Calhoun: The NPS Institutional Archive

DSpace Repository

Theses and Dissertations | 1. Thesis and Dissertation Collection, all items

1990-03

A comparative analysis of Intermediate Service College (ISC) Phase I Joint Professional Military Education (JPME)

Clark, Edward S.

Monterey, California. Naval Postgraduate School

http://hdl.handle.net/10945/30685

Downloaded from NPS Archive: Calhoun

http://www.nps.edu/library

Calhoun is a project of the Dudley Knox Library at NPS, furthering the precepts and goals of open government and government transparency. All information contained herein has been approved for release by the NPS Public Affairs Officer.

Dudley Knox Library / Naval Postgraduate School
411 Dyer Road / 1 University Circle
Monterey, California USA 93943

AD-A220 077

NAVAL POSTGRADUATE SCHOOL
Monterey, California

DTIC
ELECTE
APR 05 1990
S D
B

THESIS

A COMPARATIVE ANALYSIS OF INTERMEDIATE SERVICE COLLEGE (ISC) PHASE I JOINT PROFESSIONAL MILITARY EDUCATION (JPME)

by

Edward S. Clark

March 1990

Thesis Advisor: James Tritten

Approved for public release; distribution is unlimited.

04 04 086

REPORT DOCUMENTATION PAGE

Form Approved OMB No. 0704-0188

1a. REPORT SECURITY CLASSIFICATION: Unclassified	1b. RESTRICTIVE MARKINGS
2a. SECURITY CLASSIFICATION AUTHORITY	3. DISTRIBUTION/AVAILABILITY OF REPORT: Approved for public release; distribution is unlimited
2b. DECLASSIFICATION/DOWNGRADING SCHEDULE	
4. PERFORMING ORGANIZATION REPORT NUMBER(S)	5. MONITORING ORGANIZATION REPORT NUMBER(S)
6a. NAME OF PERFORMING ORGANIZATION: Naval Postgraduate School; 6b. OFFICE SYMBOL (If applicable): 36	7a. NAME OF MONITORING ORGANIZATION: Naval Postgraduate School
6c. ADDRESS (City, State, and ZIP Code): Monterey, CA 93943-5000	7b. ADDRESS (City, State, and ZIP Code): Monterey, CA 93943-5000
8a. NAME OF FUNDING/SPONSORING ORGANIZATION: Director, Net Assessment; 8b. OFFICE SYMBOL (If applicable): OSD/NA	9. PROCUREMENT INSTRUMENT IDENTIFICATION NUMBER
8c. ADDRESS (City, State, and ZIP Code): Office of the Secretary of Defense, Washington, D.C. 20301	10. SOURCE OF FUNDING NUMBERS: PROGRAM ELEMENT NO. / PROJECT NO. / TASK NO. / WORK UNIT ACCESSION NO: MIPR DDWAM 90005 & DWAM 90038

11. TITLE (Include Security Classification): A Comparative Analysis of Intermediate Service College (ISC) Phase I Joint Professional Military Education (JPME)

12. PERSONAL AUTHOR(S): Edward S. Clark

13a. TYPE OF REPORT	13b. TIME COVERED	14. DATE OF REPORT (Year, Month, Day)	15. PAGE COUNT
Master's Thesis	FROM _____ TO _____	March 1990	121

16. SUPPLEMENTARY NOTATION: The views expressed in this thesis are those of the author and do not reflect the official policy or position of the Department of Defense or the U.S. Government.

17. COSATI CODES			18. SUBJECT TERMS (Continue on reverse if necessary and identify by block number)
FIELD	GROUP	SUB-GROUP	Joint Professional Military Education (JPME)

19. ABSTRACT (Continue on reverse if necessary and identify by block number)

This thesis compares the four Intermediate Service Colleges (ISC) and the Defense Intelligence College (DIC) Phase I Joint Professional Military Education (JPME) curricula and student and faculty mixes. It asks the question, "Is it feasible to offer a Phase I JPME curriculum at the Naval Postgraduate School?" The results clearly show that a Phase I JPME program **is feasible** if established within the National Security Affairs/Intelligence (NSA/I) and the Joint Command, Control and Communications (C^3) curricula. In these curricula, the student and faculty mixes can be easily attained and the curriculum can be established with minimum disruption to the graduate education mission of the Naval Postgraduate School. Additionally, with six core courses established as Phase I JPME, students from other curricula may be tracked into Phase I by detailers on a case-by-case basis. Ultimately, this would increase the number of Navy Phase I JPME graduates by 69 percent. These graduates would then be available for Phase II and further on Joint Duty Assignments (JDAs).

20. DISTRIBUTION/AVAILABILITY OF ABSTRACT: X UNCLASSIFIED/UNLIMITED ☐ SAME AS RPT ☐ DTIC USERS	21. ABSTRACT SECURITY CLASSIFICATION: Unclassified
22a. NAME OF RESPONSIBLE INDIVIDUAL: James Tritten	22b. TELEPHONE (Include Area Code): (408) 646-2856; 22c. OFFICE SYMBOL: 56Tr

DD Form 1473, JUN 86 *Previous editions are obsolete* SECURITY CLASSIFICATION OF THIS PAGE: Unclassified

Approved for public release; distribution is unlimited.

A Comparative Analysis of Intermediate Service College (ISC) Phase I Joint Professional Military Education (JPME)

by

Edward S. Clark
Lieutenant Commander, United States Navy
B.A., Bowdoin College, 1976

Submitted in partial fulfillment of the requirements for the degree of

MASTER OF SCIENCE IN MANAGEMENT

from the

NAVAL POSTGRADUATE SCHOOL
March 1990

Author: [redacted]
Edward S. Clark

Approved by: [redacted]
James Tritten, Thesis Advisor

[redacted]
Richard S. Elster, Second Reader

[redacted]
David R. Whipple, Chairman,
Department of Administrative Science

ABSTRACT

This thesis compares the four Intermediate Service Colleges (ISC) and the Defense Intelligence College (DIC) Phase I Joint Professional Military Education (JPME) curricula and student and faculty mixes. It asks the question, "Is it feasible to offer a Phase I JPME curriculum at the Naval Postgraduate School?" The results clearly show that a Phase I JPME program **is feasible** if established within the National Security Affairs/Intelligence (NSA/I) and the Joint Command, Control and Communications (C^3) curricula. In these curricula, student and faculty mixes can be easily attained and the curriculum can be established with minimum disruption to the graduate education mission of the Naval Postgraduate School. Additionally, with six core courses established as Phase I JPME, students from other curricula may be tracked into Phase I by detailers on a case-by-case basis. Ultimately, this would increase the number of Navy Phase I JPME graduates by 69 percent. These graduates would then be available for Phase II and further on Joint Duty Assignments (JDAs).

NUMBERS OF GRADUATES IN A YEARLY CYCLE					
Service College	**Navy**	**Marine**	**Air Force**	**Army**	**Total**
Navy CSC	85	22	15	32	154
Army CGSC	8	16	40	867	931
Marine CSC	12	121	12	12	157
Air CSC	11	10	410	53	484
Subtotal	116 (7%)	169 (10%)	477 (28%)	964 (56%)	**1,726**
NPS potential	80 (a **69%** increase in Phase I graduates)				
	196				

TABLE OF CONTENTS

I. **INTRODUCTION** 1

II. **LITERATURE REVIEW** 8

A. A HISTORICAL PERSPECTIVE 8

B. NATIONAL DEFENSE UNIVERSITY PROPOSAL 10

C. SKELTON PANEL COMPARISONS OF PME 12

D. SKELTON PANEL PROPOSALS 15

E. NAVY JOINT PROFESSIONAL MILITARY EDUCATION 17

F. NAVY OFFICER CAREER PATH AND FLOW POINTS 20

III. **COMPARISON OF INTERMEDIATE PROGRAMS** 22

A. INTERMEDIATE SERVICE COLLEGE (ISC) PHASE I CURRICULA 22

1. Area 1: Joint Forces and the Operational Level of War 23

2. Area 2: Organization and Command Relationships 24

3. Area 3: Joint Command, Control, and Communications (C^3) and Intelligence 25

4. Area 4: Defense Planning Systems 26

B. COMPARISON OF INTERMEDIATE PHASE I INSTRUCTION 27

C. COMMON ELEMENTS OF INTERMEDIATE LEVEL PHASE I 31

D. COMPARISON OF INTERMEDIATE LEVEL STUDENT MIX 32

E. COMPARISON OF INTERMEDIATE PHASE I FACULTY MIX 34

IV. PHASE I CRITERIA AND NPS STUDENT MIX 38

A. RECOMMENDED HOURS OF INSTRUCTION 40

B. RECOMMENDED STUDENT MIX 41

C. RECOMMENDED MILITARY FACULTY MIX 42

D. NAVAL POSTGRADUATE SCHOOL STUDENT MIX 42

E. NPS STUDENT MIX ANALYSIS 45

F. NPS FACULTY MIX 47

G. SUMMARY 49

V. PHASE I CURRICULA SHORTFALLS 50

A. THE NAVAL POSTGRADUATE SCHOOL CONTRIBUTION 52

B. WHERE TO BEGIN 53

1. Hours of Instruction 53

2. Students 54

3. Faculty 54

DTIC COPY INSPECTED 4

Accession For
NTIS GRA&I ☑
DTIC TAB ☐
Unannounced ☐
Justification
By
Distribution/
Availability Codes
Dist | Avail and/or Special
A-1

C. NPS CURRICULUM REVIEW FOR PHASE I JPME 54

1. Core Phase I Courses 55

2. Core Course Comparisons with Phase I Requirements 56

3. Summary of Core Course Comparison with Phase I 65

D. HOW TO APPROACH DEVELOPING PHASE I 65

VI. CONCLUSIONS AND RECOMMENDATIONS 67

A. PHASE I JPME GROUP AT NPS 67

1. Proposed Program Matrix 68

2. Proposed Curriculum 69

3. Comparison of Proposed Curriculum with Phase I from ISCs 78

B. IS PHASE I JPME FEASIBLE AT NPS? 78

APPENDIX A U.S. ARMY COMMAND AND GENERAL STAFF COLLEGE 81

APPENDIX B U.S. MARINE CORPS COMMAND AND STAFF COLLEGE 83

APPENDIX C AIR COMMAND AND STAFF COLLEGE 86

APPENDIX D NAVAL COMMAND AND STAFF COLLEGE 91

APPENDIX E DEFENSE INTELLIGENCE COLLEGE 93

APPENDIX F STUDENT MIX OF ACADEMIC DEPARTMENTS 95

LIST OF REFERENCES 103

INITIAL DISTRIBUTION LIST 105

LIST OF TABLES

Table 1 Summary of Phase I Instruction Army Command and General Staff College....27

Table 2 Summary of Phase I Instruction U.S. Marine Corps Command and General Staff College....28

Table 3 Summary of Phase I Instruction Air Command and General Staff College....28

Table 4 Summary of Phase I Instruction Naval Command and General Staff College....29

Table 5 Summary of Phase I Instruction Defense Intelligence College....30

Table 6 Average Hours of Instruction Per Area....31

Table 7 Common Elements of Phase I....31

Table 8 Naval Command and Staff College....32

Table 9 U.S. Army Command and General Staff College....32

Table 10 U.S. Marine Corps Command and Staff College....33

Table 11 Air Command and Staff College....33

Table 12 Defense Intelligence College....33

Table 13 Naval Command and Staff College....35

Table 14 U.S. Army Command and General Staff College....35

Table 15 U.S. Marine Corps Command And Staff College....35

Table 16 Air Command And Staff College....36

Table 17 Defense Intelligence College....36

Table 18 Specific Standards For Phase I....41

Table 19 Curriculum Department/Groups....43

Table 20 Overall Student Mix FY 85–89 43
Table 21 Joint Command, Control, & Communications Student Mix FY 87-89 44
Table 22 National Security Affairs/Intelligence Student Mix FY 87-89 45
Table 23 NPS Military Faculty Mix 47
Table 24 NPS Military Faculty Breakdown 47
Table 25 Aviation Safety School Military Faculty Breakdown 48
Table 26 Defense Resource Management Education Center 48
Table 27 Numbers of Graduates in a Yearly Cycle 52
Table 28 Curricula Standards For Phase I 54
Table 29 Area 1: Joint Forces and the Operational Level of War 57
Table 30 Area 2: Organization and Command Relationships 59
Table 31 Area 3: Joint Command, Control, and Communication (C^3) And Intelligence 61
Table 32 Area 4: Defense Planning Systems 63
Table 33 Average Hours of Instruction Per Area 65
Table 34 Shortfalls in Common Elements of Phase I 66
Table 35 Proposed Matrix 69
Table 36 Area 1: Joint Forces and the Operational Level of War 70
Table 37 Area 2: Organization and Command Relationships 72
Table 38 Area 3: Joint Command, Control, and Communication (C^3) And Intelligence 74
Table 39 Area 4: Defense Planning Systems 76
Table 40 Average Hours of Instruction Per Area 78

Table F-1 Administrative Sciences Student Mix FY 87-89.....95
Table F-2 Aeronautical Engineering Student Mix FY 87-89.....96
Table F-3 Oceanography/Meteorology Student Mix FY 87-89.....97
Table F-4 ASW/Electronic Warfare Student Mix FY 87-89.....98
Table F-5 Computer Science Student Mix FY 87-89.....99
Table F-6 Electrical Engineering Student Mix FY 87-89.....100
Table F-7 Operations Analysis Student Mix FY 87-89.....101
Table F-8 Operations Analysis Student Mix FY 87-89.....102

I. INTRODUCTION

> The Department of Defense (DOD) is immense, complex, and resistant to change. Many inside and out of the Department know that procedures, organization, personnel, functions, and operations need to be changed or fixed, but such changes are hard to effect without a well known sponsor. In 1982, defense reform was given a great deal of impetus by two such sponsors, both highly respected, most credible insiders: General David C. Jones, former Chairman, Joint Chiefs of Staff and General Edward C. Meyer, Chief of Staff, U.S. Army. They convinced Congress that the US defense establishment should be reassessed and that changes were needed. After four years of debate and hearings in Congress, the Goldwater-Nichols Department of Defense Reorganization Act of 1986, popularly called the Goldwater-Nichols Act was enacted [Ref. 1:p. 1].

With the passage of the Goldwater-Nichols Department of Defense Reorganization Act of 1986, Congress felt that in order to benefit fully from the organizational changes of Goldwater-Nichols, the performance of officers assigned to joint elements must be improved. Title IV of the act addresses "Joint Officer Personnel Policy" and implements changes designed to ensure quality and two related factors—experience and education—hence, the panel's focus on education.

On November 13, 1987, House Armed Services Chairman Les Aspin established the panel on military education and appointed Representative Ike Skelton (D-Mo.) as its chairman. Creation of the panel signified recognition by the Congress that rigorous, high-quality, professional military education (PME) is vital to the national security.

Recommendation three of the panel calls for a two-phase Joint Specialist Officer (JSO) education process, with Phase I taught in service colleges and a follow-on, temporary-duty Phase II taught at the Armed

Forces Staff College (AFSC). The most fundamental conclusion of the panel was that joint specialist education should take place in joint schools. The panel further recommended that Phase I be provided not only to potential JSOs but to all students attending a service intermediate college.

The effect of Title IV on the Navy has been to force Navy warfare communities to assess the impact of the joint duty requirement on the various career paths. Several recently conducted Naval Postgraduate School theses [Refs. 2, 3] examine the flow of officers in the Surface and Tactical Air community and attempt to show the various options available to meet the mandates for joint education and joint duty. Johnson concludes in his thesis [Ref. 3] that Joint Professional Military Education (JPME) following postgraduate education appears to be a worthwhile alternative in filling JPME and Joint Duty Assignment (JDA) billets while maintaining fleet readiness.

Title IV General and Flag Officer provisions provide that "An officer may not be appointed to the grade of O-7 unless the officer has completed a full-tour of duty in a JDA." There is concern that the Naval Postgraduate School may have to compete for young warfare officers who perceive JPME and JDA to be more important to their careers than a postgraduate education and that this perception may make it more difficult than it already is to fill currently available quotas.

It is submitted that implementation of Phase I JPME at the Naval Postgraduate School will alleviate some of these concerns and reduce the amount of time warfare officers spend away from fleet billets, while still

enabling the Navy to meet the requirements of JPME and Joint Duty Assignment.

This thesis will look at the feasibility of establishing Phase I Joint Professional Military Education (JPME) by comparing Phase I JPME programs at the four intermediate service colleges and the Defense Intelligence College (DIC),[1] as outlined in the Joint Chiefs of Staff (JCS) Initial Certification Group (ICG) results for the academic year 1988-89.

Feasibility for this thesis is determined by answering the following questions:

- What Phase I JPME curricula are currently being offered at the service colleges at the intermediate level?
- After reviewing the various Phase I Joint Professional Military Education (JPME) programs currently being offered, are there common elements taught at these institutions which might serve as a starting point for the development of a Phase I JPME curriculum at the Naval Postgraduate School?
- After identifying the common elements of Phase I Joint Professional Military Education (JPME), are there identical or similar courses offered at the Naval Postgraduate School?
- Which courses would need to be added to the Naval Postgraduate School's list of courses to make Phase I JPME accreditable by JCS?
- How, academically, would this program be administered at the Naval Postgraduate School?
- Does the Naval Postgraduate School meet the "jointness" requirements for students and faculty required by JCS for accreditation?

---

[1]The Defense Intelligence College is expecting certification and is scheduled for Joint Chiefs of Staff accreditation in academic year 1989-90.

- How many hours of Phase I JPME can the Naval Postgraduate School reasonably expect to provide, given the schools "graduate school of education" mission?

The Phase I JPME programs to be compared are the Army Command and General Staff College (ACGSC), the Air Command and Staff College (ACSC), the College of Naval Command and Staff (CNCS), and DIC.

This thesis is organized with Chapter I as the introduction and Chapter II as a background and literature review to provide the reader with a concise summary of historical developments. Chapter III discusses the requirements for Joint Professional Military Education and provides an overview of schools and Phase I JPME programs. It determines common courses offered at the other intermediate-level service schools and compares the student and faculty mixes. Chapter IV examines the criteria for Phase I JPME and looks at the Naval Postgraduate School's student mix for "jointness." Chapter V discusses how a Phase I JPME curriculum might look at the Naval Postgraduate School, identifies shortfalls, and shows how it would be administered from both a military and an academic perspective. Chapter VI provides a summary and recommendations.

The research methodology used in this thesis is straightforward. Sample JPME Phase I programs from each of the intermediate service schools and DIC are compared, and the common elements are identified for use as a base for a Phase I JPME program at the Naval Postgraduate School.

Because the following terms will be used repeatedly, their definitions in the context of this thesis are provided.

Critical Occupational Specialty (COS): A military occupational specialty selected from among the combat arms in the Army or equivalent military specialties in the Navy, Air Force, and Marine Corps. Equivalent military specialties are those engaged in the operational art to attain strategic goals in a theater of conflict through the design, organization, and conduct of campaigns and major operations.

Professional Military Education (PME): PME provides the skills, knowledge, and understanding to make sound decisions in progressively more demanding command and staff positions within the national security environment. PME focuses on the military, political, economic, social, and psychological dimensions of national security. Specific emphasis is on the art and science of war, service organizations, joint and combined operations, employment and deployment concepts, and military leadership.

JCS Program for Joint Professional Military Education (PJE): The PJE is a JCS-approved body of principles and conditions that prescribes, at both the intermediate and senior levels of military education, the joint professional military education curricula, student-faculty mix ratios, standards of rigor, and learning objectives for all military education programs designed to qualify officers for the JSO nomination.

Joint Professional Military Education (JPME): JPME is that part of professional military education which enhances the integrated employment of land, sea, and air forces at all levels of war. The characteristics and standards of JPME are contained within the JCS Program of Joint Professional Military Education (PJE).

Joint Duty Assignment (JDA): An assignment to a designated position in a multi-service or multinational command or activity that is involved in the integrated employment or support of the land, sea, and air forces of at least two of the three military departments. Such involvement includes, but is not limited to, matters relating to national military strategy, joint doctrine and policy, strategic planning, contingency planning, and command and control of combat operations under a unified command.

Joint Specialty Officer/Joint Specialist (JSO): An officer educated and experienced in the employment, deployment, and support of unified commands and combined forces to achieve national security objectives.

JSO Nominee: An officer who has completed the PJE or who is in a JDA and has a critical occupational specialty and, in either instance, has been designated as a JSO nominee by the military department concerned.

PJE Phase I: That portion of the PJE that is incorporated into the curricula of intermediate- and senior-level military colleges and other educational institutions that meet PJE criteria and are accredited by the Chairman, Joint Chiefs of Staff.

PJE Phase II: That portion of the PJE that complements PJE Phase I and is taught at the PJE Phase II follow-on Armed Forces Staff College. Graduates of both Phase I and PJE Phase II complete the educational requirements necessary for JSO nomination.

NCSC: Naval Command and Staff College, Newport, Rhode Island.

USACGSC: U.S. Army Command and General Staff College, Ft. Leavenworth, Kansas.

ACSC: Air Command and Staff College, Maxwell AFB, Alabama.

USMCCSC: U.S. Marine Corps Command and Staff College, Quantico, Virginia.

II. LITERATURE REVIEW

> Passage of the Goldwater-Nichols Department of Defense Reorganization Act of 1986 marked a watershed for professional military education (PME). The act attaches added significance to PME schools by specifically assigning them the principal role in joint education—a role that Congress considers crucial to improving the performance of joint institutions. What do these new joint education responsibilities portend for the military school system.? What are the implications of educating "joint specialty" and other officers in "joint matters"? What, in fact, do these terms mean in the context of existing PME? How can the military schools fulfill the goal, implicit in the Goldwater-Nichols Act, that the panel is chartered to examine: to assure that PME "provides the proper linkage between service competent officers and the competent joint officer"? [Ref. 4:p. 43]

A. A HISTORICAL PERSPECTIVE

A historical snapshot of the Professional Military Education (PME) system provides a perspective on what changes might be required to meet the intent of Title IV of the Goldwater-Nichols Act in terms of educating joint specialists and other officers in joint matters.

What evolved after World War II, partly from changes implemented as a result of the Clements Committee report, were 10 PME schools arrayed in a two-tiered configuration in which all schools are coequal with the others on their level. Figure 2.1 [Ref. 4:p. 48] shows the convergence that has occurred in the present PME system.

Professional Level					
3rd	National War College	Industrial College of The Armed Forces	Army War College	Air War College	College of Naval Warfare
2nd	Armed Forces Staff College	Marine Corps Command and Staff College	Army Command & General Staff College	Air Command and Staff College	Navy Command and Staff College
1st		Marine Corps Amphibious Schools	Army Branch Schools	Air Force Squadron Officers School	Navy Schools for Surface, Submarine or Aviation

Figure 2.1. **Professional Military Education from the 1960s to the Present**

The structure established after World War II was one in which the joint schools had a distinctive relative position.[2] Figure 2.2 [Ref. 4:p. 41] shows this distinction.

The Skelton panel's conclusions after its review of the evolution of PME since World War II suggested a return to historical educational roots, where the focus of PME is warfighting and educating joint officers. The Goldwater-Nichols Act provides the framework and the impetus for preparing officers for joint duty.

---

[2]In June 1975, the Department of Defense Committee on Excellence in Education (commonly referred to as the Clements Committee) noted the convergence of curricula in PME schools. [Ref. 4: p. 49]

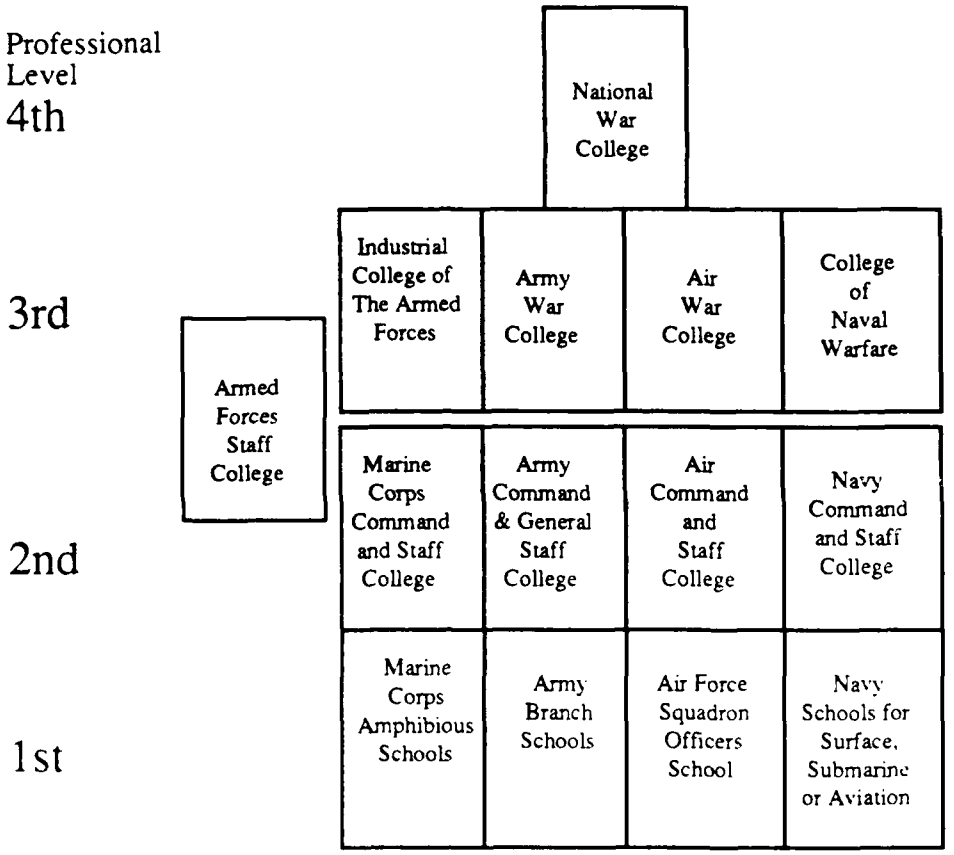

Figure 2.2. **Professional Military Education after World War II**

B. NATIONAL DEFENSE UNIVERSITY PROPOSAL

On 1 April 1987, the Vice-Chairman of the Joint Chiefs of Staff tasked the National Defense University to draw up a joint specialty curriculum and standards for preparing officers, through Professional Military Education (PME), for joint duty and subsequent joint specialty nomination. On 28 September 1987, Lieutenant General Bradley C. Hosmer (USAF), President of the National Defense University, proposed a program "designed to be given by any of the service colleges to all or any portion of

their student bodies or by NDU alone." [Ref. 5:p. 1] General Hosmer goes on to say in his memorandum,

> The educational program provides a description of specific areas along the lines recommended by the Senior Military Schools Review Board (SMSRB), specifies an approximate number of hours for each area, states learning objectives, and requires standard evaluation (testing) to ensure that learning objectives are met. (The proposed program is limited to the *unique* PME institutions to strengthen their focus on joint matters and prepare officers for joint duty). [Ref. 5:p. 1]

The program as proposed by General Hosmer for the intermediate-level service colleges encompasses five areas and sets out specific standards for implementation. The five areas to be covered at the intermediate level are:

AREA 1 Joint Forces and the Operational Level of War

AREA 2 Organization and Command Relationships

AREA 3 Joint Command, Control, Communications (C^3), and Intelligence

AREA 4 Defense Planning Systems

AREA 5 Joint Staff Operations

Dr. Benjamin S. Bloom's work regarding levels of learning is used as a frame of reference for level of understanding. According to Dr. Bloom, the cognitive domain is organized into six major levels of learning through which students must pass as they move to more complex behavior. These levels of learning are the basis for the horizontal division of PJE into Phase I and II.

Level of Learning	Mental Activity
Knowledge	Recall and recognize
Comprehension	Translate, interpret, and extrapolate
Application	Use generalizations in specific instances
Analysis	Determine relationships
Synthesis	Create new relationships
Evaluation	Exercise learned judgment

Intermediate Service Colleges (ISC) will teach four of the five PJE learning areas to the **knowledge** level of learning. The Armed Forces Staff College (AFSC) will teach the fifth learning area in its entirety and will bring intermediate-level students to the **application** level of learning in all five PJE learning areas. [Ref. 6:pp. B-1, 2]

These guidelines and directions for implementing the PJE are described in Joint Chiefs of Staff Memorandum 73-89, dated 30 January 1989.

C. SKELTON PANEL COMPARISONS OF PME

The Skelton Report, chaired by Congressmen Ike Skelton from Missouri, provided recommendations for faculty and student-body mix standards for non-JSO education, as summarized in Figure 2.3. [Ref. 4:p. 88]

	Intermediate Non-Joint Specialist Education
Student Body	Minimum of 2 students from each non-host military department per seminar. Goal of 3.
Faculty	70% host, 15% each other military department (70%/15%/15%).

Figure 2.3. **Standards for Representation of Each Military Department**

Figure 2.4 [Ref. 4:p. 73] shows that the intermediate service schools reviewed by the Skelton Panel have very low numbers of non-host military department faculty and fall far short of the Skelton Panel's lesser standard of 15 percent faculty from each of the military departments.[3]

Intermediate-Colleges (Academic year 1987-88)	Service by percent					Civilian
	Parent	Army	Navy	Air Force	Marine Corps	
Army Command and General Staff College	76	--	2	4	2	16
College of Naval Command and Staff	47	8	--	7	8	30
Air Command and Staff College	88	6	5	--	2	0
Marine Corps Command and Staff College	86	5	5	5	--	0

Figure 2.4. **Comparison of Jointness in Faculty**
(Academic Year 1987–88)

Figure 2.5 [Ref. 4:p. 76] shows the service colleges fell far short of the minimum standards the Skelton Panel felt necessary for the non-JSO education required for all students by the Goldwater-Nichols Act. Those standards for intermediate service schools, are two students per seminar from each of the other military departments (with three preferred).[4]

---

[3]The two Navy PME schools, though far short of the panel standards, have a better faculty balance for teaching joint subjects than any of the other service colleges. The Army and Marine intermediate college faculty mixes support the orientation of their curricula toward service warfighting, but they slight joint education. The Air Command and Staff College approach again puzzles the panel: the least warfighting-oriented of the colleges, it has the highest single-service faculty representation. [Ref. 2:p. 73]

[4]Of the service schools, the Navy colleges have the best mixes of other-service students. Ultimately, however, the Air Force proportion at

Intermediate-Colleges (Academic year 1987-88)	Service by percent				
	Parent	Army	Navy	Air Force	Marine Corps
Army Command and General Staff College	92	--	1	5	2
College of Naval Command and Staff	60	20	--	7	13
Air Command and Staff College	85	10	3	--	2
Marine Corps Command and Staff College	84	8	6	1	--

Figure 2.5. **Comparison of Jointness in Student Body** (Academic Year 1987-88)

The key findings associated with the Skelton Panel's review or comparison of the intermediate service schools are:

1. The panel concluded that greatly increased "other service" participation is needed in the student bodies of service PME schools.

2. Unlike students from all other services, Navy students have seldom attended a service command and staff college, despite JCS guidance that such schooling is desired.[5]

(Continued from previous page)

Newport should be increased significantly and the Army proportion slightly. The Army and Air Force schools, particularly at the intermediate level, are in far worse shape than those of the Navy. They lack adequate numbers of other-service students to teach a joint course effectively. Gradually, in order to comply with the implications of the Goldwater-Nichols Act concerning joint education for all PME students, the military departments must assign substantially more of their PME students to schools of another service. [Ref. 4:p. 76]

[5]This places the Navy students at a disadvantage compared to their classmates and affects their ability to participate fully in exercises and discussion. The net effect is less education for the Navy students and less understanding of the Navy among other-service students. [Ref. 4:pp. 77-78]

D. SKELTON PANEL PROPOSALS

The Skelton Panel made a number of proposals for joint education that have been widely received and adopted into law. The panel found that there are two essentials for an effective joint officer. The first is to be an expert in his or her own service. The educational key to this expertise is the service intermediate school. The second essential for an effective joint officer is a joint perspective. Since World War II, it has been recognized that the educational key to a joint perspective is a joint school.

To cover these two essentials, the Skelton Panel proposed establishing a two-phase Joint Specialty Officer (JSO) education process. The service colleges should teach Phase I joint education to all students. Building on this foundation, the Armed Forces Staff College (AFSC) should teach a follow-on, temporary-duty Phase II to graduates of service colleges en route to assignments as joint specialists. Because of the Phase I preparation, Phase II should be shorter and more intense than the current AFSC course. The curricula for the two phases should be as follows:

Phase I	Curriculum at service colleges should include: capabilities and limitations, doctrine, organizational concepts, and command and control of forces of all services; joint planning processes and systems; and the role of service component commands as part of a unified command.
Phase II	Curriculum at AFSC should build on Phase I and concentrate on the integrated deployment and employment of multi-service forces. The course should provide time for: (1) a detailed survey course in joint doctrine; (2) several extensive case studies or war games which focus on the specifics of joint warfare and which involve theaters of war set in both developed and underdeveloped regions; and (3)

most important, developing joint attitudes and perspectives.

Considering the required curriculum and effective learning, the Skelton panel emphasized that the Phase II course should be about three months in length or longer. [Ref. 4:p. 105]

The panel's long-range (1995–96) standards for military faculty and student body mixes by service at the intermediate service schools are:

Faculty — Should have military faculty mixes approximating 10 percent from each of the two non-host military departments by academic year 1990–91 and 15 percent by academic year 1995–96.

Students — Should have student-body mixes of one officer from each of the two non-host military departments per student seminar by academic year 1990–91 and two officers per seminar by academic year 1995–96. Eventually, each military department should be represented by at least three students in each intermediate school seminar.

The Skelton Report emphasized several major challenges facing successful accomplishment of JPME. First, resist pressures to shorten the length of the Phase II course at the Armed Forces Staff College. The Phase II should be long enough to meet the requirement for increasing student understanding of the other services and developing joint attitudes and perspectives, often referred to as "socialization" or "bonding." Thus it should be a minimum of three months long. Second, a related challenge is to keep the relatively short AFSC Phase II course free of material that should be covered in the service schools' Phase I. There will be pressures to have the AFSC teach descriptive matter about both other services and joint processes, using the argument that AFSC can do a better job. The service Phase I courses should cover both of these subjects in depth. Third, a challenge for the Navy is to ensure that all students

attend Phase I in residence prior to Phase II. A "Phase II-only" joint PME is not in keeping with the Goldwater-Nichols Act establishment of the Critical Occupational Specialty (COS) exception and the act's requirement "to maintain rigorous standards for the military education of officers with the joint specialty." The goal should be for all officers to have completed intermediate service school in residence prior to arriving at AFSC. That goal should be diluted only as necessary in the near term by few waivers of Phase I for non-COS officers. [Ref. 4: pp. 128–129]

E. NAVY JOINT PROFESSIONAL MILITARY EDUCATION

Severely exacerbating the challenges involved in keeping Phase II long enough and covering the necessary basic joint education in Phase I is the challenge, particularly for the Navy, of ensuring that all students attend Phase I in residence prior to Phase II. Three facets of this problem came to the panel's attention:

1. Claims that the Navy does not have enough officers to fill the requirements of Phase I.
2. The argument that some COS officers should be allowed to skip Phase I.
3. The difference between the Navy intermediate school, on the one hand, and those of the Army, Air Force, and Marine Corps on the other.

The Navy calculates that it will have near-term problems assigning enough officers to in-residence Phase I education at service colleges prior to their attendance at Phase II. The calculations are based on two assumptions: [Ref. 4:p. 111]

1. Sending 50 percent of all intermediate and senior PME graduates to Phase II, and

2. Not sending any COS exception officers to service or joint PME before going to a joint specialist position.

The panel emphasized that the goal is for all officers to have completed intermediate service school in residence prior to arriving at AFSC. That goal should be diluted only as demonstrably necessary in the near term by a few waivers of Phase I for non-COS officers. [Ref. 4: p. 113]

The Navy's difficulty in getting enough officers through Phase I is related to the fact that it essentially has a "one-level" system for field grade PME—the level of the senior school. There are three factors that demonstrate that Navy PME is essentially one level. First, the Naval War College basically has only one curriculum for its two schools, that of the senior school.[6] A second factor that demonstrates the one-level nature of Navy PME is that the Navy with few exceptions sends its best officers to only one level of schooling, the senior level.[7] The third factor is the

---

[6]The curriculum of the Navy intermediate school closely parallels that of the senior Navy college and devotes far less time to maritime operations than the Army and Marine schools do to land and amphibious warfare. Thus, the panel found that the Naval War College provides good senior-level education at both its schools, but its intermediate school is not commensurate with Leavenworth, Maxwell, and Norfolk. [Ref. 4:p. 113]

[7]In 1983, the Chief of Naval Operations (CNO) established a policy requiring that a high percentage of the Navy students at the College of Naval Warfare be "post-command" commanders, thus ensuring quality Navy students at the senior college. There is no parallel quality standard for the intermediate school. The Navy contends that it lacks sufficient personnel to allow two years of PME for its officers, particularly the most promising. As a result, the overwhelming majority of the best Navy officers either attend PME at the senior level or not at all. Some of the officers told the panel they would attend intermediate school only if awaiting another assignment. [Ref. 6:p. 114]

relatively small number of students the Navy sends to intermediate PME. Figure 2.6 [Ref. 4:p. 114] compares by service the number of intermediate students with the total number of majors/Navy lieutenant commanders, the grade (O-4) that attends intermediate PME. Except for the Marine Corps, the Navy sends both fewer officers and a lower percentage of officers to intermediate school than do the other services. [Ref. 4:pp. 113-114]

SERVICE	Number of intermediate PME students	Total number of Majors/Navy Lieutenant Commanders (O-4s)	Percentage intermediate students of total O-4s
Army	1004	16,791	6.0
Navy	215	13,614	1.6
Air Force	584	19,615	3.0
Marine Corps	208	3,214	6.5

Figure 2.6. **Officers in Intermediate PME**
(Academic Year 1987-88)

In looking at these three factors, the Skelton panel concluded that the Navy, both in its school assignment policies and in its Naval War College curricula, has so slighted intermediate PME that it essentially has only a senior-level system. This de facto absence of an intermediate PME level is a matter for both the Navy and DOD to consider. The panel also concluded that the Chief of Naval Operations should review the Navy PME system to determine whether officers can and should attend both

intermediate and senior colleges and whether each Naval War College school should have a more distinct curriculum. [Ref. 4:p. 115]

F. NAVY OFFICER CAREER PATH AND FLOW POINTS

Several theses conducted at the Naval Postgraduate School examine the Navy officer career paths and officer flows given the requirements of the Goldwater-Nichols Act (GNA).

A thesis by Drescher [Ref. 2] introduces a user-interactive personnel flow forecasting model, FORECASTER, and demonstrates its use to analyze the effect of the Goldwater-Nichols Department of Defense Reorganization Act on the personnel flow within the career paths of U.S. Navy Tactical Aviation (TACAIR) pilots and naval flight officers. In the analysis, the FORECASTER model is run through several iterations, each iteration devoted to satisfying the next-lower-priority billet requirements, beginning with Joint Duty Assignments and ending with "soft" shore-duty billets. The effects of each iteration are carefully examined to assess any positive or negative impact on the TACAIR community. The results of this analysis show a deterioration of warfighting skills of TACAIR field-grade officers and a decreased ability to fill "soft" billets from the TACAIR community. [Ref. 2:p. iv]

Another thesis, completed by Johnson [Ref. 3], uses FORECASTER and demonstrates its use to analyze the effect of the Goldwater-Nichols Department of Defense Reorganization Act on the personnel flow within the Surface Warfare Officer (SWO) community. The emerging problems of filling joint billets with promotable officers while maintaining the support and readiness of the critical fleet units is quantitatively analyzed with

FORECASTER. Two proposed personnel flow scenarios to contend with the DOD Reorganization Act are suggested. One establishes a fixed proportion of officers to be sent from at sea billets to joint billets, while the other considers joint education immediately following postgraduate education. The results of these proposals show an increase in joint billet fills while maintaining the fill of critical fleet unit billets. Johnson states:

> It would be also beneficial to pursue a cost effectiveness study of establishing a JPME curriculum at the Naval Postgraduate School, Monterey, California. The idea is effective, as the model results suggest, in enabling the Navy to meet JDA and JPME requirements. It would obviously save money in terms of PCS funds and should be further analyzed for its economic values. [Ref. 3:p. 65]

III. COMPARISON OF INTERMEDIATE PROGRAMS

A. INTERMEDIATE SERVICE COLLEGE (ISC) PHASE I CURRICULA

To better understand the Intermediate Service College (ISC) Phase I curricula, each program was divided into the four areas required of a joint specialty program at the intermediate level.

Curricular prerequisites emphasize joint planning, operations and procedures. The program is designed to be taught within a broader course of study that provides a foundation for understanding joint actions and the environment within which they occur now found in the common core curriculum of each college. As such, the student must be familiar with national security policy, military strategy, and the national and international environment. Any assessment of the joint educational program will cover the prerequisite material as well as the joint material itself.

Intermediate Service Colleges are required to teach four of the five PJE learning areas to the **knowledge** level of learning. The length of the program will vary between 175 and 205 hours of instruction. The Armed Forces Staff College (AFSC) in Norfolk, Virginia, will teach the fifth area in its entirety and will bring intermediate-level students to the **application** level of learning in all five PJE learning areas. The following is a summary of the four areas and objectives that are taught at the intermediate level.

1. AREA 1: Joint Forces and the Operational Level of War

a. Summary

This area of study forms the educational foundation of the joint specialty program and gives the students an understanding of the basic characteristics of U.S. air, maritime, ground, and special operations forces, and how those forces should be coordinated for successful joint operations. The course deals with the way the U.S. armed forces are organized, trained, and equipped to meet their tasks and responsibilities and then shows how those forces have been employed at the operational level of war. A series of joint campaigns, major operations, and battles are analyzed to test the application of the principles of war and the theories of selected military classical writers. While the primary focus of this area is on theater-level conventional operations, strategic nuclear operations and low-intensity conflict (LIC) should also be introduced.

b. Learning Objectives

1. **Understand** how roles, missions, capabilities, and limitations of U.S. military forces effect joint operations;
2. **Understand** why selected joint military operations failed or succeeded at the operational level; and
3. **Understand** and **appreciate** the complexity of employing joint forces at the operational level of war.

2. AREA 2: Organization and Command Relationships

a. Summary

This area of study gives the student an understanding of how the U.S. military is organized to plan, execute, and sustain joint and combined operations. It explores the responsibilities and relationships of joint organizations and unified and specified commands and the principles governing them, the U.S. military command structure, and combined commands. This area concentrates on organization and command relationships applicable to U.S. joint force commands, the existing organization of the U.S. military establishment, the principles of operational command and logistic support in unified commands, and the structure of combined commands.

b. Learning Objectives

1. **Understand** the joint and combined command structure, organizational concepts, and command relationships applicable to U.S. military forces;
2. **Understand** and **appreciate** how the U.S. military is organized to plan, and execute, and sustain joint operations; and
3. **Understand** the strengths and weaknesses in organization and command relationships within U.S. unified and specified commands.

3. AREA 3: Joint Command, Control, and Communications (C^3) and Intelligence

a. Summary

This area of study covers the wide spectrum of C^3 that extends from the strategic to the theater to the tactical levels in supporting the NCA and warfighting CINCs who control the military forces. Emphasis is placed on the operational aspects and procedures associated with current C^3 systems. Particular attention is given to the functional capabilities of WWMCCS and strategic, theater, and tactical C^3 systems that assist planners and operations personnel in performing their C^3 responsibilities. This area also gives future joint staff officers an understanding of the national intelligence organizations' structure and the intelligence they deliver to the joint commander. It gives students a basic understanding of major threats to U.S. joint and combined operations.

b. Learning Objectives

1. **Know** the capabilities and limitations of the National Military Command System to support U.S. and allied forces during joint and combined operations;

2. **Understand** how the U.S. national intelligence organizations and C^3 systems support U.S. military commands during joint and combined operations; and

3. **Understand** and **appreciate** major C^3 and intelligence issues, threats, and problems that face commanders and staff officers in planning and conducting joint and combined operations.

4. AREA 4: Defense Planning Systems

a. Summary

Various DOD systems have been developed, at both national and departmental levels, to support national strategy. This area of study gives the students an understanding of the systems that affect joint planning. It concentrates on the joint operations planning process and how the following systems are used to support the process: the Joint Strategic Planning System (JSPS), the Joint Operation Planning System (JOPS), and the Joint Deployment System (JDS). In addition, this area touches on the National Security Council (NSC) System and the joint aspects of the Planning, Programming, and Budgeting System (PPBS).

b. Learning Objectives

1. **Understand** how joint planning is influenced by national strategy and policy; the National Security Council System; the Planning, Programming, and Budgeting System; and the Joint Strategic Planning System;

2. **Comprehend** the capabilities and limitations of the joint planning and deployment execution systems (JOPS and JDS) and how they are used to support planning and deployment for joint operations;

3. **Understand** and **appreciate** time-sensitive planning processes used for joint operations; and

4. **Apply** the deliberate planning process to produce concepts of operation and operation plans. [Ref. 5:pp. 1–4]

B. COMPARISON OF INTERMEDIATE PHASE I INSTRUCTION

The five intermediate level programs used in this comparative analysis are displayed in detail in Appendices A through E. The U.S. Army Command and General Staff College at Fort Leavenworth, Kansas, in shown in summary form below. Of note is the inclusion of prerequisite instruction as part of the Phase I contact time, for a total of 182 hours of instruction.

TABLE 1

SUMMARY OF PHASE I INSTRUCTION
ARMY COMMAND AND GENERAL STAFF COLLEGE*

Prerequisite Instruction	62.0
AREA 1: Joint Forces and the Operational Level of War	52.0
AREA 2: Organization and Command Relationships	45.0
AREA 3: Joint C^3I	9.0
AREA 4: Defense Planning Systems	14.0
Total Hours of Instruction	**182.0**

**See Appendix A for a detailed listing.*

The second school is the U.S. Marine Corps Command and Staff College in Quantico, Virginia. This school has the highest number of hours devoted to Phase I (with a particular emphasis in area 1, covering a wide range of military topics), for a total of 442 hours of instruction.

TABLE 2

SUMMARY OF PHASE I INSTRUCTION
U.S. MARINE CORPS COMMAND AND STAFF COLLEGE*

AREA 1: Joint Forces and the Operational Level of War	173.5
AREA 2: Organization and Command Relationships	70.0
AREA 3: Joint C^3I	65.0
AREA 4: Defense Planning Systems	134.0
Total Hours of Instruction	**442.5**

**See Appendix B for a detailed listing.*

The third intermediate service college looked at is the Air Command and Staff College at Maxwell AFB, Alabama. This school had the second-highest number of hours devoted to Phase I, with by far the greatest emphasis in area 1, for a total of 384 hours of instruction.

TABLE 3

SUMMARY OF PHASE I INSTRUCTION
AIR COMMAND AND STAFF COLLEGE*

AREA 1: Joint Forces and the Operational Level of War	266.0
AREA 2: Organization and Command Relationships	37.5
AREA 3: Joint C^3I	27.0
AREA 4: Defense Planning Systems	54.25
Total Hours of Instruction	**384.5**

**See Appendix C for a detailed listing.*

The last intermediate service college examined is the Naval Command and Staff College in Newport, Rhode Island. Here the emphasis is not so much on hours in the classroom but rather on hours spent in preparation for each class and time spent interacting with the various military and civilian instructors. There are a total of 93 hours of instruction.

TABLE 4

SUMMARY OF PHASE I INSTRUCTION
NAVAL COMMAND AND STAFF COLLEGE*

AREA 1: Joint Forces and the Operational Level of War	31.5
AREA 2: Organization and Command Relationships	9.0
AREA 3: Joint C^3I	10.5
AREA 4: Defense Planning Systems	42.0
Total Hours of Instruction	**93.0**

*See Appendix D for a detailed listing.

NOTE: The Naval Command and Staff College requires approximately five hours of preparation time per 1.5 hours of contact time.

Finally, in order to provide the perspective of a joint school seeking validation of its recently developed Phase I program, the Defense Intelligence College has been included. Here, the emphasis has been to develop a program from a zero base that more closely conforms with the number of recommended contact for each area. There are a total of 249 hours devoted to instruction.

TABLE 5

SUMMARY OF PHASE I INSTRUCTION
DEFENSE INTELLIGENCE COLLEGE*

AREA 1: Joint Forces and the Operational Level of War	49.0
AREA 2: Organization and Command Relationships	33.0
AREA 3: Joint C^3I	64.0
AREA 4: Defense Planning Systems	103.0
Total Hours of Instruction	**249**

**See Appendix E for a detailed listing.*

C. COMMON ELEMENTS OF INTERMEDIATE LEVEL PHASE I

A comparison of each area of Phase I as it is currently taught at the Intermediate Level Service Colleges reveals common core elements of instruction that one should incorporate in building a Phase I program of instruction. One can also derive the average number of hours devoted to each area to use as a reference for designing a Phase I program. Table 6 shows the averages and Table 7 shows common elements.

TABLE 6

AVERAGE HOURS OF INSTRUCTION PER AREA

(Academic Year 1988–89)

	Prereq.	Area 1	Area 2	Area 3	Area 4	Total
USACGSC	62.0	52.0	45.0	9.0	14.0	182
USMCCSC		173.5	70.0	65.0	134.0	442.5
ACSC		266.0	37.25	27.0	54.25	384.5
NCSC		31.5	9.0	10.5	42.0	93.0
DIC		49.0	33.0	64.0	103.0	249.0
AVERAGE		114.4	38.85	35.1	69.45	**270.2**

TABLE 7

COMMON ELEMENTS OF PHASE I

Area 1	**Area 2**
Service-Specific History/Capabilities/ Missions Military History– The Evolution of War Operational Art/Planning Selected Campaign Case Studies	Campaign Planning National Security Organization and Process Combat/Operational Logistics Combined Commands Operational Planning– Service-Specific
Area 3	**Area 4**
Principles of Command and Control National Intelligence Organizations/ Structure National Military Command System Command and Control– Service-Specific	The Budget Process– PPBS Peacetime Contingency/Crisis Planning/Low-Intensity Conflict

D. COMPARISON OF INTERMEDIATE LEVEL STUDENT MIX

A comparison of the ISC student mix levels will show the distribution of other service officers in Phase I seminars and the total number of graduates for each institution. Seminars vary slightly but generally are made up of 15 officers/civilians. This seminar size is generally accepted at these institutions as the best for providing a joint atmosphere where cross-service appreciation of service perspectives, capabilities, and limitations may occur. Tables 8–12 show the ISC student mixes.

TABLE 8

NAVAL COMMAND AND STAFF COLLEGE

Seminar Mix	Number of Grads	Number of Seminars	Seminar Size	Student Mix
2 USMC	150–165	12	12–13	22 USMC (13%)
1 USAF				15 USAF (9%)
3 USA				32 USA (19%)
1 CG				
1 CIV				11 CIV/CG (6%)
5 USN				85 USN (51%)

TABLE 9

U.S. ARMY COMMAND AND GENERAL STAFF COLLEGE

Seminar Mix	Number of Grads	Number of Seminars	Seminar Size	Student Mix
See Note	1,032	64	16	16 USMC (2%)
				40 USAF (3%)
				867 USA (84%)
				101 INT (10%)
5 USN				8 USN (1%)

NOTE: 1 sister service officer per seminar (i.e., 1st seminar has 1 USN, rest USA; 2nd seminar has 1 USAF, rest USA—going to 2 sister service officers next academic year.

TABLE 10

U.S. MARINE CORPS COMMAND AND STAFF COLLEGE

Seminar Mix	Number of Grads	Number of Seminars	Seminar Size	Student Mix
9-10 USMC	180	12	12-15	121 USMC (67%)
1 USAF				12 USAF (7%)
1 USA				12 USA (7%)
2 INT				24 INT (13%)
1 USN				12 USN (7%)

TABLE 11

AIR COMMAND AND STAFF COLLEGE

Seminar Mix	Number of Grads	Number of Seminars	Seminar Size	Student Mix
1 USMC	580	44	13-14	10 USMC (2%)
9-10 USAF				410 USAF (71%)
1 USA				53 USA (9%)
2 INT				80 INT (14%)
See CIV Note				16 CIV (3%)
See USN Note				11 USN (2%)

USN NOTE: Every other seminar has either one USMC or one USN officer.
CIV NOTE: Every other seminar has one civilian.

TABLE 12

DEFENSE INTELLIGENCE COLLEGE

Seminar Mix	Number of Grads	Number of Seminars	Seminar Size	Student Mix
1 USMC	86-92	5	17-20	8 USMC (9%)
4 USAF				18 USAF (21%)
9 USA				44 USA (51%)
1 CIV				4 CIV (5%)
2 USN				12 USN (14%)

Of the ISC, the Navy Command and Staff College has the best representation of other services, falling well within the current JCS guidelines. The Defense Intelligence College also is well represented by other services but seminar size is the highest of the group.[8] The Army Command and General Staff College has the lowest other-service representation of the ISCs, with only one other-service representative for each seminar. The Air Command and Staff College has a low USN/USMC or sea-service representation, with the sea services represented every other seminar and only one other-service representation per seminar. The Marine Corps Command and Staff College has a balanced other-service representation (one per seminar) but falls below the required two other-service representation criteria.

E. COMPARISON OF INTERMEDIATE PHASE I FACULTY MIX

A comparison of the ISC military faculty mix levels will show the distribution of faculty to facilitate a joint perspective from the faculty. Not only is the distribution important but one must also look at the number of faculty who have attended intermediate or senior service college and the number who have JDA experience or are JSO qualified. Tables 13-17 show the ISC military faculty mixes.

---

[8]The Defense Intelligence College has not had its JPME program certified to date. The college expects to be certified in April 1990. One must also take into account that the Defense Intelligence College is a joint school and not an Intermediate Service College, and is included in this thesis in order to capture the program elements of a graduate institution such as the Naval Postgraduate School.

TABLE 13

NAVAL COMMAND AND STAFF COLLEGE

	Faculty	Total # of ISC/ SSC Graduates	Total JDA/JSO
USN	34 (60%)	48 (84%)	31 (55%)
USA	11 (19%)		
USAF	6 (10%)		
USMC	6 (10%)		
CIV	30		
	87		

TABLE 14

U.S. ARMY COMMAND AND GENERAL STAFF COLLEGE

	Faculty	Total # of ISC/ SSC Graduates	Total JDA/JSO
USN	5 (2%)	174 (80%)	32 (15%)
USA	200 (92%)		
USAF	9 (4%)		
USMC	4 (2%)		
	218		

TABLE 15

U.S. MARINE CORPS COMMAND AND STAFF COLLEGE

	Faculty	Total # of ISC/ SSC Graduates	Total JDA/JSO
USN	1 (4%)	21 (88%)	5 (21%)
USA	1 (4%)		
USAF	1 (4%)		
USMC	21 (88%)		
CIV	4		
	28		

TABLE 16

AIR COMMAND AND STAFF COLLEGE

	Faculty	**Total # of ISC/ SSC Graduates**	**Total JDA/JSO**
USN	6 (13%)	40 (87%)	(50%)
USA	6 (13%)		
USAF	32 (70%)		
USMC	2 (4%)		
	46		

TABLE 17

DEFENSE INTELLIGENCE COLLEGE

	Faculty	**Total # of ISC/ SSC Graduates**	**Total JDA/JSO**
USN	3 (33%)	7 (78%)	7 (78%)
USA	3 (33%)		
USAF	3 (33%)		
USMC	0		
CIV	19		
	28		

Once again, the Navy Command and Staff College and the Defense Intelligence College have the best representation of the other services in military faculty composition and the highest number of graduates from ISC/SSC as well as JDA/JSO completion. The Air Command and Staff College is well within the 10 percent other-service representation. The Marine Corps Command and Staff College falls roughly six percent below the current guidelines for other-service representation in the military faculty.

Using the core elements identified in the Phase I curriculum comparison and the comparisons of student and military faculty mix as the basis for developing a Phase I JPME program, one can examine the Naval Postgraduate School's possible future role in providing a Phase I program of instruction. Chapter IV provides a summary of the criteria established by the CJCS for Phase I and an analysis of the student and faculty mixes at the Naval Postgraduate School.

IV. PHASE I CRITERIA AND NPS STUDENT MIX

The Initial Certification Group (ICG), headed by General Thomas R. Morgan, reported out on 22 May 1989. The results of the ICG are contained in Reference 6, the source document for currently approved guidelines for JPME as endorsed by the Chairman, Joint Chiefs of Staff. The ICG decided that two major considerations would have to be addressed prior to extending an opportunity for JCS PJE Phase I accreditation to another school:

1. Does the institution impart professional military education commensurate with the CJCS definition of PME?
2. Does the institution satisfy PJE Phase I criteria?

Increased public awareness of Title IV of the Goldwater-Nichols Act has attracted the interest of various academic institutions relative to the education of joint specialist officers. Several of these institutions seek JCS accreditation for qualifying military officers who attend their colleges as PJE Phase I graduates. One school is the Defense Intelligence College, which is seeking initial certification in April 1990. The ICG has included these schools as "other schools" where accreditation is accomplished within the charter of the JCS Process for Accreditation of Joint Education (PAJE). The term "other schools" pertains to any college other than the seven intermediate and senior service colleges and the three NDU colleges. [Ref. 6:p. E-2]

The ICG established four categories of "other schools" that affect the military education of the armed forces. These "other schools" do not fit

the standard mold of intermediate- and senior-service colleges (PJE Phase I), NDU senior colleges (PJE Phases I and II), or the AFSC Phase II follow-on college. All of these colleges lead to JSO nomination and joint duty assignments. Yet these "other schools" are vital to the education of our best and brightest military officers and represent established resources which can significantly contribute to service flexibility. Officers graduating from "other schools" that would merit JCS accreditation for PJE Phase I should not be penalized for attending these institutions. The Defense Intelligence College, Naval Postgraduate School, Foreign Service Institute, and Defense System Management College are U.S. government institutions that impart professional military education in some form or another but are not recognized by some or all of the services as doing so, and thus are Category I— Other US Government Schools. [Ref. 6:p. E-1]

The JCS Initial Certification Group (ICG) conducted on-site reviews of the joint education programs designed by the service colleges and National Defense University (NDU) as pilot programs for academic year (AY) 1988-89, which were implemented by these colleges within the framework of the JCS Program for Joint Professional Military Education (PJE). Their findings recommended that all of the AY 88-89 PJE pilot programs be validated by the Chairman, Joint Chiefs of Staff, as having satisfied the JCS educational requirements for JSO nomination.

Initially, the PJE pilot programs of the three NDU colleges, the College of Naval Warfare, and the College of Naval Command and Staff included their entire student bodies. The remaining five service colleges implemented PJE "tracks" which included prescribed portions of their

student body. In AY 89-90, all the intermediate-service colleges have completely revised their Phase I curricula, expanding and refining the program. All these schools teach to the entire student body and have imbedded the "Phase I" requirements in the regular curriculum. Phase I has for the most part brought about substantial institutional change in how to teach "jointness."

Chapter II provided a summary of the Skelton report and its findings regarding the strengths and weaknesses of the PME system, focusing on the intermediate-level elements of that report. The Skelton report provides a view from the hill as to where PME should change and what direction it should take. Many of these changes will happen over a number of years as the law is phased into effect.

In the interim, the ICG results are the recommended guidelines for PJE and the definitive guidance for developing a Phase I JPME program. In Chapter III, one could see the variation in numbers of hours devoted to contact instruction (seminar/lecture) and student and faculty mixes. The recommended number of hours of instruction and the student and faculty mixes are provided below, with an analysis of the Naval Postgraduate Sschool's student mix.

A. RECOMMENDED HOURS OF INSTRUCTION

The Joint Specialty Program (Intermediate Level) curriculum should include, at a **minimum**, 175-205 contact hours of course work (as set out in Reference 5) dealing explicitly with joint subject matter (assumes approximately 75 hours of preparation). Table 18 shows the number of hours of instruction for areas 1-4.

TABLE 18

SPECIFIC STANDARDS FOR PHASE I

AREA 1:	40–50 hours
AREA 2:	20–25 hours
AREA 3:	25–30 hours
AREA 4:	90–100 hours
TOTAL:	175–205 hours

The comparative analysis in Chapter III produced an average number of 270 hours of contact instruction.

B. RECOMMENDED STUDENT MIX

The current JCS standard for PJE student seminar mixes (15 percent representation from each military department) was established as part of a PJE pilot program relative to PJE "tracks" in service colleges. Although 15 percent per military department appeared to be an appropriate standard for "track" programs which included the entire PJE (all five areas being taught to the **application** level) and were intended to fully qualify the graduate JSO nominees, the ICG [Ref. 6] considered the 15 percent per military department requirement unnecessary for the conduct of PJE Phase I seminars. Instead, the ICG recommended the following policy regarding student mix in Phase I seminars. [Ref. 6:p. B-1-B]

- A "**minimum**" sister-service student mix for PJE Phase I seminars should be two sister-service officers per seminar. Seminar size would be 15 students.
- The ICG encouraged richer mixes where requested.
- "**Minimum**" sister-service student mixes (or the richer mixes) should be reached as soon as possible, but no later than the beginning of academic year 1990–1991.

C. RECOMMENDED MILITARY FACULTY MIX

The current JCS standard for PJE military faculty mixes (1/3 land, 1/3 air, 1/3 sea service) was prescribed for the pilot program for PJE "tracks" within service colleges. The ICG also found this standard to be inappropriate for PJE Phase I. In addition,the ICG found that PJE Phase I needs and goals differed at that the ISC and SSC levels relative to the number of learning areas and levels of learning. The ICG [Ref. 6] recommended a standard more tailored to the Phase I needs and goals at both the ISC and SSC PME levels. For the ISCs, the ICG recommended the following mix for military faculty: [Ref. 6:p. B-2-B]

- The PJE Phase I faculty mix at the ISC level should consist of a "**minimum**" of 10 percent sister-service members.
- A richer military faculty mix is encouraged.
- Recognizing meeting the various military faculty mix requirements will need to be accomplished through incremental transfers, the appropriate Phase I military faculty mixes should be in place no later than academic year 1992-93.

D. NAVAL POSTGRADUATE SCHOOL STUDENT MIX

Utilizing FY 85-89 student data provided by the Director of Operations at the Naval Postgraduate School, an analysis of the student mix was conducted for the school overall and by academic department/group to see which departments meet the more stringent criteria of 15 percent representation from each military department and which departments meet the criteria as proposed by the ICG. Table 19 shows how the curricula are organized by department and academic group. Table 20 shows

TABLE 19

CURRICULUM DEPARTMENT/GROUPS

Department/Group	Curriculum Numbers
Administrative Sciences	813,814,815,817,819,827,847
Aeronautical Engineering	610,611
Oceanography/Meteorology	372,373,374,440,441
ASW/Electronic Warfare	525,595,596
Computer Science	367,368
Electrical Engineering	590,600
Joint C^3/Space Systems/Communications	365,366,591,620
National Security Affairs/Intelligence	681,682,683,684,685,686,687,825
Operations Analysis	360,361
Mechanical Engineering/Math./Physics	530,531,532,535,570,380

TABLE 20

OVERALL STUDENT MIX FY 85-89

(Average on Board)

	FY89	FY88	FY87	FY86	FY85
USN	958	1,017	1,137	1,081	1,019
USMC	139	126	120	101	82
USA	151	163	176	174	161
USAF	64	70	79	78	80
USCG	32	30	34	33	29
CIV/NOAA	33	36	36	32	33
TOTAL	**1,377**	**1,442**	**1,582**	**1,499**	**1,404**

Military Department Representation
(percentage)

SEA	82	81.3	81.6	81	80.5
LAND	11	11.3	11.1	11.6	11.5
AIR	5	4.8	5	5.2	5.7
CIV/NOAA	2.4	2.5	2.3	2.1	2.3

how the Naval Postgraduate school looks as a whole in terms of student mix. Tables 21-22 show the National Security Affairs/Intelligence Department and Joint Command, Control, and Communications Group, respectively. The rest of the academic departments are located in Appendix F.

TABLE 21

JOINT COMMAND CONTROL & COMMUNICATIONS
STUDENT MIX FY 87-89
(Average on Board)

	FY89	**FY88**	**FY87**
USN	86	93.25	73.5
USMC	17.25	11.5	8.5
USA	29.25	31.75	24
USAF	16	16.75	14.25
USCG	1	5.25	6.5
CIV/NOAA	1.25	2	3.25
TOTAL	**150.75**	**160.5**	**125.75**

Military Department Representation
(percentage)

SEA	68.4	65.3	63.0
LAND	19.4	19.8	18.5
AIR	10.6	10.4	11.0
CIV/NOAA	1	4.5	6.5

TABLE 22

NATIONAL SECURITY AFFAIRS/INTELLIGENCE
STUDENT MIX FY 87-89
(Average on Board)

	FY89	**FY88**	**FY87**
USN	47.5	59.75	57
USMC	.5	0	0
USA	0	9.75	41.25
USAF	35.25	37.25	47.25
USCG	0	0	0
CIV/NOAA	3.25	4	2.25
TOTAL	**86.5**	**110.75**	**147.75**

Military Department Representation
(percentage)

SEA	55	53.9	38.7
LAND	0	8.8	28
AIR	40.8	33.6	32
CIV/NOAA	3.8	3.6	1.5

E. NPS STUDENT MIX ANALYSIS

An analysis of the aggregate data (Table 20) presented above provides insights into the joint character of the Naval Postgraduate School. The data indicates that, overall, the Naval Postgraduate School is predominantly sea-service oriented, at approximately 81 percent over time. This is as one would expect and is slightly above the 70 percent maximum requirement for "jointness." The land representation over time is approximately 11 percent, which is slightly below the 15 percent requirement for "jointness." The air representation is low, at approximately 5 percent, and substantially below the 15 percent requirement.

An analysis of the student mix at the Naval Postgraduate School by curriculum department/group shows that two in particular have potential for meeting the more-stringent criteria of "jointness." They are the National Security Affairs and Intelligence (NSA/I) curriculum department and the Joint Command, Control and Communications (Joint C^3) curriculum group.

The Joint Command, Control and Communications curriculum group (Table 21) is by far the most "joint" curriculum at the Naval Postgraduate School. The sea-service representation is approximately 62 percent, which is slightly below the 70 percent own-service requirement for "jointness." The land representation is approximately 23 percent, which is slightly above the 15 percent requirement. The air representation is approximately 12 percent, which is slightly below the 15 percent requirement for "jointness."

The NSA/I (Table 22) sea service representation is approximately 50–55 percent over time, and thus below the maximum 70 percent own-service requirement. The land representation shows significant variation between FY 87 and FY 89. It appears that land representation was high at 28 percent in FY 87 and then experienced a significant decline in enrollment because of the U.S. Army drop to 8.8 percent in FY 88 and then to zero percent in FY 89. If the previous levels of enrollment can be reestablished at their FY 87 levels or slightly lower, the 15 percent criteria for "jointness" could be met. The air representation is approximately 30–40 percent over time and substantially above the 15 percent requirement for "jointness."

F. NPS FACULTY MIX

Faculty mix represents an area of great variability at the ISCs, as shown in Chapter III. The Naval Postgraduate school, because of its graduate mission, has primarily a civilian base of professors. Table 23 shows the primary departments which in all probability would be most likely to supply military faculty for Phase I.

TABLE 23

NPS MILITARY FACULTY MIX

Curriculum Group	Civilian	Military	Total
JOINT C^3	14	5	19
NATIONAL SECURITY AFFAIRS	24	1	25
OPERATIONS ANALYSIS	27	5	32
COMPUTER SCIENCE	20	2	22
TOTAL	**85 (87%)**	**13 (13%)**	**98**

Table 24 shows the service representation of the 13 military faculty. The only significant shortcoming is U.S. Marine Corps representation. [Ref. 9, pp. 135, 202, 228-229]

TABLE 24

NPS MILITARY FACULTY BREAKDOWN

	Faculty	Total # of ISC/ NPGS Graduates	Total JDA/JSO
USN	6 (46%)	8 (62%)	7 (53%)
USA	3 (23%)		
USAF	4 (30%)		
USMC	0 (10%)		
	13		

Other sources of military faculty on campus who might be considered for Phase I instructors would be the Aviation Safety School and the Defense Resource Management Education Center (DRMEC), located in Hermann Hall. Tables 25 and 26 show other-service representation of military faculty at these commands.

TABLE 25

AVIATION SAFETY SCHOOL MILITARY FACULTY BREAKDOWN

	Faculty	**Total # of ISC/ NPGS Graduates**	**Total JDA/JSO**
USN	5 (71%)	1 (%)	0
USA	0		
USAF	0		
USMC	2 (29%)		
	7		

TABLE 26

DEFENSE RESOURCE MANAGEMENT EDUCATION CENTER

	Faculty	**Total # of ISC/ NPGS Graduates**	**Total JDA/JSO**
USN	2 (40%)	3 (60%)	4 (80%)
USA	1 (20%)		
USAF	1 (20%)		
USMC	1 (20%)		
	5		

On the surface it appears there are sufficient military faculty resources at the Naval Postgraduate School to meet Phase I requirements. Some internal realignment over time would be required to get the

ideal military faculty mix in the NSA/I and Joint C^3 curricula. Another consideration is the use of ex-military faculty who are now in civilian faculty positions to count toward the proper military faculty mix. This concern was brought forward by several of the intermediate service colleges, who have many excellent retired military officers on the civilian faculty staff. This is particularly true at the Naval Command and Staff College. These professors could enhance their teaching credentials by attending the Naval War College to complete Phase I.

G. SUMMARY

On balance, it appears from the disaggregated data that both the National Security Affairs/Intelligence and the Joint Command, Control, and Communications curriculum groups are a likely starting point for developing a Phase I JPME program at the Naval Postgraduate School. These two curriculum groups represent approximately 238 students, or 12 percent of the student population at the Naval Postgraduate School. Not only do these curriculum groups come the closest to meeting the more stringent joint requirements, but a quick analysis of the substance of their curricula indicates that a substantial portion of areas 1, 3, and 4 are covered in detail. Chapter V will look in much greater detail at the extent to which Phase I is taught currently in these two curriculum groups and identify where shortfalls exist in curriculum and faculty.

V. PHASE I CURRICULA SHORTFALLS

The Defense Appropriations bill for FY 90 included a legislative statement of congressional policy regarding professional military education in joint matters.

> As part of the efforts of the Secretary of Defense to improve professional military education Congress urges, as a matter of policy, and fully expects the Secretary to establish the following:
>
> (1) A coherent and comprehensive framework for the education of officers, including officers nominated for the joint specialty.
>
> (2) A two-phase approach to strengthening the focus on joint matters, as follows:
>
> (A) Phase I instruction consisting of a joint curriculum, in addition to the principal curriculum taught to all officers at service-operated professional military education schools.
>
> (B) Phase II instruction consisting of a follow-on solely joint curriculum taught at the Armed Forces Staff College to officers who are expected to be selected for the joint specialty....
>
> (3) A sequenced approach to joint education in which the norm would require an officer to complete Phase I instruction before proceeding to Phase II instruction.
>
> (c) Duration of Principal Course of Instruction at Armed Forces Staff College may not be less than three months. [Ref. 7:p. S 14779]

The key elements here are the requirement for a three-month course of instruction at the Armed Forces Staff College (AFSC) and a sequenced approach to joint education. These requirements will affect the detailing process as well as the number of Phase II graduates to fill Joint Duty Assignment (JDA) billets. The first year of Phase II will remain a nine- and five-week curriculum for intermediate and senior students,

respectively, beginning in June 1990, and thereafter will be three months in duration.

Given the implications of these requirements of the law, the Navy should attempt to increase the pool of Phase I graduates available for Phase II and thereafter to JDAs. This will in turn increase the pool of flag officers eligible for promotion. Already, the Goldwater-Nichols Act (GNA) is increasing the caliber of officers detailed to joint billets. In order to ensure that JDAs are filled with officers educated in joint matters, the Congress will be carefully monitoring the AFSC to ensure that a minimal number of officers attend who have not already received Phase I education. In the future, fewer officers will be detailed to JDAs without first having completed the sequenced Phase I and then Phase II approach to joint education. Phase I education will become an important milestone in the career paths of most naval officers over time. *Perspective* (the Navy officers' professional bulletin) describes a number of new additional qualification designators (AQDs), to include joint equivalent and phased JPME education.

- JS7 (JPME graduate, Phase I)—JPME graduate from Phase I schools defined by OSD. Officer who has graduated from the Naval War College for classes commencing March 1989 and beyond and intermediate service colleges for classes commencing August 1989 and beyond.
- JS8 (JPME graduate, Phase II)—officer who has graduated from the Armed Forces Staff College with the class commencing in June 1990.

A. THE NAVAL POSTGRADUATE SCHOOL CONTRIBUTION

Chapter II showed that the intermediate service colleges (ISC) graduate relatively few naval officers and showed that the Navy sends the smallest percentage of eligible O-4s of the services to ISC. Table 27 shows that the Navy graduates only seven percent of the total number of Phase I graduates from ISCs in a 10-month cycle. This percentage will increase insignificantly (because the number of Navy officers is small) with the addition of the Defense Intelligence College (DIC), should its program be certified in April 1990. However, the addition of approximately 240 Phase I graduates from the NSA/I and C^3 curricula at the Naval Postgraduate School (of which approximately 50 percent are Navy) will add 120 students in 18-month cycles, or an increase in the number of Naval officers graduating with Phase I education over a three-year period of 69 percent.

TABLE 27

NUMBERS OF GRADUATES IN A YEARLY CYCLE

Service College	Navy	Marine	Air Force	Army	Total
Navy CSC	85	22	15	32	154
Army CGSC	8	16	40	867	931
Marine CSC	12	121	12	12	157
Air CSC	11	10	410	53	484
Subtotal	116 (7%)	169 (10%)	477 (28%)	964 (56%)	**1,726**
NPS potential	80 (a **69%** increase in Phase I graduates)				
	196				

Provisions could be made for students in other curricula outside of NSA/I and C^3 on a case-by-case basis to complete Phase I as

circumstances permit (i.e., students awaiting department head school or students who have validated other courses in their own curriculum) or on an overload basis for those whose particular circumstances justify the exception. For example, the oceanography curriculum includes three electives which could be programmed as Phase I for a particular student if so desired. Thus, the answer lies in expanding Phase I to "other schools" such as the Naval Postgraduate School, where the Navy can provide Phase I JPME and preserve the essential graduate character of the school, as provided in its important stated mission:

> To conduct and direct the advanced education of commissioned officers, and to provide *such other technical and professional instruction as may be prescribed to meet the needs of the Naval service*, and in support of the foregoing, to foster and encourage a program of research in order to sustain academic excellence. [Ref. 9:p. 6, emphasis added]

B. WHERE TO BEGIN

First of all, the criteria for Phase I at the Naval Postgraduate School must be firmly established. Chapter IV covered the criteria for Phase I in detail. In order to be in a position to become fully accreditable by the CJCS the criteria must include:

1. Hours of Instruction

At a **minimum**, 175-205 contact hours of course work dealing explicitly with joint subject matter (assumes approximately 75 hours of preparation). Table 28 shows the number of hours of instruction for areas 1-4.

TABLE 28

CURRICULA STANDARDS FOR PHASE I

AREA 1:	40-50 hours
AREA 2:	20-25 hours
AREA 3:	25-30 hours
AREA 4:	90-100 hours
TOTAL:	175-205 hours

2. Students

A "**minimum**" sister-service student mix for PJE Phase I seminars should be two sister-service officers (approximately 15 percent) per seminar. Seminar size would be 15 students.

3. Faculty

The PJE Phase I faculty mix at the ISC level should consist of a "**minimum**" of 10 percent sister-service members.

C. NPS CURRICULUM REVIEW FOR PHASE I JPME

With these criteria in mind, the next step is to look at the curriculum criteria and determine how much of the four prescribed areas are currently covered at the Naval Postgraduate School. Ideally, one would want to identify those courses in the NSA/I department and the C^3 curriculum group that come the closest to dealing with the four areas of Phase I and dissecting these courses to see where the shortfalls are. As determined in Chapter IV, the NSA/I and C^3 curricula have the student mix makeup and basic subject content to dovetail nicely with the student mix and curriculum requirements of Phase I. The objective then should be to identify, at a minimum, four courses that with minor modifications

could form a core Phase I curriculum. With each course providing 44 hours of contact time in the classroom, the four core curriculum courses would provide 176 hours of contact time for Phase I. With this objective in mind, one can begin by reviewing the most likely courses in the course catalog currently taught that will come the closest to fulfilling the requirements for the four areas in Phase I.

1. Core Phase I Courses

The first course in the National Security Affairs/Intelligence (NSA/I) department that emerges as a likely candidate is NS 3000, "Military History: War in the Modern World."

> The purpose of the course is to provide the student with historical experience of war to supplement his actual experience and to provide him with a realistic framework for any task he may face in the armed forces. The professor will present eleven historical situations distributed over the modern period that will illustrate the nature of war in the modern world. The material will be presented systematically, i.e., similarly in each case, to enable the student to grasp the general political and technological context of the situation, the more specific war fighting context, the historical lesson, analogy with the present, and the application of the whole business to present situations. [Ref. 8:p. 1]

A second course that emerges from the NSA/I department is NS 3030, "American National Security Policy/Defense Organization."

> An institutional and functional analysis of the national and international factors which shape U.S. defense policy. Attention in the course is focused on two major areas: 1) the decision making process, including the legislative-executive budgetary process, as well as the influence of bureaucratic politics and interest group participation upon defense decisions; 2) the problems of strategic choice, including security assistance, threat analysis, net assessment, deterrence theory, and limited war. [Ref. 9:p. 206]

The third course in the NSA/I Department that emerges as a likely candidate is NS 3252, "Joint and Maritime Strategic Planning."

A review of the historical, current, and evolving elements of maritime strategy, an analysis and comparison of present and emerging tactical and strategic naval doctrine as well as an analysis of emerging technical developments and their potential effect upon the prosecution of tactical and strategic naval warfare by the United States, our allies and our potential adversaries. An introduction to the theory of war, the theory and practice of war at sea, in the air, and on land, and roles and missions of the military services. A history of general and joint staffs in the U.S. and abroad, a description and analysis of tasks of the DOD and joint organization. Current issues in defense reform and reorganization in both civilian and military facets. [Ref. 10:p. 1]

Finally, two courses from the Joint Command, Control and Communications (C^3) curriculum group which are essentially the same course (but taught to two different groups of students), CC 3000, "Introduction to Command, Control, and Communications," and CM 3111, "C^3 Mission and Organization." CC 3000 is provided to C^3 students, whereas CM 3111 is provided to Telecommunications and Space Ops students.

A survey of command, control, and communications organizations within OSD, JCS, and the Service Headquarters. Execution of National Strategic Nuclear Policy and Planning for joint employment of general purpose forces are discussed. Service combat organization and service tactical C^3 systems are covered. Emphasis is on description of existing C^3 organizations and systems, with brief historical perspective. [Ref 9:p. 102]

2. Core Course Comparisons with Phase I Requirements

These four courses would supply the minimum number of contact hours for Phase I. Using course syllabi, one can assess the objectives which are met for each area and where the shortfalls are. Tables 29–32 show how these courses meet the objectives of areas 1–4.

TABLE 29

AREA 1: JOINT FORCES AND THE OPERATIONAL LEVEL OF WAR

(a) **Understand** how the roles, missions, capabilities, and limitations of U.S. military forces affect joint operations.

Course	Title	Hours
NS 3252	A New Environment for Navies—Missions of the U.S. Navy	2.0
	The Marine Corps Air-Ground Combat Team	2.0
		4.0

(b) **Understand** why selected joint military operations failed or succeeded at the operational level.

Course	Title	Hours
NS 3000	Modern War as Napoleon and the French	4.0
	The Interpreters of Napoleon and the French: Jomini and Clausewitz	4.0
	The Crimean War (1854-1871)	4.0
	The Wars of German National Unification (1866-1871)	4.0
	The First World War (1914-1918)—Case Study on Marne, Tannenberg, Verdun, Jutland, Somme, Michael	8.0
	The "Interwar Period" (1919-1939)	4.0
	The Second World War 1939-1945	8.0
	The Korean War (1950-1953)	4.0
NS 3030	Evolution of U.S. Strategic Doctrine	4.0
NS 3252	Evolution of the Current Navy Maritime Strategy	2.0
	The Current Navy Maritime Strategy	2.0
	A Review of the Literature—Clausewitz and Naval Warfare	2.0
	Old Tasks for New Navies—The Nuclear Maritime Strategy	2.0
	New Tasks for New Navies—Naval Power and National Security	2.0
	Strategic Nuclear Deterrence and War—Trident System	2.0
	AirLand Battle and FOFA: Army Combat Operations	2.0
	Aerospace Doctrine	2.0
CC 3000	Combat Operations	1.0
		61.0

(c) **Understand** and **appreciate** the complexity of employing joint forces at the operational level of war.

Course	Title	Hours
NS 3252	The Navy and Joint Strategic Planning/Education	2.0
	Coastal Defense of CONUS	2.0
	Military Force and Foreign Policy	2.0
	Joint Doctrine/Operational Art—The Sometimes Conflicting Influences of Doctrine and Mission	2.0
		8.0

Area 1 Shortfalls

(a) Does not cover roles, missions, capabilities, and limitations of U.S. military. Provide 4 hours on USN/USMC/USA/USAF capabilities and limitations in NS 3252.

(b) Needs more focus on case studies on joint campaigns, major operations, and battles that relate more to U.S. joint military operations in NS 3000.

(c) Needs case studies such as Operation URGENT FURY and JUST CAUSE that bring out the complexity of employing joint forces in NS 3000.

AREA 1
73 CONTACT HOURS PROVIDED
40–50 HOURS REQUIRED

TABLE 30

AREA 2: ORGANIZATION AND COMMAND RELATIONSHIPS

(a) **Understand** the joint and combined structure, organizational concepts, and command relationships applicable to U.S. military forces.

Course	Title	Hours
CC 3000	The Department of Defense (GNA, JCS, Joint Commands)	3.0
NS 3252	Joint Staffs and Military Organization	2.0
		5.0

(b) **Understand** and **appreciate** how the U.S. military is organized to plan, execute, and sustain joint operations.

Course	Title	Hours
CC 3000	Command of the Combat Operations Process	1.0
	Effective Command of Combat Operations	1.0
		2.0

(c) **Understand** the strengths and weaknesses in organization and command relationships within U.S. unified and specified commands.

Course	Title	Hours
CC 3000	The Department of Defense– Unified and Specified Commands	1.0
NS 3252	Joint Staffs and Military Organization	2.0
		3.0

Area 2 Shortfalls

(a) Provide 4 additional hours in NS 3252.

(b) Provide 4 hours in combat/operational logistics in NS 3252.

(c) Provide 5 additional hours in NS 3252.

AREA 2
10 CONTACT HOURS PROVIDED
20-25 HOURS REQUIRED

TABLE 31

AREA 3: JOINT COMMAND, CONTROL, AND COMMUNICATION (C^3) AND INTELLIGENCE

(a) **Know** the capabilities and limitations of the National Military Command System to support U.S. and allied forces during joint and combined operations.

Course	Title	Hours
CC 3000	C^3 Intelligence and the Combat Operations Process	1.0
	Fundamentals of Command and Control	1.0
	U.S. National Command Structure	1.0
	Strategic Nuclear Command and Control	2.0
	U.S. Navy Doctrine and Tactical C^2	2.0
	U.S. Army Doctrine and Tactical C^2	2.0
	U.S. Marine Corps Doctrine and Tactical C^2	2.0
	U.S. Air Force Doctrine and Tactical C^2	2.0
		14.0

(b) **Understand** how the U.S. national intelligence organizations and C^3 systems support U.S. military commands during joint and combined operations.

Course	Title	Hours
CC 3000	C^3 Intelligence and the Combat Operations Process	1.0
		1.0

(c) **Understand** and **appreciate** major C^3 and intelligence issues, threats, and problems that face commanders and staff officers in planning and conducting joint and combined operations.

Course	Title	Hours
CC 3000	C^3 Intelligence in Combat Operations	1.0
	Case Study– USS Liberty (AGTR-5)	0.5
	Case Study– USS Pueblo (AGER-2)	0.5
	Case Study– Operation URGENT FURY	1.0
		3.0

Area 3 Shortfalls

(a) Satisfactory.

(b) Provide 2 additional hours in C^3 Intelligence in CC 3000. Provide 3 hours in NS 3030.

(c) Provide 5 additional hours C^3 Intelligence issues, threats, and problems facing commanders in CC 3000.

AREA 3
18 CONTACT HOURS PROVIDED
25-30 HOURS REQUIRED

TABLE 32

AREA 4: DEFENSE PLANNING SYSTEMS

(a) **Understand** how joint planning is influenced by national strategy and policy, the National Security Council System, the Planning, Programming, and Budgeting System, and the Joint Strategic Planning System.

Course	Title	Hours
NS 3030	The National Security Council	2.0
	The Defense Budget	4.0
		6.0

(b) **Comprehend** the capabilities and limitations of the joint planning and deployment execution systems (JOPS and JDS) and how they are used to support planning and deployment for joint operations.

Course	Title	Hours
CC 3000	U.S. National Command Structure	1.0
		1.0

(c) **Understand** and **appreciate** time-sensitive planning processes used for joint operations.

Course	Title	Hours
Not covered		

(d) **Apply** the deliberate planning process to produce concepts of operation and operations plans.

Course	Title	Hours
Not covered		

Area 4 Shortfalls

(a) Provide 10 additional hours in NS 3030.

(b) Provide 10 additional hours in CC 3000.

(c) Provide 10 hours in joint peacetime contingency planning in NS 3030.

(d) Provide a LIC campaign exercise in NS 3252.

AREA 4
7 CONTACT HOURS PROVIDED
90–100 HOURS REQUIRED

3. Summary of Core Course Comparison with Phase I

Table 33 provides a review of the number of hours devoted to Phase I in each area at the ISCs and DIC and shows how NPS presently compares in the four selected core courses.

TABLE 33

AVERAGE HOURS OF INSTRUCTION PER AREA

	Prereq.	Area 1	Area 2	Area 3	Area 4	Total
USACGSC	62.0	52.0	45.0	9.0	14.0	182
USMCCSC		173.5	70.0	65.0	134.0	442.5
ACSC		266.0	37.25	27.0	54.25	384.5
NCSC		31.5	9.0	10.5	42.0	93.0
DIC		49.0	33.0	64.0	103.0	249.0
AVERAGE		114.4	38.85	35.1	69.45	270.2
NPS		73.0	10.0	18.0	7.0	108.0
REQUIRED		40-50	20-25	25-30	90-100	175-205
SHORTFALL		+33.0	-10.0	-7.0	-83.0	-67.0

In order to meet the minimum requirements for Phase I, one would have to reprogram approximately 67 hours of instruction out of 176 hours (38 percent) provided in the four core courses for Phase I. Table 34 displays the Naval Postgraduate School's shortfalls in common elements found in the four areas.

D. HOW TO APPROACH DEVELOPING PHASE I

The analysis to this point shows that basically the development of a Phase I curriculum *is feasible* within the National Security Affairs/ Intelligence Department and the Joint Command, Control, and Communications academic group at the Naval Postgraduate School. Chapter VI

recommends a proposed Phase I curriculum and provides concluding remarks.

TABLE 34

SHORTFALLS IN COMMON ELEMENTS OF PHASE I

Area 1	**Area 2**
Service-Specific History/Capabilities/ Missions Selected Campaign Case Studies	National Security Organization and Process Combat/Operational Logistics Combined Commands Operational Planning– Service-Specific
Area 3	**Area 4**
National Intelligence Organizations/ Structure	Peacetime Contingency/Crisis Planning/Low-Intensity Conflict

VI. CONCLUSIONS AND RECOMMENDATIONS

The main question of this thesis—"Is it feasible for the Naval Postgraduate School to offer Phase I Joint Professional Military Education (JPME)?"—can now be addressed.

As discussed in Chapter I, *feasibility* for this thesis is determined by answering the following questions:

- What Phase I JPME curricula are presently being offered at the service colleges at the intermediate level?
- After reviewing the various Phase I Joint Professional Military Education(JPME) programs currently being offered, are there common elements taught at these institutions which might serve as a starting point for the development of a Phase I JPME curriculum at the Naval Postgraduate School?
- After identifying the common elements of Phase I Joint Professional Military Education (JPME), are there identical or similar courses offered at the Naval Postgraduate School?
- Which courses would need to be added to the Naval Postgraduate School's list of courses to make Phase I JPME accreditable by JCS?
- How, academically, would this program be administered at the Naval Postgraduate School?
- Does the Naval Postgraduate School meet the "jointness" requirements for students and faculty required by JCS for accreditation?
- How many hours of Phase I JPME can the Naval Postgraduate School reasonably expect to provide, given the schools "graduate education" mission?

A. PHASE I JPME GROUP AT NPS

In order to respond to the obvious need for JPME at the Naval Postgraduate School, it is proposed that a Phase I JPME Academic Group be

established within the National Security Affairs Department. The administrative structure of the group would be similar to other academic groups. The function of the group would involve:

- Evaluation of the requirements of the program by maintaining close communications with ISCs, JCS-J7, NDU, and Congress.
- Evaluation and coordination of student mix and seminar size, being sensitive to student expertise so as to provide the broadest range of experiences inside the classroom.
- Maintenance of communication among the academic departments and groups at the Naval Postgraduate School.
- Periodic program reviews measuring course content against joint requirements.

1. Proposed Program Matrix

Chapter V analyzed present course content in four core courses and identified 67 hours of content shortfall as well as some revision of the material that did apply to more closely align with area objectives. It was also observed that teaching just the minimum number of hours may not satisfy the accrediting group and that additional hours may need to be added. With this in mind, a proposed course matrix for NSA/I and C^3 students is provided in Table 35 to meet the requirements for Phase I JPME. In developing this matrix, the following elements served as constraints:

- Scope and sequence of courses.
- No more than one JPME course in any one quarter.
- No more than a two-hour course in a thesis quarter.

TABLE 35

PROPOSED MATRIX

QTR-I	QTR-II	QTR-III	QTR-IV	QTR-V	QTR-VI
CC 3000	NS 3000	NS 3030	NS 3252	NS 2XX1	NS 2XX2

To make up the area objective shortfalls identified in Chapter V, a revision of certain course content was required and two new 2.0 credit courses were added (to be taken in the students' thesis quarters).

2. Proposed Curriculum

The following proposed curriculum is the result of the efforts of a JPME working group in conjunction with this thesis work. Tables 36-39 outline the proposed curriculum.

TABLE 36

AREA 1: JOINT FORCES AND THE OPERATIONAL LEVEL OF WAR

(a) **Understand** how the roles, missions, capabilities, and limitations of U.S. military forces affect joint operations.

Course	Title	Hours
NS 3252	Navy Roles, Missions, Capabilities, and Limitations	1.0
	Marine Roles, Missions, Capabilities, and Limitations	1.0
	Air Force Missions, Capabilities, and Limitations	1.0
	Army Missions, Capabilities, and Limitations	1.0
		4.0

(b) **Understand** why selected joint military operations failed or succeeded at the operational level.

Course	Title	Hours
NS 3000	Strategic Thinking	2.0
	War in American Strategy	4.0
	The Civil War	4.0
	Mahan and The Spanish American War	4.0
	World War I– Military and Naval	4.0
	World War II– Europe	4.0
	World War II– Pacific	2.0
	World War II– The Air War	2.0
	Korea and Limited War	4.0
	Vietnam: Insurgency	4.0
		34.0
NS 3252	Evolution of the Current Navy Maritime Strategy	2.0
	The Current Navy Maritime Strategy	2.0
	New Tasks for New Navies– Naval Power and National Security	2.0
	Strategic Nuclear Deterrence and War– Trident System	2.0
	AirLand Battle and FOFA: Army Combat Operations	2.0
	Aerospace Doctrine	2.0
		12.0

(c) **Understand** and **appreciate** the complexity of employing joint forces at the operational level of war.

Course	Title	Hours
NS 3000	Low-Intensity Conflict– Falklands, Grenada, Panama	4.0
	Neither War nor Peace– Persian Gulf, U.N. Peacekeeping, Narco Terrorism	4.0
		8.0
NS 3252	The Navy and Joint Strategic Planning/Education	2.0
	Coastal Defense of CONUS	2.0
	Military Force and Foreign Policy	2.0
	Joint Doctrine/Operational Art– The Sometimes Conflicting Comparative Service Military Doctrine	2.0
	Influences of Doctrine and Mission	2.0
		10.0

COURSE COUNTER

CC 3000	NS 3000	NS 3030	NS 3252	NS 2XX1	NS 2XX2
	42 hours		26 hours		

AREA 1

68 CONTACT HOURS PROVIDED

40–50 HOURS REQUIRED

TABLE 37

AREA 2: ORGANIZATION AND COMMAND RELATIONSHIPS

(a) **Understand** the joint and combined structure, organizational concepts, and command relationships applicable to U.S. military forces.

Course	Title	Hours
CC 3000	The Department of Defense (GNA, JCS, Joint Commands)	**3.0**
NS 3252	Joint Staffs and Military Organization	**2.0**
NS 2XX2	The Joint Military Command Structure	2.0
	Army	2.0
	Navy	2.0
	Marine Corps	2.0
	Air Force	2.0
	Functional Commands	2.0
		12.0

(b) **Understand** and **appreciate** how the U.S. military is organized to plan, execute, and sustain joint operations.

Course	Title	Hours
NS 3252	Logistics in National Defense	2.0
	Combat Logistics	2.0
		4.0

(c) **Understand** the strengths and weaknesses in organization and command relationships within U.S. unified and specified commands.

Course	Title	Hours
CC 3000	The Department of Defense– Unified and Specified Commands	1.0
NS 3252	Joint Staffs and Military Organization	2.0
NS 2XX1	Unified Doctrine Strategy	2.0
		5.0

COURSE COUNTER					
CC 3000	**NS 3000**	**NS 3030**	**NS 3252**	**NS 2XX1**	**NS 2XX2**
4 hours	42 hours		34 hours	2 hours	12 hours

AREA 2
26 CONTACT HOURS PROVIDED
20-25 HOURS REQUIRED

TABLE 38

AREA 3: JOINT COMMAND, CONTROL, AND COMMUNICATION (C^3) AND INTELLIGENCE

(a) **Know** the capabilities and limitations of the National Military Command System to support U.S. and allied forces during joint and combined operations.

Course	Title	Hours
CC 3000	C^3 Intelligence and the Combat Operations Process	1.0
	Fundamentals of Command and Control	1.0
	U.S. National Command Structure	1.0
	Strategic Nuclear Command and Control	2.0
	U.S. Navy Doctrine and Tactical C^2	2.0
	U.S. Army Doctrine and Tactical C^2	2.0
	U.S. Marine Corps Doctrine and Tactical C^2	2.0
	U.S. Air Force Doctrine and Tactical C^2	2.0
		13.0

(b) **Understand** how the U.S. national intelligence organizations and C^3 systems support U.S. military commands during joint and combined operations.

Course	Title	Hours
CC 3000	C^3 Intelligence and the Combat Operations Process	1.0
	Service Intelligence Organization	2.0
	Joint Intelligence Organization	1.0
	National Intelligence Organization	1.0
	National Command Authority	1.0
	Relationships of C^2 to Unified Commands	2.0
		8.0

(c) **Understand** and **appreciate** major C^3 and intelligence issues, threats, and problems that face commanders and staff officers in planning and conducting joint and combined operations.

Course	Title	Hours
CC 3000	C^3 Intelligence in Combat Operations	1.0
	Command of the Combat Operations Process	1.0
	Effective Command of Combat Operations	1.0
	Case Study– USS Liberty (AGTR-5)	0.5
	Case Study– USS Pueblo (AGER-2)	0.5
	Case Study– Operation URGENT FURY	1.0
		5.0

COURSE COUNTER

CC 3000	NS 3000	NS 3030	NS 3252	NS 2XX1	NS 2XX2
30 hours	42 hours		34 hours	4 hours	12 hours

AREA 3
26 CONTACT HOURS PROVIDED
25–30 HOURS REQUIRED

TABLE 39

AREA 4: DEFENSE PLANNING SYSTEMS

(a) **Understand** how joint planning is influenced by national strategy and policy; the National Security Council System; the Planning, Programming, and Budgeting System; and the Joint Strategic Planning System.

Course	Title	Hours
NS 2XX1	Levels of War	2.0
	Principles of War	2.0
		4.0
NS 3030	The National Security Process	2.0
	President	2.0
	Congress	2.0
	Intelligence	2.0
	Joint Chiefs of Staff	2.0
	National Security Council	2.0
	Typology of Strategy	2.0
	Strategy of Mobilization	2.0
	Strategy of Deterrence	2.0
	Nuclear Strategy	2.0
	SIOP	2.0
	Landed War	2.0
	Low Intensity Conflict	2.0
	Rapid Deployment Force	2.0
	Counter Terrorism	2.0
	Strategic Planning	2.0
	Joint Strategic Planning	2.0
	Budgetary Consideration	2.0
	PPBS	2.0
	Weapon System Procurement	2.0
	Intelligence, Planning, Weapons Procurement	2.0
		42.0
NS 2XX2	Organization for National Defense	2.0
	The President and National Security	2.0
	The National Command Authority	2.0
	National Security Council	2.0
	The Intelligence Community	2.0
	JCS: History and Evolution	2.0
	Overview of Military Organizations from Root Plan– 1947	2.0
	Overview of Mil. Orgns.– From National Security Act to GNA	2.0
	Vietnam: A Case Study	2.0
	Recurring Issues	2.0
		20.0

(b) **Comprehend** the capabilities and limitations of the joint planning and deployment execution systems (JOPS and JDS) and how they are used to support planning and deployment for joint operations.

Course	Title	Hours
CC 3000	U.S. National Command Structure	1.0
	Deliberate Planning Procedures	2.0
	Development of an Employment Concept	2.0
	Planning for Deployment and Sustainment	2.0
	Planning for Transportation	2.0
		9.0

(c) **Understand** and **appreciate** time-sensitive planning processes used for joint operations.

Course	Title	Hours
NS 2XX1	Terrorism: An Overview	2.0
	Narco-Terrorism	2.0
	LIC and Domestic Constraint	2.0
	Rapid Deployment Force: An Evaluation	2.0
	Latin America and LIC	2.0
	The Middle East and LIC	2.0
		12.0

(d) **Apply** the deliberate planning process to produce concepts of operation and operations plans.

Course	Title	Hours
NS 3252	LIC Exercise	**8.0**

COURSE COUNTER

CC 3000	NS 3000	NS 3030	NS 3252	NS 2XX1	NS 2XX2
39 hours	42 hours	42 hours	42 hours	20 hours	22 hours

AREA 4

95 CONTACT HOURS PROVIDED

90–100 HOURS REQUIRED

3. Comparison of Proposed Curriculum with Phase I from ISCs

Table 40 shows that the proposed curriculum compares very favorably with the other Intermediate Service Colleges.

TABLE 40

AVERAGE HOURS OF INSTRUCTION PER AREA

	Prereq.	Area 1	Area 2	Area 3	Area 4	Total
USACGSC	62.0	52.0	45.0	9.0	14.0	182
USMCCSC		173.5	70.0	65.0	134.0	442.5
ACSC		266.0	37.25	27.0	54.25	384.5
NCSC		31.5	9.0	10.5	42.0	93.0
DIC		49.0	33.0	64.0	103.0	249.0
AVERAGE		114.4	38.85	35.1	69.45	270.2
NPS		**68.0**	**26.0**	**26.0**	**95.0**	**207.0**
REQUIRED		40-50	20-25	25-30	90-100	175-205

B. IS PHASE I JPME FEASIBLE AT NPS?

The analysis shows that **Phase I JPME is feasible** at the Naval Postgraduate School. First, the two proposed curriculums (NSA/I and C^3) have the requisite student mix and the school has the necessary civilian and military faculty to support a JPME program. Second, the proposed curriculum shows that a Phase I curriculum can be developed within the existing architecture of courses with minimum academic disruption. Third, a curriculum review committee should be set up to take the four area objectives and, using these as Educational Skill Requirements (ESRs), reprogram the four selected core courses to more closely align with the basic objectives. Fourth, in order to administer a Phase I program, a **curriculum group** should be created with the appropriate

administrative personnel to provide curriculum review and monitor student mix to ensure that the appropriate student mixes are maintained in each seminar. A core of military faculty would be attached to this curriculum group to provide the necessary faculty mix. Fifth, one must consider how one will teach these four core courses as seminars with no more than 15 to 20 people in each seminar. This will probably affect faculty loading. Finally, one must consider the JCS accreditation group and what it will look at because the Initial Certification Group (ICG) validated Phase I programs and did not accredit.[9] The accreditation group will be headed by a four-star general.[10] The accreditation group, when established, will almost certainly look at the following areas of each school's curriculum.

---

[9]The first mission of the Initial Certification Group (ICG) was to validate the implemented NDU and service college PJE pilot programs for AY 1988–89, which had been previously certified as proposals. All of these colleges had well-balanced and creative programs which were being vigorously carried out. In all cases, the PJE curricula, standards, and student learning objectives were applied within the framework and principles considered necessary by the Joint Chiefs of Staff to provide officers with the educational qualifications for JSO nomination. The two Newport colleges and the three NDU colleges implemented "total" pilot programs in which the entire student body of these colleges participated. The remaining five service colleges implemented PJE "tracks." These pilot programs included only selected portions of each student body which matriculated within both the service-unique and the PJE programs. In the collected view of the ICG, all ten programs have been successful and the AY 1988-89 graduates of these programs meet the JCS educational requirements for JSO nomination. All ten programs should be awarded CJCS validation. [Ref. 7:p. ES-1]

[10]A possible choice for Chairman would be Admiral Crowe.

- Strategy of delivery
- Student and faculty mixes
- Time devoted (hours)
- Library resources
- Faculty resources
- Guest lecture program

The Naval Postgraduate School should request from the Chairman, Joint Chiefs of Staff (CJCS) a copy of the Joint Policy Document and Criteria and Standards for Accreditation immediately. In the meantime, a JPME curriculum should be set up and validated internally in order to provide the basis for a certification group visit.

APPENDIX A

U.S. ARMY COMMAND AND GENERAL STAFF COLLEGE

PREREQUISITE INSTRUCTION

Course	Title	Hours
P511/1	National Concepts	4.0
P511/2	Security Environment	2.0
P511/3	National Security Organization and Process	4.0
P511/4	U.S. National Strategy	9.0
P511/5	The Soviet Union	4.0
P511/6	Strategic Analysis Practical Exercise	4.0
P511/10	European Strategic Environment	2.0
P511/12	Soviet Strategy in Europe	1.0
		62.0

AREA 1: JOINT FORCES AND THE OPERATIONAL LEVEL OF WAR

Course	Title	Hours
P118/1	Fundamentals of Tactical Air Operations	2.0
P118/3	USAF Support to Airland Battle	4.0
P510/all	USN/USMC/USAF Capabilities	6.0
P5111/7	Spectrum of Missions	4.0
P511/8	Operational Planning	4.0
P511/9	Campaign Planning	5.0
P511/14	Operational Planning: ACE (part)	2.0
P511/16	Operational Planning: SOUTHCOM (part)	2.0
P511/17	Operation URGENT FURY	3.0
P511/20	Operational Planning: PACOM (part)	2.0
P671/all	Evolution of Modern Warfare	18.0
		52.0

AREA 2: ORGANIZATION AND COMMAND RELATIONSHIPS

Course	Title	Hours
P118/4	Sustainment of Airland Battle	2.0
P157/3	Mobilization and Strategic Mobilization Ping	10.0
P157/5	Sustainment at the Operational Level	11.0
P157/6	Campaign Planning	3.0
P511/2	Security Environment (part)	1.0
P511/3	National Security Organization and Process	1.0
P511/9	Campaign Planning	2.0
P511/11	Structure of NATO	3.0
P511/14	Operational PLanning: ACE	4.0
P511/16	Operational Planning: Southcom & Forcarib	2.0
P511/20	Operational Planning: Pacific	6.0
		45.0

AREA 3: JOINT COMMAND, CONTROL, COMMUNICATIONS AND INTELLIGENCE

Course	Title	Hours
P553/1	Principles of Command and Control	1.0
P553/2	National Military Command System	1.0
P553/3	World Wide Mil Cmd & Ctrl Sys (WWMCCS)	2.0
P553/4	National Intelligence Organizations/DODIIS	2.0
P553/5	Theatre Command and Control	1.0
P553/6	Services Command and Control	2.0
		9.0

AREA 4: DEFENSE PLANNING SYSTEMS

Course	Title	Hours
P512/1	Introduction/Overview	1.5
P512/2	Deliberate Planning Process	5.5
P512/3	Time-Sensitive/Crisis Planning	3.0
P512/4	Crisis Execution	2.5
P512/5	Emerging Systems	.5
P512/E	Examination	1.0
		14.0

APPENDIX B

U.S. MARINE CORPS COMMAND AND STAFF COLLEGE

AREA 1: JOINT FORCES AND THE OPERATIONAL LEVEL OF WAR

Course	Title	Hours
	History of the Armed Forces Symposium (Intro to Army, Navy, and Air Force)	6.5
	Defense of the Constitution/Creation of our Armed Forces and our Common Goal	1.0
	The Theory of War	1.0
	Seapower: 19th and 20th Century Concepts	3.0
	Dilemma of Modern War	3.0
	Changing Doctrine	1.0
	Maneuver Warfare Concepts	6.5
	The Battle of Fredricksburg	1.0
	The Battle of Chancellorsville	1.0
	The Future of Warfare	1.0
	National Strategy Symposium	2.0
	Civil War Case Study	6.0
	World War I Case Study	10.0
	World War II Case Study	14.0
	Vietnam War Case Study	7.5
	Introduction to Operational Art	7.0
	Civil War Campaign Case Study–Vicksburg	13.0
	World War I Campaign Case Study-Meuse-Argonne	9.0
	World War II Campaign Case Studies	
	Normandy Invasion	15.0
	Central Pacific Campaign	15.0
	Low Intensity Conflict (Exercise)	50.0
		173.5

AREA 2: ORGANIZATION AND COMMAND RELATIONSHIPS

Course	Title	Hours
	National Security Policy Process	2.0
	National Strategy Symposium	2.0
	Influences on National Policy	1.0
	Military Strategy Symposium	6.5
	Organization for Command	2.0
	Vietnam War Case Study	5.0
	MAGTF at the Operational Level of War	2.0
	Campaign Planning	8.0
	Operational Art Exercise	4.0
	Operational Logistics Symposium	6.0
	Fighting the Marine Expeditionary Force	3.0
	MAGTF in the Defense (Steel Curtain)	2.0
	MAGTF in the Offense (Sorocco)	9.0
	Amphibious Operations (Mossback)	9.0
	Low-Intensity Conflict	2.0
	Capstone Exercise (Valiant Knight)	6.5
		70.0

AREA 3: JOINT COMMAND, CONTROL, COMMUNICATIONS AND INTELLIGENCE

Course	Title	Hours
	Organization for Command	2.0
	Intelligence and the Threat	3.0
	Campaign Planning	6.0
	Operational Art Exercise	5.0
	Fighting the Marine Expeditionary Force	4.0
	MAGTF in the Defense (Steel Curtain)	4.0
	MAGTF in the Offense (Sorocco)	9.0
	Amphibious Operations (Mossback)	10.0
	Low-Intensity Conflict	10.0
	Capstone Exercise (Valiant Knight)	12.0
		65.0

AREA 4: DEFENSE PLANNING SYSTEMS

Course	Title	Hours
	National Strategy Symposium	3.0
	Military Strategy Symposium	2.0
	National Security Policy Process	2.0
	Organization for Command	2.0
	Operational Planning and Deployment	15.0
	Operational Mobility Exercise	11.0
	Campaign Planning	6.0
	Operational Art Exercise	7.0
	Fighting the Marine Expeditionary Force	4.0
	MAGTF in the Defense (Steel Curtain)	4.0
	MAGTF in the Offense (Sorocco)	13.0
	Amphibious Operations (Mossback)	13.0
	Low-Intensity Conflict	13.0
	Capstone Exercise (Valiant Knight)	39.0
		134.0

APPENDIX C

AIR COMMAND AND STAFF COLLEGE

AREA 1: JOINT FORCES AND THE OPERATIONAL LEVEL OF WAR

Course	Title	Hours
J1-2	The Doctrine-Strategy Link	1.0
J1-3	Strategy-Doctrine Analysis	1.5
J1-4	Sun Tzu: Theory for all Ages	1.25
J1-5	Limited War in the 18th Century and the Development of Modern Total War	1.25
J1-6	The American Revolution: Political Revolution	1.25
J1-7	The French Revolution: A Nation at Arms	1.25
J1-8	Napoleonic Warfare: The Political Revolution	1.25
J1-9	Jomini & Clausewitz: An Introduction	1.25
J1-10	Fundamental Theories of War: Analysis	2.0
J1-11	The American Civil War: Strategy & the Technological Revolution	2.0
J1-12	Case Study—Technology & the Doctrine—Strategy Link: Minié Ball and Tactical Doctrine	2.0
J1-14	Naval Theorists for Today: Mahan and Corbett	1.0
J1-15	Precursors of Modern Warfare	1.0
J1-16	The Dangers of Dogma	2.0
J1-18	World War I: Land Strategy	1.0
J1-19	World War I: Naval Strategy	1.0
J1-20	The Beginnings of Air Power	1.0
J1-21	Analysis of Stalemate	1.5
J1-22	The Birth of Blitzkrieg: Fuller, Liddell Hart & Guderian	2.0
J1-23	Blitzkrieg in Action: The German Onslaught	1.25
J1-24	Blitzkrieg Quagmire: The Eastern Front	1.25
J1-25	Case Study—Kursk: Blitzkrieg Breaks Down	2.0
J1-26	Opening The Second Front	1.5
J1-27	Collapse of the Third Reich	1.0
J1-28	Sea Forces in Isolationist America: Naval Aviation and Amphibious Warfare	1.0
J1-29	Japanese Assault in the Pacific	1.5
J1-30	Victory at Sea: Atlantic & Pacific	1.5
J1-31	Case Study—Battle of the Philippine Sea: Fast Carriers in Action	2.0
J1-32	Case Study—Iwo Jima: Amphibious Warfare	2.0
J1-33	Air Power Theories: Douhet & Mitchell	1.25
J1-34	Development of Air Corps Doctrine/Strategy Between the Wars	1.25
J1-35	Air Power in World War II	2.0

Course	Title	Hours
J1-37	Case Study—Strategic Bombing Campaign	2.5
J1-38	World War II: Analysis	2.0
J1-39	Postwar Defense Policy: Atomic Revolution and Interservice Rivalry	1.25
J1-40	Limited War in Korea	1.25
J1-41	The Strategy Intellectuals: Analysis	2.0
J1-43	The US in Vietnam: Advisory Years, 1954-1964	1.25
J1-44	The US in Vietnam: Combat and Withdrawal 1965-1975	1.25
J1-45	The Air War in Vietnam: Analysis	2.0
J1-47	The American View of War	1.25
J1-48	PRP: The American Way of War	3.0
J2-2	Contemporary Significance of LIC	1.75
J2-6	Couterinsurgency—The Doctrinal Roots	2.0
J2-7	Couterinsurgency—IDAD Grand Strategy	2.5
J2-8	Counterinsurgency—Military/Operational Strategy	2.0
J2-11	Unconventional Warfare	1.75
J2-12 &13	Special Operations Capabilities	3.5
J2-15	Introduction to Terrorism	1.25
J2-17	Terrorism and the Laws of Armed Conflict	2.0
J2-18	Narco Trafficking/Terrorism	1.75
J2-19	The Military Role in Counterdrug Operations	1.75
J2-20	US Counterterrorist Capabilities	4.5
J2-22	Peacekeeping	1.25
J1-50	USAF Doctrine Today	1.25
J1-51	The Promise of Air Power Doctrine	1.25
J1-52	Air Power Doctrine: Analysis	2.0
J3-4	Airpower Doctrine, The Air Campaign and Counter Air	1.75
J3-5	Counter Air Exercise	1.25
J3-6	Development of Close Air Support (CAS) Doctrine	1.0
J3-7	Close Air Support	1.5
J3-8	The Future of CAS Case Study	1.5
J3-9	Air Interdiction Case Study: Operation Strangle Italy, Spring 1944	2.0
J3-10	Air Interdiction Exercise	1.25
J3-11	Key CA/CAS/AI Issues	1.75
J3-12	Strategic Airpower in Conventional Warfare	2.0
J3-13	Electronic Combat	3.75
J3-14	Development of Airlift Doctrine	1.25
J3-15	Khe Sanh, Case Study	1.5
J3-16	Airlift in Support of Combat Operations	1.75
J3-20	Air Component Commander	2.0
J3-21	Air Reserve Forces	2.75
J3-22	Air Force Tactical Exercise	4.0
J3-23	The Air Campaign Book Analysis	2.0
J3-24	Navy Roles and Missions	2.0
J3-25	Maritime Strategy	3.25

J3-26	Navy Component Commander	1.75
J3-27	Aerospace Maritime Operations	1.0
J3-28	Navy Tactical Exercise	4.0
J3-29	Marine Roles and Missions	1.75
J3-30	Marine Air Ground Task Force (MAGTF) Commander's Perspective	2.5
J3-31	AirLand Battle Doctrine	3.25
J3-32	Army Overview	4.5
J3-33	Army Field Trip to Fort Benning	8.0
J3-34	A Land Component Commander's Warfighting Perspective	1.75
J3-35	Chemical Operations	1.75
J3-36	Army Tactical Exercise	4.5
J3-37	Soviet Readiness and Soviet Theater Warfare	7.5
J3-38	Operational Perspective	1.25
J3-42	Combat Stress	3.0
J3-43	Operational Deception	3.75
J3-44	Strategic Mobility	1.75
J3-45	Theater Commander's Warfighting Perspective	1.75
J3-52	Campaign Analysis– 1967 Arab-Israeli War	2.0
J3-53	Campaign Analysis– Korean War	5.0
J3-55	Grenada	3.25
J3-56	El Dorado Canyon	4.0
J3-57	Assessment of the Nato/Warsaw Pact Capabilities	2.75
J3-58	Nato Army Corps Commander's Warfighting Perspective	1.75
J3-59	Nato Air Component Commander (ACC)	1.75
J3-61	War Game Campaign Planning	7.0
J3-62	Agile Falcon War Game	35.0
J4-7, 8 & 10	Nonstrategic Nuclear Operations: Air Tactical Nuclear Operations, Army Tactical Nuclear Operations, and the Nuclear Situation in Europe	5.0
J4-13	Navy Nuclear Operations	1.5
J4-15	Countering the Airbreathing Threat	1.5
J5-12	Soviet Space Threat	1.75
J5-16	Military Space Policy and Doctrine	3.50
		266.0

AREA 2: ORGANIZATION AND COMMAND RELATIONSHIPS

Course	Title	Hours
C3-28	Combat Logistics	1.5
J1-13	The Prussian General Staff & The Managerial Revolution	1.0
J2-9 & 10	Foreign Internal Defense	2.0
J3-1	The United States Military Command Establishment	1.0
J3-2	Combined Commands	1.0
J3-41	Defense Reorganization Issues	2.0
J3-51	Campaign Planning	2.0
J3-60	CANUSA	7.75
J3-63	German Air Force Visit	1.75
J3-64	Royal Air Force Visit	9.25
J5-2	Air Force Role in Space	2.00
J5-18	CINCSPACE Campaign Plan	2.00
		37.25

AREA 3: JOINT COMMAND, CONTROL, COMMUNICATIONS AND INTELLIGENCE

Course	Title	Hours
J3-17	Principles of Command and Control	1.25
J3-18	Command and Control of Tactical Air Forces—Case Study	1.25
J3-19	Command and Control of the Air Campaign	1.5
J3-39	National Intelligence Structure	2.0
J3-40	Intelligence Support to Operations	1.75
J4-12	Strategic Command, Control, and Communications	1.5
J4-14	Attack Warning/Attack Assessment	1.5
J5-4	Force Enhancement Systems	2.0
J5-5	Exploitation of Space Systems Capabilities	1.75
J5-6	Tactical Exploitation of National Capabilities	1.75
J5-7	SAC: A Space System User's Perspective	1.75
J5-8	The Navy's Use of Space Systems	1.75
J5-9	Force Enhancement	2.0
J5-11	Tasking of Space Systems	1.25
J5-14	Space Control/Force Application	1.25
J5-19	Space 1999: A Situation Analysis	2.75
		27.0

AREA 4: DEFENSE PLANNING SYSTEMS

Course	Title	Hours
C3-3	Budget Formulation: Overview of the Department of Defense's Biennial PPBS	1.0
C3-4	Budget Formulation: Office of the Secretary of Defense (OSD) Role in PPBS	1.0
C3-5	Budget Formulation: Joint Chiefs of Staff Role in PPBS	1.0
C3-9	Budget Formulation: Air Staff Role in Formulating Plans, Programs, and budget submissions	2.0
C3-12	Budget Enactment: The Congressional Enactment Process	2.0
C3-13	Budget Enactment: Congressional Enactment—A Staffer's View	3.0
N1-2	National Security Policy Process	1.0
N1-3	Policy Formulation: Executive	1.75
J2-23 &24	Peacetime Contingency Operations	5.0
J2-26	LIC Campaign Planning	5.5
J3-46-50	Joint Planning Orientation Course	5.0
J3-54	Rapid Deployment Exercise (RADEX)	20.0
J4-17	Planning for Strategic Nuclear Employment	1.5
J5-10	Annex N to an OPLAN	1.75
		54.25

APPENDIX D

NAVAL COMMAND AND STAFF COLLEGE

AREA 1: JOINT FORCES AND THE OPERATIONAL LEVEL OF WAR

Course	Title	Hours
OPS-3	The Falklands War– Case Study 1	1.5
OPS-4	The Falklands War– Case Study 2	1.5
OPS-5	The Operational Level of War	1.5
SO-4	National Military Strategy	1.5
SO-7	The Theater Strategic Operation: Ground and Air Components	1.5
SO-8	The Theater Strategic Operation: Naval Component	1.5
SO-11	USAF Aerospace Doctrine	1.5
SO-12	US Army Air/Land Battle Doctrine	1.5
SO-13	War on the Central Front	1.5
SO-14/ 15	U.S. Navy Maritime Strategy	3.0
SO-16	War On NATO's Flanks: Strategic and Operational Issues	1.5
SO-18	The Pacific Campaign in Global War	1.5
WR-3	Naval Service Capabilities	1.5
WR-4	Air Force and Army Support to Maritime Ops	1.5
WR-10	Strategic Mobility and Joint Sustainability	1.5
WR-19	Joint Special Operations Forces	1.5
WR-21	Offensive Anti-Submarine Warfare	1.5
PD-1	The Commander and His Staff in Combat	1.5
PD-2	The Battle for Leyte Gulf	1.5
PD-3	The Principles of War	1.5
		31.5

AREA 2: ORGANIZATION AND COMMAND RELATIONSHIPS

Course	Title	Hours
SO-9	The SIOP and Strategic Nuclear Warfare	1.5
SO-19	Campaign Logistics	1.5
WR-13	Amphibious Warfare	1.5
PD-10	Unified Command Plan	1.5
PD-11	Organization for Joint Operations	1.5
PD-12	Joint Command and Control Systems	1.5
		9.0

AREA 3: JOINT COMMAND, CONTROL, COMMUNICATIONS AND INTELLIGENCE

Course	Title	Hours
WR-6	Environmental Factors in Military Operations	1.5
WR-7	Intelligence Support for the Commander	1.5
WR-8	Electronic Warfare	1.5
WR-9	Operational Deception	1.5
WR-12	Joint Command and Control in Maritime Operations	1.5
WR-20	Strike Warfare in Support of Maritime and Land Campaigns	1.5
PD-12	Joint Command and Control Systems	1.5
		10.5

AREA 4: DEFENSE PLANNING SYSTEMS

Course	Title	Hours
JFP-1	Foundations of Joint Force Planning	1.5
JFP-2	Total Force Posture	1.5
JFP-3	National Military Strategy	1.5
OPS-6	Joint Task Force Wargame	15.0
SO-4	The National Military Strategy	1.5
DA-1	Introduction to Resource Allocation and the Federal Budget	1.5
DA-3	The Joint Strategic Planning System	1.5
DA-4	The Planning, Programming, and Budgeting System	1.5
DA-5	The Defense Budget	1.5
PD-4	Military Planning Process	1.5
PD-5	Mission Analysis	1.5
PD-6	Enemy Capabilities and Courses of Action	1.5
PD-7	Analysis of Opposing Courses of Action	1.5
PD-8	Comparison of Courses of Action	1.5
PD-9	Development of the Plan and Directive	1.5
PD-13	Deliberate Planning Procedure	1.5
PD-14	Development of the Employment Concept	1.5
PD-15	Planning for Deployment and Sustainment	1.5
PD-16	Planning for Transportation	
PMI-8	The National Security Council	1.5
		42.0

APPENDIX E

DEFENSE INTELLIGENCE COLLEGE

AREA 1: JOINT FORCES AND THE OPERATIONAL LEVEL OF WAR

Course	Title	Hours
JPM 601	The National and International Environment	3.0
JPM 604	Military Strategy	24.0
JPM 606	Joint Staff Processes	4.0
JPM 607	Joint Intelligence Planning and Operations (JIPO): Intelligence Requirements, Collection and Indications and Warning	1.0
JPM 610	Joint Intelligence Organization and Command Relationships	3.0
JPM 611	Issues in Command, Control, Communications and Intelligence	2.0
JPM 612	Issues in Joint Staff Operations	3.0
	Orientation	9.0
		49.0

AREA 2: ORGANIZATION AND COMMAND RELATIONSHIPS

Course	Title	Hours
JPM 606	Joint Staff Processes	8.0
JPM 607	Joint Intelligence Planning and Operations (JIPO): Intelligence Requirements Collection and Indications and Warning	6.0
JPM 610	Joint Intelligence Organization and Command Relationships	11.0
JPM 612	Issues in Joint Staff Operations	2.0
	Orientation	6.0
		33.0

AREA 3: JOINT COMMAND, CONTROL, COMMUNICATIONS AND INTELLIGENCE

Course	Title	Hours
JPM 601	The National and International Environment	3.0
JPM 604	Military Strategy	3.0
JPM 606	Joint Staff Processes	5.0
JPM 607	Joint Intelligence Planning and Operations (JIPO): Intelligence Requirements, Collection and Indications and Warning	2.0
JPM 608	Joint Intelligence Planning and Operations (JIPO): Analysis, Production and Dissemination	8.0
JPM 610	Joint Intelligence Organization and Command Relationships	5.0
JPM 611	Issues in Command, Control, Communications and Intelligence	27.0
JPM 612	Issues in Joint Staff Operations	5.0
	Orientation	6.0
		64.0

AREA 4: DEFENSE PLANNING SYSTEMS

Course	Title	Hours
JPM 603	National Security Policy Process	4.0
JPM 604	Military Strategy	3.0
JPM 605	Defense and Intelligence Resource Management	30.0
JPM 606	Joint Staff Processes	13.0
JPM 607	Joint Intelligence Planning and Operations (JIPO): Intelligence Requirements, Collection and Indications and Warning	2.0
JPM 608	Joint Intelligence Planning and Operations (JIPO): Analysis, Production and Dissemination	6.0
JPM 609	The Joint Intelligence Exercise	24.0
JPM 610	Joint Intelligence Organization and Command Relationships	1.0
JPM 612	Issues in Joint Staff Operations	20.0
		103

APPENDIX F

STUDENT MIX OF ACADEMIC DEPARTMENTS

TABLE F-1

ADMINISTRATIVE SCIENCES STUDENT MIX FY 87-89

(Average on Board)

	FY89	FY88	FY87
USN	186	176	205
USMC	36	27.8	20.5
USA	7	8	5
USAF	1.5	2.5	1.5
USCG	6.25	3.5	4
CIV/NOAA	3	3.5	5.75
TOTAL	**240**	**221**	**242**

Military Department Representation

(percentage)

SEA	95	93.6	95
LAND	3	3.6	2
AIR	.6	1.1	.6
CIV/NOAA	1.3	1.1	2.3

TABLE F-2

AERONAUTICAL ENGINEERING STUDENT MIX FY 87-89

(Average on Board)

	FY89	**FY88**	**FY87**
USN	53.75	45	58
USMC	4.5	2.25	2.75
USA	4.75	3.25	4.25
USAF	0	0	.25
USCG	1.25	2	2.75
CIV/NOAA	3.75	2.25	1.25
TOTAL	**68**	**54.75**	**69.25**

Military Department Representation

(percentage)

SEA	87.5	90	91.7
LAND	7	5.9	6.1
AIR	0	0	.4
CIV/NOAA	5.5	4.1	1.8

TABLE F-3

OCEANOGRAPHY/METEOROLOGY STUDENT MIX FY 87-89

(Average on Board)

	FY89	**FY88**	**FY87**
USN	57.75	61	69
USMC	0	0	0
USA	0	0	0
USAF	6.25	13.5	11
USCG	0	0	0
CIV/NOAA	5	4.75	6
TOTAL	69	79.25	86

Military Department Representation

(percentage)

SEA	83.7	77	80.2
LAND	0	0	0
AIR	9.1	17	12.8
CIV/NOAA	7.2	6	7

TABLE F-4

ASW/ELECTRONIC WARFARE STUDENT MIX FY 87–89

(Average on Board)

	FY89	**FY88**	**FY87**
USN	42.75	48.75	64
USMC	5.25	4	3
USA	2	6	4.25
USAF	0	0	0
USCG	0	0	0
CIV/NOAA	2.25	5.25	1.25
TOTAL	**52.25**	**64**	**72.5**

Military Department Representation

(percentage)

SEA	91.9	82.4	92.4
LAND	3.8	9.4	5.9
AIR	0	0	0
CIV/NOAA	4.3	8.2	1.7

TABLE F-5

COMPUTER SCIENCE STUDENT MIX FY 87–89

(Average on Board)

	FY89	**FY88**	**FY87**
USN	103.75	102.75	108.25
USMC	26.75	30.75	33.25
USA	31.25	22.25	10.25
USAF	1.75	1.75	1
USCG	4	4.75	3.75
CIV/NOAA	3.5	3.25	3.75
TOTAL	**171**	**165.5**	**160.25**

Military Department Representation

(percentage)

SEA	78.6	83.5	90.6
LAND	18.3	13.4	6.4
AIR	1	1	.6
CIV/NOAA	2	2	2.3

TABLE F-6

ELECTRICAL ENGINEERING STUDENT MIX FY 87-89

(Average on Board)

	FY89	**FY88**	**FY87**
USN	74.5	91.5	107.25
USMC	27	27.75	24.75
USA	15	17.75	9.25
USAF	0	0	0
USCG	9.25	9.5	9.75
CIV/NOAA	3	2.5	2
TOTAL	**128.75**	**149**	**153**

Military Department Representation

(percentage)

SEA	86	86.4	92.6
LAND	11.7	11.9	6
AIR	0	0	0
CIV/NOAA	2.3	1.7	1.3

TABLE F-7

OPERATIONS ANALYSIS STUDENT MIX FY 87-89

(Average on Board)

	FY89	**FY88**	**FY87**
USN	80	82.5	85
USMC	12.25	12	12.5
USA	37.25	39.5	50.25
USAF	0	0	0
USCG	1	1	1.5
CIV/NOAA	3.5	2.25	0
TOTAL	**133**	**137.25**	**149.25**

Military Department Representation

(percentage)

SEA	70.1	69.6	66.3
LAND	28	28.8	33.6
AIR	0	0	0
CIV/NOAA	2.6	1.6	0

TABLE F-8

MECHANICAL ENGINEERING/MATH/PHYSICS

STUDENT MIX FY 87-89

(Average on Board)

	FY89	**FY88**	**FY87**
USN	164.25	191.25	183.5
USMC	6.75	1.75	1.75
USA	11.75	10	9.5
USAF	0	0	0
USCG	6	6.75	6.25
CIV/NOAA	2.5	4.25	4.25
TOTAL	**191.5**	**214**	**205.25**

Military Department Representation
(percentage)

SEA	92.5	93.3	93.3
LAND	6.1	4.7	4.6
AIR	0	0	0
CIV/NOAA	1.3	2	2.1

LIST OF REFERENCES

1. Diamond, R., CDR, USN, "Joint Specialty Officers: Improving the Military During a Period of Reform," Harvard University, John F. Kennedy School of Government, 1988.

2. Drescher, Richard B., *The Effect of the Goldwater-Nichols Department of Defense Reorganization Act on Tactical Aviation Pilot and NFO Career Paths*, Master's Thesis, Naval Postgraduate School, Monterey, California, 1989.

3. Johnson, Joseph L., Jr., *Analysis of the Joint Reorganization Act's Impact on Personnel Flow in the Surface Warfare Officer Community*, Master's Thesis, Naval Postgraduate School, Monterey, California, 1989.

4. Skelton, Ike, Missouri, Chairman, "Report of the Panel on Military Education of the One Hundreth Congress," *100th Congress 1st Session*, Government Printing Office, Washington, DC, April 21, 1989.

5. Hosmer, Bradley C., LTGEN, USAF, President, National Defense University, "Educational Program and Specific Standards to Prepare Officers for Joint Duty and Joint Specialty Nomination," *Memorandum for: Vice Chairman, Joint Chiefs of Staff*, Washington, DC, 28 September 1987.

6. Morgan, Thomas R., General, USMC (Ret.), Chairman, "The Report of the JCS Initial Certification Group on Recommendations to the Chairman of the Joint Chiefs of Staff Regarding Professional Military Education and the JCS Program for Joint Professional Military Education," *CJCS Publication*, Washington, DC, 22 May 1989.

7. *Congressional Record—Senate, November 6, 1989*, Government Printing Office, Washington, DC, November 6, 1989.

8. Stolfi, R. H. S., "NS 3000, Military History: War in the Modern World," Naval Postgraduate School, National Security Affairs Department syllabus, Monterey, California, Summer Quarter AY-87.

9. *Course Catalog*, Naval Postgraduate School, Monterey, California, Academic Year 1990.

10. Tritten, J., "NS 3252, Joint and Maritime Strategic Planning," Naval Postgraduate School, National Security Affairs Department syllabus, Monterey, California, Summer Quarter AY-89.

INITIAL DISTRIBUTION LIST

		No. Copies
1.	Defense Technical Information Center Cameron Station Alexandria, VA 22304-6145	2
2.	Library, Code 0142 Naval Postgraduate School Monterey, CA 93943-5002	2
3.	Air Command and Staff College/EDJ Air University United States Air Force Attn: Major Dave Cleary Maxwell Air Force Base, AL 36112	1
4.	Capt. J. J. Burke, USN Associate Dean of School of Strategic Intelligence Defense Intelligence College/DIA/DIC2 Washington DC 20340-5485	1
5.	LTC Tootle JCS/J-7/JDED The Pentagon Washington, DC 20318-7000	1
6.	LTC Hanes U.S. Army Command and General Staff College Fort Leavenworth, KS 66027-6900	1
7.	LTC Pratt U.S. Marine Corps Command and Staff College Marine Corps University Quantico, VA 22134-5050	1
8.	LTC Paul St. Laurent Naval War College Newport, RI 02841-5010	1

9. Professor James Tritten, Code 56Tr — 5
Naval Postgraduate School
Monterey, CA 93943-5000

10. Professor Richard S. Elster, Code 54 Es — 1
Naval Postgraduate School
Monterey, CA 93943-5000

11. RADM R. W. West, Jr., Code 00 — 1
Superintendent
Naval Postgraduate School
Monterey, CA 93943-5000

12. Dean Harrison Schull, Code 01 — 1
Provost
Naval Postgraduate School
Monterey, CA 93943-5000

12. Dean G. Shacher, Code 07 — 1
Dean of Faculty and Graduate Studies
Naval Postgraduate School
Monterey, CA 93943-5000

13. Capt. Hiller Sarepera, Code 03 — 1
Director of Programs
Naval Postgraduate School
Monterey, CA 93943-5000

14. Chairman, Code CS — 1
Department of Computer Science
Naval Postgraduate School
Monterey, CA 93943-5000

15. Chairman, Code MA — 1
Department of Mathematics
Naval Postgraduate School
Monterey, CA 93943-5000

16. Chairman, Code AS — 1
Department of Administrative Science
Naval Postgraduate School
Monterey, CA 93943-5000

17. Chairman, Code OR — 1
Department of Operational Research
Naval Postgraduate School
Monterey, CA 93943-5000

18. Chairman, Code NS — 5
Department of National Security Affairs
Naval Postgraduate School
Monterey, CA 93943-5000

19. Chairman, Code PH — 1
Department of Physics
Naval Postgraduate School
Monterey, CA 93943-5000

20. Chairman, Code EC — 1
Department Electrical and Computer Engineering
Naval Postgraduate School
Monterey, CA 93943-5000

21. Chairman, Code MR — 1
Department of Meteorology
Naval Postgraduate School
Monterey, CA 93943-5000

22. Chairman, Code AA — 1
Aeronautics and Astronomics
Naval Postgraduate School
Monterey, CA 93943-5000

23. Chairman, Code OC — 1
Department of Oceanography
Naval Postgraduate School
Monterey, CA 93943-5000

24. Chairman, Code ME — 1
Department Mechanical Engineering
Naval Postgraduate School
Monterey, CA 93943-5000

25. Chairman, Code AW — 1
Antisubmarine Warfare Academic Group
Naval Postgraduate School
Monterey, CA 93943-5000

26. Chairman, Code SP — 1
Space Systems Academic Group
Naval Postgraduate School
Monterey, CA 93943-5000

27. Chairman, Code EW 1
Electronic Warfare Academic Group
Naval Postgraduate School
Monterey, CA 93943-5000

28. Chairman 1
Joint Command, Control, and Communications
Academic Group
Naval Postgraduate School
Monterey, CA 93943-5000

29. LCDR R. Stemp, Code 30 1
Naval Postgraduate School
Monterey, CA 93943-5000

30. CDR Daniel, Code 31 1
Naval Postgraduate School
Monterey, CA 93943-5000

31. CDR J. T. Donnely, Code 32 1
Naval Postgraduate School
Monterey, CA 93943-5000

32. LCDR G. B. Netzorg, Code 33 1
Naval Postgraduate School
Monterey, CA 93943-5000

33. CDR D. P. Kimball, Code 3A 1
Naval Postgraduate School
Monterey, CA 93943-5000

34. CDR D. P. Mahoney, Code 34 1
Naval Postgraduate School
Monterey, CA 93943-5000

35. Capt. C. K. Roberts, Code 35 1
Naval Postgraduate School
Monterey, CA 93943-5000

36. CDR J. E. Jackson, Code 36 1
Naval Postgraduate School
Monterey, CA 93943-5000

37. CDR T. J. Hoskins, Code 37 1
Naval Postgraduate School
Monterey, CA 93943-5000

38. CDR T. W. Tiernay, Code 38 — 1
Naval Postgraduate School
Monterey, CA 93943-5000

39. LTC R. Allen, Code 39 — 1
Naval Postgraduate School
Monterey, CA 93943-5000

40. J. S. Blandin, Code 64 — 1
Executive Director, Defense Resource Management
Education Center (DRMEC)
Naval Postgraduate School
Monterey, CA 93943-5000

41. Capt. V. J. Huth, Code 34 — 1
Director Aviation Safety School
Naval Postgraduate School
Monterey, CA 93943-5000

42. Director Net Assessment — 5
OSD/NA PNTROOM 3A930
Office of the Secretary of Defense
Washington, DC 20301

43. Chief of Naval Operations — 1
Code OP-06
Navy Department
Washington, DC 20350-2000

44. Chief of Naval Operations — 1
Code OP-602
Navy Department
Washington, DC 20350-2000

45. Chief of Naval Operations — 5
Code OP-06
Navy Department
Washington, DC 20350-2000

46. Chief of Naval Operations — 1
Code OP-09BC
Navy Department
Attn: Dr. J. A. Richard Guertin, SES
Washington, DC 20350-2000

47. Chief of Naval Operations 1
Code OP-09BC
Navy Department
Attn: Ken Coffey
Washington, DC 20350-2000

48. LCDR Edward S. Clark 2
5509 Center Street
Chevy Chase, MD 20815