

ICAF RESEARCH AND WRITING HANDBOOK

ACADEMIC YEAR 2009-2010



NATIONAL DEFENSE UNIVERSITY
INDUSTRIAL COLLEGE OF THE ARMED FORCES
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The ICAF Research and Writing Program

Vision

ICAF graduates consistently demonstrate mastery of written communication through coherent and cogent academic and research documents that reflect the highest levels of strategic thinking.

Mission

The ICAF Research and Writing Program's mission is to ensure that all ICAF graduates are capable of writing lucid academic papers that demonstrate sound and rigorous research, command of the topic, logical organization, compelling argument, and competence in English grammar and syntax.

Philosophy

Strategic leadership rests in part on analytical and communicative intellectual power. ICAF should provide the research and writing tools and exercises to prepare our graduates to return to the professional world of high-level strategic communication.

AY 2010 Research and Writing Milestones

August 10	Receive Writing Assessment tasker from Primary Faculty Advisor.
August 10-25	<u>Prospective Fall Research Students</u> (interested in doing research in lieu on one or two electives) and <u>prospective Research Fellows</u> (interested in doing a large research project in lieu of all four electives) identify a Faculty Research Advisor (FRA). (Students interested in doing research in Spring have until October to recruit an advisor.)
August 17	Interest meeting for students considering DEPSECDEF, SECAF or Agency-sponsored research fellowship program.
August 19	Fall Electives Open House.
August 19-21	Fall Electives registration. Students selecting research options must have their Preliminary Research Topic Approval Form, Part I, signed by their FRA and Dr. Chris Lafferty, Director of Research and Writing (Rm. 328), by 21 August – <u>before</u> registering for research.
August 20	Submit writing assessment electronically to Primary Faculty Advisor.
NLT September 4	Review results of writing evaluation with Primary Faculty Advisor.
September 21	Fall Research Proposal Final Approval Form, Part II, signed by Faculty Research Advisor, due to Dr. Lafferty.
21 Oct	Spring Electives Open House.
21-23 Oct	Spring Electives Registration. Students selecting research options must have their Preliminary Research Topic Approval Form, Part I, signed by Dr. Chris Lafferty, Director of Research and Writing (Rm. 328), NLT 23 October – and <u>before</u> registering for research in lieu of electives.
November 4-6	Research Director progress check with Faculty Research Advisor and Fall Research students.
December 11	Submit Fall research final paper to Faculty Research Advisor.
December 4	Spring Research Proposal Final Approval Form, Part II, signed by Faculty Research Advisor, due to Dr. Lafferty.
18 December	All Fall research papers forwarded to Dr. Lafferty. Late papers will not be considered for awards.
February 17-19	Research Director progress check with Faculty Research Advisor and Spring Research students.
15 March	DEPSECDEF Research Fellowship papers due
<u>Before</u> Domestic Travel	Submit Spring Research Project final paper to Faculty Research Advisor.
<u>Before</u> Domestic Travel	Submit papers for CJCS & SECDEF essay competitions to Dr. Lafferty.
19 April	All Spring research papers forwarded to Dr. Lafferty. Late papers will not be considered for awards.
June 7 (tentative)	ICAF Awards and Recognition Ceremony

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CHAPTER 1

RESEARCH AND WRITING AT ICAF

Educating Strategic Thinkers

One of the major objectives supporting the mission of the Industrial College of the Armed Forces (ICAF) is to produce broadly educated strategic thinkers who possess in-depth expertise in the resource component of national security. Almost by definition, strategic thinkers are broadly educated, not narrowly trained.

A broad-based education expands and provides for the further self-administered expansion of one's horizons by developing the intellectual skills and inculcating the spirit of inquiry necessary for a lifelong pursuit of learning. Any program of study that provides such an educational experience requires its students to read (because they need to acquire knowledge); to discuss (because they need to subject their views to the rigors of dispute); to investigate (because at the strategic level, it's more about asking the right questions than answering the questions right); and to write (because they need to impose structure on their thoughts in order to communicate).

All of you who come to ICAF are successful, capable professionals. Most of you come fully prepared to discuss – you're experienced, you have strongly held opinions, and you'll be immersed in an environment where candor is encouraged and expected. Many of you come prepared to read -- you accept the inevitability of that at a graduate-level school, and besides, it's a luxury most senior level jobs don't accommodate easily. Some of you come prepared to do some writing. Probably few of you, though, come prepared to do research - it's much too academic; you've had too much of it in the past, and you don't expect to do much of it in the future; and, after all, you're preparing yourself to be a decision maker, not a scholar. Perhaps...then again, perhaps not.

What if we were to suggest to you that research and writing are incomparable instruments of intellectual development that could have a decisive effect in determining how good a decision maker you become: a true strategic thinker or a mere administrator; a rare and priceless diamond or a common, commercial rhinestone? For you to accept this proposition - which may fly well in the face of your most deeply entrenched beliefs -- we probably need, for starters, to define what we mean by research and writing.

What Is Research?

The term "research" has a myriad of different meanings depending on the context. Most of you have done academic research in your undergraduate, graduate or postgraduate work. Your job may have demanded some form of technical research; still others have been involved in scientific research.

Here at ICAF, research refers to *substantial inquiry into a problem, issue or subject area requiring the identification, collection and objective treatment of relevant evidence on all sides of the issue being investigated in order to arrive at a well-reasoned, defensible conclusion.*

Research at ICAF is an exercise in critical thinking, as opposed to a polemic or a diatribe; an investigation, not a crusade; a quest for truth, not the conveyance of

propaganda, evidence in search of an answer, not a preconceived conclusion in search of evidence.

Why Research?

To Acquire Knowledge

First, research adds to our knowledge. At least that should be its intent. In the words of the eighth-century Hindu theologian, Sankara: "Wisdom is not acquired save as the result of investigation." There is a wealth of information out there -- infinitely more than at any time in the past. However, relative to the amount of information available, there may be less knowledge today. There certainly is an overabundance of opinion -- on every conceivable topic. Opinion, however, is not knowledge; and what we want -- or what we ought to want -- is knowledge. That is what research helps us acquire.

To Aid Reason

Second, the process of doing research is a window to the process of reasoning. It is one thing to hold an opinion, an attitude, or a belief; it is quite another to understand how we arrived at such points of view -- whether through the gut or through the mind. When you enter ICAF, you come armed with many convictions. Your experience has produced what, in your mind, are unassailable truths. These convictions -- *your* truths -- many have blinded you and, in the process, may have caused you to deny the validity and even the legitimacy of other viewpoints. Research, aside from what knowledge it may afford us, has the added effect of opening our minds from the vice-like grip of certitude.

To Develop Savvy

Third, research requires you to ask good questions as well as search for answers. You learn where to look for evidence and how to weigh it. You learn what is defensible and what is not. In addition, you learn how to see through shoddy or specious reasoning. You thereby equip yourself to be a more perceptive decision maker—one who can spot the charlatans who pretend to dispense sage counsel.

Why Writing?

To Shape Strategic Thinking

Research has shown that writing activates a portion of your brain which otherwise lies dormant. Only when your hand and eye work in tandem to put those words on paper do some of those thoughts buried in the deep recesses of your subconscious come to life. Thus, writing helps you to think -- in ways that you otherwise would not.

You may argue, of course, that in the "real world" you only need to be able to produce cryptic one-page point papers and PowerPoint slides. That's more true than not. Decision makers want things brief and concise -- because they're busy; and they generally want to be briefed rather than to read. However, we're not talking about products here; that's training. We're interested in process: the process of education as a means of shaping a strategic mind. This isn't about what you're going to do. It's about how you need to think.

To Leave Your Mark

There is yet one other reason why writing should be important to you -- especially if you're a uniformed military officer. Does it ever bother you that virtually all those so-called experts on strategic affairs who appear on talk shows and whose articles appear in *The Washington Post*, the *Atlantic Monthly*, and *Harper's* magazine are civilian academicians and consultants? It should. Where are the great minds in our military establishment? Are there any? Or are they too busy putting out the daily fires?

Work is transitory. Talk is cheap. Ideas endure -- and they do so principally through the medium of writing. If Clausewitz, Mahan, and Liddell Hart, for example, are icons of strategic thought to us, it is because they transmitted their ideas -- and the wisdom embodied in those ideas -- through their writing. They have left a lasting legacy. There is absolutely no reason why our own military establishment cannot -- and should not -- be developing a new generation of Clausewitzes, Mahans and Liddell Harts who can leave a similarly rich legacy of written wisdom to future generations.

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CHAPTER 2

THE WRITING PROGRAM

Program Objectives

The ICAF Writing Program provides a variety of learning opportunities to crystallize and advance your thinking. At the same time, it provides the faculty tangible indicators of how well you're applying and extending the lessons you've learned in the classroom. Specifically, the program's objectives are to:

- Enhance student executive development processes.
- Advance student analytical and communicative intellectual power, keystones of strategic thinking.
- Reinforce the importance of improving writing abilities and, through practice, to afford opportunities for such improvement.
- Contribute to, and to provide means for, assessing, student retention, analysis, synthesis and evaluation of course material.
- Provide instructors and student faculty advisors information on the quality of both instruction and student performance.

We're concerned not only with what you learn in the classroom but with what you do with that knowledge. Writing is the *best* way we know how to improve strategic thinking and the *only* way we know to improve your writing. As the Greek Stoic philosopher Epictetus said, "If you wish to become a writer, write."

Writing Requirements

Core Courses, Regional Security Studies and Industry Studies

ICAF departments tailor writing requirements to meet course objectives. All students are required to write:

- Initial writing assessment
- Regional Security Studies policy paper (8-10 double-spaced pages)
- Core course papers, as required
- Individual Industry Studies paper
(as well as contribute to a seminar Industry Studies paper)
- Elective papers, as required

Each course syllabus specifies writing requirements; they'll vary from course to course depending on the course design. The Regional Security Studies policy paper, for example, requires you to advise a senior policy maker concisely on the importance of a regional issue for United States strategic interests and to evaluate and recommend a proposed U.S. course of action. Your seminar Industry Studies paper, however, will require that you survey and assess the "industrial health" of a vital segment of industry. Unlike the Regional Studies paper that reflects your analysis alone, the seminar Industry Studies paper is a team effort.

Elective Studies Papers

You are required to take four elective studies courses, two during the fall and two during the spring. For each course, your instructor will determine whether you (a) prepare a formal paper or (b) deliver an oral presentation supported by a point paper. In either case, there is a writing requirement, though the form may vary.

Research Projects

You may opt to undertake a major research project in lieu of one or more electives. If so, you'll produce a fully documented paper on a significant national security issue. Chapter 3 contains more details.

Initial Writing Assessment

Within your first weeks at ICAF, you'll complete a writing assessment. The purpose is to provide an ungraded opportunity to write in the manner and level expected here. The assessment also helps identify students who would especially benefit from workshops, tools and coaching to help them succeed.

Early in the academic year, your Primary Faculty Advisor will assess your ability to write an academic paper, ideally one that reflects both clearly structured strategic thinking and an ability to communicate clearly. The purpose of this writing assessment is to gauge each student's baseline as an academic writer. It will help you and your faculty advisor target areas for improvement before you undertake the first graded written assignment. As your faculty advisor assesses this effort, he or she will look at your writing skills primarily in terms of mechanics and structure; PFAs will look at content in terms of logic, coherence and critical thinking. If it appears that you're "writing challenged," your PFA may direct you to the Writing Workshop or individualized coaching.

Writing Standards

What standards should you apply in writing these papers? At a minimum, they should be the standards we'll use in evaluating your work. These standards, detailed in Appendix A, deal with what we consider to be the four most important aspects of your writing: (1) the use of higher order intellectual skills, (2) the logical organization, (3) the appropriateness of the style, and (4) grammatical and mechanical correctness. Mechanics and Structure Checklists also appear in Appendix A.

We're concerned, first and foremost, with the sophistication and clarity of your thinking. We want to see — and you should want to demonstrate — that you're able to go beyond merely regurgitating what someone else has said. You'll be asked to demonstrate that you can analyze (break things down and explain them), synthesize (combine things and develop new ideas), and evaluate (make sound judgments based on disciplined reason).

We're also concerned with the structure of your argument. Is there a logical flow from your introduction — where your thesis statement establishes your purpose — to the main body of the paper — where you develop your ideas and present evidence — to your conclusion — where you bring to closure what you have just developed? If not, if you

leave the reader confused and grasping futilely for your message, then you've lost the argument.

In addition to these substantive and structural considerations, we're equally concerned with your writing style. Do you express yourself clearly? Are there smooth transitions between ideas, sentences, and paragraphs? Do you use standard American English grammar and mechanics – punctuation, subject-verb agreement, spelling, typographical errors, and the like? (If there is little excuse at the master's degree level for failing to convey your ideas because of structural flaws, then there is absolutely *no* excuse for robbing yourself of credibility and thus diminishing your argument because of sloppy grammar and mechanics.)

Help yourself avoid common grammar errors by referring to the concise guide we have put in your study room: *The Wadsworth Brief Handbook* by Kirszner and Mandell. There are plenty of on-line sources available, too, like *The Blue Book of Grammar and Punctuation* (http://www.grammarbook.com/grammar/cnt_gram.asp). You may even consider purchasing your own copy or a similar writing guide. You'll be pleasantly surprised how much you can improve your writing through such low-cost self-help.

Finally, we encourage you to share your papers with your colleagues throughout the writing process. Sometimes a fresh eye helps you break up mental logjams, consider alternate perspectives; identify gaps in your analysis; and catch grammar and spelling errors. If someone is especially helpful, you can acknowledge such contributions (see Chapter 3 on format).

A Word About Plagiarism

Plagiarism is the unauthorized use, intentional or unintentional, of intellectual work of another person without providing proper credit to the author. While most commonly associated with writing, no types of scholarly work, including computer code, speeches, slides, music, scientific data and analysis, and electronic publications are to be plagiarized. Plagiarism may be more explicitly defined as:

- Using another person's exact words without quotation marks and a footnote/endnote.
- Paraphrasing another person's words without a footnote/endnote.
- Using another person's ideas without giving credit by means of a footnote/endnote.
- Using another person's organizational pattern without giving credit by means of a footnote/endnote.

***ICAF is serious about academic integrity.
Cite your sources!***

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CHAPTER 3

Formatting and Structuring the ICAF Paper

Format

ICAF follows *The Chicago Manual of Style, 15th Edition* (hereafter referred to as *Chicago*). There's a copy in each student room, along with *The Brief Handbook*, which also contains abbreviated directions for *Chicago* style. If certain assignments (some unique Industry Study products, for example) require a different style, your instructor will let you know.

Chicago allows considerable flexibility, recommending authors follow editorial preferences of the particular journal or magazine they're targeting for publication. For example, this handbook follows *Chicago* style, but its "requirements" differ from those of an ICAF paper (line spacing, for example). Here are some ICAF specifics:

- **Paper:** Use 8-1/2" by 11" paper.
- **Typeface and Size:** Times New Roman, 12-pitch.
- **Margins:** Top and bottom: 1.0 inch. Left and right: 1.0 or 1.25 inch.
- **Line Spacing:** Double-space your paper – between lines, between sections and between subheadings and text. Don't "innovate" with 1.5 or other alternative spacing to meet page limit requirements. Don't triple- or quadruple-space between text and subheads; most of the time, you'll need more space to make your case, not less!
- **Indenting:** Indent paragraphs 5-7 spaces or one-half inch.
- **Page Numbers:** Place page numbers one-half inch from the top right edge of the paper. Word will automatically place numbers for you (on the toolbar, go to "Insert, page numbers, top of page, right"; don't check the box for "show number on first page").
- **Headings:** Headings and subheadings improve structure and readability of your paper by acting as a guide and breaking up large blocks of text. *Use them*. Most ICAF papers will need only two or, at the most, three heading levels. *Chicago* allows for a variety of designs; just be consistent and make "readability" your guide. The system below, formatted as you would see it in a paper, is one good way.

Don't repeat the paper title on the first page of the text. Simply open the discussion, either with the first heading or with an introductory section without a heading if you so choose. While titling the introduction is optional, avoid belaboring the obvious by calling it Introduction.) Here is one method:

NOT the paper title! This is for chapter or major section titles

CHAPTER OR MAJOR SECTION TITLE

Use this for chapters in large papers such as research projects

Centered First Level Heading: **Heading Caps**

Second Level Side Head Set Flush Left: Heading Caps

Second Side Heading: Use When Needed

Third level paragraph heading. Follow with the first sentence of the paragraph.

Second Run-in Heading (Use When Needed): Follow with the first sentence of the paragraph.

This will be the Typical **first** level heading for most ICAF papers

Note what's bold, what's italicized and what's indented!

- **Block Quotations:** Format longer quotations as block quotes. Continuously indent them from the left margin the same distance as a paragraph indent. Do not use quotation marks. Use them for quotations of more than one paragraph or more than about 50 words. If there's a second paragraph, indicate it with an additional indent for the first line.
- **Endnotes or Footnotes?** Use endnotes for your ICAF papers. Endnotes don't count against the page limit of a paper.

Help!!! How Do I do References?????

The ICAF faculty would much rather you spend your effort on the content of your papers vs. spending hours sweating over the technical details of endnotes and bibliographies – especially since not every guide to *Chicago* style agrees! Don't get frustrated; just try to be complete and consistent. Chapter 17 of *Chicago* contains a wealth of detail on how to construct these elements. Remember, the point is to *credit* your sources and enable others to *find* your sources. Here are some samples from The University of Chicago Library Website, used with permission: <http://www.lib.uchicago.edu/e/using/instruct/chicago.html>

BOOK For more examples, see <i>The Chicago Manual of Style</i> 17.16-17.150	
Bibliography →	Example
Author's Name. <i>Book Title</i> . Place of publication: publisher, date of publication.	Goodspeed, E.J. <i>The University of Chicago Chapel: A Guide</i> . Chicago: University of Chicago Press, 1928.
Endnote →	Example
1. Author's Name, <i>Title</i> (Place of publication: publisher, date of publication), page number(s).	1. E.J. Goodspeed, <i>The University of Chicago Chapel: A Guide</i> (Chicago: University of Chicago Press, 1928), 15.
E-BOOK For more examples, see <i>The Chicago Manual of Style</i> 17.142-17.147	
Bibliography →	Example
Author's name. <i>Title</i> . Place of publication: Publisher, date of publication. URL.	Swanson, Richard A. <i>Results: How to Assess Performance, Learning, and Perceptions in Organizations</i> . San Francisco: Berrett-Koehler, 1999. http://www.netlibrary.com/ .
Endnote →	Example
1. Author's name, First name. <i>Title</i> (Place of publication: Publisher, date of publication), URL.	1. Richard A. Swanson, Results: How to Assess Performance, Learning, and Perceptions in Organizations (San Francisco: Berrett-Koehler, 1999), http://www.netlibrary.com/ .
BOOK CHAPTER For more examples, see <i>The Chicago Manual of Style</i> 17.68-17.75	
Bibliography →	Example
Author's name. "Chapter title." In <i>Book Title</i> , edited by Editor's Name, page numbers. Place of publication: publisher, year of publication.	Battin, Patricia. "The Management of Knowledge: Issues for the Twenty-First Century." In <i>Research Libraries: Yesterday, Today, and Tomorrow</i> , edited by William J. Welsh, 397-409. Westport, Conn.: Greenwood Press, 1993.
Endnote →	Example
1. Author's name, "Chapter title," in <i>Book Title</i> , ed. Editor's Name, page number(s) (Place of publication: publisher, year of publication).	1. Patricia Battin, "The Management of Knowledge: Issues for the Twenty-First Century," in <i>Research Libraries: Yesterday, Today, and Tomorrow</i> , ed. William J. Welsh, 397-409 (Westport, Conn.: Greenwood Press, 1993).

JOURNAL ARTICLE For more examples, see <i>The Chicago Manual of Style</i> 17.148-17.203	
Bibliography →	Example
Author. "Article title." <i>Journal title</i> . Volume.number (Year of publication): page number(s).	Fahs, Alice. "The Meanings of the Modern City: Chicago After the Linguistic Turn." <i>Reviews in American History</i> . 4, no. 3 (1996): 442-447.
Endnote →	Example
1. Author, "Article title," <i>Journal title</i> , Volume (Year of publication): page number(s).	1. Alice Fahs, "The Meanings of the Modern City: Chicago After the Linguistic Turn," <i>Reviews in American History</i> , 4.3 (1996): 443.
ARTICLE FROM AN E-JOURNAL (Including Stable URL) See <i>The Chicago Manual of Style</i> 17.180-17.181	
Bibliography →	Example
Author. "Article title." <i>Journal Title</i> Volume, no. (Year of publication): page numbers. URL.	Davies, Scott. "School Choice by Default? Understanding the Demand for Private Tutoring in Canada." <i>American Journal of Education</i> 110, no. 3 (May 2004): 233-255. http://www.journals.uchicago.edu/AJE/journal/issues/v110n3/110302/110302.web.pdf .
Endnote →	Example
1. Author, "Article title," <i>Journal Title</i> , Volume (Year of publication): page number(s) citing, URL.	1. Scott Davies, "School Choice by Default? Understanding the Demand for Private Tutoring in Canada," in <i>American Journal of Education</i> 110, no. 3 (2004): 235, http://www.journals.uchicago.edu/AJE/journal/issues/v110n3/110302/110302.web.pdf .
ARTICLE FROM AN ONLINE RESOURCE (Including Link to Library Database) See <i>The Chicago Manual of Style</i> 17.357 See also: http://www.press.uchicago.edu/Misc/Chicago/cmofaq/cmofaq.html	
Bibliography →	Example
Author. "Article title." <i>Journal Title</i> Volume (Year of publication): page numbers. Entry page of URL.	Fahs, Alice. "The Meanings of the Modern City: Chicago After the Linguistic Turn." <i>Reviews in American History</i> 4, no. 3 (1996): 442-447. http://muse.jhu.edu/ .
Endnote →	Example
1. Author, "Article title," <i>Journal Title</i> , Volume (Year of publication): page number(s) used, URL.	1. Alice Fahs, "The Meanings of the Modern City: Chicago After the Linguistic Turn," <i>Reviews in American History</i> , 4.3 (1996): 443, http://muse.jhu.edu/ .

WEB PAGE For more examples, see <i>The Chicago Manual of Style</i> 17.234-17.237	
Bibliography →	Examples
Author (if known). "Name of Page." <i>Name of Web Site</i> . URL.	The White House. "The Center of the House: The Blue Room." <i>Life at the White House</i> . http://www.whitehouse.gov/history/life/blueroom.html . Greenpeace International. <i>Greenpeace</i> . http://www.greenpeace.org .
Endnote →	Examples
1. Author (if known), "Name of Page or Section," <i>Name of Web Site</i> , URL, date accessed.	1. The White House, "The Center of the House: The Blue Room," <i>Life at the White House</i> , http://www.whitehouse.gov/history/life/blueroom.html , January 1, 2009. 2. Greenpeace International. <i>Greenpeace</i> . http://www.greenpeace.org , January 23, 2008.
If your source has more than one author, the form is slightly different. See Chicago 17.30 for more than three authors.	
Bibliography	
Leavitt, Steven, and Stephen Dubner. <i>Freakonomics: A Rogue Economist Explores The Hidden Side of Everything</i> . New York: William Morrow, 2005.	
Endnote	
1. Steven Leavitt and Stephen Dubner, <i>Freakonomics: A Rogue Economist Explores The Hidden Side of Everything</i> (New York: William Morrow) 133.	
ALWAYS INCLUDE THE PAGE NUMBER IN YOUR NOTES!	

Ibid., and Other Mysteries (*Chicago* 16.47-50)

- "Ibid." Use this in your endnotes when you're referencing the same author(s) several times in a row. The abbreviation comes from the Latin *ibidem*, meaning "in the same place."

1. Alice Fahs, "The Meanings of the Modern City: Chicago after the Linguistic Turn," *Reviews in American History*, 4.3 (1996): 443.
2. Ibid., 445.
3. The White House. "The Center of the House: The Blue Room." *Life at the White House*. <http://www.whitehouse.gov/history/life/blueroom.html>.
4. Ibid.

- “op. cit” and loc. cit.” These were formerly used followed by the author’s last name to indicate a work fully cited previously. *Opere citato* and *loco citato* mean “in the work cited” and “in the place cited,” respectively. Chicago now disallows these. Instead, use the short form.

45. Fahs, "The Meanings of the Modern City: Chicago After the Linguistic Turn," 446.

Useful Links for *Chicago*:

<http://www.docstyles.com/cmsguide.htm>

<http://library.osu.edu/sites/guides/chicagogd.php>

<http://www.lib.uchicago.edu/e/using/instruct/chicago.html>

<http://www.docstyles.com/cmscrib.htm>

Formatting Software

Making sure you format your paper’s references and bibliography correctly doesn’t have to be all frustration. Here’s a way to make it easier and quicker:

RefWorks is a web-based bibliographic management program available to all ICAF students. The NDU Library uses RefWorks to build all its bibliographies. You will have a RefWorks training session during your Library orientation. To get a RefWorks account, go to <https://www.refworks.com/Refworks/login.asp?WNCLang=false> and click on “Sign up for an Individual Account.”

Using RefWorks to build the bibliographies for your ICAF papers allows you to use a plug-in called Write-N-Cite that automatically formats papers. We’ve loaded Write-N-Cite on all student computers and provided each student with the *RefWorks User Quick Start Guide*.

Microsoft Word includes a simplified formatting program as well; click on Help and type in Footnotes and Endnotes.

IMPORTANT: Many formatting software programs (RefWorks/Write-n-Cite) create endnotes in very small type, with no spacing between lines. If you choose such a program, be remember to put your endnotes in 12-pitch and include correct spacing.

Organization of the Paper

Organize your paper as follows:

- Cover page
Unnumbered
- Acknowledgements (optional)
If someone was particularly helpful during your writing process, you can acknowledge such contributions on the page following the cover sheet. Be brief.
Example:

“I would like to thank COL John Doe for his insights regarding the Army’s role in civil reconstruction. His questions regarding roles and operations were particularly useful. Thanks also go to Ms. Mary Smith for her helpful feedback on building a balanced argument.”
- Main Elements
Abstract (for research projects only)
Introduction
Body
Conclusion
- Supplemental Elements
Appendices (if any)
Endnotes
Bibliography

Structural Elements of the ICAF Paper: A Closer Look

Remember, these are general considerations; individual course faculty directing the assignment may alter this somewhat. If you are in doubt about any details or the approach appropriate to the specific assignment, ask the faculty making the writing assignment.

Introduction

An introduction should serve four purposes:

- To get the reader interested (hook)
- To state the purpose of your paper (thesis).
- To present the organization of your paper (map)
- To lead the reader into the body (transition).

Starting with the main point, as opposed to building up to it, may seem hard. However, think of your audience. Senior leaders need to know the “so what” immediately. They need to know what to expect in terms of main points that will come up. Tell them your recommendations as well, and then let the rest of the paper explain how you get there. The body of the paper will constitute proof of your logic and include your supporting rationale.

Body: Discussion and Support

This is where the rubber meets the road when it comes to documented evidence of your strategic thinking ability, your skill at organizing and supporting your critical arguments, and your recommendations if appropriate. The actual assignment may pose a question, present an issue to examine or frame a case study to analyze. Moreover, it may have several components. Spend time understanding the exact assignment and address all parts comprehensively. Avoid make the mistake of simply writing about something related that might interest you more.

Conclusion

Your paper's conclusion should revisit your thesis, recap your key arguments and findings – or reiterate your recommendations – and wrap up the essay in a satisfying manner. Readers will now be able to understand not just what those conclusions, main findings and recommendations are, but also the logic for getting there. Avoid introducing new information in the conclusion.

Supplemental Elements

If you have additional supplementary material you want to present to the reader, but that doesn't contribute directly to your main presentation, you may attach appendices to the back of the paper. Do *not* use appendices as a way around a confining page limitation.

Course Paper Cover Sheets

Use the cover sheet provided on the following page as a template for all ICAF papers, with the exception of major research projects as covered in Chapter 3. A cover sheet template is available on the ICAF website. Go to the ICAF Portal and click on ICAF Internet Site; under Student Information, click on Research and Writing Program; then click on ICAF COVER SHEET TEMPLATE. Once again, you don't get style points for originality. *Please use the format provided* and make it *part of your document* (i.e., don't submit your text and the cover page separately).

Note: It may seem obvious, but check the spelling of faculty members' names before handing in your paper.

For Research Projects Only: The course paper cover sheet contains the following mandatory statement:

<p>The contents of this document are the property of the U.S. Government and are intended for the exclusive use of the faculty and students of the Industrial College of the Armed Forces (ICAF) or the National Defense University (NDU). No further dissemination is authorized without the express consent of the ICAF Commandant and the NDU President.</p>

AY 2009-2010

THE TITLE OF YOUR PAPER HERE

NAME OF THE COURSE HERE

NAME OF COURSE INSTRUCTOR HERE

**YOUR FULL NAME, RANK/GRADE, SERVICE/AGENCY
HERE**

YOUR SEMINAR NUMBER HERE

[NAME OF YOUR PFA HERE], PRIMARY FACULTY ADVISOR

**The Industrial College of the Armed Forces
National Defense University
Fort McNair, Washington, D.C. 20319-5062**

The views expressed in this paper are those of the author and do not reflect the official policy or position of the National Defense University, the Department of Defense or the U.S. Government.

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CHAPTER 4

THE RESEARCH PROGRAM

RESEARCH DEADLINES

The Research Approval Forms are at Appendix B.

- 21 Aug: Part 1 due for Fall research
- 21 Sep: Part 2 due for Fall research
- 11 Dec: Fall research papers due

- 23 Oct: Part 1 due for Spring research
- 4 Dec: Part 2 due for Spring research
- 15 March: DEPSECDEF Fellowship papers due (all others due before domestic travel)

Purpose

The research program is designed to complement and support the educational objectives of ICAF. Research provides the ICAF student with an opportunity to address a topic of significance related to national security with particular reference to the resources component of national power, materiel acquisition, joint logistics and their integration into national security strategy for peace and war. Research is invaluable as a means of nurturing a student's analytical and intellectual skills as well as enhancing the student's ability to communicate clearly and forcefully. A research program, consequently, improves those faculties of judgment and intellectual skills that are essential for decision making as well as enabling a student to have a better understanding of substantive issues.

Research Options

If you choose to undertake a formal research project in lieu of one or more electives, you have three basic research options: the Research Fellows Program, a Research Project, or a Group Research Project. ICAF has attempted to provide you with numerous options in order to accommodate your interests.

Research Fellows Program

Four course credits (Course 5654). The Research Fellows Program is not a substitute for the ICAF course of study. All Research Fellows are expected to fulfill all other academic obligations. The program exists to allow those interested students possessing research skills and interest to investigate a topic relevant to ICAF's substantive concerns throughout the academic year, and to nurture research and writing capability among those students who have not had sufficient opportunity to develop them. Research Fellows select research as all four of their Electives by applying to the Director of Research.

Research topics must be appropriate to the concerns of the ICAF mission and should be of sufficient scope and concern that they could not be completed without devoting the attention that would be given to two Fall and two Spring Elective courses to complete the project. Such manuscripts may examine current or fundamental issues. Because the lengths of projects vary from subject to subject, most student Research Fellowship projects will be more than 60 to 75 pages in length. This is, for example, the length of most of the National Defense University Press's McNair Paper series. All papers must be completed by the stipulated date at the end of the academic year.

A Research Fellow may request additional time at the end of the academic year to prepare a manuscript for publication. The Fellow's service or agency must give their approval to an extension as well.

Structure of the Research Fellows Program. A well-researched and written paper is demanding. Students selected to enter the Research Fellows Program will not be exempt from other ICAF written assignments that are essential to the fulfillment of course objectives.

Each Research Fellow will have a Faculty Review Committee comprised of their Faculty Research Advisor, one or two other associated faculty members selected by the Fellow and the advisor, and the Director of Research. Periodically (see Milestones), these individuals will meet with the Fellow in a Research Panel to review the Fellow's progress and provide guidance as needed.

Research Fellows are eligible to take up to five days to conduct research outside of the Washington, D.C. area. If necessary, a student may petition the Research Director to extend the length of time to conduct research outside of the area. All research days must be arranged with the approval of the Fellow's FRA, course instructors, and the Research Director. Fellows are responsible for the satisfactory completion of all work. Research Fellows are eligible for institutional support.

Limited funding is available to support such research and research fellows may submit a written request to the Research Director to have ICAF Research Funds allocated to support research.

Application procedures for the Research Fellows Program. Formal application to become a Research Fellow must be submitted to the Director of Research. To facilitate the selection of Research Fellows, the formal application must include:

- Part 1 of the research proposal
- A one-page biographical sketch describing the applicant's prior work experience and educational background.
- Samples of writing (articles, reports, etc.), if requested.

Agency Sponsored Research Fellowships

There are currently five agencies that directly sponsor research:

- The Office of the Secretary of Defense for Policy sponsors the Deputy Secretary of Defense Educational Initiative Research Fellowship.
- The Secretary of the Air Force sponsors the SECAF Energy Research Fellowship.
- Air Force Quadrennial Defense Review sponsors both a QDR Research Fellowship and smaller research projects.
- NORAD/USNORTHCOM sponsors research on Homeland Defense and Homeland Security.
- The Department of Defense Business Transformation Agency sponsors the BTA Research Fellowship.

Details on each program are at Appendix C.

Research Projects

One course credit (Course 5651). A student may choose a research project appropriate to the concerns of the ICAF mission in lieu of one elective. The project should be of such scope that it can be researched and written during one academic semester. A student may elect to take either the first or second semester to conduct research and complete the paper. The final paper is due at date designated for the last elective class for that semester. It is anticipated that such projects will normally be between 25-35 pages in length. Students who select this research option receive one Research course credit and will also take one elective during the same semester.

Appendix B of this *Handbook* contains the necessary registration forms for selecting a Research Project in lieu of one elective.

Two course credits (Course 5652 or Course 5653). ICAF will allow a student the opportunity to undertake a research project appropriate to the concerns of the ICAF mission for two Research credits. With the consent of the Research Director and Faculty Research Advisor, the project will be considered of such complexity or scope that the student's efforts warrant receiving an additional credit. A student may elect to take both Research credits the same semester (5652) or one Research course credit each semester (5653). The final paper is due at the designated date at the end of the appropriate academic semester (see Milestone Dates in this *Handbook*). It is anticipated that such projects will normally be between 35-50 pages in length.

Tutorial Readings/Independent Study, one course credit (Course 5650). Tailored to students' needs. To participate, a student must first obtain agreement of an ICAF faculty member to sponsor the elective. The student and faculty member will then plan the scope of the course, including expectations for student performance. Students may register for this course only once in each semester.

Group Research Projects

Any research project may be done with more than one student, providing the scope of the project warrants multiple authors. Group projects, like all others, require a faculty research advisor and approval of the Director of Research.

Faculty Research Advisor

All research projects are supervised by a Faculty Research Advisor (FRA). All Research Students are responsible for selecting their own FRA, with the exception of certain agency sponsored fellowships. Students should seek out FRAs who can provide advice and guidance in choosing a topic, defining a focused research question, setting bounds on the scope of research, selecting appropriate methods, identifying relevant source material and framing pertinent arguments.

In some cases, the FRA will be an expert in the area of your research and will be able to guide you through the subject matter. In other cases, the FRA will simply share an interest in the subject and will help you through the process. In both cases, the FRA will serve as another pair of eyes, commenting on your work as you go along and, ultimately, help determine whether you successfully meet the research requirement.

Whether selected because of substantive or methodological knowledge or simply interest, the FRA plays an intricate role in the research process. To aid in the selection of a faculty research advisor, Appendix D of this *Handbook* provides faculty skills and interests.

The FRA performs these functions:

- Provides advice and guidance to you in choosing a topic, defining a focused research question, setting bounds on the scope of research, selecting appropriate methods, identifying relevant source material, and framing pertinent arguments.
- Establishes milestones for you to complete all prescribed requirements successfully.
- Monitors your progress, evaluating the quality of your work, and providing critical feedback.
- As appropriate, makes recommendations for awards.

Each FRA has many other responsibilities. It therefore goes without saying that the FRA's job is not to *do* -- that's your job -- but to oversee what you do and to provide necessary counsel.

The Paper Itself: Type and Content

Standard Research Paper

A research paper, may, of course, take any of a variety of forms -- be it a technical report, a feasibility study, a historical analysis, a staff study, a systems analysis or policy analysis, the formulation of a model, or whatever. Your paper may take any of these forms -- or others, for that matter; the only limit is your own creativity.

Ideally, the paper will be an expository piece on an issue of your choosing (more on that momentarily), in which you define a problem or state a hypothesis, present the various arguments -- pro and con -- surrounding the issue, and reach a conclusion based on the strengths of the evidence. You may wish to go a step further and offer recommendations -- but you need not do so.

Bibliographic Essay

If you want to immerse yourself deeply in a particular subject and find out who has said what about it, but you don't feel comfortable venturing too far with your own original thoughts, you may want to consider doing a bibliographic essay. As the name suggests, the bibliographic essay combines features of the bibliography and the essay -- with the emphasis clearly on the latter. It's not just a list of readings but an interpretive review of a given body of literature.

If you choose this option, you need to recognize two things at the outset:

- You are expected to do a thorough survey of the literature on your chosen topic. That means if it's a narrow topic, you're going to have to dig, and if it's a broad topic, you're going to have to set some bounds on what you investigate.
- Cut-and-paste abstracts of the literature you've reviewed won't cut the mustard. We're looking for you to synthesize what you've read into manageable proportions; to analyze it by identifying common themes, points of disagreement, discernible motives and biases of authors, and the like; and to make some evaluative judgments about the state of thinking in the field.

Case Study

Case studies provide a tool for drawing the crucial link between theory (general concepts and principles) and practice (real-world experiences). There are a number of places in our curriculum where we need good, focused case studies -- but either they aren't available or we haven't been able to locate them in exactly the right form. Therefore, if you have a bent for history, a yen or a talent for sleuthing, and flair with the written word, you might think about preparing a case study or two. It could help enhance next year's curriculum.

Your initial point of contact should be the chair of one of our academic departments who probably will direct you to a faculty member with a more specific need. The particular focus of the case(s) you prepare will be a matter of negotiation and mutual agreement between you and the department. You may have an important story to tell that coincides with an identified need of ours -- let's say you were involved in a major weapon system acquisition program -- or we may be looking for something specific -- let's say the decision making process that led to the commitment of U.S. troops to Somalia.

If you choose this option, don't plan to get by with just a war-story narrative or a simple chronology of events. For your case to be useful and effective, it will have to be tailored to some specific learning objectives -- presented in other words, so that the incident, situation, or series of events portrayed highlights the themes or issues that are the focus of a given lesson or block of instruction.

Draft Joint Doctrinal Publication

The continued emphasis on jointness (increased interservice cooperation and unity of action) that was mandated by the 1986 Defense Reorganization Act has created a critical need for various joint doctrinal publications that do not now exist. You may want to draft a publication that can be staffed and subsequently adopted as established doctrine for a

particular area of joint military operations. The experience promises to be educational for you, since you will have to become truly expert in that domain of joint operations. Moreover, the fruits of your effort, if well done, have to the potential to exert a lasting impact on the military establishment.

Draft National Intelligence Estimate

The evolving nature of the international environment -- the apparent end of the Cold War, the continuation and possible expansion of regional conflicts, the ascendancy of the economic component of national power, and various critical international issues confronting the United States (debt, drugs, energy, terrorism, and the like) -- makes accurate and timely intelligence perhaps more important today than at any time in the past forty-five years.

This option, involving the preparation of a draft, unclassified national intelligence estimate on a specified regional or functional topic, provides a mechanism for ICAF students not only to acquire substantive knowledge of the subject at hand and an appreciation of the estimate process, but also to contribute original analytical insights that perhaps could be helpful to the intelligence and policy communities.

Selecting a Topic

Choosing one of the research options we've just discussed is only half of the decision you have to make in formulating your research project. The second half of the decision concerns your topic -- what are you going to research? In answering this question, you might want some advice on how to go about picking a topic, and you certainly need to know what ICAF considers a suitable focus for your project.

How to Pick a Topic

If you have come to ICAF with a burning issue already on your mind -- something you've wanted to investigate or to say, something that has been a burr under your saddle or that you think deserves the light of day -- then you're pretty well set. Others of you, though, may either have no idea what you want to research or so many ideas that you're in a muddle. That being the case, you might do the following:

- *Meet and Discuss:* Visit faculty members in their offices during the first two weeks of the academic year. Use the opportunity to explore various elective studies and research options. The list of faculty interest areas at Appendix D may give you some ideas.
- *Research and Writing Handbook*, Chapter 6: This chapter contains a list of last year's winning papers. You may find something here that gives you an idea.
- *Director of Research.* Talk to the Director of Research, Dr. Chris Lafferty (Rm 328, 685-4330, laffertyc@ndu.edu). Chris can provide you guidance on the feasibility and utility of research topics you're considering and direct you to faculty members with relevant experience and interests.

What Topic to Pick?

So, what are you actually going to research? Consider first the two cardinal imperatives that guide all researchers. First, pick a topic that interests you. Nobody benefits, least of all you, if you embark on a project that doesn't capture your heart and your imagination. Second, pick a doable topic -- taking into account the required length of the paper and the amount of time you have to do it.

You have wide latitude in choosing what to research. The only proviso in this regard is that *the topic you pick must deal with some aspect of national security*. This means any topic that directly or indirectly deals with how the United States obtains, generates, and/or utilizes the human, material, economic, and/or natural resources necessary to attain national objectives; protects national interests; provides for the safety and well-being of the American people; and preserves the American way of life.

Getting Your Research Project Approved

One of your first responsibilities is to obtain the agreement of an ICAF faculty member - or another qualified member of the NDU staff -- to serve as your Faculty Research Advisor. The list of faculty areas of interest at Appendix D can serve as a guide. The only piece of administrative paperwork you have to worry about is the two-part ICAF Student Research Application at Appendix B and on the ICAF web site: <http://www.ndu.edu/icaf/srwp/index.htm>. Use this form to flesh out and formalize the specifics of what you plan to do for your research project and how you plan to go about doing it.

Research Program FAQs

Here are some commonly asked questions (not already covered in Chapter 4) that you, too, may have about various aspects of the Research Program.

Who will read the paper?

You will. Your spouse probably will. Some of your ICAF colleagues may read it and offer suggestions. Your Faculty Research Advisor certainly will. If you wrote your paper in response to an agency's request, no doubt someone from that agency will.

Clearly, though, you don't want all your work spent for only a handful of people. So the real answer to the question is this: Even as you begin your research, you should have a fairly good idea which people -- specifically and generally -- you want to read your paper. Then, as you write the paper, you should keep that audience in mind, actually writing for them. When you're through, you then will have a written paper directed specifically at the audience you envisioned in the beginning.

When you finish your paper, you should consider actually sending it to the audience for which you wrote it. Your FRA and the Director of Research and Writing can help you with this process. All ICAF papers are subject to security review prior to publication; the clearance process can take several weeks.

What about writing awards for research papers?

Outstanding papers from the Research Program, the Senior Acquisition Program, and the Supply Chain management Program will be considered for awards. Chapter 6 lists the AY 2009 Research and Writing Award winners. Your paper will be considered for an award if the paper receives an A or A-minus grade. Late papers are not considered for research awards.

What happens to the paper once I leave?

We'll archive an electronic copy of your paper. A number of research papers are published, either because ICAF marketed it, you sought publication, or an organization with a journal requested it.

Who owns my paper? May I copyright it?

In past years, some ICAF students – with varying degrees of seriousness – have annotated their writings as copyrighted material. Everything written by students and submitted for partial fulfillment of the requirements for a degree is the property of the U.S. Government and may *not* be personally copyrighted. Address any questions or issues concerning this policy to the NDU Legal Advisor.

How should I work with an agency point of contact?

If an agency sponsors your project, you should get in touch with the point of contact right away so each of you can have common expectations for the depth, breadth, and timing of your report. Does the agency expect you to travel? Then, since our travel money is *quite* limited, ask if they can fund it.

The ICAF research director will automatically send a copy of your final paper to the sponsoring agency. However, you might consider, if the agency is local, delivering your paper in person and giving a desktop briefing -- or even a formal one.

May I write a classified paper?

Yes, but . . . the simple mechanics of typing it, putting it in a safe, and transmitting it using the official procedures may eventually get to you.

A more serious problem is that students in the past have found a smaller readership for classified papers. You can easily send unclassified papers to anyone in the government; but the logistics get in the way of distributing classified papers.

What about conducting surveys?

Although conducting a survey may be very appealing, you should realize that many surveys require special approval, usually involving a lengthy and complex process. Often you will not be able to get such permission in time to prepare your research project. If you have questions, see the Director of Research and Writing.

What should I know about non-attribution?

If you heard it at NDU in a situation guaranteeing the speaker non-attribution, you must not then attribute the remarks in your paper. That is, you must not explicitly or implicitly connect the words or ideas of a speaker in such a situation with the speaker's name. Therefore, often you will not be able to use the information in your research paper that you've learned in a situation guaranteeing non-attribution.

Also, please be careful how you handle your interviews. Be sure the people you interview clearly understand whether you intend to attribute their remarks.

What is the ICAF position on plagiarism?

We don't allow it -- in any form, for any reason. Ordinarily the issue doesn't arise with professionals of your caliber. On rare occasions, though, there is the student who thinks it's okay to steal someone else's words or ideas without proper attribution. Wrong! It's not okay. The penalty for deliberate plagiarism is expulsion. That's how serious we are.

May I submit an identical paper for two different requirements?

Students may not submit an identical paper to satisfy multi-course requirements. Each course paper must stand on its own and be targeted to the specific course requirements. Students may use a previously written paper as supporting documentation for another paper if footnoted appropriately. Two different writing assignments may be concerned with related topics, but the assignments may *not* be satisfied by the submission of an identical paper.

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CHAPTER 5

CHAIRMAN OF THE JOINT CHIEFS OF STAFF AND SECRETARY OF DEFENSE NATIONAL SECURITY ESSAY CONTESTS

In May 2010, the National Defense University will host the 28th Annual Joint Chiefs of Staff Essay Contest and the 3rd Annual Secretary of Defense National Security Essay Contest. Through this competition, the Chairman and SECDEF challenge students at our Service colleges to write about a significant aspect of national security strategy. The competition encourages original thought, and it rewards the best of that thought with substantial prizes through the generosity of the NDU Foundation and possible publication by NDU Press.

Competition Rules

1. **ELIGIBILITY:** Students enrolled in intermediate through senior-level PME/JPME schools including:
 - a. senior service colleges,
 - b. service intermediate and advanced schools,
 - c. senior joint NDU colleges (National War College, the Industrial College of the Armed Forces),
 - d. Joint Forces Staff College.

Essays must be original, not previously published, and completed during the given academic year (2009-10). Essays cannot be submitted for publication to any other journal or academic press concurrent with this competition.

2. **TOPICS:** Competitors may write on any aspect of *national security strategy*—the use of the political, military, economic, and informational instruments of national power to achieve strategic objectives. Essays with a joint, interagency, or integrated emphasis (particularly combating global terrorism, homeland defense, and historical contributions) are encouraged.
3. **CATEGORIES:**
 - a. *Strategic Research Paper:* Maximum of 5,000 words on an open topic. This traditional research essay has been mainstay of past CJCS competitions and encourages in-depth research, analysis, and critical thinking on strategic security topics.
 - b. *Strategy Article:* Maximum of 1,500 words on an open topic. Similar in length to many current JPME course papers, the Strategy Article is a scholarly but tightly focused research paper. It is long enough to encourage scholarly research but short enough to be more appealing to a broader audience.
 - c. *SECDEF Transformation Essay:* Government Transformation Research Paper: Maximum of 5,000 words. This essay contest encourages in-depth research, analysis, and critical thinking that is long enough to complete a thorough argument but short enough to rivet a broad audience. Manuscript length is not a factor in judging so long as the maximum length is not exceeded.

4. **SECURITY CLASSIFICATION:** All papers must be unclassified/

- 5. SUBMISSION DEADLINE:** All ICAF nominations must be submitted to the Director of Research and Writing NLT the day prior to domestic travel (subject to change).

*In 2007, an ICAF student won the Strategy Article category,
our first win in more than a decade. In 2008, we had a finalist.
Last year we had a finalist and a 2nd place winner.
Keep the trend going!*

CHAPTER 6

RESEARCH AND WRITING AWARDS

ICAF has an extensive recognition program for those students whose writing is of the highest caliber. Awards are presented by senior leaders, representatives from sponsoring organizations and agencies, and the ICAF Commandant. All research projects, whether from the ICAF Research Program, the Senior Acquisition Course, Supply Chain Management or certain other electives, are automatically considered for awards. In addition, awards are presented for top core course and Regional Security Studies papers. Research projects are read by an ICAF faculty panel and evaluated for both for form and substance. As you can see, no one service or agency has a monopoly on the prizes. The following are the awards and recipients from the Class of 2009; a number of them are pending publication:

Agency Awards

Secretary of the Air Force Energy Research Fellowship Award

Commander Paul W. Bieraugel, U.S. Navy

United States Air Force Sustainability: Leadership through Stewardship

Ms. Janie Benton, Research Advisor

Colonel Kimberly C. Ullmann, U.S. Air Force

What Happens If (When) the Power Goes Out? Cybersecurity and the United States Electrical Power System

Ms. Janie Benton, Research Advisor

National Defense University Foundation Writing Award

Commander Lee P. Sisco, U.S. Navy

The Decline of the U.S. Navy's Mobile and Self Repair Capability: Approach to the Tipping Point of Impacting Operational Readiness and Endurance in Peace and War

Dr. Mark Montroll, Research Advisor

National Defense University Foundation Excellence in Research and Writing Award

Mr. Ronald E. Hynes, Department of Transportation

Transportation Policies for a Democratic Society

Dr. Christina Lafferty, Research Advisor

Ambassador's Award for Excellence in Research and Writing in the Field of Diplomacy and International Affairs

Mr. Henry V. Jardine, State Department

The Implications of Transformational Diplomacy for Foreign Service Officers

Ambassador Robert Loftis, Research Advisor

Mr. David S. Meale, State Department

China's Quest for Resources in Africa: Emerging Opportunities for New U.S. Policy Approaches

Dr. Terry Myers, Research Advisor

Armed Forces Communications and Electronics Association's "Sparky" Baird Award for Research Excellence

Lieutenant Colonel David H. Foglesong, U.S. Air Force
Cry Havoc and Let Slip the Dogs of War: Command, Control, and Execution of Airborne ISR for Mass and Effect
 Dr. Stephen Randolph, Research Advisor

Association for Intelligence Officers' Earl Forrest Lockwood Award for Excellence in Research and Writing

Colonel Sean M. Scott, U.S. Army
Titanium Metals: Unmet Defense Needs
 Dr. Sylvia Babus, Strategic Materials Industry Study Lead

Association of the Industrial College of the Armed Forces Award for Excellence in Research

Commander Daryl K. Daniels, U.S. Navy
Educating and Training Military Medical Personnel for Stability Operations
 Mr. Bernard Carreau, Research Advisor

Colonel Tomas Novotny, Slovakia Air Force

Human Security Threats and Their Effective Treatment
 Dr. Mark McGuire, Research Advisor

Association of the United States Army Award for Research Excellence

Colonel Patrick V. Pallatto, U.S. Army
Bridging the Operational Army-Generating Force Logistics Gap: Achieving Enterprise Asset Visibility
 Mr. Thomas Hauser, Research Advisor

Department of Defense Business Transformation Agency Research Fellowship Award

Mr. Thomas J. Lapato, KPMG
Business As Usual? The Role of Department of Defense in Foreign Economic Development
 Mr. Thomas Hauser, Research Advisor

Canadian Department of National Defence Prize for Regional and International Studies

Colonel Toshikazu Yamane, Japan Army
Developing a National Security Strategy for Japan
 Mr. Richard deVillafranca, Research Advisor

National Defense Industrial Association Award for Excellence in Research and Writing

Mr. Quentin E. Hodgson, Department of Defense
Deciding to Buy: Civil-Military Relations and Major Weapons Programs
 Mr. Timothy Morgan, Research Advisor

Defense Acquisition University Award for Excellence in Research and Writing

Lieutenant Colonel Jason J. Denney, U.S. Air Force

Priming the Innovation Pump: The Need for More Scientists, Engineers and Basic Research

Dr. Francis A'Hearn, Research Advisor

SOLE – The International Society of Logistics – Defense Acquisition University 2009 Acquisition Program Management Field Award

Colonel Broc A. Perkuchin, U.S. Army

The Department of Defense's Application of Strategic Sourcing

Colonel Victoria Leignadier, U.S. Army (Ret.), Research Advisor

SOLE – The International Society of Logistics – Defense Acquisition University 2009**Life Cycle Support Field Award**

Ms. Valerie A. Pendrick, Department of the Army

Titanium Shortages and Impacts on Army Systems

Dr. Mark Montroll, Research Advisor

Defense Logistics Agency Award for Excellence in Logistics Research and Writing

Lieutenant Colonel Michael A. Balsler, U.S. Army; Commander Mark C. Bruington, U.S. Navy; Ms. Angela M. Evans, Defense Logistics Agency; and Ms. Emma C. Wilson, Department of the Army

Class III (B) Fuels Distribution Operations: The Supply Chain Primer

Ms. Kelly Morris and Dr. Paul Needham, Research Advisors

Department of Homeland Security Chief Learning Officer's Award for Excellence in Research and Writing

Brigadier General Stefano V. Salamida, Italy Air Force

Culture and Terrorism

Dr. Kenneth Moss, Research Advisor

National Contract Management Association Award for Excellence in Research and Writing

Colonel David E. Anderson, U.S. Army

Squeezing Value out of Idle Assets: Enhanced Use Leasing in the United States Army

Mr. Thomas Hauser, Research Advisor

Navy League Award for Excellence in Research and Writing

Colonel Daniel P. Ermer, U.S. Marine Corps

Sense and Respond Logistics: Enabling Expeditionary Maneuver from the Sea

Colonel Patrick Kumashiro, U.S. Air Force, Research Advisor

National Defense University President's Strategic Vision Award

Mr. Thomas J. Lapato, KPMG

Business As Usual? The Role of Department of Defense in Foreign Economic Development

Mr. Thomas Hauser, Research Advisor

U.S. Transportation Command Award

Mr. William A. Kobren, Defense Acquisition University

Life Cycle Management: Let's Get On With It!

Dr. Paul Needham and Captain Jeanne Vargo, U.S. Navy (Ret.), Research Advisors

ICAF Commandant's Awards For Research and Writing

Commandant's Award for Outstanding Research in Support of the Deputy Secretary of Defense Educational Initiative

Lieutenant Colonel James D. Dignan, U.S. Air Force Reserve; Colonel Timothy E. O'Brien, U.S. Air Force Reserve; Lieutenant Colonel Ricky L. Thompson, U.S. Air Force; and Colonel Frederick L. Washington, U.S. Army

Implications of the Long War: Reserve Components in the 21st Century

Dr. Joseph Goldberg and Colonel David Hill, U.S. Army, Research Advisors

Colonel Wesley P. Hallman, U.S. Air Force

Adaptive Basing: Readdressing the U.S. Basing Network in the Western Pacific

Dr. Gregory Foster, Research Advisor

Captain Bruce Loveless, U.S. Navy, and Commander Ramberto A. Torruella, U.S. Navy
China's Energy Insecurity: Sailing Toward Conflict or Cooperation?

Dr. Mark Montroll, Research Advisor

Captain Stephanie L. Wright, U.S. Navy

Strategic Communication: Tools and the Policy Officer

Mr. John Matheny, Research Advisor

Commandant's Award for Outstanding Research in Support of the Director, Defense Research and Engineering

Ms. Carol J. Axten, Department of the Navy; Ms. Jeanne C. Bohnet, National Security Agency; Mr. Richard Dick, Defense Intelligence Agency; Mr. David B. Duda, Department of the Army; Ms. Janet L. Edgehill, Department of the Air Force; Commander Heidi A. Flemming, U.S. Navy; Mr. Richard J. Folio, Harris Corporation; Lieutenant Colonel Clark M. Groves, U.S. Air Force; Colonel Eric M. C. Kobak, Delegation Generale pour l'Armement; Mr. Raymond D. O'Toole, Department of the Navy; Mr. Thomas G. Owen, National Geospatial-Intelligence Agency; Ms. Stacy E. Spadafora, U.S. Coast Guard; Ms. Myra C. Tate, Defense Contract Management Agency; Colonel Fernando L. Torrent, U.S. Army; Colonel Charles J. Westgate, III, U.S. Air Force

Building Partnerships with Eastern European Scientists

Dr. Mark Montroll, Ms. Kathleen Kingscott and Dr. Stephen Basile, Research Advisors

Commandant's Awards Best Core Course Papers

Best Economics Paper -- Fall

Lieutenant Colonel David M. Quivey, U.S. Army
The Unsustainable Federal Budget

Best Economics Paper -- Spring

Mr. Mark F. Hanson, Department of the Air Force
AT&T Incorporated: At the Top of the Internet Service Provider Industry

Best Strategic Leadership Paper

Commander Ronald A. Foy, U.S. Navy
Herding Cats in a Rainstorm: The Transformation of Naval Special Warfare

Best Military Strategy and Logistics Paper

Lieutenant Colonel Clark M. Groves, U.S. Air Force
A Hierarchy of National Interests

Best National Security Studies Paper

Ms. Melissa Clegg-Tripp, State Department
Opting to Talk: The Best U.S. Choice on Iran

Best Regional Security Studies Paper

Commander Kenneth W. Epps, U.S. Navy
China: An Engagement Strategy

Excellence in Research and Writing in the Field of Acquisition

Lieutenant Colonel William D. Bailey, U.S. Air Force, and
Colonel Eric T. Fick, U.S. Air Force
Bid Protests: Is the Situation Really as Bad as They Say?
Lieutenant Colonel Stephen Ford, U.S. Air Force, Research Advisor

Mr. David J. Chipman, Department of the Navy
Performance-Based Logistics: Assessing Performance and Cost
Dr. Linda Brandt, Research Advisor

Commander Craig T. Bowden, U.S. Navy
Open Architecture and its Impact on the Navy's Acquisition Process
Dr. Linda Brandt, Research Advisor

Ms. Cheryl J. Coto, Department of Homeland Security
Who's in Charge within the Department of Homeland Security?
 Mr. Richard Prevost, Research Advisor

Commander Kenneth W. Epps, U.S. Navy
Performance-Based Logistics: The Way Ahead or Dead End?
 Dr. Francis A'Hearn, Research Advisor

Colonel Michael R. Gregg, U.S. Air Force
Status of Public Private Partnerships for Depot Level Maintenance in the United States Air Force
 Captain Jeanne Vargo, U.S. Navy (Ret.), Research Advisor

Mr. Gregory S. Rhoney, L-3 Communications
Human Capital Management: Developing and Retaining High Performers
 Colonel Sean Herr, U.S. Air Force, Research Advisor

Ms. Glenda H. Scheiner, Department of the Air Force
USSOCOM Acquisition: Light, Agile, Lethal...A Pathfinder for DoD Acquisition Reform
 Colonel Craig DeDecker, U.S. Army, Research Advisor

Mr. Peter Schlote, EADS
European Defense Industry Consolidation: Prospects and Policy Implications
 Dr. Gerald Abbott, Research Advisor

Excellence in Research and Writing in the Field of Logistics

Lieutenant Colonel Thomas P. Flanders, U.S. Army
Title X and Title XXXI: Innovative Source of Stability or Core Rigidity?
 Mr. Richard Altieri, Esq. and Colonel Victoria Leignadier, U.S. Army (Ret.),
 Research Advisors

Colonel Richard W. Fullerton, U.S. Marine Corps
Supply Support Cube Model: A Method for Stock Positioning
 Captain Terrance Egland, U.S. Navy, Research Advisor

Colonel Brian P. Brindley, U.S. Army
DoD Strategic Supply Chain Management and the Need for a Long-Term Transformation Plan
 Captain Terrance Egland, U.S. Navy, Research Advisor

Commandant's Award for Excellence in Research

Ms. Jeanne C. Bohnet, National Security Agency
PTSD and the Native Soldier
 Dr. Christina Lafferty, Research Advisor

Mr. Martin E. Toomajian, Battelle
Getting the Edge on Energy: Breaking Our Business as Usual Energy Rhetoric
 Ms. Janie Benton, Research Advisor

Ms. Lisa M. Shaler-Clark, Department of the Army
Images from Open Source Media: Challenges for Strategic Communication for Leaders
 Dr. Daniel Kuehl, Research Advisor

Commandant's Award for Excellence in Research and Writing in Industry Studies

Mr. Bertram D. Braun, State Department
China's Banking System: From Communism to State Capitalism
 Dr. David Blair, Financial Services Industry Study Lead

Lieutenant Colonel Jason J. Denney, U.S. Air Force
Math and Science Education: Is America Prepared for the Future?
 Dr. Mark McGuire, Education Industry Study Lead

Lieutenant Colonel Clark M. Groves, U.S. Air Force
Reframing the Jones Act Debate
 Dr. Mark Montroll, Shipbuilding Industry Study Lead

Mr. David S. Meale, State Department
The Impact of Offshoring on U.S. Manufacturing
 Dr. Stephen Basile, Manufacturing Industry Study Lead

Ms. Janet L. Miller, Department of the Air Force
Defense Aircraft Industrial Surge Capability
 Dr. Steven Black, Aircraft Industry Study Lead

Chairman of the Joint Chiefs of Staff Essay Contest

Semifinalist: 5,000-Word Strategy Article

Colonel Michael A. Addison, Jr., U.S. Air Force
Avoiding the Missiles of October, Persian Edition

Semifinalist: 5,000-Word Strategy Article

Ms. Carol J. Axten, Department of the Navy
How Intellectual Growth Creates Benevolent Leaders: The Libyan Model

Semifinalist: 5,000-Word Strategy Article

Mr. Richard Dick, Defense Intelligence Agency
A Second Insurgency: The Role of Corruption in Insurrections

Semifinalist: 1,500-Word Strategy Article

Colonel Julian Brewster Lovell, Guyana Army

Contesting Al Qaeda's Message: The Importance of the U.S.A. Designing a Communication Strategy to Shape Perceptions, Build Allies, and Dissuade Potential Terrorists

Semifinalist: 1,500-Word Strategy Article

Colonel Julian Brewster Lovell, Guyana Army

The Global War on Terror: Addressing a Grand Strategy to Prevent Terrorism Recidivism

Semifinalist: 1,500-Word Strategy Article

Mr. Wayne B. Osborn, Department of the Air Force

Defining Net-Centricity: Capability Versus Doctrine

2nd Place Winner: 1500-Word Strategy Article

Lieutenant Colonel Martin K. Schlacter, U.S. Air Force

Defining Today's 5th Generation National Security Environment and Its Implications

Secretary of Defense National Security Essay Contest Semifinalists

Mr. George M. Axiotis, Department of Defense

A New Alpha-Omega Map for Acquisition Test and Evaluation

Lieutenant Colonel Renee M. Knippel, U.S. Marine Corps Reserve

Transformation of the Military Manpower Management System for the 21st Century

Mr. William A. Kobren, Defense Acquisition University

Performance Based Logistics: A DoD Strategic Readiness Imperative

Finalist: Ms. Glenda H. Scheiner, Department of the Air Force

USSOCOM Acquisition: Light, Agile, Lethal...A Pathfinder for DoD Acquisition Reform

APPENDIX A

WRITING STANDARDS AND WRITING CHECKLIST

WRITING STANDARDS

THE WRITTEN PRODUCT:

1. **Is the student's original work prepared for the specific assignment.** If the words reflect the ideas or concepts of anyone other than the student, **CITE THE SOURCE** in your paper. This includes direct quotations and paraphrasing.
2. **Reflects use of higher order intellectual skills.** The following intellectual skills are ordered from the least to the most complex; each requires concrete supporting evidence.

Analysis: Demonstrates understanding of concepts by explaining them, giving examples, breaking them into component parts, or applying them.

Synthesis: Combines concepts relevant to the development of the issue or thesis, including new ideas if appropriate.

Evaluation: Applies concepts through logically reasoned, thoughtful judgment on complex issues.

3. **Is logically organized.**

Introduction: Captures the reader's interest from the outset. Presents a clear thesis or purpose statement and states the key areas of discussion the writer will address. Transitions in a manner that leads the reader naturally into the main body.

Main Body: Presents ideas and supporting evidence in an orderly flow that logically leads the reader from concept to concept. Employs transition words and phrases to link ideas in a serial fashion.

Conclusion: Reinforces the thesis/purpose developed in the main body by summarizing the concepts and providing well-reasoned recommendations. Recaps the key arguments and gives a satisfying sense of completion.

4. **Uses appropriate style.**

Expression: Is written clearly for the reader; uses language that the intended reader speaks and hears every day – primarily active voice; includes personal pronouns, ordinary words, and an appropriate variety of punctuation.

Transitions: Leads the reader smoothly through composition; provides clear, natural linkage between ideas, sentences, and paragraphs.

5. **Is grammatically and mechanically correct.**

Grammar: Uses commonly accepted standards for:

Capitalization	Punctuation
Contractions	Subject-verb agreement
Possessives	Verb tense
Pronoun-antecedents	

Mechanics: Uses correct spelling; has no typographical errors; uses appropriate format

<i>Writing Checklist – Mechanics</i>	No Problem	Slight Problem	Serious Problem
Spelling			
Capitalization			
Sentence fragments			
Run-on sentences			
Comma usage			
Semicolon and colons			
Quotations (use and format)			
Subject/verb agreement			
Consistency of tense			
Parallel construction (using matching words, phrases, clauses or sentence structures to express equivalent ideas)			
Active (vs. passive) voice			
Consistent voice/person			
Format (references, footnotes/endnotes, bibliography, etc., according to style manual)			

Writing Checklist - Structure	No Problem	Slight Problem	Serious Problem
<p>Introduction Does the paper have an introduction, or does the writer start in the middle? Is there a thesis statement – the key point the writer will defend/prove – or at least a purpose statement? Does the introduction provide the reader with a preview of key ideas to be discussed?</p>			
<p>Thesis/Purpose Statement Is there an explicit or embedded thesis or purpose statement in the first or second paragraph?</p>			
<p>Body Is the essay divided into appropriate paragraphs? Are section headings used as appropriate?</p>			
<p>Conclusion Does the conclusion recap the essential arguments/points of the essay? Does the writer provide an appropriate summation? Does the writer err by providing “new” information in the last paragraph? Does the essay just stop?</p>			
<p>Logic Flow Is the paper well-organized? Are ideas/arguments presented in a logical order – or are the paragraphs so disconnected that they could be rearranged with no impact? Does the writer jump from one idea to another, or do the ideas build?</p>			
<p>Transitions Does the writer use transition words and phrases to link ideas smoothly? Are ideas presented in a “machine-gun” manner?</p>			
<p>Sentence Structure Are the sentences well constructed? Are they short and choppy? Long and rambling? Does the essay flow, i.e., “read” smoothly?</p>			
<p>Scope Does the writer try to cover too much material? Not enough?</p>			
<p>Language Is the language appropriate in terms of vocabulary/word choice? Is the tone conversational yet professional? Is the wording either pedantic or overly simplistic?</p>			
<p>Content Do the paper’s ideas relate to the assigned topic? Does the writer go off on a tangent or use the assignment to get on a soapbox? Does it make sense?</p>			
<p>Support Are the writer’s arguments logically supported? Does the writer support arguments through direct quotes and reference material as appropriate? Does the paper contain unsubstantiated assertions?</p>			
<p>References Does the writer follow the approved style guide for references? Are the references constructed correctly? Are they from robust, credible sources?</p>			

APPENDIX B

RESEARCH PROPOSAL FORM

ICAF STUDENT RESEARCH APPLICATION

AY 2010

I. Preliminary Research Topic Approval: DUE 21 Aug 09 (Fall) or 23 Oct 09 (Spring)

NAME: _____
(Last, First, MI)

RESEARCH TOPIC: _____

COURSE NUMBER:

- 5650 TUTORIAL READING/INDEPENDENT STUDY FALL (2 credit hours)
- 5650 TUTORIAL READING/INDEPENDENT STUDY SPRING (2 credit hours)
- 5651 RESEARCH FALL (2 credit hours)
- 5651 RESEARCH SPRING (2 credit hours)
- 5652 RESEARCH FALL (4 credit hours)
- 5652 RESEARCH SPRING (4 credit hours)
- 5653 RESEARCH FALL/SPRING (4 credit hours)
- 5654 RESEARCH FELLOW (8 credit hours)
 - o ICAF
 - o DEPSECDEF
 - o SECAF
 - o OSD/BTA
 - o NORAD/USNORTHCOM
 - o QDR

PRELIMINARY RESEARCH QUESTION: _____

FACULTY RESEARCH ADVISOR: _____
(PLEASE PRINT NAME)

(Faculty Research Advisor Signature) Date: _____

Date: _____
CHRISTINA L. LAFFERTY, Ed.D.
Director of Research and Writing

II. Research Proposal Final Approval: DUE 21 Sep 09 (Fall) or 4 Dec 09 (Spring)

NAME: _____
(Last, First, MI)

FINAL RESEARCH TOPIC: _____

FINAL RESEARCH QUESTION: _____

BRIEF STATEMENT OF METHODOLOGY: _____

PRELIMINARY OUTLINE: (attach separate sheet)

FACULTY RESEARCH ADVISOR: _____
(PLEASE PRINT NAME)

(Faculty Research Advisor Signature) Date: _____

CHRISTINA L. LAFFERTY, Ed.D.
Director of Research and Writing Date: _____

YOU MUST

- (1) Engage a Faculty Research Advisor,
- (2) Obtain Faculty Research Advisor and Director of Research approval of Part I before signing up for electives, and
- (3) Obtain Faculty Research Advisor and Director of Research final approval of Part II by the date indicated.

Director of Research and Writing: Dr. Chris Lafferty (laffertyc@ndu.edu);
Rm 328 @ (202) 685-4330.

APPENDIX C

AGENCY SPONSORED RESEARCH

Agency Sponsored Research Fellowship Information Meeting

**17 August 2009
1215-1315
Room 101**

Representatives from the sponsoring agencies will talk about their Fellowships and answer questions. Faculty Research Advisors will start forming Research Fellowship teams as well as matching up with individual researchers.

Deputy Secretary of Defense Educational Initiative

Academic Year 2010 marks the third year of the Deputy Secretary of Defense Educational Initiative. Deputy Secretary of Defense William Lynn has invited senior and intermediate-level Joint Professional Military Education colleges to form small student teams to help address major long-term strategic challenges in the Department and the nation.

Each group will conduct an assessment, produce a concise paper and supporting presentation as the final products, and be prepared, if selected, to brief DoD senior leaders on their findings and recommendations. Products may be classified or unclassified. Fresh thinking and new insights are particularly welcome.

The ICAF team(s) will select one of the broad, long-range issues of most interest to DoD senior leaders, to be provided in early August, and then work with Policy Planning in the Office of the Secretary of Defense (Policy) to refine a more specific paper topic that can be meaningfully addressed in 10 to 20 pages.

Secretary of the Air Force Energy Research Fellowship

Now in its third year, the SECAF Energy Fellowship operates under the direction of the Assistant Secretary of the Air Force for Installations, Environment and Logistics. Fellows seek to make a real-world, real-time difference in these critical energy areas:

- Synthetic jet fuels
- Solar energy
- Nuclear energy
- Coal-to-liquid
- And more!

Funding is available for travel and research costs. Fellows may work in teams or alone. Topics may also be modified for smaller scale research projects.

HQ NORAD/USNORTHCOM

This is the first year for the Headquarters North American Aerospace Defense Command – U.S. Northern Command Research Fellowship. NORAD/USNORTHCOM has framed 38 research questions that fit the ICAF curriculum, including:

- Use of Joint Special Operations Forces in Homeland Defense
- Cyber Defense
- Intelligence Fusion between Canada, the United States and Mexico.
- Changing the Intelligence Culture
- Asymmetric Threats Threatening Canada in the Near Term
- Bi-National Maritime Domain Awareness (MDA)
- Bi-national Interoperability Initiatives
- Defense Industrial Base, Critical Infrastructure
Unity of Effort for Civil Support Operations
- Mexico – U.S. Enhanced Intelligence Relationship
- CBRNE Capabilities-Based Strategic Risk Assessment
- Knowledge Management for Command Decision Making in Disaster Management
- Intel Fusion and Civil Liberties.
- Pandemic (i.e. Avian Bird Flu)

Funding is available for travel and research costs. Fellows may work in teams or alone.

Air Force Quadrennial Defense Review Research Fellowship

AY 2010 marks the inaugural year of the USAF QDR Research Fellowship. Under the direction of Mr. Mark Peterson, Associate Director of AF/CVAQ, this fellowship offers students the opportunity to research real-world issues that will impact Air Force strategic planning. Selected fellows will be offered the opportunity to brief their results at the Pentagon. Research topics are:

- **National Security Implications of Climate Change (per the FY 2008 NDAA section 951).** What are the implications of global climate change on the ability of the Air Force to conduct missions from major installations in CONUS and OCONUS? While the question is AF centric, AF/CVAX has the Naval Postgraduate School looking at this (there are a significant number of AF students there and they have a National Security Affairs division). The ICAF fellowship, in contrast, should look across the DoD from a joint perspective since much of what the AF brings to DoD is joint (e.g., mobility and space).
- **Combat Aircraft Industry Base Study.** This research specifically needs to look at the implications and risks of the reduced CAF industry base. Specifically, the focus is implications of going to a single supplier of 5th generation technology and the ramifications of losing the capability to adequately compete this advanced technology in our US industry base. Note that AT&L/PA&E are currently going through a major wargame on this topic –the research fellowship will use much of the data coming out of this wargame to help facilitate their research.

Funding is available for travel and research costs. Fellows may work in teams or alone.

This agency is also interested in research on the following smaller-scope issues:

Topic	Issues/Questions
Cyberspace	<ol style="list-style-type: none"> 1. Is Computer Network Attack capability necessary in more than one Service? 2. What should be the Air Force's long term investment strategy for cyber operations? What should the Air Force Cyber Command look like in 20 years? 3. There are restrictions associated with conducting computer network exploitation (Title 50) and computer network attack (Title 10). Do these restrictions inhibit military computer network operations? If so, what steps need to be taken to permit effective application of military power?
National security implications of global climate change	<ol style="list-style-type: none"> 1. What are the implications of global climate change on AF installations in CONUS and OCONUS? <ul style="list-style-type: none"> • Assess the long-term viability of AF installations based on an evaluation of a number of commonly-recognized climate degradation/deterioration scenarios
Alternative energy research	<i>Topics from DSB Task Force on DoD Energy Strategy</i>
UAS	<ol style="list-style-type: none"> 1. How should AF MQ-1/MQ-9 units be best structured to maintain proficiency in operational support to the JFACC while providing better support to deployed ground forces? Should the AF invest a portion of their equipment and operators in air liaison units attached to the Army brigades? 2. What Joint missions should the AF align MQ-9 with to take advantage of its weapons payload while retaining the flexibility to conduct reconnaissance? (e.g. CAS) What Joint missions would be enhanced by teaming MQ-9 with manned platforms (e.g. A-10, F-16, F-35)? 3. What limitations of current multi-mission UAS would preclude it being effective in other theaters (performance, weather)? What missions should UAS be optimized for in the future (SEAD/DEAD, long range strike, persistent surveillance)? 4. How should processing, exploitation, and dissemination evolve to prioritize detailed analysis and better determine appropriate level of analysis required? Should the current levels of exploitation be redefined? How can the different stakeholders better communicate the level of exploitation required?
Prompt Global Strike	<ol style="list-style-type: none"> 1. Analyze possible options for development and fielding of a prompt global strike capability <ul style="list-style-type: none"> • "Capability to deliver prompt, precise, conventional kinetic effects at inter-continental ranges." - CDRUSSTRATCOM
Electronic Warfare	<ol style="list-style-type: none"> 1. How can the AF address the expected EW capability gap beginning in 2012 and the Core Component Jammer IOC in 2015-2017? 2. What type of joint structure can DoD develop to ensure an integrated and sustained EW capability?
Strategic Deterrence	<ol style="list-style-type: none"> 1. What shape will strategic deterrence take in the post-OIF/OEF world? What will the AF's role be?
Missile Defense	<ol style="list-style-type: none"> 1. What are the long-term structure, role and mission of MDA? Analysis should include the following: <ul style="list-style-type: none"> • Whether MDA should be maintained in its current configuration; • Whether the scope and nature of MDA should be changed from an organization focused on research and development to an organization focused on combat support; • Whether any functions and responsibilities should be added to MDA, in part or in whole, from other entities such as the USSTRATCOM and the Services • Whether any functions and responsibilities of MDA should be transferred, in part or in whole, to other entities such as the USSTRATCOM and the

Department of Defense Business Transformation Agency Research Fellowship

The Department of Defense Business Transformation Agency (BTA) Fellowship provides the opportunity for students to research how DOD can build a business enterprise that is agile, responsive, and accountable. Fellows will select from topics ranging from business best practices; enterprise integration; transformation planning and performance; warfighter support; expeditionary business operations; and financial, human resources, acquisition, and supply chain visibility.

Funding is available for travel and research costs. Fellows may work individually or as a team. Fellows will have the opportunity to brief the Director and senior members of the Business Transformation Agency on their findings.

In addition to the Research Fellowship, BTA is interested in sponsoring research projects on a smaller scale. Students will be provided a list of topics for consideration or may propose a topic for approval.

Agency Sponsored Research Team Formation

Each Research Fellowship team must follow the ICAF Research Fellow approval process outlined in the *Research and Writing Handbook*. The team(s) composition will depend on the nature of the topic and the level of interest – most likely from 3-5 students. Individuals may opt to work alone as well.

Prospective teams will submit a Preliminary Research Approval Form containing all team members' names. In addition, each applicant must present a writing sample. The package must be delivered to the ICAF Director of Research and Writing (Dr. Lafferty) by COB 25 Aug 2009.

If more teams apply than can be accommodated by OSD (Policy), final selection will be done by the Research Director and the Dean of Faculty or his designee.

Research Fellowship Timeline

*Please note that these dates are **earlier** than regular research!*

- | | |
|---|--|
| <ul style="list-style-type: none"> • 22 Aug 2009 • 21 Sep 2009 • 22 Sep 2009 • NLT 15 Dec 2009 • NLT 15 March 2010 | <ul style="list-style-type: none"> Part I Research Topic Approval Form due Part II Research Proposal Final Approval Form due Confirmation of ICAF participation to sponsoring agency Mid-year informal progress update to sponsoring agency Nomination and submission of papers to SECDEF (before domestic travel for all others) |
|---|--|

- May 2010 Selected teams present paper at sponsoring agency

APPENDIX D

ICAF FACULTY AREAS OF INTEREST

**ICAF FACULTY MEMBER AREAS OF INTEREST
(BY ACADEMIC DICIPLINE)**

ANTHROPOLOGY:

Bryant, deVillafranca, Lafferty, Sullivan,
Whittaker, Vaitkus

ART AND ARCHITECTURE:

Montrroll

DECISION SCIENCE/GAME THEORY:

M. Davis, Russo

ECONOMICS:

Abbott, Berg, Book, Brent, Crandall, Foulon,
King, Losman, Needham, Russo, Sammis,
Shipe, Sullivan, Weissman

EDUCATION:

(including Adult Learning)

A'Hearn, Basile, Browning, Corvette, F.
Davis, M. Davis, Ford, Gropman, Knowlton,
Lafferty, McGuire, Montrroll, Severance,
Stavrakis, Whittaker

ENGLISH/AMERICAN LITERATURE:

Kramer, Lafferty

ENGINEERING:

Basile, Ford, Koprucu, Loomer. Montrroll

GEOGRAPHY:

Loomer, Severance

GEOPOLITICS:

Prevost, Severance, Stavrakis, Sullivan

HEALTH CARE ADMINISTRATION:

Book, M. Davis, Egland, King, Knowlton

HERMANEUTICS:

Corvette, Severance

HISTORY:

Abbott, Andrews, Berg, S. Brown, Cooling,
Goldberg, Gropman, Knowlton, Kramer,
Meyer, Moss, Myers, Randolph, Severance,
Stavrakis, Sullivan, Whittaker

Civil War and Reconstruction

History: Black, Cooling, Severance

HUMAN DEVELOPMENT:

Browning, Corvette, F. Davis, M. Davis,
Lafferty, Severance, Sullivan

INTELLIGENCE:

Lawrence

INFORMATION SYSTEMS:

Altieri, Andrews, Basile, F. Davis, King,
Thompson

JOURNALISM:

Briggs, Carpenter, Gropman

LAW:

Abbott, Altieri, Corvette, Dorsey, Goldberg,
Keys, Moss, Prevost, Terpinas

LEGAL SYSTEMS

Corvette, Prevost

LOGISTICS:

Egland, Kumashiro, Morris, Needham,
Vargo

MARKETING:

Needham

MEDICINE:

M. Davis, Knowlton, Stavrakis, Whittaker

MILITARY STRATEGY:

Andrews, Carpenter, Severance, Shaw

PHILOSOPHY:

Corvette, Goldberg, Moss, Stavrakis,
Sullivan, Whittaker

PHYSICS:

Basile, Ford, Kaplan

POLITICAL SCIENCE: (Includes

International Relations)

Abbott, Cooling, Goldberg, King, Koprucu,
Kramer, Lawrence, Meyer, Moss, Russo,
Stavrakis, Sullivan, Terpinas, Whittaker

PUBLIC ADMINISTRATION: Russo,

King

PUBLIC SPEAKING:

Corvette, Koprucu, Lawrence, Russo,
Stavrakis, Sullivan

PSYCHOLOGY:

Corvette, M. Davis, Knowlton, Lafferty,
McGuire, Whittaker, Vaitkus

RELIGION:

Bryant, Corvette, M. Davis, Gropman,
Meyer, Moss, Russo, Sullivan, Vaitkus,
Vargo

SOCIOLOGY:

Andrews, Corvette, M. Davis, Stavrakis,
Vaitkus, Whittaker

STATISTICS:

Ford, Needham, Vaitkus, Weissman

STRATEGIC LEADERSHIP:

Black, Browning, Carpenter, Corvette, M.
Davis, Knowlton, Lafferty, Lawrence,
McGuire, Thompson

SUPPLY CHAIN:

Egland, Hauser, Morris, Needham, Vargo

SYSTEMS MANAGEMENT:

Corvette, Ford, Montroll, Needham

TRANSPORTATION:

Morris, Needham, Russo, Shipe

WRITING: (Composition)

Berg, Corvette, deVillafranca, Lafferty

**ICAF FACULTY AREAS OF INTEREST
(BY GEOGRAPHIC REGION)**

CANADA/MEXICO:

Cooling, King, Lafferty

CENTRAL AMERICA/CARIBBEAN:

Russo

SOUTH AMERICA:

Berg, King, Stavrakis

EUROPE: (Central/Northern)

Basile, Carpenter, Cooling, Corvette, Gropman, Kramer, Kumashiro, Meyer, Moss, Randolph, Stavrakis, Whittaker

EUROPE: (Eastern)

Basile, Black, T. Brown, Cooling, Kramer, Meyer, Randolph, Stavrakis, Vaitkus, Whittaker

EUROPEAN UNION: (Incl. Southern Flank)

Abbott, Basile, Carpenter, Cooling, Kramer, Meyer, Moss, Stavrakis, Whittaker

RUSSIA/NEW INDEPENDENT STATES:

Altieri, Babus, Benton, Black, Blair, Cooling, Crandall, Goldberg, King, Kramer, Meyer, Myers, Russo, Stavrakis, Whittaker

MIDDLE EAST/PERSIAN GULF:

Bryant, Crandall, Foulon, Goldberg, Kumashiro, Losman, Moss, Sullivan, Whittaker

SUB-SAHARAN AFRICA:

Brent, Myers, Russo, Stavrakis

CHINA:

Altieri, King, Randolph, Russo, Stavrakis, Thompson, Whittaker

NORTHEAST ASIA:

Altieri, S. Brown, Whittaker

OCEANS/WORLD'S COMMONS:

Severance, Sullivan

SOUTHEAST ASIA/SOUTH PACIFIC:

Gropman, Leith, Myers, Sullivan, Thompson

SOUTH ASIA:

Goldberg, Sullivan

**ICAF FACULTY AREAS OF INTEREST
(BY INDUSTRY)**

AGRIBUSINESS:

Meyer, Randolph

AIRCRAFT:

Abbott, Black, Briggs, Berg, Carpenter, DeDecker, Needham, Russo

BIOTECHNOLOGY:

Dorsey, Goldberg, Lafferty, Montroll

RECONSTRUCTION AND VITAL INFRASTRUCTURE

Black, Brent, Needham, Vargo

EDUCATION: Russo,

A'Hearn, Browning, Corvette, M. Davis, Denney, Ford, Lafferty, McGuire, Myers, Severance, Stavrakis, Vaitkus

ENVIRONMENT:

Meyer, Myers,

ELECTRONICS:

Losman, Moss

ENERGY:

Benton, Crandall, Kramer, Leith, Losman, Morris, Myers, Sullivan, Swain

ENVIRONMENT/OCEANS:

Foster, Meyer, Montroll, Sullivan

FINANCIAL SERVICES:

Abbott, Blair, Corvette, Kaplan, Kumashiro, Needham, Severance, Sullivan

HEALTH CARE:

Briggs, T. Brown, M. Davis, Knowlton, Lafferty, Stavrakis

INFORMATION AND COMMUNICATIONS TECHNOLOGY:

Altieri, Carpenter, Kaplan, King, Myers, Thompson

LAND COMBAT SYSTEMS:

DeDecker, Severance, Shipe

MANUFACTURING:

Abbott, Basile, Needham, Russo, Swain, Vargo

MEDIA:

Briggs, Carpenter, Corvette, Gropman, Herr, Lawrence, Vaitkus

PRIVATIZED MILITARY OPERATIONS:

DeDecker, Hill, King, Vargo

SHIPBUILDING:

Montroll

SPACE:

Carpenter, Ford, Loomer, Needham, Russo, Swain

STRATEGIC MATERIALS:

Babus, M. Davis, Severance, Vargo

TRANSPORTATION:

(Air, Sea, Land, Rail)

Black, Briggs, Lafferty, Morris, Needham, Russo

WEAPONS:

Basile, S. Brown, Carpenter, Morris, Shaw

**ICAF FACULTY AREAS OF INTEREST
(BY FUNCTIONAL AREA)**

ACQUISITION:

Abbott, A'Hearn, Altieri, Brigg Basile,
S. Brown, Cooling, DeDecker, Dorsey, Montroll,
Needham, Vargo

ARMS CONTROL:

Carpenter, Moss, Sullivan, Whittaker

ARMS SALES:

Abbott, S. Brown, Cooling, Losman, Needham,
Sullivan

ATHLETIC INJURIES/TRAINING:

Severance

AVIATION (including Aeronautics):

Black, Briggs, Carpenter, Gropman, Randolph,
Russo, Severance, Swain

BIOTERRORISM:

Black, Carpenter, Goldberg

BUDGETING: (Incl. PPBS)

Briggs, Cooling, Corvette, Gropman, King,
Needham

BUSINESS-GENERAL:

Abbott, A'Hearn, Browning, Cooling, Corvette,
Crandall, Foulon, Hauser, King, Leith, Morris,
Moss, Needham, Sullivan

BUSINESS, INDUSTRY AND DEFENSE:

Cooling, Hauser, Vargo

CAMPAIGN PLANNING:

The Military Strategy and Logistics Department
Faculty; Gropman

CHAOS/COMPLEXITY THEORY:

Carpenter, Corvette, Sullivan

CIVIL AFFAIRS/CIVIC ACTION:

Goldberg, Sullivan

CIVIL DEFENSE:

Cooling

CIVIL-MILITARY RELATIONS:

Abbott, Cooling, Goldberg, Moss, Randolph,
Severance, Stavrakis

COALITIONS AND ALLIANCES:

Cooling, Randolph

COGNITIVE PSYCHOLOGY

Corvette, M. Davis, Browning

COMMAND AND CONTROL:

Black, Carpenter, Cooling, Kaplan

COMMUNICATIONS THEORY:

Carpenter, Corvette, Lafferty

COMPUTERS:

Altieri, Kaplan, Loomer, Sullivan, Whittaker

CONFLICT THEORY:

Brent, Carpenter, Corvette, Sullivan,
Whittaker

CONGRESS/LEGISLATIVE PROCESS:

Briggs, Corvette, DeDecker, Goldberg,
Lawrence, Moss, Whittaker

CONTRACTING:

Abbott, A'Hearn, Altieri, Corvette, DeDecker,
Dorsey, Morris, Needham

COST ANALYSIS:

Briggs, Corvette, King, Needham, Russo

CRIMINAL JUSTICE:

Altieri, Corvette, Keys, Lawrence

CRITICAL/CREATIVE THINKING:

The Leadership Department Faculty

CULTURE AND IDEOLOGY:

Corvette, Lafferty, Morris, Vaitkus

DEATH, DYING and GRIEF:

M. Davis, Myers, Lafferty

DECISION MAKING:

Black, Briggs, Browning, Corvette, M. Davis,
King, Needham, Stavrakis, Whittaker

DEFENSE CONVERSION:

Abbott, S. Brown, Cooling, Needham,
Sullivan

DEFENSE SCIENCE:

Basile, Cooling, Ford, Kaplan

DEMOGRAPHICS:

Sullivan

DEVELOPMENT ASSISTANCE:

Babus, Brent

DIPLOMACY:

Babus, Cooling, Corvette, Goldberg, Kramer, Meyer, Moss, Randolph, Sullivan, Stavrakis, Terpinas, Whittaker

DRUG TRAFFIC/CONTROL:

Stavrakis, Myers, Sullivan

EMERGENCY MANAGEMENT:

Black, Cooling

ENVIRONMENTAL SECURITY:

Sullivan

ETHICS:

Briggs, Carpenter, Corvette, Goldberg, Gropman, Knowlton, Lafferty, Moss, Stavrakis, Sullivan, Whittaker

ETHNIC CONFLICT:

Brent, Corvette, Gropman, Meyer, Myers, Stavrakis, Sullivan, Whittaker

EVALUATION THEORY:

Severance

EXECUTIVE COACHING/LEADERSHIP DEVELOPMENT

Browning, Corvette, Lafferty, M. Davis

FINANCIAL MANAGEMENT

Corvette, Hill

FITNESS/HEALTH: M. Davis, Knowlton, Shaw, Sullivan, Vaitkus

Athletic Injuries/Training: Shaw

FORECASTING/FUTURES:

Needham, Sullivan

FOREIGN MILITARY SALES:

Abbott, S. Brown, Losman, Needham

GAMING/SIMULATION/ EXERCISES:

Altieri, Gropman, Needham, Sullivan, Weissman, Whittaker

GOVERNMENT/INDUSTRY RELATIONS:

Abbott, A'Hearn, Altieri, Basile, S. Brown, Cooling, Corvette, Crandall, Foulon, King, Losman, Moss, Sullivan

HEALTH/HUMAN SERVICES:

M. Davis, Whittaker

HOMELAND SECURITY:

Black, Cooling

HUMANITARIAN ASSISTANCE:

M. Davis, Knowlton, Stavrakis, Whittaker

INDUSTRY CONVERSION:

Abbott, Cooling, Hauser, King, Needham, Sullivan

INDUSTRY – GENERAL:

Abbott, A'Hearn, Altieri, Basile, Cooling, Corvette,, Hauser, Losman, Needham, Sullivan

INFORMATION OPERATIONS:

Carpenter, Hauser, Koprucu

INSURGENCY/COUNTER-INSURGENCY:

Carpenter, Hill

INTEGRATION/INTEROPERABILITY:

Basile

INTELLIGENCE/COVERT ACTION:

Crandall, Hill, Lawrence, Loomer, Meyer, Moss, Stavrakis, Terpinas, Whittaker

INTERAGENCY PROCESS:

Black, Babus, Cooling, Meyer, Randolph, Severance, Sullivan, Terpinas, Whittaker

INTERNATIONAL LOGISTICS:

Needham, Sullivan, Vargo

INTERNATIONAL ORGANIZATIONS:

King, Meyer, Myers, Stavrakis, Sullivan, Whittaker

INTERNATIONAL RELATIONS:

Cooling, Goldberg, Kramer, Lawrence, Meyer, Moss, Stavrakis, Sullivan, Whittaker

LEADERSHIP/MANAGEMENT:

A'Hearn, Black, Browning, Corvette, M. Davis, King, Knowlton, Lafferty, McGuire, Thompson, Whittaker

LOGISTICS:

Abbott, Cooling, Gropman, Hauser, King, Kumashiro, Morris, Needham, Severance, Vargo

**LOW INTENSITY CONFLICT
REVOLUTION/TERRORISM:**

M. Davis, Goldberg, Gropman, Losman, Moss, Needham, Stavrakis, Sullivan, Whittaker

MACHINE TOOLS:

Basile, Needham

MANPOWER/PERSONNEL:

Corvette, Knowlton, Morris

MEDICAL GEOGRAPHY:

Severance

MILITARY GEOGRAPHY:

Carpenter, Loomer, Severance

**MILITARY OPERATIONS/ ORGANIZATION:
(AIR):**

Black, Carpenter, Cooling, Gropman, Hill, Randolph

**MILITARY OPERATIONS/ ORGANIZATION:
(Land):**

Cooling, Severance

**MILITARY OPERATIONS/
ORGANIZATION: (Sea):**

Abbott, Black, Cooling

**MILITARY OPERATIONS/
ORGANIZATION: (Joint)**

Black, Carpenter, Cooling, Gropman, Randolph, Severance, Shaw

**MILITARY OPERATIONS/
ORGANIZATION: (Combined-Multinational)**

Cooling, Gropman, Randolph, Stavrakis

**MILITARY OPERATIONS OTHER THAN WAR:
(MOOTW)**

Carpenter, Moss, Whittaker

MILITARY OPERATIONS/

ORGANIZATIONS: (Reserve Components):
Cooling, Lafferty

MIND AND BRAIN (Neuroscience):

Browning, Lafferty

MOBILIZATION:

Abbott, Cooling, Gropman, Hauser, Losman, Needham, Sullivan

MODELING:

Altieri, Basile, Kaplan, Needham

MULTILATERAL DIPLOMACY:

(including Global Governance)
Moss, Stavrakis

NATURAL DISASTERS:

Black, M. Davis, Lafferty, Sullivan

NATURAL RESOURCES:

Crandall, Myers, Sullivan

NEWS MEDIA:

Briggs, Corvette, Goldberg, Gropman, Lafferty, Lawrence, Sullivan, Vaitkus, Whittaker

**NUCLEAR-BIOLOGICAL-CHEMICAL
WEAPONS/EFFECTS:**

Black, Carpenter, Goldberg, Sullivan, Swain

ORGANIZATIONAL CHANGE

Black, Corvette, Lafferty, Thompson

**ORGANIZATIONAL THEORY;
BEHAVIOR; STRATEGIC LEADERSHIP:**

Abbott, A'Hearn, Black, Browning, Carpenter, Corvette, M. Davis, King, Knowlton, Lafferty, McGuire, Severance, Thompson, Vaitkus, Whittaker

ORGANIZED CRIME AND CORRUPTION:

Stavrakis

**PEACEKEEPING/PEACE
ENFORCEMENT:**

King, Leith, Meyer, Sullivan, Vaitkus, Whittaker

PEACE RESEARCH:

Brent, Corvette, Goldberg, Meyer, Myers, Stavrakis, Sullivan, Whittaker

POLICY PROCESSES:

Abbott, Black, Cooling, Corvette, Goldberg,
Gropman, `Stavrakis, Whittaker

POST-CONFLICT NATION BUILDING:

Brent, S. Brown, Leith, Myers, Stavrakis

POW/MIA AFFAIRS:

Lafferty

PROGRAM/PROJECT MANAGEMENT:

Corvette, DeDecker, Severance

PUBLIC DIPLOMACY/PSYCHOLOGICAL WARFARE:

Sullivan, Whittaker

PUBLIC OPINION:

Carpenter, Corvette, Lafferty, Whittaker

QUANTITATIVE METHODS:

Basile, Lafferty, Leith, Needham, Russo,
Thompson, Weissman

QUALITATIVE METHODS:

Abbott, Corvette, Lafferty, Severance

RACE/ETHNICITY/SEXUAL ORIENTATION:

Goldberg, Gropman, Whittaker

RESEARCH AND DEVELOPMENT:

A'Hearn, Basile, S. Brown, Ford, Montroll,
Sullivan

RESERVE COMPONENT:

Buonassisi, Lafferty

SAFETY

Severance

SECURITY, STABILITY, TRANSITION and RECONSTRUCTION:

Brent, Carpenter, Gropman, Leith, Myers

SECURITY ASSISTANCE/TECHNOLOGY TRANSFER/EXPORT CONTROL:

S. Brown, Cooling, Losman, Needham, Sullivan

SIMULATION:

Altieri, Carpenter, Needham, Whittaker

SOCIAL NEUROSCIENCE:

Browning, Lafferty

SPECIAL OPERATIONS:

DeDecker, Hill

STATE-LOCAL GOVERNMENT:

King, Russo,

STRATEGY:

Carpenter, Cooling, Corvette, Goldberg,
Gropman, Hauser, King, Kramer, Meyer, Moss,
Severance, Sullivan, Whittaker

STRATEGIC PLANNING:

Black, Browning, Cooling, Corvette,
Kumashiro, Lafferty, Lawrence, Meyer,
Montroll, Morris, Sullivan

SUPPLY CHAIN MANAGEMENT:

Hauser, Morris, Needham, Vargo

SYSTEMS THEORY:

Corvette, Ford, Kaplan

TECHNOLOGY-GENERAL:

S. Brown, Cooling, Ford, Montroll, Moss,
Sullivan

TECHNOLOGY TRANSFER AND EXPORT CONTROL:

Cooling, Moss

TERRORISM:

Black, M. Davis, Goldberg, Losman, Sullivan,
Terpinas, Whittaker

TEST AND EVALUATION:

(Weapons Systems, Live Fire T&E; Human
Factors)

Basile, Severance

TRAINING:

Browning, Corvette, M. Davis, Lafferty,
Knowlton, Whittaker

TRADE AND NATIONAL SECURITY:

Cooling, Foulon, Moss

TRANSNATIONAL CRIME AND CORRUPTION:

Stavrakis

TRUST:

Corvette, Lafferty

TRANSPORTATION-GENERAL:

Lafferty, Montroll, Morris, Needham, Russo

WAR CRIMES:

Lafferty, Moss, Stavrakis

WAR STRATEGY DEVELOPMENT:

Carpenter, Cooling, Gropman, Randolph,
Severance, Shaw

WAR TERMINATION:

Cooling, Gropman, King, Moss, Randolph,
Severance, Stavrakis, Sullivan, Whittaker

WATER RESOURCES:

Losman, Severance, Sullivan

WOMEN'S ISSUES:

Sullivan, Vargo, Whittaker