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APOLLO

GUIDANCE AND NAVIGATION

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E-1142

WEIGHT AND BALANCE REPORT
(UNCLASSIFIED TITLE)
15 MARCH 1962

MIT INSTRUMENTATION LABORATORY

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ABSTRACT

Report E-1142 presents estimates of total weights in groups of planned APOLLO Guidance and Navigation equipments. The estimate is to be revised periodically, and the first issue is as of 15 March 1962.

The balance portion of the required report is to be part of subsequent editions. The estimate of balance will follow as soon as possible after space allocation has been established.

APOLLO GUIDANCE AND NAVIGATION EQUIPMENT WEIGHT AND BALANCE REPORT

INTRODUCTION

This report is submitted in compliance with the documentation requirement for weight and balance data.

At this early stage of Guidance and Navigation System design, this first report is presented in terms of the combinations of subsystems and equipments to be furnished by various Industrial Support Contractors. As design progresses, estimates of individual equipments within these groups will be developed and forwarded in later editions of this report. The present estimates are contained in Table 1.

The data in Table 1 may be compared with previous estimates contained in MIT Report R-339, and the following rearrangements and new designations are apparent. The later designations are to be used henceforth.

R-339	E-1142
IMU	IMU
OMU	SXT, SCANNER
RDMU	FAE
DCU	D & C
Electronics	PSA
Stepping Motors for A/P Commands	CDU
Chart Book and Star Catalog	M & VD
AMW	Not used

It should be noted that the total estimate of weight in R-339 has not been changed for the comparable equipments. The present estimate of weight of total equipment, less radar, is within the 240-280 pounds of R-339.

The data of Table 1 do not include the weight estimates for navigation base, mounting frames, racks, etc., or for spare parts or redundant equipment. At the present writing, the Laboratory is planning to provide some redundant equipments to meet the reliability requirements and to adopt a spares program to meet the objectives of the Maintenance Plan. Details of structures and mounting requirements will be determined by the results of interface negotiations with the spacecraft contractor.

It is considered premature to submit any estimates of the balance data for the subsystems at this time. Such balance data may be developed when the form factor requirements have been established, and MIT is unable to proceed very far along these lines until the spacecraft contractor has made an allocation of space within the spacecraft for Guidance and Navigation.

AGE WEIGHT AND BALANCE REPORT

Table 1

Short Title	Descriptive Title	Weight Pounds
PSA	Power and Servo Assembly	20
IMU	Inertial Measurement Unit (Gimbal Assembly)	66
CDU	Coupling Display Unit (Total of 3)	
SXT	Sextant and Scanner	83
M&VD	Map and Visual Display	
D&C	Display and Controls	
AGC	APOLLO Guidance Computer	100
	Miscellaneous Cabling	
SFA	Sun Finder Assembly	11
FAE	Final Approach Equipment (Radar*)	40
	Total	320

*Estimated range of possible values from 10 to 70 pounds.