

AiResearch Plays Vital Role In Project Mercury Systems

The vital Project Mercury environmental control system which will undergo its most critical test during this week's scheduled launching has been designed and tested with the protection and safety of the astronaut as a key factor.

Produced by The Garrett Corp.'s AiResearch Manufacturing Co. under contract to McDonnell Aircraft Corporation, St. Louis, the environmental control system has undergone more than 100,000 hours of testing.

These elaborate procedures were necessary because of the essential function of the system when integrated in NASA's Project Mercury program. It provides the astronaut with an artificial environment while he is orbiting in space where the external environment of pressure and temperature are so extreme that, if unprotected, he could survive only a few seconds.

TESTING of components began in 1959 soon after McDonnell awarded Garrett its contract. The entire system was tested with a man for the first time only six months later in a high altitude chamber located in the laboratories of AiResearch in Los Angeles.

While testing continued at AiResearch, McDonnell carried on further tests with the system installed in the capsule. Additional runs were made at Cape Canaveral by McDonnell.

As a result, in each Project Mercury flight, the environmental control system has operated according to design specifications.

OTHER PRIME considerations in the development of the system include the incorporation of back up units for all moving components. For example, the compressor which circulates the oxygen through the capsule and the astronaut's suit has a second unit available for back up purposes.

In addition, the system which operates automatically in the capsule can also be operated manually by the astronaut.

Coupled with extensive testing procedures and proven design characteristics is the fact that most of the components in the system are similar in principle to units in use today aboard the commercial and military jet aircraft.

FOR EXAMPLE, the heat exchanger which uses water to absorb heat in the capsule is similar in design to the heat exchanger used to cool passengers aboard the Boeing 707 jet airliner. They both are technically referred to as a plate and fin heat exchanger, according to Garrett engineers, who have been producing environmental control systems for more than 20 years.

Briefly, the Project Mercury environmental control system contains two complete systems used to pressurize and cool both the capsule and suit as well as control the composition of the atmosphere.

THE 28-HOUR supply of gaseous oxygen, stored at 7500 psi, is fed into the suit and capsule through pressure reducers. (An additional 28-hour supply is available for back up purposes.)

The suit circuit removes carbon dioxide, excess moisture, debris, odors, and is cooled before being circulated back to the astronaut.

The circuit circulating the oxygen in the capsule consists of a fan and heat exchanger.

The environmental control system is capable of operating at minus 20 degrees F to +200 degrees F. In addition, it operates at zero "G" loading or in a weightless environment.

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Y Drive To Open Feb. 8

Formal launching of the 1962 support campaign for the Torrance YMCA has been scheduled for Thursday, Feb. 8, at two meetings, Chairman Harold Frenz reported yesterday.

Scheduled for noon at the Palms is a luncheon to start off the business, industry, and commerce divisions of the drive to raise \$40,000 to support the YMCA program here during the next year.

In the evening, a parents' dinner has been scheduled at the YMCA building at Washington and Arlington to enlist the aid of parents who last year raised about \$11,000 for the operation of the program.

A weekend breakfast last Saturday was attended by about 400 Y boosters, who turned out "just for fun," Secretary Joe Wilcox reported.

A special meeting of the board of managers has been scheduled for 7:30 this evening to discuss the proposal to acquire two acres of land in the area of Hawthorne and Lomita boulevards.

If the local YMCA can acquire the building site, the Metropolitan YMCA in Los Angeles will help with building costs, local Y officials have stated.

Also under consideration is construction of new facilities at the present location.

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Hi Shear Given \$18,500 Order

Contracts valued at \$18,538 have been awarded to Hi Shear Corp. of Torrance for mechanical assembly parts for the National Aeronautics and Space Administration, it was reported from Huntsville, Ala. this week.

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