aerospace notes

APOLLO ADVANCES

Fireproof LM, Extra CMs, Strong Booster

• NASA engineers who tried more than 40 times to set fire to an Apollo moon landing module declare it to be "almost completely safe from fire." The tests, conducted over several months at the Manned Spacecraft Center, included all of the items which would be carried on a space flight, such as paper flight plan books and food. Tests this month and in January were also scheduled for an Apollo command module.

• A new contract, calling for "improved plans for quality . . . reliability and safety," has been negotiated with North American Rockwell Corp. for construction of 16 Apollo spaceships, four more than originally planned. The company's original contracts totaled $2.2 billion.

• NASA says that although the uprated Saturn 1 booster, which will carry the first Apollo lunar module into space next month, has almost 140,000 pounds of added thrust in its first stage alone, it still has a safety factor of 1.4 for its entire structure. This means that the rocket could withstand 40 percent greater stress than the worst environment it is expected to encounter.

• A recovered command module, first flown in February 1966 to test the Apollo heat shield at near-reentry speeds, is being used again, this time for land drop tests. The module is the first of four, all recovered from previous tests, which are being modified and reinstrumented for investigations of impact damage in case some returning astronauts should come down on land.

SATELLITE-SPOTTING

Moonwatch Breaks Its Record

Moonwatch, that worldwide, semiformal, civilian satellite-spotting organization, set a new record for itself with 3,143 observations in a single month, October.

The previous total, 2,690, was set back in September 1960, the month following the Aug. 12 launch of the Echo 1 satellite. The silvery Echo balloon is the most visible satellite ever launched, and its passings are often visible to the naked eye.

COMMUNICATIONS

Antenna Links Subs with Satellites

An experimental antenna has been designed that allows submarines to communicate via satellite with suitably equipped submarines, ships, aircraft and fixed or mobile land stations thousands of miles apart.

Designed by International Telephone and Telegraph Corp.'s Defense Communications Division, the antenna is steerable in both azimuth and elevation, yet compact enough to fit in the superstructure of a submarine. Limited space has been a particular problem in the design of submarine-to-satellite antennas. This one was designed under contract from the U.S. Naval Ships Systems Command in Washington, D.C.

SPACE SIMULATION

Russians Affected by Long Cabin Test

Three Soviet scientists reportedly suffered hallucinations and psychological changes during a 70-day experiment in a cramped compartment that may have resembled a simulated long-term space flight.

The Soviet newsagency Tass, which repored the experiment, did not say it was connected with space research, but did describe crowded living conditions such as would be found in a space capsule.

Besides the psychological changes, not further described, the scientists lost weight, and their muscle tone deteriorated despite daily stints on an exercise bicycle. All three men reportedly returned to normal following completion of the test.

Food during the test, Tass said, was "dehydrated meat, cottage cheese, various tinned foods and concentrates."

METALLURGY

New Alloys to Be Cold-Tested

A new technique for predicting crack formation in metals will be used in low-temperature tests of three new alloys for the National Aeronautics and Space Administration.

The materials include two high-strength weldable aluminum alloys and a stainless steel, the latter fabricated by an advanced method called cryogenic stretch forming, which increases the metal's yield strength by a factor of four. Doing the testing will be Martin Marietta Corp.'s Denver, Colo., division.

Two phenomena will be studied: the resistance of the metals to brittle fracture at minus 320 degrees F. (cold space temperature), and their resistance to crack growth at the same low temperatures under both sustained and cyclic loads. The new analytical method to be used in the tests is called linear elastic fracture mechanics. It enables the strength of a material to be predicted in the presence of minor cracks and defects which are inherent, says Martin, in all metals and engineering structures.

AIRCRAFT NOISE REDUCTION

Computer Program Measures Booms

A computer program has been developed for determining how changes in an aircraft's design will affect the force of its sonic boom over a range of flight conditions.

Developed at the University of Georgia for the space agency, the program bases its computations on a series of measurements of the cross-sectional area of the plane at different points along its length. Also included is a distribution of equivalent cross-sectional areas according to lift.

Two preliminary programs provide the input data. The main program is written in Fortran IV to run on an IBM 7094 computer.