

SPACE

USSR Race for TV Space

The Russians with their lead in manned space assured, now are concentrating their efforts towards gaining superiority over the United States in space communications systems.

► **NOW THAT** their lead in manned space flight seems assured, the Russians have given top priority to overcoming United States superiority in space communications. They may win this space race, too, **SCIENCE SERVICE** learned, since now U.S. space communications system is limited to private commercial development and use.

For reasons of economy, the commercial privately owned space communications system, authorized in the recently passed Communications Satellite Act, will be in a low orbit.

Soviet and American scientists have advocated as superior the high-altitude or synchronous-type communication satellite, still in the research and development stage in the U.S.

Only one such satellite placed in a 24-hour equatorial orbit would provide TV, radio, telegraph and telephone communications for all of eastern Europe as well as the Far East. Three or four could cover the world. This is the type of system the USSR is working towards.

Quite apart from the greater efficiency of such a system, it provides far greater anti-jamming capabilities. This is essential for military communications operations, Gen. Bernard A. Schriever, Commander, Air Force Systems Command, told a subcommittee of the House Committee on Science and Astronautics.

While Government owned and operated space communications, geared to defense requirements, could also be employed for civilian commercial use, a privately owned commercial system cannot be satisfactorily adapted to satisfy national defense needs.

Defense needs, for the present, can best be satisfied immediately with a series of medium altitude (5,000 miles) communications satellites in circular polar orbits, Gen. Schriever said. This is above the range of Telstar.

The Administration's Communications Satellite legislation, providing private ownership for space communications, does not eliminate the need for a Government owned communications satellite system to meet military security requirements.

The double burden of time and money needed to support two systems—neither as good as a synchronous-type system—may provide the Russians the chance they are seeking and the time they need to move ahead in space communications.

According to a staff report for the Senate Committee on Aeronautical and Space Sciences, "The Soviets have not lost sight of the obvious effectiveness and utility of a communications satellite system as a powerful global mass communications medium. Nor have they failed to understand its potential military mission."

Since the Russians do not have to splinter their space efforts in communications, all Soviet scientific talent in the field will be concentrating on the best system possible rather than compromise systems.

With this edge, the Soviets can overtake and surpass the present U.S. lead in space communications, experts in Washington believe.

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SPACE

Safety Rocket for Moon Shot Capsule Supersonic

► **MANNED** lunar spaceships will have an emergency rocket capable of supersonic speeds to separate astronauts from the booster rocket if it fails during launch.

National Aeronautics and Space Administration officials would not specify the exact thrust or power of the escape rocket, now being developed under contract with the Lockheed Propulsion Co., Redlands, Calif. But **SCIENCE SERVICE** learned that the

Apollo escape rocket will be "many times larger" than the one used in Project Mercury to insure the safety of Astronauts Alan Shepard, Gus Grissom, John Glenn and Scott Carpenter.

Company scientists claim the thrust will be equal to that of an intercontinental ballistic missile.

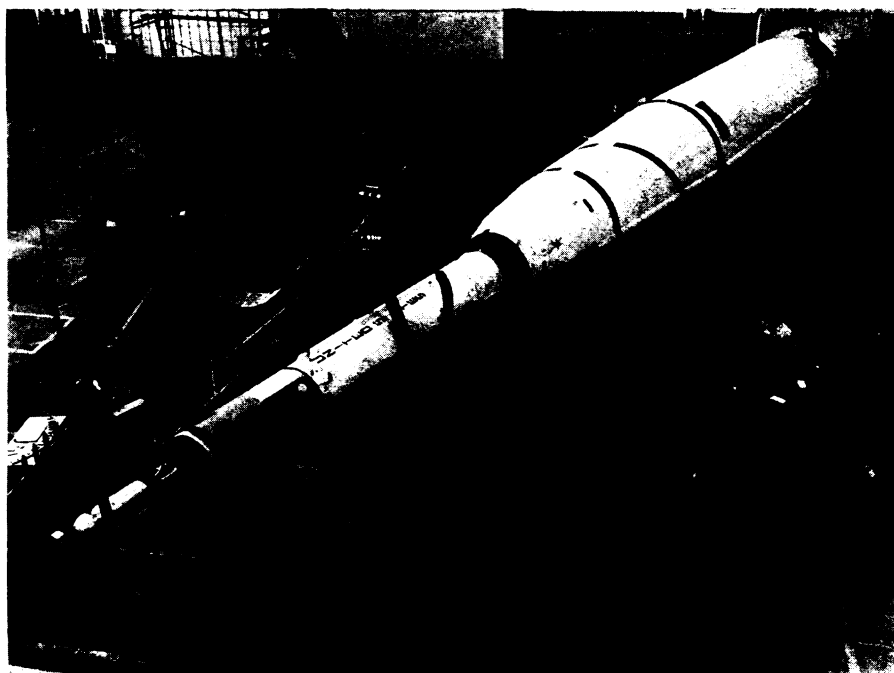
Lockheed Propulsion has selected eight other companies to participate in the design and development of the solid propellant escape rocket motor. It is the space equivalent of the jet airplane ejection seat system.

Apollo Project officials at NASA's Manned Spacecraft Center in Houston, Texas, told **SCIENCE SERVICE** that the planned date for completion of the motor is being withheld for technical reasons. They did, however, indicate that it was much sooner than the expected launching date, scheduled by 1968. Three astronauts will be sent moonward in the Apollo capsule.

The Apollo escape rocket will be capable of lifting the command module and its occupants out of an area of potential hazard instantly, Dr. Irwin Spitzer, senior project engineer at Lockheed, explained. Dr. Spitzer coordinates the company's Apollo efforts.

The company now builds the Project Mercury escape rocket. Since the beginning of the Mercury program, the escape rocket has worked properly under all test and operating conditions.

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VIBRATION TEST—A fully assembled Douglas Delta space vehicle, similar to the type that will launch the National Aeronautics and Space Administration's Relay communications satellite, is put through a vibration test at the Santa Monica, Calif., facility of the Douglas Missile and Space Systems Division. The 80-foot-long, 8,428-pound vehicle was suspended from cables for the test, which determined vehicle control stability and vehicle body bending modes.