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

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OFFICE OF THE ADMINISTRATOR

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6 NOV 1969

MEMORANDUM

TO: Mr. I. Nevin Palley
DOD Co-Chairman, SACC

SUBJECT: MOL Acquisition and Tracking System and Mission Development
Simulator

The attached correspondence is furnished for the information of the
DOD members.

It is the NASA plan that this and any subsequent work statements
involving MOL hardware will be coordinated with SACC members.

Floyd J. Sweet
Floyd J. Sweet
Secretary, SACC

Attachment: Letter, Dr. Newell to
Dr. McLucas, dated
Nov. 6, 1969 (BYE 17552/69-3)
w/attachment (BYE 17553/69-2)

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OFFICE OF THE ADMINISTRATOR

7 NOV 1969

Honorable John L. McLucas
Under Secretary of the Air Force
Washington, D. C. 20330

Dear Dr. McLucas:

During the past several weeks, a work statement has been prepared outlining a study of potential applications to NASA missions of the MOL Acquisition and Tracking System and the Mission Development Simulator. The work statement, a copy of which is attached, represents a joint effort of NASA and Air Force personnel.

By separate correspondence, we are forwarding a MIPR providing the necessary funds to accomplish the study and would appreciate your proceeding with the contracting as soon as convenient.

Although it is now too early to predict the outcome and activity resulting from the study, it is apparent that certain of the operating characteristics, i.e., pointing and tracking, of the experiment could be of continuing interest to the Air Force. Consequently, we invite Air Force technical participation in this effort. It would expedite coordination if your representatives would make appropriate arrangements through Mr. William G. Schneider, Director, Apollo Applications Program.

Sincerely,

Homer E. Newell
Associate Administrator

Enclosure (BYE 17553/69-1)

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STATEMENT OF WORK

1. Introduction

The USAF's Manned Orbiting Laboratory (MOL) Program has advanced many technologies and has fostered the development of several systems which potentially have utility in applications other than MOL. The termination of that program has provided the opportunity for the use of selected MOL-developed hardware by NASA, the primary systems identified herein for further study being the Acquisition and Tracking System (ATS) and the associated Mission Development Simulator (MDS).

In the MOL System, the ATS consisted of a high-performance telescope, providing the astronaut a wide range of magnifications and fields-of-view. A control system capable of accurate and automatic aim-point tracking would have permitted high resolution viewing of the ground through the telescope. The MDS reproduces this orbital viewing and provides a dynamic means for quantitative investigation and planning of man's role in the mission.

G. E. is therefore requested to perform a study to provide NASA with information required to determine the feasibility and advisability of:

- a. Integrating the ATS into the Saturn V Workshop (AAP-1) and,
- b. Utilizing the MDS, in its existing or modified configuration as a research tool in determining the value of manned



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Optical Systems in earth survey space missions.

2. Study Plan

This study will be performed within a period of 60 consecutive calendar days from the date of go ahead. The products of the study be:

- a. A presentation at the end of the first 30 days to consist of an oral progress report on the overall study and an unclassified descriptive document on a Manned Tracking Telescope for AAP (defined below in Task D).
- b. A final summary briefing and written report, the contents of which are defined in the Tasks below.

3. Study Tasks

- a. In conjunction with ITEK Corporation, identify, locate and determine the status of all applicable hardware and software from the previous contract. For the purposes of the study G. E. shall assume the GFE availability of all MOL-ATS hardware and software and all MOL mission development simulator hardware and software and associated test and manufacturing equipment produced under the AF₀MOL contract. Identification of any applicable hardware or software which appears in jeopardy will be immediately brought to the attention of the Government.
- b. In conjunction with the ITEK Corporation and NASA (MSFC) personnel, perform a configuration study for adaptation of the ATS to AAP-1. This study task shall include consideration of the AAP mission

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plans and vehicle characteristics to determine a recommended installation geometry. The recommendation should be governed by the desire for minimum total program cost and schedule impact.

c. In conjunction with the ITEK Corporation and NASA (MSFC) personnel perform the following interface studies to evaluate the effects of the new program on the ATS and the effects on AAP-1 of mounting the ATS:

1. Compare the differences in the environmental specifications between the MOL and APP systems and assess impact on the existing ATS design.
2. Define the thermal interface requirements and conduct supporting preliminary thermal analysis.
3. Define and evaluate the structural interface requirements.
4. Define the electrical interface requirements.
5. Define the pointing and control interface requirements.

d. Generate an unclassified document for release within 30 days from the initiation of the study contract which defines the ATS system characteristics and interface requirements in sufficient detail to enable NASA and its supporting contractors to establish a detailed integration plan and integration cost estimate. This document should include both hardware and software interface requirements and any facilities requirements associated with installation and preflight preparation of the system.

e. Following the submittal of the documentation in Task D, provide, on an as required basis, information to NASA and NASA contract personnel in support of the generation of an integration plan for the ATS on AAP-1.

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f. Perform the following acquisition program planning:

- 1. Generate a minimum change, minimum time program plan to integrate the ATS into AAP-1. Identify the high risk areas.**
- 2. Develop alternative plans for high risk areas as a function of system performance and capabilities.**

g. Identify flight system adders which will enhance the experimental value of the ATS/AAP combination and present these results in a manner which permits the comparison of cost, schedule and experimental capability.

h. ATS Flight Experiments - Describe and evaluate candidate ATS flight applications in the areas of earth surveys, navigation, astronaut performance and man/machine interface evaluations, which exploit the full capability of the ATS equipment and maximize the contribution of man.

i. Define those MDS simulations required in support of ~~XXXXXXXX~~ an ATS/AAP system. This definition should consider both those applications using the ATS independently and in support of the Earth Resources AAP experiment package currently under evaluation within NASA.

j. Simulator Options - Delineate the baseline simulator system, less the highly-classified elements peculiar to MOL, and specify those simulations in support of manned earth surveys missions which are compatible with that system. Define simulator system adders which are necessary for the conduct of those simulations which cannot be performed with the baseline simulator system. Present the results in a manner which compares the cost, schedule, and performance options.

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4. Study Guidelines

a. Security - With the exception of the document defined in Task D, the study shall be performed in accordance with the instructions contained in the security annex to the contract. New documentation developed under this contract shall be classified in accordance with the security annex and the Industrial Security Manual. However, new documents will be handled in the BYEMAN system until released by the contracting officer.

b. Additional GFE - The study contractor shall be provided the AAP vehicle performance characteristics, AAP mission profiles and plans, earth survey mission objectives, and ERS product for stimulus material generation.

5. Proposal

Not as part of this study, at no direct expense to the government, and contingent on the results of the study, the contractor will prepare a detailed proposal and program plan including costs to sanitize existing applicable BYEMAN documentation.

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