



**Aerospace
Systems Division**

B. Murrell

APOLLO 14 LRRR QUALIFICATION
STATUS LIST

NO.

REV. NO.

ATM-867

PAGE 1 OF 6

DATE April 29, 1970

Prepared by: *W. Anthony*

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1.0 INTRODUCTION

This technical memo meets the requirements of CCP 242, Exhibit F-1, Item 28 and supports the QTRR activity of the Laser Ranging Retro Reflector. It is the intent of this preliminary report to reflect the qualification rationale and summarize the qualification test plan for the LRRR Qual model. This report will be finalized to support Flight Model delivery and will be part of the Acceptance Data Package.

2.0 DISCUSSION

A. Qualification Rationale

Diagram "A" shows the qualification rationale for Apollo 11 and is reproduced from EATM-57A. It is included here since it is the Apollo 11 Qual Array that will be used during Qual testing. The qualification rationale for Apollo 14 is shown in diagram "B". The array for Apollo 14 LRRR is identical to that for Apollo 11 with the following exceptions:

1. The retaining ring inside half-angle has been increased from 1.5° to 6° .
2. The new retaining rings are secured by rivets rather than by staking.

The CDR Board meeting minutes of 4-30-70 confirmed that these changes do not necessitate requalification of the array. The increased retainer ring angle was incorporated to improve optical performance. The use of riveting has improved the mechanical integrity of the array as demonstrated by tests performed on the engineering test model, ETM-1, by A.D. Little, Inc., under subcontract to Bendix.



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B. Qualification Acceptance Criteria

The acceptance criteria for LRRR during system qualification will be based on:

1. The system meeting mass property requirements per Design and Performance Specification, Exhibit, B-1.
2. The system surviving simulated mission environments in vibration and shock.
3. Successful deployment of the array such that proper leveling and alignment may be accomplished.

The tests necessary to verify these attributes are outlined in diagram "B."

3.0 FINAL QUALIFICATION STATUS LIST PLAN

The final QSL will in effect be a revision to this ATM with the addition of the following:

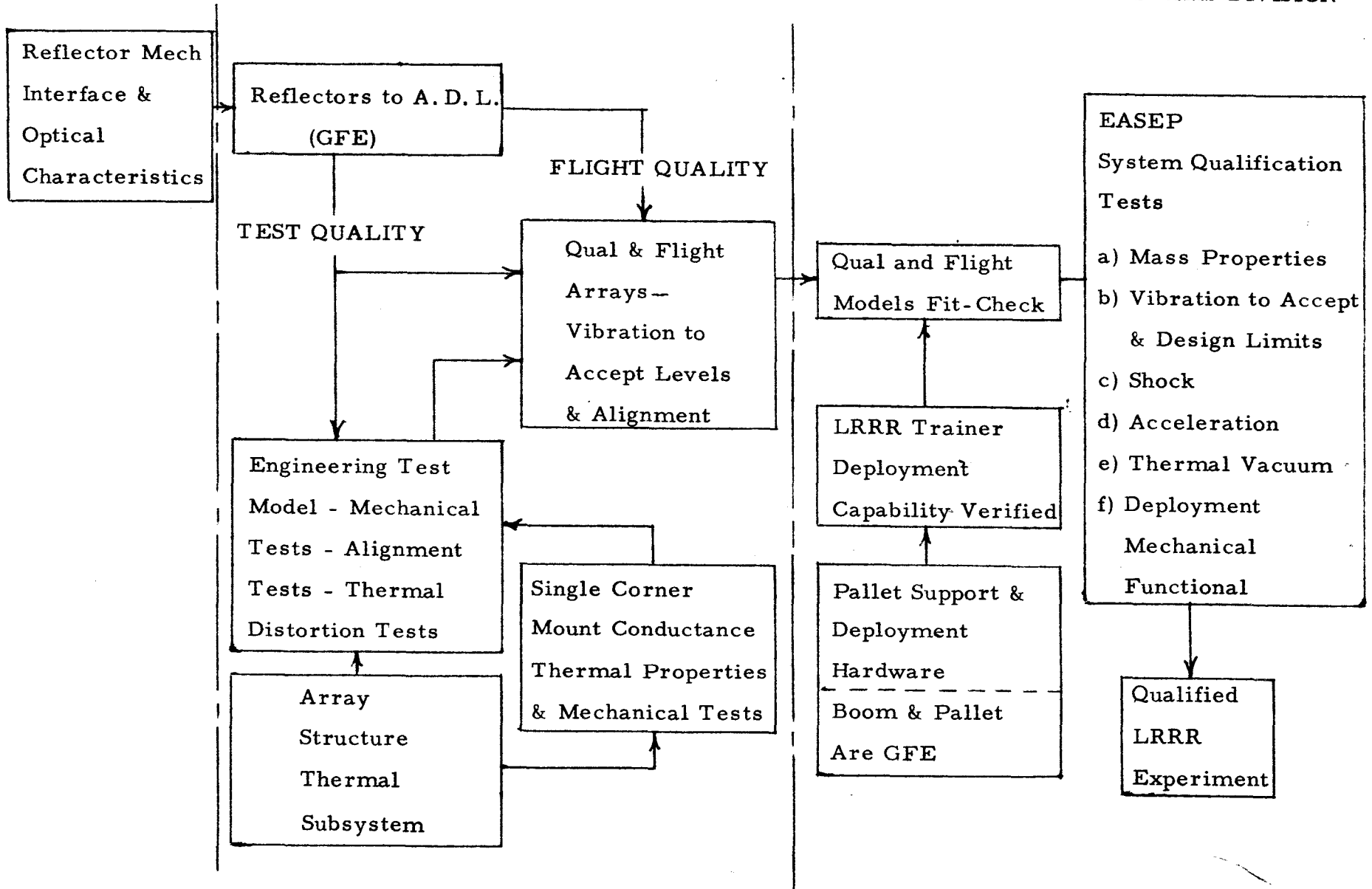
- A. Comparison of Flight and Qual Configurations.
- B. A list of LRRR experiment components and the test history of each.
- C. The results of the system Qualification Test.

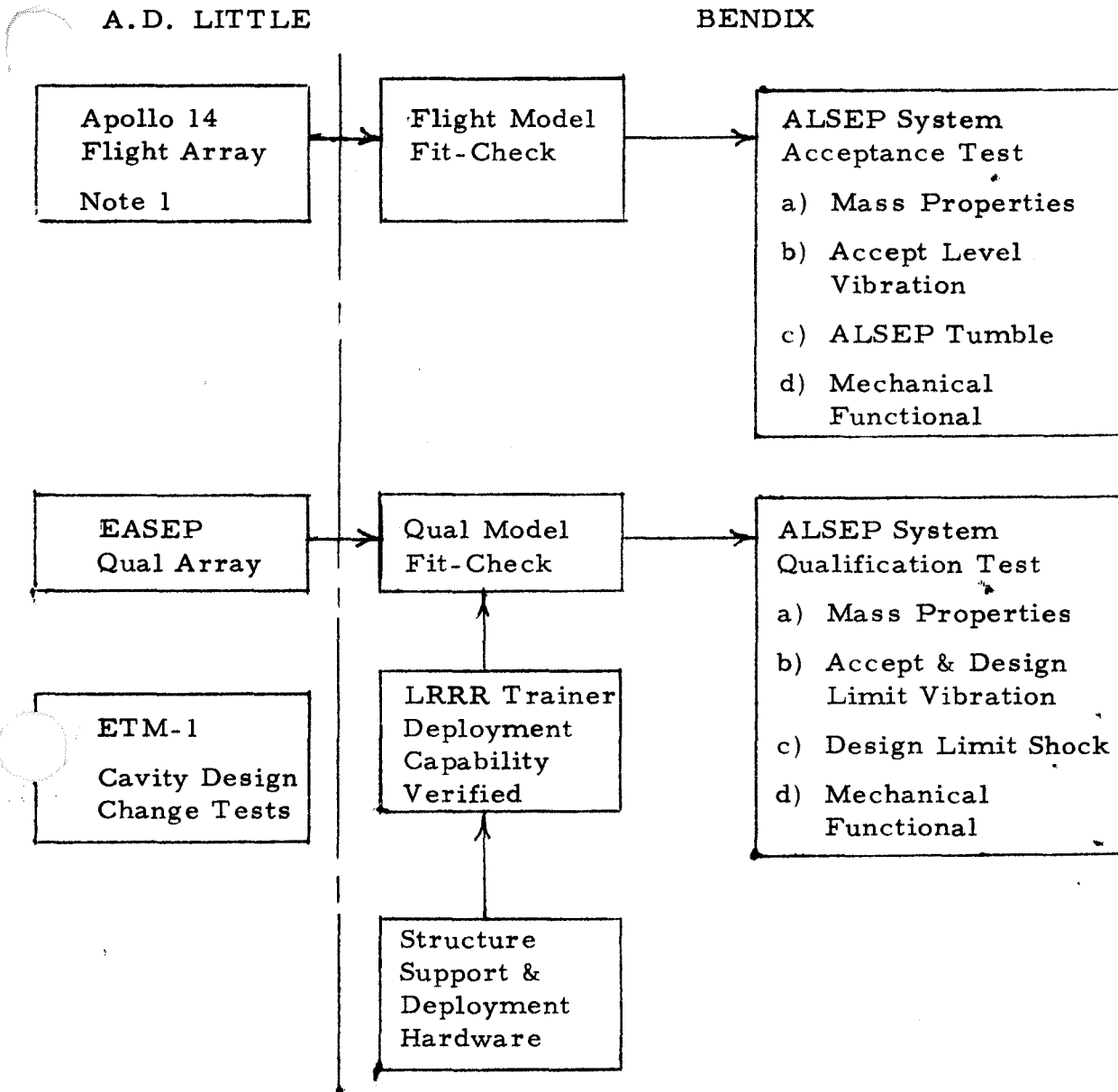
APOLLO 11 LRRR READINESS QUALIFICATION RATIONALE
 DIAGRAM "A"

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Note 1 - Flight array will be subjected to vibration to acceptance level and alignment tests by A. D. L .

DIAGRAM "B"

LRRR READINESS QUALIFICATION RATIONALE FOR
APOLLO 14