



19 AUG 1968

REPLY TO  
ATTN OFF: SAFSL-1

SUBJECT: MOL Laboratory Vehicle Low Level Vibration Acceptance Tests  
(Aero. Ltr, 15 Jul 68)

TO: Aerospace (Dr. Williams)

1. Concur.
2. A letter was sent to General Stewart based on the recommendations of Aerospace together with certain cost information obtained from Douglas. General Stewart informed me that he had submitted this information directly to Dr. Flax.
3. This should close out the item and clear the minutes of an earlier PRC when Dr. Flax raised the question.

*J. S. Blewman*  
 J. S. BLEWMAN  
 Major General, USAF  
 Deputy Director, MOL

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AEROSPACE CORPORATION



Post Office Box 95085, Los Angeles, California 90045, Telephone 648-5000

15 July 1968

MOL System Program Office  
Los Angeles Air Force Station  
Air Force Unit Post Office  
Los Angeles, California 90045

Attention: Maj. Gen. J. S. Bleymaier/SAFSL-1

Subject: MOL Laboratory Vehicle Low Level Vibration  
Acceptance Tests

Gentlemen:

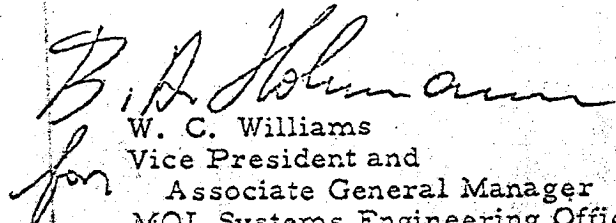
The approaches available for verifying vehicle quality of workmanship have been re-evaluated. This effort has been primarily addressed to the use of vibration as a tool for screening the vehicle at a systems level for workmanship defects. At present, a low level single axis, shaker induced vibration test without power has been proposed for the LM section and the MM section of the vehicle will be exposed to acceptance level acoustic environment as a normal part of final testing. The evaluation indicates that the proposed low level vibration test on the LM will not be useful or achieve its desired purpose because of the absence of power and inherent low transmissibility of the structure. The facilities and the presently planned acoustic test for the MM segment appear to have the potential of verifying the installation of sensitive equipment in the assembly and the module's insulation and equipment mounted to the outer structure. As the program progresses it may be shown that the acoustic acceptance test on the MM will not be beneficial and that this test should be dropped from the program.

NASA has just completed a thorough evaluation of the application and usefulness of either acoustic or shaker induced systems level vibration testing on the Apollo program. Their conclusions are that the levels and durations that are feasible for this type of testing cannot begin to achieve the desired goal of uncovering workmanship defects. Structural limitations prevent excitation to levels that are useful for uncovering the workmanship defects. The complexity of the vehicle and its operating modes make it impossible to instrument and operate the vehicle for a long enough period of time to find these defects. NASA is depending on a program which includes adequate component vibration and/or thermal acceptance testing and thorough system assembly and inspection procedures.

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It is therefore recommended that all consideration for running any type of low level vibration acceptance testing on the LM be dropped from the program. To obtain the systems integrity required for this vehicle, component testing must therefore be thorough. The present component acceptance and qualification test programs should be reviewed for inter-segment continuity and adequacy, and upgraded where necessary to assure the elimination of quality and workmanship defects. Additional emphasis should then be placed on the evaluation of contractor assembly and quality control techniques for assembling the MOL vehicle.

Very truly yours,

  
W. C. Williams  
for Vice President and  
Associate General Manager  
MOL Systems Engineering Office

WCW:BAH:rr

cc: Col. F. H. Dietrich/SAFSL-6  
Col. C. L. Gandy/SAFSL-14  
Col. B. F. Knolle/SAFSL-16  
Col. O. C. Ledford/SAFSL-1A  
Col. J. C. Wertz/SAFSL-13  
Lt. Col. L. A. Skantze/SAFSL-9

AC  
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