RIGHT POINT SO WE CAN

126

00:09:10,550 --> 00:09:13,889

TAKE ALL THE DATA YOU'RE GOING  
TO HEAR ABOUT OVER THE NEXT

127

00:09:13,889 --> 00:09:14,889

COUPLE OF DAYS.

128

00:09:14,889 --> 00:09:19,010

AND SO THIS NEXT GRAPHIC TELLS  
YOU THE TALE OF THIS.

129

00:09:19,010 --> 00:09:20,430

SO IF I COULD HAVE THAT.

130

00:09:20,430 --> 00:09:26,650

SO WHAT YOU SEE HERE IS A GOLFER  
SITTING IN NEW YORK, MAKING A

131

00:09:26,650 --> 00:09:32,470

HOLE IN ONE BY LOPPING A GOLF  
BALL ACROSS THE COUNTRY AND

132

00:09:32,470 --> 00:09:35,540

PUTTING IT IN THE CUP IN LA.

133

00:09:35,540 --> 00:09:42,699

THAT'S THE KIND OF PRECISION  
THAT THIS TEAM HAS DONE GETTING

134

00:09:42,699 --> 00:09:45,709

THE SPACECRAFT TO WHERE WE NEED  
TO GO AT PLUTO.

135

00:09:45,709 --> 00:09:49,740

A COST OF THREE BILLION MILES  
THAT WE'VE JUST TRAVELLED.

136

00:09:49,740 --> 00:09:55,190

SO THE NEXT CHART WE'LL GIVE  
YOU†-- THIS IS A LITTLE

137

00:09:55,190 --> 00:09:58,730

ANIMATION TO KIND OF GIVE YOU  
THAT LAST PIECE.

138

00:09:58,730 --> 00:10:02,439  
RIGHT HERE, YOU'RE SEEING THE  
SPACECRAFT ALONG THIS

139

00:10:02,439 --> 00:10:03,939  
TRAJECTORY.

140

00:10:03,939 --> 00:10:05,949  
IT'S ABOUT TO GO BY.

141

00:10:05,949 --> 00:10:08,399  
THERE IT GOES.

142

00:10:08,399 --> 00:10:11,370  
WE HAVE TO GO THROUGH WHAT WE  
CALL THE KEY HOLE, THAT LITTLE

143

00:10:11,370 --> 00:10:13,990  
GREEN SPOT THAT YOU SEE THERE.

144

00:10:13,990 --> 00:10:20,269  
AND THAT IS THE DISTANCE WE HAVE  
TO BE PRECISELY TO ACTUALLY TAKE

145

00:10:20,269 --> 00:10:26,740  
THE DATA THAT YOU ARE HEARING  
ABOUT FROM ALLEN AND FROM CATHY

146

00:10:26,740 --> 00:10:29,279  
AND FROM OTHERS LATER.

147

00:10:29,279 --> 00:10:34,720  
AND WE HAVE DONE THAT SO WELL,  
THAT I DON'T EVEN BELIEVE IT.

148

00:10:34,720 --> 00:10:40,939

THE REASON IS, WE HAVE BEEN  
DISCUSSING FOR A VERY LONG TIME

149

00:10:40,939 --> 00:10:45,250  
EXACTLY WHAT THE RADIAL DISTANCE  
OF PLUTO IS FROM THE SUN.

150

00:10:45,250 --> 00:10:49,629  
WE'VE ONLY LEARNED ABOUT PLUTO  
SINCE 1930.

151

00:10:49,629 --> 00:10:52,220  
WE'VE ONLY SEEN A PART OF ONE  
ORBIT.

152

00:10:52,220 --> 00:10:58,100  
IT TAKES 248 YEARS TO TAKE ONE  
ORBIT AROUND THE SUN.

153

00:10:58,100 --> 00:11:03,930  
THERE WAS A GREAT DEAL OF  
UNCERTAINTY OF HOW FAR THE

154

00:11:03,930 --> 00:11:06,019  
PLANET WAS FROM THE SUN.

155

00:11:06,019 --> 00:11:08,189  
WE KNOW WHERE THE SPACECRAFT IS.

156

00:11:08,189 --> 00:11:12,209  
BUT WHERE IS THE SPACECRAFT WITH  
RESPECT TO THE SUN.

157

00:11:12,209 --> 00:11:16,899  
WE HAVE NAVIGATORS THAT HELP US  
MAKE THOSE FINAL DETERMINATIONS.

158

00:11:16,899 --> 00:11:20,160  
AND BECAUSE THE INSTRUMENT, THE  
ONE THAT'S TAKING A LOT OF THESE

159

00:11:20,160 --> 00:11:25,589

IMAGES WAS ABLE TO DETECT SOME  
OF THE SATELLITE PICS EARLIER

160

00:11:25,589 --> 00:11:31,279

THAN WE THOUGHT, WE WERE ABLE TO  
NAIL THAT POSITION VERY

161

00:11:31,279 --> 00:11:32,800

PRECISELY.

162

00:11:32,800 --> 00:11:36,810

AND WE HAVE HAD HAD DISCUSSIONS  
ABOUT THAT IN THE LAST FEW DAYS.

163

00:11:36,810 --> 00:11:41,240

THE NEXT GRAPHIC WILL SHOW YOU  
THIS.

164

00:11:41,240 --> 00:11:45,110

WE'LL 7,750 MILES FROM THE PLUTO  
SURFACE.

165

00:11:45,110 --> 00:11:51,050

AND THE GREEN BOX YOU SEE THERE  
IS THE BOX THAT WE ACTUALLY HAVE

166

00:11:51,050 --> 00:11:54,300

TO PASS THE SPACECRAFT THROUGH.

167

00:11:54,300 --> 00:11:58,480

AND THE YELLOW BOX IS THE  
KNOWLEDGE WE WANT TO HAVE.

168

00:11:58,480 --> 00:12:03,690

SO THE GREEN BOX IS 60 BY 90  
MILES AFTER GOING THREE BILLION

169

00:12:03,690 --> 00:12:08,209  
MILES, WE HAVE TO GET THIS 60 BY  
90 MILE BOX.

170  
00:12:08,209 --> 00:12:12,139  
WE'RE ACTUALLY ALMOST TO THE  
CENTER OF IT.

171  
00:12:12,139 --> 00:12:17,019  
SO WE DECIDED THE YELLOW BOX,  
WHAT THE SPACECRAFT†--

172  
00:12:17,019 --> 00:12:19,829  
SPACECRAFT IS GOING THROUGH THE  
CENTER OF THAT YELLOW BOX.

173  
00:12:19,829 --> 00:12:23,899  
IT'S ACTUALLY GOING A LITTLE BIT  
OFF OF IT.

174  
00:12:23,899 --> 00:12:28,309  
ANYTHING INSIDE THAT BOX MEANS  
WE GET THE DATA.

175  
00:12:28,309 --> 00:12:33,339  
WE ARE GOOD TO GO FOR THIS LAST  
BIT OF THE TRIP.

176  
00:12:33,339 --> 00:12:36,910  
RIGHT NOW AT THE START OF THIS  
PRESS CONFERENCE, THE SPACECRAFT

177  
00:12:36,910 --> 00:12:42,339  
WAS 658,000 MILES FROM PLUTO.

178  
00:12:42,339 --> 00:12:45,990  
SO AFTER THREE BILLION MILES AND  
A LITTLE OVER, WE'RE JUST THAT

179  
00:12:45,990 --> 00:12:47,949

FAR AWAY.

180

00:12:47,949 --> 00:12:51,319

AND THE NEXT GRAPHIC JUST TO  
REMIND YOU THIS IS THE PATH

181

00:12:51,319 --> 00:12:55,990

THROUGH IT AT 7:50 TOMORROW  
MORNING YOU'LL BE AT CLOSEST

182

00:12:55,990 --> 00:12:59,429

APPROACH PASSING THROUGH THAT  
RING PLANE.

183

00:12:59,429 --> 00:13:04,110

WE'LL GO ON THROUGH AND THEN  
LATER THAT DAY AFTER WE'VE

184

00:13:04,110 --> 00:13:10,119

TRAVELLED ANOTHER 420,000 MILES,  
THE SPACECRAFT WILL TURN BACK.

185

00:13:10,119 --> 00:13:15,209

7:50 TOMORROW MORNING YOU WILL  
CELEBRATE WE'RE THERE.

186

00:13:15,209 --> 00:13:20,300

AND THEN AT 9:00 TOMORROW  
EVENING, YOU'LL HEAR THE SIGNAL

187

00:13:20,300 --> 00:13:25,631

THAT WAS SENT AT AROUND 4:20 IN  
THE AFTERNOON AT THE SPEED OF

188

00:13:25,631 --> 00:13:27,699

LIGHT ACTUALLY GETTING BACK TO  
THE EARTH.

189

00:13:27,699 --> 00:13:31,810

WE'LL HAVE A CELEBRATION AT THAT

TIME.

190

00:13:31,810 --> 00:13:34,601

AND SO THAT'S AS MUCH EXCITEMENT  
AS I CAN PROVIDE YOU.

191

00:13:34,601 --> 00:13:37,139

I'M GOING TO TURN IT OVER TO  
CATHY.

192

00:13:37,139 --> 00:13:38,319

>> HI.

193

00:13:38,319 --> 00:13:41,050

I'M SO EXCITED TO BE HERE AND  
TALK TO YOU ABOUT THE PLUTO

194

00:13:41,050 --> 00:13:42,050

SYSTEM.

195

00:13:42,050 --> 00:13:47,309

I WANT TO SHOW YOU AN IMAGE THAT  
WE HAVE OF PLUTO AND SHARON.

196

00:13:47,309 --> 00:13:51,129

OBSERVATIONS LIKE THESE,  
STUNNING IMAGES OF PLUTO AND

197

00:13:51,129 --> 00:13:56,420

SHARON ARE JUST†-- GOING TO HELP  
US SAMPLE THE DIVERSITY AND THE

198

00:13:56,420 --> 00:13:59,040

SCIENCE OF THESE COMPLEX WORLDS.

199

00:13:59,040 --> 00:14:02,339

WE'RE GOING TO BE LOOKING AT THE  
GEOLOGY AND THE COMPOSITION.

200

00:14:02,339 --> 00:14:05,509  
WE'RE GOING TO BE STUDYING THE  
ATMOSPHERE OF PLUTO USING DATA

201  
00:14:05,509 --> 00:14:10,069  
LIKE THESE AND OTHER  
OBSERVATIONS, WE'RE GOING TO BE

202  
00:14:10,069 --> 00:14:13,769  
LOOKING AT THE TEMPERATURE OF  
LOCATIONS ON PLUTO.

203  
00:14:13,769 --> 00:14:18,399  
IMAGING THE SMALL SATELLITES OF  
PLUTO, LOOKING AT THEIR

204  
00:14:18,399 --> 00:14:20,249  
COMPOSITION.

205  
00:14:20,249 --> 00:14:24,790  
WE'RE GOING TO BE MAKING STEREO  
MAPS SO WE CAN SEE HOW TALL THE

206  
00:14:24,790 --> 00:14:28,149  
MOUNTAINS ARE AND HOW LOW THE  
VALLEYS ARE.

207  
00:14:28,149 --> 00:14:31,769  
ALL OF THIS WILL BE ACCOMPLISHED  
WITH OUR COMPREHENSIVE PAYLOAD.

208  
00:14:31,769 --> 00:14:34,689  
WE HAVE SEVEN INSTRUMENTS ON  
BOARD THE SPACECRAFT.

209  
00:14:34,689 --> 00:14:36,089  
YOU CAN SEE THEM HERE.

210  
00:14:36,089 --> 00:14:41,240  
AND THEY SAMPLE THE PLUTO SYSTEM

WITH EVERYTHING WE'VE GOT FROM

211

00:14:41,240 --> 00:14:44,889

THE ULTRAVIOLET TO THE  
INVISIBLE, INFRARED.

212

00:14:44,889 --> 00:14:48,269

WE PROBE IT WITH RADIO SCIENCE.

213

00:14:48,269 --> 00:14:54,009

WE LOOK AT THE ENERGETIC  
PARTICLES IN THE AREA.

214

00:14:54,009 --> 00:14:57,990

WE ALSO ARE LOOKING AT THE DUST  
IN THE OUTER SOLAR SYSTEM USING

215

00:14:57,990 --> 00:15:00,019

THE STUDENT DUST COUNTER.

216

00:15:00,019 --> 00:15:03,649

ALL OF THIS SCIENCE WAS DESIGNED  
TO BE COMPLIMENTARY AND

217

00:15:03,649 --> 00:15:08,129

COMPREHENSIVE BY THIS SEVEN  
INSTRUMENT PAYLOAD.

218

00:15:08,129 --> 00:15:11,519

SO THE INSTRUMENTS ARE FIXED ON  
THE BODY OF THE SPACECRAFT.

219

00:15:11,519 --> 00:15:15,519

IF WE WANT TO TAKE AN IMAGE OF  
PLUTO, WE HAVE TO TURN THE POINT

220

00:15:15,519 --> 00:15:17,069

THE CAMERAS AT PLUTO.

221

00:15:17,069 --> 00:15:21,739  
AND SO I WANT TO SHOW YOU THE  
DANCE OF THE SPACECRAFT AS IT

222  
00:15:21,739 --> 00:15:24,100  
GOES THROUGH THE PLUTO SYSTEM.

223  
00:15:24,100 --> 00:15:27,489  
THERE'S A SIMULATION I'D LIKE TO  
BRING UP NOW.

224  
00:15:27,489 --> 00:15:31,899  
THIS IS THE SIMULATION OF THE  
SEQUENCE OF COMMANDS THAT WILL

225  
00:15:31,899 --> 00:15:37,300  
BE TAKING PLACE OVER THE TEN  
HOURS AROUND CLOSEST APPROACH.

226  
00:15:37,300 --> 00:15:39,329  
THE SPACECRAFT IS IN THE  
FOREGROUND.

227  
00:15:39,329 --> 00:15:43,329  
THE LINES GOING FROM THE  
SPACECRAFT TO THE PLUTO SYSTEM

228  
00:15:43,329 --> 00:15:46,749  
SHOW YOU WHAT THE INSTRUMENTS  
ARE LOOKING AT.

229  
00:15:46,749 --> 00:15:50,999  
AND THEN IN THE SMALL BOX IN THE  
UPPER RIGHT, YOU CAN SEE THE

230  
00:15:50,999 --> 00:15:53,879  
TARGETS AS THEY GO THROUGH THE  
FIELD OF VIEW OF THE

231  
00:15:53,879 --> 00:15:54,920

INSTRUMENTS.

232

00:15:54,920 --> 00:15:57,170  
DOWN IN THE LOWER LEFT, YOU CAN  
SEE THE CLOSEST APPROACH

233

00:15:57,170 --> 00:15:59,799  
DISTANCE AND THE TIME TO CLOSEST  
APPROACH.

234

00:15:59,799 --> 00:16:04,749  
AS THE SPACECRAFT IS DOING ITS  
DANCE, YOU CAN SEE ALL THE

235

00:16:04,749 --> 00:16:08,480  
INSTRUMENTS ARE TAKING THEIR  
TURNS AND LOOKING AT THE TARGETS

236

00:16:08,480 --> 00:16:10,170  
IN THE PLUTO SYSTEM.

237

00:16:10,170 --> 00:16:11,439  
WE'RE LOOKING AT KAREN.

238

00:16:11,439 --> 00:16:13,199  
NOW WE'RE LOOKING AT PLUTO.

239

00:16:13,199 --> 00:16:17,510  
AND THIS IS HOW WE'RE GOING TO  
GET THE BEST SCIENCE RETURN THAT

240

00:16:17,510 --> 00:16:18,939  
WE CAN.

241

00:16:18,939 --> 00:16:21,459  
AND THIS WILL ALL BE HAPPENING  
TOMORROW.

242

00:16:21,459 --> 00:16:25,449

CURRENTLY, THE SPACECRAFT IS  
DOING A SIMILAR DANCE.

243

00:16:25,449 --> 00:16:28,699  
IT'S JUST A DIFFERENT SET OF  
COMMANDS.

244

00:16:28,699 --> 00:16:31,759  
SO AS WE'RE GETTING CLOSER TO  
THE PLUTO SYSTEM, YOU CAN SEE

245

00:16:31,759 --> 00:16:34,980  
THAT PLUTO AND SHARON ARE  
GETTING LARGER IN THE FIELDS OF

246

00:16:34,980 --> 00:16:36,359  
VIEW OF THE TARGET.

247

00:16:36,359 --> 00:16:38,679  
NOW WE'RE NEAR CLOSEST APPROACH.

248

00:16:38,679 --> 00:16:42,689  
HERE WE'RE TAKING DATA THAT IF  
YOU COULD TRANSPORT CENTRAL PARK

249

00:16:42,689 --> 00:16:46,819  
TO PLUTO YOU WOULD BE ABLE TO  
IDENTIFY THE PONDS IN CENTRAL

250

00:16:46,819 --> 00:16:47,819  
PARK.

251

00:16:47,819 --> 00:16:51,569  
THAT'S THE KIND OF RESOLUTION  
WE'LL BE GETTING WITH THOSE

252

00:16:51,569 --> 00:16:56,009  
STRIP OF OBSERVATIONS BY THE  
HIGH RESOLUTION CAMERA AS WE FLY

253

00:16:56,009 --> 00:16:58,790

THROUGH CLOSEST APPROACH.

254

00:16:58,790 --> 00:17:02,649

AFTER CLOSEST APPROACH, WE'LL BE  
WATCHING THE SUN SET BEHIND AND

255

00:17:02,649 --> 00:17:04,209

RISE ABOVE PLUTO.

256

00:17:04,209 --> 00:17:09,829

WE'LL BE DOING THE SAME THING TO  
KAREN TO UNDERSTAND AND SEARCH

257

00:17:09,829 --> 00:17:13,870

TO SEE IF THERE'S ANY REMNANT OF  
AN ATMOSPHERE AROUND PLUTO'S

258

00:17:13,870 --> 00:17:16,190

LARGE MOON, KAREN.

259

00:17:16,190 --> 00:17:20,290

AND THEN AS WE GET FURTHER AWAY  
FROM THE SYSTEM WE'LL LOOK BACK

260

00:17:20,290 --> 00:17:23,770

AND WE'LL GOING TO TAKE IMAGES  
OF THE CRESCENTS, THE LIT

261

00:17:23,770 --> 00:17:26,900

CRESCENTS OF PLUTO AND ITS  
MOONS.

262

00:17:26,900 --> 00:17:31,049

WE'LL BE SEARCHING FOR CLOUDS  
AND HAZES IN PLUTO'S ATMOSPHERE

263

00:17:31,049 --> 00:17:33,410

USING THESE OBSERVATIONS.

264

00:17:33,410 --> 00:17:35,660

IT'S GOING TO BE AN EXCITING  
TIME TOMORROW WHEN THE

265

00:17:35,660 --> 00:17:38,610

SPACECRAFT IS TAKING ALL THE  
OBSERVATIONS AS IT GOES THROUGH

266

00:17:38,610 --> 00:17:39,960

THE SYSTEM.

267

00:17:39,960 --> 00:17:45,740

BETWEEN THIS TIME NOW AND  
CLOSEST APPROACH TOMORROW, THE

268

00:17:45,740 --> 00:17:49,429

SPACECRAFT WILL BE TAKING ABOUT  
150 OBSERVATIONS.

269

00:17:49,429 --> 00:17:54,520

SO THAT GIVES YOU AN IDEA OF THE  
PACE AND THE SEQUENCE OF WHAT

270

00:17:54,520 --> 00:17:56,110

WILL BE GOING ON.

271

00:17:56,110 --> 00:18:00,610

AND I CAN'T WAIT TILL WE GET  
THERE TOMORROW.

272

00:18:00,610 --> 00:18:02,710

>> OKAY, THANK YOU.

273

00:18:02,710 --> 00:18:07,750

LADIES AND GENTLEMEN, BEFORE WE  
TRANSITION INTO THE Q&A, LET ME

274

00:18:07,750 --> 00:18:12,570

JUST LET YOU GUYS KNOW THAT THIS MISSION IS GOING TO HAVE A LOT

275

00:18:12,570 --> 00:18:13,570  
OF AUDIBLES.

276

00:18:13,570 --> 00:18:15,200  
AND WE'RE GOING TO NEED THE MEDIA TO BE FLEXIBLE.

277

00:18:15,200 --> 00:18:18,090  
THE INFORMATION IS GOING TO BE COMING AND CHANGING.

278

00:18:18,090 --> 00:18:21,870  
FOR THE MEDIA THAT ARE WATCHING ACROSS THE NATION AND IN FACT

279

00:18:21,870 --> 00:18:26,539  
ACROSS THE WORLD, WE WILL HAVE PHONE CAPABILITY FOR THE SEVERAL

280

00:18:26,539 --> 00:18:29,490  
PRESS CONFERENCES FOR THE WEEK AND NEXT WEEK.

281

00:18:29,490 --> 00:18:32,029  
FOR FURTHER DETAILS ON THAT PLEASE CALL THE NEWSROOM

282

00:18:32,029 --> 00:18:33,029  
240-228-8532.

283

00:18:33,029 --> 00:18:42,760  
FOR THE MEDIA HERE, WE'RE GOING TO START IF YOU WANT TO WAIT FOR

284

00:18:42,760 --> 00:18:45,150  
THE MIC AND GIVE YOUR NAME AND AFFILIATION.

285

00:18:45,150 --> 00:18:47,840

AND WE'LL GO TO SOCIAL MEDIA.

286

00:18:47,840 --> 00:18:49,980

AND WE'LL TAKE SOME MORE  
QUESTIONS.

287

00:18:49,980 --> 00:18:54,100

THESE FOLKS HAVE TO CUT OUT OF  
HERE PRETTY FAST.

288

00:18:54,100 --> 00:18:57,600

THEY'VE GOT A MEETING AND HAVE  
TO GO OVER TO MISSION OPERATIONS

289

00:18:57,600 --> 00:18:58,600

CONTROL.

290

00:18:58,600 --> 00:19:03,200

SO LET'S SEE HOW MANY QUESTIONS  
WE CAN GET IN BEFORE WE HAVE TO

291

00:19:03,200 --> 00:19:04,200

CLOSE OFF HERE.

292

00:19:04,200 --> 00:19:07,899

IF YOU CAN RAISE YOUR HAND AND  
GET THE MIC.

293

00:19:07,899 --> 00:19:11,200

AND GIVE YOUR NAME AND  
AFFILIATION, PLEASE.

294

00:19:11,200 --> 00:19:13,940

>> LEO WITH IRISH TELEVISION.

295

00:19:13,940 --> 00:19:17,260

YOU'VE GOT COMPOSITIONAL

INFORMATION ON THE POLE OF

296

00:19:17,260 --> 00:19:20,270

PLUTO.

297

00:19:20,270 --> 00:19:24,050

CAN WE EXPECT SOMETHING SIMILAR  
FOR THE DARK POLE OF SHARON

298

00:19:24,050 --> 00:19:26,839

DURING THE WEEK OR IS THAT  
LIKELY TO BE MUCH LATER?

299

00:19:26,839 --> 00:19:31,190

>> LET ME TELL YOU ABOUT THE  
COMPOSITIONAL MAPPING WE'RE

300

00:19:31,190 --> 00:19:34,110

DOING NOW AND WHAT TO EXPECT.

301

00:19:34,110 --> 00:19:37,440

ON BOARD THE SPACECRAFT IS AN  
INSTRUMENT CALLED RALPH.

302

00:19:37,440 --> 00:19:41,380

IT HAS INFRARED MAPPING  
SPECTROMETER THAT ALLOWS US TO

303

00:19:41,380 --> 00:19:44,480

PUT PIXELS ON THE PLANET.

304

00:19:44,480 --> 00:19:47,650

AT THE DISTANCE WE WERE THIS  
WEEKEND WE WERE ABLE TO

305

00:19:47,650 --> 00:19:51,570

DETERMINE THE POLAR REGIONS.

306

00:19:51,570 --> 00:19:55,580

AS WE DRIVE IN CLOSER, THE  
RESOLUTION IMPROVES

307

00:19:55,580 --> 00:19:57,059  
DRAMATICALLY.

308

00:19:57,059 --> 00:20:00,440  
THE KIND OF MAPS THAT WE'LL MAKE  
WILL BLANKET THE SURFACE WITH

309

00:20:00,440 --> 00:20:03,900  
PIXELS ABOUT TEN KILOMETERS  
ACROSS.

310

00:20:03,900 --> 00:20:06,130  
THAT'S A LARGE NUMBER OF PIXELS  
ON THE SURFACE.

311

00:20:06,130 --> 00:20:10,799  
WE'LL DO THE SAME THING FOR  
SHARON AND WE'LL GET

312

00:20:10,799 --> 00:20:18,610  
MEASUREMENTS OF THE TWO  
INTERMEDIATE MOONS AS WELL.

313

00:20:18,610 --> 00:20:21,500  
CATHY MAY KNOW BETTER THAN I,  
WHEN WE'RE GOING TO GET THE

314

00:20:21,500 --> 00:20:22,730  
SHARON INFORMATION.

315

00:20:22,730 --> 00:20:26,730  
WE CERTAINLY HAVE THE RESOLUTION  
AND SIGNAL TO TELL WHAT THAT

316

00:20:26,730 --> 00:20:28,230  
DARK REGION IS LIKE.

317

00:20:28,230 --> 00:20:31,500

HOW IT'S DIFFERENT FROM THE  
WATERIZED COMPOSITION WE SEE ON

318

00:20:31,500 --> 00:20:33,570

MOST OF THE SURFACE.

319

00:20:33,570 --> 00:20:36,470

>> SO WE WILL DEFINITELY BET  
GETTING DOWN SHARON INFORMATION

320

00:20:36,470 --> 00:20:40,250

IN THE INFRARED WHICH IS HOW  
WE'LL LOOK AT THE COMPOSITION OF

321

00:20:40,250 --> 00:20:44,389

THE DARK REGION OF KAREN.

322

00:20:44,389 --> 00:20:46,950

IT WILL BE COMING DOWN THIS  
WEEK.

323

00:20:46,950 --> 00:20:52,100

BECAUSE THE INFRARED MAPPING  
SPECTROMETER TAKES SO MUCH DATA,

324

00:20:52,100 --> 00:20:55,110

THERE'S SO MANY PIXELS WE'LL  
BRING DOWN SELECTED WAVE LENGTHS

325

00:20:55,110 --> 00:21:01,149

IN SECTIONS THIS WEEK SO WE'RE  
NOT DOMINATING THE DOWN LINK.

326

00:21:01,149 --> 00:21:03,590

WE WILL HAVE SOME INFORMATION,  
BUT IT WILL NOT BE THE COMPLETE

327

00:21:03,590 --> 00:21:07,369

PICTURE YET.

328

00:21:07,369 --> 00:21:16,240

>> YOU'LL BE TOO SURPRISED BY  
THIS QUESTION, BUT YOU SUGGESTED

329

00:21:16,240 --> 00:21:23,419

TO THE IAU A NAMING SEQUENCE FOR  
FEATURES ON THE SURFACE OF PLUTO

330

00:21:23,419 --> 00:21:27,840

AND YOU'VE INCLUDED PEOPLE WHO  
HAVE CONTRIBUTED TO KNOWLEDGE OF

331

00:21:27,840 --> 00:21:29,309

THE PLUTO SYSTEM.

332

00:21:29,309 --> 00:21:33,440

IS IT†-- DO YOU EXPECT YOU WILL  
BE NAMING A FEATURE ON PLUTO

333

00:21:33,440 --> 00:21:40,740

AFTER THE IRISH ASTRONOMER, DO  
YOU IMAGINE THAT WILL BE A LARGE

334

00:21:40,740 --> 00:21:43,710

FEATURE?

335

00:21:43,710 --> 00:21:47,230

AND IF YOU COULD VERY BRIEFLY  
EXPLAIN WHY EDWARD WOULD BE

336

00:21:47,230 --> 00:21:50,880

SIGNIFICANT?

337

00:21:50,880 --> 00:21:53,130

>> HERE'S THE BACKGROUND.

338

00:21:53,130 --> 00:21:57,210

I THINK EVERYBODY IN THIS ROOM,  
MANY PEOPLE IN THE AUDIENCE KNOW

339

00:21:57,210 --> 00:22:02,059

THAT PLUTO IS IN THE THIRD ZONE  
OF THE SOLAR SYSTEM, BEYOND THE

340

00:22:02,059 --> 00:22:07,960

TERRESTRIAL PLANETS.

341

00:22:07,960 --> 00:22:13,179

THE QUAKER BELT GOT ITS NAME  
BECAUSE A PROMINENT DUTCH

342

00:22:13,179 --> 00:22:20,040

AMERICAN ASTRONOMER WROTE ABOUT  
THIS AS A CONJECTURE IN THE

343

00:22:20,040 --> 00:22:23,330

MIDDLE OF THE 20th CENTURY, IN  
THE 1950'S.

344

00:22:23,330 --> 00:22:27,909

PRIOR TO THAT KENNETH EDGEWORTH  
FROM ISLAND HAD WRITTEN ABOUT

345

00:22:27,909 --> 00:22:29,900

THE SAME TOPIC.

346

00:22:29,900 --> 00:22:34,480

IN 1943, 1949.

347

00:22:34,480 --> 00:22:39,070

HE NAILED IT.

348

00:22:39,070 --> 00:22:42,800

AFTER THE DISCOVERY OF THE  
POPULATION THAT PLUTO ORBITS

349

00:22:42,800 --> 00:22:52,480  
WITH IN THAT THIRD ZONE, MANY  
SCIENTISTS CALLED THE REGION THE

350  
00:22:52,480 --> 00:22:54,230  
QUAKER EDGEWORTH BELT.

351  
00:22:54,230 --> 00:22:57,280  
BUT WITH TIME WE SHORTENED THAT  
AND EDGE WORTH PROBABLY DOESN'T

352  
00:22:57,280 --> 00:22:58,740  
GET THE CREDIT HE DESERVED.

353  
00:22:58,740 --> 00:23:03,200  
YOU HAVE A FINE IDEA AND WE'LL  
CERTAINLY PUT IT IN THE

354  
00:23:03,200 --> 00:23:04,549  
CONSIDERATION IN THE NAME BANK.

355  
00:23:04,549 --> 00:23:09,330  
AS YOU MAY KNOW, WE CONDUCTED AN  
EXERCISE THIS SPRING WE ARE

356  
00:23:09,330 --> 00:23:12,780  
ASKED THE PUBLIC TO SUGGEST  
NAMES, NOT JUST FOR SCIENTISTS

357  
00:23:12,780 --> 00:23:14,080  
BUT FOR OTHER NAMING THEMES.

358  
00:23:14,080 --> 00:23:17,120  
AND WE GOT A TREMENDOUS PUBLIC  
RESPONSE.

359  
00:23:17,120 --> 00:23:19,669  
THAT'S INFORMED US.

360

00:23:19,669 --> 00:23:23,389  
IN THE FUTURE YOU'LL BE SEEING  
THE ACTUAL FEATURES BEING NAMED.

361  
00:23:23,389 --> 00:23:26,470  
SO STAY TUNED.

362  
00:23:26,470 --> 00:23:28,150  
>> NEXT QUESTION.

363  
00:23:28,150 --> 00:23:30,520  
RIGHT HERE.

364  
00:23:30,520 --> 00:23:31,709  
IRENE?

365  
00:23:31,709 --> 00:23:35,960  
>> IRENE WITH DISCOVERY NEWS AND  
REUTERS.

366  
00:23:35,960 --> 00:23:39,549  
COULD SOMEONE EXPLAIN WHAT NEW  
HORIZONS IS GOING TO BE DOING

367  
00:23:39,549 --> 00:23:43,810  
BETWEEN ITS FOUR HOURS AFTER  
CLOSEST APPROACH TO WHEN IT'S

368  
00:23:43,810 --> 00:23:48,520  
GOING TO END ENGINEERING SIGNALS  
BACK AND WHY THERE'S GOING TO BE

369  
00:23:48,520 --> 00:23:52,450  
NO INSIGHT AT ALL AMONG YOU GUYS  
AS TO WHETHER IT MADE IT THROUGH

370  
00:23:52,450 --> 00:23:54,059  
THE SYSTEM OKAY?

371

00:23:54,059 --> 00:23:55,230

THANKS.

372

00:23:55,230 --> 00:23:58,360

>> WE HAVE REALLY EXCITING  
OBSERVATIONS THAT ARE VERY TIME

373

00:23:58,360 --> 00:24:01,559

CRITICAL AND HAVE TO HAPPEN IN  
BETWEEN THAT CLOSEST APPROACH

374

00:24:01,559 --> 00:24:04,309

AND WHEN WE SEND THE TELEMETRY  
BACK.

375

00:24:04,309 --> 00:24:09,649

SPECIFICALLY, IT'S THE SOLAR AND  
RADIO SCIENCE EXPERIMENTS.

376

00:24:09,649 --> 00:24:13,480

WE NEED TO FLY DIRECTLY BEHIND  
THE SHADOW OF PLUTO AND SHARON

377

00:24:13,480 --> 00:24:19,860

AND WATCH THE SUN GO BEHIND THEM  
TO GET OUR UNDERSTANDING OF THE

378

00:24:19,860 --> 00:24:21,110

ATMOSPHERE.

379

00:24:21,110 --> 00:24:24,990

WE'LL BE SENDING SIGNALS FROM  
THE DEEP SPACE NETWORK THROUGH

380

00:24:24,990 --> 00:24:27,509

THE ATMOSPHERE TO BE RECEIVED BY  
THE SPACECRAFT.

381

00:24:27,509 --> 00:24:30,070

THOSE ARE VERY TIME CRITICAL.

382

00:24:30,070 --> 00:24:32,730

THOSE OCCUR IN THAT TIME PERIOD.

383

00:24:32,730 --> 00:24:37,549

AND WE'LL BE ALSO GETTING VERY  
HIGH RESOLUTION OBSERVATIONS IN

384

00:24:37,549 --> 00:24:38,659

THAT TIME.

385

00:24:38,659 --> 00:24:43,009

>> ANY NERVOUSNESS THAT IT'S NOT  
GOING TO GET THROUGH OKAY?

386

00:24:43,009 --> 00:24:48,669

THERE'S GOING TO BE AN UNKNOWN  
LITTLE MOON OR SOMETHING?

387

00:24:48,669 --> 00:24:53,980

>> WHAT IRENE IS REFERRING TO IS  
THE FACT OF COMBINATION OF THE

388

00:24:53,980 --> 00:24:58,070

HIGH SPEED OF THE NEW HORIZONS  
SPACECRAFT AND THE EXPLORATION

389

00:24:58,070 --> 00:25:01,490

NATURE OF THIS MISSION COULD  
BITE US.

390

00:25:01,490 --> 00:25:04,049

WE'VE TAKEN WHAT WE THINK IS A  
MEASURED RISK.

391

00:25:04,049 --> 00:25:06,370

WE'VE SEARCHED FOR DEBRIS THAT  
MIGHT BE ON THE SYSTEM ON

392

00:25:06,370 --> 00:25:07,370

APPROACH.

393

00:25:07,370 --> 00:25:09,870

WE USED OUR BEST INSTRUMENTS AND  
FOUND NOTHING.

394

00:25:09,870 --> 00:25:11,830

NOTHING OF CONCERN.

395

00:25:11,830 --> 00:25:17,260

WE'RE ABLE TO SET MODEL LIMITS  
AT AROUND ONE IN 10,000 THAT THE

396

00:25:17,260 --> 00:25:20,140

SPACECRAFT WILL BE LOST DUE TO A  
DEBRIS STRIKE.

397

00:25:20,140 --> 00:25:23,009

WE'RE HONEST THAT WE'RE FLYING  
INTO THE UNKNOWN.

398

00:25:23,009 --> 00:25:26,039

THIS IS THE RISK YOU TAKE WITH  
ALL EXPLORATIONS.

399

00:25:26,039 --> 00:25:31,650

NEW HORIZONS WILL BE OUT OF  
TOUCH.

400

00:25:31,650 --> 00:25:36,460

WHILE I DON'T LOSE SLEEP OF  
THIS, TOMORROW EVENING THERE

401

00:25:36,460 --> 00:25:37,669

WILL BE A LITTLE BIT OF DRAMA.

402

00:25:37,669 --> 00:25:40,960

WE WANT TO HEAR THE SPACECRAFT  
CHECK BACK IN AND LOOK AT THE

403

00:25:40,960 --> 00:25:46,970

TELEMETRY AND MAKE SURE THE  
SPACECRAFT HASN'T SUFFERED.

404

00:25:46,970 --> 00:25:50,710

UNTIL WE PAST THAT TIME  
TOMORROW, WE WON'T KNOW WITH

405

00:25:50,710 --> 00:25:55,840

CERTITUDE THERE WERE NO DEBRIS  
STRIKES.

406

00:25:55,840 --> 00:26:03,209

BUT I WANT TO EMPHASIZE I'M NOT  
WORRIED ABOUT IT.

407

00:26:03,209 --> 00:26:06,100

>> ERIC WITH SCIENCE MAGAZINE.

408

00:26:06,100 --> 00:26:12,179

CAN YOU SAY SOMETHING MORE ABOUT  
MEASURING THE RADIUS OF PLUTO,

409

00:26:12,179 --> 00:26:16,389

1,185 PLUS OR MINUS 10.

410

00:26:16,389 --> 00:26:24,769

IS THERE SOMETHING MORE NUANCED  
TO MAKING THE MEASUREMENT.

411

00:26:24,769 --> 00:26:28,480

YOU STARTED TO HINT AT SOME OF  
THE IMPLICATIONS THAT IT CAN

412

00:26:28,480 --> 00:26:31,480

EFFECT THE MODELS OF THE TROPE  
SPHERE AND THE INTERIOR.

413

00:26:31,480 --> 00:26:35,629  
CAN YOU SAY SOMETHING MORE ABOUT  
HAVING THIS NUMBER IN HAND

414  
00:26:35,629 --> 00:26:39,830  
MATTERS IS IT FINE TUNING THE  
MATTERS OR COULD THERE BE A

415  
00:26:39,830 --> 00:26:41,880  
LARGER IMPLICATIONS.

416  
00:26:41,880 --> 00:26:43,769  
THANKS.

417  
00:26:43,769 --> 00:26:45,240  
>> THE WAY WE MAKE THESE  
MEASUREMENTS AND THROUGH A

418  
00:26:45,240 --> 00:26:47,190  
VARIETY OF DIFFERENT TECHNIQUES.

419  
00:26:47,190 --> 00:26:50,019  
WE HAVE A NUMBER OF MEMBERS OF  
THE SCIENCE TEAM, SPECIFICALLY

420  
00:26:50,019 --> 00:26:54,299  
IN OUR GEOLOGY AND GEOPHYSICS  
INVESTIGATION TEAM WHO ARE

421  
00:26:54,299 --> 00:27:03,700  
MAKING SENSE OF CIRCULAR ENULI  
OF THE PLANET.

422  
00:27:03,700 --> 00:27:06,899  
AND DETERMINING WHAT FITS BEST.

423  
00:27:06,899 --> 00:27:10,590  
WE HAVE PEOPLE WHO ARE USING  
DIFFERENTIAL TECHNIQUES TO FIND

424

00:27:10,590 --> 00:27:16,590

THE EDGE AND MEASURE THE  
DISTANCE.

425

00:27:16,590 --> 00:27:19,029

MAKING THOSE MEASUREMENTS OF THE  
DIAMETER.

426

00:27:19,029 --> 00:27:24,710

WE HAVE MORE INDIRECT TECHNIQUE  
THAT RELIES UPON SOME FORWARD

427

00:27:24,710 --> 00:27:25,710

MODELING.

428

00:27:25,710 --> 00:27:28,710

AND WE COMPARE THE RESULTS THAT  
WE GET.

429

00:27:28,710 --> 00:27:32,080

WE ALSO HAVE AN ANCHOR POINT  
WHICH IS AN INTERESTING STORY.

430

00:27:32,080 --> 00:27:34,200

I WANT TO TELL YOU THAT.

431

00:27:34,200 --> 00:27:38,090

PLUTO'S SIZE HAS BEEN UNCERTAIN  
IN THE PAST, PRIMARILY BECAUSE

432

00:27:38,090 --> 00:27:41,300

IT HAS AN ATMOSPHERE AND THE  
ATMOSPHERE IS DENSE ENOUGH THAT

433

00:27:41,300 --> 00:27:45,940

IT ACTUALLY CREATES MIRAGES WHEN  
STARS ARE OBSERVED THROUGH

434

00:27:45,940 --> 00:27:48,470

OCCULTATION TO SET BEHIND THE  
PLANET.

435

00:27:48,470 --> 00:27:52,330

CATHY'S AN EXPERT IN THIS  
TECHNIQUE AND HAS DONE THE

436

00:27:52,330 --> 00:27:55,509

EXPEDITIONS OF THE LAST TEN  
YEARS.

437

00:27:55,509 --> 00:27:59,610

WE GET A RANGE OF SIZES FOR  
PLUTO THAT BEFORE NEW HORIZONS

438

00:27:59,610 --> 00:28:08,110

RANGED FROM 1,150 KILOMETERS UP  
TO A LITTLE BIT NORTH OF 1,200.

439

00:28:08,110 --> 00:28:12,570

WHAT WE FOUND PLUTO IS ALMOST AT  
THE TOP OF THAT RANGE.

440

00:28:12,570 --> 00:28:15,309

BUT IN ORDER TO ANCHOR OUR  
TECHNIQUE AND BE CERTAIN OF OUR

441

00:28:15,309 --> 00:28:17,820

NUMBERS, THERE IS SOME TRUTH IN  
THE SYSTEM.

442

00:28:17,820 --> 00:28:20,610

THE MOON SHARON HAS NO  
ATMOSPHERE SO IT DOESN'T CREATE

443

00:28:20,610 --> 00:28:21,630

THE MIRAGES.

444

00:28:21,630 --> 00:28:26,289

GROUND BASED OCCULTATION HAS

TOLD US THAT SHARON'S RADIUS IS

445

00:28:26,289 --> 00:28:31,840  
603 KILOMETERS PERIOD.

446

00:28:31,840 --> 00:28:34,970  
WE TOOK ALL THOSE TECHNIQUES  
WE'RE APPLYING FOR PLUTO ON

447

00:28:34,970 --> 00:28:35,970  
APPROACH.

448

00:28:35,970 --> 00:28:37,770  
AND APPLIED THEM TO SHARON.

449

00:28:37,770 --> 00:28:39,419  
AND WE GET THE RIGHT ANSWER.

450

00:28:39,419 --> 00:28:44,269  
WITH ALL THE TECHNIQUES SO THAT  
WE, AS I SAID, ANCHOR OUR BELIEF

451

00:28:44,269 --> 00:28:48,440  
THAT THE 1,185 IS GET BY TESTING  
IT ON SHARON.

452

00:28:48,440 --> 00:28:51,120  
THEN YOUR OTHER QUESTION WAS  
ABOUT THE IMPLICATIONS.

453

00:28:51,120 --> 00:28:53,659  
I THINK IT WILL TAKE A WHILE TO  
UNRAVEL IT.

454

00:28:53,659 --> 00:28:58,460  
THE FACT THAT PLUTO IS LARGER,  
LOWERS THE NET DENSITY THAT

455

00:28:58,460 --> 00:29:01,639

RAISES THE ICE CONTENT THAT'S  
INSIDE.

456

00:29:01,639 --> 00:29:03,270

LOWERING THE ROCK CONTENT.

457

00:29:03,270 --> 00:29:07,360

THAT HAS IMPLICATIONS FOR THINGS  
LIKE HOW THE BINARY FORMS.

458

00:29:07,360 --> 00:29:11,070

IT HAS IMPLICATIONS FOR THE  
CHEMISTRY OF THE SOLAR NEBULA.

459

00:29:11,070 --> 00:29:13,090

THE INDICATIONS FOR THE  
ATMOSPHERE HAVING A

460

00:29:13,090 --> 00:29:19,039

SHALLOWTROPE ATMOSPHERE.

461

00:29:19,039 --> 00:29:22,090

THIS IS NEWS THAT IS LESS THAN A  
DAY OLD.

462

00:29:22,090 --> 00:29:25,519

WE GOT THE CONSENSUS THE  
TECHNIQUE HAD THE RIGHT ERROR

463

00:29:25,519 --> 00:29:28,409

BARS AND RIGHT NUMBER.

464

00:29:28,409 --> 00:29:30,310

>> I DON'T EXPECT IT TO REALLY  
CHANGE MORE THAN A FEW

465

00:29:30,310 --> 00:29:33,960

KILOMETERS AS WE GO FORWARD BUT  
WE CAN TALK TO YOU ABOUT IMMY

466

00:29:33,960 --> 00:29:37,980

KAGSS OFF LINE BUT RECOGNIZE  
IT'S BEEN A LONG TIME SINCE

467

00:29:37,980 --> 00:29:41,450

WE'VE DONE SOMETHING LIKE THIS  
AND I DON'T KNOW HOW MANY OF YOU

468

00:29:41,450 --> 00:29:46,669

WERE AROUND IN THE VOYAGER DAYS,  
I WAS NOT, BUT DURING THAT TIME

469

00:29:46,669 --> 00:29:51,299

WHEN WE WERE EXPLORING BRAND NEW  
PLANETS FOR THE FIRST TIME,

470

00:29:51,299 --> 00:29:54,820

SCIENCE ON THE FLY OFTEN PROVED  
TO BE WRONG BECAUSE WE WANT TO

471

00:29:54,820 --> 00:29:56,360

TAKE OUR TIME.

472

00:29:56,360 --> 00:30:00,530

A LOT OF THE RESULTS THAT WE  
PROVIDE FOR YOU ARE GOING TO TRY

473

00:30:00,530 --> 00:30:03,659

TO BE AT THE FACTUAL LEVEL  
RATHER THAN THE SPECULATIVE

474

00:30:03,659 --> 00:30:07,440

LEVEL AND AS WE HAVE MORE TIME  
WITH THE DATA AND ASSOCIATED

475

00:30:07,440 --> 00:30:10,649

MODELING WE CAN MAKE BETTER  
INTERPRETATIONS BUT

476

00:30:10,649 --> 00:30:16,289  
INTERPRETATIONS MADE ON THE FLY  
OFTEN HAVE A VERY SHORT HALF

477  
00:30:16,289 --> 00:30:17,289  
LIFE.

478  
00:30:17,289 --> 00:30:18,289  
OKAY.

479  
00:30:18,289 --> 00:30:27,790  
SO WE HAVE THIS AND WE WILL GO  
TO SOCIAL MEDIA AND GET MORE

480  
00:30:27,790 --> 00:30:29,590  
QUESTIONS.

481  
00:30:29,590 --> 00:30:36,429  
WE HAVE TO CUT THIS OFF AT 11:30  
BUT THESE WILL BE AVAILABLE FOR

482  
00:30:36,429 --> 00:30:38,019  
ADDITIONAL INTERVIEWS.

483  
00:30:38,019 --> 00:30:45,109  
THIS MISSION IS VERY  
TRANSPARENT.

484  
00:30:45,109 --> 00:30:48,500  
>> JUST ONE MORE FOLLOW UP ON  
THE QUESTION OF THE RISKS OF THE

485  
00:30:48,500 --> 00:30:52,600  
SPACECRAFT, DO YOU EXPECT DUST  
AND SMALL PARTICLES TO BECOME

486  
00:30:52,600 --> 00:30:57,399  
DENSER THE CLOSER YOU GET TO THE  
CENTER OF THE SYSTEM?

487

00:30:57,399 --> 00:30:58,399

>> ABSOLUTELY, YES.

488

00:30:58,399 --> 00:31:01,309

SO LET'S TALK ABOUT HOW THAT OCCURS.

489

00:31:01,309 --> 00:31:10,590

THE PLUTO SYSTEM IS IN A SHOOTING GALLERY WITH COMETS AND

490

00:31:10,590 --> 00:31:15,009

THINGS SMALLER THAN PLUTO AND WHEN THEY STRIKE THE SATELLITES

491

00:31:15,009 --> 00:31:20,970

THEY MAKE A CRATER AND ALL THE MATERIAL IS EXCAVATED IT LEAVES

492

00:31:20,970 --> 00:31:36,150

THE SATELLITE AND GOES INTO ORBIT AROUND PLUTO.

493

00:31:36,150 --> 00:31:40,690

IT IS TOO LOW TO ESCAPE THE PLUTO SYSTEM IN MANY INSTANCES

494

00:31:40,690 --> 00:31:42,940

SO IT ENDS UP IN ORBIT.

495

00:31:42,940 --> 00:31:44,861

IT DOESN'T JUST BUILD UP AND BUILD UP BECAUSE THERE ARE

496

00:31:44,861 --> 00:31:49,649

PROCESSES THAT WE CALL LOST PROCESSES THAT REMOVE THAT

497

00:31:49,649 --> 00:31:50,649

DEBRIS.

498

00:31:50,649 --> 00:31:56,019

THERE'S A BALANCE BETWEEN  
PRODUCTION AND LOSS AND ALL THE

499

00:31:56,019 --> 00:32:00,259

MODELS THAT WE HAVE SHOW THAT  
THE HIGHEST DENSITY OF DEBRIS IS

500

00:32:00,259 --> 00:32:04,100

IN THE REGION OF THE SMALL  
SATELLITE.

501

00:32:04,100 --> 00:32:10,380

SHARON'S GRAVITY WHICH IS IS  
POWERFUL AND BEYOND THAT WE

502

00:32:10,380 --> 00:32:12,670

DON'T HAVE ANYMORE SATELLITES SO  
WE DON'T HAVE ANY MORE SOURCES

503

00:32:12,670 --> 00:32:14,240

OF DEBRIS.

504

00:32:14,240 --> 00:32:17,870

SO WE THINK THE MOST DANGEROUS  
PLACE ALTHOUGH IT'S NOT VERY

505

00:32:17,870 --> 00:32:18,870

DANGEROUS.

506

00:32:18,870 --> 00:32:20,840

I WANT TO GO BACK TO MY EARLIEST  
STATEMENT.

507

00:32:20,840 --> 00:32:24,519

THE MODELS ARE THOUGHING A 1 IN  
10,000 PROBABILITY OF LOSS OF

508

00:32:24,519 --> 00:32:29,559

MISSION BUT THE MOST DANGEROUS  
PLACE IS AS WE CROSS THE

509

00:32:29,559 --> 00:32:30,559

SATELLITE PLANE.

510

00:32:30,559 --> 00:32:35,730

THAT'S THE EQUATORIAL PLANE AS  
WELL.

511

00:32:35,730 --> 00:32:41,629

THAT'S THE LOW LEVEL OF CONCERN  
AND SOME HOURS LATER TOMORROW

512

00:32:41,629 --> 00:32:44,130

WE'LL HEAR BACK FROM THE BIRD  
AND HOW IT DID.

513

00:32:44,130 --> 00:32:48,410

>> WE'LL GO TO THIS GENTLEMAN  
AND THEN FRANK AND TAKE A COUPLE

514

00:32:48,410 --> 00:32:52,799

OF SOCIAL MEDIA QUESTIONS AND  
COME BACK FOR A FEW LAST

515

00:32:52,799 --> 00:32:54,470

QUESTIONS BEFORE WE WRAP UP.

516

00:32:54,470 --> 00:32:55,470

YES, SIR.

517

00:32:55,470 --> 00:32:57,620

>> THIS QUESTION IS FOR ALLEN.

518

00:32:57,620 --> 00:33:00,380

FIRST OFF LET ME COMMEND YOU FOR  
HAVING STUDENT-ADULT RESEARCH ON

519

00:33:00,380 --> 00:33:03,909

BOARD AND ALONG THE SAME LINES  
IS THE LAST QUESTION, IN REGARDS

520

00:33:03,909 --> 00:33:06,519

TO DUST WHEN WILL WE START  
GETTING DATA BACK FROM THE

521

00:33:06,519 --> 00:33:08,999

STUDENT DUST COLLECTOR  
EXPERIMENT?

522

00:33:08,999 --> 00:33:09,999

>> THANK YOU.

523

00:33:09,999 --> 00:33:13,659

WE'RE PROUD TO BE CARRYING THE  
FIRST STUDENT BUILT INSTRUMENT

524

00:33:13,659 --> 00:33:18,190

EVER PLACED ON A PLANETARY  
SPACECRAFT AND THAT'S NOW BECOME

525

00:33:18,190 --> 00:33:22,440

PRETTY COME MONDAY AND WE'RE  
VERY HAPPY TO HAVE HELPED THE

526

00:33:22,440 --> 00:33:25,399

STUDENTS WITH THAT.

527

00:33:25,399 --> 00:33:28,629

IT'S A LITTLE DIFFERENT THAN THE  
OTHER INSTRUMENTS.

528

00:33:28,629 --> 00:33:38,020

ALL OF THE REST OF THEM REPORT  
AND ARE SAVED IN THE MEMORY.

529

00:33:38,020 --> 00:33:45,179  
IT IS DIFFERENT IN THAT IT  
CATCHES IT'S OWN DATA IT'S OWN

530  
00:33:45,179 --> 00:33:49,059  
DATA AND DUMPS LATER ON DEMAND.

531  
00:33:49,059 --> 00:33:52,889  
IT'S REPORTING DATA ALL ACROSS  
THE SOLAR SYSTEM AND WE DUMPED

532  
00:33:52,889 --> 00:34:01,059  
THAT MEMORY MANY TIMES AND GOT A  
TRACE OF THE DUST DISTRIBUTION

533  
00:34:01,059 --> 00:34:06,379  
ALL THE WAY FROM 1-AU NOW OUT TO  
33-AU.

534  
00:34:06,379 --> 00:34:08,070  
THIS IS A RECORD DISTANCE.

535  
00:34:08,070 --> 00:34:15,500  
THE PREVIOUS RECORD FOR A DUST  
IMPACT PROTECTOR WAS ON THE AIR

536  
00:34:15,500 --> 00:34:16,500  
PROBE.

537  
00:34:16,500 --> 00:34:21,490  
AND THEY WEREN'T ABLE TO OPERATE  
BEYOND 18 UNITS.

538  
00:34:21,490 --> 00:34:25,080  
WE'RE PIONEERING SOMETHING NEW  
OUT HERE.

539  
00:34:25,080 --> 00:34:29,850  
WE'RE VERY INTERESTED IN IMPACTS  
IN THE REGION AROUND PLUTO AND

540

00:34:29,850 --> 00:34:35,490

WE WERE MONITORING THAT LATE  
LAST YEAR AND VERY EARLY THIS

541

00:34:35,490 --> 00:34:36,490

YEAR.

542

00:34:36,490 --> 00:34:49,879

HOWEVER, WHEN WE ACTUALLY  
OPERATE AT PLUTO, WE HAVE TO

543

00:34:49,879 --> 00:34:57,160

CHANGE THE LEVEL ON THE  
INSTRUMENT AND ONLY THE LARGEST

544

00:34:57,160 --> 00:34:58,160

EVENTS.

545

00:34:58,160 --> 00:35:02,280

WE HAVE DONE THAT AND WE'RE  
GOING TO CONTINUE TO RECORD DATA

546

00:35:02,280 --> 00:35:07,280

THAT WAY UNTIL JULY 31st OR JULY  
30th AND THEN WE'LL GO BACK TO

547

00:35:07,280 --> 00:35:12,500

THE MORE SENSITIVE MODE.

548

00:35:12,500 --> 00:35:23,340

AND THEN IN AUGUST THAT GETS  
DUMPED.

549

00:35:23,340 --> 00:35:28,570

>> YESTERDAY ALICE TOLD US THAT  
THE ENGINEERING DOWNLOAD

550

00:35:28,570 --> 00:35:32,170

TOMORROW WILL COME BECAUSE  
THERE'S ANOTHER OBSERVATION THAT

551  
00:35:32,170 --> 00:35:35,690  
SORT OF POINTS THE ANTENNA THIS  
WAY.

552  
00:35:35,690 --> 00:35:37,960  
IT'S CALLED THE PLAZ MONTH ROLL.

553  
00:35:37,960 --> 00:35:41,370  
COULD YOU DESCRIBE THAT  
OBSERVATION AND HOW IT HAPPENS

554  
00:35:41,370 --> 00:35:44,050  
TO BE POINTING THIS ANTENNA THIS  
WAY?

555  
00:35:44,050 --> 00:35:49,770  
>> SURE, THE PLAZMA ROLL IS  
DESIGNED TO LOOK AT THE

556  
00:35:49,770 --> 00:35:57,210  
INTERACTION BETWEEN THE SOLAR  
WIND IN THE EXTENDED ATMOSPHERE.

557  
00:35:57,210 --> 00:36:02,870  
WE POINT IT TOWARD THE EARTH AND  
ROLL THE SPACECRAFT AROUND THAT

558  
00:36:02,870 --> 00:36:08,700  
AXIS SO WE CAN SAMPLE THE PLASMA  
ENVIRONMENT AROUND IN MANY

559  
00:36:08,700 --> 00:36:10,260  
DIFFERENT DIRECTIONS.

560  
00:36:10,260 --> 00:36:13,960  
SO THAT'S THE PREFERRED  
DIRECTION FOR THE PLASMA SUITE

561

00:36:13,960 --> 00:36:20,420

TO MAKE THAT COMPREHENSIVE LOOK  
AT THE SYSTEM SO WE'LL THEN BE

562

00:36:20,420 --> 00:36:22,750

ABLE TO TRANSMIT THAT TO THE  
EARTH BECAUSE THE ANTENNA IS

563

00:36:22,750 --> 00:36:28,410

POINTING IN THAT DIRECTION.

564

00:36:28,410 --> 00:36:35,490

>> THANK YOU VERY MUCH.

565

00:36:35,490 --> 00:36:41,330

>> THE DATA IS A GIFT FOR ALL  
MANKIND NOW.

566

00:36:41,330 --> 00:36:43,480

TODAY WE DON'T KNOW WHAT IT  
LOOKS LIKE CLOSE UP.

567

00:36:43,480 --> 00:36:47,460

TOMORROW EVENTUALLY WE WILL.

568

00:36:47,460 --> 00:36:50,600

>> IT'S BEEN 9.5 YEARS.

569

00:36:50,600 --> 00:36:57,570

I'M WONDERING WHAT THE TEAM IS  
FEELING LIKE NOW KNOWING THAT BY

570

00:36:57,570 --> 00:37:01,040

THE END OF TOMORROW A LOT OF  
YOUR QUESTIONS ARE GOING TO BE

571

00:37:01,040 --> 00:37:04,840

ANSWERED AND MAYBE YOU'LL HAVE

## MORE QUESTIONS TO ASK ON THE WAY

572

00:37:04,840 --> 00:37:06,630

UP.

573

00:37:06,630 --> 00:37:08,120

>> YOU THINK?

574

00:37:08,120 --> 00:37:15,490

>> THIS IS TREMENDOUS IN THE  
OPERATIONS TEAM RIGHT NOW.

575

00:37:15,490 --> 00:37:20,480

THIS IS DIFFERENT THAN A LOT OF  
MISSIONS FLOWN RECENTLY.

576

00:37:20,480 --> 00:37:24,640

IT'S 9.5 YEARS.

577

00:37:24,640 --> 00:37:28,050

THAT'S NOT A RECORD.

578

00:37:28,050 --> 00:37:35,000

IT'S MY RESPONSIBILITY SO I CAN  
TELL YOU FIRSTHAND ON ROSETTA WE

579

00:37:35,000 --> 00:37:38,670

HAD A WHOLE SERIES OF FLY BYES  
ALONG THE WAY.

580

00:37:38,670 --> 00:37:40,500

THREE EARTH GRAVITY ASSISTS.

581

00:37:40,500 --> 00:37:41,730

ONE MARS GRAVITY ASSIST.

582

00:37:41,730 --> 00:37:48,300

WE HAD DATA AND TWO ASTROID FLY  
BYES SO IT DIDN'T SEEM LIKE WE

583

00:37:48,300 --> 00:37:52,110

WERE ON THIS ROAD TRIP BUT NEW  
HORIZONS IS DIFFERENT.

584

00:37:52,110 --> 00:37:55,020

13 MONTHS AFTER WE LAUNCHED WE  
WERE AT JUPITER.

585

00:37:55,020 --> 00:37:58,910

A VERY ACTIVE SCIENCE ENCOUNTER  
IN 2007 AND DID THE GRAVITY

586

00:37:58,910 --> 00:38:02,380

ASSIST ACROSS THE NUMBERS AND  
THEN ACROSS THIS GIANT OCEAN IN

587

00:38:02,380 --> 00:38:09,810

SPACE AND WE DIDN'T PASS  
ANYTHING ALONG THE WAY.

588

00:38:09,810 --> 00:38:14,330

IN FACT WHEN WE PAST THE ORBITS  
THEY WERE FARTHER FROM US THAN

589

00:38:14,330 --> 00:38:17,830

THEY WERE FROM THE SUN.

590

00:38:17,830 --> 00:38:21,140

IT ALWAYS SEEMED THE ENCOUNTER  
WAS VERY FAR AWAY.

591

00:38:21,140 --> 00:38:25,410

NOW THAT WE'RE IN IT-- YOU'LL  
HAVE THE OPPORTUNITY TO MEET

592

00:38:25,410 --> 00:38:28,510

MEMBER OF THE TEAM THE NEXT  
COUPLE OF DAYS BUT PEOPLE TALK A

593

00:38:28,510 --> 00:38:37,200

LOT ABOUT HOW SURREAL IT IS.

594

00:38:37,200 --> 00:38:39,500

AND I THINK BLAKE SHOULD COMMENT  
ON IT BECAUSE IT'S NOT JUST THE

595

00:38:39,500 --> 00:38:40,560

SCIENCE TEAM.

596

00:38:40,560 --> 00:38:43,300

IT'S ALL OF US HAVING THIS  
EXPERIENCE.

597

00:38:43,300 --> 00:38:46,650

FOR MYSELF, I SAID IT FEELS LIKE  
YOU HAVE BEEN WALKING ON AN

598

00:38:46,650 --> 00:38:50,730

ESCALATOR FOR ALMOST A DECADE  
AND YOU STEP ON A SUPER SONIC

599

00:38:50,730 --> 00:38:53,790

TRANSPORT.

600

00:38:53,790 --> 00:38:56,550

SO IT'S PRETTY IMPRESSIVE AND A  
LITTLE BIT SURREAL BUT THE

601

00:38:56,550 --> 00:38:59,000

ENERGY LEVEL IS JUST ELECTRIC.

602

00:38:59,000 --> 00:39:00,160

>> YEAH.

603

00:39:00,160 --> 00:39:04,450

SO I HAVE BEEN SAYING FOR SOME  
WEEKS THAT UNTIL WE START

604

00:39:04,450 --> 00:39:11,800

ACTUALLY SEEING PLUTO RESOLVE IT  
WAS LIKE WE'RE GOING TO GET

605

00:39:11,800 --> 00:39:12,800

THERE.

606

00:39:12,800 --> 00:39:15,520

WE'RE GOING TO GET THERE AND  
THEN IT'S LIKE THE FREIGHT TRAIN

607

00:39:15,520 --> 00:39:18,940

IS COMING DOWN THE TRACK AND  
YOU'RE SEEING THIS LIGHT COMING

608

00:39:18,940 --> 00:39:20,310

AT YOU.

609

00:39:20,310 --> 00:39:21,370

IT'S NOT GOING TO STOP.

610

00:39:21,370 --> 00:39:23,270

YOU CAN'T SLOW IT DOWN.

611

00:39:23,270 --> 00:39:27,920

OF COURSE IT'S PLUTO AND WE'RE  
ALL EXCITED.

612

00:39:27,920 --> 00:39:28,920

>> OKAY.

613

00:39:28,920 --> 00:39:32,350

LET'S SWITCH UP HERE AND GO TO  
SOCIAL MEDIA.

614

00:39:32,350 --> 00:39:35,360

CHRIS BLAIR, I'M HEARING THERE  
IS A LOT OF CONVERSATION.

615  
00:39:35,360 --> 00:39:36,360  
A LOT OF BUZZ.

616  
00:39:36,360 --> 00:39:38,210  
WHAT'S OUT THERE IN THE SOCIAL  
MEDIA WORLD?

617  
00:39:38,210 --> 00:39:39,210  
>> THANK YOU.

618  
00:39:39,210 --> 00:39:41,200  
CHRISTOPHER BLAIR FROM NASA, THE  
MARSHALL SPACE FLIGHT CENTER.

619  
00:39:41,200 --> 00:39:48,510  
THE FIRST COMES FROM TWO  
TOGETHER.

620  
00:39:48,510 --> 00:39:50,570  
QUESTION IS EARLIER WE HEARD  
ABOUT THE SPINNING OF NEW

621  
00:39:50,570 --> 00:39:51,730  
HORIZONS.

622  
00:39:51,730 --> 00:39:56,040  
DOES THE SPACECRAFT NEWS  
GYROSCOPES OR FUEL AND IF IT'S

623  
00:39:56,040 --> 00:40:01,580  
FUELLED WOULD THAT IMPACT  
MISSION LONGEVITY.

624  
00:40:01,580 --> 00:40:07,250  
>> THE ONLY PROPELANT WE USE IS  
TO SPIN IT UP TO 5 RPM AND THEN

625  
00:40:07,250 --> 00:40:12,320  
IT ACTS JUST LIKE A TOP POINTED

AT WHATEVER IT'S POINTED AT AND

626

00:40:12,320 --> 00:40:18,000

WE SPIN IT UP AND POINT IT TO  
EARTH STRANGELY BUT ONCE YOU'VE

627

00:40:18,000 --> 00:40:19,910

DONE THAT IT TAKES NO MORE  
PROPELLANT.

628

00:40:19,910 --> 00:40:24,800

IT CAN DO THAT FOR YEARS AND  
YEARS.

629

00:40:24,800 --> 00:40:29,200

WE USE ON BOARD SYSTEMS  
INCLUDING GYROS AND STAR

630

00:40:29,200 --> 00:40:31,840

TRACKERS TO DETERMINE IT'S  
ORIENTATION.

631

00:40:31,840 --> 00:40:36,270

BUT ONCE IT'S SPINNING, YOU CAN  
LEAVE IT THERE FOR A LONG TIME.

632

00:40:36,270 --> 00:40:42,670

>> I'LL ADD THAT THE ACTUAL  
CONTROL IS DONE WITH THRUSTERS.

633

00:40:42,670 --> 00:40:47,760

>> SO LET'S TAKE TWO MORE.

634

00:40:47,760 --> 00:40:50,340

>> THANK YOU.

635

00:40:50,340 --> 00:40:54,690

WE'VE SEEN LOTS OF GREAT BLACK  
AND WHITE IMAGES.

636

00:40:54,690 --> 00:40:59,990

WHEN CAN WE EXPECT TO SEE SOME  
COLOR IMAGES?

637

00:40:59,990 --> 00:41:03,850

>> YOU CAN EXPECT TO SEE COME  
COLOR IMAGES TOMORROW.

638

00:41:03,850 --> 00:41:10,450

SO WE'LL HAVE NEW COLOR DOWN  
SOON SO WE'LL BE LOOKING AT IT

639

00:41:10,450 --> 00:41:12,020

TOMORROW.

640

00:41:12,020 --> 00:41:22,580

>> THERE'S A COUPLE OF REASONS  
YOU SEE

641

00:41:22,580 --> 00:41:23,960

IT MORE.

642

00:41:23,960 --> 00:41:29,720

IT'S MAGNIFICATION AND IT'S BEEN  
INTRODUCING THE MORE INTERESTING

643

00:41:29,720 --> 00:41:33,210

SCIENTIFIC PRODUCT BECAUSE IT  
GIVES US BETTER RESOLUTION ON

644

00:41:33,210 --> 00:41:35,590

THE TARGET BUT THERE'S ANOTHER  
REASON AS WELL.

645

00:41:35,590 --> 00:41:38,870

WHEN WE TAKE COLOR DATA, THE WAY  
THAT WE DO IT IS WE ACTUALLY

646

00:41:38,870 --> 00:41:41,520

HAVE FOUR COLOR CAMERAS.

647

00:41:41,520 --> 00:41:45,950  
EACH WITH A GIVEN FILTER OVER  
THEM AND WE PASS THEM OVER THE

648

00:41:45,950 --> 00:41:49,670  
TARGET AND THEN WE HAVE TO DOWN  
LINK THE DATA INSTEAD OF SENDING

649

00:41:49,670 --> 00:41:53,730  
DOWN ONE IMAGE WE HAVE TO SEND  
BACK ALL FOUR AND THEY'RE

650

00:41:53,730 --> 00:41:56,070  
ACTUALLY INDIVIDUALLY BIGGER.

651

00:41:56,070 --> 00:41:59,580  
THEY HAVE MORE PIXELS AND MORE  
BITS THAN THE COLOR CAMERA

652

00:41:59,580 --> 00:42:00,650  
FORMAT.

653

00:42:00,650 --> 00:42:03,600  
IT'S MORE EXPENSIVE TO SEND THAT  
DATA DOWN.

654

00:42:03,600 --> 00:42:09,450  
NOT IN TERMS OF MONEY OR FUEL  
BUT IT TAKES MORE TRANSMIT TIME

655

00:42:09,450 --> 00:42:11,130  
TO GET COLOR IMAGERY TO THE  
GROUND.

656

00:42:11,130 --> 00:42:15,271  
SO THAT COMBINED WITH THE HIGHER  
RESOLUTION IS THE REASON WE HAVE

657

00:42:15,271 --> 00:42:19,420

BEEN BIASSING SO MUCH TOWARD THE  
IMAGERY BUT YOU'LL BE SEEING

658

00:42:19,420 --> 00:42:25,070

COLOR PRODUCTS AND EVENTUALLY  
SPEC PRODUCTS OVER THE COMING

659

00:42:25,070 --> 00:42:28,870

WEEKS AND MONTHS AS WE SHIFT ALL  
OF THIS BACK.

660

00:42:28,870 --> 00:42:33,430

100 TIME WHAT IS WE CAN TRANSMIT  
BACK THIS WEEK.

661

00:42:33,430 --> 00:42:36,390

>> BEFORE WE TAKE THE LAST  
QUESTION ON SOCIAL MEDIA, RAISE

662

00:42:36,390 --> 00:42:40,290

YOUR HAND HIGH, SOME OF YOU HAVE  
BEEN RAISING IT A LONG TIME.

663

00:42:40,290 --> 00:42:43,460

SO GO AHEAD, CHRIS, ONE MORE.

664

00:42:43,460 --> 00:42:45,570

>> THANK YOU, APPRECIATE IT.

665

00:42:45,570 --> 00:42:47,910

ONCE AGAIN, I WANTED TO MENTION  
THAT WE'RE GOING TO BE

666

00:42:47,910 --> 00:42:51,270

MONITORING THESE NEWS ACCOUNTS  
FOR SOCIAL MEDIA ALL WEEK LONG.

667

00:42:51,270 --> 00:42:53,800

IF YOU DON'T GET YOUR QUESTION  
ANSWERED TODAY WE'LL GET THE

668

00:42:53,800 --> 00:42:55,280

CHANCE TO FOLLOW THEM UP.

669

00:42:55,280 --> 00:42:59,770

AFTER THE CLOSEST APPROACH TO  
PLUTO, WHAT ARE THE

670

00:42:59,770 --> 00:43:02,780

POSSIBILITIES OF GETTING NEW  
IMAGES OF THE DARK REGIONS OF

671

00:43:02,780 --> 00:43:06,520

PLUTO?

672

00:43:06,520 --> 00:43:12,320

>> WE'LL BE LOOKING AT THE NICE  
SIDE.

673

00:43:12,320 --> 00:43:15,620

WE'RE ON THE SUMMIT SIDE NOW BUT  
ONCE WE GO AROUND THE OTHER END

674

00:43:15,620 --> 00:43:19,821

WE'RE ONLY SEEING A THIN  
CRESCENT OF THE PLANET AND IF

675

00:43:19,821 --> 00:43:22,820

IT'S HELPFUL WE CAN PUT GRAPHICS  
UP AND MAKE THEM AVAILABLE SO

676

00:43:22,820 --> 00:43:25,440

THAT PEOPLE CAN MORE EASILY  
PICTURE THIS AND CERTAINLY IN

677

00:43:25,440 --> 00:43:29,230

SIMULATIONS YOU CAN SEE THAT.

678

00:43:29,230 --> 00:43:32,250

SO THOSE DARK REGIONS ARE GOING  
TO BE HARD TO OBSERVE BECAUSE

679

00:43:32,250 --> 00:43:42,510

WE'RE LOOKING IN THIS PARTICULAR  
GEOMETRY.

680

00:43:42,510 --> 00:43:49,560

WE CAN IMAGE PLUTO IN THE LIGHT  
OF ITS MOON SHARON SHORTLY AFTER

681

00:43:49,560 --> 00:43:52,450

WE MAKE THE CLOSEST APPROACH SO  
THAT WE CAN LOOK AT THE EFFECTS

682

00:43:52,450 --> 00:43:57,450

OF THE COLDER CONDITIONS ON THE  
NIGHT SIDE TO SEE FOR EXAMPLE IF

683

00:43:57,450 --> 00:44:00,740

THERE'S EVIDENCE OF SNOWS OR  
DEPOSITIONS OF FROST ON THE

684

00:44:00,740 --> 00:44:08,320

SURFACE BUT THE DATA WE OBTAINED  
TO UNRAVEL WHAT'S GOING ON IS

685

00:44:08,320 --> 00:44:17,160

GOING TO BE THE DATA WE COLLECT  
IN A LITTLE LESS THAN 20 HOURS.

686

00:44:17,160 --> 00:44:24,590

COLOR IMAGING, THERMO  
MEASUREMENTS AND THE ULTIMATELY

687

00:44:24,590 --> 00:44:32,190

†-- ULTRAVIOLET I TALKED ABOUT  
EARLIER.

688

00:44:32,190 --> 00:44:37,730

>> ALL OF THIS IS ON THE  
SPACECRAFT AND WE SELECTED DATA

689

00:44:37,730 --> 00:44:42,760

FOR PLAYBACK SO IT'S GOING TO BE  
MONTHS†-- IT WILL BE UP TO

690

00:44:42,760 --> 00:44:45,010

ALMOST 16 MONTHS FOR US TO GET  
ALL THE DATA DOWN.

691

00:44:45,010 --> 00:44:48,910

SO YOU'RE GOING TO BE SEEING NEW  
IMAGES MONTHS FROM NOW THAT

692

00:44:48,910 --> 00:44:52,280

YOU'RE NOT SEEING THIS WEEK  
BECAUSE THIS WEEK OUR PRIORITY

693

00:44:52,280 --> 00:44:54,980

IS LOOKING AT PLUTO WITH THE  
INSTRUMENTS AND WE'LL PLAY BACK

694

00:44:54,980 --> 00:45:03,190

THE DATA WHEN WE DON'T HAVE  
SCIENCE DATA TO TAKE.

695

00:45:03,190 --> 00:45:05,780

>> OKAY.

696

00:45:05,780 --> 00:45:07,890

WHEN TOMORROW CAN WE REALLY  
CELEBRATE?

697

00:45:07,890 --> 00:45:09,350

WHEN WILL YOU CELEBRATE?

698

00:45:09,350 --> 00:45:14,140

OBVIOUSLY 8:53 IS THE CLOSEST  
APPROACH BUT THAT'S PERCEIVED

699

00:45:14,140 --> 00:45:15,140  
TIME.

700

00:45:15,140 --> 00:45:18,880  
SO IT'S ACTUALLY ALREADY WILL  
HAVE HAPPENED AND LATER IN THE

701

00:45:18,880 --> 00:45:22,810  
EVENING WHEN WE GET THE SIGNAL  
WILL THAT REALLY BE THE MOMENT

702

00:45:22,810 --> 00:45:25,540  
THAT YOU WILL BE CELEBRATING?

703

00:45:25,540 --> 00:45:30,130  
>> YEAH THERE'S TWO TIMES TO  
CELEBRATE TOMORROW.

704

00:45:30,130 --> 00:45:34,220  
ONE IS A LITTLE BIT BEFORE 7:50  
IN THE MORNING.

705

00:45:34,220 --> 00:45:37,460  
AT THAT TIME THE SPACECRAFT WILL  
BE AT CLOSEST APPROACH.

706

00:45:37,460 --> 00:45:41,350  
WE WILL BE 3 BILLION MILES FROM  
NEW HORIZONS BUT CONNECTED IN

707

00:45:41,350 --> 00:45:45,500  
TIME AND THAT IS THE TIME THAT  
WE WILL CELEBRATE AS THIS

708

00:45:45,500 --> 00:45:49,300  
HISTORIC MOMENT WHERE WE CAN SAY  
WE HAVE MADE A FLY BY OF PLUTO

709

00:45:49,300 --> 00:45:52,330

AND WE'RE STILL CONDUCTING THE  
EXPLORATION BUT WE'VE MADE

710

00:45:52,330 --> 00:45:55,720

CLOSEST APPROACH.

711

00:45:55,720 --> 00:45:59,830

THEN BECAUSE THE SPACECRAFT IS  
DOING IT'S WORK WE WILL HEAR

712

00:45:59,830 --> 00:46:02,730

FROM IT UNTIL SHORTLY BEFORE  
9:00†P.M.

713

00:46:02,730 --> 00:46:05,530

EASTERN TIME TOMORROW.

714

00:46:05,530 --> 00:46:11,190

INSTEAD OF PUTTING THE CHERRY ON  
TOP.

715

00:46:11,190 --> 00:46:14,260

WE KNOW THE SPACECRAFT CAN  
OPERATE ON ITS OWN.

716

00:46:14,260 --> 00:46:19,690

IT'S DONE THIS MOST OF THE NINE  
YEARS.

717

00:46:19,690 --> 00:46:33,400

THERE'S GOING TO BE A SIGH OF  
RELIEF AT 9:00†P.M.

718

00:46:33,400 --> 00:46:37,510

WHEN WE CAN  
CALL IT A SUCCESSFUL FLY BY.

719

00:46:37,510 --> 00:46:39,760  
TWO EVENTS AND TWO CHANCES TO  
CELEBRATE.

720  
00:46:39,760 --> 00:46:51,730  
>> WE'LL GO TO BILL AND THEN  
WRAP UP WITH THESE TWO.

721  
00:46:51,730 --> 00:46:54,420  
>> WHAT IS IT ABOUT PLUTO?

722  
00:46:54,420 --> 00:46:58,420  
THIS IS A SMALL POID COMPARED TO  
EVERYWHERE ELSE WE ARE SBN

723  
00:46:58,420 --> 00:46:59,420  
PLANET WISE.

724  
00:46:59,420 --> 00:47:02,000  
WHAT IS IT ABOUT PLUTO THAT  
SEEMS TO HAVE MARKED EVERYONE

725  
00:47:02,000 --> 00:47:04,530  
ELSE'S INTEREST.

726  
00:47:04,530 --> 00:47:08,800  
>> IF YOU LOOK MORE BROADLY AT  
WHAT WE'RE DOING IN SOLAR SYSTEM

727  
00:47:08,800 --> 00:47:13,600  
EXPLORATION, WE HAVE THE  
SPACECRAFT AROUND SERIES BEING A

728  
00:47:13,600 --> 00:47:19,790  
MAIN BELT, MINOR PLANET, HAS  
CREATED ENORMOUS EXCITEMENT AND

729  
00:47:19,790 --> 00:47:22,550  
THIS, AGAIN, IS ANOTHER MISSION  
THAT'S BEEN GOING FOR A VERY

730

00:47:22,550 --> 00:47:23,550

LONG TIME.

731

00:47:23,550 --> 00:47:28,270

IT WENT THERE AND WE HAVE  
CURIOSITY ON MARS.

732

00:47:28,270 --> 00:47:31,110

WE HAVE JUNO ON ITS WAY TO  
JUPITER.

733

00:47:31,110 --> 00:47:35,930

PLUTO IS A CAPSTONE OF OUR SOLAR  
SYSTEM EXPLORATION AND ALSO

734

00:47:35,930 --> 00:47:43,400

OPENING UP THIS NEW REALM BUT  
IT'S ALSO, YOU KNOW FOR US ON

735

00:47:43,400 --> 00:47:49,240

STAGE HERE, PLUTO IS A MEMBER OF  
OUR SOLAR SYSTEM AND THE LAST

736

00:47:49,240 --> 00:47:56,750

UNEXPLORED TERRITORY AND IT WILL  
OPEN UP NEW GROUND.

737

00:47:56,750 --> 00:47:59,810

FROM THE SCIENCE PERSPECTIVE  
WE'RE ENTERING THIS WHOLE NEW

738

00:47:59,810 --> 00:48:02,530

REALM OF THE SOLAR SYSTEM.

739

00:48:02,530 --> 00:48:06,210

WHAT'S REALLY EXCITING ABOUT  
PLUTO, THE WHOLE SYSTEM, IS THAT

740

00:48:06,210 --> 00:48:11,360  
ALREADY FROM STILL QUITE A  
DISTANCE OUT AND 20 HOURS AND 31

741  
00:48:11,360 --> 00:48:14,970  
MINUTES AWAY WE'RE SEEING THAT  
PLUTO REALLY IS A COMPLEX WORLD

742  
00:48:14,970 --> 00:48:19,300  
UNLIKE I THINK WHAT ANYBODY  
IMAGINED.

743  
00:48:19,300 --> 00:48:25,420  
>> I THINK JOHN PUT THAT VERY  
WELL BUT I'LL TELL YOU, I HAD A

744  
00:48:25,420 --> 00:48:29,250  
LOT OF CHANCES TO GET TALKS FROM  
THE PUBLIC AND HAVE PEOPLE COME

745  
00:48:29,250 --> 00:48:32,240  
UP AFTERWARDS AND TELL ME WHY  
THEY'RE INTERESTED AND PEOPLE

746  
00:48:32,240 --> 00:48:33,760  
LIKE TO DO THAT.

747  
00:48:33,760 --> 00:48:36,880  
WE HAVE BEEN ON THIS PROJECT FOR  
15 YEARS AND WHAT I FOUND IS

748  
00:48:36,880 --> 00:48:45,460  
THAT THERE'S NO SINGLE REASON  
ONE PART OF IT IS UNFINISHED

749  
00:48:45,460 --> 00:48:46,460  
BUSINESS.

750  
00:48:46,460 --> 00:48:50,400  
THE LAST CHECK MARK IN MANY

PEOPLE'S BOOKS.

751

00:48:50,400 --> 00:48:55,300

SOME PEOPLE SAY WHEN I LOOKED IN  
THAT FIRST ASTRONOMY BOOKS IT'S

752

00:48:55,300 --> 00:48:58,780

THE ONE WITH ALL THE QUESTION  
MARKS.

753

00:48:58,780 --> 00:49:01,920

OTHER PEOPLE IT'S THE FARTHEREST  
FROM HERE AND PARTICULARLY WITH

754

00:49:01,920 --> 00:49:02,920

CHILDREN.

755

00:49:02,920 --> 00:49:10,740

BECAUSE PLUTO IS MORE DIMINUTISE  
THERE'S AN ASSOCIATION THERE AND

756

00:49:10,740 --> 00:49:13,900

THERE'S THE UNKNOWN AND THE  
SCIENTIFIC ACCOMPLISHMENT OF

757

00:49:13,900 --> 00:49:21,760

EXPLORING THIS WHOLE NEW KIND OF  
PLANET

758

00:49:21,760 --> 00:49:26,370

AND PLUTO HAS BECOME A  
BRAND AND WE'RE SEEING A VIRAL

759

00:49:26,370 --> 00:49:32,470

RESPONSE IN THE PUBLIC AND  
THERE'S A HUNGER AND A THIRST

760

00:49:32,470 --> 00:49:34,580

FOR EXPLORATION.

761

00:49:34,580 --> 00:49:41,580

THEY LIKE, JUST LIKE WE DO IN  
SCIENCE, TURNING LITTLE DOTS,

762

00:49:41,580 --> 00:49:45,130

LITTLE POINTS OF LIGHT INTO  
PLANETS THAT WE CAN TRANSFORM

763

00:49:45,130 --> 00:49:46,130

OUR KNOWLEDGE.

764

00:49:46,130 --> 00:49:50,860

WE CAN WRITE THE TEXTBOOK FROM  
SCRATCH AND AND THOSE GO

765

00:49:50,860 --> 00:50:00,010

TOGETHER VERY WELL AND YOUR  
PRESENCE HERE IS EVIDENCE OF AND

766

00:50:00,010 --> 00:50:06,860

WE'RE LOOKING FORWARD TO BE ABLE  
TO TELL THAT STORY WITH YOU AND

767

00:50:06,860 --> 00:50:10,730

SHOW YOU BEHIND THE SCENES WHEN  
WE CAN AND SHOW YOU HOW THE

768

00:50:10,730 --> 00:50:12,450

SCIENCE ACTUALLY GETS DONE.

769

00:50:12,450 --> 00:50:15,861

NOT JUST THE DATA PRODUCT BUT  
WITH TIME TO SHOW YOU HOW WE

770

00:50:15,861 --> 00:50:19,700

ACTUALLY TRANSFORM SIMPLE THINGS  
LIKE A RADIUS INTO MUCH BETTER

771

00:50:19,700 --> 00:50:23,080

UNDERSTANDING OF THE ORIGIN OF  
THE SOLAR SYSTEM.

772

00:50:23,080 --> 00:50:26,400  
HOW BINARY PLANETS GET MADE HOW  
ATMOSPHERES WORK.

773

00:50:26,400 --> 00:50:29,470  
ALL OF THOSE THINGS.

774

00:50:29,470 --> 00:50:33,060  
WHEN I WAS A LITTLE KID IT WAS  
THE APOLLO PROGRAM AND EXCITED

775

00:50:33,060 --> 00:50:42,520  
SO MANY KIDS TO WANT TECH  
CAREERS THEY ENDED UP IN AREAS

776

00:50:42,520 --> 00:50:43,520  
OF REVOLUTION.

777

00:50:43,520 --> 00:50:46,270  
THEY MADE THE INTERNET  
REVOLUTION AND COMPUTER

778

00:50:46,270 --> 00:50:50,630  
REVOLUTION OF THE 80s AND 90s  
AND I ATTRIBUTE A LOT OF THAT TO

779

00:50:50,630 --> 00:50:55,330  
THE EXCITEMENT DUE TO APOLLO.

780

00:50:55,330 --> 00:51:00,800  
IF WE CAN BE A SMALL PART OF  
MAKING KIDS EXCITED ABOUT STEM

781

00:51:00,800 --> 00:51:04,690  
EDUCATION AND CAREERS IN SCIENCE  
AND ENGINEERING THROUGH NEW

782

00:51:04,690 --> 00:51:08,730

HORIZONS THAT MAY BE THE  
GREATEST GIFT.

783

00:51:08,730 --> 00:51:13,400

>> THREE QUESTIONS AND THEN WE  
HAVE TO WRAP UP.

784

00:51:13,400 --> 00:51:17,670

GO AHEAD.

785

00:51:17,670 --> 00:51:21,300

>> REGARDING THE NEW INFORMATION  
ABOUT PLUTO BEING LESS DENSE

786

00:51:21,300 --> 00:51:26,820

THAN PREVIOUSLY THOUGHT DOES  
THAT SUPPORT THE POSSIBILITY

787

00:51:26,820 --> 00:51:31,710

OF†-- IS THAT EVIDENCE  
SUPPORTING THE POSSIBILITY OF A

788

00:51:31,710 --> 00:51:32,710

SUB SURFACE OCEAN?

789

00:51:32,710 --> 00:51:38,800

AND THE OTHER THING IS AS FAR AS  
NO ATMOSPHERE HAS THE TEAM RULED

790

00:51:38,800 --> 00:51:48,300

OUT THE POSSIBILITY OF A SHARED  
ATMOSPHERE BETWEEN PLUTO AND

791

00:51:48,300 --> 00:51:50,430

KAREN?

792

00:51:50,430 --> 00:51:53,580

>> THE CHANGE IN THE RADIUS FROM

WHAT WE UNDERSTOOD BEFORE TO

793

00:51:53,580 --> 00:52:01,450

WHAT WE KNOW NOW IS VERY NEW  
NEWS.

794

00:52:01,450 --> 00:52:04,090

WE NEED TO TAKE A LOOK AT THAT.

795

00:52:04,090 --> 00:52:16,170

WE'RE GOING TO BE GETTING  
AND

796

00:52:16,170 --> 00:52:20,410

IT'S TOO EARLY TO SAY WHAT THE  
IMMY KAGSS ARE FOR THAT NEW

797

00:52:20,410 --> 00:52:21,640

RADIUS RIGHT NOW.

798

00:52:21,640 --> 00:52:25,120

>> I'LL SPEAK TO THE QUESTION  
ABOUT SHARON'S ATMOSPHERE.

799

00:52:25,120 --> 00:52:30,130

ONE OF THE COOLEST THINGS IS  
LOOKING FOR WHETHER PLUTO'S

800

00:52:30,130 --> 00:52:34,460

ATMOSPHERE CREATES A SECONDARY  
ATMOSPHERE AROUND SHARON THE WAY

801

00:52:34,460 --> 00:52:37,430

A LOT OF BINARY STARS SHARE  
THEIR ATMOSPHERE.

802

00:52:37,430 --> 00:52:41,120

WE'VE NEVER SEEN ANYTHING LIKE  
THAT BEFORE AND WE'RE GOING TO

803

00:52:41,120 --> 00:52:43,230

TEST IT TOMORROW.

804

00:52:43,230 --> 00:52:46,190

WE'RE GOING TO PUT IT TO BED  
MORE THE LESS.

805

00:52:46,190 --> 00:52:49,560

IT'S GOING TO DO THE SAME  
EXPERIMENT FOR SHARON THAT IT

806

00:52:49,560 --> 00:52:50,580

DOES FOR PLUTO.

807

00:52:50,580 --> 00:52:53,860

IT'S GOING TO WATCH THE SUN GO  
BEHIND THE PLANET AND COME BACK

808

00:52:53,860 --> 00:52:59,120

OUT THE OTHER SIDE AND WHAT WE  
WOULD BE LOOKING FOR IS THE

809

00:52:59,120 --> 00:53:02,720

SUNLIGHT BEFORE IT HITS THE HARD  
DECK DO TO MOLECULAR ABSORPTION

810

00:53:02,720 --> 00:53:04,600

IN THE ATMOSPHERE.

811

00:53:04,600 --> 00:53:08,940

IF WE SEE THAT WE'LL KNOW SHARON  
HAS AN ATMOSPHERE AND WE HAVE A

812

00:53:08,940 --> 00:53:10,210

SENSITIVE INSTRUMENT.

813

00:53:10,210 --> 00:53:16,250

IT CAN MEASURE PRESSURES DOWN TO  
THE NANO BAR LEVEL.

814

00:53:16,250 --> 00:53:19,750

IT'S A THOUSAND TIMES†-- IN FACT  
IT'S 10,000 TIMES LOWER THAN THE

815

00:53:19,750 --> 00:53:24,360

PRESSURE AT THE BASE OF PLUTO'S  
ATMOSPHERE.

816

00:53:24,360 --> 00:53:30,810

WILL IT WILL TELL US WHAT  
MOLECULES ARE IN THE ATMOSPHERE

817

00:53:30,810 --> 00:53:38,970

AND WE'LL HAVE A PRETTY GOOD  
HANDLE ON WHETHER SHARON'S

818

00:53:38,970 --> 00:53:43,550

ATMOSPHERE IS NATIVE TO SHARON  
OR A SHARED ATMOSPHERE STREAMING

819

00:53:43,550 --> 00:53:47,460

OFF OF PLUTO BUT WE WON'T KNOW  
ANY OF THAT IN THE COMING DAYS.

820

00:53:47,460 --> 00:53:49,650

THAT'S GOING TO TAKE AWHILE  
BEFORE THE DATA SETS GET BACK TO

821

00:53:49,650 --> 00:53:53,320

THE GROUND.

822

00:53:53,320 --> 00:53:59,640

>> NBC NEWS, YOU MENTION THE  
CONFIRMATION OF THE POLAR CAP.

823

00:53:59,640 --> 00:54:01,840

IS THERE ANYTHING AT ALL THAT  
CAN BE SAID ABOUT THOSE DARK

824

00:54:01,840 --> 00:54:03,990

EQUATORIAL REGIONS AT THIS  
POINT?

825

00:54:03,990 --> 00:54:07,070

SOME PEOPLE TALKED ABOUT ICE  
VOLCANOES?

826

00:54:07,070 --> 00:54:13,640

ANY EVIDENCE FOR OR AGAINST THAT  
OR ANY OTHER HYPOTHESES PUT

827

00:54:13,640 --> 00:54:15,400

FORWARD OVER THE LAST FEW  
MONTHS?

828

00:54:15,400 --> 00:54:18,210

>> AS YOU CAN IMAGINE WE'RE VERY  
INTERESTED IN THOSE KIND OF

829

00:54:18,210 --> 00:54:25,000

QUESTIONS SO THE GEOLOGY IS SO  
OVER THAT.

830

00:54:25,000 --> 00:54:27,910

USING OTHER MORE ADVANCED  
TECHNIQUES TO LOOK INSIDE THOSE

831

00:54:27,910 --> 00:54:29,090

DARK REGIONS.

832

00:54:29,090 --> 00:54:34,640

FOR NOW, FOR TODAY WE HAVE  
RELATIVELY POOR RESOLUTIONS FOR

833

00:54:34,640 --> 00:54:38,720

WHAT'S GOING TO BE IN OUR HANDS.

834

00:54:38,720 --> 00:54:43,400

THAT'S COMING IN THE NEXT 24  
HOURS AND WE'RE GOING TO GET

835

00:54:43,400 --> 00:54:50,690  
COMPOSITIONAL SPECTROPHY.

836

00:54:50,690 --> 00:54:56,760  
THESE FIRST MEASURES WHERE WE  
COULD RESOLVE DIFFERENT REGIONS

837

00:54:56,760 --> 00:55:02,970  
ON THE SURFACE OF PLUTO SHOW TUS  
POLAR REGIONS ARE VERY DIFFERENT

838

00:55:02,970 --> 00:55:09,720  
FROM THE DARK REGIONS.

839

00:55:09,720 --> 00:55:12,140  
>> WHAT THEY'RE MADE OF IS TBD.

840

00:55:12,140 --> 00:55:16,490  
WE HAVE TO WORK ON THAT FOR  
AWHILE.

841

00:55:16,490 --> 00:55:21,520  
WE NEED TO GET BETTER DATA  
BECAUSE YOU NATURALLY GET LOWER

842

00:55:21,520 --> 00:55:25,150  
SIGNAL TO NOISE BECAUSE THEY  
DON'T REFLECT AS MUCH LIGHT.

843

00:55:25,150 --> 00:55:34,990  
>> A QUICK QUESTION AND THEN I'M  
GOING TO WRAP UP YOU HAD ME AT

844

00:55:34,990 --> 00:55:37,290  
NITROGEN FIVE DAYS AGO.

845

00:55:37,290 --> 00:55:41,940  
CAN YOU PUT A NUMBER OF DISTANCE  
OF STREAM FOR WHERE THAT IS AND

846  
00:55:41,940 --> 00:55:45,500  
DOES THIS MEAN NOR NITROGEN IN  
THE ATMOSPHERE?

847  
00:55:45,500 --> 00:55:47,430  
IT'S BEING PUSHED OUT FASTER?

848  
00:55:47,430 --> 00:55:50,590  
WHAT'S THE RANGE OF POSSIBLE  
CANDIDATE MECHANISMS?

849  
00:55:50,590 --> 00:55:51,590  
>> YEAH.

850  
00:55:51,590 --> 00:55:56,970  
SO FIVE DAYS OUT.  
190.

851  
00:55:56,970 --> 00:56:01,330  
THIS IS IONIZED AND HAS BEEN OUT  
IN THE SOLAR WIND AND IS EITHER

852  
00:56:01,330 --> 00:56:09,200  
BY SOLAR WINDS OR SOLAR  
ULTRAVIOLENT BUT WE ANTICIPATED

853  
00:56:09,200 --> 00:56:13,550  
DETECTING THINGS COMING OFF THE  
ATMOSPHERE IN THE LAST 24, 36,

854  
00:56:13,550 --> 00:56:16,810  
48 HOURS SO THIS IS ABOUT TWICE  
AS FAR OUT.

855  
00:56:16,810 --> 00:56:19,070  
ABOUT FIVE DAYS BEFORE CLOSEST

APPROACH.

856

00:56:19,070 --> 00:56:22,600

WE'RE GOING THREE QUARTERS OF A  
MILLION MILES EACH DAY.

857

00:56:22,600 --> 00:56:29,250

A LITTLE OVER A MILLION  
KILOMETERS.

858

00:56:29,250 --> 00:56:33,110

THAT'S ABOUT 6 MILLION  
KILOMETERS OR ROUGHLY

859

00:56:33,110 --> 00:56:35,300

3.5†MILLION MILES OUT.

860

00:56:35,300 --> 00:56:39,250

WHAT THAT TELLS US IS THAT AS I  
SAID EARLIER, EITHER THE SOURCE

861

00:56:39,250 --> 00:56:44,060

IS STRONGER, THE ESCAPE RATES  
ARE STRONGER OR THE CONVERSION

862

00:56:44,060 --> 00:56:53,790

FROM NEUTRALS ARE MORE EFFICIENT  
OR THERE'S A MEK SCHISM

863

00:56:53,790 --> 00:56:59,110

CONCENTRATING THE NITROGEN ALONG  
THE FLIGHT PATH.

864

00:56:59,110 --> 00:57:02,350

NOT BECAUSE IT KNOWS THAT WE'RE  
THERE OF COURSE BUT AT JUPITER

865

00:57:02,350 --> 00:57:08,370

AS WE EXITED THE SYSTEM WE FOUND  
THAT THE PLANET'S WERE VERY

866

00:57:08,370 --> 00:57:20,860

INHOMOGENIUS.

867

00:57:20,860 --> 00:57:29,300

SULFUR AND OXYGEN WERE DERIVED  
FROM

868

00:57:29,300 --> 00:57:32,690

THE VOLCANIC MOVE.

869

00:57:32,690 --> 00:57:37,050

THAT'S A GREAT QUESTION BUT WE  
DON'T HAVE THE ANSWER YET.

870

00:57:37,050 --> 00:57:40,430

IT MAY TAKE A LONG TIME BEFORE  
WE CAN PIECE ALL OF THAT

871

00:57:40,430 --> 00:57:43,630

TOGETHER.

872

00:57:43,630 --> 00:57:48,430

>> YOU CAN TELL FROM KATHIE AND  
GLENN AND ALLEN THAT THIS IS

873

00:57:48,430 --> 00:57:51,630

JUST GOING TO BE AN INCREDIBLE  
EXPERIENCE FOR ALL OF US AND I'M

874

00:57:51,630 --> 00:57:54,480

REALLY THRILLED THAT YOU'RE ALL  
HERE TO FOLLOW IT.

875

00:57:54,480 --> 00:58:01,400

20 HOURS, 22 MINUTES, 0 SECONDS,  
FOR ABOUT 625,000 MILES FROM

876

00:58:01,400 --> 00:58:02,400

PLUTO RIGHT NOW.

877

00:58:02,400 --> 00:58:05,090

I WON'T READ DOWN THE NUMBERS AS  
THEY GO.

878

00:58:05,090 --> 00:58:12,550

BUT IT'S GOING TO BE A REALLY  
DYNAMIC NEXT 24 HOURS PLUS.

879

00:58:12,550 --> 00:58:17,340

THE SCIENCE AT NASA NEVER SLEEPS  
AND I DON'T THINK YOU WILL

880

00:58:17,340 --> 00:58:20,620

EITHER FOR THE NEXT COUPLE OF  
DAYS BUT IT WILL BE EXCITING AND

881

00:58:20,620 --> 00:58:22,750

I WANT TO THANK YOU FOR BEING  
HERE.

882

00:58:22,750 --> 00:58:24,290

>> REAL QUICK.

883

00:58:24,290 --> 00:58:27,800

FOLKS THAT WANT INTERVIEWS,  
ONE-ON-ONES, FOLKS HERE IN THE

884

00:58:27,800 --> 00:58:33,710

CENTER, CHECK THE NEWSROOM THEY  
WILL BE AVAILABLE THROUGHOUT THE

885

00:58:33,710 --> 00:58:38,920

DAY AND FOR THE FOLKS VIEWING  
THIS, 2402288532.

886

00:58:38,920 --> 00:58:39,920

CALL IN.

887

00:58:39,920 --> 00:58:40,920

WE SET UP INTERVIEWS.

888

00:58:40,920 --> 00:58:44,050

THE STAGE IS SET FOR JULY 14th.

889

00:58:44,050 --> 00:58:52,150

GO TO NASA.GOV NEW HORIZONS AND  
TOMORROW, LADIES AND GENTLEMEN,

890

00:58:52,150 --> 00:58:53,920

LIVE STARTING AT 7:30†A.M.

891

00:58:53,920 --> 00:58:58,160

EASTERN, THE COUNTDOWN PROGRAM  
TO NEW HORIZONS ENTERING THE

892

00:58:58,160 --> 00:59:00,770

PLUTO SYSTEM FOLLOWED AT  
8:00†A.M.

893

00:59:00,770 --> 00:59:03,660

EASTERN BY A NEWS  
BRIEFING AND I BELIEVE WE'RE

894

00:59:03,660 --> 00:59:07,540

GOING TO HAVE SOME LIVE COVERAGE  
OF THE MISSION OPERATION CENTER.