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Current and proposed Government funded research and development is conducted with the anticipation that such R&D will eventually lead to a generation of new or improved microwave components and systems.

#### RESEARCH

Research is important to the Department of Defense to satisfy its overall national defense objectives for several fundamental reasons:

- (1) Only research can fill the gaps in knowledge that are the causes of many technological problems
- (2) Research is a source of new concepts which will lead to major changes in operational capability
- (3) Research is a source of insight for the policy-makers who must evaluate and react to technological developments
- (4) Today's research will lead to new products which will be incorporated in future systems

#### RESEARCH FUNDING

A number of new initiatives have been taken recently concerning education and university instrumentation in order to ensure a quality education for our future engineers and scientists. These initiatives include \$30 million per year for five years to replace obsolete instrumentation and to update obsolescent research equipment at our universities and colleges. New graduate fellowships at a level of \$12,000 per year will be awarded by the Office of Naval Research in the Fall. These ONR fellowships will be relatively few in number. Due to their relatively high funding level, however, these forty fellowships should attract the best students and should become trend setters. Other on-going efforts in the educational area are the science and engineering apprenticeship program, the ROTC scholarships, programs for historically black colleges, faculty development programs, etc. It is estimated that DoD research contracts at universities supports about 4,000 graduate students, most of them in engineering.

The fiscal year (FY) 1982 Department of Defense research budget is \$700 million. This represents about 13 percent of the total Federal support for research. The only agencies having larger basic research budgets, on a percentage basis, are the National Science Foundation (NSF) with 17 percent and the Department of Health and Human Services with 36 percent. It should be noted that basic research is only 3.5 percent of the total \$20 billion DoD budget for research in fiscal year 1982.

Seventy percent of the Department of Defense R&D is performed by industry or at Federal Contract Research Centers (FCRCs). Of the remainder, a substantial part (26 percent of the total) is performed at Government laboratories. Only a small fraction, the remaining 4 percent, is performed at the colleges and universities. However, that portion of research and development which is basic research is performed primarily at universities (44 percent). The remainder is either conducted at Government laboratories (35 percent of the total) or by industry or at FCRCs (18 percent of the total).

#### THE FUTURE

The presentation will discuss the major technical thrusts of the Department of Defense research program which are of interest to the microwave community and will attempt to forecast some of the future for microwave engineering, research, and development.