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NASA TO DEVELOP MANNED MANEUVERING UNIT

NASA will proceed with an accelerated development of the Manned Maneuvering Unit that will allow an astronaut to inspect and repair the Space Shuttle's heat resistant tiles while in orbit.

The unit also will allow numerous other activities outside the spacecraft that may require the personal attention of an astronaut such as spacecraft servicing and repair, payload placement and rescue operations.

The Manned Maneuvering Unit, built by Martin Marietta Aerospace, is an improved version of a gas-jet maneuvering backpack test flown inside the Skylab orbital workshop during the second and third astronaut visits in 1973-74. It has been continuously updated and adapted since then.

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NASA believes that inspection and repair of tile should not be required on the first Shuttle orbital flight, designed to cause lower than normal stress, because the tiles will have been proof tested through the full range of stress expected during normal operational flight.

NASA decided to develop this capability now so that it will be available on later orbital flight tests when the launch environment will be up to design level and inspection and repair can be performed if conditions prove more severe than now predicted.

The first Shuttle orbital flight is anticipated between the end of March and July 1980. The second flight will occur four months later. The Manned Maneuvering Unit should complete development by August.

An alternative method of tile inspection, that of an extendable boom and television camera attached to the Shuttle's remote manipulator system, was dropped from consideration.

In addition to the maneuvering unit, NASA will continue to examine, for at least another month, the feasibility of stabilized television units being placed in orbit by the Shuttle.

The orbiter would maneuver around the television cameras for a closed-circuit tile check by the orbiter crew.

Thousands of heat-resistant tiles cover the underside and sides of the orbiter. If any tiles are damaged during launch, they may have to be repaired before the orbiter re-enters the Earth's atmosphere. An astronaut using the maneuvering unit would use one of the tile repair methods being developed to repair any damage to the heat shield.

NASA will begin pull tests this week that will check the strength of several thousand tile bonds. The tests will involve monitoring the sounds made as a tile is pulled outward under pressure. Analysis of the sounds made by the tile under the stress will enable engineers to determine if each tile has adequate strength.

Tests of the tile also will begin soon using F-15 and F-104 aircraft at the NASA Dryden Flight Research Center in California. The aircraft will perform maneuvers which demonstrate tile performance up to 140 percent of the dynamic pressure planned for Shuttle operations.

The tests, however, will not check tile reaction to acoustic noise, vibrations, heating and local shocks the tile may have to endure during actual launch. These environmental factors are being separately tested in various ground facilities.

In November, the Air Force's Arnold Engineering Development Center, Tullahoma, Tenn., will begin wind tunnel testing of the tile. More extensive wind tunnel tests will follow in December.

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