

Technology Notes

SUPERSONIC TRANSPORT

Houses Safe from Sonic Booms

"It is improbable that even slight damage should occur" to houses and other buildings due to the supersonic transport, as long as its sonic booms have overpressures of less than three pounds per square foot, says the former technical director of the National Sonic Boom Programs in White Sands, N. Mex., and Oklahoma City.

Dr. John H. Wiggins Jr., reports his analysis of the two test series, in which 2,747 booms were produced in 1964 and 1965, in the June issue of *MATERIALS RESEARCH AND STANDARDS*.

"This does not imply that claims won't be made," however, he says, simply because people are much more sensitive to vibration than are structures. "That which is easily noticeable to persons is about 75 times less than the damage criterion," Dr. Wiggins reports.

Though most of the test runs were made by F-104 jets that are much smaller than the coming SST, Dr. Wiggins says, "larger aircraft should have no effect on these results, since the F-104 loaded the buildings to a maximum." There was some evidence from the tests, however, that cracking from normal shrinkage processes might be accelerated by the booms, he says.

ATOMIC POWER

Reclaiming Uranium Fuel

A new process has been developed to cut the time and cost of reprocessing and refabricating into fuel elements the unburned uranium obtained from spent reactor fuel.

Reported by the Idaho Nuclear Corp., Idaho Falls, the new process is expected to produce uranium aluminate of a superior physical form in three simple steps using only one piece of processing equipment. Uranium aluminate has been finding increasing use as a fuel for test and research reactors.

In the process, uranyl nitrate solution is sprayed into a heated bed of fluidized (air-supported) aluminum particles. Wood alcohol fumes followed by carbon tetrachloride fumes are then passed through the heated bed, causing the uranium and aluminum compounds to combine into small spherical particles of the desired uranium aluminate (UAl_3).

AVIATION

Choppers Cross Atlantic Nonstop

The first nonstop trans-Atlantic helicopter flight in history was completed when two Sikorsky HH-3E choppers belonging to the U.S. Air Force landed at Le Bourget Field in Paris June 1.

The two helicopters were refueled in the air a total of nine times during their 4,157-mile flight, at altitudes between 1,000 and 9,000 feet. The average speed for the flights was 137 miles per hour. The in-flight fueling makes the choppers ineligible for official distance records.

POWER TRANSMISSION

Longest Subsea Power Cable

The world's longest underwater power cable will soon go into operation between the Italian mainland and the island of Sardinia. Designed to carry 200,000 kilowatts, the link will also be the seventh-longest direct current system in the world.

The system goes overhead from northern Sardinia to a submarine cable across the Straits of Bonifacio, overhead across the length of the Island of Corsica, and then underwater again to an AC converter station at San Dalmazio in Tuscany. More than 60 miles of the line is on the sea floor, as much as 1,300 feet deep.

FLUIDICS

Automatic Engine Inspector

A fully automated machine based on a fluidic logic system has been developed for inspection of automobile engine blocks, reports the Swedish SKF Co., Stockholm.

Manufactured by RIV-SKF in Italy in cooperation with Fiat, the machine performs all its computing and sensing functions without mechanical parts.

CRYOGENICS

HST Test Fuel Tank to Be Built

A huge test fuel tank, 20 feet long and 8 feet across, is being built by Convair division of General Dynamics Corp., San Diego, Calif., to investigate the fuel problems of tomorrow's hypersonic transport planes.

Fuel for the HST will be liquid hydrogen, which must be kept at minus 423 degrees F. while the aircraft skin is heated to thousands of degrees. (SN: 6/3). The Convair test tank, being built and tested under contract to the Air Force, will hold 6,000 gallons of fuel, and will be enclosed in quartz fiber insulation to limit hydrogen boil-off. Made entirely of a nickel superalloy, the tank will require more than 400 feet of precise fusion welding.

DATA PROCESSING

High-speed Computer Printer

A British research laboratory has devised a machine capable of printing all of Shakespeare's plays in little more than a minute.

Designed at Standard Telecommunications Laboratories, Harlow, the device magnetically records computer data—letters, numbers or pictures—on a rapidly rotating drum. Magnetic powder is then applied to the drum, where it adheres to the magnetized areas. The powder images are transferred by contact to an unreeling spool of paper, which is then heated, melting a resin on the paper, permanently fixing the characters.

The new machine, still experimental, is being developed to print more than 60,000 characters per second. At an average of five letters per word, it could thus print the 815,000 words of Shakespeare's works in about 68 seconds.