



ION ENGINE FOR FUTURE SPACE TRAVEL UNDER DEVELOPMENT IN OHIO

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The National Aeronautics and Space Administration recently unveiled a small scale model of an ion engine that may be used some day for satellite and interplanetary space craft propulsion. Under development at the Lewis Research Center in Cleveland, Ohio, the engine operates with cesium as a propellant. The ions, which are positively charged atomic particles in a plasma, are accelerated by electrical fields to velocities of as high as 200,000 miles an hour. Plans for building larger units are also under way.

ABOVE -- An ion engine research model is assembled in a high vacuum test facility. A cesium capsule is broken in the boiler shown being mounted on the tank door. The cesium vapor atoms are ionized on hot tungsten strips, next to be assembled. The ions are then accelerated to extremely high velocity by imposing high voltages on the accelerator disks. The high-velocity cesium ions are expelled from the rear of the engine, thereby providing thrust.

BELOW -- The high vacuum facility for testing ion engine research models is operated by scientists at the Lewis Research Center. The engine mounted inside the tank must be run under very low pressure conditions as are found in outer space. The cesium-propellant exhaust from the engine must be kept from increasing the pressure inside the tank. Since high-vacuum pumps alone are not adequate, the cesium exhaust is frozen onto interior baffles maintained at very low temperatures. (59-16879)



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