straining before application; its materials also cost less. Thus the new coating offers cost advantages in materials, labor hours per application, and fewer applications over a given time span.

The NASA coating is now undergoing test on a number of coastal area structures. In a cooperative effort with the Philadelphia Mayor's Science and Technology Council, the coating has been applied to sample sections of the Frankford Elevated System's steel support structure. On the West Coast, it is being tested on facilities of the Pillar Point Satellite Tracking Station, Pillar Point, Cal. and on segments of the Golden Gate Bridge. It is also undergoing evaluation as an undercoating to protect road equipment against de-icing salts; the coating was applied to the underside of a truck and its performance is being recorded periodically by the Vermont Department of Highways. NASA has issued patent licenses to two paint companies and the coating is expected to be commercially available this year.

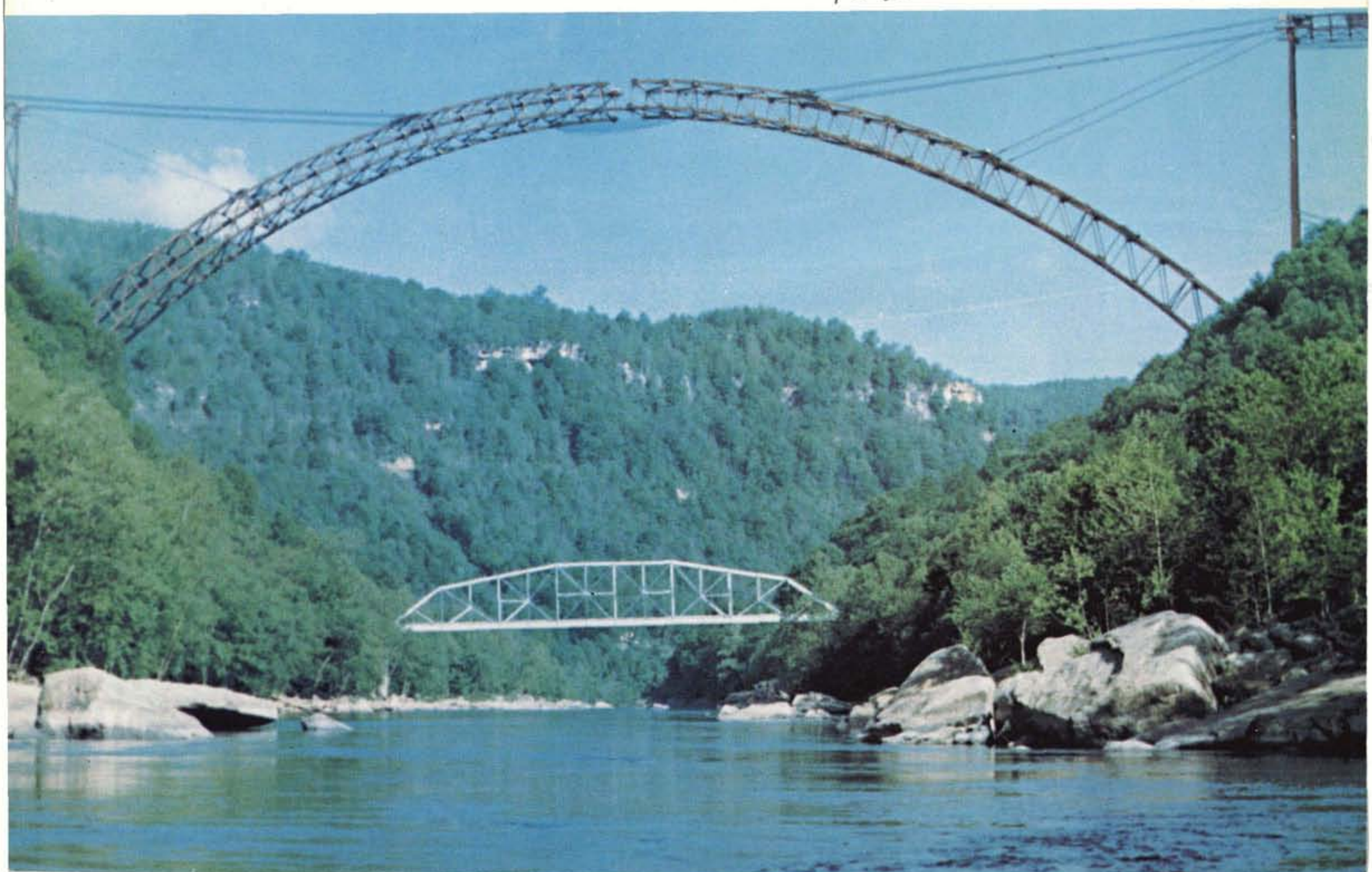
Safer Bridges

Bridges are safer today, thanks to work by U.S. Steel Corp.'s Research Laboratory in Monroeville, Pa., in which NASA technology played a supporting role.

Bridge materials and other metal structures may develop flaws during their service lifetimes. Such flaws can affect the structural integrity of the part. Thus, it is important to know the "fracture toughness" of a structural part, or its ability to resist cracks.

NASA has long experience in developing fracture toughness tests for aerospace hardware. Since 1960, NASA-Lewis has worked closely with the American Society for Testing & Materials. Lewis and NASA-funded industrial contractors have made many important contributions to test procedures, now recommended by ASTM, for measuring fracture toughness.

U.S. Steel's Research Laboratory used a NASA-Lewis fracture toughness procedure in developing a low-cost method for testing structural steels. An important area of the steel company's work was development of fracture toughness requirements for bridges. These requirements were adopted by the Federal Highway Administration and the American Association of State Highway & Transportation Officials; they are now mandatory for all federal-aid highway programs in the United States.



Safer bridges are among a number of spinoff benefits from NASA procedures for testing "fracture toughness" of a structural part, meaning its ability to resist cracks that might cause failure. The New River Bridge in West Virginia, shown under construction, is the world's largest single span bridge. U.S. Steel fracture toughness requirements for such bridges include NASA-developed test procedures.

SPINOFF 1977

This snowmobile benefited from NASA fracture toughness procedures. The manufacturer—Deere and Company—used the NASA technology to select better metals and reduce chances of failure in high-speed rotary components.

NASA's contribution to fracture toughness testing represents a broad area of spinoff. NASA-Lewis procedures have been used in testing a variety of structures and systems, ranging from nuclear reactors and power generating equipment to tractors and plows. In addition to bridge safety, another transportation-related example involves production of snowmobiles. Deere & Co., Moline, Ill., used the NASA technology as a basis for selecting better aluminum alloys and improving quality control procedures to reduce the chance of failure in high-speed rotary components of snowmobiles.

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Log Truck-Weighing System

ELDEC Corp., Lynwood, Wash., built a weight-recording system for logging trucks based on electronic technology the company acquired as a subcontractor on space programs such as Apollo and the Saturn launch vehicle. ELDEC employed its space-derived expertise to develop a computerized weight-and-balance system for Lockheed's TriStar jetliner.

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