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Fundamental Research Guidance

Department of Defense
OFFICE OF PREPUBLICATION AND SECURITY REVIEW

Background

The term “Fundamental Research” was defined in National Security Decision Directive – 189 (NSDD-189) as *“basic and applied research in science and engineering, the results of which ordinarily are published and shared broadly within the scientific community, as distinguished from proprietary research and from industrial development, design, production, and product utilization, the results of which ordinarily are restricted for proprietary or national security reasons.”* NSDD-189 states that, to the maximum extent possible, the products of fundamental research are to remain unrestricted. In practice this means that Federal agencies must not place restrictions on the type of personnel that can perform on fundamental research awards (e.g. NOFORN restrictions), and agencies should not use publication reviews that subject research to export control restrictions according to the Export Administration Regulations (EAR) or the International Traffic in Arms Regulations (ITAR).¹

Implementation within DoD

NSDD-189 is implemented within the DoD by the May 24, 2010 Memorandum “Fundamental Research” from then-Under Secretary of Defense for Acquisition, Technology, and Logistics, Ash Carter (commonly referred to as the “Carter Memo”). This memorandum is further incorporated into DoD policy and practice through references in the Defense Federal Acquisition Regulation Supplement (DFARS) clause 252.204-7000, DoD Instruction (DoDI) 5200.48 “Controlled Unclassified Information” (including the implementation Memorandum “Clarifying Guidance for Marking and Handling Controlled Technical Information in accordance with Department of Defense Instruction 5200.48”), and the Science and Technology (S&T) Protection Guide published by the Under Secretary of Defense for Research and Engineering. The Carter Memo states that research funded by the 6.1 budget activity should always be designated as fundamental research (6.2 as well, if conducted on a university campus) unless controls are mandated by statute, regulation, or executive order². The Carter Memo also states that activities funded by the 6.3 and higher budget activities may be designated as fundamental if the DoD Component would like to do so. Fundamental research includes the intent to publish and share results openly and should not be subjected to approval-based publication constraints.

Determining When a Topic is Fundamental

Under the Carter Memo, research funded by the 6.1 budget activity or 6.2 research conducted on a university campus is fundamental. For other research categories, the Department must be deliberate when deciding that a particular research topic is appropriate for openly published fundamental research. Appendix B of the Under Secretary of Defense for Research and Engineering’s S&T Protection Guide contains a Fundamental Research Review to assist S&T Managers with determining whether a particular research topic should be developed as fundamental. This review contains a series of questions, and a topic should only be designated as fundamental research if all of the questions can be answered in the affirmative. This decision should be made pre-award and should rarely be reassessed. Over-controlling research that could otherwise be fundamental risks forfeiting the benefits below.

Benefits of Fundamental Research

Beyond any regulatory or policy requirements, fundamental research is vital to the DoD mission to produce maximum technological advantage to the warfighter. Transformative technologies generally

¹ Individual research security reviews may still be carried out on key personnel according to NSPM-33 and the June 2023 Memorandum, “Policy for Risk-Based Security Reviews of Fundamental Research”.

² Fundamental Research is distinct from the definition of basic research (found in 32 CFR 273.2) and applied research (found in 32 CFR 37.1220). But see also the Carter Memo distinguishes 6.1 and 6.2 research on university campuses.

come from unrestricted research conducted by the most talented researchers in a collaborative, open environment. Attempts to constrain the open research environment are likely to be counterproductive to the DoD mission in that the benefits derived from participation in the open research environment by DoD-funded researchers (i.e. quickly developing breakthrough ideas that can translate to future critical technologies) greatly outweigh any security benefit achieved by placing controls on fundamental research. Other nations also utilize openly published fundamental research in an attempt to move faster than their competitors in developing next-generation technologies. In order for the Department to out-innovate near peer competitors, it is essential that unrestricted fundamental research be used whenever possible in accordance with the Fundamental Research Review questions so that the U.S. maintains an advantage in access to top scientific talent and in new ideas of defense relevance.

Considerations for Program Managers, Contracts and Grants Officers

In addition to the Fundamental Research Review described in the S&T Protection Guide, program managers, contracts and grants officers should consider the following:

1. Refrain from imposing publication review of research that has been formally designated as fundamental and is conducted by an institution of higher education or some other external research institute not controlled or operated by the Department. Such reviews tend to delay the onset of work while review language is negotiated and runs contrary to the purpose of a fundamental research designation.
2. For awards with multiple performers or prime and subawardees, consider whether some portion of the work (e.g. a subaward on an Small Business Technology Transfer award) should be designated as fundamental research even if much of the award is not fundamental. Similarly, program managers, contracts and grants officers managing research consortia should consider the potential benefits of making some portions of a research consortium fundamental, even if the overall topic would require controls that do not allow for such a designation.
3. If a portion of an award with multiple awardees is considered fundamental, avoid flowing down restrictions to awardees performing fundamental research that are inappropriate for fundamental research.
4. Aside from reviews for conflicts of interest and conflicts of commitment consistent with the June 8, 2023 Memorandum “Policy for Risk-Based Security Reviews of Fundamental Research,” from the Under Secretary of Defense for Research and Engineering, no security vetting should be done on personnel engaged in fundamental research.
5. No preapproval conditions for the addition of researchers such as students, postdoctoral fellows, laboratory technicians, or other persons not labeled as senior/key personnel by the research performer should be placed on awards for fundamental research.

Considerations for Prime Awardees

In cases where a subawardee, particularly an institution of higher education, requests that a fundamental research designation be made for the subawardee’s portion of the work, prime awardees are encouraged to contact the program manager, contracts or grants officer to ask for such a designation.

Point of Contact

For any questions or further information about the fundamental research policies of the Department, please contact Jason Day at jason.o.day.civ@mail.mil.

References

[DFARS clause 252.204-7000](#), “Disclosure of Information”
[DoD Instruction 5200.48](#), “Controlled Unclassified Information,” March 6, 2020
[DoDI 5200.48 Implementation Memorandum](#), “Clarifying Guidance for Marking and Handling Controlled Technical Information in accordance with Department of Defense Instruction 5200.48,”
[National Security Decision Directive – 189](#), September 21, 1985

[National Security Presidential Memorandum – 33](#), January 14, 2021

[S&T Protection Guide](#), March 31, 2021

[Memorandum from the Under Secretary of Defense for Acquisition, Technology, and Logistics](#),
“Fundamental Research,” May 24, 2010

[Memorandum from the Under Secretary of Defense for Research and Engineering](#), “Policy for Risk-
Based Security Reviews of Fundamental Research,” June 8, 2023