OFFICE OF AEROSPACE RESEARCH

Office of Aerospace Research. Air Force Research Division constituted, activated, and organized 15 January 1960. Relieved of assignment to AFSC, redesignated Office of Aerospace Research, and designated as a separate operating agency, I April 1961; inactivated 1 July 1970.

LINEAGE

STATIONS
Hamilton AFB, CA
HQ Washington, DC

ASSIGNMENTS

COMMANDERS
MG Don R. Ostrander
BG Ernest A. Pinson, Nov 1965

HONORS
Service Streamers

Campaign Streamers

Armed Forces Expeditionary Streamers

Decorations

EMBLEM

EMBLEM SIGNIFICANCE

MOTTO

NICKNAME

OPERATIONS
SINCE its establishment in April 1961 as a separate operating agency, the Office of Aerospace Re-

search (OAR) has been the prime research agency of the United States Air Force.

OAR operates well-equipped and expertly manned laboratories and field sites under the direction of Air Force scientists who are engaged in those areas of research most likely to contribute to the continued technological growth of the Air Force.

While OAR is concerned primarily with the acquisition of new fundamental knowledge, there is consistent emphasis given to the application of the results of the research programs to improve Air Force capabilities. The mission of OAR is performed through in-house research in the laboratories, complemented by research in university and industrial laboratories obtained through grants and contracts.
Brig. Gen. Ernest A. Pinson, former Deputy Commander of OAR, became the organization's new Cornmander in October 1965, upon the retirement of Maj. Gen. Don R. Ostrander, Commander of OAR since September 1962. General Pinson, who holds a Ph.D. in medical physiology from the University of Rochester and has completed all requirements for another in nuclear physics at the University of California, brings with him to his current assignment twenty-seven years of experience in Air Force research and development.

Although OAR has ten subordinate elements located in various parts of the United States and in two foreign countries, most of its resources are concentrated in three of these elements. The largest of these is the Air Force Cambridge Research Laboratories (AFCRL) at Laurence G. Hanscom Field, Bedford, Mass. Employing more than one-half of the assigned OAR manpower, its laboratories specialize in the environmental sciences—concerned with the earth, its atmosphere and space—and in electronics. In Fiscal Year 1966. AFCRL scientists investigated a wide variety of subjects ranging from preliminary airborne gravity measurements and development of techniques for cold fog dispersal, to improved computer processes and new antenna designs.

A first in the field of balloon development was achieved when scientists at AFCRL developed and proved a new method for the recovery and reuse of expensive research balloons.

A second component, and OAR's other major in- house laboratory complex, the Aerospace Research Laboratories (ARL) at Wright-Patterson AFB, Ohio, concentrates on research in the physical and engineering sciences. Among its continuing investigations in these fields are those involved in propulsion, hypersonic wind-tunnel techniques, solid-state physics, and mathematics.

During the past year, ARL scientists have conducted research in the field of electrofluid dynamic (EFD) processes.

These processes show great promise for future spacepower systems, which will use direct energy-conversion processes that do not employ moving mechanical parts to generate electrical power.

Another area of development which showed great promise was that pertaining to the development of an efficient inertial particle separator that could be used for military turbine-powered vehicles. The development of such a particle separator resulting in longer engine life would be especially beneficial, militarily, to helicopters and tanks.

The third major component of OAR is the Air Force Office of Scientific Research (AFOSR), Washington, D. C. AFOSR continually searches for research data in a wide range of scientific disciplines, from the behavioral sciences to nuclear physics. It has no laboratories of its own but conducts a basic-research program entirely through contracts and grants based on unsolicited proposals received from investigators in colleges, universities, and private industry throughout the United States and the free world.

Typical of the projects AFOSR supports is a research program in low-temperature physics at Stanford University that has made possible in principle a more sensitive magnetometer, a truly zero magnetic field region inside a perfect magnetic shield, a gyroscope capable of checking Einstein's general theory of relativity in a satellite experiment, and a completely new kind of guidance instrument—a free precession nuclear gyro. This gyro in turn makes possible a test of time- reversal invariance. one of the fundamental symmetry laws of physics now under question.

Another AFOSR-sponsored project is concerned with obtaining a better understanding of the phenomenon of boundary layers, thereby helping to refine the designs of advanced-type aircraft, reentry vehicles. and naval torpedoes. These boundary layers occur around every body moving through a liquid or a gas.

OAR's third and newest in-house laboratory facility, the Frank J. Seiler Research Laboratory (FJSRL), is located at the US Air Force Academy, Colo. Its scientists conduct research in the fields of chemistry, mathematics. and aerospace mechanics. Additional research is performed by Academy faculty members and selected outstanding Cadets.

At Holloman AFB, N. M., OAR has the Office of Research Analyses (ORA), an in-house analysis group working in the areas of research analysis, mission analysis. and systems analysis.

Three OAR field offices (Los Angeles, Calif.; Patrick AFB. Fla.: and Vandenberg AFB, Calif. assist OAR in its management of the Air Force Aerospace Research Support Program. This is a program which supports Air Force scientific experimenters of the Office of Aerospace Research and of the Air Force Systems Command in their investigations of the aerospace environment and its effects.

An excellent example of a project in that program consists of a series of satellites designated OV, for orbital vehicle. Aimed at conducting scientific investigations and engineering applications in a wide range of fields—from the effect of radiation on biological processes to solar-flare activity—the OV program is one of the Air Force's best bargains in space research.

The reason that the OVs can accomplish so much so efficiently is that the vehicles—some of which will carry more than a dozen experiments simultaneously— will be lofted into space on a "rides-available" basis. This significantly reduces the launch vehicle expense.

One means of sending the OVs into space is as hitchhikers on the Titan IIIC, as the Titan has a thrust capacity far beyond that required for development payloads. Obsolete Atlas ICBMs also serve as launch vehicles for the OVs. After being refurbished, they can launch two of the satellites

simultaneously. The Blue Scout, an off-the-shelf, low-cost booster, also is used to launch the OVs. The Churchill Research Range at Fort Churchill, Manitoba, Canada, once an important element of OAR. was turned over to the Canadian government on December 31, 1965. OAR, however, will continue to use the range facilities for high-latitude experiments.

Other smaller and more specialized OAR detachments include the European Office of Aerospace Research (EOAR) in Brussels. Belgium, responsible for the procurement and administration of Air Force research-and-development grants and contracts in Europe, the Near East, and Africa. These efforts are limited to those evaluated and funded by the Air Force laboratories in the United States which, by reasons of geographic or scientific uniqueness, are only obtainable overseas. The Latin American Office of Aerospace Research (LAOAR), in Rio de Janeiro, Brazil, performs a somewhat similar function in South America, but on a smaller scale.

While the in-house laboratories are the foundation on which the total OAR research program is based, their contributions to scientific research are not the sole justification for the existence of such an in-house capability. Equally important is the role of in-house research laboratories in giving the Air Force an independent scientific competence. Thus, OAR laboratory staffs also act as a panel of qualified experts to advise Air Force development organizations. and in a much broader sense, serve as a necessary link between new science and aerospace technology.

Office of Aerospace Research
Established as Air Force Research Division, a component of Air Research and Development Command, on 15 January 1960. On 1 April 1961, the division was assigned to USAF, redesignated Office of Aerospace Research, and given status as a separate operating agency. Reassigned to Air Force Systems Command on 1 July 1970 and concurrently inactivated.