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April 13, 1970

Honorable Olin E. Teague
Chairman
Subcommittee on Manned Space Flight
Committee on Science and Astronautics
House of Representatives
Washington, D. C. 20515

Dear Mr. Chairman:

This letter is in response to your request for a memorandum outlining the background and considerations behind our decision to proceed with the Apollo 13 mission, substituting the backup Command Module Pilot, Jack Swigert, for Ken Mattingly.

Background: Astronaut Charles Duke, Command Module Pilot of the backup crew, was exposed to Rubella (German Measles) on March 20, a fact which became known to us on April 3 when he started showing symptoms. He felt worse on April 4, and on April 5 he developed the characteristic rash. Since the prime and backup crews had met for several hours on April 2 in close contact, there had been significant exposure to all crew members. Subsequent medical tests indicated that all other members of the prime and backup crews had sufficient immunity to Rubella except for the Command Module Pilot, Lt. Cdr. Thomas Mattingly, USN.

Blood tests and analyses were conducted and medical experts consulted at leading medical centers, including the National Institutes of Health, the Communicable Disease Center in Atlanta, Georgia, and our own clinic at the Manned Spacecraft Center, Houston. Dr. Meyers of NIH, one of the world's foremost authorities on Rubella, made a special effort to see if any level of antibodies were present in Astronaut Mattingly's blood that would indicate possible immunity. Three laboratories confirmed that Astronaut Mattingly had zero immunity to Rubella. It was estimated by our medical advisors that there was at least a 75% probability that Astronaut Mattingly would become ill within the time frame of the Apollo 13 mission, most probably during the lunar surface activities while he was alone in the Command Module in lunar orbit. The potential effects of this illness in adults could result in symptoms which would seriously compromise a crewman's capability.

Another consideration was the unknown effect that the spacecraft environment might have on the progress and severity of this illness, including psychological stress, oxygen atmosphere, and zero gravity.

During the period while our medical examinations and tests were continuing, a series of program actions were taken to allow the maximum opportunity for alternative future management actions. The Apollo 13 countdown was continued but operations which were necessary for a crew change were delayed until the last possible moment. For example, the stowage of individual crew equipment was deferred until the latest possible hour. This allowed us to determine crew physical condition, evaluate crew readiness and training, evaluate hardware readiness, and consider any other factors.

When it became increasingly obvious from additional medical tests that there was a high probability that Astronaut Mattingly would become ill during the mission, detailed evaluations were initiated to identify all potential problems and alternatives for the mission.

The alternatives available to NASA were: (a) launch with Astronaut Mattingly in the crew and risk illness and reduced mission success; (b) substitute Astronaut Swigert for Astronaut Mattingly as Command Module Pilot; and (c) delay the mission a month until Astronaut Mattingly was completely recovered and could rejoin the crew.

Factors Considered:

Considerations relating to these alternatives included:

If Astronaut Mattingly did contract Rubella, would he be sufficiently recovered in May in time for the next launch? Would the Apollo 13 crew's ability to function well together as a team be impaired by the late substitution of a backup crew member? Did Astronaut Swigert have sufficient training on the Command Module and on his duties relating specifically to the Apollo 13 planned mission? Was there sufficient time remaining to verify the capabilities of the three astronauts together on the simulators at the Kennedy Space Center?

There never was any question that Astronaut Swigert could perform very capably as a Command Module pilot; the only question was whether he could be fully integrated into the Apollo 13 crew on such short notice.

During the same time frame that the alternatives were being considered, a review of the basic mission plan was implemented to minimize the

mission specific requirements for the Command Module Pilot if the decision to change the crew were made. By Friday morning, April 10, all available information had been compiled. This data included: (a) the results of Swigert's performance with the other two Apollo 13 astronauts on the simulators; (b) the medical data indicating an increasing probability of Rubella developing in Astronaut Mattingly during the lunar orbit phase; (c) an analysis of the critical points in the flight plan plotted against the projected development of the illness in Astronaut Mattingly, and (d) the lightened specific task schedule for the Apollo 13 mission. Independent evaluations and inputs were received from individuals representing crew readiness, status of hardware, and overall program management.

Decision:

At 12 noon, on Friday, April 10, a meeting of the key people in the Manned Space Flight Program was convened at the Kennedy Space Center for a final review of all available data and decision. Participants in this meeting were: myself; Dr. George Low, Deputy Administrator, NASA; Mr. Dale Myers, Associate Administrator for Manned Space Flight; Dr. Rocco A. Petrone, Apollo Program Director; Dr. Charles Berry, Director of Medical Research, MSC; Maj. Gen. James W. Humphreys, Jr., Space Medicine Director, Office of Manned Space Flight; Mr. Donald K. Slayton, Director of Flight Crew Operations, MSC; Mr. Charles Mathews, Deputy Associate Administrator, Office of Manned Space Flight; Colonel James A. McDivitt, USAF, Apollo Program Manager, MSC; and Captain Chester M. Lee, USN(Ret.), Apollo Mission Director, Office of Manned Space Flight. Mr. Julian Scheer was present as observer.

After a thorough review of all medical, mission and training facts, I asked for the independent evaluation of each individual in attendance, both in general and in his specific area of responsibility: program management, medical, hardware status or crew readiness considerations. The first question addressed was whether Astronaut Mattingly should be sent on the mission. The unanimous recommendations were to not fly Mattingly. The second question addressed was whether to fly Apollo 13 with Swigert, or to postpone the mission for one month. Independent recommendations were then received from all participants, and once again there were unanimous recommendations to launch the following day. My final decision, however, was deferred until I had met personally and privately with Captain Jim Lovell, and then with Captain Lovell and Fred Haise. They both expressed complete confidence in Swigert and recommended that we proceed with him as Command Module Pilot. After

this discussion I returned to the meeting, and after requesting any further comments, I announced my decision that the Apollo 13 mission would be launched the following day. The meeting concluded at 2:30 p.m.

Sincerely,

Original signed by
Thomas O. Paine

T. O. Paine
Administrator

cc: AD/Dr. Low
ADA/Mr. Shapley
AA/Dr. Newell
AAD/Dr. von Braun
M/Mr. Myers
F/Mr. Scheer
C/Mr. Allnutt
EH/Dr. Emme
MC/Capt. Freitag
MA/Dr. Petrone
MM/Gen. Humphreys
MD/Mr. Mathews
MA/Capt. Lee

MSC: Dr. Berry
Mr. Slayton
Col. McDivitt

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