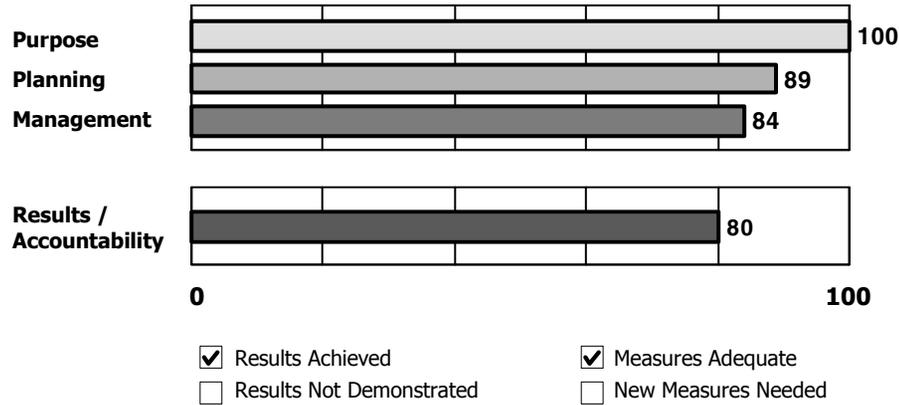


Program: Basic Research

Agency: Department of Defense--Military

Bureau: Research, Development, Test, and Evaluation



Key Performance Measures

Year Target Actual

| | | | |
|---|----------------|------|--|
| Certification in biennial reviews by technically competent independent reviewers that the supported work, as a portfolio, is of high quality, serves to advance the national security and is efficiently managed and carried out. | 2003 and later | 100% | |
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| Long-term Measure: Portion of funded research that is chosen on the basis of merit review Reduce non-merit-reviewed and -determined projects by one half in two years (from 6.0% to 3.0%) | 2005 | -50% | |
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Rating: Effective

Program Type: Research and Development

Program Summary:

The Basic Research program includes scientific study and experimentation to increase fundamental knowledge in the physical, engineering, environmental and life sciences and consists of a wide portfolio of projects. The program is carried out primarily through grants to universities and non-profits. The results of this research are expected to improve the country's defense capabilities, although the actual results of any specific project are unpredictable. Notable successes in the past have led to advances in satellite communications and imagery, precision navigation, stealth, night vision and technologies allowing greatly expanded battlefield awareness. Due to the long-term nature of research results, the R&D PART emphasizes assessment of the process of choosing funded projects and independent assessments of how well the research portfolio is managed.

The assessment indicates that the basic research program has clear purposes of providing options for new weapons systems, helping prevent technological surprise by adversaries, and developing new scientists who will contribute to the DoD mission in the future. DoD can document--through its contracts and grants management regulations, public announcements of award competitions and results from independent review panels--the methodical management of its program. Additional findings include:

1. The grants/contract solicitation, review and award processes are competitive.
2. The program is reviewed regularly by technically capable outside reviewers, which recommend improvements they would like to be implemented. They indicate that the work is of overall high quality.
3. The program has competent planning and management.
4. Earmarking of projects in the program has increased in the past decade and contribute less than the typical research project to meeting the agency's mission.

In response to these findings, the Administration will:

1. Continue to emphasize the use of independent review panels in assessing the performance of the program.
2. Work with the research community and Congress to explain the need to limit claims on research grant funds to proposals that independently can meet the standards of a strict merit-review process.

Program Funding Level (in millions of dollars)

| <u>2002 Actual</u> | <u>2003 Estimate</u> | <u>2004 Estimate</u> |
|--------------------|----------------------|----------------------|
| 1,334 | 1,417 | 1,309 |

OMB Program Assessment Rating Tool (PART)

Research & Development Programs

Name of Program: DOD BASIC RESEARCH

Section I: Program Purpose & Design (Yes, No, N/A)

| Questions | Ans. | Explanation | Evidence/Data | Weighting | Weighted Score | | |
|-----------|------|--|---------------|--|---|-----|-----|
| 1 | | <i>Is the program purpose clear?</i> | Yes | "The mission of the Defense Science and Technology (S&T) Program is to ensure that the warfighters of today and tomorrow have superior and affordable technology to support their missions and provide revolutionary war-winning capabilities." | BRP 1-1, C. | 17% | 0.2 |
| 2 | | <i>Does the program address a specific interest, problem or need?</i> | Yes | Interests/needs are (1) provide options for new weapon systems (2) help prevent technological surprise by adversaries and (3) [in the course of achieving (1) and (2)] develop new scientists who will contribute to the DoD mission in the future,. | Basic Reseech Plan (BRP), page 1-1, B | 17% | 0.2 |
| 3 | | <i>Is the program designed to have a significant impact in addressing the interest, problem or need?</i> | Yes | Strategic Research Areas are identified in the Basic Research Plan, which identifies, for the research community, areas of interest for which funding is available. Broad Agency Announcements (BAAs) detail particular areas of interest by funding Service or Agency, but also allows researchers to propose specific research approaches. | BRP, Chap VI, "Strategic Research Areas" and Broad Agency Announcements (BAAs) from individual Services and Agencies. | 17% | 0.2 |
| 4 | | <i>Is the program designed to make a unique contribution in addressing the interest, problem or need (i.e., not needlessly redundant of any other Federal, state, local or private efforts)?</i> | Yes | DoD tends to stay away from investments in areas that already are handled adequately by, say, NSF, or by the private sector, unless progress in those areas is too slow for DoD needs. A DoD process, called the Reliance Process has eliminated most of the duplication of research responsibilities within the Department. | Example: ONR Directive Ser 01/8225. "DoN Science and Technology National Naval Program Guidance" | 17% | 0.2 |
| 5 | | <i>Is the program optimally designed to address the interest, problem or need?</i> | Yes | BAAs are built around competition and identification of problems and opportunities by others, as well as by the Services. | Service BAAs | 17% | 0.2 |

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|----------|---|-----|--|---|-----|-----|
| 6 (RD 1) | <i>Does the program effectively articulate potential public benefits?</i> | Yes | In addition to publications and testimony laying out the benefits for national security (and to the Nation more generally), hold many conferences at which they make known the Department's sponsorship of research in certain general areas of investigation, along with the potential public benefits. | BRP 1-1 C. Also BAAs themselves, which communicate with the relevant scientific public. | 17% | 0.2 |
| 7 (RD 2) | <i>If an industry-related problem, can the program explain how the market fails to motivate private investment?</i> | N/A | Not industry-related. DoD's programs are designed to benefit a National need that is not already addressed by the private sector. | | 0% | 0.0 |

| | | | | | | |
|----------------------------|--|--|--|--|-------------|-------------|
| Total Section Score | | | | | 100% | 100% |
|----------------------------|--|--|--|--|-------------|-------------|

Section II: Strategic Planning (Yes, No, N/A)

| | Questions | Ans. | Explanation | Evidence/Data | Weighting | Weighted Score |
|---|--|-------------|---|---|------------------|-----------------------|
| 1 | <i>Does the program have a limited number of specific, ambitious long-term performance goals that focus on outcomes and meaningfully reflect the purpose of the program?</i> | Yes | Defense Technology Area Plan has goals for the various technologies supported by DoD. Basic research feeds into those technologies and hence contributes to the meeting of the goals. | Defense Technology Area Plan. Also, Service or Agency BAAs. | 11% | 0.1 |
| 2 | <i>Does the program have a limited number of annual performance goals that demonstrate progress toward achieving the long-term goals?</i> | Yes | Program uses semi-annual reviews by outside review panels to assess the health of the program. They assess program content, management abilities, program results. | Instructions for independent reviewers. | 11% | 0.1 |
| 3 | <i>Do all partners (grantees, sub-grantees, contractors, etc.) support program planning efforts by committing to the annual and/or long-term goals of the program?</i> | No | Many recipients of these Basic Research funds go around the process and DoD has not been notably successful in stopping them. This is in contrast to the situation at NIH, where past leadership and the affiliated research community opposed Congressional earmarking years ago and has been highly successful in nearly eliminating earmarks (or moving them to other agencies). | Increasing earmarks. | 11% | 0.0 |

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|----------|---|-----|---|---|-----|-----|
| 4 | <i>Does the program collaborate and coordinate effectively with related programs that share similar goals and objectives?</i> | Yes | DoD works with many other agencies as well as industry in coordinating and executing their program. They have interagency agreements and work through such mechanisms as the NSTC. The record isn't perfect, however, with some degree of parochialism in research agendas. | Various Memoranda of Understanding or Memoranda of Agreement with other related Federal agencies. Also, NSTC charter & membership | 11% | 0.1 |
| 5 | <i>Are independent and quality evaluations of sufficient scope conducted on a regular basis or as needed to fill gaps in performance information to support program improvements and evaluate</i> | Yes | Reviews are conducted at least once every two years by outside review panels made up of academics, industrial researchers and researchers from other agencies. | Instruction pamphlets, evaluation forms and membership lists from 2001 independent reviews.. | 11% | 0.1 |
| 6 | <i>Is the program budget aligned with the program goals in such a way that the impact of funding, policy, and legislative changes on performance is readily known?</i> | Yes | Basic research budget is divided into a few distinct programs which are traceable in R&D tables, and show up as line items in the President's Budget. | R-1s. | 11% | 0.1 |
| 7 | <i>Has the program taken meaningful steps to address its strategic planning deficiencies?</i> | Yes | As an illustration of steps taken, in 2001, two recommendations from the independent review group addressed intellectual property rights (IPRs) and Strategic Research Areas and made recommendations in these areas. The IPR recommendations were implemented, while the SRA recommendation was discussed thoroughly, but declined due to considerations beyond those addressed by the review group. | TARA recommendations. IPR memo Jan 31, 2002 and New IPR Guidelines. | 11% | 0.1 |
| 8 (RD 1) | <i>Is evaluation of the program's continuing relevance to mission, fields of science, and other "customer" needs conducted on a regular basis?</i> | Yes | The review of specific research areas is part of preparation for program announcements as well as review panel findings and the TARA findings reflected in recommendations under II-7. | TARA recommendations. IPR memo Jan 31, 2002 and New IPR Guidelines. | 11% | 0.1 |
| 9 (RD 2) | <i>Has the program identified clear priorities?</i> | Yes | Laid out in the Basic Research Plan and the BAAs. | BRP, Chap VI and BAAs. | 11% | 0.1 |

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|----------------------------|-------------|------------|
| Total Section Score | 100% | 89% |
|----------------------------|-------------|------------|

Section III: Program Management (Yes,No, N/A)

| Questions | Ans. | Explanation | Evidence/Data | Weighting | Weighted Score |
|-----------|------|-------------|---------------|-----------|----------------|
|-----------|------|-------------|---------------|-----------|----------------|

| | | | | | | |
|---|--|-----|--|---|-----|-----|
| 1 | <i>Does the agency regularly collect timely and credible performance information, including information from key program partners, and use it to manage the program and improve performance?</i> | Yes | Independent review panels for each of the Services, made up of academic researchers, industrial researchers and scientists from other Federal agencies, monitor the quality of the research programs. | Back-briefing material from the Air Force Scientific Advisory Borad of the Air Force Office of Scientific Research (AFOSR) independent review. | 11% | 0.1 |
| 2 | <i>Are Federal managers and program partners (grantees, subgrantees, contractors, etc.) held accountable for cost, schedule and performance results?</i> | Yes | Independent review panels for each of the Services monitor the quality of the research programs. In addition, on a less formal level and probably of more importance, the research offices within each Service are under great pressure from their commanding officers to stick to budgets and schedules, as funds are needed for other operational programs.' | Back-briefing material from the Air Force Scientific Advisory Borad of the Air Force Office of Scientific Research (AFOSR) independent review. | 11% | 0.1 |
| 3 | <i>Are all funds (Federal and partners') obligated in a timely manner and spent for the intended purpose?</i> | Yes | Obligation rates are carefully monitored by Service auditors and OSD. | Obligation reports prepared by the three Services and WHS. | 11% | 0.1 |
| 4 | <i>Does the program have incentives and procedures (e.g., competitive sourcing/cost comparisons, IT improvements) to measure and achieve efficiencies and cost effectiveness in program execution?</i> | No | No known formal procedures in place that provide incentives to managers. The most significant incentives are institutional, not reports-driven. If the research program doesn't perform, program managers lose money to nearer-term demands. In addition, they have competitive award processes mandated by regulation and statute, which contibute to program efficiencies. | DoD Regs DoD 3210.6-R Note that OMB, through A-21 specifies what kind of cost elements are allowable under grants. In some cases, OMB has discouraged the collection of some types of data that might be used in measurement. | 5% | 0.0 |
| 5 | <i>Does the agency estimate and budget for the full annual costs of operating the program (including all administrative costs and allocated overhead) so that program performance changes are identified with changes in funding levels?</i> | Yes | Full cost budgeting is required of all basic research. Number of programs funded is a function of the money available. | Budget documents presented during the Fall review. | 11% | 0.1 |
| 6 | <i>Does the program use strong financial management practices?</i> | No | DFAS reporting--reporting of obligations and expenditures--is weak, causing uncertainty in financial status in reviewing offices. | | 11% | 0.0 |
| 7 | <i>Has the program taken meaningful steps to address its management deficiencies?</i> | Yes | DoD IG report on the University Research Initiative program documents a few weaknesses, and the Services (A & AF) indicated intent to change. Both AF and A can document change. | DoD IG report (98-198) on University Research Initiative program, and subsequent A and AF implementation documents. | 11% | 0.1 |

| | | | | | | |
|-----------|---|-----|---|--|-----|-----|
| 8 (RD 1) | <i>Does the program allocate funds through a competitive, merit-based process, or, if not, does it justify funding methods and document how quality is maintained?</i> | Yes | Basic research is awarded overwhelmingly through grants, which regulations specify should be competitive. | BAAs and DoD Grant Regulations: DoD 3210.6-R. | 11% | 0.1 |
| 9 (RD 2) | <i>Does competition encourage the participation of new/first-time performers through a fair and open application process?</i> | Yes | There is a roughly 12% turnover per year in universities receiving grants from DoD. The big universities (with very large portions of the funding) always receive funding, but there is a not insignificant turn-over on the margins. | Chart of university turnover, DoDGR DoD 3210.6-R, also EPSCoR program. | 11% | 0.1 |
| 10 (RD 3) | <i>Does the program adequately define appropriate termination points and other decision points?</i> | Yes | Generally, 1, 2 or 3 yr. periods for individual grants, as specified in BAAs. However, there is no formal definition of termination points with regard to strategic research areas. | BAAs | 11% | 0.1 |
| 11 (RD 4) | <i>If the program includes technology development or construction or operation of a facility, does the program clearly define deliverables and required capability/performance characteristics and appropriate, credible cost and schedule goals?</i> | NA | The basic research program does not fund facilities. | | 0% | |

Total Section Score **100%** **84%**

Section IV: Program Results (Yes, Large Extent, Small Extent, No)

| | Questions | Ans. | Explanation | Evidence/Data | Weighting | Weighted Score |
|---|---|------|--|---|-----------|----------------|
| 1 | <i>Has the program demonstrated adequate progress in achieving its long-term outcome goal(s)?</i> | Yes | The Basic Research program contributes significantly to the achievement of the DoD mission. Both external and internal reviews indicate that reviewers believe that the program contributes materially to the Department's capabilities. | Internal and external review group reports. For example, the back-briefing to the AFOSR, cited above. | 20% | 0.2 |

| | |
|---------------------------------------|---|
| Long-Term Goal I: | Avoid technological surprise from adversaries and provide options for future defense systems. |
| Target: | By nature of Basic Research, no quantitative target. |
| Actual Progress achieved toward goal: | |
| Long-Term Goal II: | |
| Target: | |

| |
|---------------------------------------|
| Actual Progress achieved toward goal: |
| Long-Term Goal III: |
| Target: |
| Actual Progress achieved toward goal: |

2 *Does the program (including program partners) achieve its annual performance goals?* **Large extent** Its annual performance goals are largely not measurable directly, but rather through process measures. Semi-annual reviews generally indicate well executed programs, but not all DoD Services and Agencies measure results equally well. The Army, through the Army Research Laboratory's assessment process, does particularly well. Others lag. External review reports. 20% 0.1

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|---|
| Key Goal I: Performance Target: Actual Performance: |
| Key Goal II: Performance Target: Actual Performance: |
| Key Goal III: Performance Target: Actual Performance: |

Footnote: Performance targets should reference the performance baseline and years, e.g. achieve a 5% increase over base of X in 2000.

3 *Does the program demonstrate improved efficiencies and cost effectiveness in achieving program goals each year?* **Small extent** DoD works very hard to achieve improved efficiencies in its enacted program, and generally does well in executing the approved program. However, it has done less well in convincing Congress and the academic community of the need to support its recommended program than does, for example, NIH, which has an unusually low number of earmarks in its program compared to DoD. This results in a decreasing portion of the research total that is productive to the Department's goals. Congressional reports. 20% 0.1

4 *Does the performance of this program compare favorably to other programs with similar purpose and goals?* **Yes** DoD basic research sponsorship is generally considered on par with the best of other Federally-sponsored research. Independent review panels, number of Nobel Prize winners supported prior to receipt of their Prizes. 20% 0.2

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|----------|---|-----|--|---------------------------|-----|-----|
| 5 | <i>Do independent and quality evaluations of this program indicate that the program is effective and achieving results?</i> | Yes | See various notes above. | Outside review summaries. | 20% | 0.2 |
| 6 (RD 1) | <i>If the program includes construction of a facility, were program goals achieved within budgeted costs and established schedules?</i> | NA | Does not include construction of facilities. | | 0% | |

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|----------------------------|--|--|--|--|-------------|------------|
| Total Section Score | | | | | 100% | 80% |
|----------------------------|--|--|--|--|-------------|------------|