

COMPUTER PROBLEM WILL DELAY SHUTTLE AT LEAST TWO DAYS

By JOHN NOBLE WILFORD Special to The New York Times

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Capt. Robert L. Crippen and John W. Young returning to their quarters after the space shuttle mission was postponed. Gene Krantz, the flight director, displayed concern just before the announcement was made.

COMPUTER PROBLEM WILL DELAY SHUTTLE AT LEAST TWO DAYS

ENGINEERS FIND TIMING FAULT

Conference Scheduled for Today
to Decide on Repairs and Plan
for New Launching Time

By JOHN NOBLE WILFORD

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CAPE CANAVERAL, Fla., April 10 — A mysterious computer breakdown caused postponement of the launching of the space shuttle Columbia today, and space agency officials pressed to re-schedule it for Sunday morning.

The earliest the orbital test mission could get under way is 6:50 A.M. Sunday. But until the computer problem in the spaceship could be corrected the officials were unable to say when the re-usable winged Columbia would be cleared for another launching attempt.

Tonight engineers at the Johnson Space Center in Houston identified the source of the malfunction as a timing fault in one set of spaceship computers that disrupted communications with the backup computer.

Conference to Be Held Today

What repairs will be required and what effect they would have on launching plans will not be decided until officials at the Johnson Center hold a telephone conference with officials of the Kennedy Space Center here at mid-day tomorrow.

Arnold D. Aldrich, the shuttle deputy program manager at the Johnson Center, announced that the problem was a "time skew" traced to the operating instructions programmed into the Columbia's primary computers. This caused the primary computers, in effect, to reject communications from the backup computer because they did not arrive when expected.

Launching crews at the Kennedy Space Center here planned to keep the spaceship ready through tonight and tomorrow so that the countdown could be resumed at 6 P.M. tomorrow, aiming for a Sunday morning liftoff. However, they would not begin refueling the shuttle later that night until they received a favorable report on the computer problem from engineers and electronics experts at the Johnson Space Center.

Problem Becomes Evident

In the final stages of the countdown early this morning, with John W. Young, a civilian, and Capt. Robert L. Crippen of the Navy strapped into their cockpit couches, the Columbia's backup computer momentarily failed to establish communications with two of the four primary computers that are essential to all spaceship operations.

The countdown was halted. Flight controllers and engineers at the Kennedy Space Center here and at Mission Control in Houston struggled for three hours to trace the elusive source of the trouble, but could find no clues. The computers themselves seemed all right, as did their instruction programs, known as software. The shuttle computer experts said that they had never encountered such a

Continued on Page 11, Column 5

Computer Problem Delays Launching of Space Shuttle

Continued From Page 1

phenomenon, whatever it was, in the countless preflight tests.

After the failure recurred twice, project officials decided to give up and try another day, disappointing the crowd of hundreds of thousands of people who had gathered to watch the first flight of American astronauts in nearly six years.

Neil B. Hutchinson, a flight director at the Johnson Space Center, said that the Columbia could be operated with only one functioning computer, but added, "We would never lift off without a full complement of computers."

More than any previous space vehicle, the complex 122-foot-long Columbia, designed to fly like a spacecraft and return to earth like an 80-ton glider, is dependent on computers. The four primary computers operate simultaneously and, should they fail, the backup computer takes over. All five are identical machines, except that the backup one carries a different program of instructions.

After the postponement was announced at 9:56 A.M. today, crews went to the launching pad and helped Mr. Young and Captain Crippen out of the cockpit. They had been confined to their couches, lying with their faces skyward, for more than six hours. The liftoff had been scheduled for 6:50 A.M.

Mr. Young appeared grim as he returned to the astronaut quarters at the

space center. He and Captain Crippen have been in training three years for the mission, which was already running more than two years behind schedule because of development problems with the shuttle's propulsion system and heat-shielding tiles. The computers, ironically, had been relatively free of problems during the \$10 billion development program.

Mr. Hutchinson said later that the astronauts had received the news of the postponement without complaint. According to him, Mr. Young's first reaction over the intercom to the launching and flight controllers was: "You all did real good. We're sorry we couldn't go."

It was the first time in 15 years that American astronauts had encountered such a frustration on the launching pad. Having a launching "scrubbed," as it is known in space vernacular, was a frequent occurrence in the initial manned flight program of Mercury.

Preparations for Launching

When the Columbia astronauts were awakened at 2 A.M., all countdown preparations were progressing smoothly. The huge external tank had been pumped full of supercold liquid hydrogen and oxygen, the propellants for Columbia's main engines.

At 6 A.M., as the sun rose above a bank of clouds out over the Atlantic, Mr. Young and Captain Crippen had already been inside Columbia with the hatch sealed for more than an hour. The checkouts continued satisfactorily. But at 6:20 — T minus 13 minutes in the countdown — it was reported that warning lights had flashed on the cockpit instrument panel and at the consoles of the control rooms here and in Houston. It was a computer problem.

When the computers were being switched to the "terminal countdown mode 101," the backup computer was supposed to send signals for five milliseconds to verify that it was in communication with the primary computers.

Even though the signals failed to get through to two of the four computers, a second check a few minutes later indicated that the problem had gone away. But the countdown had to be halted anyway because of another suspected malfunction. One of the three electricity-generating fuel cells showed abnormal acid levels.

The time for the scheduled liftoff passed. And just as it was determined that the fuel cells were not in trouble, after all, the computer problem recurred. The astronauts tried to reset the computer dials, but the problem would not go away.

After the astronauts left the spaceship, launching crews pumped all the propellants, more than a million pounds of liquid oxygen and 225,000 pounds of liquid hydrogen, out of the external tank. The supercold propellants could not be left in the tank long because they would start evaporating in the Florida heat.

The time required to remove the propellants, reinspect all systems and then refuel dictated the postponement of at least two days in the launching.