1 00:00:04.737 --> 00:00:11.344
♫ MUSIC ♫

2 00:00:08.974 --> 00:00:13.878
>>> JUST PAST THE 2 MINUTES.

3 00:00:11.477 --> 00:00:16.483
1 MINUTE, SECONDS COUNTS.

4 00:00:14.045 --> 00:00:16.548
STATUS BOARD INDICATES THAT THE

5 00:00:16.649 --> 00:00:19.785
OXIDIZED TANKS IN THE SECOND AND

6 00:00:17.817 --> 00:00:20.219
THIRD STAGES NOW HAVE

7 00:00:19.919 --> 00:00:21.219
PRESSURIZED.

8 00:00:20.486 --> 00:00:24.390
CONTINUE TO BUILD UP PRESSURE

9 00:00:21.353 --> 00:00:25.724
IN ALL THREE STAGES, HERE AT THE

10 00:00:24.524 --> 00:00:28.194
LAST MINUTE.

11 00:00:25.858 --> 00:00:31.664
PREPARE FOR LIFTOFF.

12 00:00:28.327 --> 00:00:32.064
TWO MINUTES, 1 MINUTE, 35

13 00:00:31.830 --> 00:00:34.133
SECONDS.

14 00:00:32.198 --> 00:00:34.200
AND THE APOLLO MISSION, FLIGHT
TO LAND FIRST MEN ON THE MOON.

ALL INDICATIONS ARE COMING IN TO THE CONTROL CENTER AT THIS TIME INDICATE WE HAVE GO.

ONE MINUTE 25 SECONDS AND COUNTS.

THE THIRD S IS COMPLETELY PRESSURIZED.

THE 80 SECOND MARK HAS PASSED.

GOING THROUGH INTERNAL POWER IN THE 50 SECOND MARK IN THE COUNT.

DOWN.

THE IGNITION SEQUENCE AT 8.9 SECONDS.
APPROACHING THE 60-SECOND K

ON THE APOLLO 11 MISSION.

TWO MINUTES, 50 SECONDS AND COUNTING.

55 SECONDS AND COUNTING.

IT'S BEEN A REAL SMOOTH COMPOUND, PASSED THE 50 SECOND MARK.

POWER TRANSFER IS COMPLETE.

WE ARE ON INTERNAL POWER WITH THE LAUNCH VEHICLE AT TIME.

40 SECONDS AWAY FROM THE APOLLO 11 LIFTOFF.

20 SECONDS AND COUNTING.
15 SECONDS.

00:01:53,111 --> 00:02:00,286
12, 11, 10, 9, IGNITION

00:02:00,019 --> 00:02:00,352
SEQUENCE.

00:02:00,451 --> 00:02:07,792
6, 5, 4, 3, 2, 1, 0.

00:02:06,025 --> 00:02:08,127
ALL ENGINES ON.

00:02:07,927 --> 00:02:10,896
LIFTOFF!

00:02:08,259 --> 00:02:18,903
WE HAVE A LIFFTOFF!

00:02:11,030 --> 00:02:20,072
32 MINUTES PAST THE HOUR.

00:02:19,038 --> 00:02:20,338
LIFFTOFF ON APOLLO 11!

00:02:20,205 --> 00:02:22,307

00:02:20,473 --> 00:02:24,811
>> HI, I'M MIKE COLLINS, 50

00:02:22,441 --> 00:02:27,713
YEARS AGO, NEIL ARMSTRONG, BUZZ

00:02:24,943 --> 00:02:28,113
ALDRIN, AND I SUITED UP IN THIS

00:02:27,847 --> 00:02:30,082
VERY ROOM.

00:02:28,281 --> 00:02:33,586
AT THIS TIME, WE WERE ON OUR WAY...
TO MAKE HISTORY WITH APOLLO 11,

THE FIRST LUNAR LANDING.

AND THERE THEY ARE, THE MEN OF APOLLO 11, E MORTIZED IN BRONZE.

OUTSIDE OF THE SATURN 5 CENTER AT THE KENNEDY SPACE CENTER IN FLORIDA.

WE WELCOME YOU TO OUR SHOW ABOUT "NASA'S GIANT LEAPS: PAST AND FUTURE."

HELLO, EVERYONE.

>> I'M MARIE LEWIS, WRE SITTING UNDERNEATH THE SATURDAY --
SATURN 5 ROCKET BEHIND US.

THE SATURN 5, 7.6 MILLION POUNDS OF THRUST, PROPELLED APOLLO 11

AND A TOTAL OF 24 AMERICAN ASTRONAUTS TO THE MOON.

BLAST OFF FROM RIGHT HERE IN FLORIDA.

>> AND WE HAVE TEAMS OF BROADCASTER, ASTRONAUTS AND OTHER GUESTS ACROSS THE COUNTRY TO HELP US HONOR HISTORY.

THEY WILL ALSO HELP US PROJECT THE FUTURE, WE'LL TAKE YOU TO THE JOHNSON SPACE CENTER IN
HOUSTON, THE U.S. SPACE AND ROCKET CENTER IN HUNTSVILLE, ALABAMA, TO NEIL ARMSTRONG'S HOMETOWN OF WAPAKONETA, OHIO.

THEM OF FLIGHT IN SEATTLE, AND TO SOME SPECIAL GUEST, IS THAT ADAM SAVAGE THERE?

>> YES, FROM MYTHBUSTERS.

>> I SEE THEM THERE, THEY ARE ON NATIONAL MALL.

>> I'M KAREN FOX IN NASA.

>> IN A FEW MINUTES, WE'LL BE TALKING LIVE WITH APOLLO 11 ASTRONAUTS, BUZZ ALDRIN AND
MICHAEL COLLINS.

00:04:12,651 --> 00:04:18,658
>> HI, EVERYONE, MY NAME IS --

00:04:17,555 --> 00:04:21,627
DANIELLE AND BEYOND THRILLED TO

00:04:18,790 --> 00:04:23,362
BE HERE AT THE KENNEDY SPACE

00:04:21,759 --> 00:04:24,896
CENTER TO BEELEBRATING THE

00:04:23,495 --> 00:04:26,232
APOLLO 11 ANNIVERSARY, WE'RE

00:04:25,062 --> 00:04:27,199
GOING TO BE CELEBRATING AND

00:04:26,365 --> 00:04:28,033
TAKING YOUR QUESTIONS AND

00:04:27,331 --> 00:04:29,367
COMMENTS ON SOCIAL MEDIA, WE'RE

00:04:28,166 --> 00:04:30,637
GOING TO BE INTERVIEWING PEOPLE

00:04:29,535 --> 00:04:32,372
LIVE AT THIS CENTER, IF WE DON'T

00:04:30,769 --> 00:04:33,671
GET AROUND TO YOUR QUESTIONS OR

00:04:32,504 --> 00:04:34,005
COMMENTS ON THIS SHOW, DON'T

00:04:33,805 --> 00:04:35,608
WORRY.

00:04:34,139 --> 00:04:36,509
WE HAVE A TEAM ON STAND BY READY
TO RESPOND TO YOU.

ALL YOU HAVE TO DO IS REMEMBER TO THE #APOLLO 50th.

>> ALL RIGHT, THANKS, DANIELLE.

THE 50th ANNIVERSARY OF APOLLO 11 IS OF COURSE WHY WE'RE HERE TODAY.

WE BEGIN WITH OUR FIRST LOOK AT THE REMARKABLE HISTORIC ACHIEVEMENT THAT THE WHOLE WORLD IS ATING.

IANT LEAP, CHANGED HISTORY AND HELPED CREATE THE WORLD WE LIVE IN TODAY.
>> OKAY.

IT'S GO.

>> GO.

>> GO.

>> GO.

>> GO FOR UNDOCKING.

>> ARMSTRONG, ALDRIN AND COLLINS

ARRIVED AT THE MOON ON SATURDAY, JULY 19th.

>> WHEN WE DID GET CLOSE AND WE

ROLLED OUT AND SAW IT FOR THE

FIRST TIME, IT WAS A REVELATION,

IT WAS GIGANTIC.

IT FILLED OUR ENTIRE WINDOW.
>> THE NEXT DAY, SUNDAY, JULY 20th, WAS LANDING DAY.

>> A LOT OF ANTICIPATION, WE FINALLY COME TO THE DAY, THE

>> LANDING ON THE MOON WAS ABSOLUTELY THE MOST DIFFICULT PIECE OF ANY APOLLO 11 MISSION.

>> THINK ABOUT IT AS A CONTROLLED FALL OUT OF LUNAR ORBIT.

THE PROBLEM IS, IN THIS CONTROLLED FALLOUT OF OR YOU ONLY HAVE ENOUGH FUEL FOR ONE
TRY.

158
00:06:06,833 --> 00:06:09,702
>> GO FOR LANDING.

159
00:06:08,468 --> 00:06:10,603
>> ALTITUDE 4200.

160
00:06:09,834 --> 00:06:12,537
>> GO FOR LANDING.

161
00:06:10,737 --> 00:06:12,605
>> THE TRAJECTORY HAD BEEN

162
00:06:12,704 --> 00:06:16,641
WRONG, THEY WERE TARGETING INTO

163
00:06:15,074 --> 00:06:20,012
THIS INHOSPITABLE PLACE, AND

164
00:06:16,774 --> 00:06:23,348
THEY HAD TO FLY OVER THIS A

165
00:06:20,177 --> 00:06:23,415
AT A HIGH FORWARD VELOCITY AND

166
00:06:23,516 --> 00:06:24,750
THEN PITCH UP TO SLOW DOWN, SO

167
00:06:24,850 --> 00:06:27,853
THAT TO KILL THE FORWARD

168
00:06:26,351 --> 00:06:29,120
VELOCITY, AND THEN START DOWN

169
00:06:27,985 --> 00:06:31,689
LIKE A HELICOPTER.

170
00:06:29,254 --> 00:06:32,356
SO NOW, WE'RE CRITICAL FUEL

171
00:06:31,824 --> 00:06:33,859
STATE.
AND THAT'S WHY THERE'S 60 SECOND
CALL WAS GIVEN.

AND THEN 30D CALL.

>> REALLY NERVOUS, CALLING OUT
25 SECONDS OF FUEL LEFT.

AND THEN 20 SECONDS OF FUEL.

OH, JEEZ.

>> OKAY, ENGINE STOP.

CO BOTH -- COMMAND OVERRIDE
OFF.

413 IS IN.

>> WE COPY YOU DOWN, EAGLE.

>> THE EAGLE HAS LANDED.

LODGER.
TRANQUILITY, WE COPY YOU ON THE GROUND.

WE HAVE A BUNCH OF GUYS ABOUT TO TURN BLUE, BREATHING AGAIN.

THE LANDING TO ME WAS A GREAT CELEBRATION.

THE NATION WAS ALMOST EUPHORIC.

IT PROVED THAT THE UNITED STATES COULD ACCOMPLISH TREMENDOUS GOALS IF THEY WORK TOGETHER AS A TEAM.

>> APOLLO 11 COMMANDER NEIL ARMSTRONG IS FOREVER KNOWN AS THE FIRST MAN, HE PASSED AWAY IN
2012, BUT HIS SMALL STEP ON THE LUNAR SURFACE CONTINUES TO INSPIRE.

>> A MAN FROM THE PLANET EARTH,

FIRST STEP ON THE MOON. JULY, 1969.

IT CAME IN PEACE FOR ALL M KIND.

♪ MUSIC ♪

OUR KNOWLEDGE OF THE UNIVERSE AROUND US HAS INCREASED 1,000 FOLD, AND MORE.

THIS IS THE NEW OCEAN AND WE
MUST SAIL UPON IT.

AND WE MUST BE A LEADER ON IT.

AND THAT CAUGHT PEOPLE'S IMAGINATION.

>> AND LATER, WE'LL SPEAK TO SOME APOLO ASTRONAUTS LIVE AND WE'LL ALSO HERE FROM NEIL ARMSTRONG'S SON, MARK.

>> DARRYL.

>> LOOKING FORWARD TO THAT, NEIL ARMSTRONG'S SON, LOOKS JUST LIKE HIM, TOO, DOESN'T HE?

I LOVE LISTENING TO HIM, GREAT GUY.

WE HAVE OUR OWN ASTRONAUTS HERE,
TOO.

O STAN LOVE IN J A

LITTLE BIT.

EVEN AS WE CELEBRATE THE

HISTORIC MILESTONE OF APOLLO 11,

WE'RE WORKING HARD TO RETURN

HUMANS TO THE MOON IN THE NEXT

FIVE YEARS, AS WE PLOT AN

EVENTUAL COURSE TOMARS, THE

ARTEMIS.

ARTEMIS GOD DESS OF THE MOON IN

LANDING USA -- ASTRONAUTS BY

2024.
TO GET THERE, BUILD A POWERFUL ROCKET.

THE SPACE LAUNCH SYSTEM, TO SEND ASTRONAUTS ABOARD OUR NEW ORION SPACECRAFT TO THE GATEWAY IN LUNAR ORBIT.

FROM THE GATEWAY, WE'LL BE ABLE TO LAND ASTRONAUTS IN PLACES WE'VE NEVER BEEN BEFORE, INCLUDING THE LUNAR SOUTH POLE.

WE'LL HAVE A HUMAN LANDER SYSTEM BUT BEFORE THEN, WE'LL ALREADY BE BACK ON THE MOON WITH ROBOTIC
COMMERCIAL LANDERS CARRYING SCIENCE INSTRUMENTS AND TECHNOLOGY DEMONSTRATIONS TO THE MOON BEGINNING IN SEPTEMBER OF NEXT YEAR.

AND WE'LL NEED A NEW GENERATION OF SPACE SUITS AS WE SEND THE FIRST MAN AND WOMAN TO THE MOON.

THE SCIENTIFIC KNOWLEDGE ABOUT THE SOLAR SYSTEM IN WHICH WE LIVE AND AMERICAN COMPANIES LARGE AND SMALL ARE DEVELOPING ADVANCED TECHNOLOGY TO REALIZE THESE SPACE EXPLORATIONAMS.
FOR NASA, AND AS WITH APOLLO 11,

00:10:15,480 --> 00:10:18,116
MANY OF THE TECHNOLOGIES WILL

00:10:16,715 --> 00:10:21,720
GROW INTO EVERY DAY PARTS OF

00:10:18,250 --> 00:10:22,955
LIFE HERE ON EARTH.

00:10:21,852 --> 00:10:24,689
>> AND STAY TUNED TO THE END OF

00:10:23,087 --> 00:10:26,725
OUR SHOW, WE'LL HAVE A FUN

00:10:24,823 --> 00:10:28,626
REVEAL ABOUT ARTEMIS.

00:10:26,892 --> 00:10:32,096
NOW, JOINING US LIVE IS STAN

00:10:28,760 --> 00:10:32,096
LOVE, WHO FLEW ON SPACE SHUTTLE

00:10:32,197 --> 00:10:34,432
MISSION TO THE INTERNATIONAL

00:10:33,831 --> 00:10:36,400
SPACE STATION AND CURRENTLY

00:10:34,566 --> 00:10:38,737
WORKING ON THE DEVELOPMENT OF

00:10:36,533 --> 00:10:42,039
FUTURE HUMAN SPACECRAFT.

00:10:38,903 --> 00:10:44,076
STAN, 12 ASTRONAUTS WALKED ON

00:10:42,173 --> 00:10:45,976
THE MOON, DID NEIL ARMSTRONG
INSPIRE YOU IN ANY WAY, AT ANY

?  

>> WELL, SOLUTELY, I THINK  

ANYBODY ME WAS INTERESTED IN  

SCIENCE OR TECHNOLOGY OR  

EXPLORATION HELD THE APOLLO 11  

ASTRONAUTS AS HEROES.  

I REMEMBER WHEN I WAS IN GRADE  

SCHOOL, 6 YEARS OLD, MY LITTLE  

TIN LUNCHBOX HAD THE APOLLO  

SPACECRAFT.  

I REMEMBER COMING TO WORK ON MY  

VERY FIRST DAY AS AN ASTRONAUT,  

DRIVING IN THE GATE AT JOHNSON
SPACE CENTER, AND THINKING, OH,

MY GOODNESS.

THIS IS WHERE IT HAPPENED.

THIS IS WHERE WE LANDED PEOPLE

ON THE MOON FOR THE VERY FIRST TIME.

THE SENSE OF AWE AND AN 

ABLE TO JOIN THAT EFFORT TO BE 

ESPECIALLY AS A CREW MEMBER AND 

TREPIDATION, HOPING I WAS UP TO 

THE TASK.

>> WE HAVE VIDEO OF YOU

LAUNCHING IN THE SPACE SHUTTLE

WITH A CAMERA THAT HAD AN INSIDE
00:11:32,457 --> 00:11:37,896
VIEW.

00:11:32,791 --> 00:11:39,798
THAT WAS AN EXCITING RIDE.

00:11:38,029 --> 00:11:41,933
>> YEAH, YOU KNOW YOU'RE GOING

00:11:39,931 --> 00:11:44,603
SOMEBEWHERE IN A BIG HURRY.

00:11:42,067 --> 00:11:45,870
TWO STRONG GUYS SHAKING YOUR

00:11:44,735 --> 00:11:48,673
CHAIR, IT'S AMAZING.

00:11:46,004 --> 00:11:49,307
>> YOU'RE WORKING ON HUMAN

00:11:48,874 --> 00:11:51,243
FUTURE SPACECRAFT.

00:11:49,441 --> 00:11:52,511
>> I'M WORKING ON THE COCKPIT

00:11:51,375 --> 00:11:54,846
FOR THE ORION SPACECRAFT THAT,

00:11:52,644 --> 00:11:55,681
IS GOING BEHE BACKBONE, THE

00:11:54,980 --> 00:11:58,950
MAIN TRANSPORTATION DEVICE TO

00:11:55,813 --> 00:12:01,252
GET PEOPLE OFF TO THE MOON.

00:11:59,083 --> 00:12:02,520
TO THE LUNAR VICINITY AND

00:12:01,418 --> 00:12:02,855
BRINGING THEM SAFELY BACK TO

00:12:02,654 --> 00:12:04,189
EARTH.

00:12:02,988 --> 00:12:06,091
I'M WORKING ON THE DISPLAYS THAT

00:12:04,322 --> 00:12:08,059
THE CREW IS GOING TO USE TO SEE

00:12:06,224 --> 00:12:08,761
HOW THE SYSTEM IS DOING, GUIDE

00:12:08,192 --> 00:12:10,528
IT AND FLY IT.

00:12:08,894 --> 00:12:11,697
SO IT'S UP TO ME AND TH FOLKS I

00:12:10,662 --> 00:12:12,798
WORK WITH TO MAKE SURE THAT THE

00:12:11,830 --> 00:12:14,333
CREW IS GETTING ALL OF THE

00:12:12,931 --> 00:12:15,801
INFORMATION THEY NEED AND THAT

00:12:14,466 --> 00:12:16,435
THE COMMANDS THEY SEND OUT GO

00:12:15,933 --> 00:12:17,702
CORRECTLY TO THE VEHICLE.

00:12:16,567 --> 00:12:19,804
>> THAT IS EXCITING WORK, AND

00:12:17,836 --> 00:12:20,272
STAN, THANK YOU SO MUCH FOR

00:12:19,971 --> 00:12:20,938
JOINING US.
343
00:12:20,404 --> 00:12:23,240
>> YOU'RE WELCOME.

344
00:12:21,072 --> 00:12:24,042
>> BACK OVER TO YOU, MARIE.

345
00:12:23,375 --> 00:12:27,211
>> THANKS, DARRYL AND STAN.

346
00:12:24,176 --> 00:12:29,480
AND THANK YOU, WE'LL BE HEARING

347
00:12:27,345 --> 00:12:30,415
MORE FROM CURRENT AND FORMER

348
00:12:29,647 --> 00:12:31,984
ASTRONAUTS THROUGHOUT THIS

349
00:12:30,548 --> 00:12:35,754
PROGRAM, INCLUDING BUZZ ALDRIN

350
00:12:32,116 --> 00:12:36,587
AND MICHAEL COLIN FROM APOLLO 11

351
00:12:35,888 --> 00:12:39,191
AND OTHER ASTRONAUTS AS WELL.

352
00:12:36,721 --> 00:12:41,192
NOW TO HOUSTON AND APOLLO'S

353
00:12:39,323 --> 00:12:41,693
FAMOUS MISSION CONTROL.

354
00:12:41,326 --> 00:12:41,927
♪[ MUSIC ]♬

355
00:12:41,826 --> 00:12:44,864
.

356
00:12:43,095 --> 00:12:48,300
CONTROL CENTER, N CONDUCTED
SOME OF ITS MOST LEGENDARY SPACE MISSIONS.

THE FIRST U.S. SPACE WALK, THE APOLLO MOON LANDING AND EVEN THE DAWN O

AND I DON'T REMEMBER EXACTLY HOW LONG THOSE WERE, BUT WE WERE LUNAR MODULE WAS SAFE AND S

SECURE, AND READY TO GO WITH F

WE HAD TO LIFTOFF.

>> THAT'S RIGHT, GENE, THE FLIGHT CONTROLLERS IN THIS ROOM
WERE NOT MUCH OLDER THAN ME.

TELL ME ABOUT THE LEVEL OF TRUST

THAT WAS NEEDED IN THE TEAM TO

MAKE THAT MISSION A REALITY.

>> BASICALLY, IT'S A TRUST THAT

EXISTS BETWEEN MYSELF AND THE

TEAM, BETWEEN MY TEAM AND THE

ASTRONAUT AND THE PROGRAM

TRUST IS ESSENTIAL COMMODITY FOR

SUCCESS IN THE MANNED SPACE

ONE OF THE THINGS THAT CHARLIE

MENTIONED WAS THE MISSION HAD TO
WAIT TWO HOURS TO JOIN THE

CELEBRATION, WITH THE REST OF

THE WORLD.

WE WERE ON THE CONSOLE DOING OUR

JOB.

TWO HOURS AFTER LANDING WE COULD

CELEBRATE.

NOW, CHARLIE, WHEN THOSE FIRST

STEPS OF NEIL ARMSTRONG ON THE

MOON ANDHOSE FAMOUS WORDS HE

SAID, FOR ALL OF MAN KIND, DID

YOU GET TO CELEBRATE

IMMEDIATELY?

WHEN DID IT ACTUALLY HIT YOU THE
SIGNIFICANCE OF THE

ACCOMPLISHMENT?

>> AFTER WE WERE OFF DUTY, AFTER

T3, WE WENT TO A PRESS

CONFERENCE, THEN IF I REMEMBER,

WE WENT TO CELEBRATE WITH A FEW

BEERS, AT THAT POINT.

>> ALL RIGHT.

>> AND I WENT HOMED WAS WITH

MY FAMILY WATCHING IT ON TV AS

HE STEPPED THOSE FIRST STEPS

OUT.

>> ALL RIGHT.

>> AND THEN IT HIT ME THAT WE
WERE ON THE MOON.

[ LAUGHTER ]

WELL I HOPE WE GET TO HAVE THAT FEELING ONCE AGAIN.

ME, TOO.

WE HAVE JESSICA HERE JOINING US NOW, SHE'S AN ASTRONAUT, SET TO THE LAUNCH TO THE SPACE STATION HERE IN A FEW SHORT MONTHS, SELECTED AS AN ASTRONAUT IN 2013.

AND JESSICA, YOU'RE GOING THROUGH SOME TRAINING RIGHT NOW.
FOR A LONG DURATION STAY ABOARD THE INTERNATIONAL SPACE STATION, JUST ABOUT SIX MONTHS.

NOW, THAT'S MORE TIME THAN ALL OF THE APOLLO MISSIONS COMBINED.

ME, WHAT ARE GOING TO BE DOING ON THE INTERNATIONAL SPACE STATION, HOW IS THAT GOING TO HELP US FOR OUR FUTURE MISSIONS, GOING BACK TO THE MOON AND ON TO MARS.

>> I'LL BE UP THERE FOR A SIX-MONTH MISSION, AS YOU MENTIONED, AND THE SPACE STATION
IS A WORLD-CLASS LABORATORY

RIGHT NOW, A U.S. NATIONAL LAB.

THE RUSSIAN SPACE AGENCY, THE JAPANESE AND EUROPEAN.

WE ARE CONDUCTING SCIENTIFIC INVESTIGATIONS AND TECHNOLOGY

DEMONSTRATIONS THAT ARE CRITICAL TOWARDS OUR PATH FOR FUTURE EXPLORATION, SO JUST FEW, FOR EXAMPLE, WE NEED TO UNDERSTAND HOW SPACE FLIGHT AND THE MICROGRAVITY EXPERIENCE AFFECT US, SO WE HAVE DECADES OF SCIENTIFIC RESEARCH NOW FROM ALL OF THIS
BEEN CONDUCTING ON THE SPACE STATION AND IN THE PROGRAMS BEFORE, WE KN A LOT HOW TO MAINTAIN OUR MUSCLE MASS AND OUR BONE DENSITY, WE HAVE A FEW HOT TOPICS RIGHT NOW, REALLY THE VISION, OUR VISION AND THE HEALTH OF OUR EYES, ALSO, WHAT'S HAPPENING TO OUR BLOOD VESSELS, LOOKING AT OUR CAROTID ARTERIES AND CHANGES THAT WE'RE SEEING IN ASTRONAUTS THAT ARE SIMILAR TO THCESS OF AGING, SO WE NEED TO REALLY BETTER UNDERSTAND WHAT
IS HAPPENING HERE, TO MAKE SURE THAT WE CAN GET ASTRONAUTS SAFELY TO THEIR DESTINATION, AND MAKE SURE OF COURSE SO WE CAN BRING THEM SAFELY BACK TO EARTH.

AND YOU'LL GET TO DO THAT FIRSTHAND AS AN USA ASTRONAUT, NOW, AS I KNOW IT, CHARLIE DUKE

ASTRONAUT IN THE FIRST PLACE?

Yeah,' actually was the first astronaut I ever met.

IT IS PRETTY AMAZING, AN INCREDIBLE EXPERIENCE TO BE
STANDING IN THIS ROOM WITH THESE TWO PEOPLE, WHEN I WAS IN HIGH SCHOOL, CHARLIE WAS SPEAKING AT THE NEIGHBORING TOWN, I GREW UP IN A SMALL TOWN.

OF ASTRONAUTS COMING THROUGH, I NEVER MET ANYONE WHO WORKED AT NASA OR AN ASTRONAUT.

I'M SURE HE DOESN'T REMEMBER THIS, BUT HE -- I DID TALK TO HIM AFTERWARDS, HE GAVE ME HIS CARD, I TOLD HIM MY DREAM WAS TO BE AN ASTRONAUT LIKE HIM.
I WROTE HIM A LETTER, HE DID

WRITE BACK TO ME AND THIS IS THE

ACTUAL LETTER I FOUND IT WHEN I

MOVED A COUPLE OF YEARS AGO.

THIS IS THE LETTER THAT YOU

WROTE TO ME BACK IN 1996.

WHEN I WAS A FRESHMAN IN

COLLEGE.

SO MAYBE THAT WILL JOG YOUR

MOR

DOING THAT, IT WAS INSPIRING AND

IT DOES MILWAUKEE -- MAKE A

DIFFERENCE.

>> THANK YOU.

>> TYPEWRITTEN, I LOVE THAT.
>> ALL RIGHT.

[ LAUGHTER ]

>> NOW, GENE, WHEN WE'RE THINKING ABOUT OUR FUTURE MISSION, YOU USED THE WORDS TOUGH AND COMPETENT, THINKING ABOUT INSPIRING THE NEXT GENERATIONS, DO YOU THINK THE SAME VALUES WILL APPLY TO THE FOLKS THAT ARE GOING TO CARRY US?

>> YES, TOUGH AND CONFIDENT REALLY ADDRESS THE ACCOUNTABILITY OF THE MISSION
CONTROL TEAM.

BASICALLY, TO TAKE THE ACTIONS

NECESSARY TO CT THE CREW

AND ACCOMPLISH THE MISSION.

TOUGH MEANS THAT YOU'RE FOREVER

ACCOUNTABLE FOR WHAT YOU DO AND

THIS WAS DONE AFTER APOLLO 11,

NEVER AGAIN TAKING ANYTHING FOR

GRANTED, NEVER STOP LEARNING.

FROM NOW ON, THE TEAMS IN

NOW, CHARLIE, WHAT ASTRONAUTS
LIKE JESSICA DO TO INSPIRE THE

NEXT GENERATION?

>> WELL, I THINK WHAT SHE SAID,
JUST HER PERFORMANCE AND WHAT SHE'S DOING AND BEING OUT THERE, BEING ABLE TO -- BEFORE THE STORY.

>> WRITING A LETTER.
>> YEAH.
>> WRITING A LETTER.
>> YEAH.
>> SO.
>> ALL RIGHT, THANKS TO ALL THREE OF YOU FOR TAKING THE TIME TO BE WITH US HERE TODAY IN THE HISTORIC APOLLO MISSION CONTROL
IN HOUS

557 00:21:55,445 --> 00:22:00,350 THE HOMETOWN OF NEIL ARMSTRONG

558 00:21:58,415 --> 00:22:02,220 IN WAPAKONETA, OHIO.

559 00:22:00,484 --> 00:22:03,620 THOUGHTS FROM EXPLORER FROM A

560 00:22:02,353 --> 00:22:05,856 DIFFERENT KIND OF ROCKET MAN.

561 00:22:03,788 --> 00:22:10,495 >> I REALLY ADMIRE THOSE KIND OF

562 00:22:06,023 --> 00:22:13,096 PEOPLE, THEY ARE SO BRAVE AND

563 00:22:10,627 --> 00:22:15,066 IN'RE PIONEERS.

564 00:22:13,230 --> 00:22:15,933 WE WOULDN'T -- ALL OF THOSE KIND

565 00:22:15,200 --> 00:22:24,642 OF PEOPLE.

566 00:22:16,067 --> 00:22:24,942 THE WORLD WOULDN'T BE WHAT IT IS

567 00:22:24,776 --> 00:22:27,178 TODAY.

568 00:22:25,108 --> 00:22:29,346 >> AND WELCOME TO WAPAKONE

569 00:22:27,578 --> 00:22:32,716 O, WHICH ISD TO BE THE

570 00:22:29,480 --> 00:22:34,719 HOMETOWN OF NEIL ARMSTRONG.
I'M AN ANCHOR WITH HOMETOWN STATIONS IN LIMA, OHIO, AND WE ARE LOCATED AT THE ARMSTRONG AIR AND SPACE MUSEUM, WHICH IS ABOUT AN HOUR NORTH OF DAYTON, OHIO. NOAT, OF COURSE, IS THE HOME OF THE WRIGHT BROTHERS, WHO INVENTED POWER FLIGHT, MORE THAN 115 YEARS AGO. NOW, OHIO IS ALSO THE HOME OF NASA'S GLENN RESEARCH CENTER, NAMED FOR ANOTHER SPACE PIONEER, JOHN GLENN. AND WE ARE IN THE MIDST OF
SUMMER MOON FESTIVAL, AN ANNUAL CELEBRATION OF THE APOLLO MOON LANDING.

AND RIGHT NOW, WE ACTUALLY HAVE ONE OF OUR 25 ASTRONAUTS WHO ARE FROM OHIO AND ALSO A NATIVE OF CLEVELAND AND A VETERAN OF FOUR SPACE SHUTTLE MISSIONS.

DON THOMAS, THANK YOU SO MUCH FOR BEING WITH US.

HI, IT'S GREAT TO BE HERE TODAY.

LET'S GET INTO IT, DON.

YOU, OF COURSE, HAVE BEEN
INSPIRED BY SO MANY ASTRONAUTS,

BUT HOW DID NEIL ARMSTRONG AND THE OTHER APOLLO ASTRONAUTS INSPIRE YOU?

>> IT'S THE FIRST

LAUNCHING IN 1961, THAT FIRST INSPIRED ME TO BE AN ASTRONAUT,

I WATCHED THEIR LAUNCH ON A SMALL TV AND I SAID I WANT TO DO THAT.

AND SO ALL OF THE EARLY ASTRONAUTS, JOHN GLENN, ED WHITE, WHO DID THE FIRST SPACE WALK, AND THEN NEIL ARMSTRONG,
THEY WERE HUGE INFLUENCES ON

00:23:50.961 --> 00:23:52.896
CAREER.

00:23:51.296 --> 00:23:55.366
>> WELL, JOHN, THAT'S AWESOME.

00:23:53.030 --> 00:23:57.201
SO YOU WATCHED THE APOLLO 11

00:23:55.500 --> 00:23:58.935
LAUNCH ON TV AND I UNDERSTAND

00:23:57.335 --> 00:24:00.538
THAT YOU ALSO INVITED NEIL

00:23:59.069 --> 00:24:00.905
ARMSTRONG TO WATCH ONE OF YOUR

00:24:00.672 --> 00:24:02.406
LAUNCHES?

00:24:01.038 --> 00:24:03.807
>> I DID, WE'RE ALLOWED TO

00:24:02.573 --> 00:24:03.874
INVITE A VIEW VIPS TO OUR

00:24:03.973 --> 00:24:06.577
LAUNCHES AND I WROTE NEIL

00:24:05.076 --> 00:24:08.746
ARMSTRONG A LETTER, SAID I WAS

00:24:06.711 --> 00:24:10.448
ONE OF OHIO ASTRONAUTS, I

00:24:08.880 --> 00:24:12.016
TOLD HIM HE WAS ONE OF MY HEROES

00:24:10.582 --> 00:24:13.684
AS A YOUNG BOY AND I INVITED HIM
TO COME TO THE LAUNCH, HE WROTE

BACK, SAID I’LL BE THERE, AND I

WAS LIKE, WOW, NEIL ARMSTRONG IS

GOM -- COMING TO MY LAUNCH.

I GOT A CALL FROM NASA

MANAGEMENT AND THEY'D

MR. ARMSTRONG WANTED TO MEET

WITH ME.

SO MY WIFE AND HI, NEIL

ARMSTRONG AND HIS WIFE, CAROL,

GOT TO SPEND TIME IN THE CREW

QUARTERS.

I HAD A GREAT MOMENT, SHAKING

HIS HAND SAYING THANK YOU FOR
BEING HERE, I APPRECIATE YOU

COMING TO THE LAUNCH AND I A

HIM HOW LONG ARE YOU STAYING IN

TOWN FOR, HOW LONG ARE YOU GOING

TO BE IN FLORIDA FOR, HE LOOKED

ME RIGHT BACK IN THE EYE, HOW

LONG ARE YOU IN TOWN FOR, I'M

GOING TO STAY HERE UNTIL YOU

LAUNCH.

AND WE LAUNCHED ON TIME THE NEXT

day and it was the thrill of my

life to have him there for

>> INCREDIBLE, ON, THANK YOU

FOR THE MEMORIES.
Let's take a look back at Neil Armstrong, the man. Neil Armstrong was born in his grandparent's farmhouse on the outskirts of Wapakoneta. Asked them to share some personal memories of their famous brother. He was very good at telling jokes. In the accent. Scottish accent, right.

In the accent.

Scottish.

Scottish accent, right.
>> OH, MY.

00:25:23,587 --> 00:25:26,625
AND A LITTLE BIT OF GERMAN

00:25:25,589 --> 00:25:28,259
SOMETIMES, ALSO.

00:25:26,758 --> 00:25:28,625
BUT DEPENDING ON WHAT STORY WAS

00:25:28,393 --> 00:25:31,363
TELLING.

00:25:28,759 --> 00:25:33,497
BUT HE WAS GOOD AT IT BECAUSE HE

00:25:31,496 --> 00:25:34,365
TELLS THE STORY AND HE HAS

00:25:33,631 --> 00:25:37,835
THIS, YOU KNOW, JUST A LITTLE

00:25:34,498 --> 00:25:40,438
BIT OF SMILE ON HIS FACE.

00:25:37,969 --> 00:25:42,006
AND THEN EVERYBODY LAUGHS AND HE

00:25:40,571 --> 00:25:44,541
LAUGHS AND HE LAUGHS.

00:25:42,173 --> 00:25:45,276
BECAUSE HE THOUGHT IT WAS FUNNY,

00:25:44,709 --> 00:25:45,676
TOO.

00:25:45,409 --> 00:25:50,715
[ LAUGHTER ]

00:25:45,808 --> 00:25:53,417
>> THE LEGACY HADN'T BEEN
DETERMINED, IN SCIENCE, THE DOORS ARE STILL SO WIDE OPEN.

AND I REALLY FEEL LIKE THAT IT HELPED INSPIRE THE TECHNICAL PE YOU KNOW, WE HAD MANY BIG TECHNICAL BREAKTHROUGHS WITH THE PROGRAM.

NASA PROGRAM.

AND NOW, YOU CAN SEE THAT CONTINUING.

I THINK MY DAD WOULD BE VERY PLEASED WITH WHERE WE ARE NOW.

BECAUSE WE ARE ON THE CUSP OF
ANOTHER AGE OF EXPLORATION.

TAKING THOSE NEXT STEPS.

GOING BACK TO THE MOON.

BECAUSE THAT'S THE PLACE WHERE

WE CAN LEARN THE THINGS THAT WE

NEED WE GO BEYOND.

IF WE CAN REMIND EVERYONE OF HOW

THE WORLD WAS UPLIFTED BY THE

APOLLO PROGRAM, BY THESE

ENDEAVORS, I THINK THAT WE HAVE

A GOOD CHANCE OF STAYING THE

COURSE AND CONTINUING THAT

EXPLORATION FORWARD.

AN ASTRONAUT WAS OUR
THE FATHER’S WAY OF LIFE.

THAT WAS DAD’S JOB AND WE WERE ALL SUPPORTIVE AND EXCITED.

THE ASTRONAUTS, THE GUYS WHEN THEY WERE UP THERE, THEY -- THE LAST THING THEY WANTED TO DO WAS TO WORRY ABOUT WHAT WAS HAPPENING AT HOME.

I THINK THE WIVES JUST TRIED TO MAKE SURE THAT THE FAMILY WASN’T ONE OF THOSE THINGS THAT THEY HAD IN THEIR CHECKLIST OF THINGS TO BE CONCERNED ABOUT.

>> THE APOLLO PROGRAM INSPIRED A
GENERATION TO WANT TO BE BETTER.

TO WANT TO WORK HARD, AND APPLY THEMSELVES AND PURSUE THEIR DREAMS BECAUSE APOLLO MADE IT CLEAR THAT DREAMS WERE POSSIBLE.

AND I THINK THAT MADE THE WORLD A BETTER PLACE.

NOW, AS YOU DRIVE THROUGH TOWN OR STROLL DOWN THE SIDEWALK, YOU'LL SEE JUST HOW THE MOO EVERYONE IS IN WAPAKONETA.

MORE THAN A DOZEN RESTAURANTS ARE OFFERING SPECIAL MOON-THEMED ITEMS SUCH AS CINNAMON MOON
PANCAKES AND A BUCKEYE ON THE MOON SUNDAY. IT SEEMS EVERY SHOP IS SELLING FIRST ON THE MOON MERCHANDISE, SOUVENIRS, AND MEMORABILIA.

AND HISTORY IS ALL AROUND US. IT'S A PART OF HISTORY THAT I WANT TO BE ABLE TO SAY THAT I HELPED TO PRESERVE.

IT'S NOT SO MUCH, YOU KNOW, WHA WAS IT LIKE WHEN HE LIVED HERE, FOR ME, PERSONALLY, BUT TO BE ABLE TO PRESERVE PART OF HISTORY AND KEEP IT INTACT.
FOR FUTURE GENERATIONS.

>> AND WITH ME NOW, IS DONTAE

WITH THE ARMSTRONG MUSEUM,

DONTAE, WELCOME.

SO LET'S GET STRAIGHT INTO IT.

TELL ME A LITTLE BIT ABOUT WHAT

PEOPLE CAN EXPERIENCE IF THEY

WERE TO VISIT THE MUSEUM?

SURE, THE ARMSTRONG AIR AND

SPACE MUSEUM OPENED THREE YEARS

TO THE DAY AFTER APOLLO 11

LANDED IN 1972.

WE HAVE ARTIFACTS FROM THE

AIRPLANE HE LEARNED TO FLY IN.
AS WELL AS THE APOLLO BACKUP SUIT FROM APOLLO 11.

ACTUAL SUIT THAT WAS PART OF HIS MISSION.

AND TO TOP IT ALL OFF, WE ALSO HAVE A MOON ROCK COLLECTED FROM APOLLO 11, COLLECTED BY NEIL ARMSTRONG HIMSELF ON THAT MISSION.

>> AWESOME, HOW DOES IT FEEL FOR YOU TO BE ENTRUSTED WITH PRESERVING THE LEGACY OF AN AMERICAN HERO?

>> WELL, IT'S VERY HUMBLING.
BUT THE BEST PART HERE IS

THERE'S A TREMENDOUS TEAM,

THERE'S STAFF, THE BOARD,

EVERYONE SUPPORTS, AND THE

COMMUNITY IS A WONDERFUL SUPPORT

FOR THE MUSEUM, AND NEIL

ARMSTRONG'S LEGACY RIGHT HERE IN

WAPAKONETA.

DON'TAE, THANK YOU SO MUCH.

THANK YOU.

AND NOW, I WOULD LIKE TO

WELCOME SONNY WILLIAMS, ANOTHER

OHIO ASTRONAUT, SHE'S A NATIVE

OF EUCLID AND 7 SPACE WALKS.
HI, IT'S GREAT TO BE HERE IN WAPAKONETA.

YES, AWESOME HERE.

HOW DOES RESEARCH ABOARD THE INTERNATIONAL SPACE STATION HELP US EXPAND EXPLORATION, NOT ONLY ON THE MOON, BUT ALSO LATER GETTING TO MARS?

RIGHT, S I'VE HAD THE LUXURY OF BEING ON THE SPACE STATION TWO TIMES AND WE'RE DOING ALL SORTS OF EXPERIMENTS ON PROPULSION SYSTEM, LIFE SUPPORT SYSTEMS, EVEN SPACE SUIT SYSTEMS
THAT WILL HELP US ON OUR NEXT ENDEAVORS BACK TO THE MOON AND
EVEN FURTHER, OUT OF LOW EARTH
ORBIT, BEYOND AND MARS.

>> YOUE

ON ONE OF NASA'S UPCOMING COMMERCIAL CREW MISSIONS, TELL
ME MORE ABOUT THAT.

>> SCHEDULED TO BE ON ONE OF THE FIRST BOEING STARLINER FLIGHTS TO GO TO THE INTERNATIONAL SPACE

Station, along with SpaceX's Dragon 2, we will our

colleagues up to the space
STATION, AND THIS CONTRACT TO --

WILL ALLOW NASA GETTING OUT OF

LOW EARTH ORBIT AND BACK TO THE

MOON AND POTENTIALLY ON TO MARS

FOR THE NEXT GENERATION.

ALL OF THE WORK THAT'S GOING ON

THE INTERNATIONAL SPACE STATION,

INCLUDING THESE COMMERCIAL

COMPANIES WILL HELP US ENABLE US

to go further.

>> ARE YOU SCHEDULED TO CONDUCT

ANYMORE SPACE WALKS.

>> THE SPACE STATION IS 20 YEARS

OLD AND IT'S LIKE AN OLD HOUSE,
THINGS NEED TO BE FIXED.

842
00:31:01,459 --> 00:31:04,561
SO IT’S PRETTY PROBABLE, AND

843
00:31:02,925 --> 00:31:04,894
I’LL BE LOOKING FORWARD TO DOING

844
00:31:04,694 --> 00:31:06,596
THAT.

845
00:31:05,028 --> 00:31:07,998
>> RIGHT, THANK YOU FOR THAT.

846
00:31:06,730 --> 00:31:12,369
AND THANKS FROM HERE IN

847
00:31:08,132 --> 00:31:17,141
WAPAKONETA, LET’S HEAD TO D.C.

848
00:31:12,502 --> 00:31:18,208
>> THANKS, TY.

849
00:31:17,275 --> 00:31:19,877
HOSTING THIS CELEBRATION OF THE

850
00:31:18,342 --> 00:31:21,512
50th ANNIVERSARY OF THE FIRST

851
00:31:20,010 --> 00:31:21,578
MAN ON THE MOON.

852
00:31:21,679 --> 00:31:26,150
WE HAVE A LOT GOING ON RIGHT

853
00:31:23,380 --> 00:31:27,284
HERE ON THE MALL, TENTS

854
00:31:26,282 --> 00:31:29,285
HIGHLIGHTING BOTH THE APOLLO

855
00:31:27,416 --> 00:31:31,154
PROGRAM AND TODAY’S MOON TO MARS

...[11/09/2019 20:53:38]
PLANS, LEGO HAS AN INCREDIBLE APOLLO 11 DISPLAY, THAT TOOK DAYS TO BUILD.

AND SNOOPY HERE, OF COURSE, SNOOPY WAS THE NAME OF THE LUNAR MODULE, THE DRESS REHEARSAL FOR THE ACTUAL MOON LANDING.

AND AS YOU'VE PROBABLY SEEN, PEOPLE IN THE NATIONAL MALL HAVE BEEN WOWED THIS WEEK BY A HIGH-DEF PROJECTION OF THE SATURN 5 ROCKET ON THE WASHINGTON MONUMENT.

WE'LL BE ABLE TO SEE A
RECREATION OF A LAUNCH HERE TONIGHT AND TOMORROW NIGHT.
IT REALLY JUST GIVES YOU A SENSE OF THE SCALE OF THAT MASSIVE ROCKET.
APOLLO 11 WAS THE CULMINATION OF A PROMISE FROM PRESIDENT JOHN F. KENNEDY TO GO TO THE MOON WITHIN THE DECADE.
[ APPLAUSE ]
>> WE WILL GO TO THE MOON AND DO THE OTHER THINGS, NOT BECAUSE THEY ARE EASY, BUT BECAUSE THEY ARE HARD.
THE DIRECTION OF THE
PRESIDENT OF THE UNITED STATES,
IT IS THE STATED POLICY OF THIS
ADMINISTRATION AND THE UNITED
STATES OF AMERICA TO RETURN
AMERICAN ASTRONAUTS TO THE MOON
WITHIN THE NEXT F YEARS.
[ APPLAUSE ]
SO NOW, NASA IS FACING
ANOTHER BOLD CHALLENGE.
AND THIS TIME, THE ULTIMATE GOAL
ISN'T JUST JFK'S GOAL OF LAND ON
THE MOON AN RETURN TO
EARTH. BUT ESTABLISHING A
Sustainable presence on the Moon.

And eventually heading off to Mars.

So we are going to be doing some interesting science when we're there, and that's one of the really exciting things for example, we will be able to look in the giant craters, theseep craters in the southern pole region of the Moon, places down that never gets sunlight and we think there's going to be water there and we're going to be
GOING AND CHECKING THAT OUT.

NOW, TO ADAM SAVAGE WITH ASTRONAUT RANDY INSIDE OF THE AIR & SPAC MUSEUM.

>> RANDY, YOU'VE SLOUN ON THE SHUTTLE AND SPENT TIME ON THE INTERNATIONAL SPACE STATION.

I'M CURIOUS, THE FIRST TIME YOU OPENED THE HATCH TO GET ON THE ISS, GIVEN ALL OF THE INING YOU HAD ALREADY HAD UP TO THAT POINT, WHAT SURPRISED YOU AND WHAT FELT EXACTLY LIKE YOU EXPECTED?
IT SURPRISED THE MOST, THERE

WERE CREW MEMBERS ON THE SPACE

STATION THAT I HADN'T

TRA WITH.

I HAVE A CALL SIGN -- AND SO IT

WAS INTERESTING, WE GOT ON THE

SPACE STATION, THESE CREW

MEMBERS WHO I HADN'T --

ADVERSARY OF MY F-18 -- HEY,

E, COME OVER HERE.

A LITTLE SHOCK TO ME WHEN THEY

HEARD, YOU KNOW, THAT SOMEBODY

USE THAT IN SUCH A NORMAL TERM

COMING FROM A CREW MEMBER.
BUT WHAT WAS NEAT ABOUT IT WAS

EVEN THOUGH THESE WERE FOLKS

THAT I HADN'T MET, IT WAS BIG

BEAR HUGS, AS IF WE WERE LONG

LAST FAMILY MEMB WHO HADN'T

SEEN EACH OTHER IN A FEW WEEKS

AND CATCHING UP.

AND IT REALLY STRUCK ME, BECAUSE

I ONLY HAD TWO-AND-A-HALF DAYS

IN ORBIT AT THAT POINT, THAT

HERE WE ARE, NOW, THE CREW FROM

ATLANTIS, ON STATION, 12 HUMAN

BEINGS, THIS MAGNIFICENT

NG LABORATORY, GOING

17,000 MILES PER HOUR, AND WE

WERE -- THAT WAS IT, ALL OF

HUMANITY IN ORBIT.

WE WERE DOING THERE IN THE

SHARED MISSION.

IT DIDN'T MATTER WHERE WE CAME

FROM.

HERE WE WERE, JUST ONE FAMILY IN

ORBIT, DOING THE WORK.

>> AMAZING.

KNOW, WE WERE TALKING BEFORE

AND YOU SAID YOU SPENT 32 HOURS

IN SPACE, DURING SPACE WALKS,

WHAT DO YOU GET USED TO AND WHAT

ALWAYS SURPRISES YOU ABOUT
GETTING INTO AND GOING OUTSIDE OF THE SPACECRAFT?

>> WELL, START WITH THAT PART

FIRST, BECAUSE I DON'T THINK WHETHER IT'S YOUR FIRST, FIFTH OR YOUR NINTH OR TENTH.

WHEN YOU OPEN THAT HATCH, WHICH IN THE SPACE STATION, OPENS DOWN, RIGHT, YOU KNOW, YOU OPEN IT UP.

AND THERE'S SOME SAFETY IN THAT.

IT IS 250 MILES OR 400 KILOMETERS STRAIGHT DOWN.

FOR ANYBODY, YOU KNOW, A FEAR OF...
HEIGHTS, YOU KNOW, IT'S DAUNTING, BUT FOR ANYBODY WHO DOESN'T HAVE A FEAR OF HEIGHTS, IF YOU'RE AT THE EDGE OF A TALL BUILDING AND STAND ON THE EDGE AND LEAN OVER, YOUR BODY TELLS YOU TO LEAN BACK. YOU HAVE THAT INTENSE FEE TIMES 1,000, 250 MILES UP. BUT YOU GO BACK TO RELY ON YOUR TRAINING, OKAY. I KNOW I'M NOT GOING TO FALL, I'M GOING TO FLOAT. MY OWN PERSONAL SPACE SUIT,
GOING OUT THE DOOR, IF I GO OUT

THERE AND LET GO, I'M NOT GOING TO FALL.

HAS TOLD YOU YOU WOULD. E LIFE

IN THE NEUTRAL BUOYANCY LAB.

YOU DO YOUR TRAINING, YOU REACH OUT, PUT YOUR HAND ON THE HAND RAIL, TURN YOUR BODY THE WAY YOU

NORMALLY DO, THE WAIST TETHER, THE TETHER AND YOU GO AHEAD AND

YOU KNOW, DO WHAT YOU TRAINE FOR, IT'S JUST THE VIEW, INSTEAD OF BEING, YOU KNOW, CONCRETE, 40

FEET BELOW YOU, YOU HAVE THE
EARTH GOING BY AT 5 MILES A

00:36:46.101 --> 00:36:47.771
SECOND TO DISTRACT YOU WHILE

00:36:46.869 --> 00:36:49.172
YOU'RE OUT THERE.

00:36:47.905 --> 00:36:51.375
>> OH, MY GOODNESS.

00:36:49.306 --> 00:36:53.010
>> I'M CURIOUS ABOUT YOUR

00:36:51.509 --> 00:36:55.179
THOUGHT ABOUT APOLLO AIR

00:36:53.143 --> 00:36:56.547
TECHNOLOGY THAT LED YOU TO

00:36:55.311 --> 00:36:56.880
TECHNOLOGY THAT GOT YOU INTO

00:36:56.679 --> 00:36:59.849
SPACE.

00:36:57.014 --> 00:37:00.317
>> THAT WAS THE BASIS FOR

00:37:00.016 --> 00:37:01.250
EVERYTHING.

00:37:00.451 --> 00:37:02.418
I'M IN AWE, LIKE YOU AND

00:37:01.384 --> 00:37:04.422
EVERYBODY ELSE.

00:37:02.552 --> 00:37:05.554
IT TAKES TIME TO REMEMBER AND

00:37:04.554 --> 00:37:05.989
COMMEMORATE THIS HISTORIC
ACHIEVEMENT.

AND I MEAN, WE HAD NOT HAD BUT 15 M IN SPACE WHEN

President Kennedy challenged us to go to the Moon within a decade, we had Neil and Buzz on Apollo 11.

That is astounding.

And everything we've done since then has been based on those amazing investments in technology and the capabilities to live and work in space. And

the space walk is the
GRANDSON OF THE SOUP -- ON

APOLLO AND LUNAR SURFACE.

>> BUZZ ALDRIN WAS NOT ABLE TO

BE HERE, BUT WE DO HAVE A BUZZ

TRIBUTE VIDEO THAT WE CAN RUN.

LET'S RUN THIS AND SEE A LITTLE

BIT ABOUT BUZZ.

♪[ MUSIC ]♪

WE'VE COME TO THE CONCLUSION

THAT THIS IS THE FINAL -- THREE

MEN ON A VOYAGE TO THE MOON.

♪[ MUSIC ]♪

THIS IS A SYMBOL OF THE
INSATIABLE CURIOSITY OF ALL MAN

KIND TO EXPLORE THE UNKNOWN.

WE ACCEPTED THE CHALLENGE TO GO

TO THE MOON, THE ACCEPTANCE OF

THIS CHALLENGE WAS INEVITABLE.

TODAY, I FEEL WE'RE FULLY

CAPABLE OF ACCEPTING EXPANDED

ROLES IN THE EXPLORATION OF

SPACE.

>> RANDY, ARE YOU EXCITED ABOUT

THE FUTURE OF SPACE TRAVEL?

>> SOLUTELY.

IN THE 15 YEARS I'VE BEEN AT

NASA, THERE'S NEVER BEEN A MORE

...
EXCITING TIME.

WE HAVE TWO COMMERCIAL VEHICLES GETTING READY TO LAUNCH AND PUT PEOPLE ON THE SPACE STATION.

19 YEARS OF CONTINUOUS PRESENCE GOT, YOU KNOW, ARTEMIS SET UP, WHERE WE HAVE THE OR ORION.

AND LAUNCH HUMANS IN TWO YEARS AROUND THE MOON AGAIN.

>> AMAZING.

>> NEVER BEEN A BETTER TIME FOR IT.

>> RANDY, THANK YOU SO MUCH FOR JOINING US HERE TODAY.
I REALLY APPRECIATE IT.

>> NEIL ARMSTRONG AND BUZZ

ALDRIN WERE ALMOST STUCK ON THE SURFACE OF THE MOON, AS THE CREW WAS COMING BACK IN, THEY HAD TO TAKE OFF THOSE LARGE SPACE SUITS AND THEY'RE PRETTY BIG AND THE LUNAR MODULE IS PRETTY SMALL. IN THE PROCESS OF DOING THAT, BUZZ BUMPED UP AGAINST THE ENGINE ARM SWITCH, THE SWITCH THAT WAS CRITICAL TO TURNING ON THE ROCKET MOTOR THAT ALLOWS THEM TO LAUNCH OFF OF THE
SURFACE OF THE MOON.

THE SWITCH BROKE OFF.

AND SO WHEN THE TIME CAME TO

FLIP THAT SWITCH, TO GET READY

TO LAUNCH OFF, THERE WAS NO

SWITCH THERE TO FLIP, WHAT WAS

HE GOING TO DO.

HE PULLED OUT A

AND JAMS IT IN TO THE SPOT AND

USED THE FELT TIPPED PEN AS A

SWITCH AND THEY SUCCESSFULLY GET

OFF OF THE SURFACE OF THE MOON

AND COME HOME.

>> MY GRANDFATHER, PRESIDENT
KENNEDY, CHALLENGED AMERICANS TO
SENDA MAN TO THE MOON.

NOT BECAUSE IT WOULD BE EASY,

BUT BECAUSE IT WOULD BE SO HARD.

NASA AND OUR ENTIRE NATION

ANSWERED HIS CALL TO ACTION.

AND MADE THAT DREAM A REALITY.

TODAY, WE SALUTE THE MEN

WOMEN OF TLLO GENERATION.

AND LOOK FORWARD TO THE FUTURE

AND THE NEW FRONTIERS YET TO BE

DISCOVERED.

>> AND LOOKING NOW OVER THE
LAUNCH, COMPLEX 39 HERE AT

00:40:34,563 --> 00:40:40,570
KENNEDY SPACE CENTER, THE 2 PADS

00:40:40,704 --> 00:40:45,309
IN THE DISTANCE THERE, PAD B IS

00:40:45,442 --> 00:40:50,112
WHERE WE'RE GOING TO LAUNCH THE FIRST WOMAN TO THE MOON AND THE NEXT MOON.

00:40:50,246 --> 00:40:53,016
THAT'S PAD A, SPACEX'S PAD, WHICH IS CURRENTLY LAUNCHING THEIR ROCKETS T HEAVY AND THE FALCON, BUT IT'S A BEAUTIFUL SHOT AS WE FLY OVER THE BANANA

00:40:59,121 --> 00:41:05,528
RIVER AND INTO THAT LAUNCH COMPLEX THERE, 39A, WHERE OF

00:41:02,059 --> 00:41:07,264
COURSE, MANY HISTORIC LAUNCH HAPPENED HERE AT THE KENNEDY
SPACE CENTER AND WE CONTINUE TO CELEBRATE AS WELL.

>> AND THE MOOD HERE IS JUST EUPHORIC, SO MANY PEOPLE IN AWE OF THIS NATION'S AMAZING ACHIEVEMENT.

50 YEARS AGO.

>> INDEED.

>> AND IT'S A WARM DAY HERE IN FLORIDA.

YOU CAN SEE THE CLOUDS BUBBLING UP OVER 39A.

ON THE CREW ACCESS ARM THAT EXTENDS OUT FROM THAT PAD.
IT'S NOT QUITE AS HOT AS THE REST OF THE COUNTRY, THERE'S A HEAT WAVE THAT'S CURRENTLY GOT THE GRIP OF THE NATION, MOST OF THE NATION, BUT WE'RE STILL PRETTY TOASTY HERE IN IDA, AND IN FACT, WE' CELEBRATING MOON FEST AT THIS TIME.

>> YES.

>> A CELEBRATION OF COURSE OF THE 50th ANNIVERSARY OF APOLLO.

WHERE OUR OWN EMPLOYEES GOT TO GO OUT AND TO THE GRAND ENTRY,

EAT MOON PIES AND DRESS UP IN
1960s ATTIRE.

>> YEAH, AND YOU KNOW, I THINK THEY'RE ALREADY OUT OF THE MOON PIECES, SO I DON'T KNOW IF ANYBODY SAVED ANY FOR US.

>> I DON'T THINK THEY DID.

BUT THEY DID.

THEY GAVE THEM AWAY FOR FREE.

THAT WAS A NICE GESTURE.

>> YEAH.

>> ON THIS HISTORIC DAY.

>> YES, ABSOLUTELY.

AND AS WE CONTINUE TO CELEBRATE THE HISTORIC ACHIEVEMENT OF
9, WE LOOK AHEAD TO TRAVELING BACK TO THE MOON AND ON TO MARS.

JUST AS IN THE APOLLO ERA, WE NEED MANY ELEMENTS TO GET THERE.

FROM ROCKETS AND SPACECRAFT TO ASTRONAUT LIFE SUPPORT AND MORE.

ALL IN SUPPORT OF SCIENCE AND EXPLORATION ON THE SURFACE.

THERE'S A LOT ORKDY BEING DON TO MAKE THAT HAPPEN WITH OUR ARTEMIS PROGRAM.

WE'RE PREPARING TO LAUNCH OUR NEW SPACE LAUNCH SYSTEM ROCKET AND THE ORION, WHICH IS AN ENTIRELY NEW SPACE CAPSULE, ALSO
DEVELOPING A GATEWAY AT THE MOON, WE'LL HAVE NEW ROBOTIC AND HUMAN LANDERS AND NEWE SUITS, ALL OF THIS IS HAPPENING WHILE ADVANCES IN SCIENCE AND TECHNOLOGY WILL EXPAND OUR KNOWLEDGE AND ENRICH LIFE BACK HERE ON EARTH.

AND THERE'S THAT LIST THERE, THE ITEMS I WAS TELLING YOU ABOUT, AND WE'LL BE TELLING YOU MORE ABOUT EACH OF THOSE ELEMENTS YOU SEE THERE ON YOUR SCREEN THROUGHOUT THE SHOW TODAY.
AND OF THOSE ELEMENTS AS THEY COME TOGETHER, TO FORM THIS PROGRAM OF THE FUTURE, ARTEMIS IS A VERY COMPLEX PROGRAM. BUT WE WANT TO GO BACK TO THE MOON, SUSTAIN BLI, AND PERMANENTLY, IN ORDER TO TEST OUR TECHNOLOGY TO G ON TO MARS, IT'S ALL VERY KEY. ABSOLUTELY.

WE'RE GOING TO SEE COMING UP AFTER THIS SHOW TODAY, AT 3:00,
S.T.E.M. SHOW, THAT'S GOING TO SHOW YOU HOW STUDENTS ARE BREAKING DOWN A MISSION TO THE MOON.

>> THAT'S GOING TO BE A GREAT SHOW, MAKE SURE YOU STAY TUNED TO THAT HE AT0 ON NASA TV,

FORWARD TO THE MOON.

OUR S.T.E.M. SHOW.

THAT'S GOING TO BE A GOOD ONE.

>>> DID YOU KNOW THAT ONE OF THE MOST VALUEABLE SAMPLES BROUGHT BACK FROM THEN BY BUZZ ALDRIN AND NEIL ARMSTRONG ALMOST
DIDN'T HAPPEN.

1241
00:44:11,882 --> 00:44:14,650
A SERIES OF CONTAINERS THAT THEY

1242
00:44:13,516 --> 00:44:18,954
PUT THE SAMPLES IN, THEY

1243
00:44:14,784 --> 00:44:22,291
PICKED UP ABOUTING RO -- ROCKS.

1244
00:44:19,088 --> 00:44:24,027
AS NEIL WAS PREPARING TO BOX IT

1245
00:44:22,425 --> 00:44:25,829
TO THE LUNAR MODULE FOR A RETURN

1246
00:44:24,159 --> 00:44:29,132
BACK TO EARTH.

1247
00:44:25,963 --> 00:44:30,267
NEIL LOOKED IN THE BOX AND

1248
00:44:29,264 --> 00:44:30,599
REALIZED THERE WASN'T A LOT IN

1249
00:44:30,400 --> 00:44:31,602
THERE.

1250
00:44:30,733 --> 00:44:32,402
THAT'S NOT RIGHT, WE SHOULD BE

1251
00:44:31,735 --> 00:44:34,104
BRINGING MORE BACK.

1252
00:44:32,534 --> 00:44:35,538
SO HE TOOK THE BOX AND SCOOPED

1253
00:44:34,237 --> 00:44:37,072
ALONG THE SURFACE AND PUT A

1254
00:44:35,672 --> 00:44:38,074
BUNCH OF DI RT FROM THE SURFACE
OF THE MOON INTO THE BOX.

IT TURNS OUT THAT THAT DIRT, TH

AR -- WAS REALLY IMPORTANT TO

HELPING US UNDERSTAND THE SOLAR

WIND AND OTHER PROPERTIES OF THE

MOON SO THAT IS MORE HELPFUL

THAN THE ROCKS.

THAT'S ONE OF THE MOST SAMPLES

WE BROUGHT BACK FROM THE MOON.

>> THIS IS THE OFFICIAL

VISITOR'S CENTER FOR NASA'S

MARSHAL SPACE FLIGHT CENTER.

BUILDING THE ROCKETS THAT SEND

ASTRONAUTS INTO SPACE SINCE
1960, this machine here is an authentic F1 engine that powered the Saturn 5, the vehicle that launched the Apollo missions.

The Saturn 5's chief architect was the chief director, Brown, and throughout the 1950s, Von Brown promoted space travel.

He also helped spur much of the technology that first took Americans into space.

And now, America is ready for the next wave of human explanation, the AIs.
MISSION WILL TAKE

00:45:51,014 --> 00:45:55,818
SET THE STAGE FOR PUTTING HUMANS ON MARS.

MARSHAL IS WORKING ON THE ROCKET TO GET THEM THERE, HE SPACE LAUNCH SYSTEM OR SLS, AND MARSHALL, WE ARE PROUD OF OUR HERITAGE OF FIRE AND SMOKE, HERE'S A LOOK.

♪♪ [ MUSIC ] ♪

♪ [ MUSIC ] ♪

MARSHALL, WE ARE PROUD OF OUR HERITAGE OF FIRE AND SMOKE, HERE'S A LOOK.

♪♪ [ MUSIC ] ♪

♪ [ MUSIC ] ♪

MARSHALL, WE ARE PROUD OF OUR HERITAGE OF FIRE AND SMOKE, HERE'S A LOOK.

♪♪ [ MUSIC ] ♪

♪ [ MUSIC ] ♪

MARSHALL, WE ARE PROUD OF OUR HERITAGE OF FIRE AND SMOKE, HERE'S A LOOK.

♪♪ [ MUSIC ] ♪

♪ [ MUSIC ] ♪

MARSHALL, WE ARE PROUD OF OUR HERITAGE OF FIRE AND SMOKE, HERE'S A LOOK.

♪♪ [ MUSIC ] ♪

♪ [ MUSIC ] ♪

MARSHALL, WE ARE PROUD OF OUR HERITAGE OF FIRE AND SMOKE, HERE'S A LOOK.

♪♪ [ MUSIC ] ♪

♪ [ MUSIC ] ♪

MARSHALL, WE ARE PROUD OF OUR HERITAGE OF FIRE AND SMOKE, HERE'S A LOOK.

♪♪ [ MUSIC ] ♪

♪ [ MUSIC ] ♪

MARSHALL, WE ARE PROUD OF OUR HERITAGE OF FIRE AND SMOKE, HERE'S A LOOK.

♪♪ [ MUSIC ] ♪

♪ [ MUSIC ] ♪

MARSHALL, WE ARE PROUD OF OUR HERITAGE OF FIRE AND SMOKE, HERE'S A LOOK.

♪♪ [ MUSIC ] ♪

♪ [ MUSIC ] ♪

MARSHALL, WE ARE PROUD OF OUR HERITAGE OF FIRE AND SMOKE, HERE'S A LOOK.

♪♪ [ MUSIC ] ♪

♪ [ MUSIC ] ♪

MARSHALL, WE ARE PROUD OF OUR HERITAGE OF FIRE AND SMOKE, HERE'S A LOOK.

♪♪ [ MUSIC ] ♪

♪ [ MUSIC ] ♪

MARSHALL, WE ARE PROUD OF OUR HERITAGE OF FIRE AND SMOKE, HERE'S A LOOK.

♪♪ [ MUSIC ] ♪

♪ [ MUSIC ] ♪

MARSHALL, WE ARE PROUD OF OUR HERITAGE OF FIRE AND SMOKE, HERE'S A LOOK.

♪♪ [ MUSIC ] ♪

♪ [ MUSIC ] ♪

MARSHALL, WE ARE PROUD OF OUR HERITAGE OF FIRE AND SMOKE, HERE'S A LOOK.

♪♪ [ MUSIC ] ♪

♪ [ MUSIC ] ♪

MARSHALL, WE ARE PROUD OF OUR HERITAGE OF FIRE AND SMOKE, HERE'S A LOOK.

♪♪ [ MUSIC ] ♪

♪ [ MUSIC ] ♪

MARSHALL, WE ARE PROUD OF OUR HERITAGE OF FIRE AND SMOKE, HERE'S A LOOK.
REX WALL HI EM, HE FLEW THREE

DIFFERENT SPACE SHUTTLE MISSIONS, INCLUDING THE STS135,

HI, REX, HOW ARE YOU?

>> GREAT, IT'S GREAT TO BE HERE.

>> YOU DIDN'T GET A CHANCE TO

RIDE ON A 5, BUT TELL US WHAT IT'S LIKE AS AN ASTRONAUT

TO BE IN A ROCKET AT LIFTOFF.

>> THE FIRST TIME, AND YOU'RE LOADED INTO THE ROCKET ABOUT A

COUPLE OF HOURS BEFORE LAUNCH AND STRAPPED IN, IT FEELS LIKE

YOU'RE SITTING IN THIS HIGH-RISE BUILDING, SOLID AS A ROCK.
ENGINE UP, IT

SHAKES LIKE IT'S COMING APART,

IT'S AMAZING.

AND THE SOLID ROCKET BOOSTERS

LIGHT AND YOU LIFT OFF, FROM 0

TO 17500 MILES PER HOUR IN 18.5 SECONDS.

>> ASE LOOK BACK ON APOLLO 11,

WHAT ARE YOUR THOUGHTS ABOUT

RE-ESTABLISHING A HUMAN PRESENCE

BEYOND EARTH ORBIT.

>> IT'S SO IMPORTANT.

BECAUSE THE APOLLO PROGRAM, THEY

WENT TO THE FRONTIER, TO THE
MOON, FURTHER THAN ANY HUMANS IN HISTORY, WE NEED TO GET BACK THERE.

IT'S DIFFICULT TO DOAT.

WE WANT TO GO THERE AND GO BEYOND AND GO TO MARS.

NOW, WE HAVE A SOCIAL MEDIA QUESTION, ONE MAN ON TWITTER ASKED WHAT IS NASA'S PLAN FOR FUTURE ASTRONAUT PLAN -- PROGRAMS.

BACKGROUND, THEY CAN EXCEL IN TYPES OF FUNCTIONS AND WE'LL BRING THEM DOWN TO THE JOHNSON SPACE SENTER AND INTERVIEW, WHO IS GOING TO WORK THE BEST?

IT WILL BE SIMILAR TO NOW, EXCEPT A DIFFERENT DIMENSION WITH THE AUTONOMY THAT WE'RE GOING TO NEED, MORE THE EXPEDITIONARY BEHAVIOR, PEOPLE ARE GOING FARTHER THAN BEFORE, AND FAR FROM -- SO FAR FROM EARTH IT WILL TAKE MINUTES AND MINUTES FOR COMMUNICATIONS TO GO
BACK AND FORTH, COMFORTABLE

1355
00:48:46,054 --> 00:48:48,223
OPERATING BY THEMSELVES.

1356
00:48:46,722 --> 00:48:49,359
IT WILL BE SIMILAR TO THE WAY WE

1357
00:48:48,391 --> 00:48:50,159
PICK ASTRONAUTS TODAY.

1358
00:48:49,492 --> 00:48:53,230
>> THANKS, REX.

1359
00:48:50,293 --> 00:48:55,298
YOU KNOW, TODAY, THOUSANDS

1360
00:48:53,396 --> 00:48:57,501
NASA EMPLOYEES CONTRACTORS AND

1361
00:48:55,431 --> 00:49:01,237
SUPPLIERS ARE WORKING IN ALL 50

1362
00:49:01,771 --> 00:49:06,341
STATES TO TURN OUR PLANS INTO

1363
00:49:01,371 -- 00:49:03,039
REALITY.

1364
00:49:01,771 --> 00:49:04,341
THE APOLLO PROGRAM WAS A

1365
00:49:03,172 --> 00:49:06,341
NATIONWIDE EFFORT ON A GIANT

1366
00:49:04,474 --> 00:49:08,912
SCALE WITH SO MANY UNSUNG HEROES

1367
00:49:06,476 --> 00:49:10,280
BEHIND THE FAMOUS NAMES AND

1368
00:49:09,045 -- 00:49:11,914
FACES AND MANY APOLLO ERA
1369 00:49:10,413 --> 00:49:12,315 VETERANS ARE RIGHT HERE IN
1370 00:49:12,047 --> 00:49:14,383 HUNTSVILLE.
1371 00:49:12,447 --> 00:49:15,751 LET'S HEAR FROM A FEW OF THEM
1372 00:49:14,516 --> 00:49:17,786 ABOUT THAT ERA.
1373 00:49:15,885 --> 00:49:20,523 >> WELL, MOST OF US WERE OUT OF
1374 00:49:17,920 --> 00:49:20,956 COLLEGE, DIDN'T HAVE A BUNCH OF
1375 00:49:20,657 --> 00:49:21,925 EXPERIENCE.
1376 00:49:21,090 --> 00:49:23,425 BUT HERE'S WHAT CHALLENGED,
1377 00:49:22,090 --> 00:49:24,527 WE'RE GOING TO DO SOMETHING IN
1378 00:49:23,559 --> 00:49:25,429 TEN MONTHS THAT'S NEVER BEEN
1379 00:49:24,661 --> 00:49:27,896 DONE BEFORE.
1380 00:49:25,561 --> 00:49:29,598 >> MEAN, YOU NEVER HOME WITH
1381 00:49:28,030 --> 00:49:31,234 YOUR DESK CLEANED OFF, JUST SO
1382 00:49:29,731 --> 00:49:32,534 MUCH TO DO.
WE WERE JUST ALL HEADS DOWN, TRYING TO GET READY AND, YOU KNOW, IT DIDN'T MATTER, THAT I WAS A CO-OP, IT DIDN'T MATTER THAT I WAS 19 YEARS OLD.

I DIDN'T MIND WORKING 80 HOURS A WEEK, WHEN YOU WERE GOING TO DO SOMETHING DIFFERENT, YOU DIDN'T GO HOME UNTIL YOU FINISHED YOUR WORK.

THAT WAS PRETTY STANDARD IN THOSE DAYS.

LATE TO BED, EARLY TO RISE, WORK LIKE HELL AND ADVERTISE.
HAPPEN. ERE COMMITTED TO MAKE IT

THE THING ABOUT THE MOON THAT I

THOUGHT WAS PECULIAR, WHEN THE

SUN WAS ALMOST OVERHEAD, THE

MOON TO BE A WARM AND FRIENDLY

PLACE.

NEAR DAWN AND DUSK, THE PLACE

LOOKED DISTINCTLY UNFRIENDLY.

>>> WHAT A GREAT TRIVIA,

APOLLO 11 COMMAND MODULE PILOT,

MIKE COLLINS.

WHO JOINS ME NOW, LIVE, ALONG
WITH ASTRONAUT CANDIDATE ZENA,

00:50:57,686 --> 00:50:58,989
WELCOME.

00:50:58,019 --> 00:50:59,588
>> THANK YOU, KAREN.

00:50:59,155 --> 00:51:01,224
>> THANK YOU.

00:50:59,722 --> 00:51:02,425
>> AND ZENA, I'M LOOKING FORWARD

00:51:01,358 --> 00:51:04,060
TO HEARING FROM BOTH OF YOU.

00:51:02,557 --> 00:51:05,695
>> YEAH, LIKEWISE.

00:51:04,226 --> 00:51:07,429
>> GOOD TO HAVE YOU HERE.

00:51:05,862 --> 00:51:09,365
NOW, MIKE, PEOPLE MAY NOT KNOW

00:51:07,563 --> 00:51:12,635
THAT AFTER YOUR NASA CAREER, YOU

00:51:09,498 --> 00:51:14,603
WERE THE FIRST DIRECTOR OF THIS

00:51:12,768 --> 00:51:19,509
VERY SMITHSONIAN AIR AND SPACE

00:51:14,737 --> 00:51:20,976
MUSEUM, TAKING CHARGE WHILE THE

00:51:19,641 --> 00:51:22,945
BUILDING WAS UNDER CONSTRUCTION.

00:51:21,143 --> 00:51:24,045
IT'S BEEN ONE OFE MOST
VISITED SITES IN WASHINGTON EVER SINCE, SO DIRECTOR COLLINS.

>> OH.

>> WELCOME BACK.

>> THANK YOU, IT'S SO NICE TO BE BACK.

THE SMITHSONIAN HAS ALWAYS BEEN ONE OF MY MOST FAVORITE BUILDINGS ANYWHERE IN THE WORLD.

AND I USED TO GO TO THE MUSEUM OF NATURAL HISTORY AND WHEN I WAS PERHAPS TEN YEARS OLD, I

WOULD WATCH SNAILS NOW, THEY HAD -- THESE WERE NOT LIVE SNAILS,
THEY WERE SNAIL SHELLS, BUT THEY HAD LIKE 37 OF THEM ALL IN ROW.

AND I USED TO FOR SOME REASON, TOTALLY FASCINATED BY THAT, I USED TO COUNT THEM AND FIGURE OUT WHY THEY WERE BIG AND LITTLE AND WHAT COLORS THEY WERE AND ALL OF THOSE THINGS, SO THAT’S MY UP BRINGING IS SMITHSONIAN. AND AIR AND ACE, OF COURSE, CAME MUCH LATER AND I HAD A LOT OF HELP WITH PEOPLE LIKE BARRY GOLDWATER WHO WAS A SENATOR ON
THE RIGHT COMMITTEE WHO HELPED ME GET MONEY TO GET THE $40 MILLION AMASSED THAT WE NEEDED TO DIG A HOLE AND BRING THE BUILDING UP.

IT WAS INTERESTING TIME.

LL, IT'S A WONDERFUL PLACE TO BE NOW.

LET'S TAKE US BACK IN TIME A LITTLE BIT.

YOU WERE UP ORBITING THE MOON DURING THAT APOLLO 11, AROUND SOME 30 TIMES ALONE.

OVER ABOUT 24 HOURS.
TAKE US THERE, TELL US WHAT YOU

WERE FEELING AND WHAT THAT WAS

LIKE?

>> YOU KNOW, I WAS AMAZED, I WAS

ALWAYS ASKED, WEREN'T YOU THE

LONELIEST PERSON, GOING AROUND

THE LONELY MOON?

WEREN'T YOU LONELY?

NO, NO, I WAS HAPPY.

I WAS AT HOME.

THIS WAS MY LITTLE PLACE IN

COLUMBIA, THE COMMAND MODULE, I

HAD HOT COFFEE, I HAD MUSIC IF I

WANTED IT.

IF I HAD SOME PROBLEM OR
QUESTION, I JUST GOT ON THE RADIO WITH MISSION CONTROL.

AND THEY WERE ALWAYS VERY HELPFUL.

THEY EVEN TRIED TO TALK TO ME WHEN I WAS BY MYSELF BEHIND THE MOON.

BUT HA HA, THEY COULDN'T GET TO ME IN THAT SITUATION.

SO DOWN ON THE GROUND WITH NEIL ARMSTRONG, WHO OBVIOUSLY IS A LARGER LIFE FIGURE, TELL US WHAT YOU'D LIKE PEOPLE TO REMEMBER ABOUT HIM AS
A CREW MEMBER AND AS A COMMANDER?

>> ABOUT THE CREW MATE, OH, OH, NEIL.

>> NEIL.

>> NEIL AS THE CREW MEMBER.

>> NEIL ARMSTRONG.

>> HE WAS AN ALL-AMERICAN PERSON AND IN MANY WAYS, NEIL WAS VERY INTELLIGENT. HE HAD INTERESTS IN SCIENCE, ON BOTH SIDES OF THE KIND OF WORK THAT NASA DOES.

HE WAS -- HE WAS MODEST, HE

DIDN'T LIKE THE SPOTLIGHT ON
HIM.

BUT WHEN HE WAS CAUGHT IN ITS GLARE, HE KNEW EXACTLY WHAT TO SAY.

AFTER THE FLIGHT OF APOLLO 11, WE WERE VERY FORTUNATE TO HAVE AN AROUND THE WORLD TRIP, AND NEIL WAS OUR SPOKESPERSON.

AND HE JUST DID A MASTERFUL JOB, HE KNEW THE BACKGROUND OF THE COUNTRY, HE KNEW WHAT TO SAY TO THE LOCAL PEOPLE, BY THE TIME HE FINISHED ONE OF HIS SHORT FIVE-TEUTE SPEECHES, HALF
CLIMB ON BOARD COLUMBIA AND GO WITH US.

HE WAS JUST MASTERFUL.

>> GREAT.

>> AND.

>> ALL RIGHT.

WE HAVE PEOPLE HOPING TO ASK QUESTIONS TO ZENA AND MICHAEL COLL SOCIAL MEDIA.

THOUGH, I JUST REALIZED WE MAY NOT HAVE THE ACCESS TO THE SOCIAL MEDIA QUESTIONS, SO I'M INSTEAD GOING TO TURN THE QUESTION TO ZENA, OBVIOUSLY,
MICHAEL, WHEN YOU QUALIFIED TO
BECOME AN ASTRONAUT, YOU WERE A
PILOT, AND ZENA HADO TAKE A

VERY DIFFERENT PATH INTO THIS.

>> MY BACKGROUND IS ACTUALLY IN

MICROBIOLOGY, I STARTED BIOLOGY

IN COLLEGE, MY THESIS WAS IN

POETRY, BELIEVE IT OR NOT, AND I

DID RESEARCH IN MARINE

MICROBIOLOGY FOR MY MASTER'S

GRG

PARTS OF BEING IN THE SPACE

PROGRAM NOW IS JUST HOW

DIFFERENT A BACKGROUND EVERYONE
HAS COME FROM.

WE ARE TEST PILOTS, ALSO

MICROBIOLOGISTS, WE ARE

GEOLOGISTS, WE'RE SUBMARINERS,

IT'S A REALLY INTERESTING AND DI

VEERS GROUP TO GET TO WORK E GR

WITH.

WE ARE TAKING SOCIAL MEDIA

QUESTIONS, WE CAN'T ANSWER THEM

HERE AND NOW, BUT WE WILL TAKE

THEM THROUGHOUT THE SHOW.

ZENA, GIVE US YOUR PERSPECTIVE

ON OIL L -- APOLLO 11, WHAT IS

PERSPECTIVE OF THE LEGACY OF
APOLLO 11?

SURE, IT'S A PART OF THE WORLD THAT I GREW UP IN.

YOU KNOW, I NEVER KNEW A WORLD BEFORE MEN HAD LEFT THIS PLANET,

AND SO I HAVE TO ASK THE PEOPLE WHO LIVED THROUGH THAT,

THEMSELVES, WHAT THAT MEANS TO THEM.

AND THEY CAN TELL ME WHERE THEY WERE WHEN THEY SAW THAT HAPPEN,

THERE WERE SITTING IN, IT'S JUST THIS MONUMENTAL PIVOTAL MOMENT
IN HUMAN HISTORY.

So to me, that's just -- it's so

Touching to know that that's

Part of the world that I'm in

Now. And it's this hugely

Inspiring challenge to my

Generation, what would be our

Apollo, this thing that people

Around the world will feel a

Part of?

A little bit about the

Legacy?

I am not big on legacies, I'm

Not sure -- I think maybe 50

Year is not enough time for...
1597
00:56:57,646 --> 00:57:04,053
PROPER SPACING FOR -- I WAS

1598
00:57:00,148 --> 00:57:05,621
REALLY TAKEN BY SOMETHING ZENA

1599
00:57:04,219 --> 00:57:08,490
SAID, HERMINE NOR IS IN POETRY,

1600
00:57:05,755 --> 00:57:11,093
I LOVE THAT IDEA.

1601
00:57:08,625 --> 00:57:12,260
-- HER MINOR IS IN POETRY.

1602
00:57:11,226 --> 00:57:14,297
I LOVE T.

1603
00:57:12,394 --> 00:57:14,362
I GOO MIT AND TALK TO THE

1604
00:57:14,463 --> 00:57:16,765
STUDENTS UP THERE.

1605
00:57:15,130 --> 00:57:19,734
THE GREAT PUSH IN THIS COUNTRY

1606
00:57:16,898 --> 00:57:21,237
TODAY, AND RIGHTFULLY SO IS

1607
00:57:19,869 --> 00:57:22,538
SCIENCE, TECHNOLOGY,

1608
00:57:21,371 --> 00:57:23,873
ENGINEERING, MATH, S.T.E.M.,

1609
00:57:22,670 --> 00:57:26,007
THAT'S NOT A COMPLETE EDUCATION,

1610
00:57:24,005 --> 00:57:27,643
YOU HAVE TO PUT POETRY IN THERE.
WE ARE GOING TO NOW TALK BACK TO THE MALL TO ADAMSAVAGE, WHO HAS A MESSAGE NOT ABOUT POETRY, BUT FOR THOSE PEOPLE WHO LANDED ON THE MOON. AMAZINGLY, THERE ARE STILL PEOPLE WHO CHOSE NOT TO BELIEVE THAT WE WENT TO THE MOON. EVEN TO PERPETRATE SUCH A HOAX WOULD HAVE TAKEN FAR MORE ENERGY THAN JUST GOING TO THE MOON.
AND I BUSTED THIS CONSPIRACY THEORY IN EVERY WAY WE HAVE POS TESTED IT.

WE BUILT MINIATURE MODELS, WE ROTE THE VOMIT COMET, WE TRIED EVERYTHING.

AND IN FACT, OUR EPISODE IS USED BY MOON LANDING DENIERS TO BOLSTER THEIR ARGUMENT.

THEY THOUGHT THAT THE MOON SCAPE LOOKED SO GOOD, IT HELPED CONVINCE THEM THAT THE MOON LANDING MIGHT HAVE BEEN FAKED AT SOME SECRET SOUND STAGE IN THE
DESERT.

AND WHEN I'M CONFRONTED WITH THAT SORT OF WILLFUL IGNORANCE,

I DON'T HAVE ANY ANSWER.

BUT APPARENTLY, TO HEAR IT HAS A QUESTION FROM THE CROWD OUT THE MALL.

>> HI.

I'M OUT HERE ON THE NATIONAL MALL IN WASHINGTON, D.C.

IT IS A BEAUTIFUL DAY OUT HERE,

TO CELEBRATE THE 50th ANNIVERSARY OF THE APOLLO 11 MOON LANDING.

RIGHT NOW, I'M FOLLOWING THE
ATION ON SOCIAL MEDIA.

AND TWITTER USER DAVID SAID, I WOULD HAVE BEEN HARDER TO FAKE IT THAN TO DO IT, IN REGARDS TO THE APOLLO 11 MOON LANDING.

ADAM, YOU BROKE IT DOWN ON MYTHBUSTERS, WHAT DO YOU THINK? >> OH, WITHOUT A DOUBT.

ONE OF THE GREAT PLEASURES OF MY LIFE IS THAT I GET TO TALK TO ASTRONAUTS AND COME TO PLACES LIKE THE SMITHSONIAN AIR & SPACE MUSEUM.
THE FACT IS THAT THE PRIDE OF ALL OF THE INCREDIBLE MEN AND WOMEN, AND ENGINEERS AND SCIENTISTS WHO EXECUTED THIS INCREDIBLE FEAT AND CONTINUE TO THAT PRI BASED REALITY, AS IS NOT IN FANTASY, IT IS MY HONOR TO BE ABLE TO MEET AND TALK TO THESE FOLKS.

WHEN NASA'S GIANT LEAPS CONTINUES, IT WILL BE WITH FIRE AND SMOKE FROM ALABAMA.

>> SIX, FIVE, FOUR, THREE, TWO, ONE, ZERO, ALL ENGINE.
00:59:48,217 --> 01:00:11,639
LIFTOFF, WE HAVE A LIFTOFF,

00:59:53,121 --> 01:00:14,143
APOLLO 11.

01:00:11,773 --> 01:00:16,445
>> WELL, WELCOME BACK TO

01:00:14,277 --> 01:00:20,416
WAPAKONETA, AND THE

01:00:16,579 --> 01:00:23,853
AIR & SPACE MUSEUM, ANCHOR WITH

01:00:20,548 --> 01:00:26,688
HOMETOWN STATIONS IN LIE --

01:00:23,985 --> 01:00:31,659
LIMA, OHIO, I'M HERE WITH A TEAM

01:00:26,822 --> 01:00:34,396
FROM THE GLENN RESEARCH CENTER.

01:00:31,827 --> 01:00:35,331
THEY ALSO DEVELOPED ELECTRIC

01:00:34,530 --> 01:00:37,865
PROPULSION. AND THE TEAM IS

01:00:35,463 --> 01:00:39,701
ALSO WORKING ON A NEW

01:00:38,000 --> 01:00:43,405
GENERATION, ELECTRIC PROPULSION

01:00:39,835 --> 01:00:45,507
SYSTEM, THAT WILL POWER OUR

01:00:43,572 --> 01:00:46,909
GATEWAY, AN OUTPOST FOR

01:00:45,641 --> 01:00:49,211
ASTRONAUTS IN LUNAR ORBIT THAT

1697 01:00:47,041 --> 01:00:52,114
WILL GIVE ACCESS TO THE SU.

1698 01:00:49,378 --> 01:00:54,450
AND JOINING ME NOW FROM THE

1699 01:00:52,248 --> 01:00:55,516
GLENN RESEARCH CENTER IS MIKE

1700 01:00:54,617 --> 01:00:56,118
BARRETT, HELLO, MIKE.

1701 01:00:55,650 --> 01:00:58,721
>> HI.

1702 01:00:56,284 --> 01:01:01,889
>> HOW DOES ELECTRIC PROPULSION

1703 01:00:58,855 --> 01:01:03,958
WORK AND HOW IS IT DIFFERENT

1704 01:01:02,023 --> 01:01:05,594
FROM CHEMICAL ROCKETS.

1705 01:01:04,092 --> 01:01:07,061
>> IT GENERATES A HIGH

1706 01:01:05,661 --> 01:01:07,128
TEMPERATURE

1707 01:01:07,228 --> 01:01:11,333
OUT OF THE SPACECRAFT IN ONE

1708 01:01:09,264 --> 01:01:13,601
DIRECTION AND THAT PROPELS THE

1709 01:01:11,500 --> 01:01:15,838
SPACECRAFT IN ONE DIRECTION.

1710 01:01:13,768 --> 01:01:17,305
ELECTRIC PROPULSION USES
ELECTRICITY TO CHARGE OR IONIZE A GAS AND THEN THAT IS ACCELERATED OUT IN THE SPACECRAFT AND THAT PROVIDES >> WHERE DOES THE POWER COME FROM?

>> WELL, FOR SOLAR ELECTRIC PROPULSIVE POWER COMES FROM THE SUN.

WE USE SOLAR PANELS AND THAT ELECTRICITY IS USED TO POWER THE CRAFT AND THE ELECTRIC PRON SYSTEM.

>> HOW WILL IT HELP NASA GET TO
THE MOON AND EFBLTH EVENTUALLY TO MARCHES.

>> IT DOESN'T HAVE TO TAKE THE FUEL WITH IT, AND IT USES THE SUNLIGHT FOR ENERGY, THEN THAT SPACECRAFT, INSTEAD OF HAVING TO TAKE THE FUEL, CAN TAKE COMMUNICATIONS EQUI.

ANYTHING ELSE THAT THE ASTRONAUTS NEED TO COMPLETE THE MISSION.

THAT MAKES THE BUILD AND DESIGN OF THAT SPACECRAFT A LOT EASIER IN THE EFFICIENCY OF THE...
ELECTRIC PROPULSION HELPS US MAKE THE MISSION MORE ACHIEVABLE.

>> SO EXCITING, THANK YOU SO MUCH.

AND NASA'S GIANT LEAPS CONTINUE DOWN AT SPA CENTER HOUSTON.

BUT FIRST, AS YOU SEE FROM OUR SHOW TODAY, NASA REALLY IS EVERYWHERE, WITH TECHNOLOGICAL AND ECONOMIC IMPACT ALL ACROSS THE COUNTRY.

INNOVATION, FOR EXPLORATION HAS AN IMPACT ON OUR DAILY LIVES AS
IT DID IN THE APOLLO ERA.

01:02:54,036 --> 01:02:56,137

01:02:54,302 --> 01:02:56,637
>> ALL ENGINE RUNNING.

01:02:56,271 --> 01:03:22,864
LIFTOFF.

01:02:56,804 --> 01:03:23,097
WE HAVE A LIFTOFF ON APOLLO 11!

01:03:22,998 --> 01:03:24,932

01:03:25,067 --> 01:03:29,972
>> THIS NATION SHOULD COMMIT

01:03:28,103 --> 01:04:47,856
ITSELF TO ACHIEVING THE GOAL OF

01:03:30,105 --> 01:04:48,190
LANDING A MAN ON THE MOON AND

01:03:47,989 --> 01:04:50,424
RETURNING HIM SAFELY TO THE

01:03:48,322 --> 01:04:54,062
OUT HERE TO WONDER IF THE

01:03:50,559 --> 01:05:56,313
UNKNOWN -- I REALI THERE'S A

01:03:54,228 --> 01:04:12,547
TRUTH TO OUR NATURE.

01:03:55,797 --> 01:04:15,450
MAN MUST EXPLORE.
I think landing on the moon changed the sky from a barrier into a doorway. It turned the backdrop of all of human history, Ky, into an invitation. I would give anything to remember that moment. My mom promises I saw it. But I don't remember a thing. Might be one of the reasons why I'm a little obsessed with the moon landing, I have the special times when they were...
THY TO THE MOON, JULY

17th.

THE MODELS OF THE MOON, THERE IT IS.

THAT'S -- SEA OF TRANQUILITY,

THAT'S WHERE THEY LANDED RIGHT THERE.

ANY THOUGHTS ON TRAVELING TO MARS?

CAN I BRING MY FAMILY WITH ME?

YES.

YES, I WOULD GO TO MARS.

THEY'VE GOT WATER THERE AND
EVERYTHING AND METHANE, WHAT

MORE DO YOU WANT?

>>> OR THAT HAVING HAD 11 DAYS

ON APOLLO 7 THAT YOU WOULD

RECOMMEND HAVING ON THE GATEW

PERSONALLY, I FIND IT

VERY DIFFICULT TO COMPARE THINGS

TODAY AND WHAT THEY WERE THEN 50

YEARS AGO.

IT'S BECAUSE THE ORGANIZATION

HAS BECOME MORE ORGANIZED, MANY

PROBL HAVE BE I

WON'T SAY SOLVED, BUT ARE LIKE

98, 99% COMPARED TO 50%.
BUT I DO SEE A DIFFERENCE IN

ATTITUDE IN EXPLORING SPACE

TODAY FROM WHAT IT WAS BACK 50 YEARS AGO, W EVERYBAS A

FIGHTER PILOT, TEST PILOT, WE

SAW BASICALLY IT'S AN

OPPORTUNITY TO STICK OUR NECKS

OUT.

>> SURE.

>> A LITTLE TO DO IT. AND

WHAT'S AMAZING FOR ME WHEN I

LOOK AT THAT IS HERE WE ARE 50 YEARS LATER, AND I NEVER IN MY

LIFE COULD HAVE PROJECTED THIS

AMOUNT OF INTEREST AND
ASSOCIATION WITH WHAT WE WERE DOING BACK THEN.

AND ALSO, AT THE SAME TIME,

SINCE IT'S A CIVILIAN OPERATION,

WASN'T MILITARY, WE HAD ALL MILITARY TRAINED FIGHTER PILOT,

BUT WHAT'S GOING TO HAPPEN IS 10 YEARS FROM NOW, 200, 500 YEARS FROM NOW TLRS ONLY GOING TO BE PROBABLY ONE THING THEY REMEMBER ABOUT THE 20thRY AND THAT'S MAN WENT TO THE MOON AND NEIL ARMSTRONG, HE'S GOING TO BE GOING DOWN IN HISTORY FOR --.
WE APPRECIATE YOUR ROLE IN HELPING US GET TO WHERE WE ARE TODAY, CA-- AND WE'RE THANKFUL THAT YOU'RE CELEBRATING WITH US.

WHAT I WAS TAKING FOR GRANTED BACK ON APOLLO 7, TO THIS DAY, STILL THE LONGEST, MOST AMBITIOUS, MOST SUCCESSFUL TEST FLIGHT, BACK IN THOSE DAYS IT WAS A CHALLENGING JOB TO DO WE WERE COMMITTED TO IT, DO WHATEVER WE NEEDED TO DO TO MAKE IT A SUCCESS.

AND NOW 50 YEARS LATER, I LOOK...
01:12:05,119 --> 01:12:09,556
AT IT IN PERSPECTIVE WITH OUR

1854
01:12:07,021 --> 01:12:11,626
OVERALL ACCOMPLISHMENT ON

1855
01:12:09,690 --> 01:12:14,561
APOLLO, AND FRANKLY, I AM PROUD

1856
01:12:11,792 --> 01:12:15,730
TO HAVE LAYED ONE SMALL STEP IN

1857
01:12:14,695 --> 01:12:17,198
THAT WITH APOLLO 7.

1858
01:12:15,863 --> 01:12:18,766
>> THANK YOU SO MUCH, WE ARE

1859
01:12:17,364 --> 01:12:19,867
LOOKING FORWARD TO ALSO HAVING

1860
01:12:18,899 --> 01:12:21,935
SOME BIG MILESTONES TO CELEBRATE

1861
01:12:20,002 --> 01:12:23,172
IN THE UPCOMING YEARS.

1862
01:12:22,069 --> 01:12:24,773
THE GOOD PART OF THAT AND

1863
01:12:23,337 --> 01:12:26,073
GETTING PEOPLE BACK ON TO MOON

1864
01:12:24,905 --> 01:12:28,476
IS GOING TO BE GATEWAY, IT'S

1865
01:12:26,240 --> 01:12:29,978
GOING TO BE CUTTING EDGE

1866
01:12:28,609 --> 01:12:31,412
TECHNOLOGY AND THAT'S SAY

1867
01:12:30,110 --> 01:12:35,182
SOMETHING SINCE WE HAD CUTTING

1868
01:12:31.546 --> 01:12:37.119
EDGE TECHNOLOGY 50 YEARS AGO.

1869
01:12:35.315 --> 01:12:38.420
>> YOU PROBABLY KNOW THAT THE

1870
01:12:37.252 --> 01:12:40.989
SPACECRAFT THAT GOT US TO THE

1871
01:12:38.552 --> 01:12:42.623
MOON WAS INCREDIBLY COMPLICATED

1872
01:12:41.122 --> 01:12:44.425
BUT DO YOU REALIZE THERE WERE

1873
01:12:42.757 --> 01:12:47.862
6.1 MILLION PARTS IN THE SATURN

1874
01:12:46.328 --> 01:12:49.665
SPACECRAFT THAT HAD TO BE POLLO

1875
01:12:48.029 --> 01:12:51.132
ASSEMBLED AND ALL HAD TO WORK

1876
01:12:49.797 --> 01:12:57.371
CORRECTLY FOR US TO GET TO THE

1877
01:12:51.265 --> 01:12:57.439
MOON IN JULY OF 1969.

1878
01:12:57.538 --> 01:12:59.474
>> AND WELCOME BACK TO THE

1879
01:12:59.573 --> 01:13:02.478
SATURN 5 CENTER AT THE KENNEDY

1880
01:13:01.510 --> 01:13:06.181
SPACE CENTER IN FLORIDA, A LOOK

1881
01:13:03.712 --> 01:13:06.248
IT WAS SUPPOSED TO BE FOR APOLLO
1882
01:13:06,347 --> 01:13:09,216
15, BUT NEVER FLEW, ONCE THEY

1883
01:13:07,681 --> 01:13:10,519
DECIDED THEY WERE GOING TO TAKE

1884
01:13:09,350 --> 01:13:11,620
MOON ROVERS UP TO THE MOON.

1885
01:13:10,652 --> 01:13:12,753
BUT THEY SAY IT WORKS.

1886
01:13:11,752 --> 01:13:13,820
AND IT COULD HAVE GONE TO THE

1887
01:13:12,886 --> 01:13:15,857
MOON IF WE NEEDED IT.

1888
01:13:13,954 --> 01:13:17,992
>> YEAH, AND IT'S ONE THING TO

1889
01:13:15,990 --> 01:13:21,496
SEE IT, YOU KNOW, THE PICTURES

1890
01:13:18,126 --> 01:13:23,265
OF IT ARE MAGNIFICENT ON CAMERA,

1891
01:13:21,630 --> 01:13:24,899
BUT UP CLOSE AND PERSONAL NEXT

1892
TO IT, YOU SEE ALL OF THE

1893
01:13:25,033 --> 01:13:28,803
DETAILS AND IT'S AMAZING WHAT WE

1894
01:13:27,435 --> 01:13:29,837
WERE ABLE TO ACCOMPLISH TOGETHER

1895
01:13:28,970 --> 01:13:30,405
AS A NATION.
YOU'RE RIGHT.

BACK HERE, IF YOU'RE JUST JOINING US, WE ARE CELEBRATING THE 50th ANNIVERSARY OF APOLLO.

ANDARD TO THE PLANS.

FOR THE NEXT GIANT LEAP TO THE MOON AND ON TO MARS.

>> WE'RE TAKING YOUR QUESTIONS ON LINE, USING #APOLLO 50th.

>> A FUN REVEAL.

>> YOU TELL ME NOW?

>> NO, I WOULD NOT BE A REVEAL AT THE END OF THE SHOW.
>> IF YOU WANT TO FOLLOW US,

JOIN US NOW ONLINE AND EXPLORE

ORE SUBSCRIPTION RIGHT THERE AT

NASA.GOV/SUBSCRIBE, WE'LL KEEP

YOU UPDATED WITH THE NEWSLETTER

ON TO MARS, SUBSCRIBE AGAIN ATND

-- THEN COME UP TO THE GATEWAY

-- GET US BACK SAFELY ON THE

GROUND.

NOW, THE LAWS OF PHYSICS STILL

APPLY, THE SAME AS THEY DID BACK

IN THE 1960s.

WE HAD TO COME BACK FROM LUNAR

RETURN VELOCITIES, ON 32,
ANTICIPATE ALL OF THAT ENERGY.

1925
01:24:07,341 --> 01:24:11,211
SO THE SHAPE OF THE CAPSULE IS

1926
01:24:10,310 --> 01:24:12,779
THE SAME.

1927
01:24:11,645 --> 01:24:14,747
HEAT SHIELD UNDERNEATH.

1928
01:24:12,913 --> 01:24:14,814
THE BIG THING IS WHEN YOU GET

1929
01:24:14,914 --> 01:24:20,753
INSIDE, IT'S 30% LARGER.

1930
01:24:18,152 --> 01:24:22,823
ORION CAN CARRY FOUR CREW.

1931
01:24:20,887 --> 01:24:24,024
NOW, IT'S ALSO TAKING A LOT OF

1932
01:24:22,957 --> 01:24:24,091
ADVANTAGE OF TECHNOLOGY

1933
01:24:24,190 --> 01:24:30,398
DEVELOPMENTS, NOW, WE HAVE

1934
01:24:27,694 --> 01:24:32,733
IT, DIGITAL DISPLAYS -- THE

1935
01:24:30,530 --> 01:24:32,800
DIGITAL -- THE ELECTRONIC

1936
01:24:32,899 --> 01:24:34,034
PROCEDURES AND EMERGENCY

1937
01:24:33,801 --> 01:24:36,204
FUNCTION.

1938
01:24:34,201 --> 01:24:37,704
IT ALSO HAS A LOT OF THEIR
1939
01:24:36,337 --> 01:24:39,440
COMPUTING POWER AND COMPARES TO

1940
01:24:37,838 --> 01:24:40,774
APOLLO, 4,000 TIMES FASTER THAN

1941
01:24:39,573 --> 01:24:44,311
THE APOLLO COMPUTERS BECAUSE THE

1942
01:24:40,908 --> 01:24:44,979
APOLLO COMPUTERS HAD LESS

1943
01:24:44,412 --> 01:24:46,314
COMPUTAN IN THE

1944
01:24:45,112 --> 01:24:52,153
WATCHES THESE DAYS.

1945
01:24:46,447 --> 01:24:54,154
A LOT MORE SAFETY REDONE

1946
01:24:52,319 --> 01:24:56,423
DANCES, 3D PRINTING AND IT'S

1947
01:24:54,287 --> 01:24:57,290
REALLY GOING FO BE NEXT

1948
01:24:56,556 --> 01:24:59,260
GENERATION VEHICLE THAT AWE LOSS

1949
01:24:57,425 --> 01:25:01,529
US TO HAVE THAT RETURN TO THE

1950
01:25:01,662 --> 01:25:02,829
MOON IN 2024 CAN GOING BACK

1951
01:25:02,930 --> 01:25:06,166
THAT SAME PRESENCE ON THAT SOUTH
POLE, ALLOW US TO DO ALL OF THE THINGS WE NEED TO DO TO BE ABLE TO GO FROM THE MOON TO MARS SHORTLY THEREAFTER.

ANDAN DR. MICHAEL ASA ASTRON BARRETT.

HEY, MIKE, HOW DOES IT FEEL TO BE BACK IN YOUR HOME STATE?

>> IT IS GREAT TO BE BACK IN THE GREAT STATE OF WASHINGTON, IN THE MUSEUM OF FLIGHT, AND ONE SPECIAL THING FOR ME IS I LAUNCHED ON THE SOYUZ ACROSS THE STREET, THE LAST TIME I HAD S
WAS SMOKING FROM REENTRY IN THE DESERT OF KAZAKHSTAN.

YOU'VE ALSO LAUNCHED ON A SHUTTLE.

HOW OLD WOULD YOU LIKE TO TAKE A RIDE IN N.

THE SOYUZ HAVE BEEN FABULOUS, THEY HAVE DONE IT MAGNIFICENTLY.

BUT THE ORION IS A VERY DIFFERENT BEAST, DESIGNED TO TAKE US AWAY FROM LOW EARTH ORBIT AND MISSIONS OF EXPLORATION, THE MOON AND BEYOND, ALL OF US WOULD LOVE
THAT.

1982
01:26:06,726 --> 01:26:09,564
WE'VE HAD A UNDERSTAND T

1983
01:26:08,061 --> 01:26:10,698
ASTRONAUT OFFICE IN DESIGNING

1984
01:26:09,729 --> 01:26:11,998
AND BUILDING THE ORION, WE HAVE

1985
01:26:10,832 --> 01:26:13,167
A BIRTH CONNECTION, IF YOU WILL,

1986
01:26:12,166 --> 01:26:14,502
THAT WE REALLY HAVEN'T SEEN

1987
01:26:13,300 --> 01:26:15,836
BETWEEN CREW MEMBERS AND THEIR

1988
01:26:14,635 --> 01:26:18,405
SPACESHIPS FOR A COUPLE OF

1989
01:26:15,970 --> 01:26:20,507
DECADES, SO HOW WOULD I FLY IT?

1990
01:26:18,538 --> 01:26:22,141
LIKE I'M GOING SOMEWHERE

1991
01:26:20,640 --> 01:26:23,543
AWESOME, AND FLY IT LIKE IT

1992
01:26:22,275 --> 01:26:24,144
BELONGS TO ALL OF US.

1993
01:26:23,677 --> 01:26:26,381
T'S AWESOM

1994
01:26:24,278 --> 01:26:28,115
ONE OF ORION'S JOBS IS TO

1995
01:26:26,514 --> 01:26:32,552
SUSTAIN THE CREW, SO WHAT ARE
SOME MUM-- HUMAN FACTORS AND AS

WE GET CLOSER TO SENDING HUMANS TO MARS?

WE'RE GOOD FOR FLYING FOR SIX M

THE HUMAN HAS SHOWN AN INCREDIBLE CAPACITY TO ADAPT TO THAT.

THE EARTH GETS SMALLER AND YOU CAN'T EVACUATE TO EARTH IF SOMETHING MEDICAL HAPPENS, SO YOU HAVE TO BE TOTALLY AWE ON
THE -- AUTOUS AND

SELF-CAPABLE.

THE FRACTIONAL GRAVITY ON MARS AND MORE RADIATION, THERE'S

NUTRITION ASPECTS OF IT ALL.

NOW, WE HAVE SHOWN TREMENDOUS CAPACITY TO ADAPT AND WE WILL

SEE THAT, WE JUST HAVE TO APPROACH THIS, I WOULD SAY,

METHODICALLY AND THOUGHTFULLY AND DOCUMENT AS WE GO, BUT

THERE'S NO QUESTION THAT WE'LL EXPLORERS.

>> WELL, THANK YOU, MIKE.
AND HAPPY APOLLO 50th.

>> YOU, TOO.

THANKS.

AND NOW, WE'RE JOINED BY VISITORS OF THE MUSEUM, COME ON,

WHAT ARE YOUR NAMES AND WHERE ARE YOU FROM?

MY NAME IS EMIH JOHNSON, FROM TACOMA, WASHINGTON.

I'M FROM WASHINGTON.

AWESOME, SO YOU GUYS COLUMBIA, RIGHT?

WE DID, IT'S AMAZING TO SEE
IT ON THE GROUND, BUT REMEMBER

2039
01:27:42,154 --> 01:27:45,460
SEEING IT WHEN IT LANDED AND

2040
01:27:43,291 --> 01:27:46,360
WHEN IT LAUNCHED, IT'S JUST AN

2041
01:27:45,626 --> 01:27:47,628
AMAZING THING TO SEE.

2042
01:27:46,493 --> 01:27:50,063
>> UH-HUH

2043
01:27:47,761 --> 01:27:50,430
>> A WAS IT FOR YOU,

2044
01:27:50,197 --> 01:27:52,498
JEREMIAH?

2045
01:27:50,564 --> 01:27:52,833
>> IT WAS GREAT, I REALLY LOVED

2046
01:27:52,632 --> 01:27:55,836
IT.

2047
01:27:52,966 --> 01:27:58,538
IT WAS THE FIRST TIME I ACTUALLY

2048
01:27:55,970 --> 01:27:58,605
LIKE REALLY GOT TO EXPERIENCE

2049
01:27:58,704 --> 01:28:01,841
SOMETHING LIKE THIS.

2050
01:27:59,372 --> 01:28:03,143
AND I REALLY LOVED IT, I REALLY

2051
01:28:01,975 --> 01:28:04,579
WOULD RECOMMEND FOR ANYONE TO

2052
01:28:03,277 --> 01:28:05,145
COME AND SEE IT.
>> ALL RIGHT.

WELL, THANK YOU SO MUCH.

AND THANK YOU FOR JOINING US HERE IN SEATTLE.

BACK TO THE SATURN 5 CENTER.

>> ALL RIGHT.

THANK YOU VERY MUCH, NATALIE, ALL THE WAY FROM SEATTLE, WASHINGTON, TO HERE, IN FLORIDA, 3,000 MILES AWAY.

YOU'RE LOOKING LIVE AT 39B.

HERE IN FLORIDA.

THE FUTURE OF ORION, WHERE IT WILL LAUNCH BACK INTO SPACE
ABOARD AN SLS ROCKET, ONCE COMPLETE.

THE MOST POWERFUL ROCKET IN THE WORLD.

WELL, WE’VE BEEN LOOKING AT APOLLO 11 THEN, APOLLO 11 NOW,

WE CELEBRATE, APOLLO 11 FOREVER.

JUST HOURS AGO, THE U.S. POSTAL SERVICE ISSUED A 50th ANNIVERSARY COMMEMORATIVE STAMP,

TWO FOREVER STAMPS, IN FACT, ONE STAMP FEATURING ARMSTRONG’S ICONIC PHOTOGRAPH OF ALDRIN IN HIS SUIT ON THE SURF OF
THE MOON.

THE OTHER STAMP ON THE RIGHT, A PHOTOGRAPH OF THE MOON SHOWING THE LANDING SITE OF THE LUNAR MODULE EAGLE IN THE SEA OF TRANQUILITY, A NICE MOMENT HERE IN THE SATURN 5'S CENTER. IN THAT SPOT THAT 50 YEARS AGO TODAY, NEIL ARMSTRONG TOOK THE ST STEPS BY ANY HUMAN ON TO ANOTHER WORLD. AND THOSE MOMENTS HELD PEOPLE IN FRONT OF THE TELEVISION SETS AROUND THE
WORLD.

2096
01:29:23,489 --> 01:29:27,795
>> ROGER.

2097
01:29:24,291 --> 01:29:27,962
>> A PICTURE ON THE TV.

2098
01:29:28,061 --> 01:29:28,996
♪ ♪

2099
01:29:28,895 --> 01:29:29,496
.

2100
01:29:29,130 --> 01:29:31,231
>> OKAY.

2101
01:29:29,630 --> 01:29:33,701
COMING DOWN THE LADDER NOW.

2102
01:29:31,364 --> 01:29:35,702
>> WE COULD SEE IT AS IT WAS

2103
01:29:33,833 --> 01:29:37,269
HAPPENING, WE COULD WATCH ON

2104
01:29:35,868 --> 01:29:41,341
LIVE TELEVISION.

2105
01:29:37,404 --> 01:29:44,612
>> THAT'S ONE SMALL STEP FOR

2106
01:29:41,475 --> 01:29:44,912
MAN, ONE GIANT LEAP FOR MAN

2107
01:29:44,744 --> 01:29:47,346
KIND.

2108
01:29:45,045 --> 01:29:48,582
>> AND THE FACT THAT 600 MILLION

2109
01:29:47,480 --> 01:29:50,984
PEOPLE AROUND THE WORLD WERE
EITHER WATCHING OR LISTENING ON
RADIO AND TV, AS IT HAPPENED IS
A MEASURE OF THE IMPACT THAT
THIS THING HAD ON THE WORLD'S
CONSCIOUSNESS.
[ APPLAUSE ]
>> THE SURFACE AS WE SAID WAS --
LOTS OF ROCKS IN IT.
TOOK FOOTPRINTS AND THE
FOOTPRINTS STAYED IN PLACE.
TheLADDER WITH THE
WELL-KNOWN PLAQUE.

>> MAN FROM THE PLANET EARTH,

FIRST STEP MOON.

LIVE, 1969.

CAMED IN PEACE FOR ALL MAN KIND.

>> AFTER THE FLIGHT OF

APOLLO 11, NEIL ARMSTRONG, BUZZ

ALDRIN AND I, HAD AN AROUND THE

WORLD TOUR, AND EVERYBODY EVERY

IN SOME PLACES, HAVE THE

ATTITUDE OF OH, WELL, YOU

AMERICANS FINALLY DID THIS.

NOT AT ALL.
THE ATTITUDE, EVERY COUNTRY

REGARDLESS OF THEIR INTERNAL POLITICS, THEY ALL SAID, WE DID IT.

WE HUMANS.

>> EVERYTHING BEFORE JULY 20th, 1969, HUMANS ONLY HAD EXPERIENCED ON ONE PLANETARY BODY, FROM THAT MOMENT ON, WE WERE AT LEAST IN SOME MEASURE, A MULTIPLANETARY SPECIES.

>> WHEN NEIL AND BUZZ WALKED ON THE MOON, THEY DID IT WITHOUT WEAPONS, THE ONLY THING
THEY BROUGHT WAS CAMERAS, IT WAS A PEACEFUL ENTERPRISE AND ONE THAT WAS APPLAUDED WORLDWIDE.

>> OF COURSE, BEFORE WE EXPLORE THE LUNAR SURFACE, WE HAVE TO GET TO THE SURFACE, AND FOR DECADES, NASA HAS SHOWN HOW ROBOTIC AND HUMAN EXPLORATION CAN WORK TOGETHER TO UNDERSTAND THE DISTANT WORLD AND OUR FUTURE PLANS ARE NO DIFFERENT.

♪[ MUSIC ]♪

>> AS WE LOOK BACK. >> THE LENS AT WIDE ANGLE.
THE VOICE OF A SCIENTIST CALLS OUT.

UNCREWED ROBOTIC OBSERVERS OPEN OUR EYES TO NEWTIERS,

CAMERAS AND INSTRUMENTS PREPARE THE WAY FOR FUTURE HUMAN EXPLORERS.

RANGER 9 SPACECRAFT IMPACTED ON THE MOON, 24 MARCH.

TEST MISSIONS, AND LANDING CRAFT.

PAVED THE WAY TO HUMAN PILOTED MISSIONS.

TODAY, NASA AND OUR
INTERNATIONAL PARTNERS WATCH OUR LUNAR NEIGHBOR FROM ABOVE AS WE PREPARE COMMERCIAL LANDERS FOR NEW SCIENCE MISSIONS TO THE MOON.

IT'S BEEN SAID CHOOSING TO GO TO THE MOON IS HARD.

AND WE'VE DONE THAT.

NOW, WE'RE GOING BACK.

AND ON TO MARS.

>> EARLY LANDERS LAID THE GROUND WORK FOR PUTTING US ON THE MOON.

NOW, THE DIRECTOR OF NASA'S
HUMAN LUNAR EXPLORATION PROGRAMS

EXPLAINS WHAT'S NEXT FOR LANDERS

OF THE ARTEMIS GENERATION.

>> I'M STANDING IN FRONT OF THE

APOLLO LUNAR MODULE, THIS ONE

NEVER FLEW, IT'S EXACTLY THE

SAME SIZE AND SCALE THAT NEIL

USED TO FLY TO THE SURFACE OF

THE MOON 50 YEARS AGO.

THE APOLLO LUNAR MODULE IS TWO

VEHICLES TOGETHER AS ONE, THE

CREW BOARDED THE VEHICLE IN

OF THE MOON. THE SURFACE

ONCE THEY COMPLETED THE MISSION,
THE TOP PART OF THE VEHICLE

WOULD LEAVE AND GO BACK TO ORBIT, WHERE THEY WOULD BOARD THE COMMAND MODULE TO RETURN TO EARTH.

THE ARTEMIS WILL BOARD VERY SIMILAR TO THE APOLLO, THEY WILL LAND ON THE SURFACE OF THE MOON,

IT'S GOING BE UPDATED TO 21STURY TECHNOLOGY.

WE WILL HAVE LIGHTER COMPONENTS OF SYSTEMS, AND MOST IMPORTANTLY, WE'LL BE ABLE TO CARRY UP TO 4 ASTRONAUTS AND THEY WILL ALLOW US TO LAND THE
2224
01:34:04,904 --> 01:34:07,173
FIRST WOMAN AND THE NEXT MAN ON
THE SURFACE OF THE MOON.

2225
01:34:05,872 --> 01:34:09,576
THE GATEWAY IS THE PLACE WHERE
THE LANDING SYSTEM AND THE ORION
CREW THAT'S DELIVERED BY THE
ORION WILL COME TOGETHER AND THE
CREW WILL ACTUALLY BOARD THE
ARTEMIS HUMAN LANDING SYSTEM
WILL GO TO THE SURFACE OF THE
MOON WHEN THE MISSION IS
COMPLETE, RETURN TO THE GATEWAY.

2226
01:34:07,307 --> 01:34:11,877

GATEWAY ALLOWS US TO GO
ANYWHERE ON THE SURFACE OF THE
MOON.
CAN WE REALLY WANT TO GO TO THE SOUTH POLE BECAUSE WE BELIEVE THERE’S WATER THERE.

AND WE CAN USE WATER TO LEARN HOW TO LIVE AND OPERATE ON OTHER PLANETS.

THE SYSTEMS WE'RE DEVELOPING TO TAKE US TO THE MOON ARE THE SYSTEMS WE'RE GOING TO USE TO GO TO SXHARS BEYOND.

TAKING HUMANS FARTHER THAN WE’VE EVER BEEN BEFORE.

AND REJOINING US NOW IS AN ASTRONAUT WHO’S DONE TWO SPACE
WALKS AT THE INTERNATIONAL SPACE STATION, STAN LOVE.

>> THANK YOU.

>> YOU FLEW IN A GLIDER, THE SHUTTLE WHEN IT LANDED.

HAVE YOU EVER THOUGHT WHAT IT WOULD BE LIKE LANDING ON THE MOON OR?

>> YEAH.

>> YOU HAVE.

>> ABSOLUTELY.

>> NO LIMITATIONS.

>> NOBODY IN MY OFFICE IS THINKING ABOUT ANYTHING ELSE.
SO IT WOULD BE A DIFFERENT KIND OF LANDING.

THE SHUTTLE LANDED LIKE AN AIRPLANE, AS A GLIDER, ONCE CHANCE TO PUT IT ON THE CONCRETE RATHER THAN IN THE SWAMP WITH THE ALLIGATORS, SO IT WAS FORTUNATE GET THINGS T. I'LL GO ROCKETS ON OTHER PLANETS AS WELL.

THE MOON AND MARS DON'T HAVE AN ATMOSPHERE, CAN'T USE WINGS FOR LIFT, YOU HAVE TO LAND ON THE THRUST OF A ROCKET ENGINE.

THIS BRINGS UP AN INTERESTING
DIFFERENCE BETWEEN LANDING ON THE MOON AND LANDING ON MARS.

WHEN WE LANDING ON THE MOON DURING APOLLO, AND AGAIN, WE'RE GOING TO HAVE A TWO-PART SPACECRAFT, THE PART WITH THE PEOPLE IN IT AND ENGINE AND LEGS FOR LANDING. BURNING THAT LITTLE ENGINE ON THE WAY DOWN, AND OUR HOWEVER, THE PART THAT YOU HAVE AS A CREW AS THE PROPULSION TO TAKE AWAY FROM THE MOON AND INTO ORBIT.
IF SOMETHING BAD HAPPENS ON THE WAY DOWN, IF YOU LAND AND A LEG COLLAPSES, YOU CAN POP OFF AND SORT OUT WHAT YOU'RE GOING TO DO.

BUT YOU ARE IN YOUR OWN MODULAR.

ALREADY THE WHOLE WAY DOWN.

ON MARS, HOWEVER, MARS IS AWE PLANET, HARD TO GET OFF OF A PLANET, YOU HAVE GIANTIC ROCKETS TO GET US OFF EARTH.

BIGGER THAN THE MOON.

SO THAT ASSENT VEHICLE IS TOO BIG FOR A DECENT MODULE CARRY.
AND LAND SOFTLY ON THE SURFACE.

SO YOU ARE IN YOUR DECENT MODULE

AND YOU'LL PROBABLY LAND AND

WALK OVER TO YOUR ASSENT MODULE

AND LAUNCH IN THAT ONE TIME TO

GO HOME.

BUT THAT MEANS YOU DON'T HAVE

THAT BACKUP SPACECRAFT WITH YOU

WHEN YOU'RE DOING YOUR LANDING

SO YOU ABSOLUTELY HAVE TO GET IT

HT ON THE FIRST TIME, YOU

CAN'T HIT A BOULDER, THE LANDING

LEG CAN'T COLLAPSE.

ANOTHER REASON WHY THE MOON IS A

...
GREAT PLACE TO PRACTICE BEFORE GOING TO MARS.

>> A GREAT PROVING GROUND, INDEED.

>> THANKS SO MUCH, STAN, I KNOW THERE'S A LOT OF YOUNG PEOPLE LOOKING UP TO YOU TODAY.

>>> AS WE CONTINUE OUR COVERAGE, WE WANT TO TAKE YOU TO A VIDEO FROM LANCASTER, PENNSYLVANIA, SHOWING A CORN MAZE THERE, LOOK CLOSELY ON THE LEFTS SIDE OF YOUR SCREEN, YOU CAN SEE THE OUTLINE OF AN ASTRONAUT, STAN, IS THAT YOU ON THE LEFT?
I'm afraid no I wish it were.

>> It looks like you a little bit.

>> Yeah.

>> In the background.

>> That can't be me.

>> Right there is the world's largest moon pie, made an appearance at the Marshal Space Flight Center in Alabama.

And some of our employees, not those here at Kennedy, B I N Marshal, they got to sample it.
>> WE WANT TO SEND IT BACK OVER

TO DANIELLE AT THE APOLLO SATURN 5 CENTER UPSTAIRS, DANIELLE, HOW

ARE FOLKS OUT HERE CELEBRATING

THE 50th ANNIVERSARY?

>> WELL, I'M BACK HERE AT KENNEDY SPACE CENTER AND I AM READY SO OF TH SOCIAL ME

COMMENTS THAT YOU GUYS HAVE SENT TO US USING #APOLLO 50G9.

50 YEARS AGO, NASA'S APOLLO $11 MISSION CHANGE OUR WORLD AND

IDEAS OF WHAT IS POSSIBLE BY SUCCESSFULLY LANING -- LANDING

...[11/09/2019 20:53:38]
HUMANS ON THE WORLD.

IT IS TRULY MIND BLOWING.

THE CHANGED OUR UNDERSTANDING OF THE SOLAR SYSTEM.

COULDN'T BE MORE TRUE.

LOOK AT THE APOLLO 8 EARTH RISE IMAGE, THE WAY WE SAW THE HERBING TOTALLY TRANSFORMED IN THAT ONE PHOTO.

>> ALL RIGHT.

THANKS SO MUCH, WE LOOK FORWARD TO HEARING MORE OF YOU SOCIAL MEDIA COMMENTS, SEND THEM OVER,
#APOLLO 50th.

2381 01:38:42,548 --> 01:38:45,786
>> SOUNDS GOOD, THANK, DANIELLE.

2382 01:38:44,518 --> 01:39:03,270
NOW BACK OVER TO WASHINGTON,

2383 01:38:45,953 --> 01:39:23,490
D.C. FOR A LOOK AT SPACE SUITS.

2384 01:39:03,436 --> 01:39:26,259
♪[ MUSIC ]♪

2385 01:39:23,623 --> 01:39:28,461
>>> MAN, I'M SO OBSESSED WITH

2386 01:39:26,393 --> 01:39:29,996
SPACE SUITS, I LOVE SEEING ALL

2387 01:39:28,595 --> 01:39:31,664
OF THE PICTURES OF SPACE SUITS

2388 01:39:30,128 --> 01:39:33,466
OVER THE YEARS, OF COURSE,

2389 01:39:31,797 --> 01:39:36,002
INSIDE OF THE NATIONAL AIR &

2390 01:39:33,600 --> 01:39:36,069
SPACE MUSEUM, RIGHT NOW, THE OG

2391 01:39:36,168 --> 01:39:40,173
ORIGINAL SPACE SUIT THAT NEIL

2392 01:39:38,604 --> 01:39:41,774
ARMSTRONG WORE WHEN THE EAGLE

LANDED IN 1969 HAS BEEN RESTORED

2394 01:39:41,908 --> 01:39:44,744
AND WENT ON DISPLAY THIS WE
RESTOR was funded by the public through a Kickstarter campaign, and museum goers can now see it for the first time in 13 years.

I am here with NASA's space suit engineer Lindsey, and astronaut Randy Brez Nick, Lindsey, what are the key differences between the suits that you guys are currently using, the ACES, the EMU and the new generation of suits?

One of the biggest changes is...
WE'RE TRYING TO MAKE THEM AN EVOLVEABLE ARCHITECTURE, IT MEETS EVERY DESTINATION FROM LOW EARTH ORBIT AND ISS, TO SURFACE OF MARS. >> SO NOT SEPARATE SUITS FOR EACH STAGE? >> EXACTLY.

IF YOU THINK ABOUT OUR LIFE SUPPORT SYSTEM, IT'S LIKE THE MOTHER BOARD ON YOUR COMPUTER, PLUG IN A NEW PIECE. THAT'S A GREAT WAY TO KEEP GOING TO DO A NEW SUIT FOR EVERY MISSION.
RANDY, YOU ARE TESTING THESE NEWATIONS OF SUITS FOR ARTEMIS, IS THAT CORRECT?

WE HAVE TESTING ON HOW WE HAVE THE SUITS FIT, WHERE DO WE NEED THE MOBILITY, ARE WE ABLE TO USE THINGS LIKE SUIT PORTS AND BE ABLE TO LEAVE THE SUIT OUTSIDE AND COME INSIDE THROUGH A HATCH WAY IF THE BACK OF THE SUIT.

THAT'S MY FAVORITE NEW THING.

WE ARE TESTING IT IN GIANT VACUUM CHAMBER AT THE JOHNSON
SPACE CENTER.

01:41:00,787 -- 01:41:04,990
Z1, AND WE HAD IT INSIDE OF THE

VACUUM CHAMBER AND THE CHAMBERS

01:41:05,123 -- 01:41:10,764
IS A VACUUM.

01:41:08,429 -- 01:41:12,231
NG READY TO HOP IN IT,

01:41:10,896 -- 01:41:13,966
THE SUIT IS STIFF, YOU HAVE TO

01:41:12,364 -- 01:41:15,534
CRAWL INSIDE OF THE BACK OF THE

01:41:14,100 -- 01:41:16,869
SUIT, YOUR ARMS AND LEGS INTO

01:41:15,702 -- 01:41:19,239
IT, THEY CLOSE UP THE BACK OF

01:41:17,002 -- 01:41:21,173
THE SUIT, AND THEN WE CLOSE THE

01:41:19,372 -- 01:41:23,608
HATCH, AND IT ACTUALLY DETACHES

01:41:21,307 -- 01:41:25,179
THE SUIT AND VACUUM AND A BUNCH

01:41:23,743 -- 01:41:27,180
OF MOBILITY TRANSLATION AROUND

01:41:25,311 -- 01:41:28,948
THE AREA, AND THEN THE KEY POINT

01:41:27,314 -- 01:41:31,818
OF THE SUIT PORT TESTING WAS
ACTUALLY BACKING UP, OH, GETTING

BACK IN, OBVIOUSLY, YOU NEED TO

GET HOOKED BACK UP TO GET INSIDE

OF THE DOOR WAY.

AND SO WE WORKED ON THE

DIFFERENT WAYS TO BE ABLE TO SEE

OR FEEL OR MAKE LITTLE GUIDES,

THE THAT GUIDES YOU BACK UP, AND

CRAWL BACK OUT SUIT.

NOW, A QUESTION FROM A FAN ON

THE MALL, WHAT HAVE WE GOT?

HI, I'M FROM THE NATIONAL

MALL.

I JUST GOT DONE CHECKING OUT
SOME OF THESE AMAZING EXHIBITS THAT ARE HERE CELEBRATING THE ANNIVERSARY OF APOLLO, BUT ALSO SHOWCASING SOME OF OUR FUTURE PLANS FOR OUR ARTEMIS MISSIONS. TO RETURN TO THE MOON AND EVENTUALLY GO FARTHER BEYOND TO MARS. JOINING US RIGHT NOW, ARE CARLY AND SOME OF HER FRIENDS IN MARYLAND AND THEY HAVE A QUESTION FOR RANDY AND LINDSEY. SO WHAT DOES IT MEAN FOR THE
U.S. SPACE PROGRAM TO BE ABLE TO GO BACK TO THE MOON?

>> RANDY, THE QUESTION IS, WHAT DOES IT MEAN FOR THE U.S. SPACE PROGRAM TO GO BACK TO THE MOON?

>> WELL, WE LOOK AT IT AS GOING FORWARD TO THE MOON. BUT IT'S THE IMPORTANT PART, BECAUSE WE NEED TO TEST OUT ALL OF THE ROVER, ALL OF THE SUITS, ALL OF THE HABITATS, THE HATCHES AND MAKE SURE THAT EVERYTHING CAN WORK, BECAUSE WHEN WE GO TO MARS, WE'RE NOT THREE DAYS AWAY
FROM EARTH AND CAN COME BACK IF

01:42:44,823 --> 01:42:47,760
WE NEED TO.

01:42:45,725 --> 01:42:49,529
WE ARE LITERALLY OVER A YEAR

01:42:47,894 --> 01:42:50,731
AWHE TRANSIT TIME AND E

01:42:49,662 --> 01:42:51,698
HAVE TO WAIT UNTIL MARS GETS

01:42:50,863 --> 01:42:53,266
CLOSER TO EARTH TO COME BACK.

01:42:51,831 --> 01:42:54,301
WE HAVE TO MAKE SURE THAT

01:42:53,432 --> 01:42:55,702
EVERYTHING AND ALL OF THE RISK

01:42:54,434 --> 01:42:57,403
IS DOWN ON THE HARDWARE, THE

01:42:55,868 --> 01:43:00,974
MOON IS WHERE WE TEST THAT OUT.

01:42:57,537 --> 01:43:01,708
ONE OF THE MANY REASONS WE GO

01:43:01,106 --> 01:43:03,275
BACK TO THE MOON.

01:43:01,841 --> 01:43:07,346
THE MOON IS A GREAT TREASURE

01:43:03,409 --> 01:43:09,382
TROVE OF SCIENTIFIC AND ENERGY

01:43:07,479 --> 01:43:10,783
TYPES OF OPPORTUNITIES FOR US TO
GO EXPLORE AND LEARN MORE

BECAUSE THE LAST TIME WE WERE THERE 50 YEARS AGO, WE'RE GOING THERE TO STAY NOW.

RANDY, LINDSEY, THANK YOU GUYS SO MUCH.

KAREN FOX IS INSIDE OF THE NATIONAL APACE MUSEUM, RIGHT NOW, WITH ANOTHER SPECIAL GUEST.

I AM HERE WITH GENERAL TOM STAFFORD.

HE WAS COMMANDER OF APOLLO 10, THAT MISSION WAS A DRESS
REHEARSAL FOR APOLLO 11.

WITHOUT ACTUALLY LANDING.

GENERAL STAFFORD?

TELL US ABOUT THE LEGACY OF THE APOLLO PROGRAM FOR TODAY.

>> WELL, THE LEGACY OF APOLLO WAS WE STARTED WITH NEARLY THE IMPOSSIBLE, WE DID IT IN SUCH AN IMPOSSIBLE SHORT PERIOD OF TIME AND SO SUCCESSFULLY.

THE LESSONS LEARNED, IF WE THINK WE CAN DO SOMETHING NEW, INNOVATIVE, MORE -- I DON'T
THINK WE COULD PROBABLY GET MUCH BETTER AS FAR AS MANAGEMENT, HOW WE DID THAT PROGRAM.

YOU KNOW, PRESIDENT KENNEDY ON MAY 25th, 1961, SAID WE'LL GO TO THE MOON AND SAFELY RETURN,

WHICH IS GREAT.

AND BUT THE QUESTION IS, HOW DO WE GO TO THE MOON?

IT WASN'T UNTIL 12 MONTHS LATER THAT IT WAS DECIDED H WE WOULD GO TO THE MOON, A LUNAR ORBIT RENDEZVOUS.

WE HADN'T MADE THE DECISION, ALL
OF THE MAIN LEADERS IN NASA HAD

DIFFERENT IDEAS AND IT WAS

FLOATED AROUND LIKE YOU HAVE

DIFFERENT IDEAS TODAY, WHAT YOU CAN DO.

BUT IT CAME OUT TO, SENIOR ENGINEER JOHN AND HIS TEAM SAID,

MOVE TO DOCTOR -- A GREAT DOCTOR ADMINISTRATOR, FORMER DEAN OF AERO -- THE LUNAR ORBIT RIDER

COULD DO IT, IN A WAY THAT WOULD BE A SWE RV VEHICLE, DO IT

FASTER, FAR LESS COST.

AND IT WOULD BE SAFER.

AND SO THAT WAS -- SO STEVE WAS
TALKING TO THE OTHER PEOPLE'S --

THIS IS WAY WE'RE GOING TO GO.

AND THEN I WAS FORTUNATE, I CAME

ON BOARD THE PROGRAM, WITH THE

SECOND GROUP OF ASTRONAUTS TWO

MONTHS LATER.

>> THANK YOU SO MUCH.

YOU ARE ALSO THE COMMANDER OF

THE APOLLO, SO TEST PROJECT

1975, WHEN AMERICAN ASTRONAUTS

AND SOVIET COSMONAUTS MET IN

SPACE FOR THE FIRST TIME.

WE ARE GOING TO HAVE AN EXAMPLE

OF REALTIME INTERNATIONAL SPACE
PARTNERSHIP TOMORROW ON THE 50G

ANNIVERSARY OF -- 50th

ANNIVERSARY OF APOLLO'S LANDING.

SPACE AGENCY ASTRONAUT -- ALEXER

ON A ROCKET TO THE INTERNATIONAL

SPACE STATION.

>> I THINK THAT IT'S A HUGE

HONOR FOR BOTH MY CREW, MY SOYUZ

CREW AS WELL AS THE EXPEDITION

60 THAT WILL BE JOINING.

>> THE APOLLO PROGRAM PROVED

THAT IF HUMANS THROUGH THEIR

INGENUITY TO A SCOPE, ANYTHING

IS POSSIBLE.
T TO EXPLORE, WE W

IMPROVE OUR TECHNOLOGY AND

IMPROVE OUR SCIENCE.

>> FURTHER INTO THE SOLAR SYSTEM

AND THE MOON AS A STEPPING POINT

ALONG THE WAY, AS WE GO DEEPER

AND HEAD TO MARS.

>> I WOULD LOVE TO SEE A PRO

THAT TAKES US TO THE MOON FOR

MORE TECH KNOWLEDGE CAL EVENTS.

>> A STEPPINGSTONE IN THAT

DIRECTION AND I'M VERY, VERY

EXCITED AND HONORED TO BE

SERVING THIS WAY.
AND OUR CURRENT STATION CREW

MEMBERS NICK HAGUE AND CHRISTINA COOKD THEIR THOUGHTS ABOUT APOLLO'S LEGACY.

YOU KNOW, GROWING UP IN A GENERATION SUCH AS WE DID, POST APOLLO, WE NEVER KNEW A WORLD WHERE PEOPLE HAD NOT WALKED ON THE MOON.

WHEN WE LOOKED AT THE MOON AT NIGHT, IT DIDN'T SEEM AS DISTANT AS IT MAY HAVE SEEMED TO GENERATION PRIOR TO THE APOLLO MISSION.

>> THESE SPACE SUITS TAKE THE
HERITAGE FROM THE APOLLO PROGRAM, AND THE EQUIPMENT, THE TECHNOLOGY THAT WAS PROVEN OUT THEN, WE CONTINUE TO REFINE AS WE GET READY TO EMBARK ON OUR JOURNEY BACK TO THE MOON. >> SO GOING BACK TO THE MOON, IN SO MANY WAYS, IS GOING TO INSPIRE THIS NEXT GENERATION. >> ONE OF THE REASONS IT'S SO IMPORTANT ON A GENERATIONAL LEVEL IS TO DEMONSTRATE THAT AS HUMANS, AS A COUNTRY OR AS AN INTERNATIONAL PARTNERSHIP, WHEN
SOMETHING GREAT, WE CAN BE SUCCESSFUL.

>> IT'S GOING TO TAKE INTERNATIONAL PARTNER, IT'S GOING TO TAKE COMMERCIAL PARTNER, IT'S GOING TO BRING US TOGETHER.

>> THE GOAL OF LANDING THE FIRST WOMAN ON THE MOON MEANS SO VERY MUCH TO ME.

IT'S WONDERFUL TO BE PARTICIPATING IN THIS SPACE PROGRAM, ESPECIALLY AS AN ASTRONAUT THAT AS ANY PERSON
PARTICIPATING AT A TIME WHEN WE ARE HARNESSING ALL OF THE TALENTS, SKILLS, IDEAS AND INNOVATION, FROM EVERYONE WHO WANTS TO PARTICIPATE. NOT JUST A SELECT FEW. THE APOLLO ASTRONAUTS ARE THE ONES THAT SET EVERYTHING IN MOTION TO GET US BACK TO TODAY AND IT MAY SEEM LIKE WE'VE COME TO THE MOON A SECOND TIME OR WE HAVE RETURNED TO THE MOON, BUT REALLY, OUR SPACE PROGRAM HAS BEEN MOVING FORWARD FROM DAY
ONE.

01:48:18,791 --> 01:48:24,063
AND IN THE NEXT CREW THAT STEPS

01:48:21,426 --> 01:48:26,197
ON THE MOON I JUST ANOTHER STEP

01:48:24,229 --> 01:48:27,666
IN THAT LONG LINE OF THE PROGRAM

01:48:26,332 --> 01:48:29,435
MOVING THINGS FORWARD.

01:48:27,801 --> 01:48:31,538
>> THE STONE AGE, BUT I THINK,

01:48:29,569 --> 01:48:34,039
SO MUCH WE DON'T KNOW, SO MUCH

01:48:31,671 --> 01:48:34,740
WE -- YOU'VE GOT TO KEEP

01:48:34,173 --> 01:48:35,807
EXPLORING.

01:48:34,873 --> 01:48:37,810
YOU HAVE TO.

01:48:35,942 --> 01:48:39,444
THE GREATEST THING A HUMAN MIND

01:48:37,944 --> 01:48:41,348
CAN DO IS EXPLORE, WHETHER IT'S

01:48:39,578 --> 01:48:42,881
READING, CREATING, PAINTING,

01:48:41,480 --> 01:48:45,150
YOU KNOW, AND THESE GUYS ARE

01:48:43,015 --> 01:48:48,121
PIONEERS AND THEY'RE EXPLORING
FOR THE BENEFIT OF OUR KNOWLEDGE.

AND THE THIRST FOR KNOWLEDGE IS THE MOST IMPORTANT THING IN THE WORLD.

>> WELCOME BACK TO THE SPACE CENTER, COMPLEX 39, JOINING US NOW IS REGINA SPELLMAN, BRAD,

SENIOR PROJECT MANAGER

OVERSEEING ALL OF THE MODERNIZATION OF PAD B AS WE PREPARE TO RETURN TO THE MOON.

REGINA, THESE WERE BUILT FOR APOLLO 50 YEARS AGO, HOW ARE
THEY HOLDING UP?

GREAT, THESE PADS WERE BIT WITH SOME OF THE BEST ENGINEERING BACK IN THE 60s AND THEY HAVE WITHSTOOD NOW TWO WHOLE PROGRAMS OF SPACE FLIGHT AND THEY'RE READY FOR THE THIRD.

THE PAD B HAS GOTTEN A COMPLETE MAKE OVER, WE HAVE MODERNIZED HER AND REPURRED HER AND READY FOR SPA FLIGHT.

>> WHAT ARE THE THINGS THAT YOU'VE BEEN DOING.

>> WE'RE GOING TO A CLEAN PAD
ARCHITECTURE SO ONE OF THE THINGS WE DID WAS GET RID OF THE OLD SHUTTLE INFRASTRUCTURE AND GET TO A CLEAN PAD.

WE HAVE OVER THE LAST TEN YEARS GONE IN AND MODERNIZED SYSTEM OUTAGE, I CAN'T THINK OF A SINGLE SYSTEM OUT THERE THAT WE HAVEN'T TOUCHED IN SOME WAY OR ANOTHER.

AND EVERYTHING HAS BEEN UPDATED AND MODERNIZED, TAKING OUT ALL APOLLO ERA AND NEW TECHNOLOGIES, TAKING WHAT WAS OLD AND USEFUL.
AND REALLY GOOD AND BUILDING

01:49:57,856 --> 01:49:59,826
UPON IT.

01:49:58,289 --> 01:50:01,360
>> AND I LOVE IT, I LOVE THAT

01:49:59,958 --> 01:50:01,528
WE'RE TAKING THESE PADS, BUILT

01:50:01,627 --> 01:50:05,030
TO GO TO THE MOON, WE'RE NOW

01:50:03,729 --> 01:50:06,365
GOING TO GO TO THE MOON AGAIN.

01:50:05,163 --> 01:50:07,199
I LOVE IT.

01:50:06,498 --> 01:50:07,899
COMING FULL CIRCLE.

01:50:07,332 --> 01:50:10,902
>> EXCITING.

01:50:08,033 --> 01:50:11,269
>> THANKS FOR BEING WITH US,

01:50:11,069 --> 01:50:11,970
REGINA.

01:50:11,404 --> 01:50:13,372
BACK TO DANIELLE.

01:50:12,104 --> 01:50:17,476
>> WE'RE BEHIND THE SATURN 5

01:50:13,506 --> 01:50:18,845
HERE, WE HAVE TWO VERY EXCITING

01:50:17,643 --> 01:50:19,345
GUESTS, DEF -- WHATD
THIS TRIP?

>> WELL, WHEN I WAS SIX, I REMEMBER WATCHING THE MOON LANDING ON TV.

AND IT WAS SUCH AN AWE-INSPIRING EVENT, I WANTED TO BRING THE FAMILY HERE.

>> AMAZING, IS THIS YOUR FIRST TIME?

>> YES, IT IS.

>> WHAT EXHIBIT ARE YOU LOOKING FORWARD TO SEEING OR ALREADY SEEING?

>> SEEING THE TAKEOFF TOMORROW,
SO THE 50th ANNIVERSARY, THAT WOULD BE GREAT.

>> TAKEOFF.

>> DO YOU WANT TO GO TO SPACE?

>> DEFINITELY.

>> THE NEXT ASTRONAUT RIGHT HERE.

>> SUIT HIM UP.

IT'S BEEN GREAT BEING WITH US FOR THE SATURN 5 CENTER HERE.

A LOOK AHEAD AND A LOOK BEHIND AT APOLLO 11.

NOW, JUST AHEAD, OUR S.T.E.M.
SHOW, FORWARD TO THE MOON, IS COMING AND A FUN REVEAL ABOUT THE ARTEMIS PROGRAM.

STAY TUNED FOR THAT.

RIGHT, BUT FIRST THE FINAL WORD TODAY ON APOLLO 11, IS F THE COMMANDER, NEIL ARMSTRONG.

THE FIRST TIME I'D LIKE TO INTRODUCE TO T APOLLO 11 CREW,

ASTRONAUTS NEIL ARMSTRONG.

THE ULTIMATE PEACEFUL COMPETITION.

USA VERSUS USSR.

IT WAS A DIVERSION, WHICH
DIVERSION. WAR, BUT IT WAS A

2780 01:51:42,795 --> 01:51:47,399 IT WAS INTENSE, IT DID ALLOW TO

2781 01:51:45,030 --> 01:51:48,935 BOTH SIDES TO TAKE THE HIGH ROAD

2782 01:51:47,533 --> 01:51:49,002 WITH THE OBJECTIVES OF SCIENCE

2783 01:51:49,101 --> 01:51:56,242 AND LEARNING AND EXPLORATION.

2784 01:51:51,938 --> 01:51:59,979 EVENTUALLY, PROVIDED A MECHANISM

2785 01:51:56,376 --> 01:52:00,046 FOR COOPERATION BETWEEN FORMER

2786 01:52:00,145 --> 01:52:04,917 ADVERSARIES.

2787 01:52:00,579 --> 01:52:09,756 IN THAT SENSE, AMONG OTHERS, IT

2788 01:52:05,051 --> 01:52:09,822 WAS AN INVESTMENT FOR BOTH

2789 01:52:09,921 --> 01:52:12,590 SIDES.

2790 01:52:10,222 --> 01:52:14,527 >> WELCOME BACK TO DC, I AM HERE

2791 01:52:12,725 --> 01:52:16,396 WITH NASA ADMINISTRATOR JIM

2792 01:52:14,659 --> 01:52:18,430 BRIDEN IN, IT HAS BEEN SO

2793 01:52:16,561 --> 01:52:21,300 INSPIRING TO BE HERE WITH YOU
ALL, JIM, TELL US ABOUT THE NEXT GIANT LEAP?

>> ABSOLUTELY, YOU'VE HEARD A LOT TODAY ABOUT THE INCREDIBLE ACHIEVEMENTS OF APOLLO, THERE

ARE NOW SEVERAL GENERATIONS OF AMERICANS WHO HAVE DREAMED ABOUT RETURNING TO THE MOON AND GOING BEYOND IT.

MANY WERE BORN, WELL AFTER THE APOLLO PROGRAM ENDED.

NOW, WE ARE CHARGED WITH SENDING HUMANS TO MARS.

AND FIRST, WE'LL PREPARE FOR
THAT JOURNEY AT THE MOON.

WE CALL THIS PROGRAM ARTEMIS.

AND TODAY, I'M PROUD TO SHARE

WITH YOU FOR THE VERYFIRST TIME

THE ARTEMIS LOGO.

THIS IS THE IMAGE OF EXPLORATION

THAT WILL CARRY US AS WE ONCE

AGAIN SEND HUMNTO EARTH

ORBIT.

WE INVITE ALL OF YOU TO JOIN US

AND FOLLOW THE STORY AT

NASA.GOV/ARTEMIS.

THERE IS MUCH WORK TO BE DONE.

AND MANY GREAT STORIES TO TELL
ALONG THE WAY.

STORIES OF PERSEVERANCE,

STORIES OF HUMANITY, ONCE AGAIN,

PRESSING OUTWARD INTO THE UNKNOWN.

WE ARE GOING.

AND AS WE GO, I HOPE THAT WOMEN AND MEN OF ALL AGES AND ALL BACKGROUNDS WILL CONSIDER THEMSELVES PART OF THIS.

THE ARTEMIS GENERATION.

>> 50 YEARS AGO, WE WENT TO THE MOON.

MOON.
WE CALLED IT APOLLO.

01:53:45,585 --> 01:53:47,485
>> MANY PEOPLE DON'T KNOW IS

01:53:47,586 --> 01:53:49,422
THAT APOLLO HAD A TWIN.

01:53:49,521 --> 01:53:53,158
>> SHE WAS A WOMAN NAMED

01:53:52,225 --> 01:53:55,695
ARTEMIS.

GODDESS OF THE MOON.

01:53:55,828 --> 01:54:01,267
>> WE ARE RETURNING TO THE MOON.

01:53:57,997 --> 01:54:01,701
>> AS A NEW GENERATION OF

01:54:01,434 --> 01:54:02,335
EXPLORERS.

01:54:01,833 --> 01:54:06,238
>> THIS TIME TO STAY.

01:54:02,467 --> 01:54:07,673
>> AND TO PREPARE TO ACHIEVE

01:54:06,372 --> 01:54:07,740
HUMANITY'S NEXT GIANT LEAP OF

01:54:07,840 --> 01:54:10,409
SENDING THE FIRST HUMAN MISSIONS

01:54:09,574 --> 01:54:12,177
TO MARS.

01:54:10,542 --> 01:54:13,979
>> WE BELIEVE OUR COURSE WILL
REDEFINE WHAT POSSIBLE.

>> THAT WE WOULD DISCOVER LIFE-SAVING.

>> EARTH-CHANGING SCIENCE.

>> AND THE CHALLENGES AHEAD WILL INSPIRE GENERATIONS.

>> THIS IS OUR MANIFEST.

>> FOR ALL WHO WONDER IF WE COULD RETURN.

>> FOR ALL WHO DREAMED OF BEYOND.

>> THIS IS YOUR CALLING.

>> WE GO FOR ALL OF AMERICA.

>> WE GO.
>> WE GO.

AS THE ARTEMIS GENERATION.

>> WE GO.

C ]♪

TEST TEST TEST TEST TEST TEST

♪[ MUSIC ]♪

>>> WE'VE BEEN THERE BE

WE'RE GOING AGAIN.

THIS TIME TO STAY.

IMAGINE THE FUTURE.

USING MATH AND SCIENCE AS FORMS OF ART, CREATING TECHNOLOGY,

TRANSFORMING SOCIETY.

NOW, WE TAKE CIVILIZATION TO THE
STARS.

AND A JOURNEY TO EXPLORE AND BUILD.

A GATEWAY.

AN OUTPOST.

THE FUTURE.

GOOD AFTERNOON, AND WELCOME TO OUR SHOW.

S.T.E.M. TOWARDS THE MOON.

WE'RE LIVE FROM THE APOLLO CENTER AT NASA'S KENNEDY SPACE CENTER IN FLORIDA, WHERE WE JUST WRAPPED UP A TWO-HOUR CELEBRATION COMMEMORATING THE
50 ANNIVERSARY OF THE FIRST-EVER WALK ON THE MOON.

TO YOU, THE STUDENTS, AND EDUCATORS.

THANKS FOR JOINING US AND WELCOME TO OUR SHOW.

I'M STEPHANIE MARTIN FROM NASA'S OFFICE OF COMMUNICATIONS, AND I'M HERE WITH MY COHOST AND FRIEND, FROM NA OFFICE OF S.T.E.M. ENGAGE.

WE ARE PART OF THE ARTEMIS GENERATION OF EXPLORERS, WE'RE GOING BACK TO THE MOON AND THIS
TIME TO STAY.

>> WE JUST SAW THE NEW ARTEMIS

BRANNEDING, A NOD TO THE APOLLO

MISSIONS, WHAT MANY PEOPLE DON'T

KNOW IS APOLLO HAD ITS WIN.

SHE WAS WOMAN NAME ARTEMIS,

GODDESS OF THE MOON.

AS THE ARTEMIS GENERATION, WE

NEED TO DEVELOP THE SKILLS TO

GET US TO THE MOON AND BEYOND.

NASA'S OFFICE OF S.T.E.M.

ENGAGEMENT WORKS WITH EDUCATORS,

SCHOOLS, AND OTHER ORGANIZATIONS

LIKE MUSEUMS TO IMMERSE STUDENTS
IN NASA'S WORK AND ENHANCE LITERACY AND SCIENCE,

TECHNOLOGY, ENGINEERING AND MATH.

GENERALLY, WE'RE HERE TO INSPIRE THE NEXT GENERATION TO EXPLORE.

COMING UP, WE'LL SEE AN ARTEMIS MISSION THROUGH THE EYES OF MIDDLE SCHOOL STUDENTS FROM MUSEUMS ACROSS THE COUNTRY.

I ALSO SEE THOSE SAME STUDENTS PERFORM EXPERIMENTS THAT SHOW HOW YOU CAN RECREATE THEM FROM YOUR HOME USING THINGS.
THAT YOU CAN FIND AROUND THE HOUSE.

LATER IN THE SHOW, WE'LL ALSO HAVE A MESSAGE FROM A SPECIAL CELEBRITY GUEST.

>> WE WANT EVERYONE TO JOIN THE FORWARD TO THE CONVERSATION, USING THE #NASA STEM ON TWITTER, MY TEAM IS STANDING BY TO ANSWER YOUR QUESTIONS ON SOCIAL MEDIA.

I HOPE YOU JOIN OUR CONVERSATION ONLINE, LET'S GET STARTED.

>> AS STEPHANIE MENTIONED,
CAUGHT UP WITH MIDDLE SCHOOL

02:07:47,458 --> 02:07:51,863
STUDENTS ACROSS THE COUNTRY THIS

02:07:50,362 --> 02:07:54,365
SUMMER WHO USE THEIR IMAGINATION

02:07:51,997 --> 02:07:56,901
TO SEE WHAT IT WOULD BE LIKE IF

02:07:54,498 --> 02:07:57,301
THEY TOOK OVER AN ARTEMIS MOON

02:07:57,034 --> 02:07:58,970
MISSION.

02:07:57,435 --> 02:08:00,672
THEY SIMULATED A LAUNCH, ARRIVED

02:07:59,104 --> 02:08:02,708
AT THE LUNAR GATEWAY, TOOK THEIR

02:08:00,805 --> 02:08:05,509
FIRST STEPS ON THE MOON AND EVEN

02:08:02,841 --> 02:08:06,178
COLLECTED SAMPLES ON THE LUNAR

02:08:05,810 --> 02:08:08,547
SURFACE.

02:08:06,310 --> 02:08:12,884
FIRS MISSION CONTROL FROM

02:08:08,680 --> 02:08:15,521
THE COSMO SPHERE IN KANSAS.

02:08:13,016 --> 02:08:17,988
>> WELCOME TO THE SPACE LAUNCH,

02:08:15,654 --> 02:08:20,391
ARTEMIS CREW, YOU HAVE BEEN
TRAINING MANY MONTHS FOR THE GREATEST ADVENTURE OF YOUR WHOLE LIFE.

YOU S, BUT THAT'S NORMAL.

YOU'LL BE EXPLORING THE SOLAR SYSTEM, BEGINNING WITH THE MOON AND EVENTUALLY ON TO MARS.

GO FOR LAUNCH, ALL SYSTEMS WILL BE A GO.

>> T MINUS 3 MINUTES AND COUNTING.

>> IT'SIMPORTANT FOR NASA TO SPEND PEOPLE TO THE MOON AND T
EXPERIMENTS TO HELP PEOPLE BACK ON EARTH.

>> WHAT EXCITES ABOUT ME

ARTEMIS, IT WILL HAVE THE FIRST WOMAN ON THE MOON.

AND THERE HADN'T BEEN ONE BEFORE

AND THAT'S COOL.

>> ARTEMIS, YOU'RE GO FOR

LAUNCH.

>> MAIN ENGINE, START, 10, 9, 8, 7, 6, 5, 4, 3, 2, 1.

IGNITION AND LIFTOFF.

ARTEMIS HAS CLEARED THE TOWERS.
2994
>> WELCOME TO THE SOLAR EM,

2995
ARTEMIS, YOU SHOULD SEE THE

2996
GATEWAY. AND MOON IN THE

2997
DISTANCE.

2998
NAVIGATOR FIRE ROCKETS.

2999
>> THANK YOU.

3000
WE WILL CHECK IN AS WE NEAR

3001
GATEWAY AND ARE GETTING READY TO

3002
DOCK.

3003
>> THIS IS THE FUTURE WHERE

3004
BETTER THINGS CAN HAPPEN.

3005
>>> SO HERE AT KENNEDY SPACE

3006
CENTER, WE HAVE LAUNCH COMPLEX

3007
39, THAT IS WHERE PADS 39A AND
39B WERE USER THE

02:09:47,345 --> 02:09:51,750 MISSIONS AND ARE KEY TO THE

02:09:48,747 --> 02:09:52,384 FUTURE EXPLORATION OF HUMAN

02:09:51,882 --> 02:09:54,418 SPACE FLIGHT.

02:09:52,518 --> 02:09:55,820 PAD 39A IS WHERE SPACEX WILL

02:09:54,551 --> 02:09:55,886 LAUNCH OUR ASTRONAUTS IN THE

02:09:55,987 --> 02:09:57,822 FUTURE TO THE INTERNATIONAL

02:09:57,122 --> 02:09:59,892 SPACE STATION AND YOU CAN SEE

02:09:57,956 --> 02:10:00,490 THAT ON THE LEFT-HAND SIDE OF

02:10:00,024 --> 02:10:02,292 YOUR SCREEN.

02:10:00,625 --> 02:10:04,261 PAD 39B IS ON THE RIGHT AND THAT

02:10:02,426 --> 02:10:05,963 IS WHERE HEAVY ROCKET,

02:10:04,395 --> 02:10:07,965 KNOWN AS THE SPACE LAUNCH

02:10:06,097 --> 02:10:09,367 SYSTEM, WILL CARRY THE ORION

02:10:08,099 --> 02:10:11,636 SPACECRAFT FOR ARTEMIS MISSIONS
TO THE MOON AND ON TO MARS.

>> WE'VE BEEN HEARING A LOT ABOUT ARTEMIS TODAY, STEPHANIE,

CAN YOU TELL US MORE?

>> TO REALLY SIMPLIFY IT, OUR APOLLO MISSIONS WERE FOCUSED ON FROM THE MOON.

FOR ARTEMIS, WE'RE GOING TO SEND OUR ASTRONAUTS BACK TO THE MOON AND THERE, THEY WILL EXPLORE.

AND THEY WILL UTILIZE THAT EXPERIENCE TO PREPARE US TO TAKE THE NEXT GIANT LEAP TO SEND OUR
ASTRONAUTS TO MARS.

>> AND ARTEMIS WILL REQUIRE A HEAVY LIFT VEHICLE, THE SPACE LAUNCHSYSTEM, THE STU WE MET AT THE COSMO SPHERE HAD AN PEERMENT.

>> THIS SCIENCE ACTIVITY TEACHES STUDENTS WHAT IT TAKES TO LAUNCH A PAYLOAD INTO ORBIT AND HOW SLIGHT VARIATION IN WEIGHT CAN AFFECT PERFORMANCE.

LET'S TAKE A LOOK.

♪ MUSIC ♪
02:11:00,752 --> 02:11:04,856
>> FROM THE COSMO SPHERE IN

02:11:04,956 --> 02:11:07,726
HUTCHINSON, KANSAS.

02:11:05,523 --> 02:11:10,395
>> THEY STARTED DOING THE NASA

02:11:07,859 --> 02:11:12,631
ACTIVITY HEAVY LI IT IS A

02:11:10,560 --> 02:11:15,465
PAYLOAD ACTIVITY TO TEST THE

02:11:12,764 --> 02:11:16,868
AMOUNT OF PAYLOAD THAT THEY CAN

02:11:15,600 --> 02:11:19,737
EVENLY DISTRIBUTE AND HOW TO

02:11:17,001 --> 02:11:21,940
DISTRIBUTE IT ON TO THEIR ROCKET

02:11:19,904 --> 02:11:25,543
SHIP, EACH PAPER CLIP IS EQUAL

02:11:22,073 --> 02:11:27,346
TO TWO GRAMS OF WEIGHT.

02:11:25,676 --> 02:11:30,147
THEIR C IS TO GET AS

02:11:27,479 --> 02:11:32,150
MANY PAPER CLIPS ON TO THE

02:11:30,280 --> 02:11:33,918
ROCKET AS POSSIBLE AND BE ABLE

02:11:32,283 --> 02:11:35,820
TO REACH THE CEILING.

02:11:34,051 --> 02:11:35,886
>> YOU JUST NEED AN ELONGATED BALLOON, PAPER CLIPS AND CLOTHES

PIN TO STOP THE AIR FLOW AND

MASKING TAPE.

>> SO WHY DON'T WE CHECK OUT WHAT WE ARE GOING ON THIS SIDE.

>> IT LOOKS LIKE DREW AND EMMA HAVE THEIR ACTIVITIES STARTED.

>> YES, DREW HAS A STRATEGY WHERE HE’S GOING TO CONDENSE --

HIS PAYLOAD ON TO A ROCKET AND

EXPERIMENT WITH A LOCATION TO

PUT HIS PAYLOAD AT THE MAXIMUM HEIGHT.
EMMA IS CHAINING THE PAPER CLIPS

AND WILL EVENLY DISTRIBUTE THEM

ON TO HER ROCKET TO MAXIMIZE HER

PAYLOAD THE HEIGHT OF HER

ROCKET.

RIGHT, AND THEN THE IDEA IS

TO TEST THE DIFFERENT PAYLOADS

TO SEE WHAT HAPPENS OR WHICH ONE

LAUNCHES?

>> EXACTLY.

SO THEY'RE GOING TO START WITH A

VERY LIGHT PAYLOAD AND THEY'LL

INCREASE THEIR TESTS EACH TIME

BY A FEW GRAMS UNTIL T
MAXIMIZE THEIR PAYLOAD.

>> EXCELLENT.

SO WHY DON'T WE SEE WHAT IT LOOKS LIKE TO LAUNCH THIS THING?

>> SO IT LOOKS LIKE MAD LYNN AND DAVID HAVE FINISHED THEIR PRODUCTS.

WE HAVE A COUPLE OF DIFFERENT DESIGN AREA, ONE IS TO KEEP THE PAYLOAD TOGETHER AND AT THE BOTTOM.

ANDN THE OTHER DESIGN I CHAIN THE PAYLOAD AND DISTRIBUTE THE WEIGHT ALL THE WAY DOWN THE
LENGTH OF THE ROCKET.

>> GREAT.

VERY NICE.

SO ARE WE GOING TO WATCH ONE OF

THese GET LAUNCHED?

>> YEAH, LET'S TRY IT OUT.

>> OKAY.

SO WE'RE GOING TO LUNCH?

READY.

IS EVERYONE COUNTING?

>> 3, 2, 1.

>> WHOA!

THAT'S AMAZING!

[ APPLAUSE ]

...
SO WHY DON'T WE TRY THIS

WITH ANOTHER PAYLOAD.

>> RIGHT.

MA A HER PARTNER HAVE

ANOTHER PAYLOAD ON THIS BALLOON.

>> ARE YOU GUYS EXCITED?

>> OKAY.

>> LET'S COUNT DOWN, READY?

3, 2, 1.

>> YEA.

>> FOR THOSE OF YOU WHO WOULD

KE TO TRY THIS ACTIVITY AT

HOME, VISIT THE WEBSITE AT THE

BOTTOM OF YOUR SCREEN AND YOU'RE

MORE THAN WELCOME TO PARTAKE IN
THIS AWESOME EXERCISE.

>> THE HEAVY LIFT EXPERIMENT AND

MANY OTHERS ARE IN OUR S.T.E.M.

FORWARD TO THE MOON ACTIVITY

GUIDE.

PARENTS, EDUCATORS AND STUDENTS

CAN GO TO THE WEBSITE A

DOWNLOAD THE BOOK, THERE IS A

TON OF REALLY FUN KITCHEN

SCIENCE IN THERE.

I HAD A LOT OF FUN WITH THEM

MYSELF, IN FACT, THE WATER

FILTRATION ACTIVITY YOU WILL SEE

COMING UP WAS MY FAVORITE AND
STEPHANIE, ALL OF THESE ACTIVITIES CAN BE DONE AT HOME USING THE ACTIVITY GUIDE, FROM

THERE'S A LOT TO LEARN.

>> MUSEUMS ACROSS THE COUNTRY ARE HOSTING WATCH PARTIES JUST LIKE THE ONE THAT IS IN THE NATIONAL MALL IN WASHINGTON, D.C.

IT WAS COORDINATED BY NASA AND THE SMITHSONIAN'S AIR & SPACE MUSEUM, YOUSEE THE MONUMENT IN THE BACKGROUND WITH ALL OF
THE EXHIBITS ALONG BOTH SIDES.

MANY OF THEM HAVE BEEN EVENTS

THAT ARE BEING HOSTED, EVEN

TOMORROW, TO COMMEMORATE THE BIG APOLLO 11 MISSION.

>> AND EACH NIGHT, THIS WEEK, AN IMAGE OF A SATURN 5 ROCKET WAS BEING PROJECTED ON TO THE SIDE OF THE WASHINGTON MONT.

AND STARTING TONIGHT AND TONIGHT, A 17 MINUTE ANIMATED SHOW WILL TELL THE STORY OF THE LAUNCH IN LANDING OF APOLLO 11.

THAT'S HAPPENING AT THE NATIONAL
MALL IN WASHINGTON, D.C.

IF YOU'RE IN THE NATION'S

CAPITOL THIS WEEK, IT SOUNDS

LIKE SOMETHING REALLY WORTH

SEEING.

>> IT REALLY DOES.

AS YOU CAN SEE, WITH THAT, THAT

ROCKET ON THE PAD, AS IT'S DAY

DIS DISPLAYED ON THE MONUMENT.

IT'S AMAZING.

>> DESPITE THE HEAT INDEX, IT

WOULD HAVE BEEN A GREAT

ADVENTURE.

>> IT WOULD HAVE.

>> SO A FEW MOMENTS AGO, WE SAW
ISSION SIMULATION AT THE COSMO SPHERE, I'M AMAZED AT HOW INTERACTIVE THESE MUSEUMS ARE. RIGHT, AND IT'S SO GREAT TO HAVE THESE EXPERIENCES AVAILABLE TO THE STUDENTS. NASA PARTNERSHIPS ARE CRUCIAL IN ENGAGING STUDENTSES IN NASA'S MISSION. NOT ONLY DO THE PROVIDE LEARNING OPPORTUNITIES FOR STUDENTS, THEY ALSO ENHANCE THE CAPABILITIES OF EDUCATIONAL INSTITUTIONS AND SUPPORT
EDUCATORS TO BETTER ENGAGE THE STUDENTS.

>> AT THE COLUMBIA MEMORIAL STAYS SPAUS CENTER IN CALIFORNIA, FOR EXAMPLE,

STUDENTS CAN RETURN TO THE MOON OR VOYAGE TO MARS IN THE INTERACTIVE SPACE MISSION SIMULATOR, THERE ARE CHALLENGER LEARNING CENTER.

THEM THEY CAN EXPERIENCE TEAM WORK.

>> STUDENTS THERE TOOK THEIR IMAGINATION TO NEW HEIGHTS AS THEY THOUGHT THROUGH WHAT IT
WOULD BE LIKE TO BE ABOARD THE N

WE TRAVEL FURTHER TO MARS

SOMEDAY.

I WAS THERE WITH THE CAMERA

CREW AS THESE MIDDLE SCHOOLERS

PREPARED TO LAND ON THE MOON.

THEY HAD A LOT OF FUN.

LET'S WATCH.

>> GATEWAY.

TRACKING YOUR ORBIT.

HOW DO YOU R FOR LANDING?

>> MISSION CONTROL.

ORBIT ESTABLISHED FOR LANDING ON

THE MOON SOUTH POLE.
I think it's important to send people to the Moon and on to Mars because discovery is a big thing and the more you explore, the more you know.

>> Mission system checks on Lunar Lander.

>> Power systems go.

>> Communications?

>> Comms.

>> Go.

>> I want to be one of the first women on the Moon, I wanted to be the first. So that would
A DREAM COME TRUE THAT WE'RE GOING BACK DURING MY TIME.

> ENVIRONMENTAL CONTROLS.

> ENVIRONMENT CONTROLS.

GO.

> I THINK THE MOST IMPORTANT EXPERIMENT TO DO ON THE MOON WOULD MOST LIKELY BE SEEING IF WE COULD FIND SOMEWAY TO MAKE PEOPLE ABLE TO LIVE ON THERE.

> IT'S GOING TO BE THE FIRST WOMAN TO ON AND IT'S SHOWING JUST HOW MUCH THINGS HAVE CHANGED SINCE THE FIRST LANDING
ON THE MOON.

>> FLIGHT SYSTEMS.

>> FLIGHT SYSTEMS GO.

>> RESPONDING WITH GREEN ACROSS THE BOARD.

>> CONFIRMED HOUSTON?

>> CONFIRMED GATEWAY.

LANDER SYSTEMS GREEN.

PROCEED WITH DECENT OPERATIONS.

>> ROGER MISSION CONTROL,

PROCEEDING WITH THE DESCENT OPERATIONS.

>> GOING FORWARD TO THE MOON IS CREATING A WHOLE NEW LIFE AND
BEING ABLE TO DISCOVER MORE THAN
WE THOU

>> LUNAR SECURED.

ASCENSION TEAM MOVING TO LANDER.

>> WHAT EXCITES ME ABOUT GOING

FORWARD TO THE MOON IS THE
LEARNING OPPORTUNITY, I THINK

IT'S AMAZING THAT DURING MY
LIFETIME AND DURING LIKE

ESPECIALLY ME AT THIS AGE, I'LL
BE ABLE TO EXPERIENCE SOMETHING
LIKE THIS.

>> EXPEDITION TEAM HAS ENTERED

THE LANDER.
HATCH IS SECURE.

PRESSURE CHECK ON LANDER.

PRESSURE GOOD.

HOLDING NOMINAL.

INITIATING RELEASE.

SEALS RELEASED.

TWO METERS. NG AWAY.

FOUR METERS.

SIX METERS.

YOU ARE CLEAR LANDER.

GODSPEED.

SAFE TRAVELS, EXPEDITION, AND

DON'T FORGET OUR SOUVENIRS.

YOUNG WOMEN JUST SHARED US, THESE

IT IS SUCH A DIFFERENT APPROACH
FROM WHAT WE HAD DURING APOLLO.

That's right, Stephanie, it's a huge innovation.

Gateway gives us the opportunity to land anywhere on the surface of the moon.

It will also be a rest stop and staging area as we continue to go on to Mars.

Now, a journey to the moon takes about three days, each way.

And a great way to pass the time is with music.
>> STEPHANIE, MUSIC HAS ACTUALLY BEEN PART OF SPACE TRAVEL FROM THE BEGINNING, RIGHT?

>> IT HAS, THERE WERE PRELAUNCH SONGS, SHUTTLE KRU WAKEUP SONGS AND EVEN PLAYED INSTRUMENTS ON INTERNATIONAL SPACE ST TO BRING A PART OF HOME TO THE SPACE STATION WITH THEM.

>> WITH NASA RETURNING TO THE MOON BY 2024, WE ASKED PEOPLE WHAT THEY THOUGHT SHOULD BE ON THE PLAY LIST FOR THE JOURNEY AND CREATED MOON TUNES, YOU CAN
LISTEN ON THIRD ROCK RADIO OR

USE THE #NASA MOON TUNES TO

LEARN MORE.

>> ONE OF THE TUNES THAT MADE

THE PLAY LIST IS A SONG MOON IN

THE WATER BY -- BUT FOR OUR AS

ASTRONAUTS, WHEN THEY TRAVEL TO

THE MOON, ONE IMPORTANT ASPECT

IS GOING TO BE MAKING SURE THEY

HAVE CLEAN WATER ON THE MOON.

>> YOU'VE WORKED WITH STUDENTS

ON A WATER FILTRATION

>> THAT'S RIGHT, I DID.
THIS ACTIVITY GETS STUDENTS THINKING ABOUT SOME OF THE NECESSITIES OF SURVIVAL WHEN IT COMES TO LIVING AND WORKING IN SPACE.

AND IN THIS CASE, WE LOOKED AT SOME OF THE SCIENCE BEHIND CLEANING WATER AND CREATING A WATER FILTRATION SYSTEM.

MEMORIAL SPACE SENTER AND SEE HOW IT WENT.

>> BRIANNA AND TODAY, WE'RE GOING TO BE DOING A CLEANING WATER ACTIVITY.

>> YEAH, SO CLEANING WATER IS SO
IMPORTANT.

>> RIGHT.

>> SO I THOUGHT, YOU KNOW, WE CAN MAKE A WATER FILTER ACTIVITY WATER.ALLY GET THE IMPORTANCE OF

>> AND WHY W NEED CLEAN WATER.

>> EXACTLY.

AND AS THE ASTRONAUTS STAY ON

THE INTERNATIONAL SPACE STATION,

TOMORROW'S COFFEE WAS

YESTERDAY'S COFFEE.

>> GOT TO RECYCLE EVERYTHING WE CAN.

>> EXACTLY.
'>> SO RIGHT HERE, I HAVE THE NECESSARY MATERIALS THAT WE DO FOR THE FILTER.

>> GREAT.

>> I HAVE SOME BEANS, DIFFERENT KIND OF BEAN, SOME AQUARIUM GRAVEL, COLORFUL.

I HAVE SOME PEAS AND RICE AND OUR FAVORITE, COTTON BALLS.

>> EXCELLENT.

>> JUST TO ORGANIZE SOME THINGS,

I HAVE, YOU KNOW, A FILTER, TO FILTER ROUGH, SOME GOGGLE,

FACE SAFETY FIRST.
02:20:55,345 --> 02:20:58,381
>> EXACTLY.

02:20:56,246 --> 02:21:00,951
>> AND ALSO SOME PH PAP SORES WE

02:20:58,514 --> 02:21:01,318
CAN ACTUALLY SEE IF OUR WATER IS

02:21:01,084 --> 02:21:03,654
FILTERED.

02:21:01,451 --> 02:21:04,688
>> AWESOME, SO WE HAVE JACKIE

02:21:03,788 --> 02:21:06,090
CONTINUING THE ACTIVITIES.

02:21:04,822 --> 02:21:08,592
>> YEAH, SO IT LOOKS LIKE

02:21:06,222 --> 02:21:08,993
THEY'VE ALREADY STARTED THEIR

02:21:08,759 --> 02:21:09,760
FILTER.

02:21:09,126 --> 02:21:09,894
THEY HAVE.

02:21:09,994 --> 02:21:10,528
>> AWESOME.

02:21:10,628 --> 02:21:14,364
>> THEY HAVE BEANS, GREEN PEAS,

02:21:13,531 --> 02:21:15,599
RICE, AQUARIUM GRAVEL AND

02:21:14,497 --> 02:21:17,834
THEY'RE GOING TO ADD THEIR FINAL

02:21:15,733 --> 02:21:18,268
STEP, WHICH IS COTTON BALLS, IT

LOOKS LIKE.

>> EXCELLENT.

>> REALLY EASY, AND FOR OUR

DIRTY WATER TO WE MADE, WE

ACTUALLY USED ITALIAN DRESSING,

SO IT'S FUN.

>> THAT'S AWESOME.

WHAT WAS MIXED WATER

WITH THE ITALIAN DRESSING?

I LIKE TO GRAB SOME DIRT.

>> THAT'S FUN.

>> I LOVE PLAYING WITH DIRT.
IT'S REAL DIRTY WATER.

>> RIGHT.

>> AND IT GETS TO TEST OUT TO

SEE IT'S GOING TO BE CLEAN.

>> THEY'RE GOING TO NEED SYSTEMS

LIKE THIS TO BE MORE EFFICIENT.

>> HEAVY DUTY SYSTEMS.

>> IT LOOKS LIKE WE HAVE A

COMPLETED ACTIVITY HERE.

>> YEAH, SO IT LOOKS LIKE

EVERYTHING IS READY TO GO.

>> GREAT.

>> AND GOGGLES ARE ON.

>> SO SAFETY FIRST.
I'M GLAD THEY'RE READY FOR THAT.

NOW, ALL THEY NEED TO DO IS ADD

THE DIRTY WATER.

>> EXCELLENT.

AND THAT WATER DOESN'T LOOK TOO DIRTY TO ME.

I THINK WE NEED TO GIVE IT A STIR.

>> OH, THERE WE GO, LOOK AT THAT DIRTY WATER.

>> MIXING THE ITALIAN DRESSING IN THE WATER.

>> SO NOW, I WOULD PROBABLY SAY
IT'S GOOD TO TRY OUT.

>> SO WE'RE GOING TO TRY THIS OUT NOW?

>> YEAH.

>> LET'S DO IT.

>> I'M HOPING IT WORKS.

>> I HOPE SO, TOO, FINGERS CROSSED.

>>

[ LAUGHTER ]

OH, WOW.

>> IT'S STARTING TO GO THROUGH,

IT'S GOING THROUGH ALL OF THE LAYERS.
THAT'S FASTER THAN I WOULD EXPECT.

TOTALLY.

AND I'M ACTUALLY REALLY SURPRISED, IT LOOKS VERY CLEAN.

IT LOOKS VERY CLEAN.

FOR THOSE OF YOU INTERESTED IN PARTICIPATING IN THIS ACTI AND MANOTHERS, FEEL FREE TO VISIT THE WEBSITE AT THE BOTTOM OF OUR SCREEN, TAKE PART IN THIS IMPORTANT INITIATIVE.

THE WATER LOOKS A LITTLE CLEANER WHEN IT COMES OUT OF THE
FILTRATION SYSTEM ON THE INIONAL SPACE STATION.

>> THAT IS TRUE, STEPHANIE.

OUR SYSTEM INCLUDES A COUPLE OF TECHNOLOGIES THAT YOU DON'T NORMALLY HAVE AT HOME.

WHICH IS WHY WE SUGGEST STUDENTS DON'T DRINK THE WATER YOU FILTER.

>> ABSOLUTELY NOT.

WE WANT S.T.E.M. DISCOVERIES AND EXPERIMENTS TO BE EXCITING FOR EVERYONE.

>> WE
AND EVEN CELEBRITIES ARE GETTING
EXCITED ABOUT NASA'S S.T.E.M.

ACTIVITIES.

>> ACTRESS AND SINGER KI KI

PALMER RECENTLY HAD THE
OPPORTUNITY TO LEARN MORE ABOUT
OUR INITIATIVES AND SHE SHARED

THIS MESSAGE ABOUT S.T.E.M. AND
NASA'S ARTEMIS MISSIONS.

>> HEY, KICK KICK PALMER HERE,

AND WHEN I'M NOT ON SET OR IN
THE RECORDING STUDIO, ONE OF MY
FAVORITE THINGS TO DO IS LEARN
THINGS ABOUT NASA.
IN ADDITION, TONS OF NEW ADVENTURES ARE ON THE HORIZON.

ARTEMIS, THE FIRST WOMAN AND NEXT MAN ON THE MOON.

'S NEVER BEEN BETTER TIME TO GET TECHNOLOGY, AND ENGINEERING OR MATH.

VISIT NASA.GOV/STEM.

>>> T LANDINGOLOLO 11 IS WHAT WE ARE COMMEMORATING TODAY.

>> AND FOR THE FIRST TIME, WHEN WE LAND, WHEN WE LAND THE FIRST ARTEMIS MISSION, EVERYONE AROUND
THE WORLD IS GOING TO BE

CELEBRATING AND IT'S REALLY

GOING TO BE SOMETHING WE CAN ALL

LOOK FORWARD TO.

NOW RECENTLY HAD TRIP TO

THE ST. LOUIS SCIENCE CENTER.

WE WENT TO THE ST. LOUIS

SCIENCE CENTER AND TALKED TO

SEVERAL STUDENTS THERE, WE ASKED

THEM WHAT THEY THOUGHT IT WOULD

BE LIKE TO LAND ON THE MOON AND

SHOWED US WHAT THEY IMAGINED THE

BIG EVENT WOULD BE LIKE, THEY

WERE REALLY EXCITED, THEY GOT

REALLY INTO IT.
ASTRONAUT CLASS IN TRAINING.

>> ARTEMIS, THIS IS HOUSTON,

MISSION CONTROL HERE, YOU HAVE 30 SECONDS OF FUEL REMAINING.

>> WE ARE CLOSE, ADJUSTING

FORWARD A LITTLE.

SHUT DOWN.

>> OKAY.

ENGINES STOP.

>> WE COPY YOU DOWN,

>> ENGINE IS OFF.

SOUTH POLE HERE, ARTEMIS HAS LANDED.

>> ROGER, WE HAVE YOU ON THE
GROUND.

WELCOME, ARTEMIS.

>> I WOULD GET MY CLASSMATES EXCITED BY ARTEMIS BY TELLING THEM HOW WE'RE GOING TO GO TO THE MOON, AND I JUST THINK THAT'S REALLY COOL. 'S VERY IMPORTANT FOR NASA TO SEND PEOPLE TO THE MOON AND MARS SO WE CAN LEARN MORE ABOUT OUR PLANETS AND OUR SOLAR SYSTEM.

AND WE CAN HAVE NEW PEOPLE GO AND EXPERIENCE THAT.
WE SEE YOU OPENING UP THE HATCH.

GETTING READY TO TAKE YOUR FIRST STEPS.

>> THE MOST IMPORTANT EXPERIMENT TO DO ON THE MOON IN MY OPINION.

WOULD -- THIS IS HOUSTON, OUT.

>> THE MUSEUM OF FLIGHT IN

SEATTLE IS CELEBRATING THE LANDING OF APOLLO 11 MISSION.

WITH A LUNAR BLOCK PARTY FOR ALL MUSEUM GUESTS THIS END.

>> THE MUSEUM OF FLIGHT ALSO HOSTS THE APOLLO 11 COMMAND.
MODULE, COLUMBIA, WHICH IS ON
DISPLAY FOR THE GUESTS.

>> WHEN LIVING IN SPACE, SHELTER
IS VITAL FOR SURVIVAL,

CONDUCTING EXPERIMENTS, AND TO
HAVE A PLACE TO REST WHEN

SURROUNDED BY HARSH CONDITIONS

OF SPACE.

AND AT THE ST. LOUIS SCIENCE
CENTER, STUDENTS EXPLORED WHAT
IT WOULD TAKE TO BUILD A HABITAT

THAT COULD BE SUSTAINABLE FOR
ASTRONAUTS TO STAY IN AND MARK
CAL ENOUGH TO LIVE IN.

LET'S TAKE A LOOK.
WE'RE HERE TODAY AT THE ST. LOCIENCE CENTER, AND I'M HERE WITH AARON WHO WILL BE SHOWING US ABOUT A HABITAT ACTIVITY.

OUR ASTRONAUTS HAVE GOTTEN BACK FROM THE MOON AND THEY'RE DESIGNING THEIR NEXT LUNAR HABITAT, BUSY AT WORK, DRAWING A, WHAT THEY THINK WOULD BE HELPFUL IN A HABITAT TO LIVE IF THEY WERE ON THE MOON.

I CAN'T WAIT TO SEE WHAT A
HABITAT LOOKS LIKE.

>> I HAVE EVAN AND NIKKI HERE

AND THEY ARE WORKING ON ACTUALLY

BUILDING A 3D VERSION OF THEIR

HAS BEEN [ BLEEP ] -- HABITAT.

>> THEY FOUND EVERYTHING IN THE

RECYCLING BIN.

>> THEY HAVE EVERYTHING HERE, IT

HAS BEEN RECYCLED OR REUSED,

ANYBODY CAN DO THIS AT HOME OR

AT SCHOOL.

ANYWHERE.

>> SO IMPORTANT, BECAUSE YOU

NEED ASTRONAUTS TO HAVE CLEAN
DRINKING WATER AND CLEAN AIR TO BREATHE.

>> GRAVITY IS AN ISSUE, NIKKI IS AT LABORATORY, THIS SPACE LAB.

WE CAME UP WITH A LOT OF WAYS TO BRING THOSE EXPERIMENTS SAFELY BACK.

>> I WANT TO SEE A COMPLETED HABITAT.

>> BUILT A BEDROOM AND SO IN THE OOM, WHEN YOU COME IN,

THERE'S A BUTTON, ON AND OFF BUTTON, SO IF YOU WANT THE --
>> GRAVITY.

02:27:59,702 --> 02:28:03,105
>> GRAVITY ON, YOU PRESS THE

02:28:01,305 --> 02:28:04,674
GREEN BUTTON AND YOU WANT THE IT

02:28:03,239 --> 02:28:06,543
OFF, YOU PRESS THE RED BUTTON.

02:28:04,808 --> 02:28:09,713
AND THEN THERE'S A BED, LIKE A

02:28:06,709 --> 02:28:10,713
ROLL OUTBED, WITH A DRESSER.

02:28:09,845 --> 02:28:13,716
>> WOW.

02:28:10,846 --> 02:28:16,820
>> SO WHAT IS GOING ON?

02:28:13,851 --> 02:28:18,721
>> WELL, I BUILT THE KITCHEN OF

02:28:16,953 --> 02:28:20,224
THE HABITAT.

02:28:18,888 --> 02:28:22,259
AND THERE IS A TABLE RIGHT HERE

02:28:20,356 --> 02:28:24,361
WITH CHAIRS THAT YOU CAN PUSH

02:28:22,391 --> 02:28:26,329
UNDER THE TABLE SO THATAY IT

02:28:24,494 --> 02:28:28,165
SAVES MORE SPACE.

02:28:26,463 --> 02:28:30,433
AND THEN IT'S JUST A BASIC STUFF
LIKE THE SINK BUT THEN THERE'S A HOT WATER TANK INSIDE OF THE REFRIGERATOR.

>> SO IMPORTANT.

>> TO KEEP MORE WATER INSIDE OF THE HABITAT AND THERE'S A PANTRY ON THE SIDE OVER HERE.

>> YOU THOUGHT OF ETHING.

WHAT DO YOU HAVE GOING ON?

>> I BUILT A LIVING ROOM AND THE GYM, I THOUGHT WHEN YOU COME HOME FROM OUT OF SPACE, YOU WOULD WANT TO RELAX.

SO WE HAVE A TV AND COUCH AND A
LITTLE LOOKCASE WITH SOME CHAIRS

YOU CAN SIT IN.

AND YOU HAVE A TREADMILL, YOU

ALSO HAVE OXYGEN AND NITROGEN

AND A COMPUTER.

AND WHAT'S IN THE MIDDLE OF

YOUR LIVING ROOM, BECAUSE I

REALLY LIKE THIS?

>> I THINK WE'VE GIVEN PEOPLE AT
HOME A REALLY GREAT IDEA ON HOW TO START THEIR OWN U LUNAR HAS BEEN -- HABITAT.

>> I CAN'T WAIT TO DO THIS AT HOME MYSELF.

>> YEAH.

>> FOR THOSE OF YOU INTERESTED IN PARTICIPATING IN THIS FREE TO VISIT THE WEBSITE AT THE BOTTOM OF THE SCREEN.

>>> SO WE'VE COVERED LAUNCH, GATEWAY, AND LANDING THE NEXT MISSION ON THE MOON, BUT THERE'S
ANOTHER IMPORTANT STEP TO WHAT YOU'VE ASKED STUDENTS TO IMAGINE.

>> AS IMPORTANT AS ALL OF THOSE OTHER ASPECTS OF THE MISSION ARE, WE ARE GOING TO EXPLORE, SO WE ASKED STUDENTS AT THE ARIZONA SCIENCE CENTER TO ENVISION A LUNAR SOLAR MISSION AT THE MOON'S SOUTH POLE.

THIS IS WHAT THEIR IMAGINATION DELIVERED.

>> SYSTEM INFORMATION CONTROL.

>> THE OPTIMAL LUNAR SOUTH POLE LOCATION TO BEGIN DRILLING FOR
CORE SAMPLE OF WATER ICE.

ARE YOU GOING TO START THE COON.

>> THE CORE DRILL IS IN POSITION

AND THE ANALYTIC LAB IS READY.

>> DRILLING HAS STARTED AND PROCEEDING SMOOTHLY.

>> I'M EXCITED FOR THE FIRST WOMAN TO BE ON THE MOON BECAUSE IT'S REALLY GOOD ACHIEVEMENT FOR AMERICA AND THE WORLD.

>> I LIKE TO THINK OF IT AS A GAS STATION ON THE WAY TO MARS, BECAUSE FROM THE EARTH TO MARS,
IT'S PRETTY FAR AWAY, SO IF
WE'RE ABLE TO GO TO THE MOON AND
SPLIT THE LIKE HYDROGEN ATOMS
INSIDE OF THE ICE THAT'S
HOPEFULLY THERE AND CREATE
ROCK
WOULD BE COOL.
>> I THINK IT'S IMPORTANT TO
HAVE ACTIVITIES THAT REALLY
HELPS STUDENTS UNDERSTAND JUST
HOW IMPORTANT THIS STEP IS IN
POSSIBLE SOURCE OF COLON
SAYINGS.
>> WE ARE AT THE INCH MARK TO
BEGIN COLLECTING SAMPLE

>> COLLECTION COMPLETE.

ANCHOR THE DRILL FOR CORE

>> THE DRILL IS ANCHORED, BEGIN EXTRACTION.

>> SAMPLE READY FOR ANALYSIS.

OPEN ROVER SAMPLE CONTAINER.

>> THE CONTAINER IS OPEN AND READY.

BEGIN ANALYSIS.

>> I THINK IT'S IMPORTANT BECAUSE IT REALLY IS THE FIRST STEP IN UNDERSTANDING SPACE.
TRAVEL IN GENERAL.

ESPECIALLY FOR MARS, JUST BEING ABLE TO SEE WHETHER OR NOT THERE'S POSSIBLE BIOLOGICAL LIFE IN THE ICE OF MARS JUST AMAZING, IT CAN REALLY SIGNAL THAT PERHAPS THERE IS A GREATER CHANCE OF LIFE IN OUR UNIVERSE.

>> I FEEL LIKE THERE'S NOT ANY EXPERIMENT THAT'S MORE IMPORTANT THAN ANY OTHER BECAUSE ANY EXPERIMENT IS ANY EXPERIMENT AND THEY'RE ALL EQUALLY IMPORTANT.

>> ANALYSIS COMPLETE.

>> HOUSTON, GREAT NEWS, WE ARE
72% WATER ICE AND 28% RESOLUTE

FRNS.

>> THAT IS GREAT NEWS.

THIS IS AN EXCELLENT LOCATION

FOR A LONG DURATION LUNAR

HABITAT.

FIRST STEPS ON THE SURFACE OF

MARS.

GREAT WORK, HOUSTON OUT.

>> I FEEL LIKE WE CAN LEARN A

LOT ABOUT HOW THE MOON WAS

FORMED AND WHEN WE LEARNED MORE

ABOUT THAT, WE CAN LEARN MORE

ABOUT HOW THE EARTH WAS FORMED
AND LEARN MORE ON FROM THERE.

>> I THINK JUST BEING ABLE TO

SAY YOU'RE THERE FIRST, REALLY

MAKING THE MARK FOR THE ST

CENTURY IS JUST ABSOLUTELY

AMAZING.

>>> MAN, I TELL YOU, THESE KIDS

ARE GREAT.

I LOVE HEARING HOW EXCITED THEY

ARE FOR OUR LUNAR MISSIONS AND

TO SEE THEM AS THEY WALK THROUGH

THE LUNAR SIMULATIONS AND FLIGHT

CONTROLLER AND ASTRONAUT, IT'S

JUST INSPIRATIONAL.
AND I CAN SEE HOW INTERACTIVE

THES SIMULATIONS ARE, IT'S SUCH

REALLY GREAT CONVERSATIONS IN

THE CLASSROOM AND AT HOME.

>> THAT'S WHAT WE AIM TO DO.

WITH THE ACTIVITY GUIDE.

ENCOURAGE FAMILIES TO DO THESE

ACTIVITIES AT HOME AND TALK

ABOUT THEM.

THAT'S REALLY WHAT SCIENCE I

ALL ABOUT.

ASKING THE QUESTIONS, GETTING AN

ANSWER, AND THEN ASKING THE NEXT

QUESTION FROM WHAT YOU LEARNED.
>> AND IT WAS SO MUCH FUN

WORKING WITH THE KIDS AT THE DIFFERENT LOCATIONS.

I WANT TO SEND A BIG THANK YOU TO THE COSMO SPHERE, THE COLUMBIA MEMORIAL SPACE CENTER, THE ST. LOUIS SCIENCE CENTER AND THE ARIZONA SCIENCE CENTER FOR ALL OF THEIR HELP IN MAKING THIS SHOW POSSIBLE.

IT'S GREAT TO WORK WITH GREAT ORGANIZATIONS TO HAVE THE SAME GOALS AS NASA.

>> THERE ARE GREAT MUSEUMS, SCHOOLS AND OTHER INFORMAL.
EDUCATION ORGANIZATIONS AROUND THE COUNTRY DOING AMAZING WORK

CH AND ENCOURAGE KIDS ABOUT S.T.E.M.

>> WE ARE GOING FORWARD TO THE MOON.

AND TO GET US THERE, AND ON TO MARS, WE NEED YOU.

THE ARTEMIS GENERATION.

TO BE THE NEXT SCIENTIST,

TECHNOLOGISTS, ENGINEERS AND MATHEMATICIANS TO TAKE US FURTHER THAN WE EVER G

BEFORE.
>> TO LEARN MORE, GO TO OUR WEBSITE AT WWW.NASA.GOV/S.T.E.M.

AND JOIN OUR ONLINE CONVERSATION USING NASA STEM ON FACEBOOK AND TWITTER.

THE MOON THANKS FOR WATCHING AND HAVE A GREAT WEEKEND.

♪[ MUSIC ]♫