

The development and growth of NASA's laboratory competence has been accomplished in several ways that are indicative of the changing mission goals that have been and must be assigned to research and development organizations.

When NASA was established, the research capabilities of the National Advisory Committee for Aeronautics—the Langley, Lewis, Ames, Wallops, and Flight Research Centers—were brought in to serve as the nucleus for this country's aeronautical and space research and development.

The research laboratories of the NACA still serve as a major NASA element leading the forward thrust of our aeronautical and space technology. Each of these research centers directs limited flight mission development projects as a means of using its capabilities to assist NASA in handling its large growth in flight activity and also to keep so involved in real flight problems that research activities are realistically directed toward advancing the country's capability in aeronautics and space.

Among the flight development activities that have been placed in these research centers are, for example, the responsibility for directing the development of the Centaur rocket at the Lewis Research Center, the Pioneer Solar probes at the Ames Research Center, the biosatellite projects aimed at determining the effects of the space environment on life forms at the Ames Research Center, the Lunar Orbiter project directed by the Langley Research Center. Because their emphasis is on a broad program of research and technology development, their activities are characterized by relatively stable workloads that are not subject to the rapid buildup and phasedown characteristic of individual flight mission projects.

In addition to the research capabilities required to carry out the assignments made by the National Aeronautics and Space Act to the National Aeronautics and Space Administration, the Congress assigned to NASA a development and space flight operations responsibility that required a scientific and engineering development capability beyond that available in NACA.

As a result of authorities specified in the National Aeronautics and Space Act of 1958, the Vanguard team of the Naval Research Laboratory was transferred to NASA and formed the nucleus for NASA's Goddard Space Flight Center in Greenbelt, Md.

Incidentally, they were supplemented by a group out of the Signal Corps activities in Fort Monmouth that later became the leading people in the weather, meteorological, and atmospheric science areas.

The Development Operations Division of the Army Ballistic Missile Agency was transferred to NASA to form the basis for the Marshall Space Flight Center in Huntsville, Ala. The Jet Propulsion Laboratory operated for the Army by the California Institute of Technology was transferred to NASA, and you will hear more about that from Dr. Pickering.

A cadre of personnel of the Langley Research Center was assigned to the space task group to initiate this country's first manned space flight activities in Project Mercury. In 1961 when the national commitment was established to develop a space flight capability sufficient to land men on the moon in this decade, the space task group became the core of the Manned Spacecraft Center in Houston that is now responsi-