GOOD MORNING AND WELCOME TO THE JOHN'S HOPKINS APPLIED PHYSICS LABORATORY.

JOINING ME ON STAGE IS ASTRONAUT AND ASSOCIATE ADMINISTRATOR ALAN STERN WHO IS THE PRINCIPLE INVESTIGATOR IN BOLDER COLORADO.

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I know many of you the last few days have been participating but what it calls comes down to is an enormous team of people. Lead by Allen Stern, the principle investigator. A big team here at the Johns Hopkins Applied Physics Lab, University of Colorado, the list goes on and on. Hundreds of scientists, engineers, technicians, people sewing blankets to be able to prepare this wonderful Trepid. The first to visit Pluto and to fly on beyond. This is true exploration. I'm so glad you're all here to participate in it and this disappeared— that view is just the first of many, many rewards.
THAT THE TEAM WILL GET ESPECIALLY SINCE PLUTO DIDN'T TURN OUT TO BE A RELEVANTLY FEATURELESS PLANET WITH NITROGEN FOGGY ATMOSPHERE AND WE'RE SCRATCHING OUR HEADS THINKING WHAT ARE WE GOING TO DO WITH THAT? PLUTO HAS TURNED OUT TO BE A COMPLEX AND INTERESTING WORLD. OF COURSE IT WOULD BE BUT THAT WAS NEVER A CERTAINTY. BUT NOW FOR THE VERY FIRST TIME WE KNOW THAT. AND WITH THAT, FOR HIS FIRST IMPRESSION, I'D LIKE TO TURN IT OVER TO ALAN STERN. >> THANK YOU. >> WELL, I WANT TO THANK JOHN FOR HIS REMARKS AND THANK NASA
FOR MAKING THIS ALL POSSIBLE.

HOW ABOUT THAT?

>> 50 YEARS AGO TODAY THE UNITED STATES WAS EMBARKING AT THE BEGINNING OF AN ERA OF EXPLORATION OF THE SOLAR SYSTEM THAT WILL LIVE FOREVER IN HISTORY.

50 YEARS AGO TODAY THE FIRST SPACECRAFT FLEW BY MARS.

AND I THINK IT'S FITTING THAT ON THAT 50th ANNIVERSARY WE COMPLETE IT WITH THE EXPLORATION OF PLUTO.

A BIG TEAM OF PEOPLE WORKED 15 YEARS TO DO THIS.

THEY WORKED UNDER THE GUN FOR TIME.

THEY BROKE RECORDS FOR LOW COST OUTER PLANET EXPLORATION.
THEY DID SOME AMAZING FEATS AND
WE SAW ONE OF THEM JUST LAST

49
00:03:38,919 --> 00:03:44,859
WEEKEND IN TERMS OF THAT MISSION
OPERATION RESCUE OF THIS FLY BY

50
00:03:44,860 --> 00:03:49,090
THAT PRODUCES IMAGES JUST LIKE
THE ONE YOU SAW AND MANY MORE

51
00:03:49,090 --> 00:03:54,159
RAINING TO THE GROUND BEGINNING
TOMORROW BUT STAY TUNED.

52
00:03:54,159 --> 00:03:56,239
STAY TUNED BECAUSE OUR
SPACECRAFT IS NOT IN

53
00:03:56,239 --> 00:03:57,560
COMMUNICATION WITH THE EARTH.

54
00:03:57,560 --> 00:04:02,180
WE PROGRAMMED IT TO BE SPENDING
IT'S TIME TAKING IMPORTANT DATA

55
00:04:02,180 --> 00:04:06,099
SETS THAT IT CAN ONLY TAKE
TODAY.

56
00:04:06,098 --> 00:04:09,139
AND OVER THE NEXT PERIOD OF
ABOUT 12 OR 13 HOURS THE

57
00:04:09,139 --> 00:04:12,818
SPACECRAFT WILL CONTINUE TO TAKE
THAT DATA AND THEN IT WILL

58
00:04:12,818 --> 00:04:16,250
TRANSMIT A MESSAGE BACK TO THE
EARTH FOR ABOUT 20 MINUTES AT

59
00:04:16,250 --> 00:04:17,250
9:00†P.M.
EASTERN TIME WHICH WE'LL FIND OUT HOW IT'S DOING.

WHETHER IT SURVIVED THE PASSAGE THROUGH THE PLUTO SYSTEM AND HOPEFULLY IT DID AND WE'RE COUNTING ON THAT BUT THERE'S A LITTLE BIT OF DRAMA BECAUSE THIS IS TRUE EXPLORATION.

NEW HORIZONS IS FLYING INTO THE UNKNOWN.

AND THEN TOMORROW MORNING, WE SHOULD SEE THE BEGINNING OF A 16 MONTH DATA WATERFALL.

YOU'LL BE SEEING MORE AND MORE ABOUT PLUTO BEGINNING TOMORROW.

BUT IF WE CAN PUT THAT IMAGE UP WHICH IS NOW THE BEST IMAGE.

IT HAS A RESOLUTION OF ABOUT 4 KILOMETERS PER PIXEL WHICH IS 1,000 TIMES BETTER THAN WE COULD DO EVEN WITH THE BIGGEST AND BADDEST GUN TELESCOPE, THE HUBBLE SPACE TELESCOPE 3 BILLION
00:05:05,240 --> 00:05:07,319
MILES AWAY.

00:05:07,319 --> 00:05:09,769
NEW HORIZONS TOOK THAT IMAGE YESTERDAY.

00:05:09,769 --> 00:05:12,038
DOWN LINKED IT TO THE GROUND.

00:05:12,038 --> 00:05:16,409
THE BITS FLEW AT THE SPEED OF LIGHT FOR 4.5 HOURS.

00:05:16,410 --> 00:05:20,770
RECEIVED AT THE NETWORK AND TRANSMITTED HERE AND THE IMAGE

00:05:20,769 --> 00:05:23,098
WAS OPENED THIS MORNING.

00:05:23,098 --> 00:05:31,368
HOW ABOUT A ROUND OF APPLAUSE FOR THAT BEAUTIFUL PLANET.

00:05:31,369 --> 00:05:38,909
[ APPLAUSE ]
NOW I'D LIKE TO INVITE OUR

00:05:38,908 --> 00:05:41,740
MISSION OPERATIONS MANAGER.

00:05:41,740 --> 00:05:44,038
>> DR.

00:05:44,038 --> 00:05:48,120
BOWMAN HAS BEEN LEADING THIS MISSION OPERATION FROM THE

00:05:48,120 --> 00:05:53,098
TIME WE WROTE THE PROPOSAL TO WIN THIS PROJECT ALL THE WAY
THROUGH DEVELOPMENT, THROUGH LAUNCH AND THROUGH AN EPIC 3 BILLION MILE JOURNEY ACROSS THE SOLAR SYSTEM.

WHAT AN ABSOLUTE HONOR IT IS TO BE HERE.

I'M THANKFUL THAT NASA ALLOWED US TO BUILD THIS HERE AT THE APPLIED PHYSICS LABORATORY.

WE HAVE A LARGE TEAM AND I HAPPEN TO BE THE MISSION OPERATIONS MANAGER BUT IN NO WAY AM I TAKING THE CREDIT FOR THIS INCREDIBLE JOURNEY.

I MEAN, IT'S DEFINITELY A TEAM EFFORT.

WE HAD TO EACH DO OUR PART AND BE THE EXPERTS IN OUR FIELD AND WHEN I STAND BACK THIS MORNING AND I JUST THINK--- I HAVE TO
PINCH MYSELF.

LOOK WHAT WE ACCOMPLISHED.

IT'S TRULY AMAZING.

BUT HUMAN KIND CAN GO OUT AND EXPLORE THESE WORLDS AND TO SEE MUY TOE BE REVEALED JUST BEFORE OUR EYES, IT'S JUST FANTASTIC.

AND I CAN'T WAIT UNTIL WE GET THESE IMAGES DOWN STARTING EARLY TOMORROW MORNING AND THIS SPACECRAFT IS HEALTHY AND HAS RECORDED ALL OF THAT FANTASTIC DATA.

SO THANK YOU AGAIN.

THANK YOU VERY MUCH.

[ APPLAUSE ]

>> OKAY.

IT'S BEEN A GREAT MORNING AND OBVIOUSLY WE STILL†-- THE STORY
IS NOT OVER YET.

00:07:55,788 --> 00:07:57,490
YOU'RE GOING TO HEAR MORE ABOUT THAT THIS EVENING.

00:07:57,490 --> 00:08:01,079
BUT BEFORE WE OPEN IT UP FOR QUESTIONS I'M GOING TO TOSS THIS

00:08:01,079 --> 00:08:02,478
TO ALAN.

00:08:02,478 --> 00:08:05,918
ALAN, IF YOU CAN SET UP, WE HAVE VIDEO OF SOMETHING THAT HAPPENED

00:08:05,918 --> 00:08:10,178
THIS MORNING WITH THE SCIENCE TEAM I BELIEVE.

00:08:10,178 --> 00:08:11,178
>> SURE.

00:08:11,178 --> 00:08:15,239
JOHN AND I WERE OVER AT THE BUILDING HERE ON THE APL CAMPUS

00:08:15,240 --> 00:08:16,780
WHERE THE SCIENCE TEAM IS WORKING.

00:08:16,779 --> 00:08:20,709
THE SCIENCE TEAM ASSEMBLED AT 5:45 THIS MORNING FOR A CHANCE

00:08:20,709 --> 00:08:24,579
TO SEE THAT IMAGE OF PLUTO AND TO REACT TO IT AND HAVE A LITTLE

00:08:24,579 --> 00:08:27,550
BIT OF A SCIENTIFIC DISCUSSION AND WE'RE GOING TO GIVE YOU A

00:08:27,550 --> 00:08:34,408
PEAK INTO IT IF WE CAN QUEUE IT UP.

121 00:08:34,408 --> 00:08:45,649 [ APPLAUSE ]
WOW!

122 00:08:45,649 --> 00:09:03,899
>> A LITTLE BEHIND THE SCENES
LOOK BUT IT'S NOT BEHIND THE

123 00:09:03,899 --> 00:09:04,899
SCENES ANYMORE.

124 00:09:04,899 --> 00:09:08,279
YOU'VE SEEN IT ON THIS SCREEN
AND IT'S GOING VIRAL AROUND THE

125 00:09:08,279 --> 00:09:11,250
WORLD ON FACEBOOK AND INSTAGRAM
AND PROBABLY EVERY OTHER SOCIAL

126 00:09:11,250 --> 00:09:13,330
MEDIA AS WELL.

127 00:09:13,330 --> 00:09:15,950
AND WE'RE VERY HAPPY TO BE HERE
AND TO BE ABLE TO ANSWER YOUR

128 00:09:15,950 --> 00:09:18,810
QUESTIONS AS THE REPRESENTATIVES
OF THIS BIG TEAM AND

129 00:09:18,809 --> 00:09:20,089
REPRESENTATIVE OF NASA.

130 00:09:20,090 --> 00:09:21,090
>> EXCELLENT.

131 00:09:21,090 --> 00:09:22,090
CONGRATULATIONS.

132 00:09:22,090 --> 00:09:27,080
>> WE'RE GOING TO OPEN UP FOR
QUESTIONS AND SOCIAL MEDIA, OH
MY GOODNESS.

THE NUMBERS ARE ASTOUNDING.

THE WORLD LADIES AND GENTLEMEN IS†-- THEY'RE JUST TOTALLY

EXCITED AND THE STORY IS NOT OVER YET.

SO WHAT WE'RE GOING TO DO HERE IS RAISE YOUR HAND, THE MEDIA,

WE'RE GOING TO START WITH YOU.

WE'LL GO TO SOCIAL MEDIA AND WE'RE GOING TO TRY TO GET AS

MANY QUESTIONS IN AS POSSIBLE.

SO RAISE THEM HIGH.

LAST TIME I STAYED OVER HERE A LOT OF TIME SO LET ME START OUT

WITH JOE.

YOUR NAME AND AFFILIATION.

>> WASHINGTON POST, TELL US
ABOUT PLUTO.

00:09:58,269 --> 00:10:00,159
WHAT ARE WE LOOKING AT THERE?

00:10:00,159 --> 00:10:02,049
ARE THERE MOUNTAINS?

00:10:02,049 --> 00:10:03,049
CRATERS?

00:10:03,049 --> 00:10:04,049
TELL US ABOUT WHAT YOU SEE?

00:10:04,049 --> 00:10:08,689
CAN WE QUEUE THAT IMAGE BACK UP?

00:10:08,690 --> 00:10:11,980
OKAY.

00:10:11,980 --> 00:10:18,940
SO THIS IMAGE IS ORIENTED WITH PLUTO'S NORTH TO THE TOP SO

00:10:18,940 --> 00:10:22,730
THE DARK REGIONS THAT YOU SEE ARE NEAR PLUTO'S EQUATOR.

00:10:22,730 --> 00:10:26,289
THE PLANET IS ABOUT 1500 MILE ACROSS TO GIVE YOU A SCALE.

00:10:26,289 --> 00:10:31,299
IT HAS A THIN NITROGEN ATMOSPHERE WHICH YOU CAN'T SEE IN THIS IMAGE BECAUSE IT'S CLEAR JUST LIKE LOOKING THROUGH OTHER

00:10:36,029 --> 00:10:39,899
ATMOSPHERES BUT WHAT YOU CAN SEE IN THIS IMAGE AND IT'S POSSIBLE

159 00:10:39.899 --> 00:10:42.659 FOR THE FOLKS BEHIND THE SCENES TO ACTUALLY JUST MAKE IT A

160 00:10:42.659 --> 00:10:46.159 LARGER FRACTION OF THE SCREEN AND YOU'D BE ABLE TO SEE IT, YOU

161 00:10:46.159 --> 00:10:48.969 CAN SEE REGIONS OF VARIOUS SIGNS OF BRIGHTNESS.

162 00:10:48.970 --> 00:10:54.840 DARK NEAR THE EQUATOR AND BRIGHT REGIONS TO THE NORTH OF THAT.

163 00:10:54.840 --> 00:10:58.590 BROAD INTERMEDIATE ZONES OVER THE POLE.

164 00:10:58.590 --> 00:11:02.690 WHAT WE KNOW IS THAT ON THE SURFACE WE SEE THE HISTORY OF

165 00:11:02.690 --> 00:11:03.830 IMPACT.

166 00:11:03.830 --> 00:11:06.730 WE SEE A HISTORY OF SURFACE ACTIVITY IN TERMS OF SOME

167 00:11:06.730 --> 00:11:11.330 FEATURES THAT WE MIGHT BE ABLE TO IDENTIFY INDICATING INTERNAL

168 00:11:11.330 --> 00:11:15.070 ACTIVITY IN THE PLANET AT SOME POINT IN THE PAST OR MAYBE EVEN

169 00:11:15.070 --> 00:11:19.680 IN IT'S PRESENCE AND WHAT WE ALSO KNOW IS THAT THIS IS
CLEARLY A WORLD WHERE GEOLOGY AND ATMOSPHERE CLIMATOLOGY PLAY A ROLE.

IT HAS STRONG ATMOSPHERIC CYCLES.

IT SNOWS ON THE SURFACE.

THEY GO BACK INTO THE ATMOSPHERE EACH 248 YEAR ORBIT.

THEY HAVE BEEN OBSERVED TO MOVE AROUND ON THE SURFACE SEEN FROM 3 BILLION MILES AWAY.

WE LOOK AT THAT IMAGE AND FRANKLY IF YOU'RE A SCIENTIST LIKE I AM, YOU WANT TO SEE ALL THE SUPPORTING DATA.

YOU WANT TO SEE THE TYPOGRAPHY SO WE CAN DETERMINE WHAT'S HIGH AND WHAT'S LOW.

YOU WANT TO SEE COLOR DATA.
YOU WANT TO SEE THE COMPOSITION
SO WE CAN DETERMINE WHAT THE

183
00:12:05,120 --> 00:12:07,070
TARGET AREAS ARE MADE FROM.

184
00:12:07,070 --> 00:12:11,150
YOU WANT TO SEE THE THERMAL MASS
SO WE CAN UNDERSTAND THE

185
00:12:11,149 --> 00:12:15,289
BRIGHTTEST AREAS AND COLDEST
AREAS FOR EXAMPLE WHERE THE SNOW

186
00:12:15,289 --> 00:12:18,149
PLAYED IT OUT OR IS IT SOME
OTHER STORY PLUTO IS TRYING TO

187
00:12:18,149 --> 00:12:19,149
TELL US.

188
00:12:19,149 --> 00:12:22,139
YOU ALSO WANT TO SEE HIGHER
RESOLUTION IMAGES.

189
00:12:22,139 --> 00:12:26,409
TOMORROW WE'LL SHOW YOU IMAGERY
WITH TEN TIMES THE RESOLUTION OF

190
00:12:26,409 --> 00:12:29,839
THAT IMAGE AND AS THE DATA
CONTINUES TO COME TO THE GROUND

191
00:12:29,840 --> 00:12:32,370
WE'LL HAVE IMAGES THAT ARE
BETTER STILL.

192
00:12:32,370 --> 00:12:34,470
DRAMATICALLY BETTER STILL.

193
00:12:34,470 --> 00:12:39,120
A LOT MORE WITH THE DATA COMING
DOWN AND WE COULDN'T BE HAPPIER

194
00:12:39,120 --> 00:12:42,250
ABOUT THE PERFORMANCE OF THE SPACECRAFT AND FRANKLY ABOUT THE

00:12:42,250 --> 00:12:44,708
PERFORMANCE OF THE PLUTO SYSTEM.

00:12:44,708 --> 00:12:46,539
>> OTHER QUESTIONS?

00:12:46,539 --> 00:12:48,860
>> I'M WITH THE PLANETARY SOCIETY.

00:12:48,860 --> 00:12:51,889
I NOTICE THERE'S ALSO COLOR INFORMATION IN THAT PICTURE.

00:12:51,889 --> 00:12:54,360
I'M WONDERING IF YOU CAN TELL ME A LITTLE BIT ABOUT THE COLOR

00:12:54,360 --> 00:12:59,169
DATA THAT YOU GOT AND IF YOU SEE ANY EVIDENCE FOR CLOUDS OR

00:12:59,169 --> 00:13:01,759
ANYTHING IN THE ATMOSPHERE THAT YOU CAN SEE IN THE IMAGES.

00:13:01,759 --> 00:13:02,759
>> SURE.

00:13:02,759 --> 00:13:03,759
ABSOLUTELY.

00:13:03,759 --> 00:13:04,759
CAN WE PUT UP THE COLOR IMAGE?

00:13:04,759 --> 00:13:07,778
IS THAT POSSIBLE?

00:13:07,778 --> 00:13:13,250
>> THERE'S ANOTHER IMAGE I'M LOOKING FOR AND IF THEY DON'T
HAVE IT BACKSTAGE I'M NOT ABLE TO SHOW IT TO YOU.

OKAY.

SO ON THE MONITOR IT'S A LITTLE HARD FOR ME TO SEE BUT WE KNOW THAT PLUTO HAS COLOR VARIATIONS ACROSS THE SURFACE.

WHEN WE STRETCH THOSE, WHICH IS SOMETHING THAT OUR TEAM IS WORKING ON RIGHT NOW WE'LL HAVE A BETTER HANDLE ON HOW STRONG THOSE VARIATIONS ARE AND WE EXPECT TO BE ABLE TO SHOW YOU SOME OF THAT LATER IN THE DAY.

I HAVE LOOKED AT THAT IMAGE JUST VERY BRIEFLY WHEN WE WERE FIRST OVER IN THE SCIENCE WORK AREA AND I WAS LOOKING FOR EVIDENCE OF PLUMES AND ATMOSPHERIC HAZING AND I COULDN'T SEE THEM.

THAT DOESN'T MEAN THAT THEY'RE NOT THERE.
A REAL PROPER ANALYSIS OF IT WILL REQUIRE SOME TIME AND MAYBE HIGHER RESOLUTION IMAGES.

FIRST OF ALL, THIS IS VERY EXCITING FOR EVERYBODY I’M SURE.

BUT I AM WONDERING, SPECIFICALLY FOR ALICE, HOW ARE YOU FEELING RIGHT NOW KNOWING THAT YOUR CRAFT IS OUT THERE, YOU KNOW,

FLYING BY THE PLUTO SYSTEM AND YOU WON'T HEAR FROM IT FOR AWHILE.

THANKS.

THAT'S A REALLY GOOD QUESTION.

I HAVEN'T HAD VERY MUCH SLEEP.

AND YOU KNOW, WE ALWAYS TALK ABOUT THE SPACECRAFT AS BEING A CHILD, A BABY, A TEENAGER.
AND WE LOST SIGNAL AS PLANNED LAST NIGHT AT 11:17 AND IT WAS ABSOLUTELY NOTHING ANYBODY ON THE OPERATIONS TEAM COULD DO.

IT WAS JUST TO TRUST THAT WE HAD PREPARED IT WELL TO SET OFF ON ITS JOURNEY ON ITS OWN AND DO WHAT IT NEEDED TO DO.

BUT, YEAH. THERE WERE A LOT OF US IN THE OP CENTER EVEN THOUGH WE KNEW THAT SPACECRAFT WASN'T GOING TO BE TALKING TO US BUT WE WERE THERE. WE WANTED TO BE WITH IT AS IT WENT THROUGH THIS JOURNEY AND I AM FEELING A LITTLE BIT NERVOUS JUST LIKE YOU DO WHEN YOU SET YOUR CHILD OFF BUT I HAVE ABSOLUTE CONFIDENCE THAT IT'S GOING TO DO WHAT IT NEEDS TO DO TO COLLECT THAT SCIENCE AND IT'S GOING TO TURN AROUND AND SEND US THAT BURST OF DATA AND TELL US
THAT IT'S OKAY.

I GUESS IT'S A MIX OF FEELING NERVOUS AND PROUD AT THE SAME TIME.

>> OKAY IF YOU CAN PLEASE RAISE YOUR HAND HIGH, A LOT OF FOLKS HERE.

GO AHEAD.

>> I HAVE A QUESTION FROM ONE OF OUR LISTENERS.

HOW LONG CAN NEW HORIZONS CONTINUE TO TRANSMIT BEFORE IT'S POWER EXPIRES?

>> I'LL TAKE A CRACK AT THAT?

NEW HORIZONS IS POWERED BY RTG.

THAT STANDS FOR RADIO ISOSCOPE† THERMO GENERATOR.

THAT'S WHAT WE ALL USE.

THAT'S A TECHNOLOGY DEVELOPED
JOINTLY BY NASA AND THE

DEPARTMENT OF ENERGY AND THE
ACTUAL POWER SOURCE INSIDE THE

RTG IS THE ELEMENT PLUTONIUM
WHICH WAS NAMED FOR THE PLANET

PLUTO IN THE 1930s.

SO WE SENT A LITTLE PLUTONIUM
BACK TO PLUTO.

THAT PRODUCES HEAT AND FROM THE
HEAT THERMO COUPLES TURN THAT

INTO POWER FOR THE SPACECRAFT.

IT WAS PRODUCING ABOUT 250 WATTS
BUT THAT DECLINES EVERY YEAR AS

THE PLUTONIUM DECAYS AND
CURRENTLY PRODUCING ABOUT 202

WATTS TO POWER THE SPACECRAFT
AND ALL THE INSTRUMENTS.

BUT EVERY YEAR 3 LESS WATTS AND
AS THAT DECLINES EVENTUALLY

WE'LL GET TO A POINT WHERE WE
CAN’T OPERATE THE PRIMARY

00:17:10,230 --> 00:17:13,470
SPACECRAFT COMPUTER AND
COMMUNICATION SYSTEM.

00:17:13,470 --> 00:17:17,970
WE ESTIMATED THAT THAT POINT
WILL BE REACHED SOMETIME IN THE

00:17:17,970 --> 00:17:19,778
MID 2030s.

00:17:19,778 --> 00:17:21,818
ROUGHLY 20 YEARS FROM NOW.

00:17:21,818 --> 00:17:25,269
AT THAT POINT THE SPACECRAFT
WILL BE 100 ASTRONOMICAL

00:17:25,269 --> 00:17:29,220
UNITS FROM THE SUN.

00:17:29,220 --> 00:17:39,808
IT COULD DO A FLY-BY OF THE
BUILDING BLOCKS OF PLANETS LIKE

00:17:39,808 --> 00:17:44,028
MUY TOE AND THEN WE HAVE A
CHANCE TO GO FURTHER TO OBSERVE

00:17:44,028 --> 00:17:49,710
THE DEEP REACHES LIKE VOYAGER
DID AND DO THAT WITH MUCH MORE

00:17:49,710 --> 00:17:54,710
SENSITIVE INSTRUMENTS ABOARD
THIS SPACECRAFT AND HOPEFULLY

00:17:54,710 --> 00:17:58,230
RETURN DATA THAT WILL REALLY ADD
TO THE STOREHOUSE OF WHAT WE

00:17:58,230 --> 00:18:02,200
KNOW ABOUT OUR ENVIRONMENT IN
THE SOLAR SYSTEM AND POTENTIALLY

00:18:02,200 --> 00:18:07,990
EVEN TO CROSS THAT INTERSTELLAR
BOUNDARY WITH MUCH MORE MODERN

00:18:07,990 --> 00:18:12,420
INSTRUMENTATION.

00:18:12,420 --> 00:18:14,320
>> BEFORE YOU ASK THE QUESTION
I'M GOING TO TRY TO GET TO AS

00:18:14,319 --> 00:18:16,058
MANY MEDIA AS I CAN.

00:18:16,058 --> 00:18:19,440
IF YOU CAN HELP ME OUT HERE AND
JUST ASK ONE QUESTION.

00:18:19,440 --> 00:18:21,970
DON'T TRY TO SNEAK A FOLLOW UP
IN, OKAY?

00:18:21,970 --> 00:18:25,139
WE CAN GET TO AS MANY OF THESE
FOLKS AVAILABLE THROUGHOUT THE

00:18:25,138 --> 00:18:26,138
DAY FOR ONE-ON-ONE INTERVIEWS.

00:18:26,138 --> 00:18:28,399
>> NAME AND AFFILIATION.

00:18:28,400 --> 00:18:32,899
>> YEAH, I'M JUST WONDERING HOW
WHEN THE DATA COMES IN IT WILL

00:18:32,898 --> 00:18:34,359
BE PRIORITIZED.

00:18:34,359 --> 00:18:39,048
THERE'S A PRIORITIZATION BECAUSE
IT'S SUCH A SLOW, ALMOST 56K
00:18:39.048 --> 00:18:41.618
CONNECTION COMING BACK FROM
PLUTO.

00:18:41.618 --> 00:18:44.949
HOW IS IT GOING PRIORITIZED AS
IT COMES BACK IN OVER THE NEXT

00:18:44.950 --> 00:18:46.240
FEW MONTH?

00:18:46.240 --> 00:18:48.759
S.
>> WELL, THAT'S ACTUALLY A

00:18:48.759 --> 00:18:53.359
NUISANCE STORY.

00:18:53.359 --> 00:18:56.329
LET ME START BY SAYING OVER THE
NEXT COUPLE OF MONTHS THE

00:18:56.329 --> 00:18:59.199
SPACECRAFT†-- WELL, FOR THE NEXT
COUPLE OF WEEKS THE SPACECRAFT

00:18:59.200 --> 00:19:01.710
IS GOING TO BE SENDING SOME OF
THE HIGHEST PRIORITY DATA BACK

00:19:01.710 --> 00:19:06.140
ON THE GROUND BUT THEN AROUND
THE FIRST OF AUGUST WE'LL

00:19:06.140 --> 00:19:09.640
TRANSITION TO A MODE WHERE THE
SPACECRAFT IS SENDING WHAT WE

00:19:09.640 --> 00:19:11.850
CALL OUR LOW SPEED DATA SETS TO
THE GROUND.

00:19:11.849 --> 00:19:14.528
NOT COMING TO THE GROUND AT A
LOWER SPEED BUT TAKEN AND
RECORDED AT A LOWER SPEED.

THOSE ARE EASIER TO PLAN FOR.

AND WE CHOSE THOSE TO COME TO

THE GROUND FIRST TO GIVE ALICE

AND HER TEAM A MUCH NEEDED BREAK

FROM WHAT HAS BEEN A SIX MONTH

HISTORIC ENCOUNTER OF SEVEN DAYS

AROUND THE CLOCK OPERATIONS.

SO WE WANTED TO GIVE THEM A

BREAK AND THAT'S WHY WE'RE GOING

to send the low speed to the

ground in August and September

AND THEN THEY'RE GOING TO CRANK

IT BACK UP.

WE'LL START THE PLANNING FOR

THAT IN A COUPLE OF WEEKS.

WE HAVE AGREED WITH NASA A LONG

TIME AGO WHICH DATA SETS FOR

FIRST PRIORITY, SECOND PRIORITY

AND THIRD PRIORITY AND WE'LL

SEND THEM DOWN IN THAT ORDER.
INITIALLY WE'RE GOING TO SEND ALL THE DATA DOWN AS THE BROWSE DATA SET THAT'S COMPRESSED ON BOARD THE SPACECRAFT BY A FACTOR OF SEVERAL SO THAT WE CAN GET IT DOWN MUCH MORE QUICKLY AND THEN WE'LL GO BACK AND SEND EVERYTHING A SECOND TIME IN AN UNCOMPRESSED MANNER.

THE ENTIRE PROCESS WILL TAKE A PERIOD OF 16 MONTHS SO WE EXPECT TO FINISH THE LAST OF THE DATA TRANSMIT IN OCTOBER OR NOVEMBER OF LAST YEAR.

>> WHAT IS THE ACTUAL DATA RATE?

I THINK 56K IS MUCH TOO HIGH.

>> YEAH WE WISH IT WAS 56K.

WE CALL IT RATE STEPPING.
SO AS THE SPACECRAFT IS VIEWED FROM THE GROUND AND GETS HIGHER

329
00:20:43,648 --> 00:20:50,428
IN THE SKY AND AS THAT INCREASES IN ELEVATION FOLLOWING THAT WE

330
00:20:50,429 --> 00:20:54,130
CAN INCREASE THE DATA RATE SO AT THE LOWEST RATE AT 10 DEGREE

331
00:20:54,130 --> 00:21:00,590
ELEVATION WE'RE AT ABOUT 1,000 BITS PER SECOND.

332
00:21:00,589 --> 00:21:04,740
NOW WHEN WE TRANSITION INTO A SPIN MODE WE CAN ACTUALLY GET

333
00:21:04,740 --> 00:21:05,859
HIGHER RATES.

334
00:21:05,859 --> 00:21:13,729
ON TOP OF THAT, THE MASS DATA RATE IS ABOUT 4,000 BITS PER SECOND

335
00:21:13,730 --> 00:21:16,679
SECOND DOWN LINK.

336
00:21:16,679 --> 00:21:19,548
>> WE'LL TAKE TWO QUESTIONS AND THEN WE'LL GO TO SOCIAL MEDIA

337
00:21:19,548 --> 00:21:23,249
WHICH NO SURPRISE IS EXPLODING WITH EXCITEMENT.

338
00:21:23,249 --> 00:21:28,720
SO THEN I'LL COME OVER HERE BECAUSE I HAVEN'T HIT THIS SIDE YET.

339
00:21:28,720 --> 00:21:29,769

340
00:21:29,769 --> 00:21:37,349
I'm very excited to be here.

The question is about the cratering.

Looks like NIT images you released a day or so ago were a lot of craters and this image that you just showed here shows maybe one crater.

I wonder if that is -- is that real?

Do you see a lot less craters?

And why would that be?

Why is there such a difference?

>> Pluto and Sharon look different.

We've known that from the earth but now we can see how dramatically different they are.
MORE BATTERED SURFACE ON SHARON.

WE CAN PUT NUMBERS COUNTING THE CRATERS AS A FUNCTION OF THEIR SIZE.

I HOPE THAT WE'LL BE ABLE TO ESTABLISH THE SURFACE UNITS ON PLUTO AND SHARON.

AS TO WHY IT LOOKS YOUNGER EITHER IT'S INTERNAL ENGINE CONTINUES TO RUN AND THERE'S ACTIVE PROCESSES TAKING PLACE OR THOSE ATMOSPHERIC PROCESSES ARE THEMSELVES COVERING UP THE GEOLOGY AND COVERING UP THE CRATER.

WE'LL BE ABLE TO KNOW THAT IN THE COMPETITIIONAL DATA AND OTHER DATA SETS THAT I MENTIONED BECAUSE WITH THOSE VARIOUS DATA SYSTEMS, YOU CAN REALLY READ THE WHOLE STORY AND IT'S AMBIGUOUS.
TODAY FOR A COUPLE OF REASONS.

ONE WE JUST GOT THE DATA AND SECOND WE DON'T HAVE THE SUPPORTING DATA SETS TO REALLY UNRAVEL THE WHOLE STORY.

SO STAY TUNED.

>> LET'S TAKE A COUPLE OF QUESTIONS FROM SOCIAL MEDIA AND TWO QUESTIONS THAT ARE REOCCURRING WHAT'S GOING ON?

I'M HEARING A LOT OF BUZZ ON THAT.

>> THANK YOU.

I APPRECIATE IT.

NASA MARSHALL SPACE FLIGHT CENTER AS WE MONITOR ALL THE GREAT QUESTIONS FROM ALL THE FANS ON THE LINE WITH US.

FIRST QUESTION IS DOES ANY OF THE SURFACE FEATURES ON PLUTO
SUGGEST POSSIBLE TECTONICS?

>> I'M NOT SURE.

THAT'S AN HONEST ANSWER.

I THINK WE REALLY HAVE TO HAVE A LITTLE TIME TO WORK WITH THE DATA AND LOOK AT IT CAREFULLY ON A COMPUTER VERSUS SEEING IT ON THE SCREEN FOR A FEW SECONDS OR ON THE SCREENS OVER IN THE SCIENCE ANALYSIS AREA FOR JUST A FEW SECONDS BUT WE'RE GOING TO HAVE A CHANCE TO DO THAT TODAY AND I THEY BY THE TIME THE EXPERTS TAKE A LOOK WE CAN REPORT BACK TO YOU TOMORROW FOR THE FIRST ANALYSIS.

>> ONE MORE QUESTION, CHRIS.

>> EXCELLENT.

THANK YOU.
HAS THE IS A IS ALWAYS ENCOURAGING OUR YOUTH TO STUDY,

THIS QUESTION COMES FROM ONE OF OUR YOUNGER FANS.

MY 9-YEAR-OLD SON WANTS TO KNOW HOW LONG DID IT TAKE TO BUILD THE SPACECRAFT NEW HORIZONS?

NEW HORIZONS WAS BUILT IN A PERIOD OF FOUR YEARS AND TWO MONTHS BUT THAT INCLUDES THE DESIGN PHASE AS WELL AS THE CONSTRUCTION AND TESTING.

THE ENTIRE PROJECT FROM THE TIME THAT WE GOT AUTHORITY RECEIVED FROM NASA UNTIL WE LAUNCHED WAS 4 YEARS AND TWO MONTHS WHICH IS PRETTY SHORT FOR OUTER PLANET MISSIONS AND EVEN PLANETARY MISSIONS IN GENERAL BUT WE WERE UNDER THE GUN TO MAKE THE JUPITER GRAVITY ASSIST LAUNCH WINDOW IN EARLY 2006 AND WE WERE
ABLE TO DO THAT.

AND AS A RESULT WE WERE ABLE TO MAKE THE ENCOUNTER TODAY.

HAD WE NOT MADE THAT LAUNCH WINDOW WE WOULD HAVE HAD TO FLY ANOTHER FOUR YEARS AND NOT ENCOUNTERED PLUTO UNTIL 2019.

SO WE WERE VERY WELL AWARE DURING THIS PERIOD THAT WE WERE DESIGNING AND BUILDING NEW HORIZONS THAT THERE WAS A BIG INCENTIVE TO MAKE THAT LAUNCH WINDOW AND THE HOPKINS APPLIED PHYSICS LABORATORY TEAM AND CONTRACTOR TEAM, THOSE OF US ON SCIENCE AND SOUTHWEST RESEARCH RESPONSIBLE FOR PAYLOAD.

I THINK EVERYBODY KNEW THAT IT WAS VERY IMPORTANT.

A LOT OF PEOPLE THAT REALLY
SACRIFICED FAMILY TIME, NIGHTS

AND WEEKENDS.

A LOT OF OTHER PEOPLE DIDN'T
THINK IT COULD BE DONE BUT THIS
TEAM MANAGED TO DO IT AND THEY
DESERVE A HUGE AMOUNT OF CREDIT.

THEY NOT ONLY BUILT THAT
SPACECRAFT AND GOT IT LAUNCHED
IN THAT UNBELIEVABLY SHORT TIME
BUT IT'S WORKED ESSENTIALLY
FLAWLESSLY FOR THE WHOLE 9.5
YEARS.

I'LL GIVE YOU THE LAST
QUESTION AND WE'LL TAKE A FEW
MORE HERE AND WE'LL HAVE TO WRAP
UP.

WHAT IS THE MAXIMUM
RESOLUTION YOU HOPE TO GET FROM
THE PICTURES YOU'RE TAKING IN
THE SHADOWED AREAS WHERE SHARON
LIES?
THAT'S A LITTLE BIT OF A DIFFICULT QUESTION TO ANSWER

BECAUSE IT DEPENDS ON SOME OF THE SUBTLETIES OF THE DATA

FOR THOSE THAT DON'T KNOW WHAT THE QUESTION IS ABOUT, NOW THAT THE SPACECRAFT IS BEYOND PLUTO WHEN IT LOOKS BACK AT THE PLANET IT'S SEEING THE NIGHT SIDE AND JUST A THIN CRESCENT.

BUT WE ARRANGED THE FLY BY TO OCCUR ON A DAY WHEN PLUTO'S LARGEST MOON SHARON IS ON THE OTHER SIDE AND SUNLIGHT IS REFLECTING OFF SHARON AND ILLUMINATING THE NIGHT SIDE.

SO WE LOOK BACK WITH OUR CAMERAS AT THOSE NIGHT SIDE TERRAINS ILLUMINATED BY SHARON LIGHT AND WE CAN SEE IN THOSE TERRAINS.
HOWEVER WE'RE LOOKING BACK INTO THE GLARE OF THE SUN AND THE SUNLIGHT CREATES VARIOUS OPTICAL EFFECTS ON THE IMAGES THAT CAN MAKE IT DIFFICULT TO SEE THE DETAILS THAT ARE IN THEM.

THE NATIVE RESOLUTION OF THE IMAGES IS PRETTY GOOD BUT BECAUSE IT'S SO DARK, THE SIGNAL TO NOISE IS LOW AND WE'LL HAVE TO ACTUALLY ADD THE PIXELS TOGETHER IN A WAY THAT REDUCES RESOLUTION UNTIL WE BUILD UP THE SIGNAL WELL ENOUGH THAT WE CAN ACTUALLY PICK OUT INDIVIDUAL SURFACE UNITS.

HOW FAR WE'LL HAVE TO DEGRADE THAT RESOLUTION IN ORDER TO GET THE GOOD SIGNAL TO NOISE IS DIFFICULT TO PREDICT IN ADVANCE BECAUSE WE'VE NEVER TURNED THE CAMERAS BACK TO LOOK AT THE SUN.

WE DIDN'T WANT TO RISK THAT.
DURING THE FLIGHT OUT TO PLUTO.

00:28:00.858 --> 00:28:04.579
SO WE'LL HAVE TO SEE WHAT THE OPTICAL EFFECTS ARE AND THEN SEE

00:28:04.579 --> 00:28:08.378
HOWELL WE CAN PRODUCE HIGH RESOLUTION VERSUS MEDIUM

00:28:08.378 --> 00:28:10.769
RESOLUTION IMAGERY.

00:28:10.769 --> 00:28:14.509
>> ALL RIGHT.

00:28:14.509 --> 00:28:16.499
I KNOW THE SCIENTISTS HAVE BEEN WORRIED THAT WHAT LITTLE

00:28:16.499 --> 00:28:20.169
ATMOSPHERE PLUTO HAS MIGHT HAVE FROZEN OUT AND YOU WERE EAGER TO

00:28:20.169 --> 00:28:21.169
GET THERE.

00:28:21.169 --> 00:28:26.080
YOU MENTIONED YESTERDAY THAT YOU'VE SEEN DATA FOR NITROGEN

00:28:26.079 --> 00:28:27.548
AND METHANE.

00:28:27.548 --> 00:28:29.479
NOW THAT YOU'VE SEEN THE PICTURES IS IT FAIR TO SAY THAT

00:28:29.479 --> 00:28:32.230
IT SNOWS ON PLUTO?

00:28:32.230 --> 00:28:33.679
>> IT SURE LOOKS THAT WAY.
00:28:33,679 --> 00:28:36,889
>> PASS IT DOWN THIS WAY.

462
00:28:36,888 --> 00:28:40,109
PASS IT DOWN THIS WAY.

463
00:28:40,109 --> 00:28:44,609
>> THEN WE'RE GOING TO WRAP UP HERE.

464
00:28:44,609 --> 00:28:48,508
>> ASTRONOMY NOW MAGAZINE, COULD YOU TELL US A LITTLE BIT ABOUT

465
00:28:48,509 --> 00:28:50,979
THE OTHER DATA YOU GOT DOWN LAST NIGHT?

466
00:28:50,979 --> 00:28:55,459
ARE THE MEMORY CHIPS FILLING UP, FOR EXAMPLE?

467
00:28:55,459 --> 00:29:01,778
>> WELL, LAST NIGHT WE DOWN LINKED THAT IMAGE WHICH YOU SAW

468
00:29:01,778 --> 00:29:04,349
ON THE SCREEN HERE.

469
00:29:04,349 --> 00:29:09,349
AND WE DID MONITOR HOW THAT RECORDER WAS DOING AND IT

470
00:29:09,349 --> 00:29:14,849
ACTUALLY HAD FILLED UP A COUPLE OF SEGMENTS SO EACH SEGMENT IS 4

471
00:29:14,849 --> 00:29:18,928
GIGABITS SO SINCE THE LAST CONTACT WE HAD WITH IT IT WAS

472
00:29:18,929 --> 00:29:23,070
STARTING TO FILL UP THAT RECORDER SO ONE OF THE THINGS
THAT WE’LL DO TONIGHT IS GET ANOTHER LOOK AT HOW MUCH DATA HAS BEEN RECORDED ON THAT RECORDER AND HAVE A GOOD MEASURE OF HOW THE OBSERVATIONS ARE GOING ON BOARD THE SPACECRAFT.

>> I’M SORRY I WAS BROADCASTING SO I HOPE THIS ISN’T A QUESTION THAT’S ALREADY BEEN ASKED BUT THE LARGE SCALE PICTURE THAT WE’RE LOOKING AT HERE, I’M SEEING MAYBE FIVE OR SIX DIFFERENT TERRAINS, REGIONS ON THE BROADER SCALE.

IS THAT ROUGHLY RIGHT?

AND THE HEART FEATURE, THAT APPEARS TO BE SLIGHTLY DIFFERENT, THE LEFT SIDE AND THE RIGHT SIDE BUT I’M WONDERING IS THAT AN EFFECT OF THE SUB SOLAR POINT OR IS THERE A DIFFERENCE WITHIN THE HEART FEATURE?
I would say we're seeing the same thing that you're seeing LEO.

Hand full of individual broad surface units across this HEMS.

Fear and we are seeing a bit of a left right dichotomy on the heart.

When we get color data and other data sets we'll be able to say more things about that but you're making the right conclusion.

Can you describe what exactly you'll see on the monitors tonight when the signal comes in?

What's the hello Earth data that you're going to be getting in?

What will pop up first?
>> WHAT WILL POP FIRST.

>> WHAT WILL SHOW UP ON THE SCREEN FIRST.

>> WHEN YOU ESTABLISH THE HANDSHAKE BETWEEN THE GROUND STATION OR THE ANTENNA AND THE SPACECRAFT THE FIRST THING THAT

WE TRY TO LOCK IS CARRIER AND THAT WILL TELL US THAT THE SPACECRAFT IS THERE.

THE FIRST IS TURBO WHICH IS TELEMETRY AND WE KNOW THAT IT'S TRANSMITTING AT THE EXPECTED DATA RATE.

IT HASN'T SWITCHED TO ANOTHER DATA RATE SO THAT'S WHAT WE WILL SEE.

IT'S JUST ONES AND ZEROS BUT IN OUR DATA BASE ON THE GROUND WE MAP THAT SEQUENCE OF 1S AND 0S TO STAY OUT OF LOCK OR LOCKED SO...
WE'LL ACTUALLY SEE THOSE WORDS APPEAR ON THE SCREEN AND THEN WE'LL START TO GET REAL TIME DATA FROM THE SPACECRAFT, NOT RECORDED BUT REAL TIME DATA AND THAT CONSISTS OF THE MOST CRITICAL POINT FROM ALL THE SUBSYSTEMS ON BOARD THE SPACECRAFT.

SINCE THERE'S NOT ENOUGH ROOM. THERE'S THE CYCLE THAT THAT TABLE WILL GO THROUGH.

FIRST YOU MIGHT SEE POINTS THAT ARE DEVOTED TO THE MAIN COMPUTER STATUS AND THEN YOU MIGHT SEE POINTS DEVOTED TO GUIDANCE AND CONTROL.

SO WE DON'T KNOW EXACTLY WHERE IN THAT ROTATION WE WILL INTERCEPT SO WE'LL HAVE TO WAIT AND WATCH THAT CYCLE THROUGH.
WE SHOULD HAVE ENOUGH TIME TO CYCLE THROUGH A FEW TIMES ON THAT TABLE.

>> FOUR QUICK QUESTIONS, PLEASE.

ONE.

>> BOBBY RUSSELL WITH QUEST FOR STARS.

MY SOCIAL MEDIA COUNTER GOING UP.

WHEN WILL WE SEE COLOR DATA IN PICTURES?

>> WE HAVE COLOR DATA ON THE GROUND RIGHT NOW.

AND SO THE SCIENCE TEAM HAS BEEN WORKING WITH THAT AND I BELIEVE THAT WE'RE GOING TO BE ABLE TO SHOW YOU SOME OF THAT LATER IN THE DAY BUT WE'LL GET BACK TO YOU WHEN WE CAN.

>> BOB MCDONALD FROM THE CANADIAN BROADCASTING
CORPORATION.

CONGRATULATIONS ON CLOSEST APPROACH BUT THAT WAS ALSO THE MOST DANGEROUS TIME FOR THE SPACECRAFT.

IF ANYTHING WAS GOING TO GO WRONG THAT WAS IT.

IF YOU DON'T HEAR FROM IT TONIGHT HOW MUCH SCIENCE DO YOU HAVE AT THIS POINT?

>> I DON'T THINK THAT WE'RE GOING TO LOSE THE SPACECRAFT.

WE HAVE ESTIMATED BASED UPON A VARIETY OF DIFFERENT EXPERTS MAKING NUMERICAL MODELS OF HOW MUCH DUST AND DEBRIS MIGHT BE IN THE SYSTEM AND PROBABILITY OF LOSS OF MISSION.

WE SET THAT AT AROUND 2 PARTS IN 10,000.

SO YOU COULD FLY HUNDREDS OF NEW HORIZONS THROUGH THE SYSTEM AND
EXPECT ALL OF THEM TO SURVIVE.

SO IT’S A VERY LOW PROBABILITY BUT WE ALWAYS CAUTION THAT WE HAVE FLYING INTO THE UNKNOWN.

AS YOU KNOW, WE HAVE BEEN FURIOUSLY TRANSMITTING DATA TO THE GROUND THE LAST FEW DAYS.

THOSE ARE FAIL SAFE DATA SETS AND THE CONCEPT IS IDENTICAL TO THE CONCEPT USED ON THE APOLLO MISSION.

AS SOON AS THE MISSION COMMANDER WOULD STEP TO THE SURFACE OF THE MOON AND SAY A FEW WORDS FOR HISTORY, THEY WOULD IMMEDIATELY COLLECT THE FIRST SAMPLE.

IT WAS CALLED A CONTINGENCY SAMPLE IN CASE SOMETHING WENT WRONG AND THEY HAD TO TERMINATE THE REST OF THE SPACE WALK AND
COME BACK INTO THE LANDER AND LEAVE.

SO THEY HAD A LITTLE BIT OF SOMETHING GUARANTEED.

THAT'S WHAT WE HAVE BEEN DOING OVER THE LAST FEW DAYS.

WE DESIGNED THIS MORE THAN ABOUT FOUR YEARS AGO.

WE WENT THROUGH AND LOOKED AT THE DATA SETS THAT HAD BEEN COLLECTED ON FINAL APPROACH AND SELECTED FOR EACH OF OUR PRIMARY MISSION OBJECTIVES SOME SAMPLES OF THAT DATA LIKE THE WONDERFUL IMAGE YOU JUST SAW BUT ALSO SOME COLOR DATA AND COMPOSITIONAL, ULTRA VIOLENT, LOOKING AT THE SURFACES AND ATMOSPHERES AND PARTICLES AND PLASMA DATA WAS ALL SENT TO THE GROUND.

THEY REVOLUTIONIZED OUR KNOWLEDGE ABOUT PLUTO AND IT'S
SATELLITES ALREADY.

00:35:23,809 --> 00:35:28,509
HOWEVER, IT WOULD BE GUIDING
THE LILY A LITTLE BIT IF I

00:35:28,510 --> 00:35:31,940
DIDN'T TELL YOU THAT 99% OF THE
DATA IS STILL IN THE SPACECRAFT

00:35:31,940 --> 00:35:35,429
AND SOME OF THE MOST IMPORTANT
STUFF IS IN THAT SO IT WOULD BE

00:35:35,429 --> 00:35:38,929
A GREAT DISAPPOINTMENT IN NEW
HORIZONS HAD BEEN LOST TO A

00:35:38,929 --> 00:35:50,539
DEBRIS STRIKES BUT I THINK HE
WILL BE FINE AT 9:00 TONIGHT.

00:35:50,539 --> 00:35:57,730
>> BASED ON THE INFORMATION LAST
NIGHT AND THE READJUSTED

00:35:57,730 --> 00:36:03,490
DIAMETER OF PLUTO, HOW
EXACTLY†-- HOW CLOSE DID NEW

00:36:03,489 --> 00:36:07,939
HORIZONS COME AT CLOSEST
APPROACH THIS MORNING DO YOU

00:36:07,940 --> 00:36:08,940
THINK?

00:36:08,940 --> 00:36:13,289
>> WELL, THAT'S REALLY A
NAVIGATION QUESTION.

00:36:13,289 --> 00:36:20,019
I CAN TELL YOU THAT WE WERE 72
SECONDS EARLY FOR THAT†--
HITTING THAT AIM POINT.

AND ALLEN, DO YOU KNOW EXACTLY HOW— WHAT THE DISTANCE WAS?

THE PLAN WAS 7750 MILES.

OUR VERY LATEST ORBIT DETERMINATION INDICATED THAT WE WERE GOING TO BE SOMEWHERE IN THE VOIR DIRE TINTY OF 70 KILOMETERS CLOSER.

WE DID FLY THROUGH IT BUT A LITTLE BIT OFF CENTER.

WELL WITHIN SPECS.

I SUPPOSE THIS IS A QUESTION FOR ALAN.

WHEN CAN WE GO BACK TO PLUTO?

I HAVE SECRETLY BEEN WORKING ON A LANDER.
I HAD A PRETTY GOOD BET SOMEBODY WOULD ASK ME A QUESTION LIKE THAT.

>> HAVE YOU REALLY?

>> YEAH.

I DO THINK THAT WE'LL RETURN TO THE PLUTO SYSTEM.

IT'S SO SCIENTIFICALLY INTERESTING AND COMPELLING THAT WE'LL WANT TO SEND AN ORBITER OR LANDER IN THE FUTURE.

BUT DOING A MISSION LIKE THAT WILL BE TOUGHER THAN NEW HORIZONS BECAUSE WE'LL WANT TO COME TO A STOP.

WE'LL WANT TO DEVELOP NEW TECHNOLOGY TO DO THAT.

PARTICULARLY WHEN WE WANT IT TO CROSS IN A REASONABLE AMOUNT OF TIME.
BE ABLE TO TRAVEL FAST AND THEN
ALSO COME TO A STOP.

THERE ARE VERY GOOD CONCEPTS
THAT PEOPLE HAVE.

PRELIMINARY CONCEPTS FOR HOW WE
DO FOLLOW UP MISSIONS BUT FIRST

WE NEED TO SEE THIS DATA COME TO
THE GROUND AND ANALYZE IT FOR A

PERIOD OF SOME YEARS.

WE DON'T KNOW THE RIGHT
QUESTIONS TO ASK AND THEREFORE

THE RIGHT INSTRUMENTS TO PUT ON
A LANDER OR ORBITER.

SO I THINK IT'S A LITTLE
PREMATUREFUL WE'RE ALL EXCITED

TOO AND WE'LL WANT TO SEE
POWERFUL INSTRUMENTS THERE BUT

THE RIGHT THING TO DO IS ANALYZE
THE DATA WE HAVE ON THE GROUND

AND THEN COME TO THAT QUESTION A
LITTLE BIT DOWN THE ROAD.

>> OKAY.
SO WE'RE GOING TO HAVE TO CLOSE OUT HERE.

I WILL REMIND THE MEDIA, THESE FOLKS AND MANY OTHERS WILL BE AVAILABLE THROUGHOUT THE DAY FOR INTERVIEWS.

JUST CHECK IN WITH THE NEWSROOM.

I'M GOING TO TURN IT OVER FOR CLOSING REMARKS AND THEN I'LL DO SOME PROGRAMMING NOTES.

>> I THINK YOU HAVE GOTTEN A LITTLE BIT OF A SENSE OF THIS GREAT ADVENTURE OF SCIENCE THAT WE'RE ON.

WE HAVE A LONG DAY BEFORE WE GET TO THE PHONE HOME SIGNAL.

I'LL JUST MENTION BECAUSE I HAVE BEEN WATCHING IT, IF YOU GO TO EYES.NASA.GOV YOU CAN SEE THE DEEP SPACE NETWORK SIGNAL.

SO YOU'LL BE ABLE TO SEE WHEN -- ALMOST LIVE, WHEN THE DEEP SPACE
NETWORK IS LOOKING AND THEN, YOU KNOW, FOLLOW OUR STORY BECAUSE WE'LL CERTAINLY KEEP YOU INFORMED WHEN NEW HORIZONS PHONES HOME.

THROUGHOUT THE DAY, THOUGH, WE HAVE A SERIES OF PANELS.

SO YOU'LL BE ABLE TO HEAR THE SCIENTISTS ACTUALLY TALKING ABOUT THEIR FIRST IMPRESSIONS.

YOU'VE HEARD ALAN'S FIRST IMPRESSIONS AND A FEW FROM THE PRESS HERE ON YOUR FIRST IMPRESSIONS.

WE ALL HAVE THEM AND IT'S JUST INCREDIBLE THAT WE'RE GETTING OUR FIRST VIEWS OF PLUTO AND THE PLUTO SYSTEM IN THIS HIGH RESOLUTION.

BUT I CAN GUARANTEE WITH AS MUCH CERTAINLY AS ANY OF US CAN THAT...
THE BEST IS YET TO COME.

BOTH FROM IMAGES THAT YOU'LL SEE LATER TODAY BEING WORKED ON AND

WITH ALL OF OUR FINGERS AND TOES CROSSED.

THE GREAT IMAGES THAT NEW HORIZONS IS TAKING RIGHT NOW

THAT WILL BE OVER THE NEXT DAYS, WEEKS AND MONTHS AND FOR THE

NEXT 15 MONTHS.

AND THAT'S ONLY PART OF THE STORY.

YOU KNOW WHAT WE HAVE SEEN ALREADY FROM PLUTO IS THAT IT'S A COMPLEX, INTERESTING WORLD.

YOU HAVE ALL BEEN FOLLOWING CURIOSITY.

THERE WAS A LOT OF DISCUSSION, IS MARS RELATIVELY
STRAIGHTFORWARD OR VERY COMPLEX.

NOW CURIOUSITY IS SHOWING US THAT MARS IS VERY COMPLEX.

A WHOLE WORLD, MUCH LIKE THE EARTH.

WE HAVE SPACECRAFT ORBITING THE EARTH TRYING TO TELL OUR STORY WHICH IS EVEN MORE COMPLEX.

OUR ATMOSPHERE IS REALLY TOUGH TO UNDERSTAND.

AND OF COURSE EXISTENCE OF LIFE ON EARTH FOREVER CHANGED THE

ATMOSPHERE AND THE GEOLOGY OF EARTH.

SO WE'RE SCRATCHING THE SURFACE OF OUR SOLAR SYSTEM AND MUCH,

MUCH MORE, JUNO WILL ARRIVE NEXT YEAR AT JUPITER.

WE'LL LAUNCH THE GEO MONITORING STATION ON MARS AN THE MISSION TO ACTUALLY DO A TOUCH AND GO AND BRING SAMPLES BACK.
SO THIS IS JUST THE MOST INCREDIBLE TIME FOR PLANETARY
SCIENCE AND I THINK IT'S FITTING THAT YOU'RE ALL HERE SHOWING
THIS GREAT INTEREST FOR THIS INCREDIBLE ACHIEVEMENT.
THE CAPSTONE EVENT.
CONGRATULATIONS ELLEN AND ALAN.
I HOPE YOU ENJOY THE DAY AND LEARN A LOT AND COMMUNICATE IT TO ALL OF YOUR SUBSCRIBERS AND READERS BECAUSE THIS IS AN INCREDIBLE JOURNEY AND TRUE EXPLORATION.
I'M THRILLED TO BE HERE.
>> OKAY.
SO SOCIAL MEDIA, FOLLOW IT ON TWITTER.
THIS MISSION, FACEBOOK, YOUTUBE, AND OTHERS.
THE CONVERSATION IS ASTOUNDING.

AND ALL THE INFORMATION YOU HEARD TODAY AND YOU WILL BE HEARING WEEKS, MONTHS, YEARS PROBABLY.

NASA.GOV/NEW HORIZONS.

LADIES AND GENTLEMEN, AMERICA'S SPACE PROGRAM HAS WRITTEN A NEW CHAPTER IN SCIENCE AND EXPLORATION.

THANKS FOR JOINING US.

[ APPLAUSE ]