
Thermal reactors for cars

That villain of urban air pollution, the automobile, emits from a fourth to a half ton of carbon monoxide and hydrocarbons a year per car. To reduce or eliminate this hazard, the National Air Pollution Control Administration has asked the National Aeronautics and Space Administration's Lewis Research Center in Cleveland, Ohio, to investigate a method of completing combustion in a thermal reactor.

A thermal reactor would replace the standard exhaust manifold in a car and serve as an afterburner, thus reducing pollutants. But the reactor must withstand operating temperatures of from 1,400 to 1,900 degrees F. It must also be strong enough to take thermal shock and severe mechanical vibrations.

Engineers at Lewis are using a V-8 engine equipped with experimental thermal reactors. Instruments measure the exhaust temperature and pollutant content over a wide range of speeds and loads.

SERT 2

Early engine shutdown

After operating for five of the expected six months, one of the ion engines aboard the space agency's orbiting Space Electric Rocket, SERT 2 (SN: 4/4, p. 343), shut down due to electrical problems in the thruster system.

Spacecraft managers at NASA's Lewis Research Center attempted unsuccessfully to restart the engine; the second ion engine was activated July 24.

Preliminary indications are that the breakdown occurred in the high voltage portion of one of the thrusters. High voltages are required in the electric rocket to accelerate ions out of the engine to produce the necessary thrust.

DATA COLLECTION

Help from AIAA

The National Aeronautics and Space Administration has selected the American Institute of Aeronautics and Astronautics to continue the abstracting, indexing, publication and dissemination of scientific and technological data required by NASA.

The contract, amounting to about \$1.6 million, will extend from July 1, 1970, to June 30, 1971.

REMOTE SENSING

Disasters and fish

Three airplanes, a Lockheed Electra, a Hercules C 130 and a Martin Canberra RB 57, have been modified and equipped with cameras and infrared sensing instruments at NASA's Manned Spacecraft Center in Houston for use in earth resources and disaster area flights.

Photographs taken by the instrumented Electra of the area of Peru damaged by the May 31 earthquake (SN: 8/1, p. 94) have already been turned over to the Peruvian Government. Similar photographs aided in recovery work in Lubbock, Tex., after a tornado in July,

and most recently, in the Texas Gulf Coast area hit by hurricane Celia last week.

This week, the Electra is flying off the coast of Portland, Ore., aiding 750 ships involved in the annual albacore tuna fishing season. Using infrared thermometry and multiband photography, the airplane supplies data on factors influencing the catches.

It is known that albacore catches are highest where the sea surface temperatures range from 15 to 18 degrees C., but little is known about other factors influencing the catches within the temperature range. Two features off the Oregon coast, the emptying of the Columbia River and upwelling of deep, cold water to the surface, are thought to be factors.

Working with two scientists from Oregon State University, Drs. William Percy and Jane Pattulo, NASA crews will correlate the airborne sensor data with shipboard oceanographic observation.

VIKING EXPERIMENT

Air pollution detector

A gas chromatography system developed for the Mars Viking spacecraft is being tested and produced for detection of air pollution on earth.

The gas system, a three-ounce generator-separator made of palladium, can identify gas compounds with great precision and sensitivity. The system was designed for the National Aeronautics and Space Administration by the Jet Propulsion Laboratory to analyze, in conjunction with a mass spectrometer, the Martian soil and atmosphere when the Viking lands on Mars in 1976.

British scientist J. E. Lovelock, a JPL consultant, invented the system. The idea was licensed to Triangle Environmental Corp. of Research Triangle Park, N.C. Dr. G. R. Shoemaker, supervisor of the experiment at JPL, says the detector is particularly sensitive to the major air pollutants in the United States, such as sulfur dioxide, carbon monoxide and oxides of nitrogen.

APOLLO

Remote-control television

The space agency has selected the RCA Corp.'s Astro-Electronics Division in Princeton, N.J., to build a ground-commanded television system for use in the last four Apollo lunar landings.

The remote-control units and color television camera will be compatible with existing Apollo real-time command systems at the Manned Space Flight Network tracking stations. The system will permit operations either from earth or by the astronauts from the moon.

A camera mounted on the lunar rover, the vehicle that will fly on Apollo 16, could relay a view of the LM liftoff to earth.

The television system will work in conjunction with another RCA contract project, the Portable Lunar Communications Relay Unit; both will permit voice and TV transmission direct to earth without the use of the lunar module's relay system. The need for such a relay has limited coverage in the past to areas near the landing site. The system will operate manually when it is connected to LM batteries and the S-band transmitter; at other times it will be earth-operated.