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"SATURN I-B"

PRESENTATION TO LITTLE ROCK GROUP (AND THE GOVERNOR OF TENNESSEE) Buell, DN

(Introduction by J. Henrie, NASA) June 1965

Thank you, Jim,

It is a pleasure to speak to such a distinguished audience. I would like to greet you for Chrysler Corporation Space Division.

Welcome to Michoud Facilities.

I will take 5 or 10 minutes to tell you something about the work that Chrysler is undertaking here.

As a preamble to this I would like to give you a very brief resume of my own job here. I am an engineer in the Advanced Systems Section of the Advance Engineering Branch. My group undertakes the conceptualization of advanced systems that will be installed two to fifteen years from now.

For example, we are presently studying various systems to effect astronomical observations from space. This includes all kinds of telescopes in manned or unmanned spacecraft - in earth orbit or from the surface of the moon.

Other studies pertain to systems for the scientific exploration of the planets and the sun.

However, currently, the greatest part of our effort represents contracts related to the design, production and testing of the Saturn I and Saturn IB. This launch vehicle is the most powerful operational rocket in the world today. It represents the "cutting edge" of the new American technology in space travel.

This work is part of the Apollo program, which involves putting three astronauts on a lunar trajectory. Once in lunar orbit, two astronauts will descend to the

surface of the moon and conduct experiments for a period of two days. On the third day, the two explorers will rejoin the third man in orbit and they will return to earth.

The launch vehicle for this lunar voyage will be the Saturn V, as explained by my colleague from Boeing.

However, before this voyage takes place, the spaceships that make up the Apollo's payload must be put through their paces in order to establish the mathematical reliability needed to justify the use of this system to send our astronauts out into space.

The payload for Apollo will be exercised during rehersals of portion of the lunar m mission conducted in earth orbit and the launch vehicle for these rehearsals will be the Saturn IB. (Slide A-1 on near screen)

Here we have a picture of the Saturn IB launch system. We build this part - the first stage. It is 80' tall and 21.5' in diameter. It has a dry weight of 43 tons, and is loaded with 450 tons of propellant at lift-off.

This booster, ready for launch weighs almost a million pounds. The whole vehicle, from top to bottom weighs one and a third millions of pounds on the launch pad.

The principal components of our booster are 9 propellant tanks and 8 rocket engines.

There is a large tank in the center with a diameter of 9 feet and eight smaller tanks on the outside with diameters of 7 feet. The center tank and four of the outer tanks contain LOX-liquid oxigen at -200°C (below zero). The other four outer tanks contain RP-1 fuel - a kerosene type combustible.

(Slide B-1)

Each engine develops a thrust of 200,000 pounds - that is a total of 1,600,000 pounds of thrust for all engines working at the same time. This thrust is sufficient to lift-off the 1.3 million pounds of weight and accelerate the vehicle to a velocity of about 4,000 miles per hour in 2½ minutes. This velocity is reached at an altitude of 40 miles and at this point the booster is developing 32,000,000 H.P. At this point the first stage shots off and separates from the rest of the vehicle and the second stage ignites.

The second stage in the S-IVB, manufactured by the Douglas Aircraft of Santa Monica, California.

The oxidizer it uses in Liquid Oxygen and the combustible in Liquid Oxygen and the combustible in Liquid Hydrogen. This stage finishes the job of rejecting the payload into a 130 mile orbit. From here, the necessary tests will be conducted over a period of days in a free space environment. The restoof the vehicle, with exception of the red tower here, in payload. This structure in the escape tower that separates the crew from the rest of the vehicle in case of emergency at the time of launch. Normally it is not used and it separates from the rest of the vehicle 2½ minutes after lift-off at the same time that the first stage shuts off and separates.

This is the Command Module. It is manufactured by North American Aviation. In it the astronauts recline in the crew couches which permit them to survive the rigors of launch and re-entry. The command module will be the only part of the payload which will return to earth.

This is the Service Module. It is also made by North American. Essentially, it is the booster that puts the Command Module on its earth-return trajectory from the moon.

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Between the service module and the S-IV second stage, behind this fairing, is the L.E.M. - the lunar excursion module. Once the astronauts are in lunar orbit, this module will be used by two of them to reach the lunar surface and return once more to rendezvous with the Command Module.

The Mission of the S-IB can be summarized then as follows

(Slide A-2)

The first mission is to completely qualify the payload for Apollo.

The second is to develop the technique of spaceship maneuvers.

The third mission is the training of the Apollo crew in performing rendezvous and docking operations.

The fourthemission is to advance large booster technology in direct support of Saturn V.

The fifth mission is to develop and qualify the Saturn S-IV vehicle which will be later used and on the Saturn V

The sixth goal is to install large scientific payloads of the order of 35,500 pounds.

Here are a couple of additional shots I would like to show you.

(Slide B-2)

This is the barge used to ferry the boosters from New Orleans to the static test areas in Huntsville, and later to Cape Kennedy.

(Slide B-3)

And here is an S-IB at lift-off.

Thank you.

I believe that the NASA representatives are ready to take us to the main plant now.