

classification has many shortcomings stemming from the fact that computers do not fit neatly into such narrow classifications, and there are many cases where a single computer installation functions within both categories in meeting varying program demands. Further, the utilization figures are not necessarily a meaningful comparison between computers, since they are not an adequate description of the utility of the computers in their diverse applications. However, in the absence of a universally accepted computer classification system, which would not only reflect the different purposes for which computers are used but also the operating requirements surrounding their uses, the present A and B categorizations have been used as a reasonable basis for making appropriate distinctions in applying policies.

The Manned Space Flight organization for managing its computer resources has been structured to carry out overall programs of which the computers are an integral part. Because of the differing missions at each of the MSF Centers, the computer organizations which have been developed are also different. However, in all cases, the thread of similarity which runs through each of the Center's organizations is that the director of the Center is the final authority for computer policies at that Center. All computer acquisitions must be approved at his level prior to submission to NASA Headquarters for final approval.

Programming and computer operation at each center is carried out primarily by contractor support personnel on a task-order basis. The contractor method of supporting computers in MSF has provided a highly trained staff through the peaks and valleys of work requirements. The total number of contractor personnel used by the MSF Centers in computer support of all programs is approximately 2200.

While the capability of MSF computers is expanding to meet increased program requirements, with equipment changes to third-generation hardware, the FY 1967 and FY 1968 costs show a significant decrease. This reduction can be attributed to both the third-generation hardware, which has a greater computation per dollar ratio, as well as to the centralization of computational capability. Both of these trends are continuing.

The natural growth that has been characteristic of the computer industry has resulted in a whole new generation of computer equipment that has necessitated frequent re-appraisals of existing management techniques and the development of new procedures, such as the ADP Resources Sharing Panel, which have immeasurably improved our ability to carry out manned programs.

There is a continuing awareness in the MSF program that the computer is inextricably entwined with the achievement of manned space-flight goals. The application of computers must be viewed in terms of