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(NOTE TO EDITORS & CORRESPONDENTS: For your information, the following announcement was issued for a.m. papers of Saturday, August 29, by Atomics International, a Division of North American Aviation, Inc., Canoga Park, California.)

FUEL ELEMENT FAILURE AT THE SODIUM REACTOR EXPERIMENT

During inspection of fuel elements on July 26 at the Sodium Reactor Experiment, operated for the Atomic Energy Commission at Santa Susana, California by Atomics International, a Division of North American Aviation, Inc., a parted fuel element was observed.

The fuel element damage is not an indication of unsafe reactor conditions. No release of radioactive materials to the plant or its environs occurred and operating personnel were not exposed to harmful conditions. The occurrence is important from a technical standpoint and a detailed study is under way to determine the precise cause of the damage.

The fuel element of the SRE is a cluster of seven stainless steel tubes, each approximately 3/4 inches in diameter and 6 feet long. Each tube contains a column of six-inch long uranium metal slugs. These tubes are capped at the two ends. The elements are suspended in the core of the reactor by means of hanger rods from plugs in the upper shield.

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To date, 34 of the 43 elements comprising the fuel loading of the core have been examined by means of the fuel handling cask television system. It has been noted that five additional elements have only an upper half attached to the hanger rod. In each case, all seven tubes of the fuel element cluster were parted and a portion of the lower half of the fuel element remained in the core.

Preliminary indications are that the damage could have been caused by restrictions in the coolant passages resulting from inadvertent introduction of an organic material into the reactor. This material could have come from leaks in the primary coolant pumps where tetralin, an organic compound, is used in seals to eliminate sodium leakage into the pump bearings and drive. Preliminary investigation of the stainless steel fuel cladding of one element indicates the element was damaged through formation of a uranium-iron alloy in the cladding in the area of the failure.

The SRE is the first experiment in the Commission's program to develop a sodium graphite reactor, one of the five original reactor concepts in the Commission's 1954 Five Year Civilian Power Program. It was designed to produce 20,000 kilowatts of heat and 6,500 kilowatts of electricity.

The purpose of the SRE is to develop the technology associated with the sodium-graphite type of reactor and to provide a flexible tool to develop the advanced technology necessary to achieve economically competitive power. This concept holds promise because of the high temperature, and high efficiencies, at which heat transfer systems using liquid metals can be operated without pressurization.

The reactor has been in operation since April 1957 and has demonstrated the feasibility of the sodium graphite reactor concept. On May 22, 1959 the SRE achieved a maximum steam temperature of 1,000 degrees Fahrenheit. This steam temperature is believed to be the highest ever produced by a nuclear reactor. The fuel loading, nearing the end of its useful life, was scheduled to be removed in the near future and replaced with a second core loading of thorium-uranium alloy fuel elements.