PRESENTATION BY
RAYMOND PISANI
TO
GULF COAST ITALIAN AMERICAN SOCIETY
NOVEMBER 24, 1962

VIII 4
VIII 5

SATURN AND THE GULF COAST

THANK YOU, MR. _____. I AM PLEASED TO BE HERE AS A REPRESENTATIVE OF THE MARSHALL SPACE FLIGHT CENTER, HUNSTVILLE, ALABAMA. QUITE APPROPRIATELY, THE TITLE OF MY TALK TONIGHT IS SATURN AND THE GULF COAST. THIS AREA, IN WHICH MOST OF YOU LIVE, AND THE SATURN PROGRAM, HAVE BECOME INTERLOCKED.

THE GULF COAST AREA NOW OCCUPIES A UNIQUE POSITION IN THE UNITED STATES. A POSITION AS UNIQUE, IN ITS OWN WAY, AS THAT OF HUNTSVILLE. FOR IN THIS AREA, ACTIVITY IS NOW UNDERWAY TO DIRECTLY SUPPORT ADVANCED EXPLORATIONS INTO SPACE.

OUR SPACE EXPLORATION BEGAN IN 1958 WITH THE ORBITING OF THE FIRST UNITED STATES SATELLITE. SINCE THAT TIME, SATELLITE LAUNCHINGS HAVE BECOME COMMONPLACE. INSTRUMENTED SPACECRAFT HAVE FLOWN DEEP INTO THE SOLAR SYSTEM. AND -- ON TELEVITION -- YOU HAVE SEEN MANNED SPACECRAFT LAUNCHED INTO

ORBIT AROUND THE EARTH.

BUT YOU HAVE REALLY SEEN MORE THAN SPACE THEATRICALS.

EACH SPACECRAFT LAUNCHED, EACH MANNED SPACE FLIGHT PERFORMED, IS A PLANNED STEP FORWARD IN REALIZING SPECIFIC NATIONAL OBJECTIVES. PLANNED -- I WANT TO EMPHASIZE THAT WORD.

THE NATIONAL AERONAUTICS AND SPACE ADMINISTRATION -- OR NASA -- HAS PLANNED A LONG-RANGE PROGRAM OF SPACE EXPLORATION. IN ACHIEVING THIS, NASA WORKS THROUGH ITS TECHNICAL FIELD ORGANIZATIONS. THE MARSHALL SPACE FLIGHT CENTER -- DIRECTED BY DR. WERNHER

VON BRAUN -- IS ONE OF THESE.

NASA'S TOTAL SPACE PROGRAM IS DIVIDED INTO FOUR MAIN PARTS. LET ME ILLUSTRATE THESE.

LIGHTS DOWN

SLIDE 1 -- TIROS (SC-C-4A)

THE FIRST PART OF NASA'S SPACE PROGRAM IS THE DEVELOPMENT OF USEFUL SATELLITES -- SUCH AS THE TIROS WEATHER SATELLITE SHOWN HERE. BY "USEFUL" I MEAN SATELLITES WHICH HAVE A DIRECT EFFECT ON OUR LIVES -- BY COLLECTION OF WEATHER INFORMATION. BY PROVIDING NAVIGATIONAL AIDS. OR -- LIKE THE TELESTAR SATELLITE -- PROVIDING NEW COMMUNICATIONS FACILITIES.

SLIDE 2 -- EARTH CLOUD COVER (SC-C-4)

HERE IS THE EARTH AS SEEN BY TIROS. THE SLIDE IS A COMPOSITE OF MANY PHOTOGRAPHS TAKEN BY TIROS. WHEN PIECED TOGETHER, THESE PHOTOGRAPHS ALLOW STUDY OF CLOUD COVER OVER A LARGE PART OF THE WORLD.

SLIDE 3 -- OSO (SC-C-41)

A SECOND OF NASA'S PROGRAMS IS DEVELOPMENT OF SATELLITES FOR SCIENTIFIC INVESTIGATIONS IN SPACE. SHOWN HERE IS ONE SUCH SATELLITE--THE ORBITING SOLAR OBSERVATORY. THIS SATELLITE WAS SUCCESSFULLY LAUNCHED EARLY THIS YEAR TO STUDY THE SUN.

SLIDE 4 -- MARINER (SC-C-44)

HERE IS THE MARINER SPACECRAFT, A DEEP SPACE PROBE, DEVELOPED BY NASA'S JET PROPULSION LABORATORY IN CALIFORNIA. ABOUT THREE WEEKS FROM NOW, MARINER AS SHOWN ON THIS SLIDE, WILL PASS CLOSE TO VENUS. IF ALL GOES WELL, THE SPACECRAFT WILL TRANSMIT BACK TO US OUR FIRST INFORMATION ON THE SURFACE TEMPERATURE OF VENUS. PLUS DATA ON MAGNETIC FIELDS, RADIATION, AND COMPOSITION OF THE MYSTERIOUS, PLANETARY CLOUD COVER.

SLIDE 5 -- MERCURY SEPARATION (MSA-A-12A)

A THIRD PART OF NASA'S PROGRAM IS

MANNED SPACE FLIGHT. HERE IS THE MERCURY SPACECRAFT ENTERING ORBIT. THE BURN-OUT ATLAS BOOSTER IS FALLING AWAY TO THE RIGHT. MERCURY IS OUR FIRST STEP TOWARD MANNED FLIGHT IN SPACE.

SLIDE 6 -- LONG SHOT, SA-2 (SA2 LS-50)

A FOURTH MAJOR NASA PROGRAM IS ADVANCED RESEARCH AND TECHNOLOGY WHICH INCLUDES DEVELOPMENT OF LAUNCH VEHICLES. HERE YOU SEE THE SATURN AT CAPE CANAVERAL. SATURN -- THE NEWEST AND LARGEST OF NASA LAUNCH VEHICLES -- IS BEING DEVELOPED BY THE GEORGE C. MARSHALL SPACE FLIGHT CENTER, AT HUNTSVILLE. THE MAN

DIRECTLY RESPONSIBLE FOR THE SATURN PROGRAM IS DR. OSWALD H. LANGE, DIRECTOR OF THE SATURN SYSTEMS OFFICE.

DR. LANGE REPORTS TO DR. VON BRAUN.

THE SATURN HEAVY LAUNCH VEHICLE IS BEING DEVELOPED TO CARRY NOT POUNDS -- BUT TONS OF INSTRUMENTED PAYLOADS -- AND MANNED SPACECRAFT.

SLIDE 7 -- CLOSE-UP OF SATURN (SA2-LS-51)

HERE IS A CLOSER LOOK AT THE SATURN.

I WOULD LIKE TO SHOW YOU A SHORT FILM CLIP OF A SATURN FLIGHT TEST.

MAY I HAVE THE SLIDE OFF, AND THE FILM, PLEASE.

SLIDE OFF

FILM CLIP -- SATURN LAUNCH (2½ MINUTES)

WHEN IGOR SEQUENCE BEGINS

THESE FILMS WERE MADE WITH A RADAR-DIRECTED, TELESCOPIC CAMERA. THE SATURN, AS YOU SEE IT, IS MORE THAN 40 MILES AWAY FROM THE CAMERA. NOTICE HOW THE ENGINE FLAME SPREADS OUT IN THE NEAR VACUUM. NOW THE PRO-PELLANT IS ALMOST EXHAUSTED. THE ENGINES ARE

ABOUT TO SHUT OFF. AT THIS POINT, THE SATURN
IS ABOUT 80 MILES AWAY. ITS SPEED IS 3600
MILES AN HOUR.

FILM OFF. STOP PROJECTOR BEFORE NEXT FILM SEQUENCE.

MAY I HAVE THE NEXT SLIDE, PLEASE.

SLIDE 8 -- BLOCK II SATURN (MSC-B-1)

THE SATURN YOU HAVE JUST SEEN FLOWN
IN THE MOVIE IS BEING MODIFIED TO A TWO STAGE
VEHICLE. THIS LATER VERSION OF SATURN IS
SPECIALLY DESIGNED FOR MANNED ORBITAL MISSIONS.
WITH THIS SLIDE WE ARE GETTING CLOSER TO WORK
PERFORMED IN THE GULF COAST. THIS TWO-STAGE
SATURN WILL BE SUPPORTED BY THE WORK PERFORMED
IN THIS REGION.

SLIDE 9 -- BLOCK II BOOSTER (S1-J-4)

HERE IS THE BOOSTER, OR FIRST STAGE, FOR THE MODIFIED SATURN. TWENTY-ONE OF THESE STAGES WILL BE BUILT AT THE MICHOUD PLANT IN NEW ORLEANS. SOME PRODUCTION OF PARTS FOR THIS STAGE HAS ALREADY BEGUN AT MICHOUD BY THE STAGE MANUFACTURER, THE CHRYSLER CORPORATION.

SLIDE 10 -- S-I/S-IV SEPARATION (MSC-B-9)

HERE, YOU SEE THE MICHOUD-BUILT BOOSTER FALLING AWAY. ITS JOB IS FINISHED. THE SATURN SECOND STAGE HAS IGNITED. THAT STAGE IS BEING BUILT BY INDUSTRY. ABOVE THE SECOND STAGE YOU SEE ONLY PART OF THE LUNAR SPACE-CRAFT, SINCE THE TWO-STAGE SATURN, FOR ALL

ITS POWER, CANNOT PLACE THE EXTREMELY HEAVY SPACECRAFT IN EARTH ORBIT.

SLIDE 11 -- C-1B (MSC-C-5)

TO ALLOW US TO EARTH ORBIT THE COMPLETE SPACECRAFT, WE ARE DEVELOPING THE VEHICLE SHOWN HERE -- SATURN C-1B. THIS MORE POWERFUL VEHICLE WILL USE THE PRESENT SATURN BOOSTER BEING BUILT AT THE MICHOUD PLANT. A NEW SECOND STAGE WILL GIVE US THE ADDITIONAL POWER NEEDED. THIS STAGE WILL ALSO BE USED IN THE ADVANCED SATURN, WHICH I WILL TELL YOU ABOUT IN A FEW MINUTES. THIS COMBINATION OF OLD AND NEW WILL ALLOW US TO TEST THE COMPLETE LUNAR SPACECRAFT NEAR THE EARTH,

BEFORE STARTING FLIGHTS TO THE MOON.

SLIDE 12 -- MOONSCAPE (NO NUMBER)

HERE IS OUR OBJECT.

LATE IN THIS DECADE, WE WILL MAKE MANNED FLIGHTS AROUND THE MOON. LATER, WE WILL LAND ON THE LUNAR SURFACE, AND RETURN TO EARTH.

THE LUNAR MISSION IS DIFFICULT AND TECHNICALLY COMPLEX. IT REQUIRES MAJOR ADVANCES IN ALMOST EVERY PHASE OF PRESENT TECHNOLOGY -- IN THE DEVELOPMENT OF ORBITAL OPERATIONS--AND IN THE DEVELOPMENT OF GROUND FACILITIES.

BY WHICH I MEAN:

1) THE LAUNCH AREAS AT CAPE CANAVERAL.

2) VEHICLE PRODUCTION FACILITIES -- SUCH AS THE MICHOUD PLANT.

3) VEHICLE TEST FACILITIES -- SUCH AS THE MISSISSIPPI TEST SITE, WHICH IS ABOUT 40 MILES WEST OF HERE.

4) AND COMPUTER SERVICES -- SUCH AS THOSE AT SLIDELL, LOUISIANA.

AT THE SAME TIME, NASA IS DEVELOPING A SOPHISTICATED SPACECRAFT WHICH I WOULD LIKE TO SHOW YOU NOW.

SLIDE 13 -- APOLLO SPACECRAFT (MSC-C-4A)

AND HERE IS THE LUNAR SPACECRAFT --

THE APOLLO. IT IS BEING DESIGNED TO CARRY THREE ASTRONAUTS TO THE MOON AND RETURN THEM TO EARTH. AT TOP RIGHT, YOU SEE THE THREE-MAN CREW COMPARTMENT. BELOW THIS IS A LARGE PROPULSION UNIT, OR SERVICE MODULE.

AT THE BOTTOM OF THE SPACECRAFT IS THE LUNAR EXCURSION MODULE -- COMMONLY CALLED THE "BUG". THE BUG WILL BE THE ONLY PART OF THE SPACECRAFT TO LAND ON THE MOON.

TO PLACE THIS QUITE HEAVY SPACECRAFT NEAR AND ON THE MOON, WE MUST DEVELOP -- AND BUILD -- AND TEST AN EXTREMELY POWERFUL CARRIER VEHICLE.

SLIDE 14 -- SATURN AND BARRONE BUILDING

AND HERE IS THE VEHICLE BEING DEVELOPED TO SUPPORT ACTUAL LUNAR FLIGHT MISSIONS -- THE ADVANCED SATURN. TO GIVE YOU AN IDEA OF SIZE, THE VEHICLE HAS BEEN PLACED NEXT TO THE BARRONE BUILDING IN NEW ORLEANS. WITH SPACECRAFT, THE ADVANCED SATURN WILL MEASURE OVER 350 FEET HIGH. IT WILL BE 33 FEET WIDE.

SLIDE 15 -- SATURN VEHICLES

NOW, I WOULD LIKE TO STOP FOR A MOMENT AND REVIEW THE VEHICLES. YOU SEE HERE THE SATURN HEAVY LAUNCH VEHICLES. THE C-1 SATURN, AT LEFT, IS ALREADY IN FLIGHT TEST. THE NEXT VEHICLE, THE TWO-STAGE SATURN, WILL FLIGHT TEST PARTS OF THE APOLLO IN EARTH ORBIT. THE

SATURN C-1B WILL FLIGHT TEST THE COMPLETE APOLLO SPACECRAFT IN EARTH ORBIT. AND -- AT RIGHT -- THE ADVANCED SATURN, C-5, WILL LAUNCH APOLLO ON LUNAR FLIGHTS.

LET US DISCUSS BRIEFLY THE ADVANCED SATURN, WHICH IS TO BE THE MOST POWERFUL OF ALL SATURN VEHICLES. IT WILL BE ABLE TO ORBIT 120 TONS -- THAT IS, ABOUT 80 FAMILY AUTOMOBILES.

FOR PERFORMANCE LIKE THIS, WE NEED TREMENDOUS FIRST-STAGE THRUST. LET'S LOOK AT THE FIRST STAGE OF THE ADVANCED SATURN.

SLIDE 16 -- S-IC STAGE (SIC-A-2)

WE CALL IT THE S-IC STAGE. IT GROUPS FIVE OF THE LARGEST ROCKET ENGINES NOW BEING DEVELOPED. WHEN FIRED TOGETHER, THESE ENGINES WILL PRODUCE 7½ MILLION POUNDS OF THRUST. IT WOULD TAKE THE SUGAR BOWL FILLED WITH STRONG MEN TO HOLD THIS STAGE DOWN WHILE THESE ENGINES ARE FIRING. I MIGHT REMIND YOU THAT THE SEATING CAPACITY OF THE SUGAR BOWL IS 85,000.

THIS MAMMOTH STAGE WILL BE BUILT AT MICHOUD, BY THE BOEING COMPANY LESS THAN 90 MILES FROM HERE. FABRICATION AND ASSEMBLY OF THE FIRST TEST STAGE IS TO BEGIN LATE THIS YEAR. BY 1967, IT IS EXPECTED THAT BOEING

WILL HAVE BUILT ABOUT 24 FLIGHT STAGES AT THE MICHOUD PLANT.

SLIDE 17 -- REGIONAL MAP

WITHIN THE AREA SHOWN HERE, WILL BE PERFORMED A LARGE PART OF SATURN MANUFACTURE, COMPUTATION, AND TEST. THE COST OF THIS WORK FOR THE NEXT SEVERAL YEARS WILL BE OVER 750 MILLION DOLLARS. OVER 20 MILLION DOLLARS WERE SPENT IN THE LAST THREE MONTHS THAT WE HAVE FIGURES FOR.

AT MICHOUD, THE BOOSTER STAGES FOR OPERATIONAL SATURN VEHICLES WILL BE PRODUCED.

AT SLIDELL, A HIGH-SPEED ELECTRONIC COMPUTER FACILITY HAS BEEN ESTABLISHED, AND STARTED OPERATIONS THIS MONTH.

AT THE MISSISSIPPI TEST FACILITY WILL BE LOCATED THE STANDS TO PERFORM CAPTIVE TEST OF THE STAGES PRODUCED AT MICHOUD.

THE ACTIVITIES OF THESE THREE AREAS ARE DIRECTED BY THE MARSHALL SPACE FLIGHT CENTER AT HUNTSVILLE.

SLIDE 18 -- MICHOUD PLANT (NO NUMBER)

THE MICHOUD PLANT, SHOWN HERE, IS ONE OF THE LARGEST, SINGLE-FLOOR BUILDINGS IN THE COUNTRY.

THE PLANT HAS DEEP-WATER ACCESS FOR BOOSTER TRANSPORT TO TEST SITES IN HUNTSVILLE, MISSISSIPPI, AND THE CAPE.

ACTIVATION OF THE MICHOUD PLANT GOT UNDER-WAY EARLY THIS YEAR.

SLIDE 19 -- SLIDELL (O-D-6)

THIS BUILDING WILL HOUSE THE SLIDELL COMPUTER FACILITY. THE COMPUTER WILL BE USED IN SUPPORT OF TEST AND CHECKOUT OPERATIONS AT MICHOUD. AND WILL ALSO SERVICE THE MISSISSIPPI TEST FACILITY.

SLIDE 20 -- MTF, OVERALL

SHOWN HERE IS AN ARTISTS' CONCEPT OF THE MISSISSIPPI TEST FACILITY. IN THIS AREA WILL BE LOCATED TEST STANDS IN WHICH SATURN BOOSTERS--AND ALSO AN UPPER STAGE -- WILL BE FIRED TO ASSURE THEIR FLIGHT READINESS.

NASA HAS ALREADY BEGUN LAND ACQUISITION FOR THE FACILITY. A 6-MILE WIDE ZONE WILL SURROUND THE SITE. THIS ZONE WILL ACT AS A BUFFER TO DISSIPATE THE SOUND AND VIBRATION OF CAPTIVE FIRINGS.

FACILITY DESIGN IS WELL UNDERWAY. EARLY PHASES OF CONSTRUCTION ARE SCHEDULED TO BEGIN BEFORE THE FIRST OF NEXT YEAR. THE ESTIMATED CONSTRUCTION IS OVER $500 MILLION DOLLARS. EVENTUALLY ABOUT 1,500 PEOPLE WILL BE EMPLOYED AT THE FACILITY.

UNTIL CONSTRUCTION IS COMPLETED, WE WILL CONTINUE TO GROUND TEST THE BOOSTERS AT

MARSHALL. I THOUGHT THAT YOU MIGHT LIKE TO GET SOME IDEA OF THE SOUND AND FURY OF THEST TESTS. SO I BROUGHT A FILM CLIP OF A RECENT TEST CONDUCTED AT MARSHALL. COULD I HAVE THE SLIDE OFF AND THE FILM, PLEASE.

SLIDE OFF

FILM -- STATIC FIRING OF BOOSTER (2 MINUTES)

NOW YOU MAY HAVE SOME IDEA WHY WE NEED A SIX-MILE BUFFER ZONE.

MAY I HAVE THE NEXT SLIDE, PLEASE.

SLIDE 21 -- BARGE ON WATER (T-C-8)

AFTER THE MICHOUD-BUILT BOOSTERS HAVE BEEN GROUND TESTED AT THE TEST FACILITY, THEY WILL BE LOADED INTO A BARGE AND MOVED THROUGH

THE INTERCOASTAL WATERWAY, ACROSS THE GULF, AND AROUND THE TIP OF FLORIDA TO CAPE CANAVERAL.

SLIDE 22 -- VERTICAL ASSEMBLY BUILDING (C5-B-13)

AT THE CAPE, THE BOOSTER WILL BE UNLOADED INTO A SPECIAL ASSEMBLY BUILDING. SHOWN HERE IS ONE POSSIBLE DESIGN OF THE FORTY-EIGHT STORY HIGH BUILDING. WITHIN THIS BUILDING, THE VEHICLE WILL BE ASSEMBLED ON A LAUNCH RACK. NEXT, THE COMPLETE SATURN IS CHECKED OUT. THEN THE SATURN, STILL ON THE LAUNCH RACK, IS MOVED BY A TRACKED VEHICLE, CALLED THE CRAWLER.

SLIDE 23 -- C-5 ON THE LAUNCH PAD (C5-B-14)

 Help with Lunar Sequence:

HERE YOU SEE THE ADVANCED SATURN ON THE LAUNCH PAD. THE CRAWLER IS AT THE LEFT. THE TOWER -- IN THE CENTER -- SUPPLIES THE NECESSARY GROUND CONNECTIONS UNTIL LAUNCH.

I WOULD LIKE TO SHOW YOU ONE OF THE MISSIONS THAT WILL REQUIRE THE ADVANCED SATURN -- A LUNAR EXPLORATION FLIGHT.

THE NEXT SERIES OF SLIDES WILL SHOW YOU, STEP BY STEP, HOW NASA EXPECTS TO PERFORM THE FIRST MANNED LANDING ON THE MOON.

~~SLIDE 24 -- C-5 LIFTOFF~~

Of course,

THE MISSION BEGINS WITH LAUNCH OF THE ADVANCED SATURN. ~~THE MICHOUD-BUILT BOOSTER BEGINS ACCELERATION OF THE VEHICLE TO~~

TREMENDOUS SPEEDS.

SLIDE 25 -- BOOSTER SEPARATION (MSC-C-113)

THE BOOSTER BURNS OUT AND ITS WEIGHT DROPS AWAY. THEN THE 2ND STAGE IGNITES TO PROVIDE EVEN HIGHER SPEEDS.

SLIDE 26 -- SECOND STAGE SEPARATION (MSC-C-14)

THEN THE SECOND STAGE BURNS OUT. ITS WEIGHT DROPS AWAY. THE THIRD STAGE BURNS BRIEFLY, GIVING THE FINAL, ADDITIONAL SPEED TO PLACE THE APOLLO SPACECRAFT INTO EARTH ORBIT. NOW, THE 3RD STAGE AND SPACECRAFT CIRCLE THE EARTH ONCE. AT THE PROPER TIME -- AND IF ALL SYSTEMS ARE GO -- THE THIRD STAGE IS RE-IGNITED. IT WILL GIVE THE FINAL SHOVE

TO SEND THE APOLLO AWAY FROM EARTH TOWARD THE MOON.

SLIDE 27 -- THIRD STAGE SEPARATION AND DOCKING (MSC-C-16)

AND SHORTLY AFTERWARDS, THE PROTECTIVE COVERING AROUND THE BUG IS DROPPED. THE CREW COMPARTMENT IS SEPARATED, TURNED COMPLETELY A AROUND, AND MATED WITH THE BUG, NOSE-TO-NOSE. NOW THE THIRD STAGE FALLS AWAY.

SLIDE 28 -- ENTERING LUNAR ORBIT (MSC-C-17)

ON APPROACHING THE MOON, THE ENGINE IS FIRED SLOWING THE SPACECRAFT. AND THE APOLLO SWINGS INTO AN ORBIT ABOUT THE MOON. TWO OF THE THREE ASTRONAUTS NOW ENTER THE BUG. THE BUG

SEPARATES FROM THE CREW COMPARTMENT. THE CREW COMPARTMENT, WITH ONE MAN STILL ABOARD, CONTINUES TO ORBIT ABOUT THE MOON. THE BUG'S ENGINE IS IGNITED AND DESCENT TO THE LUNAR SURFACE IS BEGUN.

SLIDE 29 -- LUNAR DESCENT (MSC-C-19)

HERE WE SEE THE BUG, WITH LANDING LEGS EXTENDED, DESCENDING TO WITHIN 100 FEET OF THE LUNAR SURFACE.

SLIDE 30 -- LANDING MANEUVER (MSC-C-22)

THE BUG WILL BE ABLE TO HOVER FOR ABOUT 60 SECONDS AND MOVE HORIZONTALLY FOR ABOUT 1000 FEET IN SEARCH OF THE BEST LANDING POINT. IF NECESSARY, THE BUG CAN RETURN TO THE

ORBITING SPACECRAFT.

SLIDE 31 -- LEM FIELD OF VIEW (MSC-C-21)

UPON LANDING, THE CREW WILL IMMEDIATELY MAKE RELAUNCH PREPARATIONS. WHEN COMPLETED, AND ONLY THEN, WILL EXPLORATION BEGIN. PHOTOGRAPHS AND SURFACE SAMPLES WILL BE TAKEN. SOME OF THE EQUIPMENT USED FOR EXPERIMENTS WILL BE LEFT FOR TRANSMITTING INFORMATION BACK TO EARTH.

SLIDE 32 -- LUNAR LIFTOFF (MSC-C-23)

MISSION COMPLETED, THE MEN RE-ENTER THE BUG. AT THE PROPER TIME, THE UPPER PORTION IS LAUNCHED FROM THE LANDING STRUCTURE. IT

WILL MEET WITH THE SPACECRAFT THAT WAS LEFT IN ORBIT.

SLIDE 33 -- LUNAR ORBIT RENDEZVOUS (MSC-C-24)

UPON RENDEZVOUS, THE BUG IS MATED WITH THE CREW COMPARTMENT. THIS IS ONE OPERATION THAT WILL BE PRACTICED AND PERFECTED DURING EARTH-ORBIT FLIGHTS. ONCE THE TWO MEN HAVE RE-ENTERED THE CREW COMPARTMENT, THE BUG IS SEPARATED AND LEFT CIRCLING THE MOON. THE SPACECRAFT THEN FIRES ITS ENGINE TO RETURN TO EARTH.

SLIDE 34 -- RE-ENTRY (MSC-C-27)

THE RETURN TRIP TAKES ABOUT 2½ DAYS. ON APPROACH TO THE EARTH, THE PROPULSION UNIT IS

JETTISONED. THE CREW COMPARTMENT IS POSITIONED FOR RE-ENTRY.

Slide – 29 – Artist concept of Reentry.

SLIDE 35 -- DESCENT (MSC-C-29)

SHORTLY AFTER RE-ENTRY, PARACHUTES ARE RELEASED. THE CREW COMPARTMENT IS LOWERED FOR A LANDING ON THE GROUND.

LIGHTS UP

I HOPE YOU ENJOYED THE TRIP. OF COURSE, SOME DETAILS MAY BE CHANGED LATER, AS THE LUNAR MISSION IS STILL BEING PLANNED. THERE IS STILL MUCH CONCENTRATED AND CONTINUOUS EFFORT TO BE EXPENDED. STAGES MUST BE DEVELOPED, BUILT, AND TESTED. MUCH OF THIS WORK IS GOING TO BE DONE IN THIS AREA --

AT MICHOUD -- AT SLIDELL -- AND AT THE MISSISSIPPI TEST FACILITY. THIS WORK IS GOING TO BE DIFFICULT. IT WILL REQUIRE THE BEST THAT THE GULF COAST HAS IN MANY FIELDS -- IN SCIENCE, INDUSTRY, AND EDUCATION, TO NAME JUST THREE. BUT IT IS A WORTHWHILE EFFORT. AND WHEN WE LAND A MAN ON THE MOON, AND SAFELY RETURN HIM, I AM SURE YOU CAN JUSTLY BE PROUD OF THE CONTRIBUTIONS MADE BY YOUR GULF COAST.