J. Watson N10-C

NEWS

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NOTE TO EDITORS:

Deputy Administrator Dr. Robert C. Seamans, Jr. has given NASA Administrator James E. Webb a second report on the progress of the Apollo 204 Review Board activities.

The Report has been reviewed with Senator Clinton B. Anderson, Chairman, Senate Committee on Aeronautical and Space Sciences; Senator Margaret Chase Smith; and Representative George Miller, Chairman, House Committee on Science and Astronautics, and other committee members and staff

The full report is attached.

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NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
WASHINGTON, D.C. 20546

OFFICE OF THE ADMINISTRATOR

February 14, 1967

MEMORANDUM

To: Mr. James E. Webb
Administrator

From: Robert C. Seamans, Jr.
Deputy Administrator

Subject: Further report on Apollo 204 Review Board Activities

On February 10 I met with the Apollo 204 Review Board at KSC to discuss their progress in the investigation of the Apollo accident.

The Board now has 21 panels established and operating, each with a specific assigned task, each chaired by a Government employee, and each reporting to a specific Board member. A detailed Review Board activity schedule has been established and is reviewed daily to ensure that milestones are being met or that scheduled adjustments are made as early as necessary. This permits close coordination and integration of all the necessary activities, analyses, and studies.

In order to speed up the investigative effort, the Apollo 012 spacecraft is being mapped in detail, using a 3-dimensional coordinate system to which all physical spacecraft elements can be referred. Complete photographic coverage is being maintained, color film being preferred since it permits more ready identification of components and their condition. Each photograph is cross-referenced to the master grid.

The Board has implemented a data control system that permits a visual display, against a time-line background, of each step of the investigation. As spacecraft systems are examined and as their utilization in the 204 test is established, these are noted and color coded: at a glance, one can determine whether a system might have caused the accident or has proven to be non-contributory, and also whether a particular analysis is still underway or completed. This method of data control focuses on the critical areas requiring the greatest attention.

I reviewed at some length the work and procedures of the panel that is investigating the origin and propagation of the fire. While their work is far from complete, I am satisfied that the procedures they are following are well worked out. When this work is completed, it will give us as clear a view as can be obtained from the evidence. The panel has begun by examining each possible combustible within the spacecraft, its distribution and characteristics, and its proximity to each possible ignition source. Such combustibles include both solids and liquids. At each step of spacecraft disassembly, panel members are carefully removing both damaged and undamaged materials for micro-analysis which, in turn, permits the identification of the material that was burned. This allows a reconstruction of the final location of all combustibles in the spacecraft and will point up irregularities in this distribution if any exist. The physical evidence thus far examined points to the following:

> First, it appears the fire had considerable variation and directionality, since damage in the spacecraft indicates differences of intensity and timing. For example, an aluminum tubing handle has a hole burned through it indicating a temperature at that point of at least 1,400° F, while its nylon hinge within two inches of the melted spot is relatively undamaged indicating a temperature there of less than 500° F.
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> Second, there is evidence that the fire may have had more than one phase, but this is difficult to prove since the last phase would obscure the evidence of the earlier. One hypothesis, supported by the cabin pressure history, assumes a small, low-grade fire whose heat was at first largely absorbed by the spacecraft structure and that was burning at the time of the first crew report; that fire may have continued for as long as ten seconds. A more intense fire may have then developed, causing the rapid increase in cabin pressure. This fire was probably then extinguished by the depletion of oxygen.
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> Other peculiarities require further analysis. These deal with the ruptures in the spacecraft and the role of the fire in burning through into the space between the inner and outer hulls.

At this time, there has been no determination as to the source of the ignition itself.

Additional information relating to the progress of the accident has been identified and is being analyzed. A recording from an onboard bio-sensor that appears relatively undamaged is in the process of being read out at this time. Additional work to interpret all background sounds on a high fidelity recording obtained over the S-band link is being carried out in the hope of gaining further information on the course of the fire. I also reviewed with the physician who heads the medical analysis panel the condition of the personal effects, suits, and equipment of the crew as well as data available on their actions during the course of the accident. It is now clear that all three suits were burned through, though the extent of suit damage varies; the command pilot's received the greatest exposure to flame and the pilot's the least.

Spacecraft disassembly is proceeding with great care; for example, a false floor with plexiglass viewing ports has been installed to permit continued examination without the danger of disturbing physical evidence. Current plans are for the final removal of the spacecraft to the industrial area by the end of this week. Detailed plans for the continued disassembly of both the command module and service module are in preparation and will be reviewed and approved by the Board before further work is undertaken. It is important to note that no single spacecraft element is touched or removed for analysis without full Board approval and evaluation of its possible effect on any of the other on-going studies or analyses.

Robert C. Seamans, Jr.