



NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
MANNED SPACECRAFT CENTER
HOUSTON, TEXAS 77058

REPLY TO
ATTN OF: EG8-2-PP7-71-PP-438
Contracts NAS 9-4065
NAS 9-10356

FEB 18 1971

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Gentlemen:

There have recently been several occasions during which problems were experienced at KSC and Bethpage because of discrepant K-start tapes. NASA has reviewed current Delco and MIT procedures and has determined that some minor changes are in order.

At the present time, there are several sources from which requirements to change K-start tapes can originate. Among these are TRSD (test requirements and specification document), TCOP (test and checkout plan), checkout meetings, steering committee meetings, program release documentation, and others. However, there are only three entities which can approve these changes for implementation; these are the steering committee, the checkout coordination committee, and the software control board.

I. Delco Electronics

Delco has released document AP-70-00845 dated December 28, 1970, entitled "K-Start Tape Maintenance Procedure." This procedure is considered satisfactory with the following minor exceptions:

1. Field Site Coordination, paragraph 4.2.4, is accomplished after the tape is completed. It is recommended that Milwaukee personnel who are to prepare the tape review requirements thoroughly with Delco and NASA field personnel who are to use the tape before the tape is manufactured. The purpose of this review is to assure that requirements have been correctly interpreted before the tape is delivered for use at the field site.

2. This procedure correctly indicates that changes can originate with either the checkout coordination meeting or the steering committee meeting. MSC requests that in the future, Delco forward a letter to MSC and KSC acknowledging any and all changes to be made to Delco's K-start tapes as a result of direction from either the checkout or the steering committee. This acknowledgement should be forwarded to MSC and KSC as soon as the official meeting minutes have been received by Delco. The purpose of this request is to assure that all affected parties are informed in advance of a planned change.

3. In addition to the tape listing, a program flow description should be delivered to the field site. Also, changes to the previous program should be identified. This will aid in revision to the vehicle test procedure for vehicle checkout.

II. MIT-Cambridge

For Apollo 15 and subsequent, MIT is responsible for four IM tapes--mission load, simflight, IMU performance, and RR simflight--and five CSM tapes--mission load, G&N/LV polarity, G&N/LV simflight, CSM simflight, and IMU performance.

1. Because of the status of the Apollo program, there will be few changes to K-start tapes except those required by flight program changes. MIT has been identifying changes informally to all tape listings; NASA desires that these changes be identified in written form such that comparison to the spacecraft checkout procedure can be expeditiously implemented. It is also requested that a flow description be provided with these tapes so that changes to the spacecraft checkout procedure may be more readily recognized.

2. MIT is requested to notify MSC of changes to be implemented per direction of the checkout committee and the steering committee as indicated in paragraph I.2. above.

III. In this phase of the Apollo program, few changes will be made except for those associated with flight programs. All K-start tape changes that affect the existing spacecraft procedures should be fully coordinated with KSC, Bethpage, and Downey before fabrication of the tape. In addition, when there is no intended functional change required to the tape, the revised or new tape must be checked to assure that it is compatible with planned spacecraft checkout procedures.

It is believed that present procedures, with the minor modifications indicated above, will effect adequate control and coordination of K-start tapes. Your adherence to these plans is requested.

Sincerely yours,

Original Signed by

Ralph Albon
Project Officer, G&N
Apollo Spacecraft Program Office

cc:
Delco-Houston
Delco-KSC/J. P. Kaiser
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