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IDA STUDY S-507

**ANALYTICAL SUPPORT  
FOR THE JOINT CHIEFS OF STAFF:  
THE WSEG EXPERIENCE, 1948-1976**

John Ponturo

July 1979

Prepared for  
Joint Chiefs of Staff



**INSTITUTE FOR DEFENSE ANALYSES  
INTERNATIONAL AND SOCIAL STUDIES DIVISION**

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400 Army-Navy Drive, Arlington, Virginia 22202

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## PREFACE

The research and analysis on which this study is based were carried out by an IDA study team consisting of Rosemary Hayes, John K. Moriarty, and John Ponturo, with the advice and assistance of W. Bruce Erwin, Brig. Gen., USAF (Ret.), Acting Director, International and Social Studies Division. The study was edited by Jo C. Levy.

An advisory and review panel reviewed the work and provided comments and advice. The panel consisted of Dr. Don K. Price, former Dean, John F. Kennedy School of Government, Harvard University; Gen. Berton E. Spivy, Jr., USA (Ret.), formerly Director, Joint Staff, OJCS; and Leonard Sullivan, Jr., formerly Assistant Secretary of Defense (PA&E). The principal IDA reviewer for the study was Andre R. Barbeau, Director, Systems Evaluation Division.

The research process was greatly facilitated by the support of those in the DoD-IDA Management Office, including Capt. James C. Oliver, Jr., USN (Ret.); Capt. John A. Coiner, USN, Director; Pauline S. Butler, Technical Information Officer, and Shirley A. Goldsmith, Secretary, who managed to retain custody of WSEG records while the study was being completed.

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Scientific and Technical Advisor, SAGA, OJCS. Mr. Joseph A. Lewis, who provided many insights based on his long association with WSEG and IDA, also made available a copy of his unpublished paper, "The WSEG/WSED Role in the Future," written in August 1966. Mr. John H. Ohly, former Special Assistant to the first SecDef, James V. Forrestal, furnished invaluable assistance, not only through his recollections but also through his comprehensive collection of personal papers, in which he tracked down some critical items bearing on the early formation of WSEG. In addition, of course, the study team is extremely grateful to those individuals, active and "retired," who took time out from busy schedules and allowed themselves to be interviewed about the WSEG experience. The list of those interviewed is provided in Appendix B.

Needless to say, none of those mentioned is responsible for any inaccuracies of fact or judgment in the study.

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## SUMMARY AND PRINCIPAL FINDINGS

### A. PURPOSE

This study analyzes the activities of the Weapons Systems Evaluation Group (WSEG) in providing operational analyses and weapons systems evaluations to the Joint Chiefs of Staff (JCS) from 1948 to 1976.

The purpose of the analysis is twofold: (1) to assess the factors that affected WSEG's usefulness as a source of analytical support for the JCS; and (2) to derive lessons from the WSEG experience that may be of value in providing for such support in the future.

In reviewing the WSEG record for these purposes, the study considers WSEG's organization, working arrangements, task assignments, operating procedures, and study production, in the context of the circumstances and requirements of the particular period. Under the terms of the task directive, the study covers WSEG's functions and the nature of their accomplishment, but does not attempt to evaluate either the quality of WSEG studies or their impact on JCS or Department of Defense (DoD) decisions.

The study is based on the WSEG records and documents available when it was disestablished in 1976; on WSEG materials in the files of the Secretary of Defense and the JCS; and on supplementary interviews with some 30 participants and observers. Persons interviewed are not cited individually, but the list of those interviewed is given in Appendix B.

## B. BACKGROUND

WSEG was established in December 1948 as a top-level analytical study group to serve the JCS and the Secretary of Defense. It was organized on a multi-Service, combined military/civilian basis, with three primary objectives:

- (1) To bring scientific and technical as well as operational military expertise to bear in evaluating weapons systems.
- (2) To employ advanced techniques of scientific analysis and operations research in the process.
- (3) To approach its tasks from an impartial, supra-Service perspective.

WSEG continued in operation for some 28 years before it was disestablished in September 1976. For many of those years it occupied a preeminent position as the principal analytical support agency of its kind at the upper echelons of the DoD. Over this span of years, it underwent various changes in organization and function in response to changing external circumstances and task requirements, so that its role in the DoD varied considerably.

Generally speaking, WSEG's institutional position and study activities were strongly influenced by major developments in the world situation and in national security affairs; in military technology, force structure, and defense posture; and in the organization and management of the defense establishment. When WSEG was founded, the Office of the Secretary of Defense (OSD) was brand new, the national defense establishment was relatively small, and WSEG was virtually the only analytical support organization at the OSD/JCS level. As time passed, however, WSEG came to operate within a larger and more diversified DoD, with a multiplicity of analytical support requirements and capabilities. This was a radical transformation of the contextual framework within which WSEG functioned, and led to major adjustments in its organization and operations.

For purposes of this study the evolution of WSEG can be divided conveniently into three phases, characterized by three different WSEG configurations:

- WSEG I, from 1948 to 1955, when WSEG operated wholly in house as a single, integrated military/civilian organization.
- WSEG II, from 1956 to 1966, when WSEG was reconstituted as a mixed government-contractor arrangement, operating as a joint military group in close partnership with a civilian contractual component, the Weapons Systems Evaluation Division (WSED) of the Institute for Defense Analyses (IDA).
- WSEG III, from 1967 to 1976, when WSEG continued to operate as a joint military group with supporting contractual arrangements, providing military participation in contractor studies, but also functioned increasingly as an administrative monitor and interface between study sponsors in the DoD and the contractor performing the analytical work (primarily IDA but other contractors were included as well).

In each of these three configurations, the WSEG role was conceived of as meeting the need for an authoritative analytical support agency at the level of OSD and the JCS. For the purposes of this study, therefore, the different configurations can be considered as alternative operating mechanisms by which WSEG was enabled to perform this role. Their history constitutes a useful record of the advantages and disadvantages of several different analytical support arrangements, and provides the means by which to identify factors that made each of them more or less advantageous and to derive lessons that may have general relevance for analytical support problems of today.

In approaching the WSEG experience in these terms, due account must be taken of differences in the external context, such as developments in international and strategic affairs, the political climate within the DoD and the U.S. Government as a whole, and the management structure of the DoD at any

given time. It must also be noted that WSEG was never the exclusive instrument of the JCS alone, but was shared with the OSD, in practice with the R&D element of OSD of the period. Not all of WSEG's work was performed for the JCS, and not all of WSEG's activities are necessarily germane to JCS concerns.

In addition, it should be noted that WSEG was never the sole source of analytical support for the JCS. Although WSEG was in many ways a preferred JCS source for external studies, the JCS were also able to call on substantial analytical support from the Joint Staff itself, from the Military Departments or other DoD agencies, and directly or indirectly from the outside world of contractual services. In reviewing the WSEG experience, therefore, this study is examining only a portion of the total analytical support that was available to the JCS.

#### 1. WSEG I, 1948-1955

WSEG was founded by the First Secretary of Defense, James V. Forrestal, in December 1948,

...to provide rigorous, unprejudiced, and independent analyses and evaluations of present and future weapons systems under probable future combat conditions--prepared by the ablest professional minds, military and civilian, and the most advanced analytical methods that can be brought to bear.<sup>1</sup>

At the time, the Defense organization was rudimentary and unification of the armed forces was new. The Secretary of Defense had no Assistant Secretaries and only a tiny personal staff. The three Services were loosely linked at the SecDef level by coordinating committees or boards composed of Service representatives, like the Research and Development Board or the JCS, which performed policy coordinating functions. Service roles and missions were still not firmly defined, and the Services were in substantial disagreement over fundamental issues

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<sup>1</sup>WSEG Charter (Dec. 11, 1948).

of strategy and force structure. The tempo of defense technology was rapid, adding to the complexity of decisions and creating new demands for technical analysis of all kinds. At the same time, the international climate intensified the national focus on peacetime preparedness and timely scientific and technological contributions to defense, and created an urgent need, in Forrestal's view, for competent and impartial analytical advice in support of weapons systems decisions.

Under its original charter, WSEG was established as an analytical advisory group to perform studies for both the JCS and OSD in support of decisionmaking at the supra-Service level. Its analytical purpose was to integrate operational military and scientific/technical considerations, and its studies were to be carried out by teams that mixed professional military staff members on a multi-Service basis with civilian scientific and technical personnel. Its philosophical aim was objectivity, particularly with regard to possible Service or other biases.

During this first phase WSEG was organized as a wholly in-house organization of about 50 professionals, half military and half civilian, with the military members assigned on regular rotating tours from each Service and the civilians appointed to regular civil service status. On the military side WSEG had a JCS-type structure, consisting of a three-star military Director, senior flag-level representatives from each Service, and a colonel/captain level joint staff. On the civilian side it had a senior technical director or Director of Research, typically a distinguished scientist on temporary leave from the academic world, a staff of permanent analysts with backgrounds in operations research or some form of defense-related science and engineering, and a capability to bring in additional experts from government, industry, or the academic world, as needed. Individual projects were normally headed by civilian project leaders.

WSEG I was housed with or near the JCS in the Pentagon and did nearly all of its work for them. For the most part it was assigned broad mission-area type tasks, as in strategic air power, weapons for air defense, antisubmarine warfare, and the like, many of which continued for several years, but it also worked on narrower studies examining specific new technologies, such as nuclear propulsion for naval vessels, or atomic artillery. From 1948 to 1955 WSEG produced 15 reports, many of them voluminous, covering broad subjects in depth. The JCS formally tasked, was briefed, and took action on nearly all studies. Relatively few were briefed to the SecDef or his principal assistants, but at least one, an evaluation of strategic air bombardment plans, was briefed directly to the President.

The demands on WSEG during this period were substantial, much greater than it could satisfy. It had difficulty attracting qualified civilians under the civil service arrangements of the time, and relied heavily on temporary consultants or personnel it could borrow on short-term loan. Even so, it fell seriously behind in its work, and remained behind throughout the period.

The advent of the Eisenhower Administration in 1953 initiated a new cycle of interest in WSEG. In line with general trends toward strengthening the organizational structure of DoD, several Presidential advisory groups, such as the Rockefeller Commission on Defense and the Hoover Commission on government organization, reviewed WSEG and strongly reaffirmed the WSEG role and mission. They noted, however, that WSEG had been unable to satisfy the study requirements of the JCS and at the same time provide needed support to the R&D side of OSD. They recommended that WSEG be made into at least as strong an organization as the operations research agencies of the three Services, and that its technical staff be expanded by resorting to contractual arrangements along the lines,

pioneered by the Services, of RAND, OEG, and ORO, in order to facilitate the recruitment of high caliber civilian analysts.

In 1954 a new WSEG directive placed WSEG under the administrative purview of the then Assistant SecDef for R&D, to be responsive to study directives from both the JCS and the Assistant Secretary (R&D). WSEG was charged with providing "comprehensive, objective, and independent evaluations under projected conditions of war," to include present and future weapons systems, their influence on strategy, organization, and tactics, and their comparative effectiveness and costs. Its military structure and staffing continued along existing lines, but in 1955 the decision was made to expand the technical staff and convert WSEG to a contractual arrangement.

## 2. WSEG II, 1956-1966

The DoD authorities who examined the contractual alternatives available for WSEG turned to university sponsorship as a means of lending scientific prestige to the enterprise, facilitating access to the scholarly research community, and promoting a working climate that would appeal to civilian research analysts. They persuaded Dr. James R. Killian, Jr., President of MIT and shortly to become the first Science Adviser to the President under Eisenhower, to take the lead in bringing together a consortium of leading universities to sponsor a nonprofit corporation to provide the necessary contractual support. The organization, formally incorporated as the Institute for Defense Analyses (IDA), was established in 1956 by five university members: the California Institute of Technology, Case Institute, MIT, Stanford University, and Tulane. Others were added in subsequent years--the University of California, University of Chicago, Columbia University, University of Illinois, University of Michigan, the Pennsylvania State University, and Princeton--to make up a total of 12 members.

The WSEG transition to a contractual arrangement was effected with little difficulty. WSEG continued to operate initially as essentially the same organization, under the same charter and rules of operation as before. Nearly all civil service analysts transferred to the IDA payroll, and the IDA contingent of civilians continued to operate as an integral and nearly indistinguishable part of WSEG in the Pentagon. Studies continued to be carried out by mixed civilian/military teams, under the coordinate leadership of the WSEG Director and the IDA Director of Research. In subsequent years, when IDA's role was expanded to serve other OSD elements and Defense Agencies such as ARPA, the IDA contingent supporting WSEG was simply reconstituted as a separate division of IDA, the Weapons Systems Evaluation Division (WSED), and the Director of the Division became the IDA counterpart to the Director of WSEG. The organizational format was a collaborative WSEG/WSED combination, to incorporate both military and technical expertise, correlate both operational and technological considerations in the analyses, and ensure both the technical validity and operational realism of the study reports.

The defense climate of the 1956-66 period was highly favorable to the WSEG/WSED venture. The Eisenhower "New Look" defense policies gave defense science and technology a major boost, and the era of supersonic aircraft, ballistic missiles, computers, advanced electronics, and nuclear plenty was in full swing. Foreign policy challenges and commitments reached global proportions, multiplying the potential claims on defense resources. Technological superiority was increasingly seen as the master key to providing national security while still keeping defense budgets in check. The DoD centralization trend continued with the 1958 defense reorganization under President Eisenhower that strengthened the SecDef and the JCS and brought DDR&E and ARPA into the picture, and accelerated with the major expansion and bureaucratic diversification of OSD under Secretary McNamara in the 1960's. These latter developments added

out of the Pentagon in 1964 into a new building, together with the rest of IDA.

### 3. WSEG III, 1967-1976

In 1966 and 1967, IDA underwent a comprehensive re-appraisal, prompted in part by a corporate interest in taking stock after 10 years of operation, and in part by Congressional and DoD reviews of IDA and the other nonprofit research advisory corporations that had grown up during the 1950's and 1960's. The reappraisal was carried out by the new President of IDA, Gen. Maxwell D. Taylor, USA (Ret.), a former Chairman of the JCS, Ambassador to Vietnam, and consultant to the President, in a series of meetings with leading officials of the DoD, including the SecDef and Deputy SecDef, the Chairman of the JCS, the DDR&E, and various Assistant Secretaries. Although not initially intended to examine WSEG and the WSEG/IDA relationship as such, the discussions ultimately led to a reorganization of IDA that entailed a shift from separate client-oriented divisions--of which the WSED division was one--to a more centrally managed structure of functional divisions that in effect led to the dissolution of the unique WSEG/WSED arrangement.

The primary aims of the 1967 IDA reorganization were to reduce staff duplication, improve the utilization of IDA resources, and enhance IDA's flexibility and responsiveness to multiple user requirements in the DoD. From the JCS point of view, however, the reorganization had serious disadvantages. It theoretically made the entire talent base of IDA available to WSEG, as to other DoD users, but disrupted the dedicated WSEG/WSED relationship and raised serious questions about the future role of WSEG as a mechanism for providing analytical support for the JCS.

The outcome was a compromise, in which the JCS reluctantly accepted the reorganization of IDA as an internal IDA matter, dropping their long-standing insistence on a separate

WSED division dedicated exclusively to WSEG, but resisted any basic change in the WSEG role. They defended the continuation of WSEG as a study management interface between the OJCS and IDA. They upheld the authority of the Director of WSEG to require military participation in studies prepared under WSEG task orders, to monitor IDA performance in carrying them out, and to conduct a separate WSEG review of the final IDA product. They also supported the authority of the Director of WSEG to regulate and control security matters, including "need-to-know" determinations on information access. Finally, as a hedge against possible discord between WSEG and IDA, the JCS proposed that WSEG be authorized to enter into study contracts with firms other than IDA, when comparative capabilities, costs, or other factors made it desirable, thus ending IDA's privileged status as sole contractor for WSEG studies. These recommendations were approved by the SecDef in July 1967.

The new WSEG/IDA association underscored IDA's role as an independent study producer, with greater latitude in staffing and carrying out studies for WSEG, or through WSEG, than before, and at the same time further emphasized WSEG's role as an administrative go-between and study manager who was also participating in IDA-led studies, rather than as a co-equal participant in or a leader of the analytical work. In other respects, however, the changes were not radical. There was greater physical segregation of WSEG military and IDA civilian staffs, but they were still collocated in the same building and project work still continued on a "mixed" civilian/military basis. The new Systems Evaluation Division of IDA, because it ended up with approximately the same pool of expertise that IDA had maintained in the former WSED division, naturally inherited most of the IDA work on WSEG tasks, so that in practice there was considerable continuity and stability. Under the new procedures IDA management had the prerogative of making project assignments on a case-by-case basis, but departures from previous assignment practices proved to be exceptional and not difficult to accommodate.

Similarly, WSEG's new prerogative to utilize contractors other than IDA was exercised relatively infrequently. During the entire 1967-77 period, only 20 WSEG reports, out of a total of 208, were produced using contractors other than IDA. For the most part it proved more convenient and effective for WSEG to engage an established, familiar contractor with IDA's known capabilities, qualifications, resources, and experience, than to survey the contractual community anew each time a task was assigned. Also IDA's noninvolvement in any Service or industry program or study effort gave IDA an institutional mantle of objectivity appropriate to many of WSEG's DoD-wide responsibilities.

WSEG had received a strong vote of confidence from the JCS and OSD at the time of the IDA reorganization in 1967, and it received another in 1969, when the new Nixon/Laird administration carried out its own assessment of DoD organizational matters. The deterioration of relations between the defense establishment and the academic/intellectual world, on the one hand, and Congressional criticism of FCRC's, on the other, appeared to jeopardize the continuation of IDA for a time, and the traumatic Pentagon Papers episode of 1971 hardened JCS attitudes toward contractor access to sensitive information. Whenever in-house or other alternatives to the WSEG/IDA effort were considered, however, they were generally conceived of as operating on the same basis as WSEG: professional military participation and joint military/civilian staffing to provide some kind of balanced operational military/civilian scientific team, to carry out authoritative studies at the supra-Service level.

During the 1967-77 period as a whole, WSEG produced a total of 208 reports, twice as many as in the previous decade, but many of them were of much narrower scope. The reports were almost evenly divided, with 100 done for the JCS, 95 for DDR&E, and 13 for other OSD-level agencies. There was a pronounced shift in the balance of WSEG efforts during the period, from a ratio of nearly 3 to 1 in favor of JCS studies in the earlier years to roughly 2 to 1 in favor of DDR&E in the later years.

The shift is generally attributable to JCS reaction to the Pentagon Papers episode, an overall decline in JCS tasking initiatives, especially in the sensitive strategic operations and command and control areas, and a corresponding increase in DDR&E tasking, primarily in the OT&E area, prompted largely by "fly before buy" weapons acquisition policies.

The character of WSEG changed during the period. The WSEG staff was nearly halved, decreasing from about 70 military professionals in the late 1960's to 38 in 1975. The Director of WSEG remained at the three-star level, the complement of senior Service members was dropped to one-star ranks, and the officer cadre remained at the O-6 level. WSEG military officers as a group continued to perform study management functions--that is, helping tailor study tasks to user needs, providing communication and information channels between study teams, study sponsors, and consumers, monitoring and reviewing study progress and accomplishments, and the like, while IDA provided the study leadership. They also played an important role in providing access to the military data required for studies and in assisting with the interpretation and application of such data. The extent of their actual participation in the analytical study effort, however, varied considerably and was difficult to evaluate. There was considerable skepticism as to the extent of their analytical contributions to the studies, particularly considering the sizable number of senior military personnel involved. This issue had arisen previously, in the 1960's, but received considerably more attention in the 1970's.

During 1975 and 1976, WSEG was the subject of several separate but overlapping reviews, initiated primarily by OSD, with incidental JCS participation. Among these was an OSD organization/management review designed to reduce OSD/JCS manpower spaces, and an ad hoc DDR&E review of the overall role of WSEG. Both reviews were generally negative. The DDR&E review, which was never formally completed, concluded that WSEG's role had diminished over the years, as alternative analytical support

capabilities in the DoD had grown and spread. The OSD management review made the elimination of the WSEG manpower spaces seem to be an attractive way to implement a targeted reduction in the ODDR&E staff, where the WSEG spaces were charged. Finally, in March 1976, the SecDef announced that WSEG would be disestablished effective September 30, 1976. "It is no longer needed," he said, "given the extensive complex of study and evaluation activities available to the Department."<sup>2</sup>

## C. PRINCIPAL FINDINGS

### 1. Factors Affecting WSEG's Usefulness to the JCS

If WSEG is viewed over the entire 28-year span of its existence, through each of the three different phases outlined above, there is very little question that the JCS found it to be generally useful. Although somewhat dubious at first, the JCS became prominent defenders of WSEG, even at times when other elements of the DoD questioned its value. The JCS continued to show considerable preference for using WSEG as their main source of external analytical support even when, in the late 1960's and early 1970's, they obtained access to other sources that had become widely available. At the end, when WSEG was disestablished, it was primarily for DoD reasons rather than JCS reasons. Moreover, throughout the changes in WSEG's actual organization, working arrangements, and operating environment, the validity of the concept behind WSEG--high-quality analytical support to integrate operational military, technological, and other considerations at the supra-Service level--was never seriously challenged.

The primary challenges to the WSEG concept arose from changes in the analytical setting itself--the growth of competing analytical services at the disposal of the OSD and the OJCS, the utilization of such services as standard management tools

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<sup>2</sup>Secretary of Defense, Memo for CJCS, DDR&E, Acting ASD (PA&E), "Organization Change--Disestablishment of WSEG" (Sept. 9, 1976).

throughout the DoD, and the multiplication of specialized user requirements beyond the capacity of a relatively small, across-the-board analytical study group like WSEG to satisfy.

Changes also occurred in the OSD/OJCS perspectives on the potential role of technical analysis, whether by WSEG or any other agency, in resolving joint or inter-Service issues. Some of the high expectations of WSEG's early years proved to be unrealistic, and it was always difficult to ensure WSEG's analytical independence and impartiality in inherently controversial policy-level matters. Moreover, while striking results could sometimes be obtained from the fresh application of analytical methods and techniques to new problem areas, as the analytical base expanded the potential contribution of further analysis diminished.

Within the context of such changes, the JCS considered WSEG a valuable asset because of five continuing characteristics:

- (1) Supra-Service status
- (2) Joint organization
- (3) Military/scientific participation
- (4) Comprehensive information access
- (5) Safeguards against bias

It was the combination of these characteristics within a single agency that was highly responsive to JCS analytical support needs that was of particular value to the JCS. In various JCS assessments of WSEG over the years, the combination was often referred to as "unique," not available elsewhere in other analytical support groups.

Of the foregoing characteristics, the factor that above all made WSEG useful to the JCS was WSEG's capability to integrate scientific and operational military expertise as part of the analytical study process. Whether in WSEG itself or in the mixed WSEG/IDA arrangements that existed after 1956, this integration was considered critical in order to assure the JCS of

both the technical soundness and the operational realism of the supporting studies. For the most part, the scientific and technical ingredient was sought because it was not readily available within the Joint Staff, but the JCS also placed a high value on substantial military participation in the study effort. The latter greatly enhanced the credibility of study results, in the JCS view.

WSEG's pursuit of objectivity was another factor that affected WSEG's usefulness to the JCS. Although objectivity is an elusive goal, difficult to measure, and one that in the real world can only be approximated, WSEG incorporated two specific provisions for it that proved of considerable value.

First, WSEG provided for civilian technical direction of its studies, whether in the early in-house arrangement, during the second WSEG/WSED period, or in the third period when WSEG operated separately from IDA and other contractors. Civilian technical direction was counted on not only to ensure a high level of scientific and technical competence, but also to provide an independent perspective that was not associated with any Service or other special interest.

Second, WSEG provided for multi-Service or joint participation on the military side. All WSEG studies were subjected to the crossfire of multi-Service critiquing at both the tasking and reviewing ends and as part of the study process. Although this multi-Service approach generated some problems, it was also one of the safeguards against Service biases or distortions.

WSEG's dual sponsorship--the fact that WSEG was chartered to serve both the JCS and OSD--had both advantages and disadvantages from the JCS standpoint. The main disadvantage was that the JCS had to share authority over WSEG with other users, primarily the R&D element of OSD. This required coordination in such matters as allocation of effort and posed some constraint on JCS freedom of action. Generally, however, OSD fostered preferential treatment of JCS study requirements in the WSEG program, so that this was not a serious handicap.

On the other hand, the dual sponsorship arrangement had certain positive aspects. It helped assure WSEG's independence from partisan pressures. It helped counter outside impressions that WSEG might be a "captive" agency of the JCS with a collective military bias. It also facilitated the flow of information and ideas across organizational lines, which probably benefited the JCS as well as other agencies.

WSEG's military structure, with a military Director and senior representatives and staff officers from each Service, was clearly congenial to the JCS, since it was modeled on a JCS style of operation, but in study and analysis terms it was probably both an asset and a liability.

On the positive side, WSEG's military structure facilitated communications. The structure was sometimes criticized, particularly in the later years, as an unnecessary interface between OJCS clients or users and the IDA research teams. But when it worked well this interface could provide a useful communication channel or bridge. There was considerable value in the senior WSEG military officers, including WSEG's three-star Director, being able to maintain close touch with appropriate levels in the Joint Staff, focusing on JCS study needs, anticipating study opportunities, and following up on study results, generally promoting a two-way interaction with the JCS.

In addition, the joint military structure helped ensure that different Service views and data contributions were considered during the course of a study, with no gaps or blind spots. And, as indicated above, it also provided additional checks and balances against Service bias or distortion of study results.

On the negative side, however, WSEG's military structure subjected WSEG to criticism that WSEG studies tended to compromise or "water down" study results. This problem was eventually circumvented to a considerable degree by separating the IDA product as an independent contribution to the WSEG report and

identifying the WSEG portion as, in effect, a WSEG commentary on the IDA study, but it did not disappear entirely.

WSEG's utilization of contractual support, which differed in the 1956-66 and 1967-76 periods, affected WSEG's usefulness in several ways. Initially, the chief reason for WSEG's switch to a contract arrangement was to obtain the services of high-quality technical personnel, who were difficult to recruit for government service. As government service became more attractive during the 1960's and 1970's and scientific expertise became more available throughout the DoD, however, contractual arrangements continued to be useful primarily because they offered flexibility (easy access to expertise that was new or relatively rare, or was only required on a temporary basis), convenience (study efforts could be tailored to changing requirements), and the capability for quick-reaction responsiveness as well as sustained effort that was difficult for government staffs to undertake. More important, perhaps, was that especially under nonprofit FCRC-type arrangements, contractual arrangements were an independent assurance of the validity and objectivity of study results.

As we have seen, WSEG's utility to the JCS declined somewhat over time, for several reasons. First, the growth of additional analytical support centers and agencies, both within the DoD and outside, provided alternatives and rivals to WSEG, making it less indispensable to the JCS.

Second, the evolution of IDA into an organization with multiple clients in DoD in addition to WSEG, some of them institutional adversaries of the JCS, made IDA/WSEG/JCS relations more complicated and, on occasion, difficult, and led the JCS to seek supplementary sources of analytical support.

Third, there was growing skepticism in OSD as to WSEG's actual analytical contribution, particularly in the later years, and the growing impression that WSEG was performing predominantly administrative functions. These administrative functions were

regarded as important and necessary, but it became increasingly difficult to justify the employment of large numbers of senior military personnel to handle them. In the end, the continuation of WSEG could not be justified on these grounds alone.

## 2. Lessons from the WSEG Experience

Many aspects of the WSEG experience are undoubtedly of primarily historical interest and are relevant only to past times and circumstances, when analytical support requirements and arrangements bore little resemblance to those of today. The pertinence of these aspects of the WSEG experience to the current JCS analytical support situation may be questionable, depending on how current or projected JCS analytical support needs are defined and on what alternatives may be available for fulfilling them. Both these determinations are outside the scope of the present study. Nevertheless, this study is predicated on the assumption that there may well be lessons in the WSEG experience that are of general applicability, quite apart from the specific analytical support requirements of the time and regardless of the specific arrangements and procedures that may be utilized for satisfying them.

Of course, the factors that made WSEG more or less useful to the JCS, as summarized above, can themselves be considered lessons from the WSEG experience. In addition, however, the WSEG experience can be used to demonstrate or confirm the importance to the JCS of certain qualities or attributes that might be utilized as criteria by which to judge the merits of other analytical support arrangements. While some of these criteria may seem almost intuitively obvious, the fact that they can be empirically substantiated from the WSEG experience underscores their value.

In the first place, WSEG performed a number of functions for the JCS that related primarily to study management or study administration. Those that the WSEG experience has shown to be

substantially to the demands for analytical and technical studies throughout the DoD and greatly enhanced the role of such studies in the overall decisionmaking process.

WSEG grew considerably larger and more capable during this period, to include about 50 military officers in WSEG and 100 civilians in the WSED division of IDA. The WSEG/WSED team produced 104 reports from 1956 through 1966, an average of nearly 10 per year. A total of 71 reports, or more than two-thirds, were produced for the JCS, and nearly all the rest were produced for DDR&E. They included some of the foremost strategic posture studies of the period, ground-breaking command and control work, major operational evaluations of electronic countermeasures and counter-countermeasures, and critical studies of missile reliability and accuracy, as well as a wide variety of studies of "limited war" or general purpose weapons systems and problems.

In the early years of the period, WSEG and its built-in IDA/WSED component still constituted the principal analytical support capability at the level of the JCS and OSD. The WSEG/WSED combination of supra-Service status, privileged access, and integrated scientific and military participation were regarded as major DoD assets. WSEG's institutional position in the top echelons of the Pentagon and its communication links to the external research world through IDA contributed to the confidence of the JCS and other clients that the most complete information, the broadest base of scientific, technical, and military advice, and the most comprehensive judgments were brought to bear in its studies. Although these studies were sometimes criticized as excessively "watered down," on the whole WSEG had achieved a reputation for exceptional objectivity and relative freedom from political, bureaucratic, and commercial bias.

In the 1960's WSEG began to be displaced as the primary analytical support organization at the JCS/OSD level. The

growth, diversification, and analytical orientation of OSD under McNamara caused studies and analysis efforts to proliferate throughout the DoD. OSD staff offices such as Systems Analysis emerged as the primary centers of decision support analysis. There was a relative decline both in the influence of the JCS in DoD decisionmaking and in the high-level attention accorded to WSEG studies. The JCS themselves turned to alternative sources of analytical support, augmenting internal Joint Staff capabilities and tapping the more sizable study and analysis resources of the military Services.

IDA also expanded considerably during this period. Other IDA divisions were established to work for DoD clients other than WSEG and the JCS, raising awkward issues connected with the compartmentalization of WSEG/JCS work within a separate IDA division. At the same time, new DoD rules governing relationships with external contractors called for a sharper functional distinction between WSEG and IDA responsibilities. In the ensuing adjustments, which were not accomplished without a good deal of friction, the JCS and WSEG conceded IDA's requirements for greater corporate integrity and independence, and for greater visibility for identifiable IDA study contributions, but they successfully defended the condition that the WSED division of IDA be maintained as a "separate and stable entity" dedicated to WSEG, operating insofar as possible as the civilian/technical partner of a closely coupled WSEG/WSED enterprise.

From the JCS standpoint, the WSEG/WSED arrangement satisfied requirements for full military participation in supporting studies and for assuring task responsiveness to JCS needs--as well as for the protection of sensitive or privileged JCS information--without infringing unduly on contractor requirements for management integrity and independence. Nevertheless, the close association was difficult to maintain under the new ground rules, and in time a more "arms-length" relationship developed, particularly after the WSEG/WSED operation moved

of proven usefulness and importance to the JCS include the following:

- Tailoring study task assignments to JCS needs.

Performing this function required close knowledge of the analytical support needs developing within the JCS, on the one hand, and the capabilities of available analytical support organizations, on the other, in order to match them effectively in the formulation and assignment of tasks. The function was required in order to gear the supporting study effort to the major planning and advisory activities of the JCS. It could not be accomplished without high-level OJCS participation and support.

- Providing interface and liaison support.

This included coordination and liaison with OSD and other agencies, both for study management and to facilitate information access. These activities required the full-time effort of designated senior officers, operating under explicit JCS authority and procedures.

- Monitoring and reviewing study production, primarily to assure responsiveness to JCS task guidance.

It was sometimes difficult for WSEG to accomplish this essential overseer function without impinging on the study producer's responsibility for technical performance and professional integrity. The WSEG solution necessitated establishment of a clear separation between OJCS monitoring, review, and approval procedures, on the one hand, and the technical direction of the analytical work, for which the study producer was primarily responsible, on the other.

- Controlling sensitive information.

A somewhat mundane but nevertheless critical WSEG function was maintaining the security of sensitive OJCS information--in terms of facilitating its utilization as required as

well as safeguarding its dissemination within need-to-know limitations. WSEG's performance in both respects was considered outstanding.

- Budgeting and contracting.

The JCS relied heavily on WSEG for essential budgeting, contracting, and contract management activities, thus relieving the Joint Staff of most of the purely administrative burdens in study management. Under other arrangements, specific provisions are required to carry out such activities.

While the foregoing is not an exhaustive list of study management functions, it appears to include those that the WSEG experience has shown to be of proven usefulness and importance to the JCS.

Of even greater importance, however, were WSEG's analytical support characteristics. As reflected in the WSEG experience, these qualities or attributes include the following:

- Comprehensive, authoritative, and objective analyses.

This may seem to be a platitude; it is presented here as a reminder that throughout the existence of WSEG, the JCS placed a premium on the assurance that the most complete information, the broadest base of scientific, technical, and military advice, and the most comprehensive judgments available were being incorporated into JCS supporting studies. Attainment of this goal required substantial attention to WSEG by the Director and Chief Directorates of the OJCS, and at times even by the Chairman and the Joint Chiefs themselves.

- Access to a wide variety of scientific, industrial, and governmental expertise.

It was especially important that this access extend to types of expertise that were not normally within the competence of the Joint Staff or otherwise available to it. Since the

types of expertise needed varied with the tasks, WSEG's capability to tap a wide variety of sources was crucial.

- Military inputs during the analytical process.

This was probably a fundamental requirement of most studies for the JCS, without which study results lacked credibility and persuasiveness. Moreover, separate military qualifications or amendments introduced at the review stage were much less satisfactory than active participation in the study process itself.

- Adaptability to changing JCS requirements.

Throughout the WSEG experience, an unusual degree of flexibility was required in order to adjust the size, composition, subject matter, methods, and other variables of the study effort to accommodate changing JCS requirements. This flexibility was an essential feature of WSEG's operating procedures.

- An in-depth analytical base.

It was particularly important and useful for WSEG to be able to monitor military and technological developments in the more important or dynamic areas, in order to provide the JCS with quick-reaction as well as sustained support. In practice, OJCS authorities were called upon to designate such problem areas in advance and to provide continuing working program support, in order to ensure that the capability was available when needed.

- Jurisdictional latitude.

The JCS found that one of WSEG's most useful qualities was its ability to carry out studies that cut across institutional lines and jurisdictional areas in the government. This required explicit OSD approval and backing.

- Independence.

WSEG provided the JCS with an alternative source of analytical support outside of the Joint Staff that was able to test

alternative hypotheses or assumptions and arrive at independent conclusions outside the confines of normal policy constraints. This required WSEG studies to be exempted from many of the policy rules and guidelines that were applicable to most in-house agencies.

Most of the lessons that can be drawn from the WSEG experience would take on added currency and relevance if--in accordance with recommendations like those offered in the recent Steadman and Rice reports to the Secretary of Defense<sup>3</sup>--it was decided to strengthen the role of the JCS in DoD resource allocation, force structure, and weapons-systems decisions. In this event, the JCS would almost certainly have to have access to augmented analytical support capabilities, be they within the Joint Staff or from external sources, created either by enlarging on present organizational arrangements or developing alternative ones. It is beyond the scope of this study to propose solutions, but it can be suggested that a review of the WSEG experience, in the light of current requirements and circumstances, could be helpful in illuminating the available options.

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<sup>3</sup>*Report to the Secretary of Defense on the National Military Command Structure* (July 1978); *Defense Resource Management Study* (February 1979).

NSC	National Security Council
NSDM	National Security Decision Memorandum
NSSM	National Security Study Memorandum
OASD	Office of the Assistant Secretary of Defense
ODDR&E	Office of the Director, Defense Research & Engineering
ODM	Office of Defense Mobilization
OEG	Operations Evaluation Group
OJCS	Office of the Joint Chiefs of Staff
OMB	Office of Management & Budget
Ops Depts	Operations Deputies
ORO	Operations Research Office
OSD	Office of the Secretary of Defense
OSRD	Office of Scientific Research and Development
OT&E	Operational Test and Evaluation
OUSDRE	Office of the Undersecretary for Defense Research & Engineering
PA&E	Program Analysis & Evaluation
PPBS	Planning, Programming, and Budgeting System
PSAC	President's Science Advisory Committee
R&D	Research & Development
RDB	Research & Development Board
R&E	Research & Engineering
RESD	Research & Engineering Support Division
RISOP	Red Integrated Strategic Offensive Plan
RW	Radiological Warfare
SA	Systems Analysis
SAC	Strategic Air Command
SACEUR	Supreme Allied Commander, Europe
SAGA	Studies, Analysis, and Gaming Agency
SAGE	Semi-Automatic Ground Environment
SALT	Strategic Arms Limitation Talks
SED	Systems Evaluation Division
SHAPE	Supreme Headquarters, Allied Powers Europe
SIOP	Single Integrated Operational Plan

SLBM            Sea-launched Ballistic Missile  
SSBN            Ballistic Missile Submarine, Nuclear  
TFX             Tactical Fighter, Experimental  
TWP             Tactical Warfare Programs  
USA             U.S. Army  
USAF            U.S. Air Force  
USAFE           U.S. Air Forces Europe  
USN             U.S. Navy  
V/STOL         Vertical/Short Take-off and Landing  
WSED            Weapons Systems Evaluation Division  
WSEG            Weapons Systems Evaluation Group

## ACRONYMS AND ABBREVIATIONS

AAG	Acquisition Advisory Group
ABM	Anti-Ballistic Missile
AC&W	Aircraft Control & Warning
AE	Applications Engineering
AEC	Atomic Energy Commission
ARPA	Advanced Research Projects Agency
ASD	Assistant Secretary of Defense
ASW	Anti-submarine Warfare
BMD	Ballistic Missile Defense
BW	Biological Warfare
CBR	Chemical, Biological, Radiological
CIA	Central Intelligence Agency
CINCFE	Commander-in-Chief, Far East
CINCLANT	Commander-in-Chief, Atlantic
CINCPAC	Commander-in-Chief, Pacific
CINCPACFLT	Commander-in-Chief, Pacific Fleet
CINCSAC	Commander-in-Chief, Strategic Air Command
CJCS	Chairman, Joint Chiefs of Staff
COMSAC	Commander, Strategic Air Command
CNO	Chief of Naval Operations
CONARC	Continental Army Command
CONUS	Continental U.S.
DCA	Defense Communications Agency
DCP	Development Concept Paper; also, Decision Coordinating Paper
DCS/Ops	Deputy Chief of Staff, Operations
DDR&E	Director, Defense Research & Engineering
DDT&E	Deputy Director for Test and Evaluation

DEW	Distant Early Warning
DIMO	DoD-IDA Management Office
DNA	Defense Nuclear Agency
DJS	Director, Joint Staff
DoD	Department of Defense
DSARC	Defense Systems Acquisition Review Council
DSB	Defense Science Board
ECM	Electronic Countermeasures
ECCM	Electronic Counter-countermeasures
EPSD	Economic and Political Studies Division
FBM	Fleet Ballistic Missile
FCRC	Federal Contract Research Center
FYDP	Five-Year Defense Plan
ICBM	Intercontinental Ballistic Missile
IDA	Institute for Defense Analyses
I&L	Installations and Logistics
IRBM	Intermediate-range Ballistic Missile
ISA	International Security Affairs
JCS	Joint Chiefs of Staff
JLRSS	Joint Long Range Strategic Study
JRDOD	Joint R&D Objectives Document
JSCP	Joint Strategic Capabilities Plan
JSIPS	Joint Continental Defense Systems Integration Planning
JSOP	Joint Strategic Objectives Plan
JSSC	Joint Strategic Survey Committee (Council)
JSTPS	Joint Strategic Target Planning Staff
MIRV	Multiple Independently Targetable Re-entry Vehicle
MIT	Massachusetts Institute of Technology
M&RA	Manpower and Reserve Affairs
NASA	National Aeronautical & Space Agency
NATO	North Atlantic Treaty Organization
NMCC	National Military Command Center
NMCS	National Military Command System
NORAD	North American Air Defense Command

# I

## INTRODUCTION

### A. PURPOSE

This study analyzes the activities of the Weapons Systems Evaluation Group (WSEG) in providing operational analyses and weapons systems evaluations to the Joint Chiefs of Staff (JCS).

The purpose of the study, as defined in the Task Order, is to "provide an in-depth review and assessment of the WSEG experience" in order to assess:

- (1) the factors that appear to have had the greatest impact on WSEG's capability to provide analytical support to the Joint Chiefs of Staff, and
- (2) the lessons learned from the WSEG experience that might assist the Joint Chiefs in advising the Secretary of Defense in regard to the acquisition of weapons systems.

The Task Order describes the scope and terms of reference of the study as follows:

The study will examine the circumstances that led to the formation of WSEG, the objectives sought by its founders, and the institutional arrangements and procedures that were developed to implement their concepts. It will cover the subsequent evolution of WSEG, including major organizational developments, task assignments, modes of operation, and functional interrelationships within the DoD.

In analyzing the WSEG experience, the study will concentrate on the manner in which WSEG performed its analytical support function for the Joint Chiefs of Staff--the nature of studies requested, the means employed to accomplish the tasks, the consideration given to the study

results, and other indications of JCS reliance upon WSEG for scientific and operational analysis of weapons systems. An integral aspect of the analysis will be an examination of organizational, administrative, and other developments within the Department of Defense that had an impact either upon WSEG or upon JCS relations with WSEG.

While the study will assess the various factors affecting WSEG's functions, the nature of the tasks assigned and the manner of their accomplishment, it will not attempt to evaluate the quality of WSEG products nor seek to assess their impact on JCS or DoD decisions.

## B. BACKGROUND

WSEG was established in December 1948 as a high-quality analytical study group, organized on a multi-Service, combined military and civilian basis, to provide analytical support for the JCS and the Secretary of Defense. The objectives of the group were:

- to apply scientific and technical as well as operational military expertise to the task of evaluating weapons systems.
- to employ advanced techniques of scientific analysis and operations research in the process.
- to carry out tasks on the basis of an impartial, supra-Service perspective.

WSEG continued to operate for 28 years before it was disestablished in September 1976. For many of those years it was the leading analytical support agency of its kind at the upper echelons of the DoD. WSEG's status, organization, and function within the DoD changed at various times, in response to changing external circumstances and study requirements, so that its overall role and activities varied considerably during its existence. Its institutional position and study program were strongly influenced by major developments in the world situation and in national security affairs; in military

technology, force structure, and defense posture; and in the organization and management of the defense establishment.

### C. APPROACH

For the purposes of this study, the evolution of WSEG was divided into three phases, each characterized by a different organizational configuration. The first phase was from 1948 to 1955, when WSEG operated wholly in house as an integrated military-civilian organization. The second phase was from 1956 to 1966, when WSEG was reconstituted as a mixed government-contractor arrangement, operating as a joint military group in close partnership with a civilian contractual component, the Weapons Systems Evaluation Division (WSED) of the Institute for Defense Analyses (IDA). The third phase was from 1967 to 1976, when WSEG continued as a joint military group with supporting contractual arrangements, primarily with IDA but including other contractors as well. During this period WSEG evolved further to become mainly an administrative monitor, interfacing between the study sponsors in the DoD and the contractors who performed the analytical work.

In considering the relevance of the WSEG experience to a consideration of the analytical support needs of the JCS, it should be noted that WSEG was never exclusively an instrument of the JCS. From the first, WSEG was charged with supporting OSD as well as the JCS, and in practice it was administratively and operationally affiliated with the R&D element of OSD--be it the R&D Board (the early years), the responsible Assistant Secretary (after 1953), or the DDR&E (after 1958). Not all of WSEG's work was performed for the JCS, therefore, and not all of WSEG's activities are necessarily germane to JCS concerns.

Not only was WSEG shared with other users, it was never the sole source of analytical support for the JCS. Although it frequently was a preferred source for external studies, the JCS were also able to call on substantial analytical support

from the Joint Staff itself, from the military Services or other DoD agencies, and directly or indirectly from the outside world or contractual services. In reviewing the WSEG experience, therefore, this study examines only a portion of the analytical support that was available to the JCS.

The history is presented in four parts: the establishment of WSEG, 1947-1948; the first phase, 1949-1955, the second phase, 1956-1966; and the third phase, 1967-1976. Insofar as possible and relevant, each part addresses WSEG's organization, working arrangements, task assignments, operating procedures, and study production, in relation to the circumstances and requirements of the particular period.

Appendix A provides a chronology of WSEG Directors and Senior Service members from 1948 to 1976, together with a chart of principal WSEG and IDA counterparts, for reference purposes.

The study is based on WSEG records and documents that were made available when it was disestablished in 1976; on WSEG materials in the files of OSD and the OJCS; and on supplementary interviews with some 30 participants and observers. While specific sources are identified in the footnotes, persons interviewed are not cited individually but are listed in Appendix B. The text of the directive establishing WSEG is contained in Appendix C.

## II

### THE ESTABLISHMENT OF WSEG, 1947-1948

#### A. INTRODUCTION

The Weapons Systems Evaluation Group was established on December 11, 1948 by the first Secretary of Defense, James V. Forrestal,

...to provide rigorous, unprejudiced and independent analyses and evaluations of present and future weapons systems under probable future combat conditions--prepared by the ablest professional minds, military and civilian, and the most advanced analytical methods that can be brought to bear.<sup>1</sup>

In his authorizing statement, the Secretary wrote that he considered the action "among the most important taken since the passage of the National Security Act"<sup>2</sup>--the 1947 Act that created his own office, reorganized the armed forces, and set up a new framework for managing national security affairs in the aftermath of World War II.

By 1948 Secretary Forrestal had already been directly involved in the formation of WSEG for about a year, from shortly after he took office as Secretary of Defense in September 1947. Although he did not originate the WSEG proposal, he endorsed it strongly, helped shape it, and shepherded it through the staffing and decision processes that led to its implementation. Among the high-level officials who participated

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<sup>1</sup> "Directive, Weapons Systems Evaluations Group," Enclosure to SecDef Memorandum for the Joint Chiefs of Staff and Chairman, Research and Development Board (Dec. 11, 1948).

<sup>2</sup> "Directive," SecDef Memorandum (Dec. 11, 1948).

in the founding of WSEG, he was clearly one of the leading sponsors.

Forrestal left office in March 1949, while WSEG was still getting underway. The original WSEG charter that he signed was superseded in 1954 and revised several times thereafter. The WSEG organization that he left behind underwent major modifications over the years, in response to changes in the analytical requirements and capabilities of the national defense establishment. WSEG's primary function shifted, from the performance of studies and analyses to managing and monitoring them. Yet the underlying concept of WSEG that Forrestal enunciated in 1948 proved surprisingly durable, and in essence was still operative when WSEG was disestablished in 1976, some 28 years later. A retrospective look at the origins of WSEG, the context in which it was founded, and the conceptual approach of its founders is therefore pertinent.

## B. CONTEXTUAL FACTORS

### 1. Defense Organization

When WSEG came into being in December 1948, the organizational arrangements for national defense were rudimentary by comparison with those of today. At the Presidential level, the National Security Council, established by the National Security Act of 1947 to help integrate domestic, foreign, and military policies on a government-wide basis, was still new and untried. There was a Secretary of Defense, also a result of the 1947 Act, but no Department of Defense as such. The Secretary was head of the "National Military Establishment," a largely unstructured entity that included the Departments of the Army, Navy, and Air Force, the last newly activated as a separate and equal Service. Below the Secretarial level the individual Services retained their status as separately organized and administered executive departments and continued to operate as relatively independent institutions. This was in

keeping with the political climate of the time, which favored greater coordination among the armed forces but rejected the idea of an integrated top command or a unified Department of Defense.<sup>3</sup>

The Secretary of Defense of that day was essentially an overall coordinator imposed on powerful and cohesive Service departments. He was officially the "principal assistant" to the President in national security matters, but he had little power or authority to integrate Service plans, programs, or budgets. Until the National Security Act was amended in 1949 and the National Military Establishment was formally converted into the present Department of Defense, the Secretary of Defense's authority was defined as "general" direction, authority, and control--the word "general" expressly intended to protect the organizational integrity and internal self-management functions of the Services against OSD intrusion. The Secretary of Defense was empowered to "supervise and coordinate" budget submissions, but he was forbidden by law to maintain his own military staff and was limited to three special assistants; so that he lacked the staff resources for genuine budgetary control. Moreover, the three Services had prerogatives of direct access to the President and Congress on budgetary and other matters, so that for all practical purposes the SecDef was, in the words of a principal observer, "a sort of umpire without power of decision."<sup>4</sup>

The three Services were loosely linked at the SecDef level by four coordinating committees or boards, each organized along tri-Service lines and staffed with Service representatives. They were the War Council (renamed the Armed Forces Policy

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<sup>3</sup>For an account of the "unification" controversies that preceded the National Security Act of 1947, see Walter Millis, *Arms and the State* (New York: Twentieth Century Fund, 1958), Chapter 4.

<sup>4</sup>Dean Acheson, *Present at the Creation* (New York: Jeffrey Norton Publishers, Inc., 1969), p. 243.

Council in 1949), which consisted of the Secretary of Defense plus the Secretaries and military Chiefs of all three Services and handled overall policy questions; the Joint Chiefs of Staff (regularized as a permanent body by the 1947 Act), which consisted of the three military Chiefs and the Chief of Staff to the President<sup>5</sup> and met on strategic military matters; the Munitions Board (abolished in 1953), which was chaired by a civilian appointee and manned by officials at the under- or assistant-secretary level from each department and discussed questions of production and procurement; and the Research and Development Board (also abolished in 1953), which was headed by another civilian appointee and manned by two representatives from each Service, for military R&D.

These board-type agencies served more as Service negotiating forums than as executive mechanisms for the Secretary of Defense. With few exceptions, the members were "double-hatted" Service officials who had to divide their time--and institutional loyalties--between primary duties at the individual Service level and corporate functions at the SecDef level. Their normal mode of operation was to accommodate and compromise. Members had little incentive to subordinate their own Departmental perspectives and no means, short of appeal to outside authorities, of having their differences adjudicated. Their small central staffs or secretariats--comprising only 100 people in the case of the Joint Staff, 300 or so for the others--were hardly a match for the entrenched Service staffs.<sup>6</sup>

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<sup>5</sup>The position of Chief of Staff to the Commander-in-Chief lapsed in March 1949 when the incumbent, Admiral William D. Leahy, retired. Leahy acted as presiding officer at JCS meetings but was not an actual counterpart of today's Chairman of the JCS. The present office of Chairman was not established until August 1949. See Historical Division, Joint Secretariat, *Joint Chiefs of Staff, Main Features of the Organizational Development of the Joint Chiefs of Staff Since 1947* (Aug. 18, 1976).

<sup>6</sup>For a general account of how this system worked, see John Reis, *The Management of Defense* (Baltimore: Johns Hopkins Press, 1964), pp. 95-106.

The JCS was unique among the four agencies in that the Chiefs were placed directly under the authority and direction of the President as well as the SecDef. The 1947 Act formally designated them as the principal advisers to both the President and the SecDef (and, in a 1949 amendment, to the National Security Council as a body). In their corporate role, they were charged with preparing strategic plans and providing for the strategic direction of the armed forces, preparing logistic plans and assigning logistic responsibilities among the Services, establishing unified commands in strategic areas, formulating policies for joint training and education, and reviewing major materiel and personnel requirements. As spelled out in the implementing "Functions Paper" of April 1948 (approved by the President and the SecDef) and reiterated in subsequent DoD directives,<sup>7</sup> these responsibilities included specifying military requirements for use in budgetary planning, to include tasks, priority of tasks, and forces required and, in R&D matters, providing broad strategic guidance and indicating general military requirements, R&D priorities, and new weapon assignments. These remained the main JCS functions until the DoD Reorganization Act of 1958, which added further duties in support of the SecDef's operational command responsibilities.<sup>8</sup>

The Research and Development Board (RDB) was in principle a committee to coordinate the military R&D activities of all three Services. Its primary tasks were to develop general R&D policies and procedures, prepare an integrated R&D plan for the military establishment as a whole, coordinate Service R&D

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<sup>7</sup>SecDef Memorandum to Secretaries of the Army, Navy, and Air Forces and the Joint Chiefs of Staff (Apr. 21, 1948), enclosing "Functions of the Armed Forces and the Joint Chiefs of Staff" (commonly known as the Key West Agreement), promulgated, with revisions, as DoD Directive 5100.1, *Functions of the Armed Forces and the Joint Chiefs of Staff*, various dates.

<sup>8</sup>Historical Division, Joint Secretariat, JCS, *Organizational Development*.

budget proposals, and recommend appropriate revisions or shifts of emphasis in Service programs to minimize unnecessary duplication and enhance mutually supporting efforts. The Board was explicitly enjoined from directing or controlling the "internal administration" of Service R&D programs.

The RDB and the JCS were expected to work closely together as lateral agencies subordinate to the SecDef. One of the RDB's functions was to advise the JCS regarding the interaction of R&D and strategy: namely, to inform the JCS as to the potential military impact of new scientific advances, the estimated technical performance and time frame of prospective weapons developments, and the probable military contributions of ongoing R&D activities. The JCS were responsible for furnishing the RDB with guidance as to strategic military value of weapons systems that were proposed or under development, "in the light of estimated technical performance and military effectiveness."<sup>9</sup>

Despite the presumed functional interdependence of the JCS and the RDB, however, communication was imperfect and collaboration infrequent. During the first year after promulgation of the new Act, each was preoccupied with its own primary sphere of activity. The JCS were busy clarifying Service jurisdictions ("roles and missions") that had been unsettled by such developments in World War II as the expanded role of air power, the emergence of nuclear weapons, and changing strategic and tactical interrelationships among ground, sea, and air warfare. The RDB was busy making basic inventories of Service R&D projects, promoting standard accounting and reporting procedures, and starting up scientific and technical reviewing machinery. Before the end of the year, the gap between the JCS and the RDB was noted as "one of the most glaring deficiencies" in the new

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<sup>9</sup>RDB 1/5, "Directive, Research and Development Board" (Dec. 18, 1947).

national security structure,<sup>10</sup> and influential leaders like Secretary Forrestal were examining additional mechanisms-- including the mechanism of an independent weapons evaluation agency--as a means to bring national strategic planning and modern scientific technology closer together.

## 2. Defense Science and Technology

The status of the RDB and the desire to have its activities incorporated into the mainstream of strategic military planning was a reflection of the generally recognized fact that scientific and technical factors had become crucially important in contemporary warfare. Recognition of this was responsible for the formation of WSEG and remained a primary justification for WSEG's existence long after the novelty of a scientific-military partnership had worn off.

The prominence of defense-related science and technology during World War II was not simply a result of the radical changes they caused in military technology, but because their application created a whole new order of complexity in the planning and conduct of military operations. The invention of nuclear weapons was obviously a technological breakthrough of the first magnitude, but the War also stimulated innumerable innovations and improvements of lesser scope--in aircraft, tanks, and ships; in ordnance and electronics, propulsion and guidance, explosives and fuels, communications and sensors; in almost every type of military hardware--whose cumulative effect was to multiply the range, speed, and power of weapons, add to the technical complexity of their employment, and create unprecedented demands for technical analysis of all kinds.<sup>11</sup>

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<sup>10</sup>Committee on National Security Organization, Commission on Organization of the Executive Branch of the Government (Hoover Commission), *National Security Organization* (Washington, D.C.: Government Printing Office, 1949), p. 68.

<sup>11</sup>See Vannevar Bush, *Modern Arms and Free Men* (Cambridge, Mass.: MIT Press, 1949); and Bush's (continued on next page)

The tempo of these developments led to something of a technological arms race during the war, a "battle of the drawing boards," as it was called, that brought the nation's universities and laboratories into the defense effort as never before, and enlisted civilian scientists, engineers, and technologists in defense activities by the thousands. These men served as participants at policy and planning levels, as technical advisers and consultants, and as R&D managers and performers. They were of course put to work translating esoteric scientific knowledge into the development of operable weapons, as in the Manhattan Project, but they were also brought in to apply their technical knowledge and analytical techniques to improving weapons utilization, as in the relatively new field of operations research. The techniques of operations research were in widespread use by the end of the war, applied to such activities as strategic targeting, air defense coordination, and antisubmarine warfare, and the field was becoming established as an identifiable discipline in its own right.<sup>12</sup>

By and large, the World War II mobilization of science and scientists in the United States was carried out neither by absorbing them directly into the military establishment nor by developing a duplicative set of scientific arrangements and resources for military purposes. Rather, the approach was to build on existing institutions and institutional patterns in the civil sector, insofar as possible, and to link them to the military effort by a variety of interconnecting mechanisms. The traditional American distinctions between government and private enterprise and traditional civilian-military

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(cont'd) foreword to Irwin Stewart, *Organizing Scientific Research for War* (New York: Little, Brown & Co., 1948). Bush was Director of the Office of Scientific Research and Development during World War II.

<sup>12</sup>Florence N. Trefethen, "A History of Operations Research," in *Operations Research for Management*, J. F. McCloskey and F. N. Trefethen, eds. (Baltimore: Johns Hopkins Press, 1954).

relationships and values were generally maintained. Thus, for example, the Office of Scientific Research and Development, the topmost government agency for military R&D, was entirely outside the military structure and operated on a par with it. It was directed by civilian scientists, managed its own funds and programs, and conducted most of its activities through contractual relationships with universities and private firms. The military Services themselves, with a dearth of technically trained military personnel and little in the way of organic R&D facilities, also relied heavily on civilian employees and contractors, even for such "in-house" research centers and laboratories as they chose to operate. Operations research practitioners who worked closely with military units, frequently in the field, were generally recruited directly from universities and simply put to work as specialists. The prevailing relationship was that of a partnership, in which scientists and scientific institutions retained considerable integrity and independence and preserved their fundamentally civilian character.<sup>13</sup>

The wartime structure of scientific-military collaboration was carried into the postwar period. There had inevitably been frictions during the War, and conflicts of both substance and style, but for the most part any innate military "conservatism" or resistance to civilian intrusion into traditional military spheres was overshadowed by the conspicuous accomplishments of the scientists and technicians. For all of their chafing under military restrictions and modes of operation, the civilian scientists found gratification in their new role as an influential elite. There was an undercurrent of mutual antipathy and distrust that surfaced during the postwar

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<sup>13</sup>See Don K. Price, *Government and Science* (New York: New York University Press, 1954), Chapters 5 and 6, and *The Scientific Estate* (Cambridge: Harvard University Press, 1965) for an analysis of the historical and philosophical underpinnings of the scientific role.

controversy over civilian control of atomic energy, but the basically cooperative relationship survived. The proliferation of scientific advisory committees, boards, and panels linking the outside scientific establishment to military R&D continued. The wartime Office of Scientific Research and Development was disestablished, but its university science programs were picked up by agencies like the National Science Foundation and its weapons programs were resumed by the Services. The Services followed the lead of the OSRD, upgrading and strengthening their R&D arrangements at both management and operating levels, supplementing in-house technical activities with external contractual support, and generally preserving the wartime pattern of government/industry/university relationships.

Each Service also took steps to regularize some form of operations research capability. In 1946 the Navy reorganized its wartime Operations Research Group as the Operations Evaluation Group (OEG), which was attached to the office of the CNO but administered under contract by MIT, following the mixed organizational pattern of a number of R&D installations or laboratories that were operated for the government by private universities during the War. In 1948 the Army created its own parallel organization, the Operations Research Office (ORO), under the auspices of Johns Hopkins University, which had successfully operated wartime R&D facilities for the Navy. After the Air Force was established as a separate Service in 1947, it continued to maintain Operations Analysis divisions or sections at Air Force Headquarters and at various Air Force Commands in accordance with wartime Army Air Force practice. The Air Force also sponsored RAND, begun in 1946 as an experimental project at the Douglas Aircraft Company and expanded in 1948 as an independent nonprofit corporation, for accomplishment of longer-range studies oriented toward future technology and future warfare. RAND soon achieved considerable prestige as a "think tank" and became the acknowledged leader in broadening the scope and

methods of operations research, evolving in the process a number of techniques such as linear programming and game theory and venturing far into the systematic and largely quantitative analysis of strategic problems.<sup>14</sup>

Postwar military and political developments added impetus to these trends in defense science and technology. The tempo of technological change remained rapid, accelerated by breakthroughs in the development of nuclear weapons, jet aircraft, missiles, computers, and other areas. New technology promised to transform the shape of future war. Moreover, tension between the United States and the Soviet Union increased sharply in 1947 and 1948, enhancing the risks of a military showdown in Europe and triggering a reversal of U.S. demobilization and withdrawal programs. Western Europe seemed in serious danger from a formidable new adversary, and the goals of U.S. national security switched, to "containment" and "collective security." In military policy there was a new emphasis on peacetime preparedness, the importance of an advanced scientific and technological base, and a determination to retain the lead in the development and application of weapons. The public was reminded that the United States had been fortunate, developing nuclear weapons first during World War II, but that it had also come close to losing several potentially dangerous technological races. When the War ended the Germans were well ahead in jet aircraft, missiles, and rockets, and under other circumstances such a lead might have been decisive.<sup>15</sup>

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<sup>14</sup>Denver Research Institute, *Contract Research and Development Adjuncts of Federal Agencies*, a report prepared for the National Science Foundation (Denver, 1969), Chapters II and III. For a detailed history and analysis of RAND, see Bruce L. R. Smith, *The RAND Corporation* (Cambridge: Harvard University Press, 1966).

<sup>15</sup>Bernard Brodie, "The Scientific Strategists," in *Scientists and National Policy Making*, Robert Gilpin and Christopher Wright, eds. (New York: Columbia University Press, 1964).

The developments on the international scene put a new premium on scientific and technological contributions to defense, not only in R&D but also in strategic planning. If future wars were going to be fought primarily with the weapons and forces already in existence at the outset, the ability to make effective decisions in advance, both in selecting weapons and in preparing for their operational use, was of unquestionable importance. In this new era of nuclear weapons and sophisticated delivery measures and countermeasures, when past experience could offer dubious guidance at best, prior assessment and decisionmaking were much more difficult, of course, but they were also much more important. There might be much less margin for error. Moreover, the costs of new weapons were escalating exponentially, so that the budgetary penalties for faulty choices were increasingly severe. From any perspective, the need for high-quality analytical support to help cope with these challenges was growing rapidly.

### 3. Strategic Issues

The evolution of advanced military technology and the beginnings of the Cold War found the military Services in substantial disagreement over such strategic questions as the likely spectrum of military threats, the balance of forces required to defend against them, and the responsibilities and functions that should be assigned to the forces. These questions provided the basis for the major defense controversies that developed during the years right after World War II.

It is neither particularly useful nor even meaningful to attribute the military controversies of the period primarily to Service parochialism or attempts at Service aggrandizement.<sup>16</sup>

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<sup>16</sup>A reasonably balanced treatment of these inter-Service controversies is provided by Samuel P. Huntington; *The Common Defense: Strategic Programs in National Politics* (New York: Columbia University Press, 1961), pp. 369-425.

Both sides had their partisans and there were many varieties and shades of opinion in between; in general, however, the arguments coalesced around Service interests. Air Force spokesmen generally advocated nuclear bombing as an effective strategy that should be under centralized Air Force control. They criticized competing Naval air capabilities as redundant, and opposed the development of a flush-decked "super-carrier" that the Navy was promoting at the time to accommodate nuclear-capable aircraft. The Navy maintained that it needed nuclear strike capabilities, including the capability for strikes against inland targets, for its mission of controlling the seas, and that mobile, carrier-based aircraft could make a unique contribution to any all-out air campaign, complementary and equal in value to that of the land-based bombers of the Air Force. In addition, the Navy sought land-based aircraft of its own for ASW, antishipping, and other naval operations, including long-range aerial reconnaissance, whereas the Air Force believed that Naval aviation should be confined to carriers only. Behind these arguments were charges on the part of the Air Force that the Navy intended to develop a separate strategic air force, and on the part of the Navy that the Air Force intended to take over the Naval air arm--suspicions that were kept alive so long as Service roles and missions remained somewhat fluid.

There were other unresolved doctrinal differences among the Services and other inter-Service feuds over jurisdiction. The Army, contemplating a massive ground war in Europe on the scale of World War II, argued for greater emphasis on fulfilling airlift and close air support requirements and clashed with the Marines over responsibility for sustained operations beyond the beaches. The Navy focused on capabilities for controlling the sea lanes around Europe and into the Mediterranean. The Air Force stressed long-range bombing as the first priority, and emphasized forward bases in the United Kingdom for a predominantly aerial, and relatively short, war. The three

Services disagreed on many fronts, not only on "national commitments, objectives, and risks," in the words of the National Security Act, but also on the preferred national military strategy, the proper types and levels of forces, and the relative merits of the associated weapons systems.

Given these inter-Service rivalries and doctrinal debates, budgetary decisions became extremely difficult and politically contentious. The JCS found it impossible to come up with a common strategic outlook, a unified strategic plan, or a coherent set of military requirements and force goals that political leaders felt they could work with. The plans and programs of the individual Services were too far apart, and in some ways too incompatible--as in the case of long versus short war concepts, or strategic air versus balanced force capabilities--to be simply added together, coordinated jointly on the basis of mutual accommodation and compromise, or even split three ways according to arbitrary ground rules of some kind. When in 1948 Secretary Forrestal asked for military views on allocating defense funds under a Presidentially directed ceiling of \$15 billion, the uncoordinated Service requests that he received came to some \$30 billion, and the JCS were unable to cut the total below \$23.6 billion, which they considered the "absolute minimum."<sup>21</sup> Even extraordinary appeals to rise above Service loyalties and the threat to take the decisions out of JCS hands--which is what eventually happened--failed to produce a solution without outside arbitration. Left to itself, the joint military process seemed to resemble a bargaining free-for-all at a trading post more than the responsible formulation of strategic guidance by the supreme military authorities of the land.<sup>22</sup>

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<sup>21</sup>Ibid.

<sup>22</sup>The episode was a failure for Forrestal as well, who believed that the \$15 billion ceiling was unreasonably low and tried several times without success to (continued on next page)

Similar differences also arose in civilian political circles, where they were regarded as legitimate questions of public policy, not necessarily identified with organizational ties or vested interests; and similar differences arose within the Services as well as between them. Nevertheless, the perspective of each Service was strongly influenced by the mission areas on which it focused, the weapons system with which it was associated, and the military doctrines it had formulated. These perspectives became highly politicized during the armed forces unification debates after the War, and each Service's point of view intensified during subsequent budgetary battles. The result was a series of emotionally charged disputes that were not readily amenable to dispassionate discussion and analysis.<sup>17</sup>

Traditional Service roles and missions were in considerable disarray after World War II. The functional distinctions that had separated ground, sea, and air warfare, with each Service oriented toward defeating counterpart ground, sea, or air forces and with each operating distinctive ground, sea, or air weapons, were no longer tenable. Modern weapons and methods of war, as President Eisenhower put it in later years, had "scrambled" traditional Service functions.<sup>18</sup> None of the three Services could fulfill its primary mission without crossing inter-Service lines, and no major mission could be performed without the participation of more than one Service. Functional

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<sup>17</sup>For a detailed account of one of the more famous inter-Service disputes of this period, see Paul Y. Hammond, "Super Carriers and B-36 Bombers: Appropriations, Strategy, and Politics," in *American Civil-Military Decisions*, Harold Stein, ed. (Birmingham, Ala.: University of Alabama Press, 1963).

<sup>18</sup>Dwight D. Eisenhower, *The White House Years: Waging Peace, 1956-1961* (Garden City, N. Y.: Doubleday and Co., Inc. 1965), p. 250. Eisenhower emerged from World War II convinced, as he said in submitting his 1958 reorganization proposals as President, that "separate ground, sea, and air warfare is gone forever." *Ibid.*, p. 246.

disagreements led to inter-Service competition, with overlapping and duplicative efforts, making it extremely difficult for decisionmakers to work toward a rational force structure or a unified defense budget. When Secretary Forrestal tried to resolve some of the outstanding jurisdictional disputes by convening the JCS at special "roles and missions" conferences at Key West and Newport in March and August of 1948, he succeeded in obtaining a set of compromises that only ratified Service positions as to the major mission areas while redirecting rivalries into "collateral" or complementary areas. What one Navy admiral called "the war after the war" continued unabated, and in fact broke into open confrontation during the next several years.<sup>19</sup>

The most contentious inter-Service dispute of the time revolved around strategic nuclear air power, both with respect to its place in defense strategy and with respect to Service roles in its employment. Underlying the argument were different assumptions about the nature of future war, different estimates of the dimensions and immediacy of the threat, and different assessments of the efficacy of strategic nuclear bombardment, all of which surfaced during strategic planning and budgetary deliberations. Proponents of strategic air power advocated emphasis on strategic nuclear weapons, even at the expense of other capabilities. They were strongly opposed by defenders of combined operations and balanced force concepts, who argued vociferously against excessive reliance on nuclear strike capabilities, whether in the force structure or in operational plans.<sup>20</sup>

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<sup>19</sup>Huntington, *The Common Defense*, p. 369; and Walter Millis, ed., *The Forrestal Diaries* (New York: Viking Press, 1951), pp. 389-96, 475-8.

<sup>20</sup>For a detailed account of the arguments, see Warner R. Schilling, "The Politics of National Defense: Fiscal 1950" in Warner R. Schilling, Paul Y. Hammond, and Glenn H. Snyder, *Strategy, Politics, and Defense Budgets* (New York: Columbia University Press, 1962), pp. 164-74.

The trials and frustrations of 1948, during which for the first time Service budgets were considered together by the JCS and the SecDef for presentation to the President and Congress in a single package, convinced Secretary Forrestal that the organizational machinery of the new National Security Act was incapable of dealing effectively with major defense problems. Ironically, this was a personal disillusionment for Forrestal, who as Secretary of the Navy had been a leading opponent of greater armed forces unification and a strong critic of greater centralization. After a year as SecDef he was convinced that the legal authority of both the SecDef and the JCS had to be strengthened, and that both needed greater staff resources in order to integrate defense policy and mediate force structure and weapons disputes among the Services. He recommended adding an Undersecretary of Defense, dropping the Service Secretaries from the NSC, deleting the provision for a Chief of Staff to the President, providing a Chairman for the JCS, either one of the three Chiefs or an additional person, and eliminating the 100-man limitation on the Joint Staff.<sup>23</sup>

Among other things, Forrestal was convinced, the SecDef and the JCS needed independent analytical support in technical weapons systems matters. Modern technology, he wrote in his first annual report, had created "confusion and uncertainties" as to military capabilities and had led to "honest disagreements" among the Services as to the relative merits of various weapons systems.<sup>24</sup> What effect would strategic bombing have on the Soviet war effort? Could bombers get through to their targets

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(cont'd) persuade the President to raise it. "In the person of Harry Truman," Forrestal told the press after his final defeat at the White House, "I have seen the most rocklike example of civilian control that the world has ever witnessed." Ibid., p. 199.

<sup>23</sup>National Military Establishment, *First Report of the Secretary of Defense* (Washington, D. C.: 1948).

<sup>24</sup>Ibid.

in the face of contemporary radar and jet fighter defenses? Could aircraft carriers survive in the Mediterranean against land-based aircraft? Questions such as these--which Forrestal had actually raised with the JCS in October 1948 at the height of the budget controversy--had long impeded the resolution of inter-Service issues, yet appeared susceptible to objective analysis. Some provision for dealing with them on an impartial inter-Service basis that incorporated civilian resources and technical skills, could possibly help reduce the areas subject to unproductive argument and facilitate the joint adjudication of inter-Service disputes. There was more than ever an "urgent need" (as Forrestal had said before) for "objective and competent advice as to the technical capabilities performance of present and probable weapons systems."<sup>25</sup> He was calling, in essence, for a Weapons Systems Evaluation Group.

#### C. FORMULATION OF THE WSEG CONCEPT

By the end of Forrestal's first year as SecDef, the establishment of some kind of "weapons evaluation study group," as he referred to it in his first annual report,<sup>26</sup> was a foregone conclusion. The idea had been under consideration since early 1948, agreed to in principle but held up by differences between the JCS and the RDB about where the group should be located and its specific terms of reference. These questions were not trivial to the participants, but involved the basic concept of the group and its projected role in the military establishment.

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<sup>25</sup>Memo from the SecDef to the JCS (Feb. 9, 1948), requesting comments on Draft Memos for the Chairman, RDB, on technical capabilities and performance of present and probable weapons systems (JCS 1812/4, Feb. 9, 1948).

<sup>26</sup>*First Report*, p. 7. Forrestal's report mentioned that the establishment of the group might be completed by the time of publication; it was announced soon afterward.

The WSEG proposal was first made to Forrestal by Dr. Vannevar Bush, Chairman of the RDB.<sup>27</sup> Bush was the foremost scientific administrator of World War II, a former professor of electrical engineering at MIT and President of the Carnegie Institute of Washington. During the War he was simultaneously Director of the Office of Scientific Research and Development in the Executive Office of the President, Chairman of the New Weapons and Equipment Board of the JCS, and Chairman of the Military Policy Committee that served as a board of directors for the Manhattan Project. When the war ended Bush stayed on in a leading military R&D role, first as Chairman of the Joint (Army-Navy) R&D Board and then, after the National Security Act of 1947, as Chairman of the RDB under Forrestal.<sup>28</sup>

Bush's wartime experience at the national policy level, and his wartime associations with senior political and military authorities as well as the nation's leading civilian scientists, gave him extraordinary stature and influence. He had earned the confidence of many of the wartime military leaders, including several of the postwar Chiefs. At the same time, he was critical of the JCS as an institution. He had serious reservations about the ability of the Chiefs to detach themselves from Service interests and responsibilities and act as a unitary body of strategic planners and advisers, and he was dubious about their ability to deal with scientific and technical matters, such as the potentialities of new weapons, without the direct intervention of outside technical experts. He advocated a greater role for science and scientists in defense matters, in order to bring to bear not only substantive technical expertise but also a "scientific point of view"--what he liked to refer to as the "dispassionate, cold-blooded analysis

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<sup>27</sup>Millis, *The Forrestal Diaries*, p. 541.

<sup>28</sup>See Price, *Government and Science*, pp. 144ff., and Vannevar Bush, *Pieces of the Action* (New York: Morrow, 1970), especially pp. 52-80 and 303-4.

of facts and trends." He was also a strong promoter of operations research and had done a great deal of missionary work to further it during and after the war.<sup>29</sup>

Bush's WSEG proposal was adopted by Forrestal and formally passed on to the JCS on February 9, 1948, for comments and suggestions. Bush had already discussed the idea with General Dwight D. Eisenhower, who was about to retire as Army Chief of Staff to become President of Columbia University. Eisenhower not only proved receptive, but collaborated on the draft memorandum that Forrestal sent to the JCS, which was revised in accordance with his suggestions. Eisenhower also brought up the idea at a meeting of the War Council (which enabled Forrestal to refer to it as "General Eisenhower's suggestion"), and at his last meeting with the Joint Chiefs urged them to consider it favorably. Forrestal subsequently gave credit for the idea to Bush, but he initially counted upon Eisenhower's support to sell it to the JCS.<sup>30</sup>

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<sup>29</sup>Bush summarized his philosophical reflections on science and national security affairs in his *Modern Arms and Free Men*. His criticisms of the JCS, as articulated when he was a member of the Rockefeller Commission on DoD Organization, appointed by President Eisenhower in 1953, are summarized in Paul Y. Hammond, *Organizing for Defense: The American Military Establishment in The Twentieth Century* (Princeton, N. J.: Princeton University Press, 1961), pp. 256-8; and his specific views on WSEG/JCS matters are expressed in a long letter to Dr. Karl T. Compton, his successor as Chairman of the RDB (Sept. 30, 1949), copy in WSEG files.

<sup>30</sup>Forrestal letter to Roscoe Drummond quoted in Millis, *The Forrestal Diaries*, p. 541: "The real credit is due to Van Bush. The idea began germinating in his mind a year ago."

Bush refers to his conversations with Eisenhower in *Pieces of the Action*, p. 210. Eisenhower's direct participation is reported by Forrestal's Administrative Assistant, John H. Ohly (Memorandum for the Secretary, Feb. 4, 1948), who informed Forrestal that both Bush and Eisenhower concurred in the draft memorandum and that Eisenhower had agreed to promote it among the Chiefs. "I made these arrangements at the suggestion of General Gruenther," reported Ohly, "inasmuch as this is General Eisenhower's last meeting with the Joint Chiefs, and his opinion carries great weight."

It is not surprising that Eisenhower was sympathetic to the idea. As Army Chief of Staff in 1947 he had established an Advanced Study Branch in the Plans and Operations Division of the Army General Staff, familiarly known in the Army as the "Buck Rogers Committee," to consider long-range developments in future warfare; moreover, he had a high personal regard for broad-gauged scientists and was a severe critic of military parochialism during the unification controversies. These views were manifested amply when he became President.<sup>31</sup>

As described by Forrestal, the WSEG proposal was for "a centrally located, impartial and highly qualified group" to provide "the most objective and competent advice obtainable concerning the technical capabilities and performance of present and future weapons systems."<sup>32</sup> There were ambiguities in the phrase "technical capabilities and performance," as the JCS soon perceived, but it was clear that the intended purpose and scope of the group went far beyond the R&D function. The group was to support the SecDef and the JCS, not merely the RDB; it was to consider present as well as future weapons; and it was to cover "performance" (perhaps "technical" performance) as well as "technical capabilities." Its inputs were expected to be of use in formulating war plans, assigning roles and missions, and addressing similar strategic and operational matters, as well as in making R&D decisions. Thus, in Forrestal's draft memo:

Because of the ever-increasing influence of scientific developments on the art of warfare, the Joint Chiefs of Staff and I must have *the most objective and competent advice obtainable concerning the technical capabilities and performance of present and probable weapons systems*. We must also have thoroughly impartial

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<sup>31</sup>Interviews. On the latter point, see especially James R. Killian, Jr., *Sputnik, Scientists, and Eisenhower* (Cambridge, Mass.: MIT Press, 1977).

<sup>32</sup>Draft SecDef Memo for the RDB, transmitted for comments in SecDef Memo for the JCS of Feb. 9, 1948 (see fn. 25, p. 22).

and reliable information about the relationships among various possible weapons systems in terms of the time required for, and the feasibility of, their development, the practicability of their production in quantity, their technical capabilities and limitations, and their comparative costs in terms of money, effort, and critical materials. These technical factors may, in my opinion, profoundly affect the answers to many of the vital questions which face us--decisions as to the probable character of warfare at various future dates, the formulation of war plans, the assignment of roles and missions, etc. [emphasis added].<sup>33</sup>

Forrestal's draft memo is also notable for its repeated emphasis on the ideal of impartiality, and for its specific focus on the importance of objective analysis from a supra-Service perspective:

In dealing with technical matters of this character, both the Joint Chiefs and myself require considerably more than the very necessary, but none the less separate, evaluations of the several departments, each of which has a responsibility only for the development and procurement of particular types of weapons. There remains a need for a *centrally located, impartial and highly qualified group which, from a technical standpoint can objectively analyze each component program, and examine the programs of each department in their relationship to the programs of the other* [emphasis added].<sup>34</sup>

Finally, Forrestal did not say that the RDB was in the best position to undertake the task of providing this "expert and objective advice" merely because of its R&D purview, although that was important; it was "because of the close relationship of the RDB with scientists, and with others who are qualified to express technical judgments on questions of this character."<sup>35</sup>

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<sup>33</sup> Ibid.

<sup>34</sup> Ibid.

<sup>35</sup> Ibid.

The initial JCS reaction to the proposal was hesitation, primarily because of apprehensions that such a group might infringe on JCS functions. The Joint Strategic Survey Committee, one of the senior committees of the OJCS dealing with studies and policies on joint matters and on national security affairs,<sup>36</sup> cautioned that the "technical" evaluations of such a group might become "operational evaluations" and thus encroach on the statutory responsibilities of the JCS or the Services. It did not object to the formation of the group as such but recommended modifications in its terms of reference to ensure that the JCS would not necessarily be committed to its technical or other evaluations in making their "strategic appraisals."<sup>37</sup>

The new Chief of Staff of the Army, General Omar N. Bradley (who a year later became the first Chairman of the JCS), took an even stronger stand. He interpreted the Forrestal memo as charging the RDB with "operational analyses" of weapons systems while still leaving the JCS with the responsibility for their "strategic appraisal." Since operational analysis was an essential preliminary to strategic appraisal, he wrote, forfeiting the former to the RDB would put the Board in position to "dictate" strategic considerations to the JCS. He recommended that the JCS have the JSSC study the advisability of establishing an operational analysis group within the OJCS instead.<sup>38</sup>

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<sup>36</sup>The OJCS at this time consisted of two elements--the Joint Staff and the Joint Committees. The Joint Staff consisted of three staff groups: Strategic Plans; Intelligence; and Logistics Plans. The Joint Committees included the JSSC and such groups as the Joint Intelligence Committee, the Joint Strategic Plans Committee, the Joint Logistics Plans Committee, etc. See *First Report*, Appendix A, "Report of the Joint Chiefs of Staff to the Secretary of Defense."

<sup>37</sup>Report from the JSSC to the JCS, "Proposed Directive to the RDB..." (JCS 1812/5, Feb. 27, 1948).

<sup>38</sup>Chief of Staff, USA, Memo to JCS, "Proposed Directive to the RDB..." (JCS 1812/6, Mar. 29, 1948), UNCLASSIFIED. The other Service Chiefs at this time were Adm. Louis E. Denfeld (CNO, December 1947-October 1948) and Gen. Hoyt S. Vandenberg (CSAF, April 1948-May 1953).

Bradley's objections clearly had an impact, but were not, however, the final word. The JCS formally responded to Forrestal on April 23. They did not object to the establishment of the proposed "Analysis Group of the RDB," but recommended stipulations in its terms of reference to preclude any infringement on the prerogatives of the JCS. They recommended that the group be limited to "technical" matters referred to it by the SecDef and the JCS, with the specific proviso that its evaluations be considered advisory only and not binding.<sup>39</sup>

Forrestal took no immediate action but kept the matter open for discussion. He waited for a report from an ad hoc committee of scientists appointed by the RDB to review the general problem of weapons systems evaluation<sup>40</sup> and responded to the JCS on July 12 with a revised set of draft instructions to establish what he now called a "Weapons Systems Evaluation Group." In his reply he concurred with the stipulation that the group's findings be advisory only, but he did not agree to limit the group's work to tasks requested by the SecDef and the JCS, or to "technical evaluations" alone. He felt that the group should serve the RDB, as well as the SecDef and JCS, and perform evaluations and analyses for all three, with reports going directly to the requesting agency and with the head of the group empowered to establish relative priorities in consultation with all three agencies (with resolution by the SecDef himself in the event of disagreement). As to limiting the scope and kind of analysis of the group to "technical" evaluation, Forrestal was clearly opposed:

I want to be very explicit as to the scope and kind of evaluation and analysis which I intend this group to undertake. I agree with the ad hoc committee [of the RDB] that it would be

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<sup>39</sup>JCS Memo to SecDef, "Proposed Directive to the RDB..." (JCS 1812/8, Apr. 23, 1948).

<sup>40</sup>The committee consisted of L. V. Berkner (Chairman), Frederick L. Hovde, Alfred Loomis, and William Shockley.

unwise to attempt to divide the pieces of evaluation, as I visualize it, into technical and other components. The interrelationships are so close, and the advantages of a unitary and integrated approach to particular questions are such, that any attempted division of the function ... would be difficult, if not impossible. I therefore do not intend or desire that this group should restrict itself, when considering matters presented to it, to only the technical phases thereof, as suggested by some, and to do so would, in my opinion, seriously detract from its value. In view of the advisory character of the group, I can see no disadvantages in this approach, and of course the JCS or the Secretary of Defense would in no wise be precluded from themselves undertaking the analysis or evaluation of a problem from any standpoint which seemed relevant in discharging their responsibilities....<sup>41</sup>

Forrestal also added an appeal for JCS cooperation and a note of assurance. He said that the value of the undertaking depended heavily on the extent to which the JCS itself used the group and on the development of a high degree of mutual confidence in the relationship between the JCS and the group. He promised to see to it that the JCS received any studies that dealt with questions relating to their responsibilities. Moreover, "as time goes by and experience accumulates" he would welcome any JCS recommendations for changes in the group's organization or location to improve its effectiveness.<sup>42</sup>

The JCS stood their ground. They replied that they concurred in the need for the group, but defended the distinction between strategic appraisal ("evaluations and appraisals of the strategic value of weapons systems and military effectiveness under envisaged combat conditions"), which was a JCS responsibility, and technical evaluation ("estimated technical

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<sup>41</sup>SecDef Memo for the JCS, "Establishment of a Weapons Systems Evaluation Group in the RDB" (JCS 1812/9, July 12, 1948).

<sup>42</sup>Ibid.

performance and the interaction of R&D and strategy"), which was a function of the RDB, and they suggested that each agency was entitled to conduct the evaluations and analyses appropriate to its principal responsibilities, collaborating as necessary. They proposed to establish their own Weapons Systems Evaluation Committee, directly under the JCS on a level with the JSSC, staffed by both military and scientific personnel, to perform strategic appraisals as defined--"Evaluations and appraisals of the strategic value of weapons systems and their military effectiveness, under envisaged combat conditions"--looking to the RDB "and any technical evaluation group that may be established" for advice on technical issues.<sup>43</sup> Thus, the issue seemed to be deadlocked.

On a purely legalistic basis, the question of jurisdiction certainly appears moot. The JCS cited the RDB directive as the basis for the "strategic appraisal" responsibility, but this directive only assigned the function to the JCS in an R&D context ("appraise the strategic value of major weapons systems proposed for or in process of development"<sup>44</sup>), which was narrower than the scope envisaged by Forrestal. The same was true of the RDB authority for "technical" evaluation, assuming that the latter could be precisely defined: the RDB charter referred to authority for "estimated technical performance ... of weapons systems proposed for or in the process of development." Clarifying these legalistic claims was hardly likely to settle the real question. The WSEG proposal went beyond R&D; Bush knew it, Forrestal knew it, and the JCS knew it, too.

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<sup>43</sup>JCS Memo for SecDef, "Establishment of a Weapons Systems Evaluation Committee" (JCS 1812/10, July 28, 1948).

<sup>44</sup>RDB 1/5, "Directive, Research and Development Board."

#### D. THE FINAL DECISION

Forrestal set about breaking the JCS-RDB deadlock over WSEG during the following month, August 1948, by acting as a mediator trying to reach a decision through conference and accommodation if at all possible. He held at least three high-level meetings during the month at which WSEG was discussed, on August 12 and 17 and then on August 23, when he met with the JCS at Newport, R. I., at the Naval War College ("away from the telephone," Forrestal said<sup>45</sup>) to settle outstanding roles and mission questions still pending after the Key West Conference of the previous March. The WSEG question was the third item on the Newport agenda, after such preeminent subjects as the control and direction of atomic operations and clarification of the term "primary mission" in the basic functions paper. In explaining why WSEG should be included among such important questions, Walter Millis, the military historian and editor of the Forrestal papers, described the WSEG proposal as a "thorny subject" that touched on pivotal issues:

Sound military evaluation of available or prospective weapons systems was not only of first importance in guiding research on, and development of, the new instruments of war, but bore directly on all the current controversies as to bombers versus fighters, air versus surface, and so on. An evaluation group would have great power; and its establishment had been held up by an argument as to whether it should be controlled primarily by the civilian head of the Research and Development Board or be directly under the military control of the Joint Chiefs.<sup>46</sup>

By this time the WSEG decision had come down to a choice between organizing the group under the RDB, as first proposed by Bush, or organizing it under the JCS, Bradley's counterproposal. At the end of July, prior to the August meetings, Bush

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<sup>45</sup> Millis, *The Forrestal Diaries*, pp. 476-7.

<sup>46</sup> *Ibid.*

made a compromise suggestion--in effect that the group be established by order of the SecDef and operate temporarily (for 1 to 3 years) as a joint agency under both the RDB and the JCS. At the end of that time it could be attached directly to either one or the other.<sup>47</sup> Forrestal's reaction at his August 17 meeting, just before the Newport Conference, was that he wanted a solution that was acceptable to both Bush and Bradley; that he preferred the Bush compromise proposal but would be agreeable to whichever alternative Bush and Bradley could settle on.<sup>48</sup>

When the subject was taken up at Newport, Forrestal and the JCS--Bush was not there--arrived at a "consensus" on the main question but not on the details. According to the Conference record kept by Forrestal's special assistant for policy and organizational matters, John H. Ohly, the JCS agreed that the establishment of a weapons evaluation group was "desirable and necessary" but there was no final decision on the precise form of organization. "It appeared to be the consensus," wrote Ohly, that the group should be organized directly under the JCS but that the JCS should "call upon Dr. Bush to organize the group and get it operating." It was also suggested that the chief or deputy chief of the group (whichever was the civilian job) might well be nominated by the RDB. Forrestal would discuss the matter with Bush when Bush returned to Washington, after which there would be another meeting of the JCS.<sup>49</sup>

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<sup>47</sup>Chairman, RDB, Memo for the SecDef, "Evaluation of Future Weapons Systems" (July 23, 1948).

<sup>48</sup>Interviews.

<sup>49</sup>John H. Ohly, Memo for Record (Aug. 23, 1948), "Newport Conference--Summary of Conclusions Reached and Decisions Made," in OSD files, UNCLASSIFIED. Another decision recorded by Ohly was that Bush should be invited to participate more fully and directly in the work of the JCS and should be asked to sit with the JCS "on all appropriate occasions." It is not clear that this led to any basic change in RDB-JCS relationships.

The "consensus" at Newport to put WSEG under the JCS appeared to decide the central issue raised by Bradley about the original proposal, but did not preclude an influential role for the RDB, particularly in organizing the group and getting it underway. If the subject matter for evaluation was broader than R&D, if it included present weapons as well as new weapons "proposed for or under development," and if, however "technical" the group's orientation, its analytical scope extended beyond the technological aspects into the area of operational employment, then the purposes and output of the group were more directly pertinent to the strategic domain of the JCS than the RDB. To put it more accurately in terms of the technological-strategic interactions that were of concern to both agencies, the group was less on the RDB and more on the JCS side of the balance. Bush himself conceded this point later on, while still finding reasons to argue against unilateral JCS control:

I agree entirely that the normal flow of conclusions from WSEG should be to the Joint Chiefs of Staff to there become embedded into broader judgments.<sup>50</sup>

On the other hand, Bush's July compromise proposal, which provided for an initial period of dual sponsorship, in which the RDB could well have a major influence on how the group's essentially technical contributions were to be integrated into its activities, and perhaps also could see to it that the group's capabilities were properly used, was still under active consideration. The problem was how to implement it.

After the Newport decision, it took another 6 weeks to draft an implementing directive, and it was another 2 months before the directive was officially approved in final form, on December 11, 1948. The long delay was due to continuing conflicts and frictions between the RDB and the JCS and some misunderstandings among the participants.

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<sup>50</sup> Vannevar Bush to Dr. Karl T. Compton (Sept. 30, 1949).

Most of the details concerning organization and terms of reference were worked out and translated into a draft directive by Vannevar Bush, who was still Chairman of the RDB until mid-October, Maj. Gen. Alfred M. Gruenther, Director of the Joint Staff, and John M. Ohly, Special Assistant to the SecDef.<sup>51</sup> The essential points, prepared in draft by October 11 and finally issued with minor changes of wording on December 11, were as follows:<sup>52</sup>

- (1) WSEG was established by both the JCS and the RDB, with the concurrence of the SecDef, in recognition of the need for combined "technical" and "operational" evaluation.
- (2) The purpose of WSEG was "to provide rigorous, unprejudiced, and independent analyses and evaluations of present and future weapons systems under probable future combat conditions--prepared by the ablest professional minds, military and civilian, and the most advanced analytical methods that can be brought to bear."
- (3) The group would make studies at the request of the SecDef, the JCS, or the RDB.
- (4) The group's findings and conclusions would be advisory and not binding.
- (5) The group would be headed by a Director, appointed by the SecDef with the advice of the JCS and the RDB from among senior military officers of the military establishment.
- (6) The group would also have a Research Director, appointed by the Director with the concurrence of the SecDef, the RDB, and the JCS, who would be its chief scientific officer and direct the work of the group under the general supervision of the Director.

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<sup>51</sup>Interviews.

<sup>52</sup>Memorandum from the Executive Secretary, RDB (Oct. 11, 1948), enclosing Draft Directive for the proposed Weapons Systems Evaluation Group, RDB 150/3, Draft #6 (Oct. 5, 1948) (JCS 1812/12, Oct. 14, 1948). The final version, RDB 150/3, Draft #8, was approved and issued by SecDef Memorandum (Dec. 11, 1948) (JCS 1812/15, Dec. 15, 1948).

(7) The Director would consult with the Research Director on the assignment of military personnel and the appointment of civilian personnel.

(8) The Director would consult with the JCS and RDB prior to accepting requests, satisfying himself as to the acceptability, feasibility, and relative priority of tasks, referring any serious disagreements to the SecDef.

(9) Except where the JCS or RDB or both were clearly not concerned, all reports would be submitted to them for comment. Formal submission of reports to the requesting party would include such comments.

(10) Once the Group was organized, and staffed, and working effectively, it was expected that it would be transferred from the RDB and become "a component" of the JCS.<sup>53</sup>

The October draft thus provided for the establishment of WSEG under dual JCS/RDB arrangements, as suggested in Bush's compromise proposal of July, with eventual assignment to the JCS, as settled at Newport; the dual relationship of the RDB and JCS was preserved for organization, tasking, and reporting on studies.

Why this draft directive remained in limbo for 2 months is not entirely clear from the available documentary record. There were no further formal actions by the principals involved until December 1, when Forrestal forwarded the last draft of the directive, essentially a finalized version of the October 11 draft, to the JCS for comment.<sup>54</sup>

There are several possible explanations for the delay. A Hoover Commission task group on defense organization that had been active during the summer and fall of 1948 and was favorably impressed with the WSEG proposal indicated that there

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<sup>53</sup> For the complete directive, see Appendix C.

<sup>54</sup> SecDef Memorandum to the JCS requesting formal JCS consideration of the proposed directive, already approved by the RDB. "I am most anxious that the Group in question be organized at the earliest possible date, and would therefore appreciate action by you as a matter of priority." (JCS 1812/13, Dec. 1, 1948).

had been continuing differences between the RDB and the JCS, and implied that there were still misgivings on the JCS side. In its report, dated November 15, 1948, the Hoover task group wrote:

Some witnesses have stated that the Joint Chiefs of Staff seem skeptical of the importance of technical weapons evaluation; on the other hand, the Committee was also told that the Joint Chiefs of Staff was keenly aware of the necessity for a weapons systems evaluation group. But for months this important question has remained unsolved because of conflicts of opinion as to how the joint group should be set up and where it should be located.

The Joint Chiefs of Staff feel that their strategic responsibility must not be impaired, yet the simple fact is that the Joint Chiefs of Staff is not now equipped for technical evaluation. Such evaluation requires personnel with special abilities in scientific analysis of a sort not generally found in uniform. The situation is not good news for the American taxpayer, who is spending over \$600 million a year on military scientific research and development.... It should be immediately corrected.<sup>55</sup>

The Hoover committee proposed that WSEG be established immediately, if not by agreement between the JCS and the RDB then by directive settling the matter by the SecDef.<sup>56</sup>

Another source, Don K. Price, who was not then on the scene but is well qualified to comment on the situation because of his knowledge of the circumstances and subsequent service on the RDB, also characterized the JCS as "dubious" about WSEG and concluded that they accepted the WSEG proposal "grudgingly."<sup>57</sup>

However, Dr. Karl T. Compton, who succeeded Vannevar Bush as Chairman of the RDB on October 15, attributed the delay to a misunderstanding. In a letter to Vannevar Bush a year

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<sup>55</sup> Hoover Commission, *National Security Organization*, p. 68.

<sup>56</sup> *Ibid.*, p. 19.

<sup>57</sup> Price, *Government and Science*, p. 177. Price was Deputy Chairman of the RDB in 1952-53.

later, Compton wrote that when he took over the RDB and the WSEG question came up, he found the WSEG proposal blocked by Air Force representatives on the RDB:

Not yet knowing what it was all about, I withdrew the item and went to see General Vandenberg [then Air Force Chief of Staff] to discover the source of the opposition. It appeared that Vandenberg's opposition was due to fear that the RDB would continue indefinitely to sponsor WSEG, whereas Vandenberg felt that ultimately the principal value of WSEG was to provide guidance in its field to the JCS.

So far as I knew from the background, this was everybody's idea and the only difficulty seemed to be that the proposal presented ... was indefinite as to time.<sup>58</sup>

As a result, said Compton, he and Vandenberg reaffirmed the understandings incorporated in the final version of the charter: that the RDB would sponsor the initial formation and organization of WSEG with the expectation of turning over the sponsorship to the JCS at the end of one year, but if at the end of one year "WSEG had not yet reached the strength of personnel, organization, and experience to proceed without help," then the RDB could request an extension. "Under such circumstances," Compton reported, "Vandenberg said he would be the first to support such an extension."<sup>59</sup> In its final version, the WSEG directive accordingly included the following provision:

It is expected that, after an initial period of organization and trial, the Group will have proved its worth and will then become a component of the JCS. The Group shall therefore be transferred to JCS one year after the date of its authorization, subject, however to the provision that RDB may at that time request of JCS a postponement of this transfer in the event that the one year period has been insufficient to have established the Group as an

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<sup>58</sup>Karl T. Compton to Dr. Vannevar Bush (Oct. 7, 1949), letter in WSEG files.

<sup>59</sup>Ibid.

adequately staffed and effectively working organization.<sup>60</sup>

Compton's recollection seems plausible, in view of the substantial agreement already reached on the main WSEG issues, as shown in the available documents. If there were lingering JCS doubts and suspicions, it is likely that Compton succeeded in smoothing them over.

In any case, by December 1948 Forrestal was pressing for action. Coincidentally, a first-class weapons controversy was building up among the Services that seemed ripe for the kind of impartial analytical support at the supra-Service level that WSEG was designed to provide: the clash over strategic air-power.

Adm. Louis E. Denfeld, the CNO, specifically alluded to this point a year later, during Congressional hearings on the B-36/carrier controversy:

There have been serious differences of opinion between the Services with regard to the emphasis to be placed on so-called strategic bombing as a part of strategic air warfare. These differences of opinion have been a source of concern to many officials. This concern was, in fact, largely responsible for the establishment of the Weapons Systems Evaluation Group....

The Joint Chiefs of Staff took two steps, both of which I strongly supported....

The first step resulted in the establishment by the Secretary of Defense of the Weapons Systems Evaluation Group....<sup>61</sup>

Once Forrestal approved the WSEG directive, officially activating WSEG on December 11, 1948, it was left to Gen. Gruenther, the Director of the Joint Staff, and Compton of the RDB to confer on implementation, including the initial step of

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<sup>60</sup> See Appendix C.

<sup>61</sup> U.S., Congress, House of Representatives, *The National Defense Program--Unification and Strategy*, Hearings before the Committee on Armed Services, 81st Cong., 1st sess. (October 1949), pp. 351-2.

selecting a WSEG Director. They agreed quickly on a candidate, and on January 3, 1949, Adm. Leahy for the JCS and Compton for the RDB jointly recommended the appointment of Lt. Gen. John E. Hull, USA. Gen. Hull was then Commanding General, U.S. Army, Pacific. He had served in the Operations Division of the War Department under Gen. George C. Marshall during World War II, and as Commander, U.S. Army, Pacific, commanded the JCS task force conducting the nuclear weapons tests at Eniwetok in 1947. Forrestal readily approved the choice and WSEG was underway.<sup>62</sup>

The essential elements of the WSEG concept, as they emerged from the extensive deliberations and were expressed in the WSEG charter, were clear. They can be summarized as follows:

(1) WSEG was to be an analytical support agency, to perform studies and analyses at the JCS/DOD (supra-Service) level in order to support decisionmaking at that level.

(2) Its analytical purpose was to integrate operational military and scientific/technical considerations in an area in which military and technical factors were highly interrelated.

(3) Its studies were to be conducted by some kind of mixed arrangement combining professional military inputs on a multi-Service basis with civilian scientific or technical inputs.

(4) The central goal of the organization was objectivity, in particular to ensure against Service or other biases in its studies.

This concept was not necessarily easy to put into practice. The success of the undertaking would depend on many factors, among them, as Forrestal had written the JCS in July, the extent to which the JCS used the organization in discharging its own responsibilities, and the degree of mutual confidence and cooperation that developed between the JCS and the group.

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<sup>62</sup>JCS 1812/16 (Jan. 5, 1949).

In the final analysis, he said, "The group will serve a useful purpose only as it can provide help to those who have the responsibility of making decisions."<sup>63</sup>

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<sup>63</sup>SecDef Memo for JCS, "Establishment of a Weapons System Group."

### III

#### THE FIRST PHASE, 1949-1955

##### A. IMPLEMENTING THE WSEG DIRECTIVE

###### 1. Early Actions

WSEG was officially activated on December 11, 1948; Lt. Gen. John E. Hull, USA, was designated as Director on January 3, 1949; and the formation of the group was announced to the press on January 7, 1949. During the next 6 months WSEG acquired the principal attributes of a going concern: top management, a working staff, organizational structure, operating procedures, and, as an analytical support group, a study program. These details were worked out by the Director of the Joint Staff, the Chairman of the RDB, and the Director of WSEG. The three of them together initiated most of the organizational patterns and procedures that governed WSEG's activities for the next several years.

The direct involvement of the DJS, then Maj. Gen. Alfred M. Gruenther, USA, and the Chairman of the RDB, Dr. Karl T. Compton (who had succeeded Vannevar Bush in October 1948), set the precedent of dual JCS/RDB responsibility for WSEG matters and reaffirmed the fact of high-level interest in its future development. Gen. Gruenther occupied a key position in the defense establishment, working closely with Forrestal as the primary liaison between the OSD and the JCS and functioning in effect as the principal military adviser to the SecDef.<sup>1</sup>

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<sup>1</sup>See Samuel P. Huntington, *The Soldier and the State* (Cambridge: Harvard University Press, 1959), p. 447. Gruenther attended most important meetings at the White House as well as the Pentagon, accompanied Forrestal on major trips, and was frequently utilized as an intermediary in doing business with the JCS.

Compton, President of MIT from 1930 to 1948 and a member of the World War II "triumvirate" of leading defense scientists (along with his predecessor at the RDB, Vannevar Bush, and Dr. James B. Conant, President of Harvard),<sup>2</sup> was a national figure in his own right and had long operated at top policy levels.

The first step in implementing the WSEG directive was the selection of Gen. Hull as Director. Hull, who was stationed in Hawaii at the time, was brought to Washington for preliminary conferences in mid-January 1949 and took up his new duties on February 21. The second step was the appointment of a civilian Research Director, Dr. Philip M. Morse, a professor of physics at MIT with outstanding credentials in military operations research.<sup>3</sup> The appointment was approved on January 25 and Morse arrived for duty in March.

The next steps were to outline the initial organization and operating arrangements, and to begin the procurement of additional military and civilian personnel.<sup>4</sup>

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<sup>2</sup>Herbert F. York and G. Allen Greb, "Military Research and Development: A Postwar History," *Bulletin of the Atomic Scientists* (January 1977). In World War II, Compton was a member of the National Defense Research Committee, head of OSRD field activities, and a member of the advisory committee on the atomic bomb. When he returned to MIT after the war, he remained active as a JCS and Presidential consultant in evaluating the postwar atomic bomb tests.

<sup>3</sup>During World War II Morse was Chairman of the National Research Committee on Sound Control, Director of the MIT Underwater Sound Laboratory, Director of the Naval Operations Group, and Assistant Chief (under Compton) of the OSRD Office of Field Services. From 1946 to 1948 he was Director of the Brookhaven National Laboratory, one of the country's main nuclear research installations, and from 1947 to 1949 he served as a trustee of the RAND Corporation.

<sup>4</sup>Unless otherwise noted, the material in this section is based on WSEG, *History of the Weapons Systems Evaluation Group, 1 Dec. 1948-1 Sep. 1949* (hereafter cited as *WSEG History*, Vol. I, and on WSEG, *Development of WSEG, 1949-1959*, which is a collection of important documents and documentary excerpts.

It was understood from the beginning that WSEG would be kept rather small. Initial projections were that the staff might number about 35 by mid-1949 and perhaps 50 by mid-1950, supplemented as necessary by part-time consultants. These targets were achieved, in the main, by borrowing people from ORO, OEG, RAND, and similar organizations. By September 1949 the total complement of personnel numbered 43, including 35 professionals, half military and half civilian. By mid-1951 the total was 53, of whom 38 were professionals, 19 military and 19 civilian, including those on loan. The size of the staff grew slowly over the next several years to a total of 70 by mid-1953, of whom 50 were professionals, 26 military and 24 civilian. WSEG's total size and the roughly equal balance of military and civilian personnel were controlled by OSD, which monitored WSEG's military and civilian personnel allocations year by year.<sup>5</sup>

The initial organization and composition of WSEG were determined by its multi-Service character and its technical mission.<sup>6</sup> On the military side the group was modelled along joint staff lines, in accordance with the expectation that WSEG would ultimately be absorbed into the OJCS structure. The Director's position, filled by a three-star officer, was expected to rotate among the Services on a regular basis. The Director was supported by three senior military representatives, one from each Service, at the two-star level. These had largely advisory functions in managing the group but an influential role as authoritative Service spokesmen and reviewers. There was a small Executive Secretariat, largely military, to handle routine

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<sup>5</sup>For the initial projections, see Acting Executive Officer, WSEG, Memo for Administrative Officer, OSD, "Brief of Job Descriptions for WSEG" (Mar. 11, 1949). Other personnel data are taken from various volumes of the *WSEG History* and from the USAF Staff Study, *Weapons Systems Evaluation Group* (Sept. 8, 1953).

<sup>6</sup>Details of the initial organization are based on the first edition of the *WSEG Handbook*, prepared for the orientation of incoming personnel (Mar. 16, 1949).

administration, document control, security, and the like. The remaining military staff, almost all of whom were senior field grade officers equally divided among the three Services, as in the OJCS, were, for administrative purposes, nominally members of a "Military Studies and Liaison Division"; in practice they were assigned with civilian analysts to the ad hoc study teams assembled as required. Again, in accordance with joint principles and practices, each Service was represented on each study team with one or more officers.

The civilian professionals were formally included in an "Analysis and Evaluation Division" under the civilian Research Director (who was also Deputy Director of WSEG as a whole). In order to carry out the study tasks, the division was subdivided into project sections or groups, headed by project leaders and organized as required to study specific problems. These groups included military officers from the Military Studies and Liaison Division who were assigned to the civilian Research Director and project leaders to assist in accomplishing project activities. While there was no explicit rule against military officers serving as project (or subproject) leaders, this was relatively rare--apart from any question of competence or expertise, it was generally much easier for civilians to don the mantle of impartiality on inter-Service questions.

A six-member Review Board was established to consult with the Director on tasks and task priorities, review the results of studies, and advise on publication and distribution of reports. The Board was chaired by the civilian Research Director, and included the three senior Service representatives plus two senior civilians from the Studies and Analysis Division. Although its functions were advisory, the Board was clearly intended to carry weight with the Director and provide both a multi-Service and a combined civilian/military perspective to the overall management of the group.

The internal organization of WSEG was primarily a matter of administrative convenience rather than functional or operational significance. It was a loose structure, designed primarily for flexibility and to accommodate a variety of shifting study tasks, avoiding rigid distinctions or fixed command lines. It specified that overall responsibility would rest with the Director, who could exercise "general supervision" of studies at his discretion, while still allowing latitude to the Research Director--the "chief scientific officer of the group" as the WSEG directive called him--as the official in direct charge of the analytical work. It did not attempt to overformalize or overdefine a division of labor or working relationship between the Director and the Research Director, or between military and civilians, but in effect assumed that such arrangements were best left to the participants to work out informally. It provided for multi-Service participation in studies and multi-Service reviews without requiring a multi-Service approval process for final evaluations or decisions. It provided a basis for combining civilian technical and analytical expertise with professional military experience without raising questions of hierarchy or rank order. The primary focus of the new organization was intended to be the study project, and the basic operating unit was intended to be the mixed project team. As the first WSEG Handbook expressed it:

Since WSEG will always be a small team, with the closest cooperation between all members, it is intended that hard and fast organizational barriers will never develop inside the Group.... Free and full discussion between members of the Group on questions of interest is not only desirable, but is essential if the Group is to benefit from the ideas of its members....<sup>7</sup>

The authors were evidently aware that WSEG was in many respects a unique organization that would require unusual approaches.

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<sup>7</sup>Ibid., p. 13.

Military officers were assigned to WSEG for a regular 2- to 3-year tour of duty, as in the Joint Staff, but there were also provisions for the temporary assignment of "military consultants" as required, and in fact in the first year there were three such consultants, one from each Service. Civilian professionals were categorized in various ways. The Research Director was a temporary employee on a personal service contract that was individually negotiated as to tenure (Morse, the first, agreed to take the job for a year). Other professional staff members were permanent employees, most of them at the GS-13 to GS-15 level; consultants without compensation (WOC), such as those borrowed from ORO, RAND, and elsewhere; or consultants when-actually-employed (WAE), such as those brought in for temporary periods or part-time duties from universities or industrial firms.<sup>8</sup>

WSEG was clearly recognized as the kind of organization that depended heavily for its effectiveness on the quality of the people associated with it. In the beginning, personnel selection was facilitated by the prominence of WSEG's patrons and the attraction of its anticipated importance in matters of national defense. Hull and Morse were outstanding leaders, as both their previous and subsequent careers attested: Hull went on to a fourth star after his WSEG tour and after his military retirement served in elder statesman capacities with such groups as the Gaither Panel of 1957 and President Eisenhower's Board of Consultants on Foreign Intelligence; Morse continued his academic career at MIT as one of the country's foremost theorists and teachers of operations research.

The first contingent of senior Service representatives was also noteworthy for distinguished reputation and a generally analytically oriented bent. It included then Maj. Gen. James M. Gavin, USA, Commander of the 82nd Airborne Division in World

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<sup>8</sup>See *WSEG History*, Vol. I, Ch. IV, "Administrative Developments."

War II and subsequently one of the Army's leading strategic thinkers in the fields of tactical nuclear weapons, missiles, and space matters; Maj. Gen. E. W. Barnes, USAF, former Commanding General of the 13th Air Force and Commandant of the Air Command and Staff School at Maxwell Air Force Base prior to his WSEG assignment; and Rear Adm. W. S. Parsons, USN, who worked with Vannevar Bush on the development of the radio proximity fuze and as part of the Manhattan Project on the atomic bomb, became the bomb commander and weaponeer of the B-29 that dropped the atomic bomb at Hiroshima, and later served as Navy member of the Military Liaison Committee to the AEC and Deputy Commander (to Gen. Hull) of the joint task force that conducted the Eniwetok nuclear tests in 1947.<sup>9</sup>

The other military and civilian staff members were likewise of generally high caliber. Among the original military officers were Comdr. Horacio Rivero, who later became Vice CNO, and Lt. Col. Alfred D. Starbird, who became Director of the Defense Communications Agency and occupied other important OSD positions, including in recent years Director of Test and Evaluation in DDR&E. The civilians were conspicuous for their combination of scientific backgrounds and wartime experience in military operations research, so that they fitted into WSEG work without a major period of adjustment. Among them were senior analysts like Dr. George I. Welch, a physicist and mine warfare specialist during World War II with the Navy Bureau of Ordnance and the 14th Air Force in China, member of the Strategic Bombing Survey in Japan, and an operations analyst in OEG prior to joining WSEG; Dr. William J. Horvath, also with the Navy Bureau of Ordnance during the war and subsequently with

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<sup>9</sup>*WSEG History*, Vol. I. In September 1949, while at WSEG, Adm. Parsons served on President Truman's special committee to evaluate the first Soviet atomic explosion, along with Vannevar Bush, J. Robert Oppenheimer, and Robert F. Bacher. See Harry S. Truman, *Memoirs, Vol. II: Years of Trial and Hope* (Garden City, N. Y.: Doubleday and Co., Inc., 1956), p. 306.

OEG; and Dr. Ernst H. Plesset, who served in the Radiation Laboratory of the Manhattan Project, joined the Douglas Aircraft Corporation at the end of the war, and was one of the original staff members of the RAND project when it was formed.<sup>10</sup>

WSEG experienced considerable difficulty in obtaining permanent civilian analysts, however, and during its early years--in fact, until the mid-1950's, when it converted completely to contract operations--it relied heavily on the expedient of borrowing people from other agencies and using outside contractors or consultants to fill its needs. At that time operations research was not a profession for which people received formal university training. As in World War II, individuals with the requisite background in scientific and technical fields acquired an interest in military problems on their own and gained their experience "on the job." The reservoir of analysts trained in World War II was at that time quite small relative to the demand, which was growing rapidly with the general expansion of the national defense effort during the late 1940's and early 1950's and the concurrent spread of operations research in government and industry. The operations research agencies of each of the military Services, for example, were in the midst of an accelerated growth phase. Despite WSEG's newness and considerable prestige value, recruiting qualified civilians continued to be a problem.<sup>11</sup>

## 2. Development of the Study Program

WSEG was ready to begin work by the spring of 1949, at a time when significant events were occurring in the defense world. The Truman administration had been inaugurated in January 1949. Secretary Forrestal resigned and was succeeded by

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<sup>10</sup>Ibid.

<sup>11</sup>See Bright Wilson (Director of Research), Memo for Gen. Keyes (Director of WSEG), "A Personnel Policy for WSEG" (Sept. 18, 1952).

a new Secretary of Defense, Louis Johnson, in March. Debate was underway in the administration and Congress on amendments to the National Security Act, proposed by the Hoover Commission in January and signed into law in August, to strengthen the authority of the SecDef, transform the National Military Establishment into an executive Department of Defense, drop the Service secretaries from the NSC, and add a nonvoting Chairman to the JCS.<sup>12</sup> In the interim General Eisenhower was back in Washington from Columbia University, for periods of a week or more at a time, acting as senior military consultant to the SecDef, sitting as de facto chairman at JCS meetings (until Gen. Omar N. Bradley, USA, formally took over as the first Chairman in August 1949), and working on defense organization and other matters. In yet another round of budget-cutting, the SecDef was on the verge of cancelling the Navy's new flush-deck carrier, which he did in April 1949, precipitating the "revolt of the admirals" and the heated B-36/carrier controversy that reached a climax during major Congressional hearings in the fall.<sup>13</sup> The Soviets were not far away from their first atomic explosion, which took place on August 29, 1949.

In March 1949 Gen. Hull began an informal series of dialogues, conferences, and negotiations with the OJCS, the RDB, and the Services, all aimed at the development of an initial program of studies for WSEG. During the course of the next several months Hull received a formidable list of proposals, including questions of considerable national importance (such as the most controversial issue of the day, strategic airpower), which in total were well beyond WSEG's embryonic capabilities. Months of staff coordination and a number of high level decisions on questions of task formulation, priorities, scheduling, and the like were required before an acceptable program of studies was adopted.

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<sup>12</sup> See Reis, *Management of Defense*, Chapter VIII, on the 1949 amendments to the National Security Act.

<sup>13</sup> Hammond, "Super Carriers and B-36 Bombers."

Without attempting to retrace, step by step, the process of developing the first WSEG study program, it is worth noting the highlights that reflect some of the initial perceptions of WSEG and what it was expected to accomplish in the way of analytical support. The procedures that were followed and the considerations that influenced the selection of study tasks are illustrative of the working relationships that began to take form.

The potentially close relationship between WSEG work and the most urgent defense problems of the period was evident in the suggestions proposed on April 15, 1949, by the DJS, Gen. Gruenther, in response to an informal query from Hull as to OJCS study requirements:

(1) An evaluation of ground to air guided missiles related to time and R&D expectancy vis-a-vis antiaircraft.

(a) Static defense of targets of the general type to be defended in the zone of the interior,

(b) Defense of forward installations in the combat and communications zones, and

(c) Defense of front line groups and installations against air attack.

(2) Determination of the military worth of offensive mining, air and surface

(3) Evaluation of the military worth and effectiveness of air to ground guided missiles for support of ground forces as opposed to provision of such support by guns and/or by conventional bombs

(4) Evaluation of the military worth and effectiveness of ground to ground guided missiles for close support of operations in relation to provision of such support by tactical aircraft and heavy guns

(5) Evaluation of the effectiveness of a hunter-killer group as a weapon system in anti-submarine warfare.<sup>14</sup>

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<sup>14</sup>WSEG History, Vol. I, pp. 35-6.

At the same time, in a separate memo, the Director, Plans and Operations, USAF, Maj. Gen. Samuel E. Anderson, proposed three others:

- (1) An evaluation of the success of the strategic air offensive
- (2) Defense of the US against air attack
- (3) Improving bombing accuracy, i.e., improving the individual and group proficiency of bombardiers.<sup>15</sup>

None of the above problems could be considered trivial, inappropriate for a combined military/technical analytical study agency like WSEG, or outside the scope of major JCS responsibilities at the supra-Service level. They seem ambitious, in retrospect, but that was in keeping with the underlying WSEG concept. The most important was obviously the evaluation of the strategic air offensive, as proposed by Gen. Anderson: it had a direct bearing on basic national security concepts, war plans, force postures, and military budgets; it involved contentious doctrinal and other issues among professional military leaders, and it had become a politically divisive issue in the country at large, shaking public confidence in the management of the armed forces.

The proposal that WSEG evaluate strategic air offensive operations could be traced back to Secretary Forrestal's queries to the JCS in October 1948 during the battle over the \$15-billion defense budget, before WSEG was established. Forrestal at that time asked a two-part question: First, what were the chances of successful delivery of atomic bombs by aircraft against Soviet defenses; and second, assuming successful delivery, what would be the effect on the enemy war effort.<sup>16</sup>

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<sup>15</sup>Ibid. It is interesting to note that Gen. Anderson later became Director of WSEG, in August 1954.

<sup>16</sup>Forrestal actually forwarded the question in two separate memos, on Oct. 23 and 25, 1948. See *WSEG History*, Vol. 1, pp. 48-9, and Adm. Denfeld's testimony in *The National Defense Program*, House Armed Services Committee, pp. 351-2.

The first part of the query was first referred by the JCS to the Air Force, which responded in February 1949 to the effect that the strategic air offensive could be executed as planned, providing it had first call on available resources. The second part of the question, on potential effects, was referred to an ad hoc committee of the JCS (the Harmon Committee, or Board, named after its chairman, Lt. Gen. H. R. Harmon, USAF), which apparently became embroiled in controversy over basic intelligence data on the U.S.S.R.<sup>17</sup>

The delivery issue became an open dispute. The Secretary of the Air Force, Stuart Symington, assured Forrestal that the Strategic Air Command could drop the atomic bomb where and when it was directed to, a claim that was followed up by major briefings in March and April 1949 to the JCS and the President showing what SAC planned to do in case of war. The presentations did not go unchallenged, and on April 21 President Truman sent a memorandum to the new SecDef that essentially repeated the gist of Forrestal's basic questions:

Yesterday afternoon [wrote the President] I listened with interest to an Air Force presentation of plans for strategic bombing operations, in the event of war, against a potential enemy. I should like to examine an evaluation by the Joint Chiefs of Staff of the chances of successful delivery of bombs as contemplated by this plan, together with a joint evaluation of the results to be expected by such bombing.<sup>18</sup>

Secretary Johnson replied that the JCS were already at work on such an evaluation in response to Forrestal's prior request; that there were serious differences among the Chiefs as to the type of evaluation that should be conducted and the validity of the intelligence data that was required; and that

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<sup>17</sup>Ibid.

<sup>18</sup>Truman, *Memoirs*, Vol. II, p. 305. Truman cites this as an example of his desire to have important questions fully studied before making up his mind.

the JCS expected such an evaluation to take a full year. This was on April 27. A few days later, on May 3, the JCS informed the SecDef that they had informally notified WSEG of the problem and asked WSEG to conduct the desired evaluation as a matter of the highest priority.<sup>19</sup>

The strategic bombing evaluation first suggested by Gen. Anderson now went to the head of the list of topics from the OJCS. On May 18 Gen. Hull sent the JCS a draft of a proposed WSEG study program that included a formulation of the strategic bombing problem as the first priority task, followed by four of the other topics that had been discussed. On May 23 Hull and Dr. Morse met with the DJS and the "Deputy Chiefs"--the Operations Deputies--to consider the draft program, which was outlined as follows:

- (1) An evaluation of the results to be expected should current strategic air offensive plans be implemented
  - (a) Capability of bomber formations to reach assigned aiming points...
  - (b) Degree of accuracy to be expected in dropping bomb load...
  - (c) Material damage to be expected as result of bombing, together with psychological effect and loss of life...
  - (d) Resultant effect on enemy's capability and will to make war.
- (2) An evaluation of the effectiveness of present and projected antisubmarine warfare weapons and weapons systems
  - (a) Air
  - (b) Surface and sub-surface
- (3) An evaluation of the military worth and effectiveness of present and projected air defense weapons and weapons systems
  - (a) Interceptor aircraft
  - (b) Antiaircraft guns
  - (c) Surface to air and air to air missiles
  - (d) Electronic devices

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<sup>19</sup>WSEG History, Vol. I, pp. 54-5.

(4) An evaluation of the effectiveness of present projected aircraft carrier task force weapons and weapons systems.

(5) An evaluation of the military worth and effectiveness of present and projected ground force weapons

(a) For offensive purposes

(b) For defensive purposes...<sup>20</sup>

The meeting with the Ops Deps focused on the first problem. The Ops Deps agreed on the wording of the first two parts of the task--on bomber penetration and bombing accuracy--but decided to defer consideration of the second two parts, on expected damage and effects, while they assessed the requirement to repeat or redo the work of the Harmon Board.

Meanwhile, Congress had gotten wind of claims by Navy fliers that they could shoot down the B-36, on which the Air Force based its most dramatic strategic bombing claims. On May 19 the House Armed Services Committee formally proposed that appropriate agencies of the armed forces conduct "impartial tests" of the vulnerability of the B-36 to simulated attacks by USN and USAF interceptors. The SecDef transmitted the Committee's proposal to the JCS, who recommended against such tests unless conducted as part of the overall evaluation of strategic bombing under WSEG. When the Ops Deps raised the possibility of such tests at the May 23 meeting, Hull and Morse took the position that WSEG had insufficient manpower to take charge of them, but offered to help plan and evaluate the results, should the JCS decide to conduct them. The Ops Deps agreed.<sup>21</sup>

The consensus reached at the May 23 meeting with the Ops Deps was accepted as informal authorization for WSEG to proceed at least with the first two parts of the strategic bombing task. Gen. Hull and Dr. Morse, working in close

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<sup>20</sup>WSEG History, Vol. I, pp. 38-9.

<sup>21</sup>WSEG History, Vol. I, pp. 39-40.

collaboration, chose an overall civilian project leader (Horvath) and assembled a project team, consisting of about two-thirds of the staff, 13 civilian and 9 military personnel, with a mixture of civilian and military subproject leaders for different parts of the study and, in an illustration of the organization's nonhierarchical approach to studies, two of the three flag-rank military representatives and the Assistant Director of Research (Welch) assigned as team members. The group made an early trip to SAC headquarters for briefings by Lt. Gen. Curtis LeMay, the Commanding General, on SAC operational plans. Requests for supporting studies and data were sent out to the Weather Analysis Group of the Air Force, Aberdeen Proving Ground, Service operations research agencies, and other sources, and high altitude interception test information was requested of the Air Force and the Navy.<sup>22</sup>

With the first major task underway, Gen. Hull proceeded to finalize the remainder of the initial study program. On June 20 he circulated a revised draft of the program, asking for comments from the RDB as well as from the OJCS and WSEG staffs. He noted that WSEG would be unable to initiate all tasks simultaneously and that the strategic air problem had first priority, but that he wished to include the other tasks in the program, without setting a timetable as yet, in order to have a basis for future planning and staff recruitment. Two of the Ops Deps (Lt. Gen. A. C. Wedemeyer, USA, and Vice Adm. A. D. Struble, USN) reiterated that it might not be necessary for WSEG to reevaluate the findings of the Harmon Committee as part of its own strategic bombing study, and both the DJS and the DCS/Ops of the Air Force (Lt. Gen. L. Norstad) suggested that WSEG submit a detailed task outline in each instance prior to undertaking the other studies.<sup>23</sup>

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<sup>22</sup>*WSEG History*, Vol. I, Ch. III, "Operational Developments."

<sup>23</sup>*Ibid.* The Harmon Committee report was forwarded to the SecDef on July 28, 1949.

In his comments on the WSEG tasks the Executive Secretary of the RDB, Dr. Robert F. Rinehart, discussed some general guidelines for tasking WSEG. Rinehart observed that of the five projects on the proposed list only one, air defense, involved the operations of more than one Service to any extent. Strategic air bombardment was chiefly an Air Force responsibility, ASW and carrier task forces were predominantly Navy, and the last task involved practically the whole field of Army operations. He questioned whether WSEG as an agency of the National Military Establishment and not of any one Service should focus so strongly on single-Service problems. He conceded that there might be a valid rationale for having a uni-Service problem taken up by an impartial high-level group, especially if, as in the case of strategic bombing, the problem was high on the list of national priorities, but suggested that generally it was preferable to encourage the Services to improve their own analysis of their own problems. WSEG, he felt, could make its unique contribution by directing its efforts toward the analysis of joint or multi-Service problems, of which there were many.<sup>24</sup> The issues raised by Rinehart were apparently not resolved at this time, and they recurred a number of times during the WSEG experience.

On August 12 Gen. Hull submitted a final draft of the list of studies to the JCS for formal approval. He had already cleared the list with the RDB and incorporated the main suggestions of the DJS and the Ops Deps--including the addition of another task, on weapons systems for airborne operations. On September 1 the JCS officially approved the following as the first WSEG study program:

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<sup>24</sup>Executive Secretary, RDB, Memo for Director, WSEG (July 15, 1949). Rinehart, a mathematician and wartime operations analyst, resumed his academic career but returned in 1962 to work with WSEG as Director of the Weapons Systems Evaluation Division of IDA.

1. It is requested that the Weapons Systems Evaluation Group undertake immediately the following project:

a. An evaluation of the results to be expected should strategic air offensive plans be implemented.

(1) Capability of bomber formations to reach assigned aiming points in target system considering means available, probable degree of opposition, training and logistical requirements and such other factors as are revealed to be pertinent.

(2) Degree of accuracy to be expected in dropping bomb load...

(3) Material damage and loss of life to be expected as a result of bombing, together with consideration of possible psychological effects...

(4) Resultant effect on enemy's military capabilities or potential.

b. Certain aspects of the problem included under (3) and (4) above have been evaluated by the Harmon Committee.... It is desired, therefore, that the Weapons Systems Evaluation Group devote its attention initially to those phases of the problem listed under (1) and (2). Should the conclusions resulting from these studies indicate its desirability, the Weapons Systems Evaluation Group is requested to proceed with a review of the findings of the Harmon Committee insofar as they pertain to the subject matter listed under (3) above.

c. Although for the present it is not intended that the scope of the study include the subject matter listed under (4) above, the Weapons Systems Evaluation Group should keep in mind that at some later date it may be requested to cover this aspect also.

2. As rapidly as staffing capabilities permit, it is requested that the Weapons Systems Evaluation Group undertake the following additional projects, insofar as possible in the priority in which listed:

a. An evaluation of the effectiveness of present and projected antisubmarine warfare weapons and weapons systems.

b. An evaluation of the military worth and effectiveness of present and projected weapons and weapons systems for airborne operations.

c. An evaluation of the effectiveness of present and projected carrier task force weapons and weapons systems.

d. An evaluation of the military worth and effectiveness of present projected air defense weapons and weapons systems.

e. An evaluation of the military worth and effectiveness of present and projected ground force weapons and weapons systems.

3. Prior to consideration of each of the five projects listed in paragraph 2, a detailed outline of the procedures to be followed and the objectives of the evaluation will be forwarded to the Joint Chiefs of Staff for approval.<sup>25</sup>

When he received this directive, Morse said, "Now we are legitimate."<sup>26</sup>

In view of the overriding priority and high-level interest in the strategic bombing study, and WSEG's limited resources, none of the other five tasks on the basic JCS list--ASW, airborne operations, aircraft carrier forces, air defense, or ground force weapons--was formally designated as a project or received appreciable attention during the remainder of 1949. Two other small projects were initiated, however, as a result of ad hoc requests. The first, originated in the RDB and forwarded to WSEG by the JCS in July 1949, was on nuclear propulsion for aircraft. The Air Force and Navy were sponsoring a joint R&D project on nuclear aircraft engines, and the RDB believed it desirable to have a joint study of the operational utility and relative strategic worth of nuclear-powered aircraft for further guidance in R&D decisions. The AEC was interested, both Services backed the idea, and the JCS concurred with tasking WSEG to conduct the study. A parallel request was made on August 31 for a WSEG study on the military potentialities of nuclear-powered submarines, which at that time were in

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<sup>25</sup>JCS 1812/18, "Projects for Consideration by the Weapons Systems Evaluation Group" (Sept. 1, 1949).

<sup>26</sup>WSEG History, Vol. I, p. 47.

exploratory development, and again the JCS concurred and forwarded a task statement to WSEG.<sup>27</sup>

Throughout the fall and winter of 1949 and into early 1950 WSEG was in something of a spotlight because of the air-power controversy. Congress held extensive hearings on the question in October, during which WSEG and its ongoing strategic bombing study were mentioned frequently, in favorable terms, as the potential source of authoritative, objective evaluations of some of the principal issues. Congressmen cited the JCS memo to the SecDef of the previous May, in which the JCS gave prominent play to WSEG:

The JCS are engaged in a study and evaluation of strategic bombing as well as other weapons and weapons systems.... The study and evaluation will furnish the most reliable scientific basis for conclusions concerning strategic plans and weapons procurement and development. This process will include thorough consideration of many of the questions by the recently formed Weapons Systems Evaluation Group, where techniques of scientific analysis will be applied to determine the relative effectiveness of current and projected weapons systems. It will also include from time to time, whenever field data are required, the conduct of joint exercises and joint tests under simulated combat conditions. The full participation of the Weapons Systems Evaluation Group in this work should permit better and more complete evaluations, a requirement which was in mind when the group was established.<sup>28</sup>

Asked by one Congressman whether the disputed performance characteristics of the B-36 should not be a proper subject for resolution by WSEG, Adm. Arthur W. Radford, then CINCPACFLT (and later, in 1954, Chairman of the JCS), said he agreed:

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<sup>27</sup> WSEG *History*, Vol. I, pp. 74-6, and Vol. II (Sept. 1, 1949 to June 30, 1950), pp. 35-47.

<sup>28</sup> JCS memo to the SecDef, "High Altitude Aircraft Intercept Tests" (May 27, 1949), cited in *The National Defense Program*, House Armed Services Committee, p. 611.

I think that that will ultimately be the procedure, and I feel it will be an efficient method of settling such problems. Unfortunately, it wasn't organized in time to handle this one...<sup>29</sup>

During the hearings the Chairman of the JCS, Gen. Omar N. Bradley, was critical of both the Air Force and the Navy for presenting contradictory facts and conclusions, saying

...to answer assertion with assertion would only carry on this hearing indefinitely, it would serve no useful purpose. This is especially true when all of the Services and their leaders are agreed that this weapon can best be tested by the Weapons Evaluation Group.<sup>30</sup>

Most explicit of all, however, was Secretary Johnson:

You have heard from fervent adherents of both the Air Force and the Navy. From what you have heard, I believe you will agree with me in commending the wisdom of Secretary Forrestal, who established the Weapons Systems Evaluation Group for the express purpose of obtaining the most competent and objective professional judgment on a matter where virulent unilateral attitudes have heretofore been the rule. It is our hope, through the Weapons Systems Evaluation Group, to bring the capabilities of various weapons--of all the weapons systems, including the B-36--out of the area of interservice controversy and into the area of fact.... A comprehensive and detailed analysis on which we can place confidence can, in my opinion, only come finally from such an agency as the Weapons Systems Evaluation Group, and there will be some who will challenge even the view of this group when it comes along, but I know of no better process than that and I am glad Mr. Forrestal got it well under way.<sup>31</sup>

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<sup>29</sup> *The National Defense Program*, House Armed Services Committee, pp. 62-3.

<sup>30</sup> *Ibid.*, p. 521.

<sup>31</sup> *Ibid.*, p. 614.

Comments such as this obviously credited the new organization with a pivotal role in future defense decisionmaking, and the House Armed Services Committee lent its blessing to the idea in its final report. Although it fumbled badly with WSEG's name, the Committee stated, among its conclusions:

The evaluation of the B-36 is properly within the province of the Joint Weapons Systems Evaluation Board [sic]; future mass procurement of weapons should not be undertaken until the recommendations of this Board, except in times of emergency, are available to the Joint Chiefs of Staff.<sup>32</sup>

### 3. The Dual Sponsorship Issue

During the development of WSEG's initial study program and the group's immediate involvement with one of the burning issues of the day, WSEG was perceived primarily as a mechanism of the JCS, although not entirely so. It was physically and procedurally close to the OJCS, in keeping with the original understanding that after a year or so of dual sponsorship by the JCS and the RDB it would revert to the JCS. Its work was also functionally associated with JCS responsibilities in weapons systems areas, as most of the references to WSEG in the B-36/strategic airpower hearings implied. However, WSEG's relationships to these elements of the decisionmaking structure in the Pentagon were far from settled.

From the beginning the need for physical proximity to the JCS was assumed without question. WSEG was located in the Pentagon, first in temporary quarters near the JCS but by September 1949--after the statutory ceiling on the Joint Staff was raised from 100 to 210 officers--inside a new, expanded OJCS restricted area. Administrative services for WSEG were initially provided by OSD, but security procedures, report formats, filing systems, and the like were all patterned after those of the JCS

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<sup>32</sup> *The National Defense Program*, House Armed Services Committee, pp. 53-6.

and conformed to JCS administrative instructions, again in the expectation that after a transitional period WSEG would be attached to the JCS.<sup>33</sup>

During the formative period, while WSEG was being organized and its study program being developed, most WSEG business was transacted in the first instance with the OJCS, with the RDB as the secondary partner. Gen. Hull discussed the proposed projects with representatives of both the RDB and the JCS, but he formally submitted the draft list to the JCS, and he accepted tasks according to priorities indicated by the JCS. The directive governing the study program noted that the projects had been discussed with the Chairman of the RDB, but the authorizing document was issued by the JCS, not jointly with the RDB, and it failed to specify either coordination with or concurrence by the RDB.

It is not clear that these procedural formalities were considered untoward or that they reflected any difficulties between WSEG and its two sponsors, but as the end of WSEG's first year approached the question of dual JCS/RDB sponsorship was reopened. Vannevar Bush (who had left the RDB the year before but kept in touch with the progress of WSEG from his position as President of the Carnegie Institution in Washington) wrote to his successor at the RDB, Dr. Karl T. Compton, arguing strongly against the impending transfer of WSEG to the JCS:

It seems to me that WSEG should maintain its essential independence if it is to perform adequately the very important functions which lie before it. I believe it would be a serious error at this time to place it directly under the Joint Chiefs of Staff....

He had a high regard for the members of the JCS, Bush explained, but he doubted whether they could be expected to display the necessary supra-Service perspectives and impartiality:

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<sup>33</sup> *WSEG History*, Vol. I, pp. 22-4.

Each of the members of the Joint Chiefs of Staff ... is the chief officer of a service. I think I do not need to argue that as yet they and their organization have not yet attained to that detachment from service interests and responsibilities which enables them to act in unitary fashion for the establishment of our primary military policy for this country.

The analytical organizations of the services were valuable, he said, but none of them was in the position to perform the type of overall analysis that was necessary at the national level:

There should be in addition WSEG, and there is, but it should not report to these same individuals. Its considerations should be available to them. It should work upon problems which they propose.... But its analyses should not be subject to control by reason of individual service considerations. Neither should it be blocked at any point in presenting those conclusions ... by reason of any narrow service interest whatever.

Bush also raised the question of the technical competence and handling of technical issues among the Chiefs:

If the Joint Chiefs of Staff themselves were highly skilled in scientific analysis we might have a different situation, but they are not and should not be. I do not believe that they should directly control an affair which they cannot in the nature of things themselves fully understand. Rather I believe that they should have its opinions, and while they might draw conclusions at variance therewith because of other factors, those conclusions based on scientific analysis should never be suppressed or distorted. Rather they should stand in their own light and if over-riden by reason of other considerations the fact that this is being done should be clear on the record.

Moreover, the JCS would possibly be the gainers--"They need the protection themselves of an independent WSEG"--

A considerable section of the country is ... convinced that military men in upper echelons do not understand such things [the potentialities

of new weapons] and are likely to be over conservative, and are likely to push into the background matters of great technical moment.... One of the strongest arguments that could be made to the contrary ... would be to point out an independent, strongly staffed WSEG constituted for the very purpose of examining into such matters from the scientific point of view. I believe the time will come when the Joint Chiefs themselves will be glad to assert strongly that independence is an essential part of modern planning.<sup>34</sup>

It is not unlikely that Bush had a specific purpose in mind when he wrote this letter, beyond merely expressing his philosophical outlook. It was written after conversations with Hull and Morse on WSEG's progress, and at a time when the public controversy over strategic airpower lent substance to the stereotypes of "narrow service interests" versus "impartial scientific analysis." Bush wrote that he had strong opinions on the role of WSEG in this context and would like to be sure that they were "known." If and when the subject of WSEG's transfer to the JCS was seriously considered, he wrote Compton, he hoped he would have an opportunity to present them "directly."<sup>35</sup>

In Compton's reply, he promised Bush an opportunity to present his views in person to the RDB, when and if the issue arose, and said he was asking General Bradley to see that Bush had a similar hearing whenever the matter was discussed by the JCS. He reminded Bush of the definite understanding when WSEG was formed that it would eventually be transferred to the JCS, though he implied that the transfer still required some final action that had not yet been taken.<sup>36</sup>

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<sup>34</sup> Vannevar Bush to Dr. Karl T. Compton (Sept. 30, 1949).

<sup>35</sup> Ibid.

<sup>36</sup> Karl T. Compton to Dr. Vannevar Bush (Oct. 7, 1949).

As to the question, Compton said he agreed with Bush's goals for WSEG:

Certainly WSEG must be free and independent to express its opinions without fear or favor. It must be free to undertake studies which it deems important. It must, I think, also be ready to undertake analyses of important situations submitted to it by JCS or RDB. I suspect there would be no disagreement on these propositions.

However, he added:

Whether the dangers which you have in mind can be obviated best by considering the chain of command, or by the provision of a suitable charter or directive at the time of the contemplated transfer, or by some other means, are questions which I think need study before final action is taken.

He said he would like to talk this over with Bush in more detail, and he would also talk to Hull and Morse himself, "partly to find out whether there have been some elements in the present relationships which have handicapped the effectiveness of the WSEG group or which threaten its effectiveness."<sup>37</sup>

Neither Bush nor Compton mentioned the jurisdictional argument that had been central to the sponsorship question in the beginning--the JCS versus the RDB, "strategic appraisal" versus "technical evaluation" argument. Neither one mentioned specific problems (or lack of problems) in the WSEG operation thus far that might justify a reopening of the sponsorship decision--though Compton seemed to suggest, sensibly enough, an exploration of the facts of the matter with Hull and Morse. Nor did either of them seem to suggest a positive case in favor of RDB sponsorship; if there was a case being considered, it was a negative case against unilateral JCS sponsorship. What both of them emphasized, in Bush's case particularly, was the issue of institutional objectivity, the issue that became the

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<sup>37</sup> Ibid.

foremost consideration in perpetuating the dual sponsorship arrangement for WSEG.

The sponsorship decision remained in abeyance for the next several years. There was apparently reluctance in some quarters to implement the WSEG transfer to the JCS as planned, plus possibly some procrastination in others, where neither the desirability nor necessity of forcing the issue was apparent and, quite plausibly, after the departure of Forrestal and such events in 1949 and 1950 as the Soviet A-bomb, the H-bomb controversy, the establishment of NATO, and the outbreak of the Korean War, a top-level preoccupation with more pressing matters.<sup>38</sup> In December 1949, when the scheduled year of dual RDB/JCS sponsorship was due to end, the RDB asked for a 6-month extension, until July 1950, to permit more time for further staffing, organizational adjustments, and operating experience. As explained by the Executive Secretary, Dr. Rinehart, who was also the Acting Chairman, Morse had not assumed his duties as Research Director until late February 1949, and the recruitment of civilian scientific staff did not get into full swing until the spring and was not yet completed. Civilian recruitment was slow because academic personnel with relevant operations research qualifications were hard to find. The operations research agencies of all the Service departments, for example, were overloaded and shorthanded. In WSEG, work on the first major project was still incomplete, with results due within the next few months, and the RDB was still engaged in assisting with "professional partnership and consultation." Moreover, Rinehart said, the present dual relationship with the JCS and the RDB was working well.<sup>39</sup>

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<sup>38</sup>Lt. Col. S. H. Sherrill, Memo for Col. C. G. Dodge (Executive Secretary, WSEG), "Status of WSEG" (Oct. 11, 1951); interviews suggest that external events dominated the picture.

<sup>39</sup>RDB 150/9.1, Acting Chairman, RDB (Dr. R. F. Rinehart), Memo for JCS, "Extension of RDB Sponsorship of WSEG" (Dec. 6, 1949).

On January 6, 1950 the JCS endorsed the RDB recommendation, and on January 19 the SecDef concurred.<sup>40</sup> Administrative officials agreed that WSEG would continue to be shown on organizational charts as subordinate to both the RDB and the JCS, but that in the interests of economy and efficiency office services for WSEG would be provided by the Administrative Secretary of the JCS and WSEG personnel records would be transferred to the JCS. WSEG's budget for personnel and travel would be maintained separately from the JCS budget, but other WSEG funds would be merged with those of the JCS, without placing WSEG "under the jurisdiction of the JCS ... to a greater extent than contemplated."<sup>41</sup>

Shortly before the July 1950 deadline, the transfer question was taken up by the Chairman of the RDB (by this time a new incumbent, Mr. William Webster<sup>42</sup>) and the Chairman of the JCS, Gen. Bradley, who agreed to recommend that the dual RDB/JCS arrangement be continued for an additional year. In a memo for the JCS, Gen. Bradley questioned whether WSEG should be transferred to the sole jurisdiction of the JCS, as planned, and lose the advantages of dual supervision and sponsorship. He said the present arrangement was working "very satisfactorily," with WSEG benefitting from close contacts with both the JCS and the RDB and receiving considerable assistance from the RDB in the recruitment of qualified civilians. Moreover, he wrote, the

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<sup>40</sup> SecDef, Memo for Secretaries of Military Departments et al., "Amendment to Directive of WSEG" (Jan. 19, 1950).

<sup>41</sup> Assistant Director of Administration, OSD (J. R. Loftis), Memo for Gen. Hull, Rear Adm. Davis (DJS), and Dr. Rinehart (Jan. 31, 1950).

<sup>42</sup> Webster was a Naval Academy and MIT graduate who became a utility executive. During World War II he served with the National Defense Research Committee, and after the War with the JCS R&D Board, where he chaired the atomic energy committee. Before his appointment to the RDB he was Chairman of the Military Liaison Committee, the OSD agency responsible for coordinating weapons matters with the AEC.

assignment of studies by both the JCS and the RDB might well lead to the best results in the long run.<sup>43</sup>

The fact that Gen. Bradley took this position was particularly important, because when the WSEG concept was first proposed, when Bradley was Chief of Staff of the Army, he had been a leading opponent of RDB control as an infringement on JCS prerogatives in weapons evaluation matters. His acceptance of dual sponsorship therefore carried special weight, both at this time and several years later, in 1953, when he was one of the principals on the Rockefeller Committee on Department of Defense Organization at the start of the first Eisenhower administration.<sup>44</sup>

General Bradley's memo was published "in the green," which meant that it was fully staffed for presentation to the JCS, but it was never finally acted upon, for undetermined reasons. Over a year later, in September 1951, the paper was formally withdrawn from further consideration by the JCS.<sup>45</sup> Commenting on the status of the action at that time, the WSEG Executive Secretary reported that there had been no decision on WSEG's sponsorship among the officials primarily interested--the SecDef, Chairman of the RDB, the Joint Chiefs, or the Director of WSEG--which left things uncertain. In order to be prepared in case the subject came to a head, he thought it advisable to canvass the views of WSEG Review Board members as to whether WSEG should (a) continue to be jointly sponsored by the RDB and the JCS, or (b) be transferred to the control of the JCS. He asked for reasons so that he could brief the pros

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<sup>43</sup> CJCS, Memo for JCS, "Status of the Weapons Systems Evaluation Group" (May 31, 1950) (JCS 1812/33, June 12, 1950).

<sup>44</sup> See below, p. 103.

<sup>45</sup> Note to Holders of JCS 1812/33, Sept. 21, 1951.

and cons to the new Director of WSEG, Lt. Gen. Geoffrey Keyes, USA.<sup>46</sup>

The responses argued the issue in terms of both objectivity and functional connection, and differed according to which consideration they emphasized. Both the Research Director and the Assistant Research Director recommended the joint JCS/RDB arrangement as a safeguard against loss of "independence."<sup>47</sup> The third senior civilian likewise opposed sole JCS control ("I have seen enough of the workings of JCS committees with their split decisions and partisan points of view to avoid having WSEG suffer the fate of becoming a JCS committee"), but he also criticized the dual arrangement, "the loose organizational coupling where we are the step-child of both the RDB and JCS and not very close to either group." He blamed the situation on the dropoff of interest in "impartial evaluation" following personnel turnovers in OSD, the RDB, and the OJCS, and recommended another high-level reexamination of the need for a group like WSEG.<sup>48</sup>

Of the three senior military representatives, one felt that the issue of "independence" was overriding from the

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<sup>46</sup>Col. C. G. Dodge (Executive Secretary, WSEG), Memo for Dr. Robertson, et al., "Request for Comments on the Status of WSEG" (Oct. 11, 1951); and Memo for Gen. Keyes, same subject (Nov. 30, 1951).

Lt. Gen. Geoffrey Keyes, USA (Ret.), was recalled to active duty as Gen. Hull's successor. Asked the reason for this unusual step, replacing one Army Director with another and recalling the Director from retirement, one informant surmised that the other two Services were at loggerheads over the appointment and found it easier to agree on another Army officer as a compromise. Gen. Keyes was the Army's candidate.

<sup>47</sup>Col. C. G. Dodge, Memo for Gen. Keyes (Nov. 30, 1951); and George Welch, Memo for Col. Dodge, "Status of WSEG" (Oct. 16, 1951). Welch also interposed a third alternative, establishment as a separate agency directly under the SecDef, if WSEG were going to be under a single sponsor, but did not pursue it.

<sup>48</sup>W. J. Horvath, Memo for Col. Dodge, "Comments on Status of WSEG" (Oct. 25, 1951).

standpoint of the SecDef and that therefore the "dual channel" should be maintained.<sup>49</sup> The other two, however, said that WSEG should be either a part of or under the control of the JCS, because weapons evaluation was primarily a JCS function--or rather, a function that was inseparably intertwined with JCS strategic military responsibilities.<sup>50</sup>

In summarizing these views for the new Director of WSEG, the Executive Secretary cast his vote with the dual sponsorship advocates:

To make "unprejudiced and independent analyses" I feel that a certain amount of independence is necessary for the Group. Our assignment to the direct control of the JCS would doubtless reduce materially the amount of independence which we now enjoy.

The present status, he said, was preferable:

It provides a considerable degree of independence for the Group; it makes our studies directly available to the two agencies (JCS and RDB) that most need them and are best qualified to review and to use them; it has worked satisfactorily for three years and should work well in the future.

He recommended that the Director discuss the matter with Gen. Bradley and the Chairman of the RDB (the fourth, Dr. Walter G. Whitman<sup>51</sup>) to determine whether it was best to initiate action to obtain a new decision or "let sleeping dogs lie."<sup>52</sup>

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<sup>49</sup>Brig. Gen. Garrison H. Davidson, USA, Memo to the Executive Secretary (Nov. 5, 1951).

<sup>50</sup>Rear Adm. H. B. Temple, USN, Memo for Col. Dodge, "Comments on the Status of WSEG" (Nov. 20, 1951); and Maj. Gen. E. W. Barnes, USAF, Memo to Col. Dodge, "Status of WSEG (Nov. 26, 1951).

<sup>51</sup>Whitman was a chemical engineer who had worked on aircraft fuels for the National Advisory Committee on Aeronautics during World War II and directed an MIT study on nuclear powered aircraft for the AEC after the war. He remained Chairman of the RDB until June 1953.

<sup>52</sup>Col. C. G. Dodge, Memo for Gen. Keyes (Nov. 30, 1951) (see above, fn. 46).

The Director of WSEG, Gen. Keyes, accepted the view that the dual sponsorship of WSEG should continue indefinitely, and decided not to raise the issue.<sup>53</sup> In August 1952 the Chairman of the RDB proposed that specific action be taken to put the arrangement on a permanent basis--he said that it was "working well"--but the proposal was not picked up and the situation was allowed to continue informally until the abolition of the RDB in the following July.<sup>54</sup> Thus, the provision in the original directive that "after an initial period of organization and trial" WSEG would be "transferred" to the JCS was never implemented.

## B. TASKS AND ACCOMPLISHMENTS

### 1. The First WSEG Program

As was indicated above, the initial WSEG task assignments were part of a program of studies that was developed as a single package by the first Director of WSEG in conjunction with the Director of the Joint Staff and officially directed by the JCS on September 1, 1949.<sup>55</sup> It was an ambitious program, with the evaluation of planned strategic bombing operations, at the top of the list, to be followed in due course by weapons systems evaluations in five designated mission or functional areas. The JCS listed these latter areas in order of priority--antisubmarine, airborne, carrier task force, air defense, and ground force weapons systems--but left specific study tasks in each area for later formulation.

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<sup>53</sup>Research Director, WSEG (Dr. H. P. Robertson), Memo for Deputy Director, RDB (Dr. Don K. Price) (June 27, 1952).

<sup>54</sup>Chairman, RDB (Dr. Walter G. Whitman), Memo for SecDef, "Weapons Systems Evaluation Group" (Aug. 7, 1952).

<sup>55</sup>See above, p. 56. The authorizing directive was SM-1747-49 (Sept. 1, 1949), contained in JCS 1812/18 (Sept. 1, 1949).

Carrying out this first program kept most of the WSEG staff occupied for years. Its overall scope was sufficiently broad to cover the major weapons systems of all three Services, and was probably designed with a rough tri-Service balance in mind. The analytical latitude that the directive provided was also, probably intentionally, quite permissive, with few if any constraints laid down in advance. The directive asked WSEG to evaluate "weapons and weapons systems," for example, terms which went beyond mere hardware or technology and could be interpreted very broadly. The systems to be covered included those that were "present and projected," so that both currently operational systems and potential alternatives could be considered regardless of time frame. The systems to be evaluated were not tied to any presumed sphere of joint, interservice, or multiservice concern or responsibility (although some people, like Rinehart of the RDB, felt there was a case for such a focus in tasking policy) but were left open for decision on a case-by-case basis. And the evaluations requested were pointed loosely toward "effectiveness" or "military worth and effectiveness" without further qualifying restriction. In short, there was nothing obvious in the directive to preclude WSEG's "weapons systems evaluations" from ranging across the broad spectrum of JCS and OSD interests.

In practice, the scope, duration, terms of reference, approach, and other parameters were worked out individually for each designated task. The first task, on strategic bombing, was unique because of its special origin and circumstances, but the other tasks that were undertaken were also individually tailored to one degree or another. They differed considerably as to the size and nature of the problem, its difficulty, and the kind of solution desired, and WSEG's handling of them varied accordingly.

The chief features of the strategic bombing study have already been discussed.<sup>56</sup> The subject was at the center of the stormiest strategic controversy of the day, and had major implications for national strategy and defense budgets. It was the focus of high-level attention not only from the Joint Chiefs and the SecDef, but also from the President and Congress. The study was triggered by a series of queries to the JCS from the SecDef, the President, and Congress for an authoritative joint appraisal of strategic bombing, which the JCS publicly committed themselves to base in part on an impartial and "scientific" WSEG study. The JCS assigned WSEG first of all to evaluate the American capability for strategic weapons delivery, with an assessment of resulting damage to Soviet military capabilities and will included in the overall WSEG task statement, but deferred pending study of the conclusions of the Harmon Report.

The task definition and terms of reference for the strategic bombing study were incorporated into the September 1949 directive covering the initial WSEG program that has been quoted above.<sup>57</sup> These elements were reviewed in detail by the Director and Research Director of WSEG, the Director of the Joint Staff, the Chairman of the RDB, and the Service Ops Deps, and the directive underwent much redrafting and revision before being approved. The task also received the personal scrutiny of the Joint Chiefs, who met on it formally. After the task was approved, the JCS followed developments in the study closely, at least at the Ops Deps level, and both the Joint Staff and the Services maintained close communication with WSEG on problems, progress, and prospects as the study went along.<sup>58</sup>

Because of the study's general importance and continuing relevance, the stakes for WSEG were obviously very great and

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<sup>56</sup> See above, pp. 50-55.

<sup>57</sup> See pp. 57-8.

<sup>58</sup> Study operations are summarized in *WSEG History*, Vols. I and II, with the latter volume covering the completion period.

almost the entire organization was involved in the study. As previously noted, the study absorbed some two-thirds of the available staff through the last part of 1949. It was carried out in comprehensive detail, resulting in the massive 10-volume WSEG Report No. 1, *Report on Evaluation of Effectiveness of Strategic Air Operations*, with a publication date of February 8, 1950.

The report was generally pessimistic as to the probability that offensive strategic air operations could be carried out on the scale called for in existing emergency war plans. It emphasized major logistic deficiencies, including weaknesses in aerial refueling capabilities and heavy dependence on overseas operating and staging bases for the great bulk of the bombing effort (which, despite the B-36 fanfare, was still dependent on B-29's and B-50's). The study also highlighted serious inadequacies in the intelligence data base with respect to Soviet defensive capabilities and target systems.<sup>59</sup>

When the strategic bombing study was substantially completed, it was briefed to the JCS by Gen. Hull, on January 19, 1950, and then to President Truman at the White House on January 23, as part of the JCS response to Truman's request of the previous April ("I should like to examine an evaluation by the JCS of the chances of successful delivery of bombs as contemplated by this plan...."<sup>60</sup>). When he introduced the study to the President, the Chairman of the JCS, Gen. Bradley, informed him that the JCS had not specifically endorsed the conclusions but considered the study useful for planning guidance. He said it was the first major evaluation carried out by the new Weapons Systems Evaluation Group.<sup>61</sup>

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<sup>59</sup>JCS 1952/1, WSEG Report No. 1, "Summary" (Feb. 10, 1950).

<sup>60</sup>See above, p. 50.

<sup>61</sup>WSEG History, Vol. II.

The White House briefing was conducted by Gen. Hull, who was accompanied by Dr. Morse and several project members including the civilian project leader. Besides the President, the briefing was attended by members of the Cabinet, including the SecDef and the Secretary of the Air Force, and the Joint Chiefs. The WSEG files do not record the President's reaction to the briefing, other than his agreement with Gen. Bradley that the results should not be made public, but Gen. Hull was apparently gratified. When he returned to the Pentagon he congratulated the WSEG staff on completing their first effort.<sup>62</sup>

After the White House briefing on R-1 the strategic bombing project at WSEG was suspended, rather than terminated, while the possibility of a follow-on phase was being considered, particularly with respect to extending the study's coverage to include bombing effects. In April 1950 the JCS formally issued a supplementary request asking WSEG to evaluate such effects, taking into account the applicable conclusions of both WSEG R-1 and the earlier Harmon Report (which had assumed 100 percent weapon delivery for purposes of analysis), but the supplementary project was accorded a relatively low priority and little effort was put into it during the next several years, with no formal product.<sup>63</sup> Then, in June 1952, the supplementary request was superseded by another JCS directive asking WSEG to complete the evaluation of strategic air bombing as first

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<sup>62</sup>WSEG History, Vol. II. A personal account of this briefing session has been recorded by Dr. Morse in his recent autobiography (Philip M. Morse, *In at the Beginnings: A Physicist's Life* [Cambridge, Mass.: MIT Press, 1977], pp. 258-9): "Truman and Acheson listened carefully, and [Secretary of Defense] Johnson stayed awake but seemed more interested in watching faces than in listening. When Hull had finished, Acheson asked a perceptive question; then Johnson turned to Truman, beamed and said, 'There, I told you they'd say the B-36 is a good plane.' Truman looked disgusted and snapped, 'No, dammit, they said just the opposite.' So at least two of our audience got the point."

<sup>63</sup>WSEG History, Vol. IV (July 1951-June 30, 1952).

set forth in the September 1949 directive, including a review and updating of the operational aspects covered in WSEG R-1, focusing on the effects on the Soviet war effort of atomic strikes against fixed industrial targets. The new study was to be initiated at the earliest practicable date and accorded the highest practicable priority. After several adjustments in the precise terms of reference and the title ("The Evaluation of the Effect of the Strategic Air Offensive on the Soviet War Effort," "Evaluation of the Effectiveness of the US Strategic Air Campaign Against the Soviet Economy in 1954," and, finally, "Evaluation of the Effects of the Mid-1954 First Phase Atomic Offensive Against Fixed Industrial Targets in the Soviet Bloc"), the study was eventually completed and published as WSEG R-10 (October 14, 1953). At the suggestion of the Army Chief of Staff, it was forwarded to the SecDef with the recommendation that he bring its conclusions and recommendations to the immediate attention of the NSC.<sup>64</sup>

Whereas the strategic bombing study was directed toward the evaluation of operational plans for which the concept, weapons systems, forces, and similar characteristics were laid down, the next study in the first series, on antisubmarine warfare weapons systems, was entirely different. The task covered an entire mission area, in which the problem, objectives, threats, operational means, and the like were open to definition. Rather than undertake a comprehensive survey of the whole subject, WSEG's leaders sought to focus the study more narrowly and tackle a problem that, like the strategic bombing problem, was linked to current war plans--in this case, the capability to carry out ocean transport requirements in the face of estimated Soviet submarine threats. A proposal to this effect was presented to the DJS and the RDB in April 1950. In response WSEG was asked to broaden the study to include other threats

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<sup>64</sup> Ibid.

to ocean transport besides submarines, particularly enemy mining. WSEG resubmitted an appropriately modified proposal to the JCS in June, and the JCS approved it on July 24, 1950. WSEG mounted a seven-man study effort, completing the study in June 1951 as WSEG R-5, *First Interim Report on Evaluation of Allied Capabilities to Carry Out the Ocean Transport Requirements of Current Emergency War Plans in the Face of Estimated Soviet Submarine and Mine Threats* (June 29, 1959).<sup>65</sup> The heart of the study was an enclosure that reported on war gaming of hypothetical antishipping campaigns. As with the strategic bombing study, the report was large, running to some 600 pages.

When the study was completed, the JCS formally considered it, noted the conclusions, and approved distribution of the report to the Services, with certain modifications to protect war plans information. They went along with WSEG's judgment that no further ASW evaluations were required for the time being, and the project was suspended. In fact, WSEG did not undertake another study in ASW until the late 1950's, when it was asked to examine the problems of defending the continental United States against sea-launched missile attacks.<sup>66</sup>

WSEG experienced a certain amount of difficulty with the third study on the list, weapons systems for airborne operations, due to problems in task formulation, personnel assignment, changes in priority, and the like. No major report was ever completed. One civilian and one military staff member were assigned to the study initially, and they conducted considerable preliminary research on airborne operations in World War II (eventually published as a WSEG Staff Study in 1951).<sup>67</sup> In February 1950 WSEG submitted a proposal to analyze the

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<sup>65</sup> WSEG History, Vols. II and III. The report was published under JCS cover as JCS 2141/1 (July 17, 1951).

<sup>66</sup> SM-709-57 (Oct. 2, 1967).

<sup>67</sup> WSEG Staff Study No. 3, *A Historical Study of Some World War II Airborne Operations* (February 1951).

capabilities of airborne forces to carry out five types of missions, such as reinforcing threatened land forces, seizing an airhead, and the like, which was approved by the JCS in June 1950. In January 1951 the study effort was reviewed and re-oriented to focus on the capabilities of airborne forces to perform assigned missions under existing emergency war plans. The study was carried out under several different project leaders and finally completed in January 1952. After a review, it was decided to publish the results as a WSEG Staff Study rather than a report and merge any remaining work on the subject into the overall project on ground forces. The JCS approved distribution of the paper to the Joint Staff, the Services, and the RDB.<sup>68</sup>

The fourth study--the third of the "additional projects" after the strategic bombing study--was an "evaluation of the effectiveness of present and projected carrier task forces weapons and weapons systems." Like the study of airborne operations, this was tackled as one overall project, beginning with an initial review of operational experience with carrier forces during World War II and evolving, after several exchanges between WSEG, the Joint Staff, the Services, and OSD, into a study of current carrier task force capabilities to carry out assigned missions under existing war plans. During the course of the work, carrier task force logistics emerged as an especially important problem, and military logistics consultants were brought in from each of the Services to undertake a separate substudy. Supporting studies were also requested of some outside agencies, such as the Aberdeen Proving Ground, OEG, the Bureau of Ships, the Joint Intelligence Group, and the CIA.

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<sup>68</sup>WSEG History, Vols. III, IV, and V. The results were published as WSEG Staff Study No. 10, *A Determination of Some Measures Required to Maximize the Effectiveness of an Airborne Force When Employed Under the Concepts of Current Emergency War Plans* (Apr. 2, 1952).

Although it was regarded as a major study, the carrier project had several different project leaders because of personnel turnover, finally ending up with the Assistant Research Director, who brought the study to completion. The report was forwarded to the JCS as WSEG R-7, *Evaluation of the Offensive and Defensive Capabilities of Fast Carrier Task Forces in 1951*, and was briefed to the JCS by the WSEG project leader on March 24, 1952, with the entire WSEG Review Board in attendance. In September 1952, the JCS asked for a similar evaluation of the offensive and defensive capabilities of carrier task forces projected to 1956 and 1957, to be carried out within the priorities of approved WSEG programs, but the diversion of staff members to other studies led to the indefinite postponement of any follow-on work.<sup>69</sup>

The evaluation of the "military worth and effectiveness of present and projected air defense weapons and weapons systems" began as the fifth study in the WSEG program in order of priority but was shifted to third, ahead of the airborne operations project, as a result of the Soviet atomic explosion. In November 1949 the CNO proposed that the JCS evaluate as a matter of priority the strategic significance of the air defense of the continental United States, assuming a Soviet atomic stockpile; in the following month the Director of WSEG suggested that the ongoing WSEG air defense study be upgraded in priority and accelerated, and in January 1950 the JCS agreed.

WSEG assigned 10 men to the air defense project. An outline was prepared and submitted to the JCS, RDB, and Services for comment in April and, after comments were received, forwarded to JCS for approval in July 1950. In their decision the following October, after a large-scale air defense exercise carried out by the Air Force, the JCS asked for an expansion

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<sup>69</sup>WSEG History, Vols. II and IV. The historical portion of the study was published and distributed separately as WSEG Staff Study No. 4, *Operational Experience of Fast Carrier Task Forces in World War II* (Aug. 15, 1951).

of the scope of the study to include possible variations in prevailing air defense doctrine and tactics. With JCS approval, WSEG published a separate study of the existing air defense system as a first interim report (R-4, *Evaluation of Air Defense Weapons and Weapons Systems*) on December 27, 1950, and proposed to tackle alternative programs later.<sup>70</sup> The JCS were briefed on the interim report and proposals for further study in April 1951, and confirmed their previous guidance that WSEG should go on to study the various alternatives, looking toward the 1953-54 time period.<sup>71</sup>

The follow-on air defense studies were undertaken and published as separate staff studies rather than as one comprehensive survey. In December 1951 WSEG published a study of the aircraft control and warning facilities available by 1953; in March 1952 a study of the estimated capabilities of Army anti-aircraft defenses for the continental United States projected to mid-1954; and in May 1953 a study of the seaward extension of coastal air defense radar surveillance. Further work in air defense was suspended for several years after this, because of WSEG's limited resources and the urgency of other commitments.<sup>72</sup>

During this portion of the early 1950's, air defense moved to the forefront of national strategic issues, propelled there by the growing Soviet nuclear attack capabilities and the

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<sup>70</sup>WSEG History, Vol. III. The study was published as JCS 2084/15 (Jan. 22, 1951), with copies distributed to the RDB and the Services.

<sup>71</sup>WSEG History, Vol. III.

<sup>72</sup>WSEG Staff Studies No. 7, *The Continental Air Defense System: An Examination of Aspects of the Control and Warning Facilities Available by 1953* (Dec. 20, 1951); No. 9, *The Continental Air Defense System: Estimated Capabilities of Planned Army Anti-Aircraft Defense for the Continental United States as of Mid-1954* (Mar. 11, 1952); and No. 16, *Some Aspects of the Seaward Extension of the Coastal Air Defense Radar Surveillance* (May 1, 1953). The last study was carried out by an electrical engineer on loan from the Hughes Aircraft Corporation. See WSEG History, Vol. V (July 1952-June 30, 1953).

increasingly difficult choices to be made among the competing goals of strategic retaliatory power, European defense, continental defense, and the demands of the Korean War, to name only a few. A number of major studies were undertaken outside of WSEG, such as Project Charles, sponsored by the Air Force in 1951 at MIT (which led to the formation of the Lincoln Laboratory, "the Manhattan Project of air defense"), and the Lincoln Summer Study Group of 1952; in an effort to mobilize scientific and technical resources to attack the problem. WSEG was brought into some of these activities, either formally, at the steering level (as in Project Charles), or informally, via the participation of WSEG officers and staff members among the working groups.<sup>73</sup> WSEG thus became involved in a process of cross-fertilization of ideas and studies that produced influential recommendations, in some cases, although not necessarily under JCS auspices. It also encountered increasing competition from other prestigious study groups that were able to tap the ranking talent in the nation to work on problems comparable to those assigned to WSEG. This became a trend during the 1950's, as demands for broad-gauged high-level military-technical studies increased on all sides, while WSEG's own capacity to undertake more than one or two large studies at a time--not more than two, Gen. Keyes told the JCS and the RDB in May 1952<sup>74</sup>--remained relatively limited. One of the results was that in 1955, for example, when the JCS again became interested in an independent analytical survey of the air defense problem, they asked WSEG not to attempt another competitive continental defense study, but rather to evaluate the assumptions, conclusions, and recommendations of other recent studies, of which by then there were a number, sponsored variously by the Air Force,

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<sup>73</sup> *WSEG History*, Vol. III.

<sup>74</sup> Director, WSEG (Lt. Gen. Geoffrey Keyes), Memo for JCS and RDB, "Proposed Program for WSEG" (May 26, 1952).

the Army, the Executive Office of the President, and other agencies.<sup>75</sup>

The last project in the series, "Evaluation of the Military Worth and Effectiveness of Present and Projected Ground Force Weapons and Weapons Systems," was in many ways the most amorphous and difficult to carry out. It had an uneven history, with several changes of pace and shifts of direction, at least three different project leaders, and a long list of staff studies as the principal output, culminating in a single summary report on March 22, 1955, WSEG R-11, *Some Measures of Military Worth and Effectiveness of Ground Force Weapons Systems with Air Support and Atomic Weapons*.<sup>76</sup>

There was continuing disagreement within WSEG, but also with the OJCS and the Ops Deps, as to how to approach and carry out the task. The initial approach, proposed in the spring of 1950, was to attempt to assess the effectiveness of ground forces on a unit basis (e.g., divisions, corps, or armies), testing the effects of varying degrees of tactical air support, atomic weapons, and similar variables. There were serious misgivings as to the feasibility of such a task, and considerable interest in adopting a different approach aimed more directly at the practical problem confronting operational planners, which was how to stop a Soviet invasion of Western Europe as far to the east as possible.

By the fall of 1950 JCS approval was being sought for a comprehensive study that would compare the relative combat effectiveness of U.S. and Soviet ground force units of various types (e.g., infantry, mechanized, armored), in both defensive

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<sup>75</sup>WSEG History, Vol. VII (July 1954-June 30, 1955). For a general treatment of the development of the continental defense issue in this period, including the role of the Lincoln scientists and similar "outside" groups, see Huntington, *The Common Defense*, pp. 326-41. The 1955 study was carried out and published as WSEG R-15, *Continental Defense* (July 8, 1955).

<sup>76</sup>WSEG History, Vols. III and IV.

and offensive situations, considering tactical air support, nuclear weapons, and other factors. WSEG warned that the task as outlined required considerable background study and was beyond WSEG's capabilities without large-scale supporting assistance from agencies like ORO and Army combat developments offices, but the plan was approved as a basis for proceeding with the task, without a specific timetable.

Work continued along these lines through 1951 and 1952, apparently with disappointing results. There were major complaints in WSEG that operational situation studies were inadequate, and that data from tactical field trials, combat experiments, and historical records were too sketchy or unrelated for systematic treatment. Nevertheless, pressure built up for some kind of output. In October 1952 Gen. Mathew B. Ridgway, then SACEUR, asked for assistance with planning factors for the mid-1950's in the light of nuclear developments, but WSEG was unable to help. In December 1952 the new Research Director, Dr. E. Bright Wilson, called for a reexamination of the purpose and scope of the study ("What does the JCS want from WSEG? Can we give them that?"<sup>77</sup>). It was confirmed that the major current interest from the users' standpoint was in the force requirements needed to hold Europe, given the effects of emerging new weapons. The study was accordingly reoriented, with the goal of producing the minimum report suitable for the JCS, utilizing much of the work already accomplished and levying additional requests for supporting assistance on both the Army and the Air Force. Work was stepped up during 1953 and 1954 and for a time the ground force project became the largest in WSEG.

The project resulted in a number of discrete staff studies during these years, as follows:

- No. 11, *Basic Capabilities of US and USSR Ground and Support Air Combat Units*, August 1, 1953.

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<sup>77</sup>WSEG History, Vol. V, pp. 16-17.

- No. 12, *Capabilities of Atomic Weapons Systems for the Attack of Troop Targets*, June 15, 1954.
- No. 13, *US Armored Division Defense of a Sector Against a Soviet Mechanized Army*, February 4, 1955.
- No. 14, *US Type Corps in Defense Against a USSR Mechanized Army and Atomic Weapons Effects*, June 15, 1954.
- No. 15, *US Type Corps in Defense Against a USSR Rifle Army*, November 15, 1954.
- No. 17, *Operations of a US Armored Corps Against a Soviet Mechanized and a Soviet Rifle Army*, December 1, 1954.
- No. 18, *Effectiveness of the US Type Corps on Offensive Operations*, August 29, 1955.

Then, in March 1955, as noted, WSEG forwarded R-11, *Some Measures of Military Worth and Effectiveness of Ground Force Weapons Systems with Air Support and Atomic Weapons*, as a summary-type report to wind up the project.<sup>78</sup>

There was apparently considerable disagreement, both within WSEG and without, as to whether the results of the ground force project were worth the effort. For the most part, the products were of greater interest and utility to the Army than they were at the level of the JCS. Some reviewers felt that there was considerable educational value and even analytical merit in attempting to grapple with ground force operational problems in an overall strategic setting and doing so from a joint rather than a single service standpoint. Little or no JCS interest was shown in continuing the work, however, incomplete though it was, and when ground force problems were taken up in later years--for example, in studies of weapons for limited war--entirely different approaches were adopted.<sup>79</sup>

## 2. The Add-on Studies

While the first WSEG program of September 1949 was being carried out, the Pentagon environment changed, JCS

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<sup>78</sup>WSEG History, Vols. IV, V, VI, and VII.

<sup>79</sup>Interviews.

perspectives shifted, new defense problems appeared, and additional demands for WSEG studies arose. Most of the new demands were for studies more limited in scope than those that were sponsored in the early planning period, when WSEG was getting started. Most of them were sparked by some specific interest of the moment, so that they tended to be shorter projects. In other respects, however, they did not follow a predictable pattern but originated in a variety of ways for a variety of reasons.

Although WSEG's efforts were more than fully committed to the first series of tasks, WSEG's leaders had a certain amount of leeway for working additional requests into the study program. The dimensions of each task, its schedule, personnel assignments, external support, and the like, were not fixed in advance, as in a written contract, but were subject to adjustment as required during the course of the work. Trade-offs and modifications had to be negotiated with the OJCS study sponsor, usually at the level of the Director of the Joint Staff, and in important cases such changes went to the Ops Deps or even to the Joint Chiefs for approval, but they were possible.

During this early phase of the WSEG experience, add-on tasks or program modifications were generally handled on an individual study basis. Neither the JCS nor WSEG had developed a regular procedure for periodically reassessing the whole study program as a matter of course. When the study program was overhauled, it was usually at the instigation of a new Director or Research Director, who made a fresh review of WSEG's capabilities and commitments, arriving at his own judgments as to needs and priorities and developing new suggestions and proposals for consideration by the JCS and other authorities. But abrupt changes were not easy to make: it was difficult to redirect or drop obsolescent studies, once tasks were approved

at the level of the JCS, and new tasks usually had to be accommodated within the framework of the ongoing program.<sup>80</sup>

Requests for extra tasks came up as early as the summer of 1949, after the first study program had been drafted but before it was formally adopted. The first two have already been mentioned: the request for a study of the operational utility and relative strategic worth of nuclear-powered aircraft, initiated in July 1949, and a parallel study of the military potentialities of nuclear-powered submarines, initiated in August. Both were inspired by RDB and/or Service interests but authorized under JCS auspices. The nuclear aircraft study was proposed as a comparative analysis of the relative merits of nuclear-powered versus conventionally powered aircraft, in order to help judge how much R&D effort should be put into nuclear aircraft engines. It was expected to be a continuing study, with a first report within something like 6 months and additional reports "of increasing precision" as further R&D progress warranted. WSEG assigned several analysts to the project on a part-time basis, including both military personnel and civilians. They reviewed R&D progress and prospects to determine whether the situation was "optimistic" and submitted a paper on the subject that was forwarded to the JCS and the RDB in October 1950. The paper did not attempt to assess the military worth of the nuclear aircraft, however, and WSEG called it a "survey" rather than a report or a study.<sup>81</sup>

WSEG continued to monitor developments in the nuclear aircraft field for several years, as a low priority effort, with the possibility open of actually making a study and issuing a report should more solid information become available and more

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<sup>80</sup>Interviews. See also the testimony of Lt. Gen. Samuel E. Anderson, Director of WSEG, 1954-1957, before the House of Representatives, Committee on Appropriations, *DOD Appropriations for 1957* (Feb. 16, 1956), pp. 6-7.

<sup>81</sup>*WSEG History*, Vols. I and II.

concrete characteristics of the vehicle be defined, but in fact by 1952 the project had become inactive and in 1954 the Director of WSEG asked that it be cancelled.<sup>82</sup> No report was ever completed in response to the task, although the subject came up again in 1958, and WSEG finally did carry out a study of the nuclear-powered aircraft concept in response to a task order from DDR&E.<sup>83</sup>

The WSEG study of the nuclear-powered submarine, begun at about the same time as the nuclear aircraft task and on a similar basis, had a different outcome. It also addressed the issue of military utility, involved a parametric comparison of submarines with alternative nuclear and nonnuclear power plants, and provided that WSEG would monitor the R&D on a continuing basis and submit reports as information accumulated or as significant conclusions were reached, without a specified deadline or target date. There was a good deal more interest in the subject, however, and military applications were quicker to materialize than in the case of the nuclear-powered aircraft. In May 1950 WSEG submitted a progress report to the JCS and the RDB, together with a study outline, which was accepted, and on December 10, 1951 WSEG issued an "interim report" on the task, WSEG R-6, *Evaluation of the Military Capabilities of the Nuclear Powered Submarine*. The Director of WSEG delivered an oral briefing on the report to the JCS in January 1952, and the project effort was closed down, although the task was not officially cancelled and remained on the WSEG project list for several years thereafter.<sup>84</sup>

The next set of requests was for studies in the controversial and politically sensitive areas of chemical, biological,

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<sup>82</sup>The cancellation request was made by Director, WSEG, for JCS, "Proposed Program for WSEG" (Sept. 24, 1954).

<sup>83</sup>R-37, *Evaluation of Military Applications of Nuclear-Powered Aircraft* (May 25, 1959).

<sup>84</sup>WSEG History, Vols. II, III, and IV.

and radiological warfare. These were transmitted to WSEG in the form of a single JCS request in mid-January 1950, following a November 1949 report by the RDB entitled *A Comparative Evaluation of Chemical Warfare, Biological Warfare, and Radiological Warfare* that identified problems relating to operational utilization and effectiveness. The JCS took issue with some of the RDB conclusions, particularly as to the limited value of radiological warfare, and advised the RDB that such conclusions should await an operational evaluation by WSEG. The RDB agreed that a WSEG study of the entire subject would be helpful, particularly in highlighting areas for further R&D exploration, and on January 18, 1950 the JCS formally asked WSEG to undertake "an operational evaluation of the military potentialities of chemical, biological, and radiological warfare."<sup>85</sup>

Meanwhile, national chemical warfare policy was under discussion at the NSC level. In providing their advice and comments, the JCS informed the SecDef that the policy should be reviewed after detailed operational evaluations by WSEG. The SecDef relayed this to the NSC in mid-February 1950, returning with a request to the JCS that the WSEG studies be "pressed vigorously."<sup>86</sup>

The SecDef, at this time Louis Johnson, also created an advisory committee on CBR warfare, with a civilian as chairman. The committee expressed interest in whatever results WSEG might be able to furnish by about mid-June 1950, particularly in the field of chemical warfare, in which there was priority interest because of the pending policy question. Gen. Hull responded that WSEG would be unable to submit an operational evaluation of all three types of warfare within that time, but offered to submit an interim report summarizing WSEG's best judgment at that time, based on the information and analysis

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<sup>85</sup> *WSEG History*, Vol. II. The JCS request was made in SM-117-50 (Jan. 18, 1950).

<sup>86</sup> *WSEG History*, Vol. II.

available, together with a list of the unanswered questions that would have to be considered for an adequate evaluation. This compromise was accepted, and on July 11, 1950 WSEG submitted R-2, *Evaluation of Toxic Chemical Agents*, as its contribution to the deliberations. The report was forwarded to the JCS, the RDB, OSD, and the SecDef CBR committee as an interim report for consideration in conjunction with the latter's ongoing study of chemical warfare policy.<sup>87</sup>

The two remaining areas, biological and radiological warfare, thereupon became separate projects. Progress on the WSEG study of BW virtually ceased for some time, pending the arrival of data from laboratory tests that WSEG had requested, but the subject remained controversial and in December 1951 the SecDef asked WSEG to undertake an evaluation based on existing knowledge and submit findings by the following June. When the Director of WSEG (Gen. Keyes) asked for an extension of the deadline, he was given only 6 weeks, because "the lack of such an evaluation has been a handicap to both the operating forces and the authorities responsible for making allocations of funds and personnel to support the various programs." WSEG submitted its report as R-8, *An Evaluation of Offensive Biological Warfare Systems Employing Manned Aircraft*, published July 15, 1952.<sup>88</sup>

The RDB took issue with the conclusions of WSEG R-8 in a memo to the SecDef, faulting the study's terms of reference for excluding consideration of potentially effective agents and munitions that were not yet standardized but could be developed. The WSEG Research Director, project leader, and other staff members briefed the SecDef (at this time Robert A. Lovett, Secretary of Defense from September 1951 to January 1953), but the RDB continued to press its case against the WSEG study and

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<sup>87</sup>WSEG *History*, Vol. III.

<sup>88</sup>WSEG *History*, Vols. III and IV.

in favor of further R&D.<sup>89</sup> In August 1954, under the new Eisenhower administration, the JCS asked WSEG to conduct another review of the overall status of BW, but this was a separate action. Again there were arguments, this time between WSEG and the Services over the latter's attempts to impose restrictions on the scope and assumptions of the study. The Director of WSEG and the Research Director protested to the JCS and the Assistant Secretary for R&D, respectively, and the restrictions were lifted. The study was submitted as WSEG R-14, *The Status of Biological Warfare Weapons Systems* (June 1, 1955).<sup>90</sup>

The protest by the WSEG Research Director (at that time Dr. William B. Shockley, the future Nobel physicist<sup>91</sup>) is worth noting because of the light it sheds on WSEG's position as an independent analytical study group, the quasi-independent status of the civilian Director of Research, and the importance of WSEG's dual sponsorship at the supraservice level. Shockley informed the Assistant Secretary of Defense for R&D, then Mr. Donald A. Quarles,<sup>92</sup> that the directive in question required WSEG to reach agreement with the three Services on the "assumptions and scope" of the study, with referral of any disagreements to the JCS. This was the first time, Shockley wrote, that such a requirement had been included in a JCS directive to WSEG; it permitted the technical organizations with a stake in the BW program to control important aspects of the evaluation of the program, and "may well frustrate the impartial evaluation which [the directive] purports to direct."

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<sup>89</sup>WSEG History, Vol. V.

<sup>90</sup>WSEG History, Vol. VII (July 1954-June 30, 1955).

<sup>91</sup>Shockley came to WSEG from Bell Laboratories in July 1954, on loan for 1 year. He was a co-winner of the Nobel Prize for Physics in 1956 for his work on transistors.

<sup>92</sup>This was a new position, created in 1953 when the RDB was abolished. Quarles was the first incumbent.

It seems to me entirely appropriate, although unnecessary since it would occur in any event, to require WSEG to discuss scope and assumptions of a study with the Services. But to require agreement with the Services, even with resolution of difficulties by the JCS, seems undesirable no matter what the outcome: If the WSEG proposal is upheld, unnecessary procedures have been employed. If the Services position is upheld, the study is not impartial. If the directive to carry out the study is withdrawn, the charge that nonscientific considerations control WSEG studies will be difficult to refute.

In summary, he said, "WSEG should be given evaluations to do, offered advice if this is deemed appropriate, but not told how to do its evaluations."

These seem to me to be basic conditions for objective evaluations. In fact, I do not see how I can, with a clear conscience, occupy the position of Director of Research with its implied responsibility for intellectual integrity of the output, under conditions substantially different from those stated above.<sup>93</sup>

Quarles responded with a diplomatic defense of the need to direct the assumptions and scope of a study along useful lines, without impairing its independence and objectivity. It was entirely legitimate and proper, he said, to ensure that the assumptions employed were useful and generally acceptable:

WSEG studies are fundamentally the application of logical processes to show that conclusions flow from assumed situations. The situations to be assumed should be realistic and useful, i.e., pertinent to the needs and interests of those who will use the reports.... The situation that the questioned paragraph of the directive seeks to avoid arises when the Departments, on receipt of the report, condemn the conclusions on the ground that the assumptions are unrealistic or unsound.

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<sup>93</sup>Dr. William B. Shockley, Director of Research, WSEG, Memo for Dr. Donald A. Quarles, Assistant Secretary of Defense (R&D) (Nov. 30, 1954).

He suggested that Shockley construe the requirement in the directive "as an experiment in method of operation," essentially counting on the right of referral to the JCS (and, presumably, himself) to ensure that this "feedback loop" between WSEG and the Services was not exercised "in the sense of domination of WSEG but in the sense of directing the assumptions and scope along most useful lines." If Shockley deemed the experiment a failure, Quarles said, he would ask the Chairman of the JCS, Admiral Radford, to discuss it with both of them.<sup>94</sup>

It is not clear that the "experiment" was really carried through. The JCS readily agreed to delete the offending requirement from the study directive, and there appeared to be ample checks, both in the WSEG operating procedures and in OJCS staffing methods, to see that WSEG studies were relevant to real problems and circumstances, without requiring specific Service concurrence.

The third of the CBR studies, radiological warfare, also continued for several years before culminating in a WSEG report. WSEG's initial exploration of the subject indicated that additional field test data were required before a useful operational evaluation could be made. In the spring of 1951, however, a joint AEC-DoD panel on RW issued a favorable report, suggesting that it was appropriate for the JCS to express their views as to the need for RW before further development programs were authorized. Then, in April 1952, the RDB made a formal request that WSEG outline test requirements for a "military worth evaluation" and prepare to undertake such an evaluation when the data became available. WSEG did so, and on August 26, 1953 published the long-awaited report as R-9, *An Evaluation of US Capabilities in 1956 and 1960 for Employment of Radiological Warfare Weapons Systems in Air and Ground Operations*. As the study entered the

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<sup>94</sup>Dr. Donald A. Quarles, Assistant Secretary of Defense (R&D), Memo for Dr. William B. Shockley, Director of Research, WSEG (Dec. 4, 1954).

final review stages, the WSEG Research Director reported that the Army had already dropped RW from the Army research budget in anticipation of the forthcoming WSEG report.<sup>95</sup>

In spite of the fact that WSEG had already been asked to take on more work than it could readily perform, several other tasks were added to the WSEG program during the first several years. Two more were added during 1950, on guided missiles and atomic artillery; another was added in 1951, on nuclear-powered surface vessels; and two others were added in 1952, on atomic depth bombs and atomic warheads for the Honest John artillery rocket.<sup>96</sup>

The guided missile request was potentially important because it came relatively early, when the number and variety of missiles being proposed and developed were proliferating rapidly, and when analytical assistance was greatly needed to support the necessary choices.<sup>97</sup> In January 1950, the SecDef asked for JCS views on the overall prospects for developing guided missiles for military use with atomic warheads. The JCS in turn asked WSEG to study the military worth and effectiveness of such weapons, in collaboration with the AEC, in order to facilitate the coordination of operational guidance. It was an area, said the JCS, "where specific military requirements are most important and not entirely clear." WSEG responded in August 1950 with a formal submission that was not offered as an actual study or report on "military worth and effectiveness" but was intended to provide some preliminary judgments. The JCS duly noted the paper and forwarded it to the Services, with the observation that WSEG would continue to monitor missile R&D developments.

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<sup>95</sup> *WSEG History*, Vols. II and VI.

<sup>96</sup> *WSEG History*, Vols. III and IV.

<sup>97</sup> It has been estimated that in 1949-50 there were at least 35 separate missile programs being directly supported by the government, not counting smaller efforts supported by private overhead or other funds. See York and Greb, "Military Research."

The situation in missile R&D was becoming increasingly chaotic, far beyond the authority and capability of the RDB to control, given its limited powers and part-time Guided Missiles Committee (a situation that led, incidentally, to widespread public demands for a "Missile Czar" to straighten things out<sup>98</sup>). In May 1952, the Chairman of the RDB suggested to WSEG that certain guided missile programs had reached the stage where meaningful evaluations in terms of concrete tasks should be possible. He suggested that WSEG was in a good position to perform such evaluations, and proposed that WSEG either initiate a major project in the area or else act as the coordinating agency for basic studies that could be farmed out to the Service operations research groups. Because of personnel limitations, however, neither alternative was adopted, and no study was undertaken immediately.<sup>99</sup>

In retrospect, the 1952 decision not to pursue the guided missile study appears to have been a missed opportunity for WSEG to take the lead in what was a dynamic new area. Beginning in about the fall of 1952, as a result of advances in the hydrogen bomb, accumulating intelligence about the Soviet missile program, and the receptivity of the newly elected Eisenhower administration to fresh policy departures, U.S. missile programs underwent a dramatic acceleration and began to dominate military technology. In the spring of 1953 the WSEG Review Board reconsidered the idea of a basic guided missile study along the lines that had been proposed in 1952; however, a major DoD reorganization was in the works and the status of WSEG was unsettled, so that it once more seemed advisable for WSEG to defer the question. Activist groups of scientists,

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<sup>98</sup>A Director of Guided Missiles reporting directly to the SecDef but having access to the President was appointed in October 1950, but he functioned in an advisory rather than a managerial capacity. Ibid.

<sup>99</sup>*WSEG History*, Vols. III and IV.

administrators, and military officers like the Von Neumann Committee and its sponsors, supported by analytical work at RAND and elsewhere, soon took the lead in analyzing innovative missile developments.<sup>100</sup>

The other study sponsored by the JCS in 1950 was on atomic artillery, requested in April as a "crash" effort. Its purpose was to evaluate the military worth of artillery as compared with alternative delivery means for atomic weapons in support of ground troops, considering such factors as tactical flexibility, accuracy in all weather conditions, relative vulnerability, and logistics factors. The study was carried out and issued as WSEG R-3, *Evaluation of Artillery Delivered Atomic Weapons* (July 25, 1950). It concluded that artillery-fired atomic projectiles would be worthwhile enough on balance to justify their development. The JCS approved the conclusion and forwarded the study to the AEC with a request that R&D work on such projectiles be continued.<sup>101</sup>

In October 1951 the JCS asked WSEG to follow developments in the use of nuclear power for major surface ship propulsion, so that WSEG might be in a position to evaluate military applications should the need arise. The JCS request stemmed from a prior JCS decision to establish a military requirement for the construction of a prototype of a nuclear-powered engine suitable for a major warship such as an aircraft carrier. In this case, as in several others, although WSEG took steps to monitor the relevant R&D, no study was actually commissioned.<sup>102</sup>

There were similar requests of modest scope in 1952. In January the JCS asked WSEG to follow R&D activities in atomic

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<sup>100</sup> WSEG History, Vol. V. For an account of this turning point in the missile story and the role of the various participants, see Herbert York, *Race to Oblivion* (New York: Simon and Schuster, Inc., 1970), pp. 83ff.

<sup>101</sup> WSEG History, Vol. II.

<sup>102</sup> WSEG History, Vol. IV.

depth bombs, to be in a position to evaluate their effectiveness in antisubmarine warfare; and in February they asked WSEG to monitor the Honest John rocket program, together with potentially matching atomic warheads, to be in a position to evaluate the utility of a nuclear Honest John weapon as a ground force support system. Neither of these requests resulted in a formal study, although the latter produced one as an offshoot. In November 1953, the JCS asked WSEG to evaluate the Honest John with a "Jackstraw" warhead and WSEG produced a staff study, No. 28, *An Operational Evaluation of the "JACKSTRAW" Warhead to be Delivered by the 72mm Heavy Artillery Rocket (HONEST JOHN)* (September 20, 1954).<sup>103</sup>

The only new project begun in 1953 was the result of a WSEG initiative in October. WSEG had been studying air interdiction problems for some time in connection with the overall ground forces study, but the air interdiction campaign during the Korean War stimulated additional interest in the subject and WSEG decided to establish a separate aerial interdiction project, under WSEG charter provisions allowing for self-initiated work. The task statement and terms of reference for the study were developed in WSEG and coordinated with the OJCS and the Services. The task was focused on NATO theater problems and directed toward assessing the efficacy of alternative interdiction operations against the SACEUR target system. During the course of the study, a team of WSEG officers and civilians was sent to Korea to collect data on the employment of jet aircraft, with which combat experience was new, for possible application to campaigns in Europe; scenarios involving the use of atomic weapons were also projected. The results were Staff Study 25, *Evaluation of Atomic Interdiction in Central Europe with Associated Conventional Interdiction* (May 20, 1955), and

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<sup>103</sup> WSEG History, Vols. IV and VI. It is noteworthy that in the Honest John case WSEG went to the trouble of submitting a quarterly progress report on R&D developments.

WSEG report R-16, *Air Interdiction of Ground Logistics* (August 19, 1955).<sup>104</sup>

In July 1954, the JCS requested a new study that resembled the earlier strategic air bombing study in scope and magnitude: an evaluation of the "combined effects" of all applications of atomic weapons under current war plans. The study, to be accomplished in about 6 months, was to include the employment of atomic weapons allocated to all of the unified and specified commanders as of January 1955. WSEG was concerned at first that it might not have the resources to carry out such a study within the deadline period, but it put together a staff of 15 civilians and 8 military professionals, about half of the total WSEG staff, borrowed 5 extra analysts from ORO, and convened a 3-day conference of more than 30 military planners from the CINC's--COMSAC, CINCPAC, CINCFE, CINCLANT, and SHAPE--to facilitate the effort. The report was finally completed and issued as WSEG R-12, *An Evaluation of the Combined Effects of the US Atomic Objectives for a War Beginning in Mid-1955* (February 28, 1955).<sup>105</sup>

### 3. Task Performance

By the end of 1954 the WSEG program, which had been started in 1949 as a package of fairly coherent tasks, had become something of a confused mixture. Some of the original tasks had been carried through to completion, with comprehensive reports being issued; others, though ostensibly open-ended, had been allowed to lapse after the submission of "interim" or partial reports, or had been closed out with staff studies or less. Over the years, some tasks had been overtaken or superseded, or were redefined or reconfigured as needs and interests changed. Tasks were added, on a sporadic or piecemeal basis, with or without any indication as to priority or order, or relationship

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<sup>104</sup>WSEG History, Vols. VI and VII.

<sup>105</sup>WSEG History, Vol. VII.

to ongoing tasks or programs. WSEG's resources, moreover, had lagged considerably behind study requirements, frequently entailing major personnel reallocations or changes of schedule, which impeded systematic planning on the part of both WSEG producers and the expected users and caused long intervals to elapse between JCS task directives and WSEG responses. Exhibit 1 summarizes WSEG's performance from 1949 to 1955. As the exhibit shows, it was exceptional for WSEG to complete a report during the same year in which the study was requested, and many projects took a year or more to complete. This situation, as will be discussed below, led to a major decision to expand WSEG.

The tasking pattern shown in the exhibit also indicates a decline in the number of study requests after the early months of 1950, and a shift toward more narrowly technical topics with a more distinctive R&D orientation, as compared with the large mission-type studies in the first program, most of which were related to important strategic planning problems. These changes in the tasking pattern led to some dissatisfaction within WSEG, because they implied a decrease in high-level interest. One of the civilian project leaders wrote in 1951,

We are not in constant touch with the people we are supposed to be advising and are acting on directives from one to two years old.... We thus find ourselves in our present position--hard at work--but for whom?<sup>106</sup>

In 1952 the senior Army representative echoed the same reaction: "It is questionable whether those to whom we are responsible feel any real need for our being."<sup>107</sup>

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<sup>106</sup>W. J. Horvath, Memo for Col. Dodge (WSEG Executive Secretary), "Comments on Status of WSEG" (Oct. 25, 1951). This memo also contains the comment "we are the stepchild of both RDB and JCS and not very close to either group."

<sup>107</sup>Brig. Gen. Garrison H. Davidson, USA, Memo for Gen. Keyes (Aug. 15, 1952).

Exhibit 1. WSEG TASKS AND ACCOMPLISHMENTS, 1949-1955

Directive Date	Task	Report	Publication Date
1949			
Sept. 1 <sup>a</sup>	Strategic Air Operations	R-1	Feb. 8, 1950
	Antisubmarine Warfare	R-5	June 29, 1951
	Airborne Operations <sup>b</sup>	--	--
	Carrier Task Forces	R-7	Feb. 20, 1952
	Air Defense	R-4	Dec. 27, 1950
	Ground Forces	R-11	Mar. 22, 1955
July 6	Nuclear Aircraft	--	--
Aug. 3	Nuclear Submarines	R-6	Dec. 10, 1951
1950			
Jan. 18	Chemical Warfare	R-2	July 11, 1950
	Biological Warfare <sup>c</sup>	R-8	July 15, 1952
	Radiological Warfare	R-9	Aug. 26, 1953
	Guided Missiles	--	-- --
Apr. 14	Atomic Artillery	R-3	July 25, 1950
1951			
Oct. 25	Nuclear Warships	--	-- --
1952			
Jan. 23	Atomic Depth Bombs	--	-- --
Feb. 4	Honest John/Atomic Warhead <sup>d</sup>	--	-- --
June 30	Strategic Bombing Effects	R-10	Oct. 14, 1953
1953			
Oct. ? <sup>e</sup>	Air Interdiction	R-16	Aug. 19, 1955
1954			
July 14	Combined Atomic Effects	R-12 <sup>f</sup>	Feb. 28, 1955
Aug. 4	Biological Warfare	R-14	June 1, 1955
1955			
July 8	Continental Defense	R-15	July 8, 1955

<sup>a</sup>The Strategic Air Offensive study was actually initiated in May 1949, before the governing directive was put in final shape.

<sup>b</sup>Resulted in Staff Study 10.

<sup>c</sup>New directive issued by OSD November 21, 1951.

<sup>d</sup>Resulted in Staff Study 28

<sup>e</sup>WSEG decision.

<sup>f</sup>There was no WSEG R-13.

Such perceptions might well have been valid, and it is easy to understand how they could be warranted by the circumstances. It would be natural enough for WSEG to receive a considerable amount of high-level attention during gestation and early growth, while its organization, functions, tasks, and other basic features were being determined and established; it would have been unusual, and normally unnecessary, for high-level interest to be sustained to the same degree. High-level attention would have been called for primarily at particular junctures, such as the selection of a new Director or Director of Research, the formulation of important new tasks, or the consideration of major study results, and these would have occurred at varying intervals. From 1950 on, there were only a few studies published each year (see Exhibit 2) and these were not necessarily on the most important defense problems of that year; even if each of them had been briefed in detail to the topmost officials (as many were) the occasions for top-level involvement would have been rare. The producer-user interaction that was required to carry out a study once it was authorized was certainly both feasible and altogether appropriate at lower staff levels.<sup>108</sup>

It should also be borne in mind that after June 1950 a great deal of the time of the top military decisionmakers was necessarily taken up with the operational problems of the Korean War and the simultaneous buildup of NATO Europe. Moreover, WSEG's full workload during most of this period probably discouraged additional requests, which could not have been satisfied without displacing some part of the ongoing work.<sup>109</sup>

In the fall of 1954 the new Director of WSEG, Lt. Gen. Samuel E. Anderson, USAF, who succeeded Gen. Keyes,<sup>110</sup> reviewed

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<sup>108</sup>Interviews.

<sup>109</sup>Interviews.

<sup>110</sup>Lt. Gen. Anderson was selected on May 5, 1954, but did not take up the Directorship until Aug. 1, 1954.

Exhibit 2. WSEG REPORTS, 1949-1955

Report No.	Subject	Date
1	Effectiveness of strategic air operations	Feb. 8, 1950
2	Toxic chemical agents	July 11, 1950
3	Artillery delivered atomic weapons	July 25, 1950
4	Air defense weapons and weapons systems (1st interim report)	Dec. 27, 1950
5	Allied capabilities to carry out the ocean transport requirements of current emergency war plans in the face of estimated Soviet submarine and mine threats (1st interim report)	June 29, 1951
6	Military capabilities of the nuclear powered submarine (1st interim report)	Dec. 10, 1951
7	Offensive and defensive capabilities of fast carrier task forces in 1951	Feb. 20, 1952
8	Offensive biological warfare weapons systems employing manned aircraft	July 15, 1952
9	U.S. capabilities in 1956 and 1960 for employment of radiological warfare systems in air and ground operations	Aug. 26, 1953
10	Effects of the mid-1954 first phase atomic offensive against fixed industrial targets in the Soviet bloc	Oct. 14, 1953
11	Military worth and effectiveness of ground force weapons systems with air support and atomic weapons	Mar. 22, 1955 <sup>a</sup>
12	Combined U.S. atomic offensives in a war beginning in mid-1955 (summary report)	Feb. 28, 1955
14	The status of biological warfare weapons systems	June 1, 1955
15	Continental defense	July 8, 1955
16	Air interdiction of ground logistics	Aug. 19, 1955

<sup>a</sup>None in 1954.

the status of WSEG's existing program of studies and called for some substantial consolidation and revision, including a number of deletions. He proposed that five of the current projects be completed as planned: (a) the Honest John/"Jackstraw" study, which was in the process of being published; (b) the ground force study, one of the original broad studies that was finally being wrapped up, with a target date of early 1955; (c) air interdiction, a separate offshoot of the ground force project, scheduled for completion by mid-1955; (d) "combined atomic effects," for which a high-priority task request had just been received in July 1954; and (e) biological warfare, reported on already in 1952 (WSEG R-8) but requested for restudy in August 1954.

Gen. Anderson also proposed that seven long-standing projects be cancelled outright, as follows:

- Offensive and defensive capabilities of fast carrier task forces, as projected to 1956-57, requested as a follow-on study to WSEG R-7 but not initiated due to higher priorities.
- Air defense weapons systems, as an updating of the "interim" report, WSEG R-4, in suspense pending further developments in new weapons and techniques,
- ASW, similarly in suspense, after WSEG R-5 on the same subject.
- Four R&D programs being monitored in order to evaluate effectiveness on request: nuclear propulsion of aircraft, nuclear submarines (reported on in WSEG R-6), nuclear warships, and atomic depth bombs.

Finally, Gen. Anderson proposed one study for initiation as current studies were phased out: an overall evaluation of surface-to-surface guided missiles.<sup>111</sup>

The proposal to complete the five current projects as planned and cancel the other seven would have completely cleared

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<sup>111</sup> Director, WSEG, Memo for JCS, "Proposed Program for WSEG" (Sept. 24, 1954).

the backlog of studies--for the first time since WSEG was established--by about mid-1955. It would have enabled WSEG and its sponsors to develop a fresh program for the new, expanded WSEG that was then under consideration. However, the JCS was not ready to accept the proposal. In response to Gen. Anderson's memo, they generally concurred with his suggestions but asked that the seven candidates proposed for deletion be carried in a "deferred" status until the JCS were ready to decide on future projects and priorities.<sup>112</sup>

## C. THE 1955 REORGANIZATION

### 1. The Rockefeller Committee Report

The inauguration of the Eisenhower administration in January 1953 also inaugurated a complete turnover in the nation's top defense leadership, a reappraisal of national defense policy and strategy, and another cycle of high-level interest in the status of WSEG. This new cycle ultimately produced a major reorganization of WSEG's structure and mode of operation.

One of the first acts of the new administration was to appoint an advisory committee to reexamine DoD organization. The committee, headed by Nelson A. Rockefeller, included former and current officials as well as outsiders. Its members were General Omar N. Bradley, then Chairman of the JCS; Vannevar Bush, Chairman of the RDB under Forrestal; Milton S. Eisenhower, the President's brother; Arthur S. Flemming, the new Director of Defense Mobilization; Robert A. Lovett, the outgoing Secretary of Defense; and David Sarnoff, Chairman of the Board of the Radio Corporation of America.<sup>113</sup>

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<sup>112</sup>JCS SM-890-54, Memo for Director, WSEG, "Proposed Program for WSEG" (Oct. 13, 1954).

<sup>113</sup>This committee on the DoD should not be confused with the President's Advisory Committee on Government Organization, charged with reviewing the organization of the entire executive branch, which was also chaired by (continued on next page)

At least three members of the Rockefeller Committee-- Lovett, Bradley, and Bush--were already on record as critics of the current DoD organization and had proposed a variety of remedies that generally leaned toward greater unification and centralization, such as designating the SecDef as Deputy Commander-in-Chief under the President (Lovett), establishing a separate set of military elder statesmen as "Super Chiefs" (Bradley), or divorcing the JCS from command responsibilities and introducing nonmilitary experts into the Joint Staff (Bush).<sup>114</sup> President Eisenhower himself was known to favor a greater degree of armed forces unification and a stronger corporate structure and outlook in the JCS.<sup>115</sup>

Members of the Committee had significant associations with WSEG as well. President Eisenhower had been somewhat instrumental in broaching the WSEG proposal in early 1948, before he departed his post as Chief of Staff of the Army; Bush had been a prime mover and strong advocate of a WSEG-type organization from the beginning; both Bush and Bradley had

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(cont'd) Rockefeller, and included three of the same committee members: Flemming, Milton Eisenhower, and Sarnoff. Nor should it be confused with the Commission on Organization of the Executive Branch of the Government, chaired by former President Herbert Hoover (hence, the "Hoover Commission"), which operated under a Congressional charter. The first Hoover Commission operated from 1947 to 1949, and the second from 1953 to 1955. Both Commissions covered Defense organization matters in various task force or subcommittee studies and reports. See House of Representatives, Committee on Government Operations, *Summary of the Objectives, Operations, and Results of the Commissions on Organization of the Executive Branch of the Government (First and Second Hoover Commissions)* (Washington: Government Printing Office, 1963).

The Rockefeller Committee on DoD Organization also had a panel of "senior military consultants" consisting of Gen. George C. Marshall, USA, Adm. Chester W. Nimitz, USN, and Gen. Carl Spaatz, USAF, all retired. Its staff director was Don K. Price, until then with the RDB.

<sup>114</sup> See Hammond, *Organizing for Defense*, pp. 256-62.

<sup>115</sup> Dwight D. Eisenhower, *The White House Years: Mandate for Change, 1953-1956*, pp. 445-8.

participated in working out WSEG's sponsorship and initial terms of reference; and Bradley had subsequent contact with WSEG business, including the residual sponsorship question and the WSEG study program, as Chairman of the JCS.<sup>116</sup>

The Rockefeller Report was a milestone in the evolution of the DoD, the JCS, and WSEG. The Report was submitted to the SecDef and forwarded to the President on April 11, 1953.<sup>117</sup> Most of its principal recommendations were incorporated into President Eisenhower's Reorganization Plan No. 6, which was transmitted to Congress and went into effect on June 30, 1953.<sup>118</sup> Others were the basis for subsequent actions that were implemented by new DoD directives or other administrative measures during the ensuing months. These recommendations obviously had the strong approval and support of the administration, from President Eisenhower down.

The main changes effected in the DoD were to clarify and bolster the position of the SecDef. His full authority over the three military Departments was reaffirmed, laying to rest the legalistic argument that the provision for the Service departments to be "separately organized and administered" was a limitation on his powers.<sup>119</sup> Moreover, the OSD superstructure

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<sup>116</sup>See above, pp. 67-8; p. 74.

<sup>117</sup>*Report of the Rockefeller Committee on Department of Defense Organization* (Apr. 11, 1953), reprinted by U.S. Senate Committee on Armed Services (Washington: Government Printing Office, 1953).

<sup>118</sup>"Plan No. 6" was the 6th of 10 Eisenhower reorganization packages designed to overhaul the executive branch of the government. For details of the Plan, see Ries, *The Management of Defense*, Ch. IX; and Hammond, *Organizing for Defense*, Ch. 11.

<sup>119</sup>*Report of the Rockefeller Committee*, pp. 2-3, and Appendix A, "Legal Opinion Re the Power and Authority of the Secretary of Defense." The only limitations on the Secretary's power and authority were the specific statutory prohibitions against transferring, reassigning, abolishing, or consolidating combatant functions, merging the military departments, or establishing a supreme commander or general staff.

was strengthened and streamlined. The RDB, Munitions Board, and similar committee-type agencies that were manned and operated by Service representatives were abolished and replaced by Assistant Secretaries of Defense with full-time executive staffs. The responsibilities of the RDB were divided between two Assistant Secretaries: one for Research and Development, who was concerned with coordinating R&D policies and programs; and the other for Applications Engineering, who was concerned with the engineering adaptation of weapons for quantity production facilities and processes.<sup>120</sup>

As recommended by the Committee, the operational chain of command was redirected to run from the President and the SecDef through the civilian departmental secretaries rather than through the JCS and individual Service Chiefs, and the status of the JCS as a planning and advisory rather than a command body was further clarified. The 1948 functions paper (based on the Key West Agreement) was revised to restate the first duty of the JCS as "to prepare strategic plans and to provide for the strategic direction of the Armed Forces, including guidance for the operational control of forces and for the conduct of combat operations."<sup>121</sup> The selection and tenure of members of the Joint Staff was made contingent on the approval of the Chairman--as "at least one step," wrote President Eisenhower, "in divorcing the thinking and the outlook of the members of the Joint Staff from those of their parent services"<sup>122</sup>--

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<sup>120</sup>The division of the R&D field into these two offices, apparently inspired by the new SecDef's experience at General Motors, was not entirely clear and "never worked," according to observers. The two offices overlapped and were finally combined in March 1957 into the office of Assistant Secretary of Defense (Research and Engineering)--which was upgraded a year and a half later as Director, Defense Research and Engineering. See Hammond, *Organizing for Defense*, pp. 310-11.

<sup>121</sup>The revision was ultimately embodied in an amended version of DoD Directive 5100.1 (Mar. 16, 1954).

<sup>122</sup> Dwight D. Eisenhower, *The White House Years: Mandate for Change, 1953-1956*, p. 448.

and the Chairman was made responsible for organizing and managing the entire subordinate structure of the JCS. The Joint Staff work of the Chiefs was accorded precedence over all their other duties, including their duties as Chiefs of Service, on the assumption that they would delegate as much of the latter as possible to subordinates.<sup>123</sup>

Although the Rockefeller Committee concentrated on organizational relationships at the topmost echelons of the DoD, primarily at the OSD/JCS level, the Report singled out WSEG for specific attention. In recommending establishment of the positions of Assistant Secretary for R&D and for Applications Engineering, the Report made the following comments and recommendations, quoted here in full.<sup>124</sup>

It is desirable for the Weapons Systems Evaluation Group to be made responsible, for administrative purposes, to the Secretary of Defense through the Assistant Secretary (Applications Engineering). Its primary duty should be to respond to calls for service and assistance from the Joint Chiefs of Staff or from the Secretary of Defense.

In addition to the military members, this Group should include a small staff of outstanding scientists and engineers to make studies of our present and future weapons systems and those of other countries, their relations to strategy and tactics, and their comparative effectiveness and cost. It would rely for a great part of its data on the studies prepared in the operations research and operations evaluation groups attached to the three military departments. At the same time the Weapons Systems Evaluation Group should be enabled to make use of the contract method to obtain operations research studies from outside the Government, as the three military departments now do. The Weapons

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<sup>123</sup>DoD Directive 5158.1, *Method of Operations of the JCS and Their Relationship with Other Staff Agencies of the OSD* (July 26, 1954). See Historical Division, Joint Secretariat, JCS, *Organizational Development*.

<sup>124</sup>*Report of the Rockefeller Committee*, p. 13.

Systems Evaluation Group should be at least as strong an organization as the operations research agencies now maintained by contract by the three military departments.

The Assistant Secretary (Applications Engineering), working with the assistance of this Group, should attempt to establish the greatest standardization of weapons consistent with the prompt introduction of advanced weapons and techniques.

Several points in this reference are unclear. First, no rationale was given for the suggestion that WSEG be administratively attached to the Assistant Secretary (AE) rather than R&D. It may be that the Committee did not consider this important, since the main point was that WSEG was supposed to perform its work for both the JCS and OSD and be operationally responsive to them, whatever the administrative attachment. On the other hand, it may be that the Committee thought the special assistance that WSEG could offer the Assistant Secretary (AE) in weapons standardization, as mentioned in the final paragraph above, warranted a somewhat closer relationship to that office. When it actually came time to act on the Report and provide WSEG with an administrative affiliation to OSD, the group was tied to the Assistant Secretary (R&D) rather than AE.<sup>125</sup>

Secondly, it is not clear why the Committee chose to mention the inclusion of "a small staff of outstanding scientists and engineers" in addition to military members, almost as if this would be an innovation, when in fact it was the current WSEG practice; perhaps this question simply stems from an unfortunate choice of language in the Report. Those who were familiar with WSEG, like Bush and Bradley (and Price, the Rockefeller staff director), should have been aware that WSEG already included civilian scientists and engineers, and no one suggested otherwise, then or later.

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<sup>125</sup>See below, p. 112.

In terms of the future of WSEG, however, the most noteworthy elements of the Rockefeller Committee reference were the coupled propositions that (a) WSEG should "make use of the contract method" to obtain operations research support from outside the government, and (b) "The Weapons Systems Evaluation Group should be at least as strong an organization as the operations research agencies now maintained by contract by the three military departments." Both propositions became the focal points for a series of high-level discussions about WSEG and the WSEG concept that were carried on, in one form or another, during the rest of 1953 and 1954, and ultimately led to the reorganization of WSEG in 1955.

## 2. The Newbury Committee

The immediate sequel to the Rockefeller Committee recommendations on WSEG was the creation of an ad hoc committee of the principal officials concerned to consider what actions to take. Appointed by the new Deputy SecDef, Roger M. Kyes, the committee was headed by the new Assistant Secretary (AE), Frank D. Newbury, and included the new Chairman of the JCS, Adm. Arthur W. Radford, the new Assistant Secretary (R&D), Donald A. Quarles, and, as a "special consultant," Dr. Mervin J. Kelly, President of Bell Telephone Laboratories.<sup>126</sup>

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<sup>126</sup>Newbury was a retired Westinghouse executive, who was 73 at the time of his appointment. Radford, the personal choice of President Eisenhower as CJCS, played an important part in shaping the "New Look" military strategy of the Eisenhower period and developed close working relationships with the President, the SecDef, and the SecState (John Foster Dulles). Quarles had been President of Sandia Corporation, the Western Electric Company subsidiary that functioned as the AEC's nuclear ordnance facility, and had also been Chairman of the RDB committee on electronics; he exercised a considerable impact on military R&D as Assistant Secretary, and went on to become Secretary of the Air Force in 1955 and Deputy SecDef in 1957 until his death in 1959. Kelly was an active participant in the world of defense advisory committees: among other things, he was chairman of a major civilian committee on air defense appointed by Lovett in 1952, headed a (continued on next page)

The Newbury Committee reviewed WSEG's organization and functions in the context of the DoD reorganization and reported to the SecDef on September 26, 1953. It strongly endorsed the WSEG concept of independent analytical support at the supra-Service level, close operational association with the JCS, administrative affiliation with the Assistant Secretary (R&D), and broadened use of the contractual method of operation.<sup>127</sup>

The Committee delved at some length into the various types of weapons evaluations required in the military establishment, from "systems engineering" studies in the early phases of the weapons development cycle to "operations analysis" studies later on. It concluded that the type of broad operations analysis and weapons evaluation conducted by WSEG was appropriate at the DoD level, mainly as an adjunct to JCS planning, and that WSEG should accordingly be assigned the primary mission of providing such analyses and evaluations for the JCS. In the interests of "the closest operational tie-in" with the JCS, it recommended that the current physical location and arrangement of WSEG vis-à-vis the JCS be retained, without, however, establishing a stronger "organizational tie" or preempting direct reporting channels to the SecDef:

As for the organization of WSEG within the DOD, the paramount consideration appears to be that of assuring its effective relationship to the JCS. Another very important consideration is that of assuring the proper staffing of WSEG with qualified trained personnel. The set-up should also recognize that WSEG findings will be important in guiding the thinking of the Secretary of Defense and certain Assistant Secretaries as well as being important to the JCS. WSEG needs to be closely related to the R&D function in order to assure good two-way

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(cont'd) Hoover Commission subcommittee on Defense R&D in 1955, and was a member of the Advisory Panel of the Gaither Committee in 1957.

<sup>127</sup>Frank D. Newbury, et al., Memo for the SecDef, "Organization and Functions of WSEG" (Sept. 26, 1953).

flow of information needed by WSEG as inputs to their studies and needed by R&D for strategic guidance....

At the present time the WSEG operation is physically associated with the JCS organization and all of the testimony of those who have experience in it argue for continuing this arrangement without, however, implying that there should be an organizational tie between the two. At the present time, the Director, WSEG, reports to the Office of the Secretary of Defense and there is sound reason for continuing this degree of independence.<sup>128</sup>

This reporting channel, the Committee said, was a "desirable safeguard." However, since the WSEG function was closer to the field of primary interest of R&D rather than AE, it recommended that within OSD cognizance over WSEG be assigned to the Assistant Secretary (R&D).

In this connection the Committee recalled that the original 1948 WSEG directive had provided that WSEG would be transferred to the JCS from joint JCS/RDB control. It recommended that this provision be cancelled, and that the old directive be updated by simply replacing Assistant SecDef (R&D) for "RDB" wherever the latter appeared and by understanding that where SecDef was mentioned he would be represented by the Assistant SecDef (R&D).

The Committee also addressed the contract issue, together with the suggestion that WSEG should be as "strong" as the operations research agencies of the Services. While there were notable exceptions, the Newbury group said, operations analyses and similar studies

are best carried out under contract conditions rather than within the military establishment. This is because it is hard to maintain within military establishments the kinds of analytical competence that are required. This is evidenced by the fact that most of the groups presently organized for this kind of work are

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<sup>128</sup>Ibid.

actually set up under outside contracts with universities, non-profit organizations, industrial laboratories, and the like. WSEG is presently an exception.<sup>129</sup>

Its recommendation was that WSEG "establish one or more contract set-ups to supplement its own staff, recognizing that there is a radical bar to in-shop organization of a group of the size and caliber required." WSEG should be "powerful enough in its organization and manning" to carry out the evaluations and analyses needed by the JCS and OSD, and it needed to be "built up" in competence. By making greater use of lower echelon evaluation work and resorting to outside contract methods, the Committee felt, WSEG could substantially increase the amount and scope of its work while still keeping to "something like its present dimensions."<sup>130</sup>

### 3. The New WSEG Directive

The principal conclusions and recommendations of the Newbury Committee were promptly approved. By general consent WSEG retained its close operational association with the JCS, and its dual sponsorship arrangement with OSD. When the DoD Directive establishing the office of the Assistant Secretary (R&D) was issued, in November 1953, one of the major responsibilities assigned was that of "providing the JCS with operations analysis service through the medium of the Weapons Systems Evaluation Group."<sup>131</sup>

It took somewhat longer to issue a revised WSEG charter to implement the new relationships, and even longer for the contract recommendation to come to fruition. The latter was apparently shelved for about a year.

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<sup>129</sup> Ibid.

<sup>130</sup> Ibid.

<sup>131</sup> DoD Directive 5128.7 (Nov. 12, 1953), *Responsibilities of the Assistant Secretary of Defense (Research and Development)*.

The office of the Assistant Secretary (R&D) took charge of revising the WSEG directive, in coordination with the JCS. By mid-March 1954 there was substantial agreement on all but two points, both noteworthy in retrospect as reflections of current perceptions of WSEG's role. The first point involved the mission statement, which at first specified analytical support for the JCS as the primary mission, as was in fact accepted by the Newbury Committee. In the ensuing discussions it was finally agreed to omit any statement as to JCS priority and incorporate more even-handed references to both the JCS and the Assistant Secretary (R&D). On this point the final directive of August 17, 1954 read simply:

The Group shall function under the administrative direction of the Assistant Secretary of Defense (Research and Development) and shall be responsive to directives with respect to studies from the Joint Chiefs of Staff and the Assistant Secretary of Defense (Research and Development).<sup>132</sup>

And the mission of WSEG was stated as:

(1) To provide the Department of Defense with comprehensive, objective, and independent analyses and evaluations under projected conditions of war, which will include but will not necessarily be confined to:

- (a) Present and future weapons systems.
- (b) The influence of present and future weapons systems upon strategy, organization, and tactics.
- (c) The comparative effectiveness and costs of weapons systems.

(2) To make available to the Department of Defense timely advice and assistance to aid decisions in the allocation of resources for development of the most effective combination of weapons systems.<sup>133</sup>

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<sup>132</sup>DoD Instruction 5128.8 (Aug. 17, 1954), *Weapons Systems Evaluation Group*. This may be compared with the following statement from the Mar. 12, 1954 draft (No. 3): "Under the administrative control of the Assistant Secretary of Defense (R&D) the primary mission of the Group is support to the Joint Chiefs of Staff...."

<sup>133</sup>Ibid.

The second point at issue concerned whether the selection of a senior military officer as Director of the Group should be mandatory, as in the 1948 directive, or whether it should be made optional, to allow for the alternative of a civilian Director. The question was posed primarily in terms of the danger of "military control" over the group and the independence and technical integrity of its studies, and brought forth a strong rejoinder from the Director of WSEG, Gen. Keyes:

It is recognized that there always exists, in principle, some danger of military control of the group if the Director is a military officer. However, I do not think this has occurred in the past, nor will occur in the future. The necessary latitude, freedom of action and control essential to the best interests of the civilian scientists is amply provided for in the designation of a Research Director, who is ex officio the Chairman of the Review Board and who directs the work of the Group, and by the customary designation of civilian scientists as Project Leaders.<sup>134</sup>

Keyes pointed out that there were advantages to having a military Director--he could facilitate cooperation throughout the armed forces and help make studies more usable and acceptable to the military establishment--but the issue actually hinged on the question of "military control." In the end the new directive fell back on the 1948 formulation, which implicitly recognized the importance of personal standards and good will rather than written rules in assuring the professional independence and integrity of the civilian analysts. The new directive, like that of 1948, provided merely that the head of the Group would be a Director appointed by the SecDef, with the advice of the JCS and the Assistant Secretary (R&D) "from among the senior officers of the Department of Defense"; and that there would be a Research Director, appointed by the SecDef with the advice of

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<sup>134</sup>Director, WSEG (Lt. Gen. Geoffrey Keyes, USA), Memo for Mr. Quarles (ASD/R&D), "Proposed Changes to WSEG Charter" (Apr. 1, 1954).

the Director of WSEG, who would supervise and direct the work of the Group "subject to the general supervision of the Director." In an important amendment 10 days later, this was changed to:

appointed by the Secretary of Defense with the advice of the Director of the Group, the Joint Chiefs of Staff and the Assistant Secretary of Defense (R&D). The Research Director shall be the chief scientific officer of the Group, and he shall serve as deputy director of the Group.<sup>135</sup>

These latter phrases had also been used in the original WSEG directive.

The "rules of operation," as spelled out in the new directive, gave equal treatment to the JCS and the Assistant Secretary (R&D), and went into specific detail with respect to the distribution of reports. The rules generally permitted the requesting agency to control the distribution of final reports, but permitted the Director considerable latitude in circulating preliminary drafts, within the limits of JCS limited distribution policies.<sup>136</sup> The rules of operation are listed in Exhibit 3.

#### 4. The Contract Issue

The WSEG Directive of August 1954 left unresolved the issue of whether, or to what extent, WSEG should adopt a contractual form of operation, as recommended by the Rockefeller Committee and approved by the Newbury Committee. There had always been some provision in the WSEG arrangements for obtaining ad hoc contractual assistance--both in 1948 and 1954 the charter permitted the Director to recommend "such contractual arrangements for analytical and professional services as he considered necessary."<sup>137</sup> The question now was broader, however: whether WSEG should shift

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<sup>135</sup>DoD Instruction 5128.8, with change dated Aug. 27, 1954.

<sup>136</sup>See JCS 1812/42, *Report by the Joint Staff Plans Committee on the WSEG Directive* (July 8, 1954).

<sup>137</sup>RDB 150/3, "Directive, Weapons Systems Evaluation Group" (Dec. 11, 1948): and DoD Instruction 5128.8.

### Exhibit 3. WSEG RULES OF OPERATION

(1) In carrying out its operations research and in preparing its studies, analyses, and evaluations, the Group will utilize the ablest professional minds, military and civilian, and the most advanced analytical methods that can be brought to bear within available resources.

(2) The Group shall establish and maintain close relations with other evaluation activities of the military departments.

(3) Prior to initiating action in response to directives, the Director of the Group may consult with the originating agency to assure himself that the studies proposed are within the capacity of the Group and to advise as to the degree to which the proposed studies are likely to result in significant findings and conclusions within a reasonable time.

(4) In addition to performing such studies as are directed by the Joint Chiefs of Staff and the Assistant Secretary of Defense (Research and Development), the Group will have the responsibility of undertaking such studies as the Group itself may decide to initiate on the grounds of relevance to current and projected work of the Group.

(5) Directives for studies initiated by the Joint Chiefs of Staff and the Assistant Secretary of Defense (Research and Development) shall take precedence over studies originating within the Group, unless otherwise approved by the initiating agencies.

(6) The Director may establish and adjust from time to time the relative priorities undertaken by the Group, when consistent with Section VI (5) above.

(7) The Director of the Group shall inform the Joint Chiefs of Staff and the Assistant Secretary of Defense (Research and Development) of the studies initiated, together with the estimated dates for the submission of tentative and final reports and any changes in such estimated dates.

(8) The findings and conclusions of the Group shall be advisory and not binding on any group or agency of the Department of Defense.

(9) The Group is authorized to obtain from any agency within the Department of Defense such information as it deems relevant to its studies and shall seek the advice of other agencies within and without the Department of Defense to the maximum extent appropriate. Information on war plans and other highly classified defense information shall be obtained in accordance with the established security procedures of the agency in possession of the information.

(10) Distribution of all completed reports classified SECRET or above resulting from studies by the Group shall be determined and made by the agency [Assistant Secretary of Defense (Research and Development) or the Joint Chiefs of Staff] initiating the study. Service comments, as requested, on a completed report will be given the same distribution as the report. Distribution of studies classified SECRET or above originating within the Group shall be determined by the Assistant Secretary of Defense (Research and Development) or the Joint Chiefs of Staff. Those portions of the preliminary reports containing matters of interest to specific agencies in the Executive Department may be distributed to those agencies with the approval of the agency initiating the study. The Director of the Group may circulate to agencies within the Department of Defense preliminary drafts of all, or portions, of a report or staff study resulting from its studies for review and comment; in this case, the identity of the initiating agency shall not be revealed. When, for security reasons, certain reports on studies prepared at the direction of the Joint Chiefs of Staff require limited distribution, the Group shall identify those portions of the report which are considered suitable for wider distribution.

Source: DODI 5128.8.

from a basically in-house civil service mode of staffing and operating, on the civilian side, to a "contract method" as recommended by the Rockefeller Committee, or "one or more contract set-ups" as suggested by the Newbury Committee, like the operations research agencies of the Services--OEG, ORO, and RAND. The latter implied a fundamental change in the WSEG structure.

This was not a new proposal. It had been advanced as early as January 1953 by the Director of ORO, Dr. Ellis A. Johnson, when Gen. Keyes consulted with him on finding a Research Director for WSEG.<sup>138</sup> In his communication to Gen. Keyes, Johnson was critical of the WSEG practice of appointing an outstanding scientist as Research Director for the limited period of a year or so. He thought that for a "professional operations analyst" to work into the job would require a minimum of 2 years, and if the person was "a noted scientist but an amateur in operations research" a minimum of 3 years was necessary simply to become familiar with WSEG and WSEG-level problems. He felt that in either case an additional 2 years was desirable for "noteworthy accomplishment." Too rapid rotation of the Research Directorship, he said, made it difficult to attract an outstanding staff of research scientists and mold them into an effective team. Moreover, he questioned whether WSEG could achieve success in this area under civil service:

For research people there is no question of the fact that a civil service status is regarded as degrading by the majority of scientists ... civil service is held in contempt by students, faculty and noted research scientists alike. It is incredibly difficult, therefore, to attract good people to civil service.

The inability to attract scientists to government careers under civil service was mainly responsible for DoD's use of contractual organizations:

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<sup>138</sup>Ellis A. Johnson, Director, ORO, to Lt. Gen. Geoffrey Keyes, Director, WSEG (Jan. 16, 1953), copy in WSEG files.

The principal usefulness of the contract mechanism is not only in the establishment of good management criteria that will maintain the integrity and effectiveness of a research organization but also in doing this under circumstances which avoid the unfavorable attitude of scientists toward direct government employment.

The advantages of the contract mechanism were demonstrated during World War II and had continued to be obvious, both in operations research and laboratory operations.

I would suggest therefore that if it were possible to establish the civilian group of WSEG under a contractual arrangement with one of the notable universities then its chances of success might be from five to ten times as great.<sup>139</sup>

Gen. Keyes replied that he had already begun studying the matter of the civil service versus a contract arrangement for providing WSEG with scientific talent, but would now "explore it more seriously."<sup>140</sup>

Considering the fact that it was the highest echelon operations research group in DoD, WSEG had surprising difficulty in recruiting Directors of Research. WSEG aimed high, of course. Scientists of recognized status were sought in order to help enlist the further interest and support of the scientific community, and a productive scientist was considered a greater asset in this regard than one who was primarily an administrator.<sup>141</sup> The first Research Director, Dr. Philip Morse, professor of physics at MIT and Director of the Brookhaven National Laboratory, agreed to serve only long enough to

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<sup>139</sup> Ibid.

<sup>140</sup> Lt. Gen. Keyes, Director, WSEG, to Dr. Ellis A. Johnson (Jan. 27, 1953), copy in WSEG files.

<sup>141</sup> Dr. H. P. Robertson, Director of Research, WSEG, Memo for Director, WSEG, "Choice of Deputy Director and Research Director" (Dec. 3, 1951).

get WSEG started, and returned to teaching and research at MIT in the summer of 1950. The second, Dr. H. P. Robertson, a physics professor at California Institute of Technology, took the job on a 1-year leave of absence, agreed to an additional year's extension, and left in June 1952. The third, Dr. E. Bright Wilson, a physical chemist at Harvard who was widely known among leading scientists, also came to WSEG on a 1-year leave-of-absence basis, but left in the summer of 1953.

After Wilson's tour of duty was over, the post of Research Director remained vacant for an entire year, until mid-1954, despite strenuous efforts to fill it. Wilson and Gen. Keyes began canvassing possibilities as early as January 1953, seeking the assistance of leading scientists, in and out of government, as well as university presidents, foundation officials, and other major figures in the world of science and technology. They went to sources such as Vannevar Bush, Henry D. Smyth, Robert Oppenheimer, Merle Tuve, Lee DuBridge, Alan T. Waterman, Detlev Bronk, Emmanuel Piore, and others, who suggested many candidates, but there were no takers. In February 1954 Gen. Keyes even went to the length of trying to effect a "draft" of one candidate, Dr. Robert F. Rinehart of the Case Institute of Technology, by means of a letter from President Eisenhower to the President of Case, to no avail.<sup>142</sup> Finally, Dr. William B. Shockley, Director of Transistor Physics at the Bell Laboratories, was persuaded to take the post for a year on a loan basis.

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<sup>142</sup>The text of the letter from President Eisenhower to Dr. T. Keith Glennan, President of Case, is as follows:

Secretary Wilson has told me of the conversations that he and some of his people have had with you and Dr. Robert F. Rinehart. They earnestly hope he can be persuaded to come to the Department of Defense as Director of Research of the Weapons System Evaluation Group.

As you know, this is the senior operations research group in the Department functioning (continued on next page)

All four Research Directors complained of the great difficulty of recruiting civilian technical staff, which they attributed largely to limitations on compensation and other restrictions imposed by civil service.<sup>143</sup> Other aspects of the WSEG atmosphere were also cited as making it difficult to attract and hold able men. In 1952 Wilson wrote, "The strain of the work is great, public or even private recognition small, and opportunities for advancement to positions of greater responsibility very limited."<sup>144</sup> A JCS committee writing in 1955 cited "the disadvantages to a scientist of working in the Pentagon and under military direction"--adding, however, that it considered these disadvantages offset to some extent by "the advantages of the prestige of being associated with the Joint Chiefs of Staff organization and working on problems of national importance."<sup>145</sup> Whatever the reasons, despite

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(cont'd) as a part of the office of the Assistant Secretary for Research and Development. As such it gives indispensable advice and assistance to the Joint Chiefs of Staff.

I realize that Dr. Rinehart has previously given of his time and talent to the problems of Defense and that asking for his help again means sacrifices on the part of the Institute as well as personal problems for him. The post is so important, however, that I shall greatly appreciate your considering the matter as well as any service you feel you can give us in making Dr. Rinehart a member of the Defense team. President Dwight D. Eisenhower to Dr. Keith Glennan, President, Case Institute of Technology (Feb. 2, 1954), copy in WSEG files.

<sup>143</sup>Interviews. See also Commission on Organization of the Executive Branch of the Government (Hoover Commission), *Subcommittee Research Activities in the Department of Defense and Defense Related Agencies* (Mar. 10, 1955) (Washington: Government Printing Office, 1955).

<sup>144</sup>E. Bright Wilson, Research Director, WSEG, Memo for General Keyes, "A Personnel Policy for WSEG" (Sept. 18, 1952).

<sup>145</sup>Maj. Gen. K. F. Hertford, Chairman, WSEG Ad Hoc Committee, Memo for Secretary, Joint Chiefs of Staff, "Ad Hoc Committee Report on Proposed Expansion of WSEG" (Mar. 14, 1955).

constant efforts to expand, the permanent civilian staff of WSEG remained at about 15 to 20. The turnover rate was relatively high, and WSEG was forced to staff its projects by borrowing (or "raiding") from other agencies or institutions--which hardly contributed to a spirit of good will and cooperation with WSEG in the military research community.

Toward the end of 1954, the new Research Director, Dr. Shockley, and the new Director, Lt. Gen. Samuel E. Anderson, USAF,<sup>146</sup> agreed to bring the contract issue to a head. (This was not long after Gen. Anderson had ascertained that the JCS were reluctant to cancel obsolescent task orders and reduce the WSEG workload.) With the Rockefeller and Newbury Committee conclusions for support, they took up the question with the Assistant Secretary (R&D), Dr. Quarles. The three of them agreed that, whatever else might be said for it, WSEG could not be expanded to anything like the required size within the current civil service ground rules, and that some form of contract operation was indicated. Quarles then decided to appoint an ad hoc advisory committee to consider the matter, composed of Detlev W. Bronk, President of the National Academy of Sciences; T. Keith Glennan, President of the Case Institute of Technology; James Perkins, Vice President of the Carnegie Corporation; and E. Bright Wilson, the former WSEG Research Director who had returned to academic life as Chairman of the Chemistry Department at Harvard.

The committee had a one-day meeting at the Pentagon on December 2, 1954, with Quarles, Gen. Anderson, Dr. Shockley, and Shockley's deputy, Dr. George I. Welch.<sup>147</sup> The operative

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<sup>146</sup>Gen. Anderson had been Commander of the 9th Air Division in England in World War II; Director of Plans and Operations in the Office of DCS/Ops, Hq., USAF; Commander of the 8th Air Force in SAC; and Commander of the 5th Air Force in Korea prior to becoming Director of WSEG in August 1954.

<sup>147</sup>WSEG, "Report of a Meeting Held on 2 December 1954 to Discuss Contract Operation of WSEG" (Dec. 8, 1954).

premise of the meeting was that WSEG should be enlarged and strengthened, and the meeting focused on ways and means, considering in particular the establishment of a contractual arrangement similar to those of OEG, ORO, or RAND. Shockley reported that most members of the WSEG professional staff were strongly in favor of a contract operation, which would allow greater flexibility in salary treatment and work activity, possibly including unclassified work that might result in publication or other forms of professional recognition. Anderson reported that all three Services, which had been contacted at the Deputy Chief of Staff level, felt that WSEG should be strengthened and all three endorsed the idea of a contract operation. (He also reported some feeling that WSEG had been "relatively ineffective and had produced few reports of any real value," but associated this with the erroneous assumption that WSEG was a large group comparable to RAND, which had a staff of some 390 as compared to WSEG's 15 to 20 civilians.)<sup>148</sup>

The committee favored expansion of WSEG to about 100 civilian analysts, which seemed a feasible target, even though this would still leave WSEG smaller than the Service operations research groups.<sup>149</sup> No one at the meeting apparently questioned retention of the military side of the WSEG structure or the desirability of the military/civilian mix in WSEG study arrangements, but neither did anyone propose any increase in the current military strength of 28. The proposed WSEG expansion was to be on the civilian side.

The committee also discussed alternative contracting sponsors, without, however, arriving at a definite conclusion.

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<sup>148</sup> Ibid.

<sup>149</sup> One member of the committee, Dr. Perkins, felt that 100 might be excessive, in terms of the current demands for WSEG output. He suggested that WSEG's future strength be made contingent on effective utilization of its products by military and civilian planners, which would not be the case, he said, so long as no truly joint plans were being made. See WSEG report of the meeting, *ibid.*

There was some feeling that it might not be easy to find a suitable university sponsor, like MIT or Columbia, but that there might be other possibilities, such as the National Research Council, the National Academy of Sciences, or the Associated Universities (the multi-university consortium that was organized in 1946 to operate the Brookhaven National Laboratory for the AEC). The committee recommended that the DoD explore these various possibilities.<sup>150</sup>

On January 5, 1955, Gen. Anderson put these ideas and suggestions into the form of an official proposal to the SecDef and the JCS.<sup>151</sup> His memorandum began with the statement that there was still a real need for the type of analytical support for which WSEG was originally established--in Forrestal's words

to provide to the Secretary of Defense and the Joint Chiefs of Staff "rigorous, unprejudiced, and independent analyses and evaluations of present and future weapons systems under probable future combat conditions--prepared by the ablest professional minds, military and civilian, and the most advanced analytical methods that can be brought to bear"

--but that a group of the present size was incapable of accomplishing this purpose and should be enlarged and strengthened to the extent required. Anderson said that the major problem was in creating an atmosphere that would make it possible to attract and retain a sufficient number of highly qualified scientists. There was general agreement among the members of the four-man advisory committee, the Assistant Secretary (R&D), the Director of Research, and himself, that the creation of such an atmosphere would entail the following conditions:

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<sup>150</sup>D. W. Bronk, T. K. Glennan, E. B. Wilson, Memo for Assistant Secretary (R&D), "Report of the Advisory Committee on WSEG" (Jan. 3, 1955).

<sup>151</sup>Lt. Gen. S. E. Anderson, USAF, Director, WSEG, Memo for the Secretary of Defense and the Joint Chiefs of Staff (Jan. 5, 1955).

a. More complete knowledge of the problems facing the Secretary of Defense and the Joint Chiefs of Staff.

b. Some fraction--say 20%--of the WSEG's total capability to be available to the Director and Research Director for work on projects other than those assigned by the Secretary of Defense or the Joint Chiefs of Staff.

c. Freedom to recognize or reward outstanding ability and work with rapid promotion.

d. Provision of a means whereby the WSEG scientific personnel can, at intervals of two or three years, escape the anonymity among the scientific fraternity that their work in the WSEG imposes upon them because of security requirements.

e. Provision of adequate and congenial working quarters.

f. Enlargement of the scientific staff towards a goal of about 100 operations analysts....<sup>152</sup>

He therefore recommended, with the concurrence of the Assistant Secretary (R&D) and the WSEG Director of Research:

a. Establishment of a contract similar to OEG's, preferably with the Massachusetts Institute of Technology, Columbia University, or the National Research Council....

b. Expansion of WSEG from its present strength of 15 operations analysts, 28 military, and 20 civilian overhead, up to 100 operations analysts, 28 military (including the Director and three senior Service members), and 50 civilian overhead.

c. Provision of space for the WSEG outside of the Pentagon in the event adequate and congenial working space cannot be made available in that building.<sup>153</sup>

On February 1, 1955, the JCS agreed in principle to Anderson's conclusions and recommendations, establishing their

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<sup>152</sup> Ibid.

<sup>153</sup> Ibid.

own ad hoc committee of flag officers to consider the degree and rate at which WSEG should be expanded and the possible location of an expanded WSEG.<sup>154</sup> The JCS committee reported in mid-March 1955, reviewing the general grounds for the proposed expansion, the arguments in favor of shifting to a contract operation, and the broad alternatives that should be explored, including the ORO/OEG type of university sponsorship and the RAND model of a separate nonprofit corporation. The JCS committee adopted the position that the extent and rate of expansion should be determined by the future workload, that a staff of 100 analysts was probably a maximum figure and would probably take a minimum of 2 years to achieve. It concluded, however, that WSEG should remain in the Pentagon if possible, because of the high security classification of its studies and the need for frequent contact with the OJCS and Service agencies.<sup>155</sup>

Assistant Secretary Quarles proceeded with exploratory talks on negotiating a contract, starting with Dr. James R. Killian, Jr., President of MIT. By the end of March 1955, Quarles and Killian had agreed in principle that MIT would undertake a contract for WSEG as an interim measure while it attempted to organize an association of universities, such as the California Institute of Technology, the Case Institute, Harvard, Columbia, and possibly one or two southern universities, to relieve MIT of sole responsibility for the contract.<sup>156</sup> The JCS and the SecDef concurred with this plan of action, and during April and May 1955 initiated the necessary steps to launch WSEG into the

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<sup>154</sup>SM 84-55 (JCS 1812/47, Feb. 1, 1955), "Proposed Expansion of WSEG." The committee consisted of Maj. Gen. K. F. Hertford, USA; Rear Adm. P. H. Ramsay, USN; and Brig. Gen. M. F. Cooper, USAF.

<sup>155</sup>Maj. Gen. Hertford, "Ad Hoc Committee Report."

<sup>156</sup>Director, WSEG (Lt. Gen. S. E. Anderson), Memo for the Joint Chiefs of Staff, "Proposed Expansion of the Weapons Systems Evaluation Group" (Mar. 21, 1955).

second phase of its organizational development, the contractual phase.<sup>157</sup>

Concurrently with these Pentagon actions, and possibly in parallel, the Hoover Commission Subcommittee on Defense R&D--chaired by Mervin J. Kelly of Bell Telephone Laboratories, who had been one of the principals on the Newbury Committee--also came forth with a strong recommendation that WSEG be expanded and shifted to a contract operation. The Kelly subcommittee reviewed the history of WSEG, including its problems in recruiting a competent staff of the size required to carry out its mission, and concluded as follows:

From a review of the history of the Weapons Systems Evaluation Group and an evaluation of the present situation, it is evident that unless effective steps are promptly taken to provide the essential environment and compensation for such work, the group cannot be maintained. It is the view of the subcommittee that the potential worth of this organization is so great that positive steps to make possible its continuance and growth should be taken....

To provide the necessary environment and compensation levels, the subcommittee recommends that contract operation be adopted, and that the Weapons Systems Evaluation Group be established in adequate quarters with an academic institution or nonprofit organization as near to the Pentagon as possible....

While service to the Assistant Secretary of Defense (Research and Development) is now permissive, because of the backlog of work of the Weapons Systems Evaluation Group for the Joint Chiefs of Staff, little work is being done for the Assistant Secretary. It is the subcommittee's view that the Assistant Secretary needs and should make use of Weapons Systems Evaluation Group particularly in the ... search for radically new approaches to weapons systems.

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<sup>157</sup>Adm. Arthur Radford, Chairman, JCS (for the JCS), Memo for the Secretary of Defense, "Proposed Expansion of the Weapons Systems Evaluation Group" (Apr. 12, 1955); and Secretary of Defense (C. E. Wilson); Memo for the Chairman, JCS, "Proposed Expansion of the WSEG" (May 4, 1955).

The size of the Weapons Systems Evaluation Group staff should be increased so that it can make studies as required by the Joint Chiefs of Staff and have time available for service to the Assistant Secretary....

The subcommittee urges immediate attention to this problem. Unless positive action along the general lines of the subcommittee's recommendation is initiated soon, it will be difficult to hold the group in being.<sup>158</sup>

The Kelly subcommittee's report was submitted on March 10, 1955, to the Hoover Commission's Committee on Business Organization of the Department of Defense, which in turn transmitted it to the full Commission on March 28. By this time, as we have seen, these recommendations were well on the way toward implementation.

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<sup>158</sup>Hoover Commission, *Research Activities in the Department of Defense*, pp. 28-30 and 82-3.

## IV

### THE SECOND PHASE, 1956-1966

#### A. THE CONTRACTUAL ARRANGEMENT

##### 1. The Formation of IDA

When the decision was made in 1955 to expand WSEG and convert the civilian component from an in-house civil service arrangement to a contractual arrangement in the style of the operations research groups of the military Services, several alternatives were available to choose from. The Navy's Operations Evaluation Group was administered under contract by MIT and the Army's Operations Research Office by Johns Hopkins. Both universities had distinguished records in scientific and technical fields and considerable experience as contracting agents and managers of various governmental R&D programs and facilities. Other outstanding universities with similar qualifications, such as Harvard, Columbia, and Princeton, were suggested by the advisory committee on WSEG reorganization brought together at the end of 1954 by the Assistant Secretary of Defense for R&D, Donald A. Quarles. There was also the possibility of utilizing a consortium of universities like Associated Universities, Inc., which was established to operate the Brookhaven National Laboratory for the AEC, or affiliating with an existing quasi-governmental institution like the National Academy of Sciences, or creating an independent nonprofit corporation, as the Air Force had done in the case of RAND, specifically to support WSEG.<sup>1</sup>

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<sup>1</sup>See above, p. 123.

These choices were considered primarily in terms of how each could facilitate the recruitment and retention of high caliber civilian analysts. The idea of a university sponsor was very attractive as a means of lending scientific prestige to the enterprise, providing access to the scholarly community, and promoting a working climate that would appeal to researchers. On the other hand, as advisers like T. Keith Glennan of the Case Institute pointed out, a university administration was necessarily preoccupied with educational activities and might treat a contractual offshoot as a lesser sideline.<sup>2</sup> A university might also object to salaries that were out of line with those of its faculty members, which might prove too restrictive, as Ellis A. Johnson, Director of ORO, suggested; and universities with the relevant competence and interest were probably already engaged in work for one of more of the individual Services, perhaps even to the extent of compromising their impartiality.<sup>3</sup>

It was recognized, of course, that it might not be easy to persuade a leading university to take on a WSEG contract. Some of the prime candidates were already heavily committed to government work and might be reluctant to take on more. They might also have misgivings about becoming closely identified with a sensitive and potentially controversial venture over which, in the circumstances, they could not hope to exert much actual control. Both MIT and Johns Hopkins had apparently experienced some difficulties of this nature over OEG and ORO, respectively, and some university administrators considered such organizations difficult and risky to manage.<sup>4</sup>

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<sup>2</sup>T. Keith Glennan to Dr. William B. Shockley (Dec. 6, 1954).

<sup>3</sup>Lt. Gen. S. E. Anderson, Director of WSEG, Memo for Record, "Telephone Conversation with Dr. Ellis A. Johnson of ORO" (Jan. 28, 1955).

<sup>4</sup>Interviews.

The JCS committee on WSEG that investigated the matter in March 1955 conceded the fact that WSEG as then constituted had been incapable of attracting and keeping enough highly qualified scientists. The committee also realized that civil service salary constraints were only partially to blame, and that overall working conditions, which included opportunities to tackle significant military problems and latitude to arrive at "scientific and unprejudiced" solutions, were "equally as important." Nonetheless, the committee felt that there were major advantages in having a prime contractor whose efforts were fully dedicated to supporting WSEG rather than being spread over many disparate activities, as they would be in a university. Its report pointed to the results achieved by RAND, both in prestige and effectiveness, and was inclined favorably toward the formation of a nonprofit corporation for the sole purpose of providing operations research services to WSEG. At the same time, the report expressed a clear preference for a "personal or professional services" type of contract "where the prime contractor has no responsibility for the substantive results of the work."<sup>5</sup>

One of the difficulties with establishing a separate nonprofit corporation on the RAND model was that considerable time and effort might be needed to survey the possibilities, muster the necessary institutional and financial backing, and get it into operation. RAND, for example, operated for 2 years as a "project" under the aegis of the Douglas Aircraft Company before it had sufficient strength and momentum to become a separate research organization. And, of course, RAND was much more than a mere provider of "personal or professional services" on demand--it contracted to furnish

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<sup>5</sup> "Ad Hoc Committee Report on Proposed Expansion of the WSEG" (Mar. 14, 1955).

independent studies and analyses, and not only for the Air Force.<sup>6</sup>

The leading role in investigating contractual possibilities for WSEG apparently fell to Assistant Secretary Quarles. His first preference was a university arrangement with MIT, and he turned to the president of MIT, James R. Killian, Jr. MIT was a logical choice as a ranking technical university with a preeminent reputation in defense-related R&D, and Killian was a leading figure in national science affairs. As a public administrator, rather than a working scientist, he was a skillful and talented organizer and, in the view of contemporary scientists, a "near-perfect" intermediary between high-level political leaders like President Eisenhower and the scientific community.<sup>7</sup> Before 1955 Killian was a member of the Science Advisory Committee of the White House Office of Defense Mobilization, and headed the Technological Capabilities Panel that, at Eisenhower's express request, undertook a major review of the nation's military posture. The Panel issued the highly influential "Killian Report" of February 1955 that recommended higher priorities for ICBM and IRBM programs,

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<sup>6</sup>Smith, *The RAND Corporation*, Ch. 2. The original letter contract establishing Project RAND specified that "The Contractor will perform a program of study and research on the broad subject of intercontinental warfare, other than surface, with the objective of recommending to the Army Air Forces preferred techniques and instrumentalities for this purpose." Ibid., p. 30. The Air Force policy statement issued when RAND was incorporated as an independent research organization said that RAND would "continue to have maximum freedom for planning its work schedules and research program," and that its use for current staff work would be "minimized." Ibid., pp. 78-81. RAND, of course, took corporate responsibility for the end products of its work.

<sup>7</sup>See Herbert F. York, *Race to Oblivion* (New York: Simon & Schuster, 1970), p. 114; and Charles S. Maier, "Science, Politics, and Defense in the Eisenhower Era," introduction to George B. Kistiakowsky, *A Scientist at the White House* (Cambridge: Harvard University Press, 1976).

including the sea-based Polaris system, and accelerated U.S. technical intelligence capabilities.<sup>8</sup> (In 1957, after the launch of Sputnik, Killian became the first Special Assistant to the President for Science and Technology.)

Killian's reaction was initially negative, on the grounds that MIT was already overburdened with external research and no one university should have the sole responsibility for supporting WSEG.<sup>9</sup> However, in response to urging from Quarles, he agreed that MIT would undertake the contractual responsibility on a temporary basis and assume the task of organizing a consortium of universities to take over and continue the operation as a public service. On behalf of MIT, Killian requested a clear indication from the JCS that they favored the proposal and a letter from the SecDef asking MIT to assume the interim contractual role.<sup>10</sup> The JCS readily approved, on April 12, 1955, and the letter from the SecDef was sent on May 4.<sup>11</sup> In the letter, Secretary Wilson said that the proposal had been cleared with the appropriate committees of Congress, and added that there was a need for early action. The Secretary's letter read as follows:

As you are aware, the Joint Chiefs of Staff and I have for some time been exploring ways and means of strengthening the Weapons Systems Evaluation Group to the extent required to permit it to fulfill the purpose for which it

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<sup>8</sup>Office of Defense Mobilization, Executive Office of the President, *Report to the President by the Technological Capabilities Panel of the Science Advisory Committee* (Feb. 14, 1955).

<sup>9</sup>Interviews.

<sup>10</sup>Director, WSEG, Memo for the JCS, "Proposed Expansion of the Weapons Systems Evaluation Group" (Mar. 21, 1955).

<sup>11</sup>JCS Memo for the Secretary of Defense (Adm. Radford for JCS), "Proposed Expansion of WSEG" (Apr. 12, 1955); Secretary of Defense (C. E. Wilson), letter to Dr. James R. Killian, President of MIT (May 4, 1955).

was originally established, that is, to provide the Department of Defense with comprehensive, objective, and independent analyses and evaluations under projected conditions of war--prepared by the ablest professional minds and the most advanced analytical methods that can be brought to bear. Such evaluations would include but would not necessarily be confined to:

- (a) Present and future weapons systems.
- (b) The influence of present and future weapons systems upon strategy, organization, and tactics.
- (c) The comparative effectiveness and costs of weapons systems.

The Weapons Systems Evaluation Group is also responsible for making available to the Department of Defense timely advice and assistance to aid decisions in the allocation of resources for development of the most effective combination of weapons systems.

We are aware that you have discussed with the Assistant Secretary of Defense for Research and Development ways and means in which the Massachusetts Institute of Technology could assist the Department of Defense in creating within the WSEG a greater capability for discharging the mission assigned it in Department of Defense Instruction No. 5128.8, dated 17 August 1954, the substance of which I have quoted above. The possibilities discussed were:

- (a) Negotiation of an interim contract with the Massachusetts Institute of Technology, and
- (b) The subsequent formation of an association of universities such as the California Institute of Technology, Harvard University, Columbia University, and possibly one or two Southern universities, to relieve MIT of sole responsibility for the contract and the facilities and services it would provide for the WSEG.

We concur that the foregoing are desirable objectives.

We have informed the appropriate committees of the Congress of our plans for strengthening the Weapons Systems Evaluation Group and they have interposed no objections. We therefore

request that as a public service the Massachusetts Institute of Technology enter into negotiations with the Department of Defense (Assistant Secretary of Defense for Research and Development, Mr. Donald A. Quarles) with the view of concluding arrangements for the support of the Weapons Systems Evaluation Group. The need for strengthening the WSEG has been acute for many months. Therefore, we urge early conclusion of an interim contract unless plans for forming the association of universities referred to above have progressed to the point that the interim contract would not represent a substantial saving of time.

It took several months for the MIT directors to agree to the Wilson proposal, and the interim contract was not completed until September 27, 1955. As Killian wrote later:

In view of MIT's already heavy commitments in national defense at a time when all of the educational resources of the country are severely taxed, especially searching thought was given to the request. In the end, and after discussion with the prospective university partners, it was clear that in the national interest the request must be met. Appropriate initial contractual arrangements were accordingly entered into between the Department of Defense and MIT....<sup>12</sup>

The terms of the MIT contract made it clear that the MIT arrangement was purely transitional, pending the organization of a formal group of colleges and universities to undertake the work. The operative article of the MIT contract read as follows:

The Contractor agrees to provide competent personnel and to use its best efforts to supply facilities and materials to assist in providing the Assistant Secretary of Defense (Research and Development) and the Joint Chiefs of Staff with operational analysis through the medium of the Weapons Systems Evaluation Group, and shall use

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<sup>12</sup>James R. Killian, Jr., to Mr. Rowan Gaither, President of The Ford Foundation (June 1, 1956).

its best efforts to conduct the work specified in such Task Orders as may from time to time hereafter be agreed upon by the Government and the Contractor for performance hereunder.

The scope of the work may include, but will not necessarily be limited to, studies and reports on the following:

1. Surveys and analyses of the effectiveness of various weapons systems.
2. Evaluation of new equipment in the light of military requirements.
3. The evaluation and analyses of military problems to predict the operational behavior of new material and equipment.
4. Development of new tactical doctrines to meet changing military requirements.
5. Technical aspects of strategic planning.
6. Analysis of actual combat reports, tactical and strategic plans, and field exercises in both the Continental United States and elsewhere, with a view to determining how existing weapons and weapons systems could be more effectively employed....<sup>13</sup>

The contract specified that the task orders under which the work was to be performed would be issued by the Director, WSEG, but otherwise left military-civilian working relationships vague. It said only that the Director of WSEG

may also assign one or more military personnel to each Task Order for the purpose of providing current and relevant military factors including military intelligence, which information will be taken into account in the performance of the Task.<sup>14</sup>

There was no intention at the time to have the initiation of a contract operation change the role of military personnel assigned to WSEG. Military members from each of the Services were to be assigned to projects as before, to work

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<sup>13</sup>Article I, "Contract entered into ... between ... the Government ... and Massachusetts Institute of Technology," DoD Contract No. SD-28 (Sept. 27, 1955).

<sup>14</sup>Ibid.

with contractor personnel in much the same way as they had worked with civil service civilians. No change was intended in the basic WSEG concept in this respect, as Killian himself noted:

It is a most important objective in WSEG to achieve the closest possible integration of military and scientific thought in attacking its problems.<sup>15</sup>

MIT tried to carry out its transitional responsibilities with as little disruption of ongoing studies as possible. Almost all of the WSEG civilian analysts, with the exception of several who did not choose to give up their civil service status, continued on as MIT employees, including the Acting Director of Research, Dr. Charles A. Boyd, who had been with WSEG since 1953 and had managed several of the more important projects. On November 21, 1955 Killian nominated Dr. Albert G. Hill, Director of the Lincoln Laboratories at MIT, to be the new Director of Research and the "principal representative" of MIT in WSEG. Hill's nomination was submitted to the JCS and the Assistant Secretary (R&D) and thence to the SecDef, and all three approvals were obtained by December 23.<sup>16</sup>

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<sup>15</sup>James R. Killian, Jr., to Mr. Rowan Gaither.

<sup>16</sup>James R. Killian, Jr., letter to Lt. Gen. S. E. Anderson, Director, WSEG (Nov. 21, 1955); Director, WSEG, Memo for the Chairman, JCS, "Nomination for Director of Research, WSEG" (Nov. 28, 1955); Secretary of Defense, Memo for Assistant Secretary (R&D), "Nomination for Director of Research, WSEG" (Dec. 22, 1955); and Assistant Secretary of Defense (R&D) (C. C. Furnas), Memo for Director, WSEG, "Nomination for Director of Research, WSEG" (Dec. 23, 1955).

Hill, a professor of physics at MIT, had worked in electron emission, solid state, nuclear physics, and microwave fields. He had been associated with the Radiation Laboratory and Research Laboratory of Electronics as well as the Lincoln Laboratories at MIT, and had been one of the leading participants in Project Charles and other major defense studies of the early 1950's that led to such developments as the DEW line and the SAGE system. He was a consultant to the RDB and subsequently (continued on next page)

The conversion to the interim contractual arrangement with MIT and the contemplated consortium of universities required only minor modifications of the WSEG charter, to reflect the alteration in the legal status of the Director of Research. The latter was now a contractor employee who was also serving WOC (without compensation) as a government official--the WSEG Research Director. Accordingly, rather than being "appointed" by the SecDef (with the advice of the Director, the JCS, and the Assistant Secretary for R&D), as specified in the 1954 charter, a Research Director was provided for in the revised April 1956 version as follows:

Subject to the approval of the Secretary of Defense, with the advice of the Director of the Group, the Joint Chiefs of Staff, and the Assistant Secretary of Defense (Research and Development), there shall be a Research Director....

The actual contractual relationship was not defined. In addition, rather than being the "chief scientific officer" of the Group, as previously, the Research Director was to be the "chief scientific advisor" to the Group; rather than supervising and directing the work of the Group "under the general supervision of the Director," he was to "supervise and direct the work assigned by the Director"; and his role as deputy director of the Group was simply omitted. In other respects the revised WSEG charter was identical to the old one. The contractual arrangement for furnishing the WSEG civilian technical staff was not mentioned.<sup>17</sup>

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(cont'd) served with the Gaither Panel, PSAC, and other prominent advisory committees.

<sup>17</sup>DoD Instruction 5128.8, "Weapons Systems Evaluation Group" (Apr. 13, 1956). Compare DoD Instruction 5128.8, same subject (Aug. 17, 1954), as amended Aug. 27, 1954. This DoD instruction was renumbered in 1962, to DoD Instruction 5129.37 (May 13, 1956). See Executive Secretary, WSEG, Memo for WSEG Personnel, "Change in Designation of WSEG Charter" (Jan. 17, 1962).

As will be discussed in more detail below, Hill and the rest of the MIT contingent continued to operate as an integrated and virtually indistinguishable part of WSEG in the Pentagon. WSEG space was retained in the JCS area for the Director, the Director of Research, the senior Service members, and the Secretariat, and additional space was obtained on the floor directly below to accommodate up to 200 people, including administrative and support staffs. WSEG and contractor personnel were interspersed in these offices, and most outsiders were not aware of any formal distinction between the two.<sup>18</sup>

Meanwhile, Killian proceeded to organize the association of universities that was to take over from MIT. The association was formally incorporated on April 4, 1956, as the Institute for Defense Analyses, a nonprofit corporation

to promote the public welfare and the advancement of scientific learning by making analyses, evaluations, and reports regarding matters of military defense for the United States Government.<sup>19</sup>

It was established as a membership corporation with five initial institutional members--the California Institute of Technology, Case Institute of Technology, Massachusetts Institute of Technology, Stanford University, and Tulane University--with provision for others to be added later.

The university sponsorship of IDA was deliberately made conspicuous. The legal incorporators were the university presidents, in the case of the first four institutions, and the vice-president in the case of the fifth: Lee A. DuBridge, T. Keith Glennan, James R. Killian, Jr., J. E. Wallace Sterling, and Joseph C. Morris. At the initial meeting in the Pentagon

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<sup>18</sup>*WSEG History*, Vol. VIII, 1 July 1955-30 June 1956; interviews.

<sup>19</sup>Certificate of Incorporation, Institute for Defense Analyses, Mar. 4, 1956. See *IDA Annual Report* (Mar. 18, 1956).

on April 5, 1956, representatives of the 5 universities (including 2 of the university presidents in person) elected a 10-member board of trustees, all university officials, including 3 of the presidents, with Killian himself as Chairman. As President of IDA they chose Maj. Gen. James McCormack, Jr., USAF Ret., a member of the MIT staff (shortly to be made an MIT vice-president).<sup>20</sup> They also elected Joseph J. Snyder, Vice-President and Treasurer of MIT, as IDA Secretary and Treasurer, and Hill as IDA Director of Research.<sup>21</sup>

Once IDA was set up, Killian, in his capacity as Chairman of the Board of Trustees, appealed to the Ford Foundation for initial working capital, and obtained a grant of \$500,000 (estimated as the equivalent of about one fiscal quarter's expenses).<sup>22</sup> Significantly, the President of the Ford Foundation at that time was H. Rowan Gaither (of subsequent Gaither Panel fame), who had played a key role in the establishment of RAND years before; and one of the Foundation vice-presidents who participated in the negotiations for the grant was Don K. Price, who had been staff director of the Rockefeller Committee that had recommended adoption of a contractual arrangement for WSEG in 1953.<sup>23</sup>

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<sup>20</sup> Gen. McCormack had been Director of Military Applications in the AEC, where he was instrumental in the formation of the Sandia Corporation (which had been headed by Assistant Secretary Quarles). Before retiring from the Air Force in 1955, he was Vice Commander of the Air Research and Development Command (precursor to the Systems Command), and Director of R&D in USAF Headquarters. He was prominently involved in missile developments with Quarles, Trevor Gardner, Gen. Barnard A. Schriever, and members of the various von Neumann committees. He was later active in the formation of Mitre and Aerospace.

<sup>21</sup> IDA Summary (Feb. 25, 1957).

<sup>22</sup> James R. Killian, Jr., to Rowan Gaither.

<sup>23</sup> Interviews. For Gaither's role in RAND, see Smith, *The RAND Corporation*, pp. 67-8.

In writing to Gaither, Killian expressed the desire of the IDA member universities to provide strong support to WSEG, without, however, limiting IDA to support of WSEG alone:

The initial member universities are in agreement on a number of ways in which we can give substantive technical support to the endeavor, from our resources and through our influence in the technical community. We all accept the urgent need for giving our very best efforts to this task. We agree also that we can overcome those obstacles related to conditions of employment which have hitherto prevented WSEG from attaining the scientific and technical stature which its mission deserves and requires.

We have been given informally a goal of 100 scientists and engineers for WSEG, with considerable reliance to be placed on obtaining the services of existing operations research organizations. From experience in this sort of work, and knowledge of the need, we suppose there will be other goals beyond that. In addition, it seems inevitable that there will be tasks other than the particular one of supporting WSEG. In fact, two other services have already been requested of us by the Department of Defense, relating to US scientific support of SHAPE and of the Air Defense Technical Center in The Hague. Other agencies of the Federal Government concerned with national defense have approached us informally with regard to our possible acceptance of additional responsibilities in the future. In short, the initial member universities believe beyond any doubt that an association such as this, properly managed and supported, can make a real contribution to the national interests.<sup>24</sup>

The Killian statement has special significance in view of difficulties that arose later in the IDA/WSEG relationship, in part due to IDA's expansion into other activities.

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<sup>24</sup>James R. Killian, Jr., to Rowan Gaither.

IDA formally relieved MIT on September 1, 1956, when a new WSEG contract was signed.<sup>25</sup> The contract covered the remainder of the fiscal year, to June 30, 1957, providing for a budget of \$1.7 million, including a \$100,000 management fee. Its scope was identical to the interim MIT contract that it superseded:

The contractor agrees to provide competent personnel and to use its best efforts to supply facilities and materials to assist in providing the Assistant Secretary of Defense (Research and Development) and the Joint Chiefs of Staff with operational analyses through the medium of the Weapons Systems Evaluation Group, and shall use its best efforts to conduct work specified in such Task Orders as may from time to time hereafter be agreed upon by the government and the Contractor....<sup>26</sup>

with specific task orders to be issued by the Director of WSEG. As in the interim MIT contract, quoted above, the work could include, but need not necessarily be limited to, a variety of specified study areas: (1) the effectiveness of various weapons systems, (2) evaluation of new equipment in the light of military requirements, (3) analysis of military problems to predict the performance of new equipment, (4) development of new tactical doctrines, (5) technical aspects of strategic planning, and (6) analysis of the employment of existing weapons systems in actual combat, exercises, and tactical and strategic plans.<sup>27</sup>

Also as in the interim MIT contract, the mixed civilian-military arrangement in WSEG was covered by "allowing" the Director of WSEG to assign military personnel to work with the

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<sup>25</sup> DoD Contract SD-35 (Sept. 1, 1956).

<sup>26</sup> Ibid.

<sup>27</sup> Ibid., Article I.

contractor to assist in military matters. The contract, basically a cost-plus-fixed-fee type with the categories of allowable costs spelled out, also provided that the government would supply office space and office furnishings without cost to IDA, unless the government chose to do otherwise (in which case the costs to IDA would be allowable). The allowable costs included 26 percent overhead, based on salaries.<sup>28</sup>

Killian reported on the status of the IDA/WSEG arrangements in a letter to the SecDef on October 11, 1956. He reported that the IDA trustees had met during the previous week with Assistant Secretary Furnas, General Anderson, and the senior WSEG staff to review what had been achieved thus far, with IDA halfway toward the initial goal of 100 professional staff members.

I am pleased to be able to report, in behalf of the Trustees, that the work seems to us to be going well and that our clear task for the future seems capable of accomplishment. The civilian scientific staff employed by IDA is working in happy harness with the military staff of WSEG, and their effort seems efficiently integrated under the able direction of General Anderson.

He urged Secretary Wilson to act favorably on General Anderson's request for additional space in the Pentagon, "located conveniently near the JCS," to accommodate the scheduled expansion.<sup>29</sup>

## 2. Initial WSEG/IDA Operations

The transition to a contractual arrangement was in most respects smooth and uneventful. WSEG continued to operate as essentially the same organization, under the same charter and rules of operation as before. General Anderson remained as

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<sup>28</sup>Ibid, Articles II, III, IV. See also S. E. Clements, Memo for File, "WSEG Contract" (May 2, 1957).

<sup>29</sup>James R. Killian, Jr., to The Honorable C. E. Wilson, Secretary of Defense (Oct. 11, 1956).

Director through the double transition from civil service to the MIT and then the IDA contract, and other military personnel changed in accordance with normal turnover practices. Nearly all civil service analysts were taken on as contractor personnel, so that there was considerable continuity on the civilian side as well. Ongoing projects continued operating without interruption, under the same type of mixed civilian-military team type of arrangement as before. For all practical purposes civilian analysts were identified and treated as members of the WSEG staff. Only for the most legalistic purposes were they distinguished as non-WSEG personnel, and most outsiders were unaware of any change in their status. It was rare even for WSEG to be referred to as WSEG/MIT or WSEG/IDA; for the most part the WSEG/contractor combination was treated as if it constituted a single entity.<sup>30</sup>

The most significant changes occurred as a result of the substantial increase in civilian analytical support. From a fulltime professional civilian staff of 17 in mid-1955 (down to 13 on the initial MIT payroll when Hill took charge in January 1955), the number of civilian analysts more than doubled, totaling 42 by mid-1956, with another 32 on loan from elsewhere, including other operations research agencies, the academic world, industry, and government. By mid-1957 the permanent staff had grown to 60, and by mid-1958 to 90. It reached a level of approximately 100 in mid-1959, where it held relatively stable for a time. During these years the military contingent remained at about the same size.<sup>31</sup>

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<sup>30</sup>Interviews. How the relationship operated will be discussed in more detail below.

<sup>31</sup>*WSEG Annual Activities Reports* for the various fiscal years. These replaced the annual *History* volumes beginning in FY 56. Both series were prepared in order to fulfill reporting requirements established by the various WSEG charters, including DoD Instruction 5128.8 of Apr. 13, 1956.

This was not spectacularly rapid growth, considering the fact that the basic decision to expand toward a target of 100 civilian analysts had been made as early as 1955; on the other hand it was a substantial change from the virtually static situation that had existed before the contractual shift. The gradual nature of the expansion was not dictated by budgetary considerations, according to WSEG reports, but by continued adherence to selective standards in hiring permanent staff members<sup>32</sup> plus, perhaps, a relatively slow payoff from IDA's university connections. Those who recall the early IDA years are generally agreed that the prestigious university sponsorship was genuinely helpful, but more in terms of the image of the organization than because of active assistance in recruiting personnel. Attempts to exploit official university channels encountered the obstacle that commonly thwarted similar attempts by similar organizations--the general reluctance of academic officials to steer their best graduate students and young professors into nonacademic pursuits. On the other hand, the informal networks and friendships formed by IDA officers and staff members appeared to work quite effectively, as expected, and IDA's flexibility in salaries, benefits, administrative procedures, and the like successfully overcame many of the old obstacles to WSEG's expansion.<sup>33</sup>

WSEG's operating principles and study procedures were little changed. As articulated by Maj. Gen. William L. Barriger, USA, one of the senior military representatives whose tour bridged the contractual transition (and who became an IDA staff member after his military retirement), WSEG studies were intended to be "*scientific studies of military problems*":

Normally [Barriger wrote] scientific personnel are not militarily trained and have not the military experience or knowledge which will

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<sup>32</sup> WSEG Annual Activities Reports, e.g., for FY 57.

<sup>33</sup> Interviews.

enable them to inject the necessary military factors into the problems under study. Likewise, military personnel have neither the scientific knowledge nor experience to enable them to perform the scientific research and analyses necessary to the solution of problems undertaken by WSEG. Only by the continuing injection of sound military factors into scientific research and analysis of WSEG problems can authoritative solutions be achieved.<sup>34</sup>

This could not be accomplished, said Barriger, if the Group were sharply divided into a "military side" and a "scientific side" but was feasible only by integration within a framework of day-to-day military-civilian teamwork:

The successful operation of WSEG depends, to a great extent, on the successful marriage of the scientific and the military. Mutual confidence must exist among the membership. The efforts of the senior members, both military and scientific, should be directed toward that end, and, as in any undertaking, leadership must be alert to the causes of any friction which may develop. The objective of each member of WSEG must be his maximum contribution to the work of the Group. His attention should never be focused on the kind of suit he wears.<sup>35</sup>

The initial WSEG/IDA working relationship was an attempt to effect the military-scientific "marriage" that Barriger described. By all accounts the two leaders, Anderson and Hill, tried to operate as a complementary duo and worked well together.<sup>36</sup> They consulted together on study tasks and plans, personnel assignments, schedules, data requirements, and other important business. They cosigned memos, reports, and other official documents, Hill in his capacity as the official WSEG

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<sup>34</sup>Maj. Gen. W. L. Barriger, USA, Memo for the Director, WSEG, "WSEG Procedures" (Sept. 24, 1954). The salient features of Barriger's memo were disseminated throughout WSEG and incorporated into the WSEG Handbook.

<sup>35</sup>Ibid.

<sup>36</sup>Interviews.

Director of Research. They appeared to recognize the need for a coordinate relationship, and to adhere to the precept, as Barriger expressed it, that

the problem is military, and ... the study to be accomplished is scientific.<sup>37</sup>

Reports continued to be issued as before, as WSEG reports, without identification as to individual authorship or contractor contributions. The net result was that WSEG was still generally perceived as a single integrated organization.

Formally speaking, study directives for WSEG were received by Anderson as Director and passed on to Hill as Research Director and chief representative of IDA.<sup>38</sup> In practice there was considerable consultation and collaboration with OJCS, OSD, and Service representatives before tasks were assigned, and both Anderson and Hill played large roles in task formulation. The WSEG Review Board was generally brought in at an early stage in the development of projects for discussions of their scope, limitations, scale of effort, priority, personnel requirements, schedules, methods, and so on, all of which had to be fairly clear on all sides in order to enable the relatively loose and open arrangement to work without undue difficulty. Project leaders were appointed by the Research Director, but not without consultation; senior civilians and senior military officers were responsible for assigning the project team members, generally after mutual discussion. It was understood that military members were under the control of the civilian project leader for work on the project. They were expected to provide

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<sup>37</sup>Barriger, "WSEG Procedures."

<sup>38</sup>At the time, the presidency of IDA was a part-time responsibility, and Gen. McCormack operated from MIT in Cambridge, Mass. IDA conducted most day-to-day business from the WSEG premises in the Pentagon, and did not establish separate corporate business offices until early 1958, when it leased offices at 1707 H Street, N.W., in Washington, D.C. IDA's first full-time president was Garrison Norton, who succeeded Gen. McCormack in February 1959.

military support and professional military advice to the project, but were also subject to tasks within their capabilities assigned by the project leader. They participated fully in collective project activities, such as discussion meetings, briefings, and reviews, and performed major liaison functions with respect to their respective Services, the various military commands, and the rest of the defense establishment. They generally participated with civilian staff members in writing supporting memoranda or enclosures for the reports, although their degree of participation varied considerably from individual to individual and from study to study, with no fixed pattern.

The project leader was considered responsible for the preparation of the overall product, generally a draft report in response to a task directive. The draft report underwent a period of review and criticism by the project team itself. When the project leader was satisfied, he submitted the report to the Review Board--still chaired by the Director of Research and advisory to him--for a formal review, usually with the Director and project staff members present.

For all the appearance of collective consultation and discussion, and despite considerable attempts to achieve general agreement, WSEG procedures did not require a complete consensus with respect to study findings and there was no requirement for a collective form of approval. After all reviews, the Director of Research was responsible for ruling on the substance and technical validity of the product, including its coverage and objectivity. The Director was responsible for determining its adequacy as a response to the tasking directive and for releasing it to the requesting agency. The requesting agency was responsible for its distribution.<sup>39</sup>

In practice the responsibilities and functions of the WSEG Director and the IDA Research Director were so interrelated

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<sup>39</sup>WSEG Handbooks, various years; interviews.

and interdependent that a clearcut separation was not possible and no attempt was made to codify the division of labor between them in any detail. The effectiveness of the arrangement placed a premium on the human element and qualities of personality, as well as intellect and experience. Gen. Anderson was reputed to be adept (as one informant jokingly put it) at the "care and feeding" of scientists.<sup>40</sup> Hill was notable for his extensive background in attacking high-level defense problems with organized military and civilian teams. But it was generally accepted that mutual personal respect was essential, and that the personal attitudes and outlooks of both men were important ingredients in assuring the necessary degree of collaboration.<sup>41</sup>

Qualitative personnel factors were considered vital to effective project operations as well. The multi-Service nature of the Group, juxtaposed with the supra-Service (or trans-Service) character of the WSEG mission and tasks, generated obvious stresses and strains. Military officers assigned to WSEG did not report to their Services for instructions and had their efficiency (fitness) reports made out by their WSEG superiors, but they naturally brought into WSEG views and positions that had been developed in Service careers--which, to be sure, was partly the basis of their expected contribution to WSEG studies. Nevertheless, they were expected to rise above Service parochialism in their work. As the JCS Ad Hoc Committee on WSEG observed in 1955:

The military personnel are members forming an integral part of the WSEG philosophy of operations, and it is of course necessary that the scientific members recognize the military as an equally important part of the overall team. However, it is equally necessary that the military personnel selected for this operation

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<sup>40</sup>Interviews.

<sup>41</sup>Ibid.

be men of unusually high caliber in the military circles, with an ability to see problems from an unbiased point of view, and to recognize clearly their capacities for contribution to the scientific studies.<sup>42</sup>

Similar "purple suit" standards were expected of military officers who served in the OJCS, OSD, unified commands, and many other joint positions, of course, but in WSEG the stakes tended to be high and the inter-Service issues sharply drawn, so that to maintain the appropriate degree of objectivity was frequently easier said than done. Not surprisingly, opinions differ on how well WSEG officers lived up to such standards, which suggests that the results were mixed. Some informants had a high regard for WSEG officers in this respect, and could cite outstanding examples; others felt that most of them tended to operate as partisans of a Service "party line" or interest.<sup>43</sup> This was obviously a problem inherent to any joint enterprise, however, and was not peculiar to WSEG.

The military-civilian relationship also required special handling. Given the continuation of the basic military structure on the WSEG side, with a three-star Director and a general or flag officer from each Service on the Review Board--and given the fact that WSEG was closely identified with the JCS and did most of its work for them--continuous efforts were required to ensure that a permissive research atmosphere was maintained, free from the taint of "military domination." The dual reporting channel, to the R&D element of OSD as well as to the JCS, was retained primarily for this reason, as was the delineation of an independent role for the civilian Director of Research. The contractual relationship served as an additional buffer, since it removed civilian analysts from the hierarchical

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<sup>42</sup>Maj. Gen. K. F. Hertford, Memo for the Secretary, JCS (Mar. 14, 1955), enclosing "Ad Hoc Committee Report on Proposed Expansion of the WSEG."

<sup>43</sup>Interviews.

constraints and routines of civil service and provided a source of institutional support in the event of undue military pressures, whether they originated within WSEG or without.<sup>44</sup>

Providing civilian analysts with latitude and ensuring that civilians and military officers alike were free to work toward the WSEG goal of "unprejudiced solutions" were not sufficient conditions by themselves, of course. Military and civilian staff members were mixed at the level of the project team not merely to establish checks and balances, but more fundamentally to integrate the military and technical expertise required to analyze the problems that were assigned. The rationale was that their continuous interaction would facilitate the consideration of all relevant operational and technological considerations in the analysis, with no "blind spots," gaps, or distortions, and with proper weight given to all significant factors. Ideally, this called for an atmosphere of relatively free and easy interchange of information and ideas, without inhibitions due to rank or status, that was difficult to achieve or maintain consistently.

One continual challenge in the WSEG/IDA system was achieving an effective blend of the available personnel and the necessary expertise, especially with a changing assortment of people. Teamwork did not come naturally or automatically. It placed unusual demands on all personnel, particularly on the project leaders, who were the crucial individuals in the operation at the working level. They were not easy to find or to keep, even under the contractual arrangement.<sup>45</sup>

The WSEG/IDA arrangement of the early years had its share of growing pains and operating difficulties. It was an unusual organizational venture without clearly defined

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<sup>44</sup> This was generally held to be an advantage of all the operations research corporations, which all sought a quasi-independent status from client pressures to slant study results. See Don K. Price, *The Scientific Estate* (Cambridge: Harvard University Press, 1965), pp. 260-61.

<sup>45</sup> Interviews.

precedents or parallels, requiring considerable improvisation and adaptation on the part of the participants (and their clients) and continual attention to maintain it in working order. It had many critics (as we shall see) and did not endure for long, but it still has many defenders as one of the more noteworthy attempts to effect the kind of military/scientific "marriage" that the early promoters of the WSEG concept had in mind. It was an arrangement that the JCS found relatively congenial, particularly as compared to the other alternatives that were available to them later on, and the JCS came to defend it strongly as eminently suited to their analytical support needs.<sup>46</sup>

### 3. WSEG/IDA Tasks, 1956-1960

The organizational transformation of WSEG into the WSEG/IDA format generated a fresh round of discussions about the WSEG study program. As noted above, the transformation followed a thorough review and solid reaffirmation of the WSEG role and mission by both the JCS and the OSD, aided and abetted by several high-level advisory committees and groups, including some leading members of the academic/scientific community. The review heightened WSEG's visibility at a time when circumstances favored a more influential role for WSEG in the defense establishment. It greatly influenced the course of WSEG affairs.

The defense climate of the period was highly favorable to the WSEG/IDA venture. The accelerating technical complexity of weapons and weapons decisions was bringing about a substantial reinvigoration and elevation of the military R&D function at the OSD level. The Eisenhower Administration's "New Look" defense policies were giving all forms of science and technology a major boost. The era of supersonic aircraft, ballistic missiles, computers, advanced electronics, and nuclear plenty was in full swing. Foreign policy challenges and commitments reached global proportions, multiplying the potential theaters and

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<sup>46</sup> See below, p. 209ff.

contingencies that confronted defense planners and proliferating the military claims on resources that defense managers had to adjudicate. Technological progress was more than ever regarded as the key to solving the dilemma of assuring national security while keeping defense budgets in check, but it also produced strategic and tactical complications that upset settled patterns of military structure and function. Service roles and missions, seemingly sorted out after the aircraft controversies of the late 1940's and the early 1950's, were confused again by the advent of the missile. A new set of inter-Service disputes erupted, and new demands arose for impartial analytical studies to deal with them.<sup>47</sup>

WSEG, now supported by IDA, was still the principal analytical support agency at the level of the JCS and the OSD. The JCS and the SecDef could both call upon the substantial analytical capabilities of their own staffs, the Services, and, indirectly, the outside contractual world, if they chose, but WSEG possessed a unique combination of capabilities: supra-Service status, privileged access, and built-in military and scientific participation, plus a strong presumption against political, bureaucratic, or commercial bias. Its institutional position in the top echelons of the Pentagon and its communication links to the external research world through IDA provided some measure of assurance that the most complete information, the broadest possible base of scientific, technical, and military advice, and the most comprehensive judgments, could be brought to bear. Such expectations were entirely in accord with those expressed by the original founders of WSEG in 1948.

With the initiation of the WSEG/IDA phase of operations and in anticipation of a greatly expanded technical staff,

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<sup>47</sup> For a general discussion of this contextual climate, see Maier, "Science, Politics, and Defense in the Eisenhower Era"; and Glenn H. Snyder, "The 'New Look' of 1953" in Warner R. Schilling, et al., *Strategy, Politics, and Defense Budgets* (New York: Columbia University Press, 1962).

demands for WSEG studies increased--faster, in fact, than they could be fulfilled. In February 1956, during the MIT transition period and the start of the contractual staff buildup, the JCS asked Gen. Anderson for his views and recommendations concerning the current WSEG study program and future WSEG capabilities for an enlarged program.<sup>48</sup> Anderson replied that WSEG was still contending with an unfinished backlog of directives, including seven that had been in deferred status (but not rescinded) since 1954,<sup>49</sup> two additional ones received in June and July 1955, and one just received that month (February 1956). Virtually the entire available staff, including a substantial number of personnel on loan and under subcontract, were at work on the two 1955 projects, both of which were quite large and important (the first was on weapons systems for limited or peripheral wars,<sup>50</sup> the second on the implications of radioactive fallout<sup>51</sup>). The new study, on selected aspects of continental defense, was not yet underway.<sup>52</sup>

It would be the fall of 1956, wrote Anderson to the Chairman of the JCS, before WSEG could take on new work, and he did not expect the staff goal of 100 persons to be reached before mid-1957. Meanwhile, with Hill's concurrence as Director of Research, he recommended again that the seven deferred

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<sup>48</sup>JCSM 110-56 (Feb. 9, 1956).

<sup>49</sup>See above, pp. 100-102.

<sup>50</sup>Directed by SM 518-55 (June 29, 1955), resulted in WSEG R-17, *Limited War* (Aug. 31, 1956).

<sup>51</sup>Directed by SM 566-66 (July 14, 1955), this resulted in three reports: R-18, *Study of the Implications of Radiological Fallout (Military Implications)* (July 17, 1956); R-22, *Study of the Implications of Radiological Fallout (RW)* (June 10, 1957); and R-27, *A Study of Radiological Fallout from the Massive Use of Nuclear Weapons (RW)* (Aug. 2, 1957).

<sup>52</sup>Directed by SM-102-56 (Feb. 8, 1956), this resulted in two separate reports: R-24, *Study of the SAGE System in Air Defense* (July 10, 1957), and R-28, *The Soviet Nuclear Threat to Continental US, 1960-1963* (Oct. 9, 1957).

directives be withdrawn (three terminated, the other four covered by a blanket authorization to follow technical developments in the nuclear power and nuclear weapon areas and report to the JCS on anything significant.) After completion of the current studies, Anderson and Hill suggested six new study areas for consideration: countermeasures to ECM (ECCM), intermediate-range ballistic missiles, defense against ballistic missiles, technical intelligence equipment for nonatomic intelligence, military arrangements with allied countries, and CBR warfare.<sup>53</sup>

The JCS responded with modified approval. They decided that the proposed future study on ECCM was required as a matter of priority, and requested it in a separate directive, issued on April 4.<sup>54</sup> Then, a few weeks later, they rescinded five of the seven old directives--on air defense, nuclear-powered aircraft, nuclear submarines, nuclear warships, and atomic depth bombs--but asked that the other two, weapons systems for carrier task forces and for ASW, still be carried in a deferred status. These two had been in the WSEG program since 1949 as continuing study areas, and had already been the subject of WSEG reports, but neither the Army nor the Air Force would agree to terminate them.<sup>55</sup>

As to the suggestions for future study, in addition to the ECCM study already accepted, the JCS approved three others for initiation after completion of the current tasks (and after approval by the JCS of specific study plans) and turned down two

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<sup>53</sup>Director, WSEG, Memo for Chairman, JCS, "Program of Studies by WSEG for the JCS" (Mar. 28, 1956).

<sup>54</sup>SM 273-56, Memo for Director, WSEG, "Evaluation of ECCM Measures" (Apr. 4, 1956). This directive resulted in WSEG R-20, *Program for Improving Continental Air Defense in an ECM Environment* (Oct. 29, 1956).

<sup>55</sup>Director, WSEG, Memo for Director, Joint Staff, "Program of Studies by WSEG for the JCS" (May 21, 1956); JCS SM 417-56, Memo for Director, WSEG, "Program of Studies by the WSEG" (May 22, 1956).

more. They stated that studies of CBR warfare and defense against ballistic missiles were both highly desirable, and that a study of intermediate-range ballistic missiles, to include nonballistic missiles of comparable range, was desirable as well. They said, however, that a study of military arrangements with allies and other non-Communist countries was neither advisable nor necessary, since the subject was under continuous study by JCS committees already, and that technical intelligence equipment problems were being studied by intelligence agencies.<sup>56</sup>

At this juncture, the Assistant Secretary for R&D<sup>57</sup> put in several direct requests for WSEG studies, coordinated with but not channelled through the JCS: a comparative study of the Nike B and Talos air defense systems, requested on June 26, 1956; defense against ICBM's, requested in July 1956; and air defense of NATO Europe, requested August 10, 1956.<sup>58</sup> All three were urgent requests and were accommodated within the ongoing WSEG/IDA program, but not without major adjustments in schedules, priorities, personnel assignments, and resorting to "crash" expedients for additional personnel.

These three OSD (R&D) projects were noteworthy as the first that were undertaken by WSEG directly for the Assistant Secretary for R&D under the terms of the WSEG charter. WSEG had always operated under dual sponsorship rules, of course, that in principle permitted elements of OSD other than the JCS to request studies, but with one exception in 1951--a direct

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<sup>56</sup>SM 509-56, Memo for Director, WSEG, "WSEG Program" (June 19, 1956).

<sup>57</sup>The Assistant Secretary at this time was Dr. Clifford C. Furnas, who succeeded Quarles in December 1955. Quarles became Secretary of the Air Force in 1955 and Deputy Secretary of Defense in 1957.

<sup>58</sup>The reports issued in response to these requests were WSEG R-19, *A Study of Nike B and TALOS IM-70 Systems* (Nov. 29, 1956); R-21, *Defense Against Intercontinental Ballistic Missiles (AICBM)* (Aug. 30, 1957); and R-25, *Air Defense of NATO Europe and Its Related Problems* (Oct. 14, 1957, first phase, and Dec. 5, 1958, final report).

SecDef request for a special study on biological warfare--all such requests had previously been transmitted to WSEG through the JCS. In practice this implied not only JCS concurrence, in the case of lateral elements of OSD, involving the JCS procedure of Service concurrences at the Ops Deps level or higher, but also that the JCS had a substantial voice in setting the terms of reference and other guidance for the conduct of the study.

The three direct requests from the Assistant Secretary for R&D in 1956 were handled differently, however. They were coordinated with the Joint Staff to ensure that there was no unacceptable interference with high priority JCS tasks and to make room for the projects within the overall WSEG/IDA program, but JCS concurrence on task definitions, task outlines, and the like were not required and JCS approval procedures were not invoked. In this respect, the three studies were the first of a large number that WSEG performed directly for the R&D agencies of OSD, altering somewhat the outside impression that WSEG belonged to, or worked only for, the JCS.<sup>59</sup>

In the case of these particular studies, Gen. Anderson apparently had less difficulty with the requisite JCS coordination than with finding the manpower resources to perform the studies. Although all three studies dealt with technical hardware issues, they were obviously of considerable importance and currency for the JCS as well as the Assistant Secretary for R&D. The anti-ICBM study, for example, was already on the JCS list of future projects for WSEG, and after consulting with the OJCS Anderson said he was "willing and eager" to undertake the work despite WSEG's heavy commitments.<sup>60</sup>

In carrying out the studies there was also considerable coordination with agencies other than the JCS and the Assistant Secretary for R&D. The NATO Air Defense study, for example,

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<sup>59</sup>Interviews.

<sup>60</sup>Director, WSEG, Memo for the Assistant Secretary (R&D), "ABM Program" (Aug. 3, 1956).

required WSEG/IDA analysts to consider political, geographic, and economic factors, including the political and military policy background of NATO Europe, and was accordingly conducted in close coordination with the Assistant Secretary for ISA as well as the other principals.<sup>61</sup>

With the formalization of the IDA contract on September 1, 1956, Gen. Anderson issued a task order to IDA covering all current projects, including those assigned by the JCS and the Assistant Secretary for R&D, as work initiated under the MIT contract that should be continued under IDA. The task order was quite general, simply listing the projects by title without elaboration and without further indication as to priority, level of effort, or other details, which were to be dealt with separately. The list was as follows:

Radioactive Fallout

Continental Defense

1. Nike/Talos
2. Sage System Study
3. Threat Evaluation Study
4. Counter-ECM Study

Air Defense of NATO Europe

Evaluation of Ballistic Missile Uses

Defense Against Ballistic Missiles

Utilization of Indigenous Forces of Underdeveloped Countries for Limited Wars<sup>62</sup>

In addition, said the task order,

*It is desired that the members of IDA follow the technical programs in the fields of nuclear power and nuclear weapons and such other technological developments as may be found to have an application to weapons and weapons systems.*

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<sup>61</sup>WSEG Annual Activities Report, FY 57.

<sup>62</sup>This latter was a follow-on to the limited war study, R-17, and was not formally requested by JCS directive until Mar. 15, 1957. It resulted in WSEG R-29, published Aug. 7, 1958.

When new facts, conclusions, or their indication are found, at any time during the corporation's work for the Weapons Systems Evaluation Group, *which may influence present or future weapons systems*, reports thereof will be made to me without delay [emphasis added].

To these rather sweeping instructions, remarkable by contrast with subsequent legalistic practices in the contractual world but thoroughly in keeping with the spirit of the 1956 WSEG/IDA arrangement, Anderson added an even broader catchall provision:

Whenever I am called on by either the Chairman of the Joint Chiefs of Staff or the Assistant Secretary of Defense (Research and Development) to perform any operational tasks not covered in separate Task Orders in which the immediate services of any member of the Institute for Defense Analyses are needed, this Task Order will serve as the authority to furnish the services needed.<sup>63</sup>

It seems abundantly clear from the above task order that both Anderson and Hill, who helped write the terms, expected that WSEG and IDA would continue to work closely together in performing their mutual mission without excessive concern for contractual niceties of the kind that became necessary in later years.<sup>64</sup>

After the foregoing group of WSEG/IDA tasks was authorized, other studies were added as specific requests developed, either as a result of requirements arising in a sponsoring agency, initiatives taken by WSEG/IDA, or both. In March 1957, for example, after the WSEG limited war study (R-17) was briefed to the JCS, the JCS asked for further study of the utilization of indigenous forces, one of the subjects that R-17 had suggested was worth further exploration.<sup>65</sup> The next month, on

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<sup>63</sup>Director, WSEG, Task Order No. SD-35-T1, "Task Order for Work to be Performed by Institute for Defense Analyses" (Sept. 10, 1956).

<sup>64</sup>See below, pp. 209ff.

<sup>65</sup>SM 204-57 (Mar. 15, 1957); resulted in WSEG R-29 (Aug. 7, 1958).

the basis of the same WSEG report, the Assistant Secretary for Research and Engineering (the office that resulted from a merger of the offices of the Assistant Secretaries for R&D and AE, Applications Engineering, in March 1957) asked for a follow-on study of close support weapons for limited war.<sup>66</sup> Also in April, as a result of a request from the NSC through the JCS, WSEG was asked to compare the overall military advantages of long-range ballistic missiles and manned bombers, assuming that the IRBM and ICBM systems under development attained their predicted characteristics.<sup>67</sup> In May, following a WSEG/IDA suggestion that was brought to the attention of the Armed Forces Policy Council and the SecDef, the JCS asked for a study of alternative geographic siting and deployment policies for prospective U.S. ICBM's.<sup>68</sup>

The ECM/ECCM study area was also singled out for further WSEG/IDA work in 1957, emerging as an area that absorbed considerable effort for a good many years and brought forth study contributions of prime importance. There was mounting national defense concern at the time over the ECM threat, particularly with respect to air defense systems, which had come to depend heavily on electronics of all kinds for communications, sensing, guidance, navigation, etc. Given the situation, which included

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<sup>66</sup>Assistant Secretary of Defense (R&E), Memo for Director, WSEG, "Close Support Study" (Apr. 10, 1957). Resulted in WSEG R-32, *Tactical Fire Support Systems for Land Forces in Limited War (1959-1968)*, published in four parts (Feb. 5, 1958 to July 15, 1959).

<sup>67</sup>WSEG *Annual Activities Report*, FY 57. The report, WSEG R-23, *The Relative Military Advantages of Missiles and Manned Aircraft* (May 6, 1957), was subsequently briefed to the JCS, the Deputy SecDef, the NSC, and the NSC Planning Board.

<sup>68</sup>SM 369-57 (May 16, 1957). The idea was apparently first proposed in I. I. Deutsch, Memo for Dr. A. G. Hill, "Proposal for a Study of Ballistic Missile Basing Possibilities" (Mar. 13, 1957), and was considered by the Armed Forces Policy Council of DoD on April 9. See SM 312-57, Memo for Adm. Radford, Gen. Twining, Gen. Taylor, and Adm. Burke (May 24, 1957).

rapidly changing technology and limited operational experience, major uncertainties had developed as to the potential degradation that might be caused by enemy ECM actions and, correspondingly, as to the effectiveness of remedial counter-counter-measures (ECCM). The Net Evaluation Subcommittee of the NSC noted a serious lack of knowledge in the area, and the Chairman of the JCS, Adm. Arthur W. Radford, considered the opinions of both operational and technical experts excessively "subjective and qualitative," varying widely.<sup>69</sup> Yet the strategic importance of the air defense problem and skyrocketing costs for air defense weapons and equipment made solutions urgent.

The WSEG/IDA team had undertaken a preliminary survey of the entire spectrum of ECCM possibilities in air defense for the JCS in 1956, resulting in WSEG R-20, *A Program for Improving Continental Air Defense Systems in an ECM Environment*, published December 26, 1956. The report, prepared with the assistance of a large number of experts from all over the country, from industry, government, and the Services, contained somber estimates of the disruptive effects of ECM based on technical forecasts. In view of the dearth of reliable operational data, Adm. Radford thereupon proposed that NORAD and SAC conduct full-scale operational tests, as a matter of high national priority, with an "objective evaluation" to be accomplished by WSEG.<sup>70</sup>

The Radford proposal was approved by the JCS in June 1957. The JCS expanded the terms of reference to include the effects of ECM on the major weapons systems of all Services across the board: Phase I was to include operational tests of the effectiveness of ECM on continental air defense systems, Phase II to cover fleet air defense systems, and Phase III to cover all other weapons systems. As stated in the JCS directive,

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<sup>69</sup>Chairman JCS, CM 486-57, Memo for Gen. Twining, Gen. Taylor, Adm. Burke, and Gen. Pate, "Operational Effectiveness of ECM" (May 23, 1957).

<sup>70</sup>Ibid.

all operational tests by field units were to be conducted in support of the evaluation by WSEG.<sup>71</sup>

The subsequent ECM/ECCM study became a long-term project, running for some 5 years, described by WSEG as "the first fully coordinated scientifically planned effort ever attempted by a DoD organization to evaluate the effects of ECM on missiles and planes used in both defensive and offensive roles."<sup>72</sup> The study included field tests of system elements at the Fort Bliss-White Sands Proving Ground and elsewhere, laboratory-type tests and computer simulations carried out in conjunction with the System Development Corporation (the RAND spin-off that helped the Air Force with technical support for the SAGE AC&W system), together with comprehensive operational tests carried out in the Chicago/Milwaukee air defense sector and at sea off the Virginia capes. In the Chicago tests, which took place in the fall of 1958, SAC B-52's simulating enemy bombers carried out a series of mass raids against local Nike antiaircraft defenses, employing ECM jamming transmitters and chaff. WSEG took the extraordinary step at one point of obtaining approval through JCS and NSC channels to close O'Hare International Airport to all incoming or outgoing traffic for 24 hours, as part of the test.<sup>73</sup>

The WSEG/IDA ECM/ECCM studies resulted in a series of individual test reports and two summary reports, WSEG R-43, *Evaluation of the Effectiveness of Electronic Countermeasures on Weapons Systems for the Air Defense of North America*, January 30, 1960; and WSEG R-63, *Evaluation of the Effectiveness of ECM on the Performance of US Navy Air Defense Weapons Systems*, August 30, 1962. Both were influential reports that for the first

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<sup>71</sup> SM 410-57, Memo for Director, WSEG, "Operational Evaluation of the Effectiveness of ECM" (June 6, 1957).

<sup>72</sup> WSEG Annual Activities Report, FY 58.

<sup>73</sup> Interviews. Since O'Hare was normally the busiest airport in the country (and the world) this approval was obviously a considerable tribute to WSEG's stature at the time, and to the importance which the JCS and national political authorities attached to facilitating the WSEG mission.

time made authoritative operational test data on ECM available in the air defense field.<sup>74</sup>

Several other additions were made to the WSEG/IDA work program in 1957, continuing the trend toward studies that were directly related to current strategic planning and budgetary decisions. In July 1957 WSEG was again asked by the JCS to reappraise the applicability of BW in general and limited war, taking into consideration advances in R&D since the last WSEG report on the subject 2 years before.<sup>75</sup> In October the JCS asked for the first of what was ultimately a series of studies on defense against sea-launched missile attacks, involving analyses of the nature of the threat as well as U.S. antisubmarine and antimissile capabilities against it.<sup>76</sup> And in November the JCS asked WSEG to review air defense requirements, in view of prospective changes in the threat, and to include warning systems and active defenses against ballistic missiles as well as strengthened defenses against aircraft.<sup>77</sup>

The latter request was the direct offshoot of a report made in June 1957 by an ad hoc JCS Committee on the Air Defense of North America in which the WSEG/IDA team played a leading role. The Committee, formed in the fall of 1956, was composed of a senior officer from each Service plus a representative

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<sup>74</sup>Interviews. The projected third phase of the study on ECM against other weapons systems was cancelled by the JCS in 1960. See *WSEG Annual Activities Report*, FY 61.

<sup>75</sup>Directed by SM 483-57 (July 9, 1957); reported in WSEG R-31, *A Reappraisal of Biological Warfare* (Aug. 15, 1958). The previous report on BW was R-14, *The Status of Biological Warfare Weapons Systems* (June 1, 1955).

<sup>76</sup>SM 709-57 (Oct. 2, 1957); reported in WSEG R-35, *Defense Against Sea Launched Missile Attack* (Mar. 20, 1959). The first, second, and third annual reviews of R-35 were published on Jan. 25, 1960, Mar. 29, 1961, and Feb. 5, 1962, respectively, pursuant to JCS requests.

<sup>77</sup>SM 831-57 (Nov. 25, 1957), supplemented by SM 27-58 (Jan. 8, 1968); reported in WSEG R-33, *Review of Air Defense Weapons Systems* (Dec. 23, 1957, phase I, and Jan. 17, 1958, phase II).

from WSEG. The members were Gen. Carl A. Spaatz, USAF Ret.; Gen. Thomas T. Handy, USA Ret.; Adm. John J. Ballentine, USN Ret.; and Dr. Hill from WSEG (selected by Gen. Anderson). Hill was made chairman of the Committee, and WSEG furnished the necessary technical support, as well as administrative, secretarial, clerical, and editorial assistance.<sup>78</sup>

Even more important than these individual studies in terms of the evolving status of WSEG and IDA was the WSEG/IDA role in supporting the 1957 Gaither Committee. This panel of distinguished citizens under the chairmanship of H. Rowan Gaither of the Ford Foundation had been brought together at President Eisenhower's request to make an independent appraisal of the relative merits of active and passive defense measures against nuclear attack--in order, as Eisenhower wrote later, to bring to bear "new minds and experience" with no departmental or other axes to grind.<sup>79</sup> The Committee called on IDA as its prime contractor to help support the panel participants, with technical assistance, research and fact-finding, managerial and

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<sup>78</sup>WSEG Annual Activities Report, FY 57.

<sup>79</sup>See Eisenhower, *The White House Years: Waging Peace*, pp. 219-23.

The Committee was officially called the Security Resources Panel of the Science Advisory Committee of the Office of Defense Mobilization (the 1954 Killian Committee, formed in somewhat the same way for a somewhat similar purpose, was designated the Technological Capabilities Panel of the same group). Participants in the Gaither operation included prominent corporate executives like William C. Foster of Olin Mathieson (Deputy SecDef from 1951 to 1953) and Robert C. Sprague of the Sprague Electric Company (who became co-directors of the Group when Gaither fell ill); academic officials like President Robert D. Calkins of Brookings and President James R. Killian of MIT; retired military leaders like Gen. James H. Doolittle, Adm. Robert B. Carney, and Gen. John E. Hull (the first WSEG Director); and scientists like Dr. Ernest O. Lawrence of California, Dr. I. I. Rabi of Columbia, and Dr. Jerome B. Wiesner of MIT. The full roster is given in *Deterrence and Survival in the Nuclear Age (The "Gaither Report" of 1957)*, reprinted by U.S. Congress, Joint Committee on Defense Production (Washington, D. C.: Government Printing Office, 1976).

administrative services, editorial and publication support, security, and the like. General McCormack, IDA President, Hill, Vice-President and Director of Research, and Daniel H. Gould, Administrative Officer, performed central coordinating functions. Seven IDA/WSEG analysts--including an Air Force colonel from WSEG--served as members of the analytical staff, working with a large number of specialists from the university world, private industry, and the government, and facilitating access to pertinent WSEG studies and background expertise. With WSEG cooperation, IDA also supported the bulk of the Committee's administrative and secretarial needs with a contingent of some 20 people, and handled most of the bookkeeping, financial, travel, and similar services.<sup>80</sup>

The Gaither Report was one of the most influential documents of its kind, largely due to its top-level sponsorship and its timeliness. It was submitted to the President on November 7, 1957, just weeks after the Soviet launch of Sputnik, the first artificial earth satellite, in October 1957. It emphasized recent advances in Soviet missile technology and the potential vulnerability of U.S. strategic retaliatory forces just when national attention focused dramatically on the risk of a "missile gap," and it urged a substantial acceleration of U.S. strategic programs, including both offensive and defensive weapons systems (and a national system of fallout shelters), at a time when the political climate turned suddenly receptive to stronger defense efforts. Although President Eisenhower disagreed with the Report's "far from optimistic" findings and was annoyed when they were leaked to the press, he nonetheless considered the Report useful for "gadfly" purposes within the

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<sup>80</sup>The IDA role is summarized in the IDA (Second) *Annual Report* (Mar. 18, 1958). See also the statement by Vice Adm. John H. Sides, Director of WSEG, before the House of Representatives Committee on Appropriations, Subcommittee on Department of Defense, 1959.

administration and used its recommendations as a "checklist" for a critical examination of current defense programs.<sup>81</sup>

The Gaither study had a lasting effect on the WSEG/IDA operation. First, deliberations in the NSC and other forums regarding the Gaither recommendations triggered White House requests for JCS reactions, which in turn led to a number of WSEG study assignments during the next several years. Secondly, because the additional exposure and performance of IDA confirmed the utility of the IDA contractual mechanism, the study contributed to the further expansion of IDA outside of the WSEG framework. Thirdly, and more broadly, the Report added to the impetus, already underway, for further centralization in the defense organization, thus altering the functional context within which both WSEG and IDA came to operate. While these developments would doubtless have eventually come to pass without a Gaither Report, the Report was a contributing factor at the time.<sup>82</sup>

The Gaither Report led directly to one of the major WSEG task assignments of 1958, a crash study on the overall strategic force posture. In January 1958, after a series of briefings and discussion meetings on issues raised by the Gaither Report, the NSC asked for specific JCS views on (a) whether to program additional first generation ICBM's beyond those already planned, (b) if so, whether to build and harden additional launching sites, pending the projected buildup of second-generation systems, and (c) whether to accelerate the construction program for Polaris SSBN's.<sup>83</sup> The JCS turned to WSEG for supporting analytical work, issuing a broad request on February 10 for "scientific analyses designed to provide the

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<sup>81</sup> Eisenhower, *The White House Years: Waging Peace*, p. 223.

<sup>82</sup> See Samuel P. Huntington, *The Common Defense* (New York: Columbia University Press, 1961), pp. 106-113.

<sup>83</sup> JCS 2105/295, "Production of Additional ICBMs and Launching Sites" (Feb. 24, 1958).

basis for the strategic evaluation of an appropriate strategic weapons systems posture by the JCS."<sup>84</sup> Significantly for WSEG, the JCS advised against taking final positions on the issues raised by the Gaither Report prior to completion of the WSEG analyses. These analyses were expanded to cover virtually the whole range of systems related to U.S. nuclear retaliatory capabilities, including offensive and defensive systems and their interrelationships. Findings were reported in WSEG R-30, *Evaluation of Offensive and Defensive Weapons Systems*, which was issued in increments to fit the timetables for JCS action: "interim" reports on February 19 and March 10, followed by a final report on July 15, 1958.<sup>85</sup>

A series of additional ad hoc study requests during 1958 reflected the same concern with strategic weapons. Toward the end of February the JCS asked for studies of the potential utility of very high yield nuclear weapons, the military applications of artificial satellites, and the likely impact of civilian morale on military capabilities in general war. In March the Chiefs asked for a study of the possible use of high yield weapons in air defense, in August for one on the possible contributions of chemical warfare, and in September on the uses of ECM in defense against ballistic missiles.<sup>86</sup> Requests from the Assistant Secretary for R&E in 1958 also concerned strategic weapons: one in April for a study of the communications effects of nuclear blackout and associated nuclear explosion phenomena,

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<sup>84</sup>WSEG Annual Activities Report, FY 58.

<sup>85</sup>Ibid.

<sup>86</sup>The following WSEG reports were issued in response to these requests: R-34, *High-Yield Air-Delivered Nuclear Weapons* (Dec. 8, 1958); R-39, *Military Applications of Artificial Earth Satellites* (June 23, 1959); R-42, *Effect of Civilian Morale on Military Capabilities in a Nuclear War Environment* (Jan. 8, 1960); R-38, *High-Yield Weapons in Air Defense* (May 25, 1959); R-40, *Toxic Chemical Warfare: 1959* (Aug. 14, 1959); and R-36, *ECM Against the Ballistic Missile Threat* (May 18, 1959).

and another in May on the military value and effectiveness of nuclear-propelled military aircraft.<sup>87</sup>

The stream of ad hoc tasks in the strategic weapons area continued in 1959. In February the JCS asked for an operational evaluation of a projected advanced air-to-surface missile, including its comparative cost effectiveness.<sup>88</sup> In July they asked for a comparison of a proposed Polaris/Cruiser system and the current Polaris/Submarine system.<sup>89</sup> The Director, Defense Research and Engineering (DDR&E), the successor to the Assistant Secretary for R&E, asked for studies of the role of the F-108 long-range interceptor (versus Bomarc and Nike) in continental air defense,<sup>90</sup> and of the Nike-Zeus antiballistic missile system.<sup>91</sup>

Meanwhile, the Director of WSEG, Vice Adm. John H. Sides, who had succeeded Gen. Anderson in August 1957,<sup>92</sup> apparently

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<sup>87</sup>The following WSEG reports were issued: R-41, *Consequences of ARGUS and Blackout Phenomena Upon Military Communications* (Oct. 8, 1959); and R-37, *Evaluation of Military Applications of Nuclear-Powered Aircraft* (May 25, 1959). It is interesting to note that the R-41 project was coordinated with a concurrent RAND study on military applications and exploitation of the ARGUS phenomena, which had only recently come to light as a result of high-altitude nuclear tests. See *WSEG Annual Activities Report*, FY 58 and FY 59.

<sup>88</sup>SM 300-59 (Feb. 17, 1959); resulted in R-44, *Evaluation of an Advanced Air-to-Surface Missile* (Sept. 18, 1959).

<sup>89</sup>SM 648-59 (July 1, 1959); resulted in R-47, *Evaluation of the POLARIS Cruiser System* (June 1, 1960).

<sup>90</sup>DDR&E Memo (Jan. 13, 1959); resulted in R-46, *The Role of the F-108 Long-Range Interceptor in CONUS Air Defense* (Oct. 30, 1959).

<sup>91</sup>DDR&E Memo (July 10, 1959); resulted in R-45, *Potential Contributions of NIKE-ZEUS to Defense of the US Population and Its Industrial Bases, and the US Retaliatory System* (Sept. 23, 1959).

<sup>92</sup>Sides was Director of the Guided Missile Division, Office of the CNO, from 1952 to 1956 and was Deputy to the Special Assistant to the SecDef for Guided Missiles (William Holaday) from April 1956 until his assignment (continued on next page)

decided that the time was ripe for stock-taking. The WSEG/IDA contractual arrangement was in full operation. The technical staff numbered 90 by early 1959 and was approaching the initial goal of 100 (which it reached in mid-year), with a roster of 100 consultants as backup. The WSEG military contingent, which had been kept nearly constant during the IDA buildup, was due to expand from 36 to 47 members in order to maintain an appropriate balance of multi-Service military participation in each project. The WSEG/IDA workload of requested studies had increased considerably, especially in the aftermath of Sputnik, and the topics were considerably more important and current, indicating a greater utilization of the WSEG/IDA mechanism for real-time analytical support. The number of reports had increased steadily, outpacing the expansion of the staff, from 4 in 1956, 9 in 1957, and 10 in 1958 to 13 in 1959. The majority of the reports were still produced in response to JCS requirements, as before, but from 1956 on a significantly greater number were produced for OSD. The reports issued from calendar 1956 through 1959 are summarized in Exhibit 4.

The expanded size and workload had been accompanied by further structuring within WSEG. A Division of Supporting Studies was formed in June 1957, under an Assistant Director of Research, as a vehicle for maintaining professional competence among the staff, providing an identifiable reservoir of skills and capabilities in recurring study areas, and perhaps also serving as an additional outlet for the professional interests of WSEG/IDA personnel.<sup>93</sup> It was hoped that the new division would

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(cont'd) to WSEG on Aug. 1, 1957. After leaving WSEG in August 1960 he became Commander-in-Chief, U. S. Pacific Fleet.

<sup>93</sup>Director, WSEG, Memo for All Members, WSEG/IDA, "Division of Supporting Studies" (June 28, 1957). In this memo, Gen. Anderson expressed the hope that the division might help the group acquire "some of the academic aspects of a real institute," but in fact workload priorities never permitted this to get very far. Interviews.

Exhibit 4. WSEG REPORTS, 1956-1959

Report No.	Topic	Date	Agency
R-17	Limited War	Aug. 31, 1956	JCS
R-18	Study of the Implications of Radiological Fallout	July 17, 1956	JCS
R-19	Study of Nike B and TALOS IM-70 Systems	Nov. 29, 1956	OSD
R-20	Program for Improving Continental Air Defense in an ECM Environment	Apr. 4, 1956	JCS
R-21	Defense Against Intercontinental Ballistic Missiles	Aug. 30, 1957	ASD/R&D
R-22	Study of the Implications of Radiological Fallout	June 10, 1957	JCS
R-23	Relative Military Advantages of Missiles and Manned Aircraft	May 6, 1957	JCS
R-24	Study of the SAGE System in Air Defense	July 10, 1957	JCS
R-25	First Phase, Air Defense of NATO Europe and its Related Problems	Oct. 14, 1957	ASD/R&D
R-26	Geographic Location of Initial ICBM Units	Aug. 30, 1957	JCS
R-27	Study of Radiological Fallout from the Massive Use of Nuclear Weapons	Aug. 2, 1957	JCS
R-28	Soviet Nuclear Threat to Continental US 1960-1963	Oct. 9, 1957	JCS
R-33	Phase I, Review of Air Defense Systems	Dec. 23, 1957	JCS
R-20 <sup>a</sup>	First Re-Evaluation, ECM	Mar. 26, 1958	JCS
R-23 <sup>a</sup>	First Annual Review, Missiles vs. Manned Aircraft	August, 1958	JCS
R-25 <sup>a</sup>	Final Report, NATO Air Defense	Dec. 5, 1958	ASD/R&D
R-29	Utilization of Indigenous Forces	Aug. 7, 1958	JCS
R-30	Interim Report, Medium and Long-Range Delivery Systems	Feb. 19, 1958	JCS
	Interim Report, On the Need for Additional Emphasis on Certain Weapons Systems	Mar. 10, 1958	JCS
	Final Report, Offensive and Defensive Weapons Systems	July 15, 1958	JCS
R-31	A Reappraisal of Biological Warfare	Aug. 15, 1958	JCS
R-32	Interim Report, Tactical Fire Support Systems for Land Forces in Limited War 1959-1967	Feb. 5, 1958	
	Part I, Target Acquisition, Rapid Reaction and Weapons Problems in Tactical Fire Support	July 3, 1958	ASD/R&E

<sup>a</sup>Although identified as supplemental to a previous report of the same number, sufficiently distinctive to warrant listing by WSEG as a separate report.

Exhibit 4 (cont'd)

Report No.	Topic	Date	Agency
R-33 <sup>a</sup>	Phase II, Review of Air Defense Systems	Jan. 15, 1958	JCS
R-34	High Yield Air-Delivered Nuclear Weapons	Dec. 8, 1958	JCS
R-43	Evaluation of Effectiveness of Electronic Countermeasures on the Weapons Systems for Air Defense of North America, Phase I		
	Test Report No. 1	July 29, 1958	
	Test Report No. 2	Oct. 13, 1958	JCS
R-32	Part II, Artillery and Surface-to-Surface Missiles for Tactical Fire Support of Land Forces in Limited War	Apr. 6, 1959	
	Part III, Recognition and Location of Tactical Fire Support Targets in Limited War	Apr. 21, 1959	
	Part IV, Aircraft Characteristics Suited for the Mission of Non-nuclear Daylight Visual Close Air Support Against Fleeting Targets of Opportunity in Limited War	July 15, 1959	ASD/R&E
R-35	Defense Against Sea Launched Missile Attack	Mar. 20, 1959	JCS
R-36	ECM Against the Ballistic Missile Threat	May 18, 1959	JCS
R-37	Evaluation of Military Applications of Nuclear-Powered Aircraft	May 25, 1959	DDR&E
R-38	High-Yield Weapons in Air Defense	Mar. 20, 1959	JCS
R-39	Military Applications of Artificial Earth Satellites	June 23, 1959	JCS
R-40	Toxic Chemical Warfare: 1959	Aug. 14, 1959	JCS
R-41	Consequences of ARGUS and Blackout Phenomena Upon Military Communications	Oct. 8, 1959	DDR&E
R-42	Effect of Civilian Morale on Military Capabilities in a Nuclear War Environment	Oct. 20, 1959	JCS
R-43 <sup>a</sup>	ECM, Phase I, Test Report No. 3	May 21, 1959	JCS
R-44	Evaluation of an Advanced Air-to-Surface Missile	Sept. 18, 1959	JCS
R-45	Potential Contribution of NIKE-ZEUS to Defense of the US Population and its Industrial Bases and the US Retaliatory System	Sept. 23, 1959	DDR&E
R-46	Role of the F-108 Long-Range Interceptor in CONUS Air Defense	Oct. 30, 1959	DDR&E

<sup>a</sup>Although identified as supplemental to a previous report of the same number, sufficiently distinctive to warrant listing by WSEG as a separate report.

promote a greater measure of continuity and coherence in selected disciplinary and functional fields and enable the organization to respond in a more timely fashion to ad hoc study requests in such fields. The division began in a modest way with mathematics and cost analysis groups in 1957, expanded in the following year, with groups in ballistic missiles, nuclear, air defense, and social studies, and in 1959 added a group in undersea warfare. It was not intended to divert effort from assigned projects and there is no evidence that it ever did so; its existence reflected recognition of the need for professional capabilities to be maintained at a level that would enable IDA/WSEG to meet such demands as could be anticipated both readily and effectively.<sup>94</sup>

Admiral Sides summarized these changes in a detailed memorandum to the JCS in January 1959 that was intended as a point of departure for initiating consultations about the future WSEG study program.<sup>95</sup> He described the capability of the new Division of Supporting Studies to provide in-depth analytical support in specified areas, recommended combined WSEG/Joint Staff discussions as to future JCS study requirements, and went on to suggest two problems as candidates for preliminary consideration: the capacity of programmed strategic forces to carry out "counterforce" missions in the 1968-75 period, and the adequacy of U.S. production of fissionable material to meet weapons requirements in the 1960-70 decade. At the time both were relatively unexplored and potentially troublesome questions of critical national importance for all three Services.

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<sup>94</sup>Director and Director of Research, WSEG (Adm. Sides and Dr. Hill); Memo for WSEG Personnel, "Additional Organization Within the WSEG Staff" (Aug. 29, 1958). See also *WSEG Annual Activities Report*, FY 59.

<sup>95</sup>Memo from Director, WSEG, for the JCS, "Possible WSEG Activities" (Jan. 26, 1959).

The JCS response was favorable on the whole, although not specifically so with respect to the two proposed study topics. The Director of the Joint Staff was asked to consult with Admiral Sides with a view to defining future study areas for WSEG support, and the Joint Staff (J-5) was assigned the task of reviewing WSEG's recent work for the JCS and examining requirements for additional study tasks.<sup>96</sup>

When the Joint Staff review was completed, the JCS were generally laudatory with respect to WSEG's past performance and potential. In the final decision paper, the JCS wrote:

The Joint Chiefs of Staff believe that WSEG is a valuable research-analytical activity and can contribute extensively as an advisory adjunct to strategic planning.<sup>97</sup>

However, they added,

...such research capability should generally not be dissipated by requirements for broad general area studies. Rather, studies more directly concerned with evaluation of specific weapons systems should be undertaken.

In terms of the latter, they pointed out, one of the most difficult problems before the DoD and the Services during the next few years was the selection of an "optimum mix" of weapons systems for use against strategic targets in a general war that could start in a variety of ways. WSEG R-30 (*Offensive and Defensive Weapons Systems*, July 15, 1958) had addressed the problem in part, but there had been major developments since then that the JCS wished to have considered. Another important problem concerned evaluation of the capabilities of tactical air power in both general and limited war situations: according to the JCS there was no current study available on the relative value of tactical air power in a broad range of

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<sup>96</sup>JCS 1812/101 (Feb. 13, 1959).

<sup>97</sup>JCS SM 660-59, Memo for Director, WSEG, "Possible WSEG Activities" (Sept. 7, 1959).

circumstances that could be utilized to help determine future tactical air requirements.

Accordingly, continued the memo, the JCS wanted WSEG to undertake two studies: (a) an evaluation of offensive weapons systems that might be utilized in a strategic role, particularly during the 1964-67 period; and (b) an evaluation of attack carrier striking forces and land-based tactical air forces under general and limited war situations, from 1960 to about 1967.<sup>98</sup>

The JCS were quite explicit as to the terms of reference for the two studies. Both studies were to take into account changes in the threat, the free world situation, and military technology. The strategic offensive systems study was to consider strategic bombers, air-to-surface missiles, fleet ballistic missiles (both submarine and surface), ICBM's, and IRBM's. Situational variables were to range from surprise attack on the United States to situations in which strategic warning might permit U.S. initiatives. System effectiveness factors were to include reliability, reaction time, responsiveness to control, penetration capability, accuracy against different targets, vulnerability to a variety of enemy actions, and costs, to include the costs of acquisition, maintenance, manpower, and anticipated useful life.

The tactical airpower study was also to consider a comprehensive range of conditions and criteria. It was to consider political-military situations throughout the world in which limited wars might break out, and was to include separate evaluations for situations in which nuclear weapons might or might not be authorized.<sup>99</sup>

Both studies were undertaken as a matter of urgency and highest priority and constituted the bulk of the WSEG/IDA effort during the rest of 1959 and 1960. Ongoing tasks were

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<sup>98</sup>Ibid.

<sup>99</sup>Ibid.

brought to completion during the latter part of 1959 and the early months of 1960, except for the long-term ECM study (the results of which, however, were utilized in both the strategic weapons and tactical air projects). New studies were discouraged, and the only new projects initiated were a study of the Nike-Zeus antiballistic missile system for DDR&E, which had already been decided upon by July 1959;<sup>100</sup> a nuclear weapons study for the Assistant to the SecDef for Atomic Energy in January 1960;<sup>101</sup> a study of air defense control systems for the European theater, requested by DDR&E in April 1960;<sup>102</sup> a study of geodetic and mapping uncertainties requested by the Deputy SecDef in June 1960;<sup>103</sup> a study of seaborne ballistic missiles (e.g., "Waterborne Minuteman") requested by DDR&E in September 1960;<sup>104</sup> and a study of strategic arms control measures requested by the JCS in October 1960.<sup>105</sup> All of these were relatively small-scale efforts, albeit of considerable importance to the clients, that WSEG/IDA was able to handle simultaneously while concentrating on the two large JCS studies. The latter absorbed most of the available staff resources, including a majority of the most able and experienced analysts, for more than a year.<sup>106</sup>

The two studies had considerable impact. In terms of the intrinsic importance of their subject matter, their

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<sup>100</sup>Resulted in WSEG R-45 (see fn. 91).

<sup>101</sup>WSEG R-51, *Nuclear Weapons Study* (Sept. 25, 1961).

<sup>102</sup>WSEG R-49, Part I, *Preliminary Evaluation of the AN/MSG-4 Air Defense Weapons Control System* (July 13, 1960); Part II, *Air Defense Weapons Control System in the European Theater* (Feb. 8, 1961); and Part III, *Overseas Operations* (Apr. 20, 1962).

<sup>103</sup>WSEG R-55, *Effects of Geodetic Errors on Strategic Targeting* (Aug. 23, 1961).

<sup>104</sup>WSEG R-53, *Seaborne Ballistic Missile Systems* (Apr. 12, 1961).

<sup>105</sup>WSEG R-52, *Initial Study of Arms Control Measures Affecting the Risk of Surprise Attack* (Jan. 6, 1961).

<sup>106</sup>Interviews.

pertinence to major defense problems, and their utilization in high-level decision-making processes, they may have been among the most influential studies that the WSEG/IDA organization ever produced. The strategic weapons study, published as WSEG R-50, *Evaluation of Strategic Offensive Weapons*, December 27, 1960, appeared opportunely during the period between the Eisenhower and Kennedy administrations. It was perceived as a useful transition document because it covered many of the chief strategic weapons issues and alternatives within a single integrated analytical framework, was based on authoritative JCS and Service inputs as well as a solid WSEG/IDA background of prior studies, and as a WSEG/IDA product carried the connotation of relative independence and objectivity as well as expertise.<sup>107</sup> It became a basic source document, used for orienting incoming officials and initiating fundamental reappraisals of ongoing defense programs. The report was briefed in detail to the new Secretary of Defense, Robert S. McNamara, before he had been in office a week, and he spent almost a full day going over it with the project leader and other members of the project staff. It was also briefed to the Deputy SecDef, the DDR&E, the JCS, and others in the Pentagon, as well as to the President's Science Advisor, the Bureau of the Budget, and other offices involved in the early McNamara/Kennedy defense reviews.<sup>108</sup>

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<sup>107</sup>Interviews.

<sup>108</sup>*WSEG Annual Activities Report*, FY 61, TOP SECRET. According to interviews, it appears that WSEG R-50 was first brought to the attention of key officials by the DDR&E, Dr. Herbert F. York, who had been asked by President Kennedy to continue in office and who was personally acquainted with the WSEG/IDA operation, a number of the project staff members, and the study itself. At any rate, York arranged for the project leader, Dr. George A. Contos (one of the WSEG/IDA Assistant Directors of Research), and selected members of the project staff to brief the new Deputy SecDef, Roswell L. Gilpatric, on Jan. 26, 1961, and Secretary McNamara the next day, Jan. 27, 1961. (It is possible that this was McNamara's first full immersion into the technical and military details of strategic weapons systems; he asked many questions.) The (continued on next page)

The command and control portion of WSEG R-50 had considerable impact in its own right. The analysis highlighted extremely grave deficiencies in the national command and control system that necessitated immediate attention at the highest levels, and was separately briefed to responsible officers in the OJCS as early as September 15, 1960, several months before WSEG R-50 was final. At their suggestion, it was then briefed to the JCS themselves and to Eisenhower's Secretary of Defense, at that time Thomas S. Gates, on September 26, 1960. It was subsequently briefed to various offices, commands, boards, and committees, becoming something of a "best-seller" and contributing to an upsurge of interest and concern in command and control. It achieved widespread distribution as Enclosure C--"Command and Control of Strategic Offensive Weapons in the Period 1964-1967"--of WSEG R-50, and became part of the set of WSEG R-50 briefings prepared for Secretary McNamara and other new officials when they took office in January 1961.<sup>109</sup>

Another portion of WSEG R-50 that had a lasting effect was the analysis of strategic missile reliabilities. The study raised serious questions about the estimates that were then available for force structure and operational planning. After being briefed on the problem, the SecDef and the JCS directed WSEG to develop suitable operational tests for the major missile systems, including Atlas, Titan, Minuteman, and Polaris, and undertake a continuing program for evaluating them. The ensuing WSEG/IDA program, which ran for a number of years, was looked to by OSD and the JCS as an authoritative and impartial

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(cont'd) JCS were tardier in requesting a briefing, and were not briefed until Feb. 7. Other briefings of R-50 followed, continuing until as late as May 26, 1961, when the Assistant Secretary for ISA was briefed.

<sup>109</sup>Interviews. See also *WSEG Annual Activities Report*, FY 61. The subproject leader of this command and control portion was Mr. Joseph H. Lewis, one of the early group of WSEG civilians who joined IDA in 1956, who continued after R-50 as the leader of a substantial new WSEG/IDA study program in command and control.

source of missile performance estimates and as a guide to realistic operational testing methodology.<sup>110</sup>

The tactical air study had a different effect, and while it was perhaps less impressive in terms of direct high-level contacts, it was also noteworthy. The study was divided into time periods, with the 1960-63 period, reported in WSEG R-48, *Evaluation of Attack Carrier Striking Forces and Land-Based Tactical Air Forces in Limited and General War, 1960-1963*, completed on August 15, 1960. Work on the 1964-67 period continued thereafter and was later incorporated in a follow-on report (R-54, *Future Developments in Carrier- and Land-Based Tactical Air Forces*), published July 19, 1962.<sup>111</sup>

The first report, R-48, was available when the changeover of Presidential administrations took place, and like R-50 attracted considerable attention as a relatively up-to-date, comprehensive, and authoritative study on a major problem of priority interest, in this case the new administration's interest in strengthening general purpose forces. When a DoD committee was formed to conduct an overall review of tactical aircraft alternatives for the coming decade, including the controversial TFX, the R-48 project leader (Mr. Richard H. DuBois) was made a committee member and others of the WSEG/IDA project staff participated in the staff analysis group that was formed to support the committee, along with personnel from ODDR&E, NASA, RAND, and elsewhere.<sup>112</sup>

The concentration of WSEG/IDA resources on the R-48 and R-50 efforts during 1960 caused the number of WSEG reports

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<sup>110</sup>WSEG Annual Activities Report; interviews.

<sup>111</sup>R-54 was actually published in six parts, five of them separately issued from August 1961 to May 1962, with the sixth, the summary volume, issued on July 19. See DoD/IDA Management Office, OUSDRE, *Index to WSEG Publications* (September 1978).

<sup>112</sup>WSEG Annual Activities Report, FY 61. This was SecDef Project 34, which continued from about February through August 1961, resulting in a DDR&E report to the SecDef.

issued in that year to drop sharply to six, one of them the first summary report of the long-term ECM study that was begun in 1957, and two others partial products. The 1960 reports were as follows:

Exhibit 5. WSEG REPORTS ISSUED IN 1960

Report No.	Title	Date	Agency
R-35	First Annual Review, Defense Against SLBM Attack	Jan. 25	JCS
R-43	Evaluation of Effectiveness of Electronic Countermeasures on the Weapons Systems for Air Defense of North America	Jan. 8	JCS
R-47	Evaluation of the POLARIS Cruiser System	June 1	JCS
R-48	Evaluation of Attack Carrier Striking Forces and Land-Based Tactical Air Forces in Limited and General War, 1960-1963	Aug. 15	JCS
R-49	Part I, Preliminary Evaluation of the AN/MSG-4 Air Defense Weapons Control System	July 13	DDR&E
R-50	Evaluation of Strategic Offensive Weapons Systems	Dec. 27	JCS

An organization's productivity and the effectiveness of its analytical work are not reflected only in numbers of reports issued, however. The WSEG/IDA output in 1960 included significant studies of current interest and application at top policy-making levels. This was neither an overnight accomplishment nor an accident. It was the cumulative effect of the program of studies carried out during the WSEG/IDA buildup, during which the organization grew in experience and stature and achieved recognition as a central source of (in Forrestal's words) "vigorous, unprejudiced, and independent analyses and evaluations" of the new weapons problems of the missile era, and during which it became engaged in tasks of progressively

greater relevance to the critical choices before decisionmakers. It is perhaps ironic, but not surprising, that among the principal beneficiaries of the long series of major studies and study capabilities developed primarily for the JCS during the latter 1950's were the analytically oriented civilian administrators who took office in 1961.

## B. GROWTH AND GROWING PROBLEMS

### 1. The Changing DoD Context

In the immediate aftermath of the Sputnik launch of October 4, 1957, President Eisenhower took a number of steps to provide better direction and more impetus to national security efforts, including efforts in defense-related science and technology. Scientific advisory functions became more important with the creation of the office of Special Assistant to the President for Science and Technology on November 3 and the appointment to the office of James R. Killian (a move that, incidentally, necessitated Killian's resignation as Chairman of the Board of IDA). Several weeks later, on November 21, the Science Advisory Committee of ODM, which had sponsored the Killian and Gaither Reports of 1955 and 1957, was transferred to Killian's office and redesignated the President's Science Advisory Committee (PSAC).<sup>113</sup> At about the same time the new SecDef, Neil H. McElroy, announced the formation of an Advanced Research Projects Agency (ARPA) under OSD to take charge of antimissile and space technology projects, and such other "advanced" R&D as the Secretary might direct.<sup>114</sup>

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<sup>113</sup>See Maier, "Science, Politics, and Defense," and Eisenhower, *The White House Years: Waging Peace*, pp. 210-12.

<sup>114</sup>The ARPA announcement was on Nov. 15, 1957. It was formally established by DoD Directive on Feb. 7, 1958. ARPA provided the SecDef with his own operating arm in R&D, separate from the Services and with separate budgetary resources. See Armacost, *Weapons Innovation*, pp. 226-32.

Eisenhower also initiated several major changes in DoD organization that had been brewing for some time. In the month after Sputnik, November 1957, the President's Advisory Committee on Government Organization (still chaired by Nelson A. Rockefeller) recommended steps to (a) reorganize the combat forces into "truly unified" commands; (b) place the commands directly under the operational control of the President and the SecDef (with the advice and assistance of the JCS); (c) strengthen the position of the Chairman of the JCS; and (d) increase the Secretary's control over military R&D.<sup>115</sup> At the Pentagon, Secretary McElroy appointed a follow-up "blue-ribbon" panel, chaired by Charles A. Coolidge, a Boston lawyer and former Assistant Secretary of Defense, to consider the proposals and work out the details.<sup>116</sup> The Coolidge panel undertook various consultations over a period of several months, working closely with

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<sup>115</sup>In a parallel effort that mobilized the support of many of the prominent individuals who also participated in the outside advisory groups and panels that Eisenhower liked to use, the private Rockefeller Brothers' Fund sponsored a widely publicized "Rockefeller Report" in January 1958 [*International Security: The Military Aspect* (New York, 1958)] that made almost identical recommendations. Individuals who participated in the project included Nelson A. Rockefeller (chairman of the panel of participants) and Henry A. Kissinger (project director), and a bipartisan group of leading private citizens including Adolph A. Berle, Arthur F. Burns, Gen. Lucius D. Clay, Gordon E. Dean, Henry R. Luce, Charles H. Percy (then of Bell and Howell), Dean Rusk (then of the Rockefeller Foundation), David Sarnoff, and others. The panel also included Killian until his appointment to the White House, and Gen. McCormack of IDA, who chaired a subpanel on military issues that included Roswell L. Gilpatric, a former Undersecretary of the Air Force and subsequently Deputy SecDef under McNamara; Ellis A. Johnson, Director of ORO; Col. George A. Lincoln, Professor of Social Sciences at West Point; Detlev W. Bronk of the National Academy of Sciences; and James B. Fisk of Bell Telephone Laboratories. Several of these individuals had also served on the Gaither panel.

<sup>116</sup>The other Coolidge panel members included Nelson A. Rockefeller; Robert Lovett, former SecDef under Truman; William C. Foster, former Deputy SecDef under Lovett and acting cochairman of the Gaither Committee; (continued on next page)

Secretary McElroy and meeting directly with the President, the SecDef, the Deputy SecDef, and the President's Science Advisor, among others, on specific proposals. On April 3, 1958 the President submitted a comprehensive legislative package to Congress, and after extensive hearings it was enacted into law (with minor changes) as the DoD Reorganization Act of 1958 on July 24, 1958. The President signed the Act on August 6, 1958.<sup>117</sup>

The provisions of the 1958 Reorganization Act considerably strengthened and streamlined central management controls within the DoD. The Service Departments were removed from the operational chain of command, and, under OSD administrative direction, assigned the functions of supplying trained forces for the unified and specified commands, developing and producing weapons and equipment for their use, formulating concepts and doctrine, providing administrative support, and the like. The operational chain of command ran directly from the President and the SecDef--with the advice and assistance of the JCS--to the unified and specified commands established by the President and the SecDef. Forces were assigned from the Services to such commands by the authority of the SecDef with the approval of the President, and could only be transferred from such commands by the same authority. While assigned to the commands the forces were under the full operational control of the commander.

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(cont'd) Gen. Nathan F. Twining, USAF, Chairman of the JCS; Gen. Omar N. Bradley, USA, and Adm. Arthur W. Radford, both retired Chairmen of the JCS; and Gen. Alfred M. Gruenther, retired in 1956 as Supreme Allied Commander, Europe. See Eisenhower, *The White House Years: Waging Peace*, p. 244.

<sup>117</sup>Historical Division, Joint Secretariat, JCS, "Major Changes in the Organization of the Joint Chiefs of Staff: The Reorganization Act of 1958" (Jan. 23, 1970). The SecDef issued the necessary revisions of two basic DoD Directives (5100.1, on the functions of the JCS, and 5158.1, on the method of operation of the JCS and their relationships with other agencies of OSD) on Dec. 31, 1958.

In the OSD/JCS context, the shift in command channels expanded the role of the JCS as principal military advisers and immediate military staff of the SecDef, adding to the previous JCS strategic planning functions the further duty of supporting the SecDef in exercising operational direction over the unified and specified commands. The statutory ceiling on Joint Staff officers was accordingly raised from 210 to 400, the JCS committee system was largely discontinued, and the Joint Staff was reorganized along conventional J-staff lines, acquiring in the process an Operations Directorate (J-3).<sup>118</sup> The Chairman of the JCS was accorded a voice in planning equal to that of the other Chiefs (he had previously had no "vote"), plus the authority to select the Director of the Joint Staff (in consultation with the other Chiefs and with the approval of the SecDef) and responsibility for supervising the Director and managing the Joint Staff (on behalf of the JCS).

The 1958 Act also reinforced the SecDef's general authority over the Service Departments. The SecDef was still constrained from transferring, reassigning, abolishing, or consolidating combatant functions without Congressional approval, but he was empowered to assign or reassign "the development and operational use" of new weapons systems among the Departments, and he could consolidate any supply or service activities that were common to more than one Department. The SecDef who

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<sup>118</sup>Eisenhower had proposed eliminating the statutory ceiling on the size of the Joint Staff altogether, but Congress merely raised it. The Congressional ceiling was partially bypassed, as it had been since the 1947 National Security Act, by the practice of allowing the Organization of the Joint Chiefs of Staff to be considerably larger than the Joint Staff proper. In 1958, for example, when the Joint Staff consisted of 356 officers, the SecDef approved an OJCS strength of 902.

In the 1958 JCS reorganization not all committees were abolished--some were retained but redesignated. The Joint Strategic Survey Committee, for example, became the Joint Strategic Survey Council. See Historical Division, Joint Secretariat, JCS, "Major Changes in the Organization of the Joint Chiefs of Staff."

succeeded McElroy and served during the last year of the Eisenhower administration, Thomas S. Gates, Jr., moved forcefully to capitalize on the new statutory authority: in the operational area, he established the Joint Strategic Target Planning Staff (JSTPS), a major breakthrough in the development of the Single Integrated Operational Plan (SIOP); and in the administrative area he established the Defense Communications Agency to manage common military communications. Gates also initiated studies that led to the eventual establishment of the Defense Supply Agency and the Defense Intelligence Agency under his successor, Robert S. McNamara.<sup>119</sup>

The R&D area was singled out for a considerable degree of centralization. The Office of the Assistant Secretary (R&E) was superseded by a new office, the Director of Defense Research and Engineering (DDR&E), with increased status, scope, and authority. Whereas the Assistant Secretary (R&E) had been largely restricted to advisory and coordinating functions, the DDR&E was authorized to approve, disapprove, or modify Service R&D programs. The DDR&E's formal duties included planning and recommending an integrated program of military R&D, recommending assignments for the development of new weapons, and directing any R&D activities that in the judgment of the SecDef required centralized management.<sup>120</sup> ARPA continued to exist as a separate agency under the SecDef, functioning in effect as the SecDef's own vehicle for carrying out selected DoD-level R&D programs, but after a short time it was also brought within

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<sup>119</sup>See Blue Ribbon Defense Panel, *Report to the President and the Secretary of Defense on the Department of Defense* (July 1, 1970), Appendix A, "Mechanism for Change--Organizational History," pp. 15-16. Gates succeeded McElroy on Dec. 2, 1959 and served until Jan. 20, 1961. He had been Deputy SecDef since June 8, 1959, and prior to that Undersecretary of the Navy (Oct. 7, 1953 to Mar. 31, 1957) and Secretary of the Navy (Apr. 1, 1957 to June 7, 1959).

<sup>120</sup>DoD Directive 5129.1, *Director of Defense Research and Engineering* (Feb. 10, 1959).

the purview of the DDR&E, on a par with the R&D agencies of the Services.<sup>121</sup>

The new position of DDR&E and its unusually strong terms of reference were specifically designed by the Chairman of McElroy's advisory panel, Charles A. Coolidge, and the President's Science Advisor, James R. Killian, to "avoid duplication and reduce inter-service rivalries."<sup>122</sup>

The relationship between the position of DDR&E and the JCS remained essentially one of consultation and coordination regarding the broad interactions between military R&D and strategic planning. The JCS continued to be responsible for the specific operational requirements guidance in OSD with respect to new weapons and equipment. The formal WSEG relationship was unchanged, with DDR&E taking over the administrative supervision that had been the responsibility of the Assistant Secretary and assuring WSEG's "responsiveness" to the needs of the JCS and OSD. As before, in practice the DDR&E shared with the JCS the prerogative of tasking WSEG for analytical support purposes, and its expanded functional responsibilities in advanced weapons matters began to be reflected in the tasks that DDR&E asked WSEG to undertake. This was the case, for example, with respect to the nuclear aircraft and Argus effects studies of 1959 (WSEG R-37 and R-41) and the Nike-Zeus and F-108 studies of 1960 (R-45 and R-46).

The expansion of DDR&E's role during the following years greatly increased the activity levels among elements of the ODDR&E, the OJCS, WSEG, and IDA. In 1961 the JCS established a special R&D division within J-5 to work on R&D matters and to function as a focal point for coordinating R&D business with DDR&E. Statements of broad strategic guidance for use by DDR&E in preparing an integrated military R&D program were consolidated as a regular annex of the JCS Joint Strategic Objectives Plan

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<sup>121</sup>See Herbert F. York (the first DDR&E) and G. Allen Greb, "Military Research and Development."

<sup>122</sup>Ibid.

(JSOP), and in 1966 were issued in a separate JCS document, the Joint R&D Objectives Document (JRDO). The JCS recognized that WSEG was one of its major resources for use in developing these R&D outputs, particularly for providing analyses of the relative importance and effectiveness of potential R&D products, although WSEG studies were rarely tailored with this in mind.<sup>123</sup>

From the DDR&E standpoint, WSEG became a useful source of analytical support when the paramount consideration was the operational application of a particular technology, rather than technical feasibility or technological characteristics per se. The WSEG/IDA study capabilities and approaches provided for the continuous integration during the analytical process of operational multi-Service military inputs, an integration that was not available to DDR&E from any other source. On the other hand, where the scientific or technological state of the art was the crux of the analytical problem, DDR&E developed other channels for obtaining analytical support, including contractual channels that went to IDA directly rather than through WSEG.<sup>124</sup>

Since the "technical" and "operational" aspects of weapons systems were seldom mutually exclusive and almost always overlapped and interacted, the WSEG/IDA channel offered many advantages. The principal disadvantage, from the DDR&E point of view, surfaced in those instances in which it was more desirable to isolate the technical issues and consider them apart from or prior to the application of the kind of multi-Service operational criteria--or operational military "filters"--that were inherent in the WSEG/IDA arrangement. In practice DDR&E was also inhibited from using the WSEG channel more than was absolutely necessary because of WSEG's normally heavy commitments to JCS work and a tacit understanding that by tradition WSEG

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<sup>123</sup>See WSEG R-169, *Joint Research and Development Study* (July 1971). This was a study of the role of the JCS in R&D.

<sup>124</sup>DDR&E, Office Order No. 17, "Policies and Procedures for Assignment of Tasks to the Institute for Defense Analyses" (Dec. 1, 1960).

did most of its work for or through the JCS.<sup>125</sup> DDR&E was therefore impelled to seek out other alternatives, and did so.

## 2. The Expansion of IDA

Interwoven with these external changes in DoD organization and other post-Sputnik actions that accelerated efforts in defense science and technology was the expansion of IDA outside of the WSEG framework. The expansion had a direct impact on the WSEG/IDA working relationships and precipitated a series of WSEG/IDA adjustment problems that took several years to work themselves out. The result was a further transformation of WSEG, important modifications in its functions, and changes in its role as an analytical support instrument for the JCS.

As noted above, IDA came into being with the immediate purpose of providing technical support to WSEG, but with the expectation--at least on the part of Killian and other prime movers in its formation--that it might be called upon to perform other scientific and technical activities in the national security realm. As Killian wrote in his 1956 letter to the Ford Foundation, quoted above, IDA had already been approached to help with scientific support of SHAPE and the SHAPE Air Defense Technical Center at the Hague. These requests did not lead to any significant extension of IDA activities, however, beyond the establishment of small offices in London and Paris for liaison and informal support of military operations research in the NATO countries--both of which, in point of fact, were maintained in association with WSEG, under the WSEG contract.<sup>126</sup>

The first IDA undertaking outside of the WSEG arrangement was in June 1957, when IDA agreed to perform the administrative and also a substantial share of the technical staff support services required by the Gaither Committee. This was a temporary undertaking, as we have seen, but it was a challenging assignment

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<sup>125</sup>Interviews.

<sup>126</sup>See *IDA Annual Report* (Mar. 18, 1959).

and continued for a number of months until November 1957, when the Committee's Report was submitted to the President. No particular complications apparently arose with respect to IDA/WSEG relations, and IDA/WSEG participation in the effort was appropriately cleared (and identified) as such.<sup>127</sup>

Shortly after the Gaither Report was completed, the SecDef asked IDA to undertake the principal technical support for ARPA along lines similar to those that had been established for WSEG. ARPA, however, was primarily a research management agency. It was intended to operate in the frontier areas of defense science and technology--"the more speculative, longer-range, further-looking situations"--<sup>128</sup> and had a relatively broad charter. It could either develop and monitor its own contracts, dealing directly with private universities and industrial firms, or assign projects to one of the Services for administration. In either case what ARPA needed was a group of highly specialized senior-level technical advisors, not to engage in the research itself but to assist in research management functions, assessing and recommending directions, priorities, levels of effort, methods of attack, and so on. IDA was regarded as a contractual mechanism for obtaining the necessary expertise.<sup>129</sup>

IDA entered into a separate DoD contract to support ARPA on March 15, 1958. The IDA professional staff members working with WSEG continued as before, designated as members of the Weapons Systems Evaluation Division of IDA, and a separate Advanced Research Projects Division was organized for ARPA, with Dr. Herbert F. York as Director. York was a nuclear physicist from the University of California, Director of the AEC's Lawrence Livermore Laboratory, and a member of PSAC under Killian.

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<sup>127</sup>See above, pp. 163-50.

<sup>128</sup>Deputy SecDef Quarles, quoted in Armacost, *Weapons Innovation*, p. 228.

<sup>129</sup>Interviews.

He had also served on the von Neumann ("Teapot") Committee on ICBM's and more recently on the Gaither Committee. Besides becoming Director of the Advanced Research Projects Division of IDA he also became, by appointment of the SecDef, Chief Scientist of ARPA under ARPA's Director, Mr. Roy Johnson.<sup>130</sup>

York assembled a small professional staff of some 40 scientists and engineers for the new Advanced Research Projects Division, most of whom were recruited from industry. Approximately half were on a leave-of-absence basis, and half became regular IDA employees. They worked in ARPA space in the Pentagon, a situation similar to that of the Weapons Systems Evaluation Division vis-à-vis WSEG, but were under distinctive and independent ARPA arrangements.<sup>131</sup> (In June 1960, at the request of the DDR&E, this Advanced Research Projects Division was reoriented to enable it to support DDR&E as a whole, including ARPA, and was renamed the Research and Engineering Support Division [RESD]. It was still primarily concerned with "giving advice, performing analyses, theoretical investigations, and technical planning pertaining to defense research and engineering.")<sup>132</sup>

Following the formation of the Advanced Research Projects Division, IDA reorganized and expanded its headquarters structure.

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<sup>130</sup>In December 1958 York was appointed Director of Defense Research and Engineering, at which time he resigned from IDA (as well as ARPA). He served as DDR&E until May 1961, when he was succeeded by Dr. Harold Brown.

<sup>131</sup>IDA *Annual Report* (Mar. 18, 1959); interviews. The IDA-ARPA contract (SD-50) covered the provision of "competent personnel, facilities, and materials for analyses, studies and technical assistance, and the conduct of such projects as may be agreed upon from time to time." The scope of the work was to include (but not be limited to) such subjects as space science and technology, ballistic missile defense, including communications, early warning, and meteorology, and such other advanced R&D as might be assigned.

<sup>132</sup>DDR&E (Herbert F. York) to Mr. Garrison Norton, President, IDA (May 13, 1960); IDA *Annual Report* (Mar. 18, 1961).

The IDA Administrative Officer and his staff moved from WSEG premises in the Pentagon to downtown Washington, D.C. (at 1707 H Street), leaving behind a small Pentagon contingent to handle internal WSED/WSEG business. Dr. Hill, who had doubled as IDA Vice President and Director of Research as well as WSEG Director of Research, relinquished the WSEG position and also moved to the downtown location, where he functioned as IDA Vice President and Director of Research with cognizance over both the WSED and ARPA divisions. Hill's former deputy, Dr. Charles A. Boyd, became Director of the WSED division, and, with the approval of the SecDef, JCS, and Assistant Secretary for R&D, was also appointed Director of Research of WSEG.<sup>133</sup>

Later in 1958 IDA contracted with DoD to organize a third division, the Communications Research Division, to perform basic research in communications theory, mainly in mathematical areas, for the National Security Agency. This division, like the other two, was established under a separate contract but was located in Princeton, N.J., rather than in the Washington area, and operated as a quasi-autonomous entity under distinctive contract-monitoring arrangements.<sup>134</sup>

IDA also undertook another special project for the White House, in November 1958, in support of the President's Committee to Study the Military Assistance Program, the so-called Draper Committee (after its Chairman, William H. Draper, Jr.). As in the case of the Gaither project, IDA was responsible for the general administrative management of the project and contributed several professional staff members as well as supporting staff. IDA also participated on the steering committee, brought together a large number of leading experts from universities, foundations,

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<sup>133</sup>Director, WSEG (Vice Adm. John H. Sides) to Maj. Gen. James McCormack, Jr. (USAF Ret.), President, IDA (July 16, 1958); also IDA *Annual Report* (Mar. 18, 1959).

<sup>134</sup>See IDA *Annual Report* (Mar. 18, 1959).

research institutes, and elsewhere, and managed several study subcontracts with universities on behalf of the Committee.<sup>135</sup>

In the following year, 1959, IDA added a fourth operating division, the Jason Division, to inquire into the applications of basic science to various fields of weaponry and national defense generally. The members, who were all outstanding young physicists employed on university faculties or in research institutions, worked on a part-time basis and met in annual summer sessions, in order to become familiar with defense matters and explore ways in which current or prospective scientific developments might contribute to the solution of defense problems. The division operated loosely under its own steering committee, initially chaired by Dr. Marvin L. Goldberger, professor of physics at Princeton University, and worked with a triumvirate of senior advisers consisting of Dr. Hans A. Bethe of Cornell, Dr. Edward Teller of the University of California, and Dr. Eugene P. Wigner of Princeton.<sup>136</sup>

IDA's expanded scope led to further growth of IDA headquarters. In February 1959 IDA acquired its first full-time President, when Gen. McCormack (who had remained Vice President of MIT) was succeeded by Mr. Garrison Norton, formerly Assistant Secretary of the Navy for Air.<sup>137</sup> In 1960 three additional

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<sup>135</sup> Ibid. Other members of the Draper Committee were Dillon Anderson, Joseph M. Dodge, Alfred M. Gruenther, Marx Leva, John J. McCloy, George McGhee, Joseph T. McNarney, Arthur W. Radford, and James E. Webb, all prominent in national-level advisory circles. See "Letter to the President of the United States from the President's Committee to Study the United States Military Assistance Program and the Committee's Final Report," Washington, D. C. (Aug. 17, 1959).

<sup>136</sup> IDA *Annual Report* (Mar. 18, 1960).

<sup>137</sup> Norton had also been an Assistant Secretary of State (1947-1949), Director of the Export-Import Bank and Deputy Director of the International Bank and Monetary Fund (1948-1949), and Assistant to the Secretary of the Air Force (1952-1955). He was Assistant Secretary of the Navy for Air from 1956 until he joined IDA in 1959, and (continued on next page)

universities joined the Institute: the University of Michigan, Pennsylvania State University, and Columbia, bringing the total to eight. IDA moved into larger business offices in downtown Washington, and the new RESD division moved from ARPA quarters in the Pentagon into the city. In mid-1960 the total IDA professional staff numbered about 160 (not including the 20 or so members of the Jason Division, who were not full-time employees), with some 140 staff in support.<sup>138</sup>

IDA also sought to strengthen and expand its nondivisional activities with self-initiated research, multidisciplinary conferences and symposia, educational exchanges, and other measures to broaden its base of operations and stimulate the trade of knowledge and ideas between the academic research community and the world of national security affairs. In 1959 IDA established a Special Studies Group that began working in nontechnical areas of international security affairs (developing eventually into the International Studies Division, in 1962). In a further diversification from the MIT/WSEG base, Dr. Charles H. Townes, the Nobel Prize laureate and physicist from Columbia, was chosen to succeed Hill as Vice President and Director of Research, and two Associate Directors of Research were appointed to assist him.<sup>139</sup> A Professional Committee was established,

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(cont'd) remained President of IDA until July 1962. As Gen. McCormack informed a Congressional committee on contract research, Norton was specifically chosen to further loosen the IDA identification with MIT, as "a non-MIT associated person of high caliber." Hearings, Subcommittee of the Committee on Government Operations, House of Representatives, *Systems Development and Management* (Washington, D. C.: Government Printing Office, 1962), pp. 1533-34.

<sup>138</sup> IDA *Annual Report* (Mar. 18, 1961). The new IDA business offices were located at 1710 H Street, and the RESD offices were at the Universal Building, 1825 Connecticut Avenue., N. W.

<sup>139</sup> Townes was the inventor of the maser (precursor of the laser) and won many distinguished awards, including the Nobel Prize in Physics in 1964. He returned to academic life after his term at IDA (at MIT and the [continued on next page])

composed of IDA trustees and eminent outsiders with particular professional qualifications in IDA's technical fields, to maintain surveillance over the professional quality of IDA's work generally.<sup>140</sup>

The transformation of IDA into a multidivisional organization with multiple clients necessarily complicated IDA's relationship with WSEG and led to modifications in established working arrangements. Those arrangements were largely a carry-over from previous WSEG practices in which technical support was provided by an internal WSEG technical staff under a civilian Director of Research, responsive to and coordinating activities directly with the WSEG Director. The contractual conversion to IDA at first did little to alter this basic pattern, since it merely installed the contractor's chief technical official in the position of WSEG Director of Research and substituted IDA technical personnel for civil servants. Hill retained the functional status and even the official position and title of WSEG Director of Research, and at the same time operated as the IDA counterpart, in terms of authority, to the Director of WSEG.

The natural tendency was to continue the established working pattern in WSEG, even after the expansion of IDA and the conversion of the IDA contingent supporting WSEG into the WSED division--particularly since the WSED Division Director still retained the official position of WSEG Director of Research. WSED operated as a relatively autonomous division of IDA, and nearly all substantive project business was transacted between the WSEG and WSED Directors. Research management questions dealing with the formulation and acceptance of tasks, allocation and priority of effort, assignment of personnel,

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[cont'd] University of California), but continued his participation in various White House, NASA, Air Force, and other advisory groups and committees.

<sup>140</sup>IDA *Annual Report*, for 1959, 1960, and 1961.

review of work, and the like, were handled at the WSEG/WSED level. At the same time, since the work was performed on WSEG premises under WSEG administrative rules and security controls, no major changes were required in WSEG operating procedures. Working relationships tended to be close and informal, with a minimum of communication difficulties. The WSEG Director and the WSED Director of Research occupied adjoining offices in the same complex in the Pentagon, WSEG and WSED staff members continued to be intermingled in the offices and work on mixed project teams as before, and many of the positive characteristics of a unified military-civilian operation were retained.<sup>141</sup>

The expansion of IDA had created a situation, however, which the former rules and practices did not fully cover. One of the earliest and most persistent problems concerned the responsibility of the central IDA management for the work of the WSED division and how that responsibility was best exercised. It proved difficult in practice to strike a mutually acceptable balance between the needs of an active IDA management to exercise internal IDA management prerogatives, such as supervising the work and performance of IDA personnel in the WSED division, and the responsibilities of the Director of WSEG for overseeing "need to know" access to sensitive information which was most readily facilitated by compartmentalizing substantive business at the WSEG/WSED level. Reconciling these two perspectives on a case-by-case basis proved to be difficult in practice and ultimately required a resolution through new general guidelines.

The straw that broke the camel's back was probably a briefing of the IDA Professional Committee at IDA headquarters by the WSED Director and staff members on September 17 and 18, 1960, which happened to be on WSEG R-48 and R-50 and included

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<sup>141</sup>Interviews.

"highly sensitive" JCS matters.<sup>142</sup> The new Director of WSEG, Lt. Gen. William P. Ennis, USA,<sup>143</sup> became sufficiently concerned to challenge the degree to which central IDA management, including the IDA Director of Research and the Professional Committee, required full access to WSEG/WSED work. IDA executives considered such access essential in order to ascertain the usefulness and productivity of WSED personnel and evaluate the quality of their work; Gen. Ennis felt that the work could be adequately evaluated within the framework of the WSEG/WSED arrangement and by the ultimate consumers, the JCS and DDR&E.<sup>144</sup>

Other problems surfaced, most of them due to expansion and the necessity to readjust. Gen. Ennis considered IDA insufficiently responsive in meeting WSEG's staffing requirements, giving adequate weight to the military voice in projects, enforcing security discipline, and controlling expenditures, among other things, all of which had been customarily adjudicated on a coordinate basis by the WSEG Director and Director of Research.<sup>145</sup> The latter, of course, was responsible to central IDA management as well as to WSEG.

When these issues came to the attention of DDR&E officials, they were seen as raising broad questions about

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<sup>142</sup> WSEG *Annual Activities Report*, FY 61; interviews. There were undoubtedly other events and incidents, but this was illustrative of the pattern that brought the issue to the fore.

<sup>143</sup> Gen. Ennis was assigned to WSEG in August 1960, replacing Vice Adm. John H. Sides. Prior to joining WSEG he had been Director, Office of Special Weapons Development, CONARC, Ft. Bliss, Texas; Deputy Chief of Staff for Logistics and Administration and Deputy Chief of Operations and Intelligence, Allied Forces Central Europe; and Commandant of the Army War College, Carlisle, Pa.

<sup>144</sup> Director, WSEG (Lt. Gen. Wm. P. Ennis, Jr., USA), Memo for Gen. Bonesteel (Nov. 23, 1960).

<sup>145</sup> Ibid. On Oct. 23, Gen. Ennis pointed out to IDA that the WSEG technical staff was seriously under strength, making it difficult to meet study deadlines or accept important new study requests. Director, WSEG, to Mr. Garrison Norton, President, IDA (Oct. 23, 1960).

the IDA/WSEG/JCS/DoD relationships, and a series of meetings followed to review the situation. Finally, on December 22, 1960, a meeting of the principal parties was held in the office of the Chairman of the JCS, with the DDR&E, the President and Vice-President/Director of Research of IDA, and the Directors of WSEG and WSED attending, at which new ground rules were agreed upon.<sup>146</sup>

The agreement began with a strong reaffirmation of the WSEG concept of mixed civilian/military teamwork:

The function of WSEG is reaffirmed as that of providing the best scientific inputs and utilizing the best of scientific disciplines in applications to military problems; these to be effected in a marriage together with the military and tactical operational disciplines. To perform this function there is required a group of good civilian scientific personnel, good military personnel and a sincere effort on their part to work together as a team.

Moreover, it was agreed, WSEG "is a study group and should be run as such ... maintaining the environment conducive towards performing the best of studies."

The need for IDA was also reaffirmed, insofar as WSEG was concerned:

Experience has shown that a non-profit contractor such as IDA is required in order to draw upon the talents and assistance from leading universities in the country and in order to provide the civilian scientist contingent of WSEG, assuring that they are used in a manner so as to be scientifically productive, and within the scope of an effective relationship with the military.

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<sup>146</sup>The meeting was attended by Gen. L. L. Lemnitzer, Chairman of the JCS; Dr. Herbert F. York, DDR&E; Dr. Marvin Stern, Deputy DDR&E; Lt. Gen. Wm. P. Ennis, Jr., Director of WSEG; Maj. Gen. C. H. Bonesteel, III, Special Assistant (Policy) to the Chairman, JCS; Mr. Garrison Norton, President of IDA; Dr. Charles H. Townes, Vice President and Director of Research, IDA; and Dr. Charles A. Boyd, Director of WSED, IDA. Dr. Herbert F. York to Mr. Garrison Norton (Dec. 30, 1960).

And this included a contractual responsibility both to furnish civilian scientific personnel and to monitor the quality of their contributions--"this to be done with the object of approaching the best possible in the country."

However, access to the necessary information by central IDA management was to be limited to the President and Vice President/Director of Research and carefully circumscribed:

In order for the President and the Vice President (Director of Research) of IDA to perform their functions, they will be given a "need to know" for all but the most sensitive information to which IDA personnel in WSEG have access, so that they can judge effectively the quality of the work output. It is understood, of course, that information acquired under this "need to know" is not transferrable to other activities without prior permission of duly authorized personnel.<sup>147</sup>

The new ground rules thus maintained the basic authority of the Director of WSEG but sought to achieve a limited compromise in application. The solution preserved a WSEG/WSED working arrangement distinct from the arrangement for the rest of IDA. It permitted the Director of WSEG to protect the integrity of WSEG information, which was a prerequisite for maintaining WSEG's privileged and confidential access to the JCS, for example, while at the same time working for DDR&E; and it appeared to provide reasonable terms on which WSEG could continue to operate with IDA despite IDA's multiple clients and contracts. Considerable care was required by all concerned, however, and the resulting rules seemed awkward in some respects. DDR&E had to take them into account in its own guidelines for WSEG work:

In view of the concept contained in DOD Instruction 5128.8, "Weapons Systems Evaluation Group,"

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<sup>147</sup>All quoted material from Dr. Herbert F. York to Mr. Garrison Norton (Dec. 30, 1960), confirming the understanding reached at the meeting of Dec. 22, 1960 in Gen. Lemnitzer's office.

whereby the agency, i.e., JCS or DDR&E, initiating a WSEG study, controls the distribution of the report, IDA plans to prescribe internal regulations so that WSED and RESD activities are maintained independent from each other in all respects unless prior approval is obtained from the appropriate DOD agency. Information from WSED to RESD and visa versa [sic] will flow as directed by the Directors of WSEG and of ARPA respectively. IDA will not accomplish such exchange in the absence of such directives.<sup>148</sup>

The new agreement and guidelines did not settle all of the outstanding problems, and a number of administrative difficulties still had to be ironed out, but it was evident that DoD authorities wished them to be resolved within the basic WSEG/IDA framework.<sup>149</sup>

### 3. WSEG Under McNamara

This reaffirmation of the value of WSEG and the validity of the WSEG concept--as well as the continuing need for IDA to support it--came on the eve of major changes in DoD management and an upsurge of top-level interest in weapons evaluation studies and defense analyses of all kinds. It has been said that the so-called McNamara Revolution was mostly a matter of "accelerating existing trends toward centralized control and systematic analysis."<sup>150</sup> The new SecDef was only extrapolating from the organizational structure and authority that he inherited from the 1958 Reorganization Act, not calling for fundamental changes in the law. Nevertheless, he superimposed on the existing system a style of active executive leadership,

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<sup>148</sup>DDR&E, Office Order No. 17, Encl. 1, "Policy Regarding WSED and RESD."

<sup>149</sup>Dr. Herbert F. York to Mr. Garrison Norton (Dec. 30, 1960).

<sup>150</sup>Maj. Gen. Jasper A. Welch, Jr., Assistant Chief of Staff, Studies and Analysis, USAF, "Systems Analysis and DOD," paper delivered at conference on the role of strategic studies in the United States and the Soviet Union, Oct. 29, 1976.

patterned after industrial management and strongly committed to the systematic application of quantitative analysis, that acted as a strong centralizing force. He introduced innovations in the DoD decision-making process that greatly expanded the day-to-day role and power of the SecDef and the OSD staff, particularly in planning and programming military forces, including their weapons and equipment. He initiated the Planning, Programming, and Budgeting System (PPBS), a system for "centralized planning" that related "national security objectives ... to strategy, strategy to forces, forces to resources, and resources to costs"<sup>151</sup> with a focus on functional categories and 5-year projections. Under McNamara's direction, the system became a vehicle for involving OSD in substantive issues that transcended Service categories. It ensured that discussion and deliberation took place on OSD terms and that issues were resolved from an OSD perspective. It also increased the influence of cost-effectiveness criteria and analyses in DoD decisionmaking, enhancing the bureaucratic power of OSD budgetary agencies and the effectiveness of OSD fiscal controls. The Comptroller had always been a key official in DoD, even in pre-McNamara days; under McNamara, backed by a strong OSD and armed with PPBS procedures and an OSD systems analysis staff, the Comptroller's office became more of an instrument for centralized management than ever before. The net result was a de facto outflow of power from the Services to DoD and, at the DoD level, from the OJCS to OSD.<sup>152</sup>

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<sup>151</sup>William W. Kaufmann, *The McNamara Strategy* (New York: Harper & Row, 1964), p. 173.

<sup>152</sup>There are many descriptions and analyses of the DoD decision-making process under McNamara, including, from a sympathetic viewpoint, Charles J. Hitch, *Decision-Making for Defense* (Berkeley, Calif: University of California Press, 1965), and Alain C. Enthoven and K. Wayne Smith, *How Much is Enough* (New York: Harper & Row, 1971), especially Ch. 2; and from a somewhat critical viewpoint, Clark A. Murdock, *Defense Policy Formation* (Albany, N. Y.: SUNY Press, 1974), and Keith C. Clark and Laurence J. Legere (eds), *The President and the Management of National Security* (New York: Praeger, 1969), Ch. VIII.

One of the new SecDef's first steps, upon taking office in January 1961, was to set in motion a comprehensive review and reappraisal of virtually all major defense policies, strategies, and programs. He personally immersed himself in studies and briefings on a wide range of issues and topics, and fired off a fusillade of questions for analysis to all the principal offices of DoD, the JCS, and the Services, launching one of the most hectic periods of crash study efforts ever seen in the Pentagon.<sup>153</sup> Existing WSEG studies, like the recently completed R-50 on strategic offensive weapons systems, commanded high-level attention, as we have seen, both among senior officials and among the task forces, study groups, committees, and panels that were pulled together to prepare responses to the SecDef's queries. Moreover, many of the WSEG/IDA staff members who had worked on such studies were called upon as individuals to participate in such groups. During the first half of 1961, the Director of WSEG reported, some two-thirds of the senior WSEG/WSED staff members were active in such efforts, which included both JCS and DDR&E command and control study groups, an OSD antimissile system research advisory council, an interservice group on photo reconnaissance, a Comptroller group on the survivability of strategic systems, a Defense Science Board committee on protective construction, a National Academy of Sciences group on radioactive fallout, and DDR&E projects on tactical aircraft, air defense, ASW, FBM submarines, nuclear safety measures, battlefield surveillance, and other matters.<sup>154</sup>

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<sup>153</sup> Arthur F. Schlesinger, Jr., *A Thousand Days: John F. Kennedy in the White House* (Boston, Mass.: Houghton-Mifflin Co., 1965), pp. 316ff.

<sup>154</sup> WSEG *Annual Activities Report*, FY 61. Gen. Ennis estimated that during FY 61 a total of 60 senior WSEG/WSED staff members were involved in these activities for periods ranging from 1 week to 3 months. See Director, WSEG, Memo for Administrative Assistant to the Secretary of Defense, "Requested Increase in WSEG Staff" (July 13, 1961).

Similar activities continued into 1962, attesting both to the prestige of WSEG and the high regard WSEG/WSED analysts commanded as professional experts. One or more staff members participated in a JCS command and control coordinating committee, a DDR&E committee on the air defense of Europe, a NATO design evaluation committee for strike/reconnaissance aircraft, an OSD advisory committee on missile penetration, a DDR&E committee on strategic warfare, an Arms Control and Disarmament Agency study group on inspection measures, a PSAC project on civil defense, and a Defense Atomic Support Agency weapons effects board.<sup>155</sup>

The Director of WSEG had no objection in principle to WSEG/WSED staff members functioning in such capacities. On the contrary, he wrote:

WSEG regards this kind of effort as necessarily correlated with standard project work, since it represents, in another form, the assistance WSEG is responsible for supplying to those who must make decisions.<sup>156</sup>

New demands also arose for additional WSEG project studies, some of them as a consequence of previous studies (like WSEG R-48 and R-50). In March 1961, for example, as a result of R-50 findings on strategic missile reliability, the JCS asked WSEG to undertake a major operational evaluation, based on test firings, of Atlas, Titan, Minuteman, Polaris, and Skybolt.<sup>157</sup> In June the JCS asked for an evaluation of long-range reconnaissance/strike systems.<sup>158</sup> In August the JCS

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<sup>155</sup> WSEG *Annual Activities Report*, FY 62.

<sup>156</sup> WSEG *Annual Activities Report*, FY 61.

<sup>157</sup> SM 339-61 (Mar. 27, 1961), which resulted in a series of reports, beginning with WSEG R-56, Study I, *Evaluation of Development and Operational Test Data on POLARIS, ATLAS, TITAN and MINUTEMAN* (Nov. 9, 1961) and extending into 1965. See WSEG, "Index to Publications" (January 1976).

<sup>158</sup> SM 709-61 (June 27, 1961); resulted in WSEG R-57, Study I, *Combat Operations Over Enemy Territory in 1963-1964* (Oct. 1, 1961), and Study II, *Evaluation of Post-Strike Systems* (Sept. 14, 1962).

requested a program of continuing studies in command and control, to include functional and operational analyses of emergency procedures.<sup>159</sup> DDR&E also added a number of requests: in September 1961 for a study of V/STOL aircraft for close support and a study of the vulnerability of tactical aircraft generally to anti-aircraft weapons, and in October for a study of missile penetration and a study of the civil damage implications of siting nuclear delivery systems.<sup>160</sup>

The increased demands on WSEG during the first part of 1961, both in terms of study requests and requests for staff contributions to ad hoc panels and groups at top DoD levels, soon outstripped WSEG/WSED resources. By June, after consultations with their respective staffs, the Chairman of the JCS (Gen. Lyman L. Lemnitzer, USA, Chairman since October 1960) and the DDR&E (Dr. Harold Brown, who succeeded York in May 1961) agreed that a major expansion was required. Reiterating the "vital importance" of "impartial scientific evaluation" in the weapons systems area, and the belief that "WSEG must become the foremost Operations Research group in the Department of Defense, and indeed the nation," they directed WSEG to plan on an approximate doubling of size, with an increase in the WSED technical staff from 100 to 150 by the end of FY 62 and an eventual increase to 200.<sup>161</sup>

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<sup>159</sup>DJSM 944-61 (Aug. 11, 1961), and CM 61-540 (Aug. 29, 1961); resulted in considerable informal support and "special-handling" studies of the national military command system, as well as various WSEG reports, until superseded by CM 2019-66 (Dec. 23, 1966).

<sup>160</sup>These DDR&E tasks resulted in WSEG R-58, *Future Light Tactical Aircraft Weapons Systems for Close Air Support & Other Missions, 1966-1972 Time Period* (Feb. 12, 1962); R-59, *Missile Penetration Study* (Study I, Jan. 29, 1962; Supplement to Study I, May 29, 1962, Study II, May 1963, and Study III, March 1964); R-60, *Terminal Vulnerability of Selected US Tactical Aircraft to Anti-aircraft Weapons* (Mar. 28, 1962); and R-61, *Civil Damage Implications of Siting Nuclear Delivery Systems* (Mar. 29, 1962).

<sup>161</sup>Director, WSEG, "Requested Increase in WSEG Staff" (July 13, 1961).

The proposed increase was planned to occur as a gradual expansion, with about 90 staff members added by the end of fiscal 1962: 50 IDA/WSED professional analysts, 20 IDA/WSED support, 15 WSEG military, and 5 WSEG civil service. The projected cost, not counting the cost of increased military staff, but including other support costs, was estimated at \$1,140,000.<sup>162</sup> It was also estimated that about one-fourth again more office space would be required, increasing WSEG's area from 44,000 sq. ft. to 54,000 sq. ft.<sup>163</sup>

Finding the physical space to accommodate the proposed expansion became a difficult issue. Contiguous space in the Pentagon was not available without displacing other important activities or competing with the projected space requirements of the OJCS. Consideration was given to moving WSEG either entirely or partly outside of the Pentagon, but the Director of WSEG objected strongly to both suggestions. He cited the requirement for close and frequent contact between WSEG/WSED staff members and those of OSD, the JCS, ODDR&E, and the Services, both for study purposes and active participation in JCS, DDR&E, and other OSD panels and groups; he also cited security requirements, particularly in terms of access to JCS papers that would not be accessible outside of the Pentagon under existing procedures.<sup>164</sup>

Various alternatives were considered to solve the space problem, but the question dragged on through the remainder of

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<sup>162</sup>It is interesting to note that this included an estimated \$300,000 that had already been approved to pay for approximately 10 "missile specialists"--technicians (engineers) to be obtained from missile manufacturers for the missile testing study in view of the fact that WSEG/WSED did not have specialists on the details of each missile system. Ibid.

<sup>163</sup>Director, WSEG, Memo for Director, Administrative Services Division, OSD, "WSEG Expansion" (June 1, 1961).

<sup>164</sup>Director, WSEG, Memo for Administrative Assistant to the Secretary of Defense, "WSEG Expansion" (Aug. 1, 1961).

1961 and 1962 without a satisfactory resolution. The DDR&E generally supported WSEG's stand on remaining in the Pentagon, taking the position that WSEG should be close to the JCS as well as to DDR&E, the Comptroller, and other OSD users. DDR&E also opposed dividing up WSEG--the WSEG Director had said that it was "completely infeasible" to conduct a split operation, partly in and partly outside of the Pentagon--and in the spring of 1962 suggested that steps either be taken to retain WSEG completely within the Pentagon or, failing that, to retain WSEG in the Pentagon on an interim basis for 1 or 2 years pending "an orderly plan for ... installation in a nearby research center."<sup>165</sup>

Meanwhile, in an unrelated action, the Deputy SecDef approved an overall plan for reallocating office space in the Pentagon that was predicated on moving WSEG outside of the Pentagon and assigning the WSEG space to the OJCS, which needed it badly. No specific decision on relocating WSEG was published in connection with this action, however, so that the question remained alive.<sup>166</sup> Finally, in July 1963, the SecDef upheld the decision to move WSEG out of the Pentagon, while deferring any implementation pending a resolution of certain other difficulties that had arisen (see below).<sup>167</sup>

In this July 1963 decision, McNamara exempted from the proposed move "certain specially sensitive support to the Joint

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<sup>165</sup>WSEG, "Chronology of Events Relative to WSEG Space Requests" (Oct. 12, 1961), copy in WSEG files. According to this chronology, WSEG was progressively being cramped, from 146 sq. ft. per project member in mid-1961 to 102 sq. ft. in October 1962, with 115 technical staff members, 45 military, and 10 consultants.

<sup>166</sup>J. R. Loftis (Administrative Secretary to the SecDef), Memo for Chairman, Joint Chiefs of Staff and Director of Defense Research and Engineering, "WSEG Office Space" (May 7, 1963).

<sup>167</sup>Secretary of Defense (Robert S. McNamara), Memoranda for the Chairman, Joint Chiefs of Staff, "WSEG Office Space" (July 9, 1963; July 23, 1963).

War Room and Command and Control activities of the Joint Chiefs of Staff supplied by WSEG and IDA," which, he said, should remain in the Pentagon, along with space to be used for WSEG liaison purposes. In other respects, he added, physical security arrangements for WSEG could be "negotiated" to the satisfaction of the JCS.<sup>168</sup>

Budgetary complications also arose. The WSEG personnel strength objectives agreed upon in the summer of 1961 included an end-FY 62 technical staff level of 150, with an ultimate increase to 200. The end-FY 62 technical strength was actually 115, well under the goal. The budget submitted for FY 63 (\$4.5 million) projected a year-end strength of 175. However, in January 1962 the SecDef imposed a \$3.5 million ceiling on the WSEG budget for both FY 62 and FY 63 planning, which would have provided for a technical staff of only about 125. Moreover, in April 1962 the DDR&E questioned WSEG as to the implications of a further cut for FY 63 to \$3 million, which would have required dropping more people.<sup>169</sup> Meanwhile, WSEG plans were revised to project attainment of 150 technical staff members by the end of FY 64 and 175 at the end of FY 65, and for the goal of 200 to be deferred until the end of FY 67. The budgetary pressures were growing more serious, as the Director of WSEG reported: by 1963 IDA's overhead costs had tripled, cutting further into the funds available for WSEG technical staff.<sup>170</sup>

The doubling of WSEG's size that was planned so confidently in 1961, with apparently authoritative backing, never materialized. The record is not clear as to why, and the scattered evidence available makes all speculative possibilities

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<sup>168</sup>Ibid.

<sup>169</sup>Director, WSEG (Lt. Gen. William P. Ennis, Jr.), Memo for DDR&E, "WSEG Budget" (Apr. 18, 1962).

<sup>170</sup>Director, WSEG (Lt. Gen. Harvey T. Alness, USAF), Memo for Deputy Director (Administrative Management), DDR&E (Vice Adm. Charles B. Martell), "WSEG Expansion" (Feb. 27, 1963).

seem inconclusive.<sup>171</sup> The space and budgetary difficulties were undoubtedly real, but hardly insurmountable if the officials involved were determined to follow through. Moreover, many of the external conditions appeared to be highly favorable for a substantial growth in WSEG's size and influence--the post-Sputnik developments in defense science and technology, the auspicious formation of IDA, the recent achievements in tackling the unfolding top-priority problems of the missile era, and above all, the arrival of a new analytically oriented management team at the Pentagon with a high regard (and a nearly insatiable appetite, it seemed) for studies and analyses as essential inputs into the management process.

The WSEG mission was to support both OSD and the JCS, and either or both could have chosen to exploit the WSEG/WSED potentialities more fully for analytical support. The new OSD leaders might have viewed WSEG (much more than they did) as a ready-made central study group, with a record of presenting impartial, supra-Service DoD-wide perspectives, based on multi-Service access and maintaining "in-house" confidentiality, and with proven capabilities to bridge and interrelate technological and operational military considerations. In terms of basic methods and approaches, WSEG studies were perhaps closer to the disciplinary traditions of "operations research" than to the somewhat broader and more economics-centered "systems analysis" of the McNamara team, but this seemed to be a question of emphasis and degree.<sup>172</sup> There does not appear to be any obvious reason why an appropriate shift in the approach and thrust of studies could not have been accommodated within the WSEG/WSED framework, if so desired. More difficult to overcome, perhaps, was WSEG's institutional orientation toward the JCS and DDR&E, including the explicit emphasis in WSEG work on military

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<sup>171</sup> Interviews.

<sup>172</sup> See Ralph Sanders, *The Politics of Defense Analysis* (New York: Dunellen, 1973), especially Ch. 1 and 2.

participation and military study inputs as an integral part of the design, which many members of the new breed of systems analyst found to be excessive or otherwise unsatisfactory to their needs.<sup>173</sup>

WSEG's tri-Service military structure, which was valued in the OJCS because it provided assurance that different Service viewpoints, analyses, and data contributions were duly considered in the course of WSEG studies, was also criticized by some in OSD as a handicap.<sup>174</sup> Some saw it as tending to suppress or "water down" controversial study results, papering over doctrinal or jurisdictional disputes that were beyond the scope of analytical attack or solution. These critics also felt that the structure overburdened WSEG with cumbersome and time-consuming procedures and made WSEG less "responsive" than other analytical advisory channels.<sup>175</sup>

Instead of resulting in more utilization of WSEG, the increased analytical demands under McNamara caused a proliferation of analytical capabilities throughout DoD and the outside world of defense-related research generally. The initial systems analysis staff of 13 in the Comptroller's office in OSD grew to more than 200, under an Assistant Secretary, in the latter 1960's.<sup>176</sup> In addition, as a result in part of encouragement from OSD and in part as self-protection against OSD, the systems analysis capabilities of each of the Services grew even more, with systems analysis offices staffed with military as well as civilian analysts specially schooled in economic, statistical, and other analytical techniques.<sup>177</sup> There was

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<sup>173</sup> For a skeptical view of the role of military experience and expertise, see Enthoven and Smith, *How Much is Enough*, pp. 73-116.

<sup>174</sup> Interviews.

<sup>175</sup> Interviews.

<sup>176</sup> Sanders, *Defense Analysis*, pp. 45-51.

<sup>177</sup> *Ibid.*, pp. 51-5.

also a marked increase in growth and use of civilian "think tank" groups and advisory services, many performing work for DoD agencies on problems similar to or even in competition with those that WSEG was intended to handle.<sup>178</sup>

The tendency under McNamara for OSD to intervene more actively in military strategy, force structure planning, and R&D, and to base decisions to a greater degree on studies and analytical findings, forced the JCS to respond in a similar manner, providing greater analytical depth and detail than previously. This anticipated requirement was presumably one of the reasons for the projected expansion of WSEG in 1961, which was strongly supported by the Chairman. Instead of coming to rely on an expanded WSEG, however, which did not materialize, the analytical support capabilities for the JCS evolved in a different manner. New organizational elements were established within the Joint Staff and the broader OJCS, like the Chairman's Special Studies Group, the J-5 Programs and R&D Divisions, the Command and Control Requirements Group, the Joint War Games Agency, and the Joint Meteorology Group, all of which dealt in some measure with technical, operational, or requirements analyses.<sup>179</sup> Moreover, following the standard pattern of JCS operating procedures, there was a heavy reliance on Service staffs and agencies, including Service contractual products and services funnelled into the JCS arena through staff channels rather than through WSEG.

Thus, even in the JCS, where there was a long history of close association and familiarity with WSEG, the trend of

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<sup>178</sup>For a survey of the Federal Contract Research Centers (FCRC's) and Federally Funded R&D Centers (FFRDC's) of the 1960's, most of which worked for DoD, see Denver Research Institute, *Contract Research and Development Adjuncts of Federal Agencies* (Denver, 1969), a study prepared for the National Science Foundation.

<sup>179</sup>Historical Section, Joint Secretariat, Joint Chiefs of Staff, *Organizational Development*; see also Sanders, *Defense Analysis*, pp. 55-6.

the 1960's toward greater utilization of analytical support did not benefit WSEG. WSEG continued to be employed as a major source of analytical support, but it did not remain a sole source (assuming it ever was) even in its chartered field of weapons systems evaluation, and it lost ground in relative terms as the number and variety of analytical study groups available throughout DoD and in the outside contractual world proliferated.<sup>180</sup>

#### 4. The Bell Report Crisis

In the summer of 1962, WSEG's contractual arrangement with IDA was severely strained, almost to the point of rupture, and for more than a year organizational relationships between WSEG and IDA were complicated by controversial policy issues that required high level attention by the JCS and OSD. The nature of the issues and the decisions that ensued were important for their effect on the future course of WSEG and IDA, but they also transcended immediate problems and influenced the evolution of DoD policies and practices regarding the use of FCRC's and other contractual advisory services. These issues were indicative of the general problems involved in contractual study support, in which it is inherently difficult to make a sharp distinction between governmental and external advisory functions, to define government versus contractor responsibilities for studies and study content in unambiguous terms, or to assure contractual responsiveness to government needs without interfering with a contractor's independence and objectivity. These issues are therefore of more than purely historical interest.<sup>181</sup>

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<sup>180</sup>Interviews.

<sup>181</sup>Since the author of this study is a staff member of IDA, and IDA institutional interests were obviously at stake at major points in the controversy--at times in conflict with views in WSEG or various elements of the JCS and OSD--there is the potential for bias in the (continued on next page)

On April 30, 1962 the White House issued a *Report on Government Contracting for Research and Development*, approved by the President, that set forth general policy guidelines for government contracting with private institutions and enterprises for scientific and technical work. This was the so-called Bell Report, prepared by a cabinet-level task force headed by the Director of the Bureau of the Budget, David E. Bell, and including the principal administration officials involved in government R&D programs: the SecDef, the Administrator of NASA, the Chairman of the AEC, the Director of the National Science Foundation, the Chairman of the Civil Service Commission, and the Special Assistant to the President for Science and Technology.<sup>182</sup> The task force had been directed by the President to review the growing use of contractors to operate R&D facilities and programs, perform analytical studies and services, and provide technical supervision of weapons

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(cont'd) present discussion. The author has tried to guard against this by relying almost entirely on WSEG, JCS, and OSD sources, avoiding any inquiry into the official IDA view of the events, and subjecting the material to particularly intensive outside screening for conscious or unconscious biases.

In addition, as is frequently the case in controversies of this kind, questions of personality tend to become intermingled with questions of principle and it is difficult to separate the two. While some accounts of the WSEG/IDA difficulties of the period accord considerable weight to personality factors, no attempt is made here to take them into account. Our purpose is not to reconstruct the historical record of what happened but rather to bring out those issues that warrant attention as possibly applicable today or in the future. Hence, the focus in this discussion is on policy positions and actions rather than the events as such.

<sup>182</sup>The individuals were, respectively, Robert S. McNamara, James E. Webb, Glenn T. Seaborg, Alan T. Waterman, John W. Macy, Jr., and Jerome B. Wiesner. Bureau of the Budget, Executive Office of the President, *Report to the President on Government Contracting for Research and Development* (Apr. 30, 1962), reprinted in *Systems Development and Management*, Part I, pp. 191-249.

systems and other programs, with a view to recommending policies.<sup>183</sup>

The Bell Report expressed considerable concern over the phenomenal increase in the volume of government R&D work that was carried out by nongovernmental institutions, including new kinds of professional and technical organizations like the not-for-profit corporations. The report judged that this development was in the national interest, on balance, but that it had "blurred the traditional dividing lines between the public and the private sectors" and raised many practical questions with respect to safeguarding the public interest. Management and control of R&D programs, for example, "must be firmly in the hands of full-time Government officials clearly responsible to the President and the Congress," and steps should be taken to ensure "that outside technical advice does not become de facto technical decision-making." A variety of organizational arrangements were possible, ranging from direct "in-house" government operations to profit and not-for-profit corporations, and mixed (e.g., government-owned but contractor operated) facilities. Each had advantages and disadvantages for various kinds of work, and in general diversity was valuable if the choices were judiciously made. With respect to not-for-profit mechanisms, for example, the report stated:

Not for profit organizations ... if strongly led, can provide a degree of independence, both from Government and from the commercial market, which may make them particularly useful as a source of objective analytical advice and technical services. These organizations have on occasion provided an important means for establishing a competent research organization for a particular task more rapidly than could have been possible within the

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<sup>183</sup>John F. Kennedy to David E. Bell, Director, Bureau of the Budget (July 31, 1961); reprinted in *Systems Development and Management*, pp. 250-51.

less flexible administrative requirements of the Government.<sup>184</sup>

Such organizations might even be permitted to seek contracts with other Government agencies, or with non-Government customers:

In the case of organizations in the area of operations and policy research (such, for example, as the RAND Corporation), the principal advantages they have to offer are the detached quality and objectivity of their work. Here, too close control by any Government agency may tend to limit objectivity. Organizations of this kind should not be discouraged from dealing with a variety of clients, both in and out of Government.<sup>185</sup>

The Bell Report went on to discuss other questions, including proposals for improving the government's ability to carry out R&D activities "in-house" under various procedural arrangements, but these particular points about contractual relationships with not-for-profit institutions quickly became the grounds for reexamination of the WSEG/IDA arrangement.

Coincident with the issuance of the Bell Report, there had been key personnel changes in WSEG, WSED, and IDA. Lt. Gen. William P. Ennis, Jr., Director of WSEG since August 1960, was succeeded in September 1962 by Lt. Gen. Harvey T. Alness, USAF.<sup>186</sup> Within IDA, Dr. Richard M. Bissell, Jr., formerly Deputy Director for Plans, CIA, became Executive Vice President in March 1962 and President in June 1962, replacing Mr. Garrison Norton.<sup>187</sup> Dr. Charles A. Boyd, Director of WSED,

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<sup>184</sup>Ibid., p. 221.

<sup>185</sup>Ibid., pp. 226-7.

<sup>186</sup>Lt. Gen. Alness was Vice Chief of Staff at NORAD from 1958 to 1960, Chief of Staff at USAFE from 1960 to 1961, and Vice Commander-in-Chief at USAFE from 1961 to 1962.

<sup>187</sup>Dr. Bissell, an economist by training, was an MIT professor in the latter 1940's, an assistant administrator and acting administrator in the foreign aid (continued on next page)

left in November 1961; he was succeeded by Dr. George A. Contos who was Acting Director until the arrival of Dr. Robert F. Rinehart in June 1962.<sup>188</sup> In that month, prompted by the provisions of the Bell Report, and using discussion of overall IDA matters with "senior officers" of DoD as a basis, Bissell proposed several revisions in the WSEG contract. The changes were intended to clarify the role and responsibility of IDA to provide services ("evaluations and operational analyses") rather than personnel, and to establish a sharper functional delineation between IDA and its governmental clients.

The self-evident purpose of the language proposed [Bissell wrote] ... is to emphasize that Contract SD-35 obligates IDA as a corporate entity to perform certain services for specified elements of the Department of Defense, that the members of IDA's professional staff are subject, when working on these tasks, to the supervision of the officers of IDA, and that no individual IDA employees or groups of employees perform their work under the supervision of government officials (except as may be agreed in specific cases).

...the non-military professional staff working on problems assigned by the JCS to WSEG is composed of the employees of an independent contractor operation. As such, they legally are not, and should not in fact be, subject to the direction and control of the Director of WSEG.<sup>189</sup>

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(cont'd) program (the European Cooperation Administration) in the early 1950's, and a CIA official from 1954 to 1962. He was well-known publicly as one of the principal architects of the U-2 program of the late 1950's and the Bay of Pigs incident of 1961.

<sup>188</sup>Dr. Rinehart, a mathematician and operations research pioneer of note who had been the subject of an earlier WSEG "draft" attempt in 1954 (see pp. 119-20), agreed to take the position as Director of WSED/Director of Research of WSEG on a 2-year leave of absence. See DDR&E (Harold Brown), Memo for JCS, "Director of Research, WSEG" (Oct. 17, 1961).

<sup>189</sup>President of IDA (Richard M. Bissell, Jr.) to Mr. Robert Loftis, Director, Administrative Services, OSD (June 18, 1962).

As to the mixed civilian-military staffing of studies, Bissell proposed altering the language that implied that WSEG itself was a research organization:

In fact, it is a government office for which extensive research is performed by a contractor with the collaboration of government (military) personnel furnished by that office.<sup>190</sup>

Bissell also proposed dropping the reference in the contract to the practice of having the Director of WSED simultaneously occupy an official government position as Director of Research of WSEG.<sup>191</sup>

As Bissell later explained to a Congressional committee, the WSEG/WSED arrangement "created a real ambiguity":

It was not clear, at least on the basis of the formal documents, whether this company as a Government contractor or, alternatively, the Director of the Weapons Systems Evaluation Group was ultimately responsible for the finished work. Such ambiguity is undesirable from the viewpoint of both the Government and the contractor. Certainly, the Secretary of Defense should be able to determine who is responsible for the content and nature of a particular study. Similarly, the IDA management must be able to direct and review the work for which it will be held responsible. Moreover, a legitimate doubt could arise as to whether this ambiguous relationship did promote "the detached quality and objectivity" of the work performed by the contractor, which was asserted by the Bell report to be one of the principal advantages which the Government might hope to realize from the subcontracting of research to private organizations.<sup>192</sup>

In discussions with senior officials, including the DDR&E and the SecDef, Bissell said,

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<sup>190</sup> Ibid.

<sup>191</sup> Ibid.

<sup>192</sup> Statement of Richard M. Bissell, Jr., President, Institute for Defense Analyses, *Systems Development and Management*, Part 2, pp. 633-5.

we expressed the view that it was highly desirable to make certain that the functions and responsibilities of the Institute for Defense Analyses and of the Weapons Systems Evaluation Group were distinct and recognizable and were those appropriate for a private contractor and a Government contracting office, respectively.<sup>193</sup>

Following Bissell's contract amendment proposals, the DDR&E took steps to restate the principles that should govern the overall relationship between IDA and DoD in order to meet the requirements of the Bell Report. In a memo to the Director of WSEG, on July 11, 1962, he wrote as follows:

The Institute for Defense Analyses is engaged in operations and policy research, in the evaluation of weapons systems, and in technical analysis bearing on the purposes and direction of the Department of Defense's research and development programs.... The Bell Report says of such organizations that "the principal advantages they have to offer are the detached quality and objectivity of their work," to which might be added their ability to assemble professional staffs of high quality. If the Department of Defense is to reap this advantage, the Institute as a corporate entity must be encouraged to maintain true independence, since "too close control by any government agency may tend to limit objectivity." It is therefore requested that, effective 1 August 1962, IDA be required to submit contractor reports on each task directly to the JCS and OSD. As appropriate, the senior military advisers should review the contractor report either in draft or after its completion, and supplement it with a critique or commentary of their own from the military viewpoint. These comments would be made available as inputs for decision on matters covered in the contractor report itself. In effect, this change requires the reorientation of the Review Board from its present position in the chain of operation to an advisory position.<sup>194</sup>

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<sup>193</sup>Ibid.

<sup>194</sup>DDR&E (Harold Brown), Memo for Director, WSEG, "WSEG Operations" (July 11, 1962).

He added that "the practice of assigning the contractor's chief of the IDA Weapons Systems Evaluation Division as the Research Director of the governmental Weapons Systems Evaluation Group should be discontinued."<sup>195</sup>

The Director of WSEG objected vehemently, arguing that the new DDR&E directive undermined the underlying concept of WSEG and deprived the Director of his major functions:

With the implementation of this directive, the effective scientist-military relationship ceases to exist in WSEG and the Director of WSEG loses all responsibility for, and direction and supervision of, work now done by the group. Since his principal remaining responsibility is that of both physical and document control security, I do not believe an officer in the grade of lieutenant general is required or desirable.

Accordingly, wrote the Director, "the following actions are recommended":

- a. The position of Director of WSEG be abolished.
- b. The military and civil service participation in WSEG be limited to not more than two officers from each service (grade of major or equivalent) to act in a liaison capacity only. These officers should remain assigned to an appropriate office in their own departments.
- c. All security should be the responsibility of the contractor.<sup>196</sup>

The JCS also took a strong position, and proposed that the new DDR&E directive be withdrawn. They saw as key those provisions of the directive that (a) reoriented the WSEG review board to an advisory role, (b) discontinued the assignment of the Director of WSED as the Director of Research of WSEG, and (c) called for the submission of reports directly to the JCS and OSD. These provisions, they felt, eliminated the authority

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<sup>195</sup>Ibid.

<sup>196</sup>Director, WSEG (Lt. Gen. William P. Ennis, Jr., USA), Memo for DDR&E, "WSEG Operations" (July 16, 1962).

of the Director of WSEG to control and coordinate the work, downgraded the military element of WSEG to an advisory role, destroyed the effective day-to-day military/civilian relationship that had been built up, and jeopardized the provision of sensitive security information:

The unique organizational arrangements of WSEG make it the principal agency on which the Joint Chiefs of Staff rely to conduct comprehensive and objective analyses requiring access to highly sensitive military information such as war plans, operational experience factors and intelligence. With continuous professional military participation in WSEG studies, and the consequent free flow and ready availability of pertinent military information, the Joint Chiefs of Staff are assured that military experience and other essential data are given proper consideration. A continuing requirement exists for this unique capability in support of the Joint Chiefs of Staff. No gain would accrue through merely converting this capability to another of the many already existing competent study organizations which can provide objective analysis in areas where military participation is not essential and where access to a broad range of sensitive information is not required.<sup>197</sup>

The JCS also referred to the specific value of WSEG studies, "representing a unique blending of concentrated military and scientific considerations." They added that if the purpose of the directive was to remove any possible constraints imposed by "too close supervision and control by the military," they were unaware of any incidents in which "military domination and pressures" had impaired the objectivity of WSEG reports.<sup>198</sup>

If, the JCS continued, it was necessary for other reasons to revise the WSEG charter and the IDA contract, they believed that as a minimum the Director of WSEG should be established as DoD representative for supervision of the

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<sup>197</sup>JCSM 545-62, Memo for the SecDef, "WSEG Operations" (July 23, 1962).

<sup>198</sup>Ibid.

contract, the JCS and DDR&E representative for assigning tasks to IDA/WSED and forwarding its reports, head of any OSD/DoD group to evaluate the responsiveness and quality of the products, agent for assigning priorities among tasks, responsible authority for physical security and control, and channel for dealing with a civilian director for the IDA/WSED personnel working on WSEG tasks. If these minimum conditions could not be met, then the JCS recommended deferring implementation of the DDR&E directive "pending determination by the Joint Chiefs of Staff of other means of meeting requirements of the Joint Chiefs of Staff."<sup>199</sup>

The WSEG/IDA controversy broke into public print in short order. On July 28, Hanson W. Baldwin, the military correspondent of *The New York Times*, wrote a story under the headline "Pentagon Edict Upsets Military; Officers Fear Curb on Role in Weapons Evaluation." He wrote that the proposed DDR&E directive "has aroused the strong opposition of the Joint Chiefs of Staff and other military leaders." The latter felt, he said, that the projected changes would alter the whole concept of the group, virtually eliminate the influence and judgment of professional military officers in its weapons evaluation studies, and "reduce still further the influence of professional military judgment in the decision-making process."<sup>200</sup>

The controversy also came to the attention of Congress. On July 31 a Special Subcommittee of the House Committee on Armed Services, chaired by Congressman Porter Hardy, met to review the problem with the DDR&E, Dr. Harold Brown, and the Director of WSEG, Gen. Ennis. In his testimony, Brown explained that the purpose of the Directive was to bring the operations of WSEG and IDA into conformity with the Bell report and clarify their respective responsibilities. He denied any intention of

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<sup>199</sup>Ibid.

<sup>200</sup>*The New York Times* (July 28, 1962).

eliminating or downgrading WSEG, and explained that implementing instructions would clarify the situation. The contractor would be responsible for reports, but WSEG would continue to be the DoD contact point for the contract, acting as the agent of the JCS, DDR&E, and the SecDef. WSEG would continue to provide military inputs, review reports "where there has been a military input," and control sensitive information. There was a need to reduce the "too close admixture" of the functions of the government and the contractor, which had become "mingled"--as in the Review Board, which was chaired by a contractor employee who was also the Director of Research, and included three civilians who were contractor employees as well as three military--but in other respects "my intention is to go along as nearly as before as possible."<sup>201</sup>

On August 23, 1962, the DDR&E issued a new DoD Instruction on WSEG, superseding the April 13, 1956 Instruction. The Instruction restated the WSEG mission as that of

conducting operational analyses and evaluations for the Joint Chiefs of Staff (JCS) and the Director of Defense Research and Engineering (DDR&E), and other elements of the Office of the Secretary of Defense as authorized by the Secretary of Defense; and with participation in and supervision of such WSEG study contracts with civilian or other government agencies as may be required in discharge of its mission.

It defined a "WSEG Study" as

an operational analysis or evaluation conducted by Director, WSEG, which makes use of contractor's reports and other inputs, and in which military personnel of WSEG participate. The results of a WSEG Study will be generated in consultation with appropriate divisions of the Joint Staff, approved by Director, WSEG, and published as a *WSEG Report*.

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<sup>201</sup>Statement of Dr. Harold Brown, DDR&E, to House of Representatives, Special Subcommittee on Defense Agencies of the Committee on Armed Services (July 31, 1962), pp. 7043-64.

This was distinguished from a "Contractor's Study" which was

a study conducted by a contractor under its WSEG contract in support of a WSEG Study. The contractor will be provided military assistance in the support of such studies. The results of a Contractor's Study will be transmitted by the contractor as a *Contractor's Report* and will be incorporated as part of a WSEG Report.<sup>202</sup>

In functional terms, the Director, WSEG, would be responsive as before to study directives from DDR&E, the JCS, and other elements of OSD, would assign tasks and priorities to contractors, and be the intermediary for all reports and communications relative to such tasks, as follows:

Upon request for a *WSEG Study*, the Director, WSEG, will place a task on a contractor to undertake a Contractor's Study and will arrange for participation of military personnel in the study. He will take all other appropriate actions including internal review and consultation with appropriate divisions of the Joint Staff, other components of the DOD, and other agencies or consultants to ensure the highest quality of response to the assigned task. The WSEG Study will incorporate such Contractor's Reports as separate identifiable parts of the *WSEG Report*.<sup>203</sup>

The responsibilities of the Director, WSEG, included supervising contractor performance under WSEG contracts, controlling all classified material and information issued to, used by, or developed by contractor personnel, and identifying and exercising specific control over access to sensitive material, as to individual contractor representatives to whom access was authorized. Distribution external to the contractor of studies done under a WSEG Study Contract would be determined by the Director, WSEG.<sup>204</sup>

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<sup>202</sup>DoD Instruction 5129.37, *Weapons Systems Evaluation Group* (Aug. 23, 1962).

<sup>203</sup>Ibid.

<sup>204</sup>Ibid.

On September 1, 1962, provisions of the IDA contract for WSEG were amended in accordance with the new WSEG charter.<sup>205</sup> The key paragraph on IDA responsibilities was revised as follows (words deleted are in italics; words added are underlined):

The Contractor agrees to provide *competent personnel and to use its best efforts to supply facilities and materials to assist in providing the Assistant Secretary of Defense (Research and Development) and* evaluations and operational analyses for the Director of Defense Research and Engineering, the Joint Chiefs of Staff, and such other elements of the Office of Secretary of Defense as may be authorized, with operational analyses through the medium of the Weapons Systems Evaluation Group, and the Contractor agrees to supply facilities and materials as required for the execution of the contract and shall use its best efforts to conduct the work specified *in such* under Task Orders as may from time to time *hereafter* be agreed upon by the Government and the Contractor for performance hereunder.

New paragraphs were added, to the effect that the Director, WSEG, was responsible for supervising performance under the contract and would act for the government in assigning tasks and projects and receiving and forwarding all reports and communications. However, formal communications in regard to the assignment of projects, receipt of reports, and the like, would be to the contractor and not to any subdivision of the contractor, and formal communications from the contractor to the government, including Contractor's Reports, would be approved and forwarded by "a senior official" of the contractor. The contractor would provide a Technical Director, "mutually acceptable to the Government and the Contractor," for the general supervision of work

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<sup>205</sup>Supplement 23, Contract SD-35, cited in JCS 1812/154-3/1 (Sept. 3, 1963).

performed under the contract, and on acceptance of task it was agreed that the contractor also accepted the following:

- (1) Full responsibility for the quality of the performance of the Contractor's personnel....
- (2) Government determination of priority of task and projects.
- (3) Military participation in the task or project.
- (4) Government approval of the location of the work.
- (5) Responsibility for the assignment of Contractor personnel to tasks and projects.
- (6) The assignment by the Government of military personnel to project teams.
- (7) The composition of project teams to be mutually agreed to by Contractor and the Government.
- (8) Requests by Director, WSEG, for assistance in performing such analyses, reviews, and evaluations as Director, WSEG, may require in the preparation of WSEG reports.<sup>206</sup>

Implementing these new arrangements was no easy task.

## C. WSEG/WSED OPERATIONS

### 1. Consolidation of the WSEG/WSED Arrangement

The August 1962 revision of the WSEG charter and the subsequent amendment of the IDA contract to conform to the provisions of the Bell Report did not resolve all differences between IDA management and WSEG or stabilize IDA/WSEG working relationships to the complete satisfaction of all parties. There were still residual issues, which surfaced as divergent concepts of WSEG and in the practical application of the Bell Report guidelines to IDA/WSEG operating arrangements.

On the IDA side, management proceeded to implement the new rules by tightening internal organization and supervisory procedures to emphasize IDA's identity as a contractor. IDA sought to exercise its contractual obligations as a unified

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<sup>206</sup>Ibid.

corporation dealing directly with each of its government clients, negotiating task commitments under agreed terms, performing normal managerial functions in assigning personnel and overseeing studies, and otherwise assuming full responsibility for study output. In the IDA view, WSED was a subdivision of IDA comparable to other divisions, and its studies were IDA studies performed by IDA staff members, with the "collaboration" of WSEG. As Bissell expressed it to the Chairman of the JCS, General Maxwell D. Taylor, in an effort to clarify what he called "continued misunderstanding":

...the central issue concerning IDA's role is where responsibility resides for the direction and supervision of the work performed by the IDA staff, with the collaboration of the WSEG staff, and for determining the form and content of completed studies. The concept on which I have been proceeding, and which appears to be stated in our contract with the DOD, is that this has been made a responsibility of IDA as a corporate entity. As a corporate responsibility it rests ultimately on the IDA management. In practice it is discharged by IDA's officers, division directors, and senior professional staff members who act as project leaders. Military officers collaborate fully and equally in the studies, and the members of WSEG have an opportunity to review the papers in draft, but since the project leaders and senior supervisors are IDA civilians, control of the work could be said to rest with IDA up to the point at which finished reports are turned over to the Director of WSEG.<sup>207</sup>

Bissell's approach was in marked contrast to that of the Director of WSEG, General Alness. The latter emphasized WSEG's responsibility for studies, and saw IDA in a supporting rather than a primary role. The WSED division was in effect furnished or "detailed" to WSEG to assist in carrying out WSEG

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<sup>207</sup>Richard M. Bissell, Jr. to Gen. Maxwell D. Taylor, Chairman, JCS (Feb. 5, 1963). Gen. Taylor became Chairman of the JCS in October 1962, succeeding Gen. Lyman L. Lemnitzer, USA.

studies. He visualized the WSEG/WSED relationship as a close-knit partnership that operated under dual management:

...the Director of WSED and I must work in the closest possible harmony, *exercising between us full authority* over day-to-day activities, study progress, project assignments, priorities, and security matters [emphasis added].<sup>208</sup>

In Alness's view, WSEG was considerably more than a study monitor, expediter, and post-facto reviewer and commentator from the "military" point of view. WSEG was an active contributor to the study effort, with sufficient military participation on a continuous basis at the project level to ensure that appropriate consideration was accorded to military and other operational factors during the course of studies. In addition, WSEG also had special responsibilities on behalf of the JCS and other DoD clients for safeguarding the security and privacy of sensitive or privileged government information.<sup>209</sup>

The two approaches were difficult to reconcile. In Bissell's opinion it was essential to maintain a distinct line of demarcation between IDA as a private research institution and WSEG as an official government agency, rather than to mix and merge the two in some hybridized WSEG/WSED arrangement. He believed that IDA should exercise full corporate authority over WSED as one of its subdivisions subject to the normal prerogatives of internal management, including the assignment of tasks and the allocation of staff resources. He believed that client relationships should be with IDA management and not its subordinate division chiefs, and leaned toward managerial

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<sup>208</sup>Lt. Gen. Harvey T. Alness, USAF, statement to the IDA Board of Trustees (Mar. 26, 1963), copy in WSEG files.

<sup>209</sup>Ibid. See also Lt. Gen. Harvey T. Alness, USAF, to Mr. William A. M. Burden, Chairman of the Board of Trustees, IDA (May 1, 1963), copy in WSEG files. These were not merely personal opinions, of course, but were shared by a good many others in WSEG, the OJCS, and elsewhere in the Pentagon.

flexibility in centralizing computer and other common services and rotating staff among the IDA divisions as required.<sup>210</sup>

Alness's viewpoint, on the other hand, was that it was highly desirable for WSED to operate as a quasi-autonomous entity within IDA, with a considerable degree of staff compartmentation and continuity at the working level, minimum staff rotation or mixing among IDA divisions, and minimal use of outside consultants or personnel from elsewhere in IDA in the review process. In addition, whatever the precise division of functions and responsibilities between WSEG and IDA, it was preferable that the Director of WSEG conduct his day-to-day business with the Director of WSED as with a counterpart in full charge of WSED operations, rather than as with a representative and subordinate of "external" IDA management with little authority of his own. As Alness stated to the IDA Board of Trustees in March 1963:

The availability of support from the JCS and the Services is a direct function of their confidence in the WSEG/WSED team, and of their knowledge that information disclosure and dissemination can be positively controlled within the military element of WSEG and within a stable scientific support element--the Weapons Systems Evaluation Division of IDA.

The present WSEG/WSED capability is one that the Department of Defense can ill afford to lose. Once confidence in the Group is lost ... whether by dislocation from ready access to DOD agencies, or by loss of the effective military/civilian relationships within WSEG, or by attenuation of present security controls, there will be a loss of vital information sources, curtailment in military requests for studies and, eventually, a significant reduction in the caliber of staff members.<sup>211</sup>

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<sup>210</sup> Richard M. Bissell, Jr., President of IDA, "Philosophy of Management for IDA" (June 12, 1963), and "Management Practices for IDA" (June 26, 1963); copies in WSEG files.

<sup>211</sup> Alness, statement to the IDA Board of Trustees.

While both views were advanced as being within the framework of Bell Report policies, they were diametrically opposed in application. Bissell considered them tantamount to different concepts, and wrote to the Chairman of the JCS in February 1963 that "the distinction between them is fundamental ... one or the other must prevail."<sup>212</sup> At the staff level in the OJCS it was felt that the disparity was too great to bridge; a modus vivendi based on the current situation was "temporary at best" and no longer-term solution appeared practicable that was at the same time satisfactory to the parties involved, met JCS requirements, and fulfilled the desires of OSD. WSEG and the JCS would be satisfied with a return to the previous situation in which the Director of WSEG was responsible for the studies and IDA's role was to provide and administer the civilian analysts needed, but "the trend of the times" had overtaken operations of that nature: IDA could not be expected to accept such an arrangement, and the SecDef would probably not support it. The long-term solution might be to "split off" JCS requirements for WSEG type studies from those of other elements of OSD, tailoring WSEG specifically and solely to meet JCS needs and leaving IDA to perform studies for OSD and other government agencies as envisioned by Bissell, without WSEG as a middleman, but such a solution required much more study before it could be recommended.<sup>213</sup>

Following Bissell's letter to the Chairman, and after discussing the matter directly with Bissell, the Director of WSEG, and the DDR&E, the Joint Chiefs expressed their concern to the SecDef over the deterioration in the WSEG/IDA relationship. They objected that the "shift in emphasis" in the responsibility for studies from the Director of WSEG to the President

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<sup>212</sup>Bissell to Gen. Taylor (Feb. 5, 1963).

<sup>213</sup>Director, J-5, JCS, "Comments on WSEG-IDA Relationships" (comments on the Bissell letter to the Chairman cited above); undated, copy in WSEG files.

of IDA was not warranted by the Bell Report policies as they understood them, and they criticized the "extremely ambitious objectives" of IDA management. They particularly opposed any plans of IDA management to merge all subordinate elements of IDA, eliminating WSED and leaving WSEG without a separate component specifically charged with its support. They argued that this would change the complexion of WSEG, breaking up the intimate working relationship between military and civilian personnel, diffusing responsibility for the technical support of WSEG, and causing unnecessarily wide circulation of highly sensitive military information and documents:

This close working relationship now in being is necessary to the proper approach to the effective analysis of problems assigned to WSEG. The attempt to resolve military problems in the absence of military judgments is as unsound as to consider analysis without a scientific judgment. The seven-year close melding and team effort of WSEG/WSED has resulted in a most productive effort which we can ill afford to dissipate.<sup>214</sup>

The JCS thereupon recommended measures to continue the WSEG/WSED arrangement as it existed and suspend further changes. They stated three conditions as minimum requirements: (a) that WSED continue to function as a division within the organizational structure of IDA, dedicated to providing scientific support to WSEG; (b) that WSEG continue to operate with WSED as before, with the Director of WSEG responsible for the activities of the group and the supervision of the contractor; and (c) that the President of IDA be informed that he should be responsive to DoD desires through the Director of WSEG as the designated DoD representative. If these conditions could not be met, the JCS requested that the WSEG/WSED arrangement continue in force until the end of the contract year (June 30, 1963), pending

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<sup>214</sup>CM 337-63, JCS Memorandum to the SecDef, "Relationship Between WSEG and IDA" (Feb. 25, 1963).

determination by the JCS of alternative means of meeting their analytical support needs.<sup>215</sup>

The SecDef concurred in the JCS recommendations and asked the Chairman to communicate the decision to Bissell. The decision focused on the central issue, the continuation of the WSED division as "a separate and stable entity within the organizational structure of IDA, directly supporting WSEG," without delving into any details or ancillary matters. General Taylor wrote to Mr. Bissell as follows:

Within the last few days the Joint Chiefs of Staff discussed with Secretary McNamara IDA/WSEG relationships as they are evolving under the latest supplement to the DOD contract with IDA. The discussion focused upon one principal question:

For effective fulfillment of the needs of the JCS, should WSEG be directly supported by a separately constituted division of IDA, i.e., WSED, with a relatively stable personnel base?

In developing their recommendations to the Secretary, the Joint Chiefs of Staff ... wanted to be certain that the organizational relationships influencing the development of studies done for them by WSEG satisfied at one and the same time, the requirements of research quality and objectivity as well as the requirements of security and responsiveness.

WSEG has served well the needs of the Joint Chiefs of Staff for a number of years. In our view, this close relationship between the military and scientific community, in an atmosphere of tested security, should be retained.

The Joint Chiefs of Staff informed the Secretary of Defense that they believed that the proposed reorganization of IDA, with the elimination of WSED, would effectively destroy the previous satisfactory arrangement and would be detrimental to the needs of the Joint Chiefs of Staff. They, therefore, recommended that WSED should continue to operate as a separate

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<sup>215</sup>Ibid.

and stable entity within the organizational structure of IDA, directly supporting WSEG. The Secretary of Defense concurred in our recommendations and asked that I communicate his decision to you.

The Secretary and the Joint Chiefs of Staff believe that in this framework the needs of the Department of Defense as the user agency can best be met. We hope that you will agree.<sup>216</sup>

Bissell responded on March 22, 1963, agreeing to the request that WSED continue to exist as a subdivision of IDA but pointing out the responsibilities of IDA management as he saw them and asking for "reasonable freedom of action" to exercise "normal management authority":

The Secretary of Defense has recently reaffirmed to me his belief that the IDA management should be expected to play an active part in the supervision of all the subdivisions of IDA for the purpose of improving the quality and enhancing the usefulness of their work. He has assured me, as did you in our discussion a few days ago, that the decision reported in your letter is not intended to imply a different role for the IDA management with respect to WSED.

It goes without saying that the officers of IDA cannot discharge this responsibility unless they possess and exercise normal managerial authority. In particular, they must determine the kind and degree of supervision they will exercise over the work of the organization and the extent and nature of the authority they will delegate within IDA to the directors of its divisions. They must require the senior officials of IDA (including the Technical Director for the WSEG contract) to act as members and representatives of IDA's management and not as heads of autonomous organizations. In these and other respects IDA's internal relationships are typical of those which normally obtain in any organization composed of a number of components that are subordinate to a common higher authority.

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<sup>216</sup>Gen. Maxwell D. Taylor to Mr. Richard M. Bissell, Jr., President, IDA (Mar. 12, 1963), copy in WSEG files.

Such relationships are entirely consistent with the continued existence of WSED as a separate component.<sup>217</sup>

It soon became clear that it was not merely the status of WSED as a "separate and identifiable subdivision of IDA with a relatively stable personnel base" that was at stake but its relative freedom within the overall IDA framework to operate as the civilian technical half of the combined WSEG/WSED team. On this score there was no real meeting of the minds and considerable misunderstanding persisted. Bissell felt, for example, that the WSED professional staff need not be completely self-contained:

Although its composition can and will be kept "reasonably stable," some rotation of personnel is both inevitable and, I believe, desirable. Moreover it will be useful on occasion to augment the WSED staff both by the temporary assignment of professional people from other parts of this organization and by the assignment of tasks (or portions thereof) to other IDA divisions. In particular, I anticipate certain service functions will be pooled for all of IDA's divisions when they are physically brought together in a single location, which will somewhat increase both WSED's usefulness to and its dependence upon other parts of the organization. I view it as an important duty of the IDA management to make sure that all of IDA's resources, including consultants from the scientific community outside of the government, are available to be drawn upon as needed (and within the limits of security) to assist in the performance of JCS-assigned tasks.<sup>218</sup>

General Alness, on the other hand, apparently continued to view unilateral IDA personnel and task assignments, even with the preservation of the WSED division, as eroding the special

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<sup>217</sup>Richard M. Bissell, Jr., President, IDA, to Gen. Maxwell D. Taylor, Chairman, JCS (Mar. 22, 1963), copy in WSEG files.

<sup>218</sup>Ibid.

WSEG/WSED relationship and undermining the joint responsibility for controlling workload priorities and other substantive matters.

Moreover, there was continued room for disagreement over the relative degree of autonomy to be accorded to the Director of WSED. In April 1963, after a meeting with the IDA Board of Trustees to discuss the implications of the McNamara decision, Alness believed that it was understood on both sides not only that WSED would remain a "separate stable identifiable division" in support of WSEG, but also that "the Director of WSED will be the individual with whom the Director of WSEG will deal on WSEG/WSED joint team matters."<sup>219</sup> The Chairman of the IDA Board expressed the understanding in somewhat more equivocal terms:

With respect to the second point, the President of IDA must of course determine who is to represent the organization in dealing with the several offices in the DOD with which we do business. Mr. Bissell has advised me, however, that it has been and will continue to be his practice to use the Director of WSED as the representative of IDA to handle most matters with WSEG (other than those formal written communications which should be with the President of IDA).<sup>220</sup>

The tenuous nature of the understandings on both sides was further demonstrated during the ensuing months. In June 1963 the JCS decided that it would be desirable to withhold the renewal of the regular WSEG/IDA contract for an additional trial period, through October, to see whether the agreed terms were working out satisfactorily. Meanwhile, in order to be prepared in the event relationships continued to be unsatisfactory, the Joint Staff was directed to examine alternative

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<sup>219</sup>Lt. Gen. Harvey T. Alness, USAF, Director, WSEG, to Mr. William A. M. Burden, Chairman of the Board, IDA (Apr. 19, 1963).

<sup>220</sup>William A. M. Burden to Lt. Gen. Harvey T. Alness (May 1, 1963).

solutions to meet the analytical support needs of the JCS, specifically including termination of the IDA/WSEG arrangement and the reconstitution of WSEG with a scientific/technical element directly responsive to the JCS.<sup>221</sup>

In the same month, in a further effort to clarify the IDA position, Bissell issued a formal "Philosophy of Management for IDA" and a set of "Management Practices for IDA" which were intended for both internal and external consumption.<sup>222</sup> Both documents were approved by the Executive Committee of the IDA Board of Trustees. They stressed IDA's corporate identity and unity, management flexibility, interdivisional communications and exchanges, and the need for balance between the advantages of close working relationships between particular divisions and particular clients, on the one hand, and the disadvantages of "overspecialized working procedures" tailored too narrowly to individual clients, on the other. The "Philosophy of Management" also listed "key corporate actions" for which the principal officers of IDA were accountable, including: (a) acceptance of tasks and definition of terms of reference, (b) utilization of IDA resources on tasks, including scale of effort, choice of project leaders, assignment of tasks to divisions, and interdivisional staff assignments, (c) substantive review of work in progress, from the design phase to completion, including the assessment of relevance, adequacy, and quality, and (d) determination that finished work was satisfactory and could be released to the government with IDA's endorsement.<sup>223</sup>

Since these "key corporate actions" involved prerogatives that the Director of WSEG believed should be exercised as

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<sup>221</sup>CM 630-63, Memo for the SecDef, "Renewal of WSEG-IDA Contract" (June 1, 1963); DJSM 1042-63, Memo for Director, WSEG, "Alternatives to Present WSEG-IDA Relationship" (June 20, 1963).

<sup>222</sup>Richard M. Bissell, Jr., President, IDA, "Management Practices for IDA"; "Philosophy of Management for IDA."

<sup>223</sup>Ibid.

joint WSEG/WSED responsibilities, Bissell's clarification only highlighted the discrepancy between the two views. A qualification in the Bissell statement conceding that there were likely to be "constraints" in practice on the freedom of IDA management to assign tasks and personnel, and that there were "other constraints ... inherent in the participation of military personnel" (since the latter were not part of the IDA organization, yet their views had to be accorded "due weight and respect"), fell far short of any compromise with Alness's position.

Alness concluded from the reiteration of Bissell's management philosophy that it was no longer possible to redefine WSEG/IDA relationships "to allow WSED to return to a semi-autonomous entity receiving only broad policy direction from IDA management to be executed by the Director of WSED"--short of which, he believed, it was impossible to meet JCS and other DoD needs for "a fully integrated military-civilian study group." Accordingly, in July 1963, he recommended that the IDA/WSEG connection be severed, and that an appropriate new contractor, such as a university, be selected to sponsor a dedicated WSED-type operation. He suggested that the charter of the contract group specifically limit its activities to the support of WSEG and require the prior permission of the JCS and DDR&E for any expansion of scope.<sup>224</sup>

In the Joint Staff, five alternatives were considered for presentation to the JCS, if such became necessary.<sup>225</sup> They were:

- (1) Disestablish WSEG and establish a small military liaison group to work with IDA, primarily for writing

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<sup>224</sup>Director, WSEG (Lt. Gen. Harvey T. Alness, USAF), Memo for Director, Joint Staff, Joint Chiefs of Staff, "Alternatives to the Present WSEG-IDA Relationship" (July 19, 1963).

<sup>225</sup>Draft of report by the J-5 to the Joint Chiefs of Staff, "Alternative Solutions to the WSEG-IDA Relationship" (Sept. 3, 1963), copy in WSEG files.

task orders and other contract administration. This would eliminate direct military participation with IDA in the conduct of studies and provide unadulterated civilian scientific/technical analysis for the JCS.

(2) Continue the IDA association, attempting to reestablish satisfactory principles of operation, including a relatively autonomous WSED committed to supporting WSEG. ("Full and satisfactory implementation of this alternative is ... improbable," commented the Joint Staff; "less than full implementation is undesirable.")

(3) Sever IDA relations and establish an in-house civil service group to support WSEG, as before, under more liberal pay and other inducements and considerable professional and analytical latitude. (Even at higher rates of pay, successful recruitment of top-notch personnel might be problematical, noted the Joint Staff, and it would undoubtedly require some time to build a suitable organization.)

(4) Retain the WSEG/WSED concept but sever connections with IDA and obtain a new sponsor "willing to provide the necessary technical support in a less ambitious manner." The contract group would operate under a Director of Research empowered both to deal with the Director of WSEG on tasks and task priorities, terms of reference, selection of project leaders, participation of military personnel, and the like, and to participate equally in the review process leading to completed studies, under appropriate precautions to guard against "military domination."

(5) Sever IDA ties and reconstitute WSEG as a military studies group within the OJCS, with ad hoc augmentation from civil service or contractual sources as required, including occasional specified studies. The overall pattern would be similar to that of the OJCS Special Studies Group, with augmentation to provide sufficient capacity and adaptability to handle the WSEG workload.<sup>226</sup>

Although Joint Staff consideration of these alternatives did not focus on any one as clearly superior, on balance the fourth--continuing the WSEG/WSED arrangement under different sponsorship--appeared to be the most advantageous. An important point in its favor was that it might be accomplished with a minimum of disruption; another was that it was a tested

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<sup>226</sup>Ibid.

arrangement that suited the analytical support requirements of non-JCS as well as JCS users, approximating the agreed ideal of an integrated civilian/military multi-Service group.<sup>227</sup>

The issue was brought to a head in the fall of 1963 at the end of the "trial period." On September 20 the Joint Chiefs met with the DDR&E and reached the conclusion that the situation between IDA and WSEG had to be remedied soon; it was not clear that any arrangement based on IDA's continuation as the contractor could be worked out, but if not, it would be necessary to terminate the IDA relationship and seek another contractor. However, in order to explore whether there was any possibility of preserving the IDA relationship, they proposed that representatives of the IDA Board of Trustees be invited to meet with the SecDef, the CJCS, and the DDR&E to discuss the question of continuing or terminating the IDA contract. The aim of the meeting, suggested the Chairman, should be to ascertain whether the IDA Trustees would be interested in attempting a change in key personnel and operating procedures to improve the situation.<sup>228</sup>

The meeting was held in the office of the Deputy SecDef, Mr. Roswell L. Gilpatric. Attending were the Chairman of the JCS, Gen. Maxwell D. Taylor; the DDR&E, Dr. Harold Brown; Lt. Gen. Andrew J. Goodpaster, Assistant to the Chairman of the JCS; and, for the IDA trustees, Mr. William A. M. Burden, Chairman of the Board; James R. Killian, Jr., of MIT; and Grayson Kirk, of Columbia University. The IDA trustees reviewed the history of the establishment of IDA and the background of some of the IDA/WSEG difficulties. The JCS Chairman emphasized the value of an effective working relationship between the WSEG military element and WSED. The discussion brought out the unsatisfactory state of the WSEG/IDA relationship, and, as Goodpaster

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<sup>227</sup>Ibid.

<sup>228</sup>CM 908-63, Memo for the SecDef, "Future of WSEG/IDA" (Sept. 21, 1963).

summarized it, "the prospect of deterioration or even disintegration in the near future unless something is done."<sup>229</sup>

Finally,

After further discussion on a number of factors that had contributed to this situation, the matter was presented to the IDA trustees in terms of a choice between (a) a change in IDA's top management, accompanied by a change in the roles or management practices, or (b) a change of contractor.

The trustees agreed to consider the matter.<sup>230</sup>

The IDA trustees returned several weeks later with a proposal to establish a new position within IDA headquarters, Associate Vice President for WSED Affairs, to oversee IDA/WSEG/JCS policy matters and facilitate the early resolution of issues. They proposed that the Director of WSED retain full responsibility for "technical and substantive work," but that the new Associate Vice President would be available to deal with questions of security, physical facilities, administrative procedures, personnel transfers, organizational changes, and the like, whenever such questions acquired the status of policy issues at the management level. They proposed to appoint to the position Maj. Gen. John B. Cary, USAF (Ret.), a member of the IDA staff who was Deputy Director of the International Studies Division and Special Advisor to the President.<sup>231</sup>

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<sup>229</sup>A. J. Goodpaster, Memo for Record, "Meeting in Dep Sec Gilpatric's Office--WSEG/IDA Relationships, 2 October" (Oct. 2, 1963).

<sup>230</sup>Ibid.

<sup>231</sup>DDR&E (Dr. Harold Brown), Memo for Gen. Maxwell D. Taylor (Oct. 24, 1963) forwarding Institute for Defense Analyses "Position of IDA Executive Committee re WSEG Contract" (Oct. 23, 1963).

Gen. Cary had been appointed Special Advisor to the President and the Vice President of Research of IDA on July 26, 1963, "to review specific military aspects of IDA activities and studies." (Richard M. Bissell, Jr., IDA Notice [July 26, 1963].)

The IDA position paper acknowledged that it appeared "organizationally unsound" to introduce another echelon between the President of IDA and the Director of WSED, but suggested it as a temporary arrangement in the hope that the IDA/WSEG relationship would evolve constructively and the necessity would disappear. Meanwhile, they stood behind the views of the President of IDA on overall IDA/DoD relationships, as expressed in Bissell's letter of March 22, 1963, to the Chairman of the JCS--which they had previously approved--and said that they assumed that these were still acceptable.<sup>2 3 2</sup>

The March 22 letter, as noted above, included the points that IDA management was clearly responsible for completed studies, that IDA officers would exercise normal managerial authority in supervising its divisions, determining the kind and degree of authority delegated to division chiefs, that divisions were not autonomous or self-contained organizations, and that rotation of personnel among the divisions was necessary and desirable.

The JCS found the IDA proposal unsatisfactory. They viewed the problem as more than a matter of communications. It involved definitions of basic prerogatives and responsibilities on which they took issue, and with respect to which they saw no major alteration or adjustment in the IDA position. They accordingly recommended that the IDA proposal be rejected and that immediate steps be taken to obtain a new contractor.<sup>2 3 3</sup>

McNamara's decision on the JCS recommendations, which can be reconstructed only by inference and from the conclusions of those immediately involved, was to uphold the basic JCS position on the continuation of the WSEG/WSED arrangement but to do so on a trial basis, with new personnel in the top

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<sup>2 3 2</sup>Ibid.

<sup>2 3 3</sup>Director, J-5, "Talking Paper for Chairman, JCS, for SecDef-JCS Meeting" (Oct. 28, 1963), copy in WSEG files.

positions under a strong injunction to "make it work."<sup>2 3 4</sup> Accordingly, both Bissell and Alness were replaced, as was the Director of WSED. The IDA contract was extended, on what was almost a month-to-month basis, and a new contract was negotiated that satisfied the principal concerns of the JCS. The terms were as follows:

- (1) The contract recognized the full responsibility of the Director of WSEG as the agent of the government, responsible for the performance of the contractor on tasks or projects and for the reports furnished as an end product of such tasks or projects.
- (2) The Director of WSEG was provided with the authority to assure efficient and effective operations.
- (3) The contractor would provide studies as specified in written task orders from the Director of WSEG, in accordance with priorities assigned by the Director of WSEG and with the assistance of military personnel assigned by the Director of WSEG.
- (4) The contractor agreed that the services provided for or through WSEG would be performed by an "identified division," i.e., WSED, under a Director who was mutually acceptable to the government and the contractor and who would exercise general supervision of all work performed under the contract; and furthermore,  

The Contractor will use its best efforts to maintain a stable personnel base within the Division in order to assure continuity in the substantive work.
- (5) The WSEG/WSED combination would be completely self-supporting with respect to computer facilities, mathematics services, printing functions, and similar necessities.
- (6) WSEG would operate in government-furnished space in the Pentagon and in IDA-provided floor space, designated as WSEG office space, in the new IDA building.

The new Director of WSEG, Lt. Gen. Joseph R. Holzapple, USAF, informed the Chairman of the JCS that the new contract provided a vehicle for a productive WSEG/WSED relationship, and

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<sup>2 3 4</sup>Interviews.

that there was every evidence that the new President of IDA, Dr. Jack P. Ruina, shared his views.<sup>235</sup>

## 2. WSEG/WSED Studies, 1961-66

The WSEG/WSED arrangement, with WSED operating as a stable entity within IDA essentially committed to WSEG, continued in force for the next several years. IDA grew to slightly more than 300 total professional staff members in 1966, of whom 120 were in WSED.<sup>236</sup> The number of IDA member universities increased to a total of 12, with the University of Chicago included in 1961, Princeton and the University of Illinois in 1962, and the University of California in 1964.<sup>237</sup> In the fall of 1964 the Washington divisions of IDA (that is, all divisions except the Communications Research Division at Princeton) were consolidated in quarters in a new IDA building at 400 Army-Navy Drive in Arlington, Va., directly across from the Pentagon.<sup>238</sup> WSEG moved into the new building as well, joining WSED in occupying three separate floors of the building. WSEG and WSED staff members worked in commingled offices under WSEG security control, and also utilized a small suite of WSEG offices in the

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<sup>235</sup>Director, WSEG (Lt. Gen. Joseph R. Holzapple, USAF), Memo for Chairman, JCS, "New IDA Contract for WSEG Support" (Dec. 6, 1964). Gen. Holzapple, who was officially assigned to WSEG in March 1964, had been Commander of the Wright Air Development Center at Wright Field, Ohio, and Assistant Deputy Chief of Staff, Systems and Logistics, Hq. USAF. Dr. Ruina was a professor of electrical engineering on leave from MIT; he had been Assistant Director for DDR&E in 1960-61 and Director of ARPA from 1961 to 1963.

<sup>236</sup>IDA *Annual Report*, 1966.

<sup>237</sup>Ibid. As of February 1966, the 12 universities (the five founders are marked by asterisks) were: University of California, California Institute of Technology,\* Case Institute of Technology,\* University of Chicago, Columbia University, University of Illinois, Massachusetts Institute of Technology,\* University of Michigan, Pennsylvania State University, Princeton University, Stanford University,\* and Tulane University.\*

<sup>238</sup>IDA *Annual Report*, 1965. IDA occupied most of the building under a long-term lease.

Pentagon for liaison and on-site study requirements. The remainder of IDA operated in separate office space in the new building under an IDA industrial security system.

The WSEG contingent during these years was maintained at a programmed level of 54 military officers, 45 civil service administrative personnel, and a military security force of 11 enlisted men. In 1966 and for several years thereafter, the authorized officer strength was increased from 54 to 58 in order to provide additional military analysts for studies of combat air operations in Southeast Asia, but this was temporary and the authorized officer strength later dropped back to previous levels.<sup>239</sup>

Despite the unsettled state of the IDA/WSEG relationship in the early 1960's and the uncertainties regarding the future of the WSEG/WSED arrangement, both of which absorbed a good deal of management attention, the WSEG/WSED output remained reasonably high during the 1961-66 period. There was a noticeable decline in the proportion of studies carried out for the JCS, from 76 percent in the 1956-60 period to 63 percent for 1961-66, but this is not surprising in view of the greatly expanded analytical demands of DDR&E and other OSD agencies during the early McNamara years. Except for the year 1963, the actual number of reports produced for the JCS remained substantial. Table 1 lists the number of WSEG/WSED reports issued in response to both JCS and OSD tasks, year by year, comparing the 1956-60 and 1961-66 periods.

In general the character, problem areas, and intrinsic importance of the studies produced for the JCS continued as before. The JCS continued to request a mixture of comprehensive studies of major weapons systems issues, oriented toward basic

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<sup>239</sup>WSEG *Annual Activities Report*, FY 61, 62, 63, 64, 65, and 66.

Table 1. WSEG REPORTS ISSUED, 1956-1960 AND 1961-1966

	JCS	DDR&E <sup>a</sup>	Other	Total
1956	3	-	1	4
1957	7	2	-	9
1958	9	1	-	10
1959	8	5	-	13
1960	5	1	-	6
Total	32	9	1	42
1961	7	3	1	11
1962	7	6	1	14
1963	1	2	-	3
1964	6	3	1	10
1965	10	1	-	11
1966	8	5	-	13
Total	39	20	3	62
Total 1956-66	71	29	4 <sup>b</sup>	104

<sup>a</sup> Prior to the Reorganization Act of 1958, Assistant Secretaries, R&D and R&E.

<sup>b</sup> Of these 4, 2 were for the SecDef, 1 for the Deputy SecDef, and 1 for the Special Office for Guided Missiles, OSD.

planning requirements, and short-term, quick-reaction studies, some with partial or interim reporting stipulations, in response to more immediate needs or situations. Study topics were divided approximately equally between strategic and general purpose mission areas. In several cases the annual review type of task was superseded by more open-ended study directives in which WSEG was asked to maintain continuous support capabilities, to be available as particular needs arose. Continuity in the study program was also furthered by a natural inclination on the part

of study users to turn to WSEG/WSED for additional studies in areas of demonstrated performance and expertise, and for the WSEG/WSED teams to initiate or invite tasks that could be tackled with existing study capabilities. Thus, there was a tendency for successful or well-received projects to be perpetuated, not an unwelcome result from the JCS point of view when such projects examined recurring problem areas of continuing high priority but somewhat troublesome when they conflicted with desires to reallocate priorities and shift study efforts into other project areas.<sup>240</sup>

Major project efforts in the strategic weapon/SIOP area continued throughout the 1961-66 period, partly as an extension of work stimulated by WSEG R-50 in 1960.<sup>241</sup> As mentioned above, one of the major issues highlighted in R-50 was the uncertainty of the operational reliability and effectiveness of the new ballistic missile systems that were just entering the inventory.<sup>242</sup> Empirical test experience was fragmentary, performance claims and counterclaims were contradictory, disagreement within as well as between industrial contractors and the Services was widespread, and the DoD decision stakes were high. The JCS thereupon asked WSEG to initiate a concerted, high-priority effort to evaluate the principal systems--Atlas, Titan, Minuteman, Skybolt, and Polaris--particularly as to accuracy, reliability, range, response to command, reaction time, and other operational characteristics.<sup>243</sup>

WSEG submitted an initial report in November 1961, with the conclusion that past tests were too artificial and available

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<sup>240</sup>Interviews. See also Director, WSED (G. W. Rathjens), Memo for Gen. Goodpaster (Director, Joint Staff), "Optimizing WSED/WSEG's Utility to the DOD" (July 18, 1966).

<sup>241</sup>WSEG R-50, *Evaluation of Strategic Offensive Systems* (Dec. 27, 1960), described above.

<sup>242</sup>See above, p. 177.

<sup>243</sup>JCS SM 339-61 (Mar. 27, 1961).

data too unsatisfactory for confident estimates of the probable operational performance of the missiles.<sup>244</sup> It recommended that new tests be developed, specifically oriented toward measuring capabilities under realistic conditions, and followed up with a second report outlining a set of assumptions, criteria, and design guidelines for improved tests.<sup>245</sup> The latter report, published in December 1962, was briefed to the JCS, DDR&E, and the SIOP CINC's during the next several months and provided the basis for many of the JCS/OSD decisions and actions on the strategic missile test program during the following years.<sup>246</sup>

Critical JCS requirements for reliable strategic missile assessments during this period led to the establishment of a long-term WSEG/WSED project that was sustained for many years. Assembling the necessary technical personnel was quite a problem at first, both because people with the relevant expertise were scarce and had to be obtained initially from private missile contractors (with the concomitant risk of bias), and because JCS requirements were demanding.<sup>247</sup> The JCS initially called for preoperational test reports on each of the major ballistic missiles reaching operational status, as well as summary evaluations thereafter based on tests with operational units. During 1963 and 1964, WSEG was obliged to issue quarterly progress reports on ongoing missile tests and on periodic test results throughout the testing cycle. WSEG was also obliged to prepare wrap-up reports at major stages in the various programs, such as WSEG R-78, *The POLARIS A1 and A2 Evaluation Report* (June 1964); and WSEG R-84, *The MINUTEMAN Evaluation Report* (April

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<sup>244</sup>WSEG R-56, Study I, *Evaluation of Development and Operational Test Data on POLARIS, ATLAS, TITAN, and MINUTEMAN* (November 1961).

<sup>245</sup>WSEG R-56, Study II, *Operational Effectiveness of Ballistic Missile Systems* (December 1962).

<sup>246</sup>WSEG *Annual Activities Report*, FY 61, 62, and 63.

<sup>247</sup>Interviews.

1965).<sup>248</sup> Subsequently WSEG produced a set of reports that consolidated the WSEG/WSED analytical experience and know-how in operational testing and evaluation work--WSEG R-92, *Evaluation of Operational Test Programs* (January 1966), and R-92A, *Guidelines for Evaluating Operational Test Programs* (May 1966)--in order to facilitate continuation of the work by other agencies.<sup>249</sup>

The importance of this series of WSEG/WSED studies is indicated by the fact that their substantive as well as methodological findings were utilized for establishing SIOP planning factors, adjudicating force structure issues, formulating RDT&E programs and requirements, and other purposes for which high-confidence missile performance estimates were needed. In September 1965, when DDR&E sought to have the studies dropped in favor of other WSEG/WSED tasks, the JCS replied that the work was "indispensable" and that no other source afforded "the degree of credibility, competence, or analytical insight which WSEG is capable now of providing and which the JCS require."<sup>250</sup> Again, in 1967, citing "additional complexities" in judging missile performance because of the introduction of penetration aids, multiple warheads, and defensive systems as justification for continuing the WSEG/WSED work, the JCS declared that "WSEG has developed a degree of expertise and competence in test design and evaluations that is unmatched in other analytical agencies," together with "an objectivity impossible to attain in service-oriented agencies." The value of the work should not be underestimated, the JCS added, since it involved "the backbone of U.S. nuclear striking power."<sup>251</sup>

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<sup>248</sup> WSEG *Annual Activities Report*, FY 63, 64, and 65.

<sup>249</sup> WSEG *Annual Activities Report*, FY 66.

<sup>250</sup> JCSM 710-65, Memo for the SecDef, "WSEG Participation in Ballistic Missile Studies" (Sept. 24, 1965).

<sup>251</sup> JCSM 298-67, Memo for SecDef, "Assignment of Studies Dealing with Strategic Weapons and (continued on next page)

The JCS even recommended that the SecDef authorize extra budgetary support for WSEG so that it could carry on the missile evaluation work. They argued that defense leaders could have greater confidence in SIOP planning factors if the factors were based on operational test evaluations made by an agency like WSEG that had the requisite experience, technical competence, and objectivity.<sup>252</sup>

The counterargument from OSD was that, valuable as the work was, further studies were likely to become repetitious and produce diminishing returns in comparison with other high-priority uses of the WSEG/WSED resources involved. OSD proposed that WSEG bring the series to an end with a set of final reports and that the responsibility for continuing missile evaluations be assumed by the CINC's and other agencies.<sup>253</sup>

During this same 1961-66 period, WSEG/WSED project teams also carried out other major studies concerned with strategic weapons and/or strategic force posture problems for the JCS. Some were studies of specific aspects or elements of strategic programs, such as the evaluation of manned and unmanned systems for post-strike reconnaissance operations (R-57 Study I in October 1971 and R-57 Study II in September 1962); potential military applications of offensive weapons systems in space (R-66, April 1963); cost-effectiveness of the Nike-X ballistic

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(cont'd) Strategic Warfare" (May 26, 1967). Work in the area continued. Subsequent studies included WSEG R-121, *Accuracy of Strategic Missile Systems* (December 1967), and WSEG R-140, *The POLARIS A-3 Evaluation Report* (February 1969). In 1970 and 1975, respectively, WSEG issued R-92B and R-92C, *Revised Guidelines for Use in Evaluating Strategic Ballistic Missile Operational Test Programs*, updated versions of studies R-92 and R-92A referred to above.

<sup>252</sup>JCSM 298-67.

<sup>253</sup>DDR&E, Memo for JCS, "Termination of Existing JCS Directives to WSEG for Ballistic Missile Evaluation Studies" (July 19, 1965); Deputy SecDef, Memo for Chairman, JCS, "WSEG Participation in Ballistic Missile Studies" (Oct. 14, 1965).

missile defense system (R-72, December 1963); or potential arms control measures relating to surprise attack (R-52, January 1961).<sup>254</sup> Others were more or less comprehensive evaluations of alternative strategic force options. These included such studies as WSEG R-79, *Analysis of General Nuclear War Postures for Strategic Offensive and Defensive Forces* (July 1965), in which WSEG was asked to evaluate potential tradeoffs between offensive and defensive strategic forces for limiting damage to the United States and WSEG R-91, *Methodology for the Analysis of Bypass Targeting and Area Ballistic Missile Defense* (December 1965), which extended the evaluation of ballistic missile defenses to include Nike-Z-type area defenses, given alternative civil shelter postures, alternative enemy attack patterns (including attacks to maximize the effects of fallout), and a range of enemy capabilities. Other such studies were WSEG R-94, *Analysis of Strategic Missile Exchange* (February 1966), which centered on the possible implications of improved Soviet strategic developments--for example, MIRV's, ASW advances, and/or BMD--for overall U.S. damage-limiting and assured-destruction options, and WSEG R-102, *An Offensive-Conservative Analysis of Strategic Exchange for Assured Destruction* (September 1966), which examined the cost-effectiveness of future alternative strategic choices, such as defending offensive missile sites or deploying mobile or semimobile missiles in order to achieve various degrees of assured destruction at stipulated Soviet offensive/defensive force levels.<sup>255</sup>

In most cases, the desired objective of these studies was to provide analytical support to OJCS elements responsible for strategic planning, strategic force structure recommendations, and the development, deployment, and operational

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<sup>254</sup>For exact titles, see DoD-IDA Management Office, OUSDRE, "Index to WSEG Publications."

<sup>255</sup>WSEG *Annual Activities Report*, FY 65, 66, and 67.

application of major strategic weapons. As stated by the Director of the Joint Staff (responding in early 1967 to a WSEG proposal to put WSEG's strategic warfare efforts on a more permanent basis<sup>256</sup>), the JSOP and other JCS plans were prepared by the Joint Staff with inputs from the Services, the CINC's, and other sources. Such inputs in turn were based on requirements studies performed by or for the contributing agency and generally reflected the agency's view of its own requirements. The issues addressed by the Joint Staff, on the other hand, generally had joint aspects or involved concepts and forces that transcended individual Service interests. WSEG support was particularly helpful, the DJS wrote, because "WSEG is in a unique position to assist in the formulation of 'joint' views on many of the key matters that enter into the development of these joint plans and related issues addressed by the Joint Chiefs of Staff from time to time."<sup>257</sup>

Even where the WSEG studies overlapped or duplicated studies by the Services, as a number of these strategic warfare studies did, OJCS strategic planners found the WSEG/WSED products useful as alternative sources of organized data, analytical approaches, and outside, "third party" solutions.<sup>258</sup>

Besides the studies carried out for the JCS in the strategic weapons/warfare category, WSEG also continued to produce a large number of general purpose studies as well as studies in mission areas that overlapped the two categories.

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<sup>256</sup>Director, WSEG (Vice Adm. K. S. Masterson, USN), Memoranda for the JCS, "Study Program in Support of the JCS" (Feb. 14, 1967 and Feb. 27, 1967).

<sup>257</sup>Director, Joint Staff (Lt. Gen. B. E. Spivy, Jr., USA), Memo for Director, WSEG, "Study Programs in Support of the JCS," with enclosure, "General Requirements for WSEG Analytical Support to the Joint Program for Planning" (Mar. 31, 1967).

<sup>258</sup>Executive Secretary, WSEG, Memo for Record, "WSEG Studies" (Dec. 9, 1965); Deputy Director, DDR&E, Memo for DDR&E, "Evaluation of IDA Output" (Mar. 1, 1966).

For example, WSEG had been designing, monitoring, and evaluating large-scale operational tests in the ECM/ECCM field since 1957; the series was brought to a conclusion in 1962 with a final summary report on the effects of ECM against naval air defense systems (R-63, *Evaluation of the Effectiveness of ECM on the Performance of US Navy Air Defense Weapons Systems*, August 1962).<sup>259</sup> WSEG had also maintained a continuous ASW effort since 1959, focused on countering the SLBM threat to CONUS forces and reported on in WSEG R-35, *Review of the SLBM Threat to CONUS Forces* (March 1959). At the request of the JCS, WSEG followed this initial report with annual reviews (R-35 *First Annual Review*, January 1960; *Second Annual Review*, March 1961; *Third Annual Review*, February 1962), and then broadened the scope of the work to encompass such problems as the protection of ocean shipping, the defense of naval task forces, offensive operations against hostile submarines, and other aspects of undersea warfare. Work in the broader ASW area continued through the 1960's, attesting to the perennial JCS concern with the overall problem for JSOP and other uses. In 1962 WSEG issued an initial report on current and forthcoming ASW system components (R-65, Part I, *ASW Systems Capability*, December 1962); and in 1963 it issued a more comprehensive study that treated the various systems and system interactions on an integrated basis (R-65, Part II, *Undersea Warfare Capabilities, 1963-1967*, September 1963). In addition to providing assessments of the operational effectiveness of programmed ASW forces and equipment in a variety of projected situations, this latter study provided the analytical model and many of the substantive inputs utilized by OJCS planners in gaming the ASW aspects of a NATO war.<sup>260</sup>

This series of studies in ASW was capped in 1966 by WSEG R-98, *Allocation of Resources to Antisubmarine Warfare in*

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<sup>259</sup> See above, pp. 160-162. See also WSEG *Annual Activities Report*, FY 61, 62, and 63.

<sup>260</sup> WSEG *Annual Activities Report*, FY 64.

*the Face of Uncertainty* (May 1966), which updated the earlier work, extended the treatment of selected topics to about 1970, and developed an analytical framework for evaluating alternative ASW programs based on assumptions as to the particular ASW task to be performed, the nature of enemy forces, the type of conflict envisioned, its magnitude, and other key parameters.<sup>261</sup>

Beginning in 1966, most of WSEG/WSED effort that had been concentrated on ASW and related subjects was shifted to a new series of "war at sea" studies. The administration's concern with limited war problems had resulted, among other things, in renewed JCS and OSD interest in exploring the potential value of seapower in terms of the economic and political leverage that might be obtained from limited sea options like quarantines, blockades, or naval interdiction. The JCS became particularly interested in the potential military requirements of such strategies, for JSOP purposes, and sponsored several WSEG studies on the subject. The first reports (WSEG R-104, *Preliminary Analysis of Force Structure and Force Level Implications of the War at Sea Concept*, and WSEG R-106, *Analysis of the Utility and Force Structure and Force Level Implications of the War at Sea Concept*) were forwarded to the JCS in November 1966 and January 1967, respectively. Given the nature of the problem, neither study was able to provide definitive answers on the utility of war at sea strategies, but both provided JCS planners with a balanced analysis of the relevant options, including the potential constraints and countermeasures that might be involved as well as the potential leverage that might be provided in various contingencies.<sup>262</sup>

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<sup>261</sup>WSEG *Annual Activities Report*, FY 64.

<sup>262</sup>WSEG *Annual Activities Report*, FY 67. Two other "War at Sea" reports were produced in subsequent years: WSEG R-117, *An Analysis of the War at Sea Concept and Some Hypothetical Applications in the 1975 Time Period* (September 1967); and WSEG R-122, *An Analysis of the War at Sea Concept and Some Hypothetical Applications in the 1975 Time Period* (January 1968).

Command and control developed into another area of major WSEG/WSED concentration in the first half of the 1960's, absorbing one-fifth of the WSED professional staff and requiring the part-time participation of a similar fraction of the WSEG military contingent. As already indicated, this was one of the outgrowths of WSEG R-50, which raised serious questions about the ability of the existing national command apparatus to deal with the information and time-response challenges of the missile era.<sup>263</sup> Concern about this problem coincided with urgent demands from the White House and top Pentagon officials to improve national military command performance in rapidly developing and fast-moving crisis situations. In 1961 the JCS asked WSEG to provide research and analysis support in command and control, on a continuing, open-ended basis, specifically for those OJCS elements responsible for operating the National Military Command System--the Director of Operations and the Operations Directorate (J-3).<sup>264</sup>

Because the work involved actual plans, data, and procedures with a high degree of both national security and political/administrative sensitivity--for example, the contingency communications, decisions, and actions of high-level officials--it was conducted under special access and reporting arrangements. Specific tasks, level of effort, schedules, and other details were determined by agreement between the Director of the Joint Staff and the Director of WSEG, generally on the basis of terms worked out between the Director J-3 and the WSEG/WSED project leader. Project personnel were selected on an individual basis, with the specific approval of the Director,

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<sup>263</sup>See above, p. 177.

<sup>264</sup>DJSM 944-61, Memo for Director, WSEG, "Emergency Staff Procedures" (Aug. 11, 1961); DJSM 1111-61, Memo for Director, WSEG, "Emergency Staff Procedures" (Sept. 14, 1961); and CM 505-62, Memo for Director, WSEG, "WSEG Support of the Joint Chiefs of Staff" (Jan. 13, 1962).

J-3. Most of the work was not initiated by formal study request, but was negotiated informally with the general acquiescence of the principal parties. Results were not published in official WSEG studies but were reported either informally, without a distinctive written product, or in the form of memoranda from the Director of WSEG to the Director, Joint Staff, under the latter's distribution control, so as to maintain a "quiet" reporting channel.<sup>265</sup>

Much of the command and control work that was undertaken under these ground rules--for example, analyses of the day-to-day activities of the NMCC, or the development of SIOP computer information programs and procedures--closely resembled staff services for the Operations Directorate, furnished directly by members of the project staff with minimal supervision by WSEG/WSED management. Where major written products were involved, as in "post-mortem" type histories of crisis episodes or evaluations of JCS command exercises, they were not issued as regular numbered WSEG reports but were produced, reviewed, and delivered according to the established "quiet" reporting provisions. They were circulated on a highly restricted basis, even within the Joint Staff, and were rarely seen in the OSD, JCS, or DoD community outside.<sup>266</sup>

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<sup>265</sup>For an insider's description of these working arrangements, see the account by the WSEG/WSED project leader, Mr. Joseph H. Lewis, in his paper, *The WSEG/WSED Role in the Future* (August 1966), pp. 30-37. A somewhat critical version of the arrangement is provided by the WSEG Command and Control Panel (Col. R. E. Kirtley, USAF; Capt. T. F. Pollock, USN; and Col. D. W. Elwee, USA; all WSEG officers) in Memo for Director, WSEG, "Command and Control Organization" (July 24, 1967).

<sup>266</sup>These written products were not catalogued as reports or studies and were treated for the most part as internal JCS staff papers. See WSEG Operating Instructions 3.6, "Critical Incident Studies" (December 1967).

This particular series, which included narrative accounts and analyses of such events as the 1962 Cuban missile crisis, the 1964 Tonkin Gulf Incident, and the 1967 Arab-Israeli war, was terminated in 1968 after a public (continued on next page)

These extraordinary arrangements remained in operation until 1966. Several generations of WSEG, J-3, and Joint Staff Directors were reported to be highly satisfied with the close rapport that developed between the WSEG/WSED project staff and the J-3 operator/users and paid tribute to the considerable value and importance of the effort in improving the capabilities and performance of the National Military Command System. Most staff analysts considered the relative anonymity of the work and the special handling constraints acceptable preconditions for the opportunity to work productively on problems requiring privileged access. Joint Staff clients appeared confident, by and large, that their command and control problems were being handled discreetly and expertly. Nevertheless there was some criticism, and by the mid-1960's the special arrangements had come into question. Both WSEG and IDA/WSED management officials became concerned over their own relatively passive roles in task selection and allocation of effort and over their limited participation in reviewing results. IDA/WSED management was uneasy about the propriety of some of the work--the lack of clear-cut definition of what was to be done and who was to do it, the difficulty of exercising normal supervision over IDA/WSED project personnel and evaluating their performance, the problem of

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(cont'd) disclosure of their existence. An anonymous letter prompted Senator J. W. Fulbright, Chairman of the Senate Foreign Relations Committee, to request "a report done by the Weapons Systems Evaluation Group on the subject, 'Command and Control of the Tonkin Gulf Incident, 4-5 August 1964,'" in connection with hearings he was holding on the matter. OSD refused Fulbright's persistent requests for the study on grounds that it was "an internal study ... one of a series directed to the mechanics of the national military command system." The JCS subsequently decided that it was too difficult or awkward to try to preserve confidentiality and the series was discontinued. See U.S. Cong., Senate, Committee on Foreign Relations, *The Gulf of Tonkin, the 1964 Incidents*, Hearings (Feb. 20, 1968), and *The Gulf of Tonkin, the 1964 Incidents, Part II*, Supplementary Documents (Washington, D.C.: Government Printing Office, 1968).

maintaining quality control on a limited access basis, the resemblance of much of the work to "staff support," and the relatively poor external visibility of the results. WSEG became concerned about the relatively inflexible commitment of a substantial portion of its resources to a "compartmentalized" activity over which it had little actual control.<sup>267</sup>

In December 1966, after an agreement had been reached by the Directors of J-3, WSEG, and WSED, the JCS issued a new directive putting the command and control activity on a normal basis.<sup>268</sup> The new directive reaffirmed the requirement for a continuing, open-ended command and control project, to provide analytical support in four specified areas: (a) historical studies of crisis incidents, "to develop a thorough, factual, definitive study of the nature of each crisis and the response of the NMCS and related agencies"; (b) studies and analysis of the NMCS, to include its concept, organization, equipment, communications, and procedures; (c) studies relating to SIOP planning, executing, and monitoring procedures; and (d) studies relating to NMCS tests and exercises, including the design and analysis of exercises to evaluate NMCS performance. WSEG personnel were to work closely with members of the Joint Staff and be responsive to their requests for information and advice, but the work would be carried out under regular JCS/WSEG arrangements, with written task directives, written products, standard review procedures, and the like, thus avoiding any resemblance to direct, undocumented staff support. The reporting of results--"including the removal of sensitive but non-essential information"--would be accomplished under procedures

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<sup>267</sup>WSEG Command and Control Panel, Memo for Director, WSEG; see also Director, WSED, Memo for Gen. Goodpaster (Director, Joint Staff), "Optimizing WSED/WSEG's Utility to the DoD" (July 18, 1966).

<sup>268</sup>CM 2019-66, Memo for Director, WSEG, "WSEG Support of the Joint Chiefs of Staff for Command and Control" (Dec. 23, 1966).

acceptable to the Director, Joint Staff. Other arrangements, including priority of effort, would be determined by mutual agreement between the Director of the Joint Staff and the Director of WSEG.<sup>269</sup>

Under the new charter, which still provided a highly permissive framework for a major command and control effort, WSEG's activity in the field was divided into separate projects, with separate teams working on individual tasks. There was some tendency in the OJCS to rely less on WSEG and shift toward more diversified sources of analytical support, in command and control as well as in other areas, but this was in keeping with general trends in the OJCS/WSEG relationship, and no attempt was made to reestablish the former sole-source arrangements with any other group. The informal, intimate, compartmentalized characteristics of the activity also disappeared in time, particularly after the IDA reorganization and the further delineation in 1967 of IDA/WSEG/JCS/OSD relationships.<sup>270</sup>

During the 1961-66 period, WSEG/WSED teams also carried out a substantial number of studies in tactical warfare, air defense, logistics, and other general purpose forces subjects. Work in tactical air warfare that was reported in WSEG R-48, *Evaluation of Attack Carrier Striking Forces and Land-Based Tactical Air Forces in Limited and General War, 1960-1963* (August 1960), was extended to cover developments in the 1964-67 period in R-54, *Future Developments in Carrier and Land-Based Tactical Air* (July 1962). The latter was a multipart report covering certain aspects of the subject that the JCS wished to have explored further, such as the operational implications of forthcoming aircraft developments, mid-range ballistic missiles, future aircraft carriers, transport aircraft for limited war, fleet antiair-warfare defense systems, and potential changes

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<sup>269</sup>Ibid.

<sup>270</sup>See below, pp. 279ff.

in Sino-Soviet anti-aircraft capabilities.<sup>271</sup> Major studies in the same general area were also carried out for DDR&E, such as R-58, *Future Light Tactical Aircraft Weapons Systems for Close Air Support and Other Missions, 1967-1972* (February 1962), which examined whether projected V/STOL aircraft could adequately satisfy a full spectrum of tactical air mission requirements; R-64, *Intratheater Airlift Requirements* (October 1962), which compared current and contemplated short-range logistical aircraft; and R-69, *Aspects of US Airlift and Sealift Requirements and Capabilities, 1964-1972* (September 1963), which analyzed the relative costs, capabilities, and limitations of airlift versus sealift for intercontinental distances.<sup>272</sup>

Subsequent WSEG/WSED tactical air/air defense studies for the JCS during this period included R-70, *Tactical Aircraft vs. Surface-to-Air Missiles* (February 1964), which evaluated tactical aircraft penetration capabilities against ground-based anti-aircraft defenses; R-85, *Interim Progress Report, Interceptor Comparative Analysis* (June 1965), and R-88, *Advanced Manned Interceptor Effectiveness Study* (October 1965), which carried out cost-effectiveness comparisons of several alternative interceptor configurations, including the F-111 and F-4, for North American air defense. R-86, *Study of Tactical Reconnaissance and Surveillance* (September 1965), reviewed reconnaissance requirements and capabilities in limited war contexts, and R-90, *Preliminary Analysis of Combat Air Operations in Southeast Asia* (November 1965), began a continuing effort to exploit empirical data obtained from operational reporting in Southeast Asia. The latter was initially focused on analyzing aircraft damage and losses and the effectiveness of air interdiction, with a view toward

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<sup>271</sup>WSEG *Annual Activities Report*, FY 62.

<sup>272</sup>WSEG *Annual Activities Report*, FY 62, 63, and 64.

providing current combat information that might be useful for R&D and other long-term purposes.<sup>273</sup>

As in previous periods, the WSEG/WSED studies that were produced for the JCS during the 1961-66 period were not carried out under a predetermined plan or program but were initiated largely on a case-by-case basis as study requirements and opportunities appeared. Continuing tasks were defined and continuing or recurring projects were organized in a few areas, such as strategic missile testing, command and control, or ASW, but the majority of the work for the OJCS did not proceed according to a generalized forecast of overall JCS study requirements for WSEG, prepared on a regular or systematic basis, and there was no attempt to formulate a comprehensive long-term program of WSEG studies, either in the OJCS or WSEG. As task requirements developed, decisions were made as to whether and how to accommodate them within the ongoing workload, reallocating resources, readjusting schedules, or modifying tasks as necessary. As projects neared completion and analysts became available for new work, OJCS and WSEG/WSED personnel simply negotiated succeeding tasks from whatever proposals were offered or suggested, frequently as extensions or offshoots of previous work or from the current backlog of problems that needed attention. Task generation thus proceeded on an irregular but more or less continuing basis rather than following any periodic or cyclical schedule.<sup>274</sup>

Such OJCS/WSEG/WSED tasking practices permitted a degree of flexibility in responding to intermittent OJCS requests, but they made it difficult to plan ahead for the orderly development of WSEG/WSED study capabilities, recruit the

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<sup>273</sup>WSEG *Annual Activities Report*, FY 65 and 66. Related work was also carried out for DDR&E at this time, including WSEG R-101, *Requirements of Defense R&D Agencies for Data from Combat Operations* (August 1966), and WSEG R-103, *Interdiction of the Ho Chi Minh Trail* (August 1966).

<sup>274</sup>Interviews.

necessary personnel, build up information bases and methodological expertise, or make other essential preparations. There was also some question as to whether WSEG projects were correlated with the principal functional responsibilities of the JCS or geared to the main JCS planning and decision cycles enough to make the most of WSEG's potential analytical support contributions.<sup>275</sup>

During 1966, largely at the instigation of J-5, the JCS undertook to remedy the situation by preparing a formal statement of requirements for WSEG support to be used as a broad planning guide. As finally issued in early 1967, the statement was oriented toward JCS responsibilities in the Joint Program for Planning, which included the periodic preparation and updating of such documents as the Joint Long Range Strategic Study (JLRSS), the Joint Strategic Capabilities Plan (JSCP), the JSOP, and the Joint Research and Development Objectives Document (JRDO), as well as related joint activity associated with strategic plans, studies, and programs generally.<sup>276</sup>

The JCS statement called for continuing WSEG/WSED study efforts in four broad functional areas: (a) strategic warfare, (b) land, sea, and tactical air warfare, (c) logistics, and (d) mobility. For each of the areas, the JCS defined the desired scope of the study program as well as certain topics of particular JCS interest, ranging from conceptual considerations of strategy and tactics to the evaluation of specific weapons systems, equipment, doctrines, and techniques. In strategic warfare, for example, the JCS asked for analytical

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<sup>275</sup>DJSM 392-67, Memo for Director, WSEG, "Study Programs in Support of the Joint Chiefs of Staff" (Mar. 31, 1967).

<sup>276</sup>The statement, initially issued as an enclosure to DJSM 392-67 (Mar. 31, 1967), was subsequently approved by the JCS and forwarded to WSEG in CM 2384-67, Memo for Director, WSEG, "General Requirements for WSEG Analytical Support to the Joint Program for Planning" (June 1, 1967).

support in evaluating new or alternative weapons system concepts; developing realistic and objective test programs, with emphasis on the impact of multiple payload configurations and penetration aids; and developing guidelines for determining force structure and the strategic application of forces. In the area of land, sea, and tactical air warfare, the JCS called for studies of alternative concepts and tradeoffs related to force level recommendations, including concepts for the strategic and tactical application of forces or weapons; objectives, targets, and doctrine; criteria and/or measures of effectiveness; new or alternative weapons systems; and joint operational tests of weapons or forces. In logistics, the primary study requirements were to analyze logistic support concepts and techniques and to develop procedures and analytical methods to improve logistic planning capabilities. With respect to mobility studies, the stated requirements were to analyze mobility needs and develop procedures and methods for improving the planning capability for rapid deployment, including concepts and techniques, movement and movement control, modes of transport, base utilization, containerization and/or palletization, and the like. In each of these areas, the JCS added, studies would be specified by individual directives, after appropriate coordination with the Services and the Director, WSEG, prior to the issuance of study requests. Studies that involved R&D matters to any substantial degree would be coordinated with or jointly sponsored by DDR&E.<sup>277</sup>

This broad statement of anticipated JCS requirements for WSEG studies, which was designed to provide a more stable basis for planning and developing a comprehensive study program, assumed a continuation of the existing WSEG/WSED arrangement. Before any such program could get underway, however, a general reexamination and reorganization of IDA and its OSD/JCS/WSEG

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<sup>277</sup>Ibid.

relationships occurred, so that the original plan never came to fruition. Nonetheless, the JCS statement reflects the strong interest that had developed by the end of the 1961-66 period in providing a set of guidelines for WSEG that was based on anticipated JCS analytical support requirements and related in a systematic way to major JCS functional responsibilities. The statement also represents an outstanding attempt by the JCS to maximize WSEG's utility as an analytical support agency.<sup>278</sup>

### 3. The Reassessment of 1966-67

During 1966 and 1967 IDA underwent a series of intensive reviews. These reviews were prompted in part by a self-interest in stock-taking after a decade of existence and considering new circumstances and anticipated requirements, and in part by Congressional (and in turn DoD) investigations and audits of IDA and other nonprofit research advisory corporations that had expanded rapidly during the 1950's and 1960's. Although these reviews were not particularly directed toward WSEG or the WSEG/IDA relationship as such, the end result was a structural realignment of IDA and a redefinition of overall IDA/DoD relations that in effect phased out the special WSEG/WSED arrangement.

The Congressional investigations were extremely important in this connection. While they focused on questions of pay practices, costs, management fees, and other fiscal matters, directed as much at the "looseness" of DoD regulations and procedures as at the business practices of nonprofit corporations like IDA,<sup>279</sup> they inevitably raised questions as to the purpose of such organizations and their value to the government. In the case of IDA, for example, DDR&E commissioned the Defense Science Board to evaluate a sample of the IDA output, including

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<sup>278</sup> Interviews.

<sup>279</sup> Assistant Secretary of Defense for Administration (Solis Horwitz), Memo for Deputy SecDef (Cyrus R. Vance), "Internal Audit and House Appropriations Committee Investigations of IDA" (Mar. 10, 1966).

WSED work for WSEG, and also conducted a survey of users for their views of its value. The DSB reviewers concluded that WSED work for WSEG was "highly competent within the limits of the topics discussed" but inferred that the study directives may have been "unduly constrained." (They also noted, among other things, that it was difficult to separate the contributions of the WSED civilians from those of uniformed WSEG participants, but that to their knowledge the military contributions appeared "technically sound" and seemed to be considered "a vital part of the average WSEG report.")<sup>280</sup> The summary judgment of the DDR&E survey of users was that "the users were unanimous in their support of IDA's services. Evaluation of individual reports has produced no adverse comments although some of the reports were not praised." Increased competition for IDA's services among various OSD elements was also noted as demonstrating the usefulness of IDA in general.<sup>281</sup> WSEG's specific evaluations of IDA reports prepared for WSEG during calendar year 1965 were generally favorable (see Exhibit 6).

In September 1966 the new President of IDA, Gen. Maxwell D. Taylor, USA, Ret.,<sup>282</sup> initiated a series of meetings considering broad questions of overall IDA/DoD relationships with leading officials of DoD, including the SecDef and Deputy SecDef, the Chairman of the JCS, the DDR&E, the Assistant Secretaries for Systems Analysis, Administration, International

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<sup>280</sup>Defense Science Board, ODDR&E, "Report of the Defense Science Board on Recent Reports of the Institute for Defense Analyses" (May 20, 1966), forwarded by Frederick Seitz, Chairman, DSB, to the SecDef through DDR&E.

<sup>281</sup> <sup>281</sup>DDR&E, Talking Paper for Mr. Vance, "Background for Appointment with Mr. Burden, IDA" (Feb. 25, 1966).

<sup>282</sup>Gen. Taylor became President of IDA in September 1966, after a distinguished career in national security affairs that included Chief of Staff of the U.S. Army, 1955-1959, Military Representative of the President, 1961-1962, Chairman of the JCS, 1962-1964, and Ambassador to Vietnam, 1964-1965. While at IDA he continued as Special Consultant to the President and Member of the Presidential Foreign Intelligence Advisory Board.

## Exhibit 6. WSEG EVALUATION OF IDA OUTPUT

A report on *The Defense Against the Air-breathing Weapon Threat* in 1965 to 1968 [R-83, March 1965] provided vital data, information and conclusions bearing on the proper mix of manned interceptors, ballistic missile defense systems, and hardened or mobile control systems. It was noted by the JCS and distributed to the Services and to CINCONAD.

A report on *Tactical Reconnaissance and Surveillance* [R-86, September 1965] produced validity of the highest order and has received wide distribution within each Service as well as ... Unified and Specified Commands. It is being used in current and future planning for requirements, R&D effort and applications.

A report on *PERSHING in a Quick Reaction Alert Role* [R-87, September 1965] was considered by the JCS in recommending it to the Secretary of Defense....

A report on *Interceptor Comparative Analysis* [R-88, October 1965] is currently being considered by the JCS in their review of the Draft Presidential Memorandum on forces to be supported by the FY 1967 budget.

A report on the *Vulnerability and Survivability of Tactical Air Bases* [R-89, November 1965] was discontinued when it became apparent that the data base and methodology to conduct the study were not sufficiently complete....<sup>a</sup>

A report on *Methodology for the Analysis of By-Passed Targeting and Area Ballistic Defenses* [R-91, December 1965] which places Zeus and Sprint active defense, together with fallout postures, in three attack environments ranging from a simple to a sophisticated threat, suggests not only ranges of defense effectiveness but also an "ordering" of defense development. Additionally, the threat treatise and the methodological excursions in the study are excellent source material for future research.

A *Preliminary Analysis of Combat Air Operations in Southeast Asia* [R-90, November 1965] stimulated and strengthened operations analysis through the CINCPAC area, and although the preliminary phase was largely exploratory, it produced some worthwhile results....

A report on MINUTEMAN [R-84, *The MINUTEMAN Evaluation Report*, April 1965] has provided the framework around which future operational test programs of MINUTEMAN should be conducted to provide the necessary confidence in its operational reliability.

An analysis of *General Nuclear War Postures for Strategic Offensive and Defensive Forces* [R-79, July 1965], along with Service component studies, was considered by the JCS in developing recommendations on Force Tabs for the Joint Strategic Objectives Plan. It was particularly valuable in developing data and in providing an analytical method of studying the interaction of offensive-defensive weapons systems.

A study of *Factors Influencing the Support of Airlift, Sealift and Pre-positioning Programs* [R-82, February 1965] was the first thorough study which demonstrated that an economical and viable US rapid deployment posture might involve a balanced combination of airlift-sealift and pre-positioning rather than a preponderance of one or the other. It received wide attention in the course of OSD deliberations and led to the final decision to develop the C-5A and also showed the relative economy of large dehumidified roll-on/roll-off ships.<sup>b</sup>

<sup>a</sup> Comment by Deputy Director, DDR&E: "I find the termination of this study commendable. It is harder to get agreement to terminate a study than to complete it poorly."

<sup>b</sup> Deputy DDR&E (Finn J. Larsen), Memo for the DDR&E, "Evaluation of IDA Output" (Mar. 1, 1966).

Security Affairs, and others. For an opening meeting of principals in the office of the Deputy SecDef on September 14, for example, he submitted a set of questions that covered the entire spectrum of IDA/DoD interrelationships, including such questions as what do IDA customers want that IDA is not providing? What defects do IDA customers perceive in IDA organization, procedures, and management? What criteria should govern the assignment of tasks to IDA? What can IDA management and DoD customers do to improve the quality and utility of IDA products?<sup>283</sup>

Although the ensuing discussions embraced a wide variety of IDA and DoD concerns, some touched particularly on WSED/WSEG/JCS matters. For example, most IDA users expressed satisfaction with IDA's existing organization and procedures, but the Office of Systems Analysis was critical because IDA did not perform broad studies of the type that characterized the output of RAND during the 1950's and did not provide OSD with access to broadly constituted interdivisional teams that could perform such studies; representatives of the office complained specifically about the complications and delays involved in attempting to task WSED through WSEG.<sup>284</sup> Similarly, users were generally agreed that IDA worked on the most important problems within its competence, pointing to the requirement in both DDR&E and the JCS for approval of task requests at top levels (the DDR&E or his principal deputy in ODDR&E, the DJS or even the JCS themselves in the OJCS), thereby validating the importance of the tasks, but expressed some dissatisfaction with provisions for adjudicating priorities among the

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<sup>283</sup> President, IDA (Maxwell D. Taylor) to the Deputy SecDef (Cyrus R. Vance) enclosing "Proposed Agenda for DOD-IDA Meeting, 14 September 1966" (Sept. 2, 1966).

<sup>284</sup> DDR&E, "Replies to Questions on Proposed Agenda for DOD/IDA Meeting (Sept. 14, 1966).

different using agencies.<sup>285</sup> As to whether IDA should concentrate solely on long-range studies in depth that the DoD found difficult to have done in-house, the consensus was that IDA should undertake "stop-gap" studies as well, because sometimes the latter were of urgent importance and IDA was in the best position to provide a quick response. It was also felt that IDA should take full responsibility for complete studies, although these could properly be "feeder" studies at times, or inputs to larger studies that were undertaken by staff elements of OSD or the JCS--provided that the IDA portions were identifiable and logically separable. And it was considered justifiable at times to assign studies to IDA in parallel with studies performed by DoD staffs, in order to gain the benefits of an independent outside perspective.<sup>286</sup>

The discussions also dealt with the troublesome question of staff support activities. There was substantial agreement that IDA should not be called upon to provide individuals to work for extended periods to supplement DoD staffing deficiencies. General Taylor expressed it as a basic operating principle that "IDA is not a 'hiring hall' and is not to provide individuals for tasks which properly fall to the members of the regular staffs of Pentagon officials."<sup>287</sup> Yet it was conceded that there was considerable ambivalence on this point

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<sup>285</sup> In December 1965 DDR&E was assigned "full control of all policy and other management relationships with IDA for the Secretary of Defense," to include the coordination of task assignments. (Deputy SecDef, Memo for Secretaries of the Military Departments et al., "Assignment of Tasks to the Institute for Defense Analyses" [Dec. 18, 1965]). During the 1966 meetings some interest was expressed in substituting a committee of Assistant Secretaries of Defense, rather than a single coordinating authority. Ibid.

<sup>286</sup> Ibid. See also President, IDA (Maxwell D. Taylor) to Deputy SecDef (Cyrus R. Vance) attaching "Summary of DOD/IDA Meeting, 14 September 1966" (Sept. 22, 1966).

<sup>287</sup> President, IDA to Deputy SecDef (Nov. 7, 1966).

in the Pentagon, particularly at staff levels, where the skills and knowledge IDA offered were regularly relied upon almost as an advisory adjunct to official agencies, and where it might be difficult to draw a line between legitimate consultation and staff participation. This problem had been recognized for some time in the WSED/WSEG/JCS area but was especially difficult to deal with in the command and control field, where by special arrangement the work was carried out under unusually tight security measures and special procedures that bypassed normal review and distribution methods. As already noted, the lack of documentation of much of the command and control work in formal reports and its extremely restricted circulation when it was documented made it difficult to determine whether such work qualified less as advisory support and more as staff participation. At the same time, the importance and value of the work was repeatedly affirmed by a succession of J-3 and Joint Staff Directors over the years and had been strongly supported by the Chairman of the JCS.<sup>288</sup>

The problems of access to WSED by DoD agencies other than the JCS and the use of WSED in multidivisional IDA studies also came up once again for discussion. On the first point, Gen. Taylor suggested that a clarification of DoD policy was in order:

Over all, to permit us to use our resources with efficiency and economy of effort, we feel keenly the need for stronger coordination within the Department of Defense of the requests made upon IDA by its users.... Our problem is to meet in a timely manner the requirements placed upon us within the personnel and budget ceilings under which we operate. As our personnel strength is

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<sup>288</sup>See above, pp. 126ff. Also see Director, WSED (Dr. George W. Rathjens), Memo for Director of the Joint Staff (Gen. Andrew J. Goodpaster, USA), "Optimizing WSED/WSEG's Utility to the DOD" (July 18, 1966), and Director, Joint Staff (Gen. Goodpaster), Memo for Dr. George W. Rathjens (Aug. 13, 1966).

not adequate to undertake separate studies in the same field which often overlap in some respects, we are obliged to spend an inordinate amount of time in negotiating with our customers a means of lumping together requirements and in reaching agreement on acceptable language in task orders to accomplish several purposes in a given study. Such negotiations require a give-and-take on all sides, particularly among DOD customers whose levies on us are sometimes competitive.

These conditions suggest to us the need for a single, clearly identified focal point within the Department of Defense, preferably above the level of the competitive users, to act as a clearing house for IDA's business with all its customers. Such a concentration of decision-making authority could be effected without changing the presently decentralized contacts necessary during the execution of a task directive. It is our understanding that, to some extent, this responsibility now rests in the Office of the Director of Defense Research and Engineering.... However, if the intent is to give broad authority over the relations of all DOD agencies with IDA to DDR&E, the fact needs to be established clearly through appropriate directives which will reach all officials interested in doing business with us. It is our observation that, at present, the role of DDR&E in this field is not clearly understood.<sup>289</sup>

The subject of competing demands among various users was taken up at several meetings, during which the Assistant Secretary for Systems Analysis (Dr. Alain C. Enthoven) reiterated an earlier complaint about the difficulties and delays faced by non-JCS users in arranging for WSEG/WSED studies. It was pointed out, however, that more than half of the WSEG/WSED effort was a response to agencies other than the JCS--the figures were 49 percent non-JCS in 1965 and 56 percent non-JCS in 1966--and that another large fraction was earmarked for special command and control work--22 percent of the total in 1965, 26 percent in 1966--so that the JCS in reality obtained a

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<sup>289</sup>President, IDA (Maxwell D. Taylor) to Deputy SecDef (Cyrus R. Vance) (Nov. 7, 1966).

surprisingly small share of the WSEG/WSED effort. The DDR&E (Dr. John S. Foster, Jr.) expressed consternation on this point and obtained direct authorization from the Deputy SecDef to reverse the trend and ensure that the JCS obtained a greater volume of WSEG/WSED support. He also pointed out that coordination difficulties and delays were inevitable, since task assignments affected the levels of effort for all users, including the JCS, and consultations were necessarily required to adjudicate allocations. He also suggested that the Director of WSEG help resolve questions of overlap and duplication of tasks among IDA users, especially between the ODDR&E and the OJCS.<sup>290</sup>

As a direct result of these meetings, Secretary Vance directed that a basic set of overall guidelines be issued reaffirming the role of DDR&E as the OSD agent for IDA tasks. On December 16, 1966 the DDR&E issued a document entitled "Policy Guidance for IDA." Among its major provisions, the document stated the following:

There should be one point of management contact between IDA and OSD. This point of contact is DDR&E and will represent OSD in establishing policy guidance to be used in negotiating contracts in accordance with all DOD regulations, and to prepare and manage IDA's efforts among the consuming agencies.

Responsibility for coordinating these tasks between OSD components will remain with the head of each of these components. In addition, the Deputy DDR&E will review task statements and ensure that coordination has been adequate. Task statements that are of a continuing nature will be reviewed and updated at least annually.<sup>291</sup>

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<sup>290</sup>Director, WSEG (Vice Adm. Kleber S. Masterson, USN), Memoranda for Record "Meeting Between DDR&E and IDA on Friday, 25 November 1966" (Nov. 30, 1966), "Meeting with Secretary Vance, Thursday, 8 December 1966, Regarding DOD/IDA Relationships" (Dec. 9, 1966).

Adm. Masterson joined WSEG as Director in September 1966. Prior to his WSEG assignment, he was Chief of the Bureau of Naval Weapons (1962) and Commander, Second Fleet (1964).

<sup>291</sup>DDR&E (John S. Foster, Jr.), Memo for Mr. Horwitz attaching "Policy Guidance for IDA" (Dec. 19, 1966).

The question of utilizing WSED in multidivisional IDA studies revived a number of the issues disputed during the 1962-63 period, including the JCS desire, now written into the WSEG contract, that WSED be maintained as a separate and stable entity dedicated to WSEG. As the Director of WSEG wrote:

The concept of keeping the WSED division as a separate stable entity stems from the need for a strict control of highly classified and sensitive work performed for the Joint Chiefs of Staff and from the proprietary nature of JCS business. As a separately identifiable entity, WSEG/WSED operates under military security regulations and is privileged to obtain any and all information required for its studies. Also, WSEG/WSED is privileged to maintain a residual classified data base which is an exception to the normal practice exercised with other Government contractors under industrial security regulations. Without this residual data base WSEG/WSED would be severely restricted in its operation. Any attempt at multi-divisional studies would, in one way or another, jeopardize the privilege of maintaining this data base in WSEG/WSED. In view of this consideration, any studies which require the resources of more than one IDA division should be conducted within the framework of the WSEG/WSED organization with personnel of the other divisions actually transferred into that organization for the duration of the study. Any other arrangement would run into difficulties not only with regard to security but with the desires of the JCS as well.<sup>292</sup>

The stand on WSEG enunciated by Adm. Masterson had not changed materially since the controversies of the early 1960's. It focused directly on the underlying premise that a dedicated, compartmented WSEG/WSED type of arrangement was essential and was justified primarily, if not exclusively, in terms of the requirements of the JCS. The divergent views of IDA, stemming from IDA's concept of itself as an independent, multiclient research institution, were also evident. The active dialogue

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<sup>292</sup>Director, WSEG (Vice Adm. Kleber S. Masterson, USN), "Comments on Proposed Agenda for DOD/IDA Meeting" (Nov. 7, 1966).

carried out by Gen. Taylor and other IDA officers with the principal IDA clients in the Pentagon, together with internal reviews and reappraisals of the IDA mission, performance, relations to customers, and the like, had again raised the prospect of a major institutional policy confrontation over the respective roles of IDA and WSEG.

These issues came to a head during the spring and summer of 1967. In March, after a meeting of the IDA Board of Trustees, Gen. Taylor alerted senior Pentagon officials to the fact that a comprehensive reappraisal of IDA's role and future was underway and requested the views of the principal IDA customers.<sup>293</sup> In June he presented a set of proposals in personal meetings with the SecDef and Deputy SecDef, the DDR&E, the Chairman of the JCS, and the full JCS. The proposals suggested a reorganization of IDA's client-oriented divisions into functional divisions and the "rearrangement" of "IDA's interface with the Joint Chiefs of Staff," i.e., the removal of WSEG from the chain between IDA and the JCS.<sup>294</sup>

The proposed reorganization essentially regrouped the Washington divisions into new organizational units, structured on a functional or activity basis rather than according to specific agency ties. Thus, the existing WSED, RESD, and EPSD would be disestablished and replaced by functionally oriented divisions--ultimately named the Systems Evaluation Division, Science and Technology Division, Program Analysis Division, and International and Social Studies Division, supported by the Cost Analysis and Computer groups.<sup>295</sup> It was expected that

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<sup>293</sup>President, IDA (Taylor) to Deputy SecDef (Vance) (Mar. 15, 1967).

<sup>294</sup>President, IDA (Taylor) to SecDef (Robert S. McNamara) (June 28, 1967).

<sup>295</sup>In the initial proposal in June, the divisional nomenclature was slightly different. WSED was to be disestablished and IDA would establish both a Systems Analysis Division and an Operations Analysis Division in its (continued on next page)

each of the divisions would undertake tasks for several OSD and JCS offices, depending on the nature of the task and the functional and disciplinary capabilities required.

With respect to the thorny WSEG/WSED problem and IDA relationships to the JCS, the principal terms and implications of the Taylor proposal included:

(1) Disestablishment of the WSED division as a dedicated entity.

(2) Abolition of the WSEG review process for IDA studies, with provisions for IDA submission of completed studies to the JCS (or to WSEG for the JCS).

(3) Provision of military participation in IDA studies for the JCS on an ad hoc basis as requested by IDA.

(4) Application of industrial security to all IDA support, as to other IDA divisions.

(5) Provision of access to sensitive material for IDA personnel through the DoD or OJCS office holding the material.

(6) Transfer to the OJCS payroll of those IDA personnel working for the JCS "on tasks individual in nature and difficult for the IDA management to supervise" (i.e., hypersensitive command and control work).

(7) As an alternative to (6), IDA was willing to establish a "JCS Support Division" for "on-site support" of the OJCS (i.e., command control) and would not object to that division being handled under special security arrangements.<sup>296</sup>

The JCS reaction was generally negative. The Chiefs took the position that the organization of IDA and the future of the WSED division were internal IDA matters, but strongly supported the continued need for WSEG as chartered, with the qualification that its contractor base be expanded outside of

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(cont'd) place, using most of the personnel then in WSED. JCSM 391-67, Memo for the SecDef, "Study/Analysis Support of the Joint Chiefs of Staff by WSEG/IDA" (July 18, 1967).

The official IDA announcement of the reorganization was made in IDA Staff Notice 67-28 (July 21, 1967) and summarized in the IDA *Annual Report* for 1968. The reorganization went into effect on September 1, 1967.

<sup>296</sup>JCSM 391-67, Memo for the SecDef, "Study/Analysis Support of the Joint Chiefs of Staff by WSEG/IDA" (July 18, 1967).

IDA. As they summarized their views in a memo to the SecDef on July 18:

There is a continuing requirement for contractual study/analysis support with assured military participation to provide studies responsive to requirements of the Joint Chiefs of Staff.

There is a requirement for on-site study/analysis support to appropriate directorates and agencies of the Organization of the Joint Chiefs of Staff.

The Joint Chiefs of Staff are not dissatisfied with the organizational and administrative relationships under the current WSEG/IDA arrangements. However, the Joint Chiefs of Staff have noted that in the past military/civilian sensitivities of a similar nature have had a disruptive influence. Such difficulties could occur again and at a more critical time, have an unfavorable impact on the IDA capability to meet JCS/WSEG study requirements. Therefore, it seems prudent at this time to expand the contractor base for support of JCS/WSEG and terminate the privileged status of IDA as the sole contractor.<sup>297</sup>

Accordingly, the JCS recommended that:

a. WSEG, with explicit provisions for military participation in studies conducted by its supporting contractor(s), be continued as presently chartered.

b. The Director, WSEG, be required to reserve, from the total funding which is made available for his contractor study support, appropriate amounts to be applied to contracts with qualified contractors other than IDA, when such contractors' capabilities, costs, or other considerations may make them equally or more appropriate for the tasks required.<sup>298</sup>

They also proposed that the Director of WSEG be instructed to undertake negotiations with IDA leading to the development of an appropriate contractual and working relationship, under the following guidelines:

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<sup>297</sup> Ibid.

<sup>298</sup> Ibid.

a. The contract will include no provision calling for contractor services to be provided by an identified division of IDA. In this regard, the organization of IDA and the future of the WSED are considered internal IDA matters.

b. IDA need not be required to perform work on WSEG-assigned studies within space controlled by the Director, WSEG. However, in specific studies where security considerations are overriding, the Director, WSEG ... may require that all or appropriate portions of the contractor's work be performed within space designated by him and under military security regulations.

c. The Director, WSEG, will retain security responsibility for that space occupied by WSEG. Where contractor personnel are collocated within the WSEG area the Director, WSEG, will be responsible for the security functions.

d. In regard to sensitive information, the need-to-know of any person and the determination of whether or not an individual may participate in a WSEG study will be made on a case-by-case basis by the Director, WSEG, after consultation with the representative designated by IDA.

e. The Director, WSEG, at his discretion, will assign military personnel to participate in contractor studies performed in response to WSEG task orders. These individuals normally will be from permanently assigned WSEG personnel. Contractor requests for the temporary assignment or services of military personnel outside of WSEG will be made to the Director, WSEG, who will request through normal service channels such personnel as he considers necessary and appropriate.

f. Contractor reports will be submitted to the Director, WSEG, and shall become the exclusive property of the Department of Defense.<sup>299</sup>

In addition, the JCS recommended that the Director of WSEG explore the matter of providing "on-site" analytical and study support for the OJCS, and in the event that suitable arrangements could not be made with IDA that he enter into negotiations with other contractors to perform the work.

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<sup>299</sup> Ibid.

Overall, they recommended that not more than 75 percent of the funds available for contractor support of WSEG be made available for the basic IDA contract and whatever other contracts might be necessary for the "on-site" requirements, with the remaining 25 percent withheld for study contracts with firms other than IDA.<sup>300</sup>

On July 28, 1967, Secretary McNamara approved the JCS recommendations and directed the DDR&E to issue appropriate instructions to the Director, WSEG.<sup>301</sup> Shortly thereafter, the Chairman of the JCS, Gen. Earle G. Wheeler, informed Gen. Taylor of the decision in a personal note.<sup>302</sup>

Since the basic WSEG charter neither required nor implied any special relationship with IDA or WSED, or even a single contractor, its provisions continued in force. The basis of WSEG's operating methods was necessarily altered, however, with the termination of the WSEG/WSED arrangement and the formal abandonment of the tightly integrated military/civilian mode of operations. WSEG entered a new and different phase.

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<sup>300</sup> Ibid.

<sup>301</sup> Secretary of Defense (Robert S. McNamara), Memo for Chairman of the Joint Chiefs of Staff, "Study/Analysis Support of the Joint Chiefs of Staff by WSEG/IDA" (July 28, 1967).

<sup>302</sup> Chairman of the JCS (Gen. Earle G. Wheeler) to Gen. Maxwell D. Taylor, USA (Ret.) (Aug. 8, 1967).

V

THE THIRD PHASE, 1967-1976

A. THE TRANSFORMATION OF WSEG

1. WSEG in 1967

The 1967 reorganization of IDA and the accompanying revision of IDA/WSEG working relationships took place near the end of the McNamara regime in the Pentagon. During his 7-year tenure, the longest of any Secretary of Defense to date, McNamara had instigated fundamental changes in the management and operation of the Defense Department, radically transforming the organizational environment within which WSEG and IDA performed their work. He had succeeded in superimposing on the DoD structure an administrative style that could be characterized as "centralized management with a systems analysis orientation."<sup>1</sup> As a result, the relative power of his office and its supporting complex of OSD staff agencies had grown enormously, at the expense of the JCS and the Services. The PPBS had become a comprehensive set of procedures for central budgetary management, which highlighted major issues for adjudication at the discretion of OSD, subjecting them to cost-effectiveness criteria and analysis from OSD perspectives, and in general bringing the whole military establishment under tighter OSD control than ever before. In short, the overall DoD context in 1967 was much more centralized than the context that existed when WSEG was founded in 1948, or when IDA was brought into being in 1956.

The 1967 decisions on the IDA reorganization included a fresh reconfirmation of the decision to continue WSEG, but

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<sup>1</sup>Murdock, *Defense Policy Formation*, p. 154.

with qualifications and in circumstances that significantly reduced its role and relative importance. During the McNamara years, WSEG had already lost its preeminent position as an authoritative, across-the-board analytical study group serving the upper echelons of the DoD. Instead of enlarging WSEG to meet their burgeoning analytical requirements, as was contemplated briefly in the early McNamara years, OSD authorities had elevated the office of the Assistant Secretary, Systems Analysis, to become the chief source of decision support, providing it with a large internal analytical staff and giving it access to the analytical resources of the entire DoD. OSD officials generated a voluminous demand for studies and analyses of all kinds, but they also promoted an increase in the availability of analytical resources, among regular staff elements as well as in specialized units, and in the external world of contractual services and "think tank" institutions as well as in DoD departments and agencies.

Thus, the development of a centralized, diversified, and analytically oriented OSD in the 1960's did not lead to a commensurate expansion of WSEG, as might have been expected; it produced instead a multiplication of the number and variety of analytical activities available to decisionmakers. WSEG was bypassed, in effect. It was not appreciably larger, more active, or more influential in 1967 than it had been in 1961. Its scope remained limited in practice to the direct support of the JCS and DDR&E, as before, while its former functional status as virtually the only independent analytical support agency at the OSD/JCS level had been lost to the proliferation of similar analytical groups throughout the Defense world.

Even the JCS need for greater analytical depth and detail in response to OSD requirements did not greatly enhance WSEG's position. The JCS did not unilaterally control WSEG's utilization, of course, but they were generally acknowledged to be WSEG's principal sponsors and users and their recommendations

on the WSEG program carried considerable weight. Yet after the abortive JCS/DDR&E effort of 1961, there is no evidence that the JCS sought to have WSEG greatly expanded. Rather than build on WSEG, the JCS chose to augment the Joint Staff by establishing new Programs and R&D Divisions in J-5 and additional auxiliary agencies like the Chairman's Special Studies Group, the Joint War Games Agency, and the Special Assistant for Strategic Mobility.<sup>2</sup> The JCS also characteristically turned to the military services for greater support, indirectly tapping the Services' own more sizable study and analysis sources. The net consequence was that WSEG appeared to lose ground even with the JCS, overtaken by the competing analytical support activities now at the JCS disposal.

The JCS still considered WSEG a valuable asset, however, and still counted on it for considerable analytical support, as testified to by their reaction to the 1967 IDA proposals. They objected emphatically to the suggestion that WSEG be eliminated as the interface between IDA and the JCS. They defended anew the WSEG concept of a high-quality analytical study group, operated on a combined multiservice military and civilian basis, to carry out comprehensive studies at the supra-Service level. They did not question the need for civilian staffing and civilian technical direction of the study effort in order to maximize its scientific and technical validity, but they clearly regarded the contractual arrangement with IDA primarily as a practical means of attracting and keeping competent personnel with the requisite assortment of skills and experience and sufficient

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<sup>2</sup>See above, pp. 207-208. The Chairman's Special Studies Group and the Joint War Games Agency were combined in 1970 to form the Studies, Analysis, and Gaming Agency (SAGA). The Special Assistant for Strategic Mobility, an office created in April 1966 at the request of Secretary McNamara to analyze strategic movement problems and aid in transportation planning, was subsequently cut back and integrated into J-4 of the Joint Staff in 1970. See Joint Chiefs of Staff, *Organizational Development*.

flexibility to tailor the appropriate expertise to changing study requirements. They justified the substantial military participation in studies as a means to ensure operational realism, facilitate the integration of military and technical inputs during the analytical process, and monitor responsiveness to JCS task guidance and needs. They also strongly endorsed WSEG's value to the JCS in carrying out study management functions such as contract administration, programming and budgeting, performance monitoring, and, above all, controlling sensitive information.

The JCS had developed serious misgivings about the WSEG/IDA relationship, however, which had become more complicated and difficult to manage during the 1960's. The JCS had readily accepted the initial conversion of WSEG from a wholly inhouse organization to a mixed government-contractor arrangement with IDA in 1956 as necessary to solve the civilian professional staffing problem. They had every expectation at the time that WSEG would continue to exercise responsibility for overall task management, while IDA assumed responsibility for technical leadership, including technical staff quality and performance. They assumed that the intimate working relationship between the military and civilian sides could be maintained without appreciable change, approximating the goal of an integrated operational military/civilian scientific team, and in fact this proved to be the case for several years.

In the 1960's, however, the WSEG/IDA relationship underwent severe strains. In part this was because IDA was called upon to serve other clients besides WSEG and the JCS, raising awkward issues of compartmentalization of the WSEG/JCS work within a single quasi-autonomous IDA division; in part it was because new official policies and regulations governing relations between government agencies and external advisory corporations required a sharper functional distinction between WSEG and IDA activities, both with respect to the utilization of contractual

personnel by the government and the contractual responsibility for studies. In the ensuing adjustments, the JCS had acceded to IDA requirements for greater independence and contractual integrity, including greater visibility for identifiable IDA study contributions, but insisted that the WSED division of IDA be maintained as a "separate and stable entity" dedicated to WSEG, operating insofar as possible as the civilian/technical partner of a combined WSEG/WSED activity. While WSEG and WSED staff members continued to work in intermingled offices in WSEG-controlled space and the Directors of WSEG and IDA/WSED operated in practice as co-equals in their respective spheres, the JCS sensed some loss of control and a more distant "arms-length" relationship developed. This was accentuated in 1964 when the WSEG/WSED operation was moved out of the Pentagon into the new IDA building.

By the mid-1960's, however, a new image of WSEG had begun to take shape, particularly for those outside of the OJCS. Gen. Maxwell D. Taylor, as the President of IDA, initiated a series of high-level discussions with principal officials of the DoD, including the Secretary of Defense, the Deputy Secretary, the Chairman of the JCS, and several of the Assistant Secretaries, to review the status of and requirements for IDA. These talks indicated that the JCS perspectives on WSEG were not necessarily held elsewhere in the DoD. In some quarters WSEG was regarded much more as a contracting mechanism, administrative go-between, and study manager than as a substantive participant in IDA studies. Its multiservice military structure had given rise to suspicions that WSEG studies might suppress or "water down" controversial study results, or that this structure promoted a collective military bias, or "undue military influence," in the studies. Some critics, from Systems Analysis for example, regarded WSEG as overly oriented toward the JCS and DDR&E and unresponsive to other parts of OSD. Such critics also tended to be skeptical of the value of the military inputs provided by

WSEG military staff members, most of whom were selected for their broad operational backgrounds rather than any technical or analytical training. Other OSD officials also regarded JCS views on safeguarding information and segregating WSEG/WSED activities within IDA as overly restrictive, and showed a distinct preference for dealing with IDA as a single entity, without barriers between divisions and even without WSEG as an intermediary agency.<sup>3</sup> Some of these views were highly influential in shaping the basic reorientation of the WSEG/IDA relationship that occurred in 1967.

External perceptions of WSEG in the latter 1960's were also inevitably affected by an increasing volume of public criticism of governmental practices in contract research. In Congress, particularly, concern was voiced that FCRC's like IDA were being utilized as extensions of governmental staffs, to circumvent Congressional restrictions on civil service salaries or manpower ceilings, or otherwise to perform work that was more appropriately or economically performed within the government. Congressional committees conducted several inquiries into the financial management of FCRC's, including IDA, that exposed what one Defense official conceded was an "almost complete vacuum" insofar as official regulations and procedures for contracting with "not-for-profit" organizations were concerned.<sup>4</sup> The practical effect of these developments was to impose stricter limitations on DoD utilization of FCRC's and other external

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<sup>3</sup>See Director, WSEG (Vice Adm. K. S. Masterson), "Meeting with Deputy SecDef Vance to Discuss Agenda Proposed by Gen. Taylor" (Sept. 14, 1966); and "Meeting with Secretary Vance, Thursday, 8 December 1966, at 1000 Regarding DoD/IDA Relationships" (Dec. 9, 1966). Both meetings were attended by the DDR&E, the CJCS, the ASD(SA), the ASD(ISA), and ASD(A), and others.

<sup>4</sup>Assistant SecDef (Administration) (Solis Horwitz), Memo for Mr. Vance (Deputy SecDef); "Internal Audit and House Appropriations Committee Investigation of IDA" (Mar. 10, 1966).

research organizations and to inhibit their further expansion. In regard to WSEG/IDA specifically, Congressional dissatisfaction led to a de facto freeze, or ceiling, on the size of the contract effort, and highlighted WSEG's responsibility for maintaining close financial supervision over the WSEG portion of the IDA contract. Altogether this reflected a considerable shift from the hospitable atmosphere and deferential regard which had surrounded the formation of IDA some 10 years before.<sup>5</sup>

## 2. The New IDA/WSEG Relationship

The 1967 reorganization of IDA entailed a shift from separate, quasi-autonomous, client-oriented divisions, of which the WSEG-oriented WSED division was one, to a more centrally managed structure of functionally oriented divisions (e.g., Science and Technology, Systems Evaluation, Program Analysis, International and Social Studies). The rationale for the reorganization was to improve the utilization of IDA resources, reduce duplication among divisional staffs, and provide IDA with greater overall flexibility and effectiveness in responding to multiple user requirements. The WSED division was dissolved, but in theory the entire talent base of IDA became available to WSEG, as to other users, and the talent of the former WSED division was in turn made available to other agencies in the DoD besides WSEG.<sup>6</sup>

In acceding to the IDA reorganization as an "internal" IDA matter, the JCS had dropped their long-standing insistence on maintaining the WSED division of IDA as a "separate and stable entity" dedicated exclusively to WSEG. This was no minor concession on the part of the JCS. They had favored a closely coupled WSEG/WSED arrangement, with WSED operating apart from

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<sup>5</sup>See above, pp. 129ff.

<sup>6</sup>See Director, WSED (Dr. George W. Rathjens, Jr.), Memo for Record, "Conversation with Adm. Masterson Regarding the Reorganization Question" (June 22, 1967); and President, IDA (Gen. Maxwell D. Taylor) to Secretary of Defense (June 28, 1967).

the rest of IDA as the civilian/technical/contractual component of the combined WSEG/WSED team, and with the Directors of WSEG and WSED collaborating as "opposite numbers" in most substantive matters. They believed that this arrangement was a reasonably acceptable approximation of a military/scientific partnership. It satisfied JCS requirements for military participation and task responsiveness while going a long way toward meeting contractor requirements for independence and visibility. Moreover, the arrangement also safeguarded sensitive or privileged JCS military information, even against unwanted "leakage" to other elements of the DoD.<sup>7</sup>

The divided or dual leadership that characterized the WSEG/WSED working arrangement appeared to contradict standard management practices, since neither Director could exercise full direction over the study effort. And it did not always operate smoothly, since it depended a good deal on the variable human element.<sup>8</sup> But it was a tested and familiar arrangement, and it appeared to suit the analytical support needs of the JCS. They were reluctant to have it changed in 1967, and exercised their influence to minimize any disadvantageous consequences that they felt might result from the ensuing modifications. In this the

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<sup>7</sup>IDA worked under stringent industrial security regulations enforced by the DoD, but JCS requirements for security and confidentiality were exceptional, and called for the Director of WSEG to superimpose special controls under highly restrictive need-to-know rules and practices that normally excluded other elements of IDA that were engaged in work for other DoD agencies. These controls extended to specially guarded WSEG space under military security (colloquially referred to as "the cage"), together with the maintenance of a segregated WSEG data base and a separate WSEG system of documentary control and distribution.

<sup>8</sup>Interviews conducted for this study repeatedly stressed the importance of the "personality" factor on both sides. The WSEG/WSED arrangement obviously demanded considerable good will and mutual forbearance, as well as continuous attention to the preservation of a cooperative atmosphere, at both management and working levels.

JCS had the full cooperation of the Director of WSEG, Adm. Masterson, who believed strongly that the accomplishment of the WSEG mission depended on retaining the full confidence of the JCS.<sup>9</sup>

The new IDA/WSEG arrangement provided further recognition of IDA as an independent study producer with greater latitude in staffing and carrying out projects for WSEG, or through WSEG, than before. Former contractual provisions calling for WSEG tasks to be performed by an identified division of IDA were eliminated, permitting IDA management to assign WSEG tasks to the divisions of its choice, or even to assign them internally on a composite, multidivisional, or nondivisional basis. The ambiguous WSEG/WSED practice of conducting a combined review of reports at the final draft stage, in which WSEG senior military representatives participated in an "advisory" capacity to the WSED division director, was dropped. Reviewing procedures were modified to clarify further the distinction between the IDA review of the IDA product, for which IDA assumed full contractual responsibility, and any WSEG review or reviews that WSEG conducted in accordance with its responsibilities as the sponsoring authority for the DoD.<sup>10</sup>

At the same time, the authority of the Director of WSEG to require military participation in studies performed under WSEG task orders remained intact. He continued to make such assignments as he chose from permanently assigned WSEG personnel, at his discretion, and any ad hoc IDA requirements for military personnel outside of WSEG were subject to his approval. In the latter case, he retained the prerogative of requisitioning

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<sup>9</sup>Interviews.

<sup>10</sup>See Director, WSEG, Memo for DDR&E, "Handling Final Reports Produced by IDA under WSEG Contract" (Dec. 14, 1967); and Director, WSEG-President, IDA, Memo of Understanding, "Procedures for Handling of Reports Produced Under WSEG Contract" (Jan. 22, 1968).

such personnel as he deemed necessary and appropriate through normal Service channels.<sup>11</sup>

The Director of WSEG also retained complete authority in security matters. Although IDA was no longer required to perform all work for WSEG within WSEG-controlled space, the WSEG Director could reimpose such a requirement in the case of specific studies for which he considered the security considerations overriding. He remained responsible for security in space occupied by WSEG, including space in which contractor personnel were collocated. And he also remained responsible for making individual need-to-know determinations on a case-by-case basis, including ruling as to whether specific individuals could participate in WSEG studies.<sup>12</sup>

Finally, the Director of WSEG was authorized to enter into study contracts with firms other than IDA "when such contractors' capabilities, costs, or other considerations may make them equally or more appropriate for the tasks required." This proviso in effect negated IDA's privileged status as the sole contractor for WSEG studies and diversified the potential source of contractual support for WSEG. It was apparently adopted with reluctance, as a hedge against the possibility of further discord between WSEG and IDA, and, according to one Joint Staff document, in hopes of inducing a more "customer-oriented" attitude on the part of IDA.<sup>13</sup> As the JCS stated in their 1967 recommendations to the SecDef:

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<sup>11</sup>Director, WSEG, Letter to President, IDA (Sept. 5, 1967); and Executive Secretary, WSEG, Memo for Record, "IDA Acceptance of Task Order 136" (Sept. 15, 1967).

<sup>12</sup>Ibid. See also DDR&E (John S. Foster, Jr.) Memo for Deputy Director for Procurement, "Space Occupied by the Weapons Systems Evaluation Group (WSEG) at 400 Army-Navy Drive, Arlington, Virginia" (Oct. 25, 1967).

<sup>13</sup>Report by Director J-5 to JCS, "Study/Analysis Support of the JCS by WSEG/IDA" (July 5, 1967).

The Joint Chiefs of Staff are not dissatisfied with the organizational and administrative relationships under the current WSEG/IDA arrangements. However, the Joint Chiefs of Staff have noted that in the past military/civilian sensitivities of a similar nature have had a disruptive influence. Such difficulties could occur again and at a more critical time, have an unfavorable impact on the IDA capability to meet JCS/WSEG study requirements. Therefore, it seems prudent at this time to expand the contractor base for support of JCS/WSEG and terminate the privileged status of IDA as the sole contractor.<sup>14</sup>

Initially, a minimum of 25 percent of the WSEG contract funds were ordered set aside for this purpose, "to meet unforeseen requirements and assist in developing other study and analysis resources."<sup>15</sup>

Adjustments to the new IDA/WSEG relationship took some time to work out, but considerable care was taken to maintain continuity in project operations and the changes were implemented with a minimum of disruption. Physically there was greater segregation of the WSEG military and IDA civilian staffs, as the WSEG civilians who had been collocated with WSEG officers in WSEG space were moved into IDA offices, but the actual disruption was minor: most of the WSEG staff members were transferred to the new Systems Evaluation Division (SED) in contiguous offices on adjoining floors and continued to work on the same WSEG tasks as before. While communications at the working level lost some of the air of easy informality that had characterized the operation previously, it was not appreciably more difficult to carry out work on a mixed military/civilian basis in the new configuration. WSEG officers retained automatic

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<sup>14</sup>JCSM 391-67, Memo for the SecDef, "Study/Analysis Support of the Joint Chiefs of Staff by WSEG/IDA" (July 18, 1967); and DDR&E Memo to SecDef, Covering Brief (July 21, 1967).

<sup>15</sup>Ibid.

access to IDA areas, and IDA staff members assigned to WSEG tasks were provided WSEG badges so that they could come and go freely in the WSEG security areas without the inconvenience of sign-in or escort procedures. Space was set aside in the WSEG premises for work on sensitive projects or portions of projects that had to be accomplished under WSEG military security (and for the use of other contractors working for WSEG); the volume of such work was not excessive and the space provided was generally adequate. Most IDA civilians rarely found it necessary to work in WSEG space on a continuous basis, and usually only those assigned to projects in sensitive command and control or strategic weapons areas worked there regularly. WSEG in turn extended its regular document distribution and monitoring services to IDA areas. This enabled IDA staff members working on WSEG projects to receive all but the most sensitive JCS materials in their own offices and accept document custody on their individual responsibility, so that for the most part they were able to perform WSEG work in IDA space without any difficulty. In short, although day-to-day working patterns were altered by the new WSEG/IDA relationship, many of the problems that might have been created by overcompartmentalization at the staff level were alleviated or avoided by pragmatic adjustments.<sup>16</sup>

Several other aspects of the reorganization proved to be much less radical in practice than had been foreseen during the controversies of 1967. IDA's internal shift from "user" to "functional" divisions placed most IDA/WSED staff members in SED, by virtue of their training, skills, experience, and personal preferences, so that the new SED ended up with approximately the same pool of expertise that IDA had maintained in WSED when it was operated as the dedicated counterpart to WSEG, and SED came to inherit most of the IDA work on WSEG tasks.

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<sup>16</sup>These and similar observations on working-level relationships are based largely on interviews.

Despite some of the apprehensions expressed in 1967, therefore, there continued to be a considerable degree of stability in the IDA staffing of WSEG tasks at the divisional, project leader, and professional staff level, and for a perfectly natural reason: the logical basis for employing personnel in WSEG prior to the IDA reorganization--i.e., the relevance and appropriateness of their qualifications for WSEG work--was the same as the logical basis for utilizing them on WSEG tasks after the reorganization. Although task assignments were now made at the IDA management level, there were actually relatively few instances in which IDA chose to assign WSEG tasks to other divisions, and relatively few instances in which tasks were carried out on a mixed or multidivisional basis. It was normally more efficient and practicable to carry out WSEG work within SED, since it usually contained the bulk of the talent and experience required by WSEG tasks--even though SED was no longer dedicated to WSEG and IDA management exercised the prerogative of making assignments on a case-by-case basis.

The fact that a considerable degree of stability and continuity was maintained, and that departures from former practices were exceptional and undertaken for clearly justifiable reasons, helped ease the adjustment process considerably, both on the WSEG side and on the side of IDA/WSEG personnel who were strongly attached to their work in the WSEG environment. The exceptional cases were important, but the decisions proved almost always to be mutually acceptable and not difficult to manage.<sup>17</sup>

Similarly, WSEG utilization of contractors other than IDA turned out to be a relatively infrequent occurrence, falling far short of the 25 percent target that was mentioned in 1967. By 1975, in fact, only about 10 percent of WSEG's contract funds were being allocated to firms other than IDA.<sup>18</sup> WSEG management

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<sup>17</sup> Interviews.

<sup>18</sup> See Lt. Col. Harry J. Walther, USA, "The Weapons Systems Evaluation Group: An Overview," undated, prepared for DDR&E WSEG Review Panel, 1976.

during these years apparently did not find it really feasible or desirable to put together a network of regular contractors outside of IDA, in order to broaden WSEG's base and options for contractual support. They engaged other firms on a selective, ad hoc basis, but continued to deal with IDA as their mainstay. On some occasions they turned to other contractors because IDA chose to turn down some particular task--such as certain command and control projects that IDA considered ambiguously close to "staff support."<sup>19</sup> On other occasions WSEG deliberately sought to utilize the advantages of alternative approaches offered by different contractors--for example, in a major series of studies undertaken during the 1970's to develop and evaluate a variety of force structure models.<sup>20</sup>

There were not many such occasions. During the entire 1967-76 period, for example, only 20 WSEG reports, out of a total of 208, were produced by contractors other than IDA.<sup>21</sup> Again, apart from the principle involved, it usually proved more convenient and sensible to employ an established, familiar

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<sup>19</sup> Of 18 WSEG studies for the JCS that were produced by contractors other than IDA from 1967-77, 9 were of this character, involving what was euphemistically called "on-site" work for the Joint Staff. They included direct support in connection with OJCS exercises, NMCC procedures, and the like. WSEG considered most of these studies to be so interrelated that they had to be performed by the same contractor, Serendipity Associates. See Director, WSEG, Memo for DDR&E, "IDA Proposal for the Extension of the IDA Contract" (Aug. 16, 1968).

<sup>20</sup> This was part of an extensive model development program in support of JCS/SAGA for use in making assessments of forces, force deployments, and tradeoffs among weapons systems. Participation by contractors other than IDA, such as Braddock, Dunn, and McDonald, and Planning Research Corporation, with well-known backgrounds in mathematical modelling and computer simulation, was specifically sought in order to permit a comparison of models with varying approaches. See WSEG, "FY 1977 Budget Submission" (Aug. 25, 1975), copy in WSEG files.

<sup>21</sup> WSEG records.

contractor with IDA's capabilities, qualifications, resources, and experience. As one Director of WSEG explained the matter to Congress:

...our contractor support must be free of any possible service or industrial bias in order to provide objective, unprejudiced, and rigorous analyses to support our JCS and OSD customers. Independent, and clearly unbiased, contractors with the high level of expertise we need for this work are difficult to acquire, and the arrangements necessary to maintain proper security for sensitive information, and provide for the joint civilian-military working relationships we require, are also difficult to establish. For these reasons, we feel we must continue to depend upon a non-service-oriented Federal Contract Research Center such as IDA for our principal civilian analytical support.<sup>22</sup>

### 3. Changes in DoD Management

The 1967 reorganization of IDA and the revisions in IDA/WSEG working relationships took place while Secretary McNamara was still in office (and received, as we have seen, his personal attention). In early 1968, however, the last year of the Johnson administration, McNamara lost favor with the President and resigned. He was succeeded by Clark Clifford, an experienced Washington lawyer and Presidential adviser who had helped draft the basic National Security Act for President Truman some 20 years before, and who was one of the leading "elder statesmen" of the Democratic Party. In filling out the last year of McNamara's term, Clifford confined his activities largely to broad policy matters, particularly with respect to the Vietnam War. He retained most of the McNamara staff and most of the organizational features of the McNamara system. There were no major changes in DoD operating procedures until

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<sup>22</sup>Lt. Gen. Arthur W. Oberbeck, USA, Director, WSEG, statement before Subcommittee No. 3 of the House Armed Services Committee on Defense RDT&E (March 1970).

the Nixon administration came into office in January 1969 and Melvin R. Laird became Secretary of Defense.

President Nixon strengthened the White House machinery for defense policy formation by reinvigorating the NSC system under an aggressive Presidential Assistant for National Security Affairs, Henry A. Kissinger, a well-known defense and foreign affairs intellectual. Kissinger headed a tightly integrated structure of interdepartmental committees and staffs that operated with powerful Presidential backing in areas of policy coordination and crisis management. Significantly, in terms of WSEG, the Kissinger NSC structure included a Program Analysis Staff of former DoD systems analysts that provided the White House with an independent capability to evaluate analytical issues in selected weapons matters. Although this group remained quite small, it became an important outside user of the analytical studies produced within the DoD, illustrative of a trend that has been carried to even greater lengths in recent years by the Executive Office of the President in OMB, and even by the supporting staffs of various Congressional committees.<sup>23</sup>

Within the DoD, Laird upheld the supremacy of the Secretary's authority, as inherited from McNamara, but displayed a more permissive approach toward decentralization and what he termed "participatory management" by the JCS and the Service Departments.<sup>24</sup> He acted to reduce the degree of centralized power exercised by the OSD staff, including Systems Analysis, and delegated greater responsibility to the military Services for detailed force planning and for managing their development and procurement programs. He abolished the Draft Presidential

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<sup>23</sup>See Ralph Sanders, *The Politics of Defense Analysis* (New York: Dunellen, 1973), for an extensive discussion of this trend.

<sup>24</sup>Secretary of Defense Melvin R. Laird, *Fiscal Year 1971 Defense Program and Budget*, statement before a Joint Session of the Senate Armed Services and Appropriations Committees (Washington, D. C.: Government Printing Office, 1970), p. 77.

Memorandum, which symbolized directive control by the Office of Systems Analysis, but retained the essence of the major McNamara management innovations, the PPBS and the FYDP. He attempted to introduce more specific strategic and fiscal guidance early in the budget cycle and instituted various procedural modifications to permit the Services to exercise a greater degree of initiative and latitude in budgetary determinations, but he retained ample reviewing and decisionmaking capabilities at the OSD level.

Despite the desire and momentum within DoD for greater decentralization, however, there was no reversion to the pre-McNamara days. Even the controversial powers of the Office of Systems Analysis were amended rather than abolished, to reflect a greater emphasis on reviewing rather than initiating programs and on broad strategic and defense policy problems rather than detailed force plans. The office became less conspicuous, although it remained a major vehicle for fiscal guidance and budgetary review. It continued at the Assistant Secretary level, with major responsibilities for review and analysis of force structures and programs. "This is an essential task," reported the President's Blue Ribbon Defense Panel in 1970, "and must be performed well if the management by the Secretary of Defense is to be effective."<sup>25</sup>

One of the major organizational innovations under Laird was the Defense Systems Acquisition Review Council (DSARC), established in 1969 as a means of tightening OSD management of

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<sup>25</sup>Blue Ribbon Defense Panel, *Defense for Peace: A Report to the President and the Secretary of Defense on the Department of Defense* (Washington, D. C.: Government Printing Office, 1970), p. 118.

In the spring of 1973, the head of the office was downgraded from an Assistant Secretary to a Director, and in 1974 the office was redesignated "Program Analysis and Evaluation" and returned to Assistant Secretary status, with a new and ostensibly broader directive. See DoD Directive 5141.1, Subject: Assistant Secretary of Defense (Program Analysis and Evaluation) (Mar. 29, 1974).

the development of major weapons systems. The Council, chaired by the DDR&E, included as principal members the ASD(I&L), the ASD(C), and the ASD(SA), with observer representation from the Office of the Chairman of the JCS. Its mission was to assess the status of major weapons systems at key development stages, or milestones, in order to avoid the costly overruns and management problems that had beset such programs as the C-5A and the TFX in the McNamara period. It adopted as its working instrument a document first used toward the end of the McNamara regime, the Development Concept Paper (DCP), subsequently renamed the Decision Coordinating Paper (also DCP), which defined the rationale for initiating, continuing, or terminating the development of a given major weapons system--thus giving rise to the designation of the new process as the DCP/DSARC process. Under the DCP/DSARC system, the Laird administration focused greater attention on weapons tests and test evaluations, adding considerably to requirements for improved analytical support in this particular aspect of Defense management.<sup>26</sup>

Although the modified PPBS was retained as the primary control mechanism for overall resource management within the DoD under Laird, it was oriented primarily toward force structure planning and programming. The DCP/DSARC process, in contrast, was hardware oriented, and was utilized as an ancillary system for systematically managing the acquisition of selected major weapons systems, from initial development to procurement. The two processes overlapped, of course, and there was a major need for coordination to ensure that PPBS and DSARC actions

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<sup>26</sup>The DCP and DSARC processes are outlined in DoD Instruction 5000.2, Subject: The Decision Coordinating Paper (DCP) and the Defense Systems Acquisition Review Council (DSARC) (Jan. 21, 1975); and DoD Directive 5000.26, Subject: Defense Systems Acquisition Review Council (DSARC) (Jan. 21, 1975).

were harmonized, but basically the two systems coexisted for different purposes.<sup>27</sup>

In both the PPBS and the DCP/DSARC systems, the critical action flow consisted of "vertical" transactions between the Service Departments and OSD in which JCS interactions played a peripheral, frequently more minor role. Within the PPBS, the JCS continued to produce the JSOP as their major planning document, covering both national security objectives and strategic military concepts (Vol. I), and related force structure requirements (Vol. II), but the first tended to be too broad to be used for programming guidance and the second was more a compendium of Service submissions than a supra-Service synthesis that dealt explicitly with alternatives and choices. The principal programming document issued by the JCS was the Joint Forces Memorandum, which was essentially JSOP Vol. II, recast to reflect OSD budgetary guidance but still primarily a compilation of Service inputs, including Service cost and manpower estimates, that rarely came to grips with interservice issues, alternatives, or questions of priority.<sup>28</sup>

In the R&D realm, the formal JCS responsibility for providing strategic military guidance was for many years carried out by issuing a special JSOP annex that defined the R&D objectives considered essential to support JSOP strategy and force recommendations. In 1966 the JCS began issuing a separate Joint Research and Development Objectives Document (JRDOD) to perform the function of translating military operational requirements into R&D guidelines, primarily for the utilization of DDR&E offices at the OSD level. The JRDOD, however, tended to address generalized capabilities that were for the most part

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<sup>27</sup>See *Report to the Deputy Secretary of Defense by the Acquisition Advisory Group* (Sept. 30, 1975), Vol. I, p. 45, for a delineation of interface problems between internal DoD management control systems.

<sup>28</sup>See Blue Ribbon Defense Panel, *Defense for Peace*, pp. 111ff.

universally accepted, and to endorse the R&D programs of the Services without specifically identifying deficiencies or priorities or otherwise providing a basis for interservice adjudication.<sup>29</sup> In the DCP/DSARC process itself, JCS "coordination" also tended to be routine, rarely if ever challenging the Service positions on their major R&D programs.<sup>30</sup>

In short, although the Nixon/Laird administration took steps to give a greater voice and visibility to the JCS as the nation's top military advisors, particularly in strategic and operational matters, JCS participation in DoD resource management was not fundamentally changed. The JCS were still called upon to register a corporate military ("joint") view on many controversial resource issues, particularly if the issues involved major questions of national security or major implications for the defense budget before Congress, but the JCS in their corporate role were not prime actors in the internal DoD resource management process. In this respect the major JCS functions and their associated analytical support requirements were not greatly affected by the Nixon/Laird changes in the DoD, either in the PPBS or the DCP/DSARC areas, and no major departures in the JCS utilization of WSEG occurred as a result.

#### 4. Adjustments to the New DoD Context

Although WSEG had survived an intensive reexamination at the highest levels of OSD and the JCS in the latter years of the McNamara administration, exactly how it would fare under the Nixon/Laird administration was not entirely clear. During the new administration's "shakedown" period, the incoming

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<sup>29</sup>See WSEG R-169, *The Joint Research and Development Study* (July 1971), which covers the background and origins as well as the nature and utilization of the JRDOD.

<sup>30</sup>Interviews. For a recent reflection of this observation, see U.S. General Accounting Office (Comptroller General of the United States), *A Critique of the Performance of the Defense Acquisition Review Council* (Jan. 30, 1978).

Deputy SecDef, Mr. David Packard, asked whether WSEG was really necessary. He raised the question informally with the DDR&E, Dr. John S. Foster, and elicited a strong defense of WSEG from its Director, Vice Adm. K. S. Masterson, backed up by the Chairman of the JCS, Gen. Earle G. Wheeler. (Foster, Wheeler, and Masterson were all incumbents at the time of the 1966-67 reviews.)

Masterson's response, in letters to Foster and Wheeler, stressed WSEG's unique capability to apply a combination of military and scientific expertise to the problems of the SecDef and the JCS under arrangements that facilitated analytical quality, comprehensive information access, and objective results. He explained that the "civilian input" was in actuality an independent civilian contractor study, without control by WSEG "except through the requirements of the task order as accepted by the contractor." The "military input" was provided by WSEG in assigning military officers to work as project members under the direction of the contractor's project leaders. WSEG also ensured that all relevant information was available--"from WSEG sources, from OSD sources, from the Joint Staff, from unified commands, from military services, from military contractors, and from any department of the Government that might have information pertinent to the issue"; and administered the special security provisions that permitted access to the highest degree of classification and thus made WSEG's analytical support acceptable to the JCS. WSEG's multiservice character and multiservice participation in studies insured against "service bias"; careful contractor selection and military participation compensated for civilian lack of military background and minimized the dangers of "civilian bias."<sup>31</sup>

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<sup>31</sup>K. S. Masterson, Director, WSEG, to Hon. John S. Foster, Jr., DDR&E (Aug. 19, 1969), and to Gen. Earle G. Wheeler, CJCS (Aug. 27, 1969). Dr. Foster noted on the letter: "Chief, the points are well made. Thanks."

In a similar letter to the Chairman of the JCS, Masterson suggested that the main justification of WSEG should come from the JCS, since the bulk of WSEG's work and its most important projects were carried out for the JCS. He then listed some of the more important of these, including studies of strategic missile operational tests, strategic missile accuracy, the impact of MIRV's and ABM's on strategic weapons employment, command and control requirements in strategic nuclear war, decisions at the tactical nuclear threshold, the concept of political warning in NATO, relative cost of trade-offs between airlift and sealift, weapons utilization in air-to-air encounters in Southeast Asia, and implications of combat air losses over North Vietnam.<sup>32</sup> Masterson also mentioned several new studies that were underway, including a study of JCS communications requirements for worldwide command and control, the optimum use of multiple sensor systems, and methods for comparing alternative force levels under a variety of tactical situations.<sup>33</sup>

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<sup>32</sup> The specific reports listed by Masterson were the following: R-121, *Accuracy of Strategic Missile Systems*, 1967; R-134, *Test and Evaluation Study*, 1968; R-140, *The POLARIS A3 Evaluation Report*, 1969; R-147, *Potential Role of US Military Power in the Mediterranean/Middle East/North Africa Indian Ocean Areas*, 1969; R-148, *Strategic Weapons Employment in the Time Period About 1975*, 1969. In the command and control area, R-108, *Decision at the Tactical Nuclear Threshold; Some Prerequisites for Supporting the National Response*, 1967; R-129, *Command and Control of Offensive Nuclear Weapons in the 1970 to 1975 Time Period*, 1968; R-131, *Political Warning in NATO*, 1968; R-137, *Comparative Analysis of Ballistic Missile Intercept Systems*, 1968; and R-138, *An Analysis of Operational Procedures During Exercise HIGH HEELS 68*, 1969. In the tactical area, R-116, *Air-to-Air Encounters in Southeast Asia*, 1967; and R-128, *Analysis of Combat Aircraft Losses in Southeast Asia*, 1968. And in the logistics area, R-141, *Resupply in Peace and War by C-5 Airlift and by Containership*, 1969.

<sup>33</sup> The studies referred to resulted in R-136, *Current/Near Term JCS Communications Requirements*, 1969; R-151, *Emergency Actions Communications in the Mid-1970's*, 1969; R-149, *Simulation Exchange*, 1969; and R-152, *NMCS Sensor Interface Study*, 1969.

This was clearly an impressive list of studies. It included a study that was carried out at the express request of the Chairman of the JCS (political warning in NATO), another that had been briefed to the SecDef at the Chairman's request (tactical nuclear decisions), and a third that had been formally briefed to the full JCS (command and control of strategic nuclear weapons). It also included several studies on major strategic missile issues briefed to the full JCS, including the first authoritative analysis of missile accuracy based on operational test results; the first independent study of the relative costs of airlift and sealift, which had been briefed to the Assistant SecDef for Installations and Logistics; and another study that Adm. Masterson described as the "best rundown" he had ever seen on strategic trends in the Mediterranean/Middle East/Indian Ocean area.<sup>34</sup>

The Chairman reacted by sending the SecDef a forcefully worded testimonial to WSEG's usefulness to the JCS with a recommendation against any change in its status. He said that WSEG had provided the JCS with "essential" study and analysis support since 1948, and that this support had been of "major value." He singled out as WSEG's chief quality its "unique" capability to create mixed teams of outside scientific/technical experts and professional military personnel, on a multiservice basis, to tackle problems that required a blend of scientific and military skills:

The WSEG arrangement is unique in that technical and scientific experts from universities and industry can be brought together to work with military personnel of all services on Defense problems which transcend the expertise of either group.<sup>35</sup>

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<sup>34</sup>Masterson to Foster (Aug. 19, 1969) and Wheeler (Aug. 27, 1969).

<sup>35</sup>Chairman, JCS, CM-4569-69, Memo to SecDef, "Requirement for Weapons Systems Evaluation Group Support" (Sept. 17, 1969).

Various alternatives to WSEG had been considered in the past, he said, including expanding internal study and analysis capabilities or establishing an external contracting effort in the Joint Staff, but such alternatives had always been rejected in the end as inferior to the current WSEG arrangement. WSEG's capability to provide specially qualified experts on an "as-needed" basis from the universities and industry could not be matched by any inhouse arrangement, and there did not appear to be any satisfactory alternative that did not have undesirable organization and funding implications.<sup>36</sup>

General Wheeler's memorandum was evidently persuasive. Secretary Laird's reply, noting the Chairman's concern as to the status of WSEG, was reassuring:

I am not aware of any pending proposal, in or out of OSD, which questions the need for WSEG. Should any change in WSEG's status be proposed for the future, I will give your views careful consideration.<sup>37</sup>

Although this initial vote of confidence appeared to resolve doubts as to WSEG's immediate future, external complications intruded. Congressional skepticism of FCRC's continued to grow, with spillover effects on the WSEG arrangement and budgetary consequences that reduced WSEG's potential effectiveness. Moreover, relations between the defense establishment and the academic/intellectual community, increasingly strained by the Vietnam War, deteriorated to the point of open antagonism, jeopardizing the continuation of cooperative ventures like the IDA consortium and the WSEG/IDA affiliation. These difficulties were capped by the traumatic Pentagon Papers episode of 1971, which led to a marked hardening of JCS attitudes toward

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<sup>36</sup> Ibid.

<sup>37</sup> Secretary of Defense, Memo to Chairman, JCS, "Requirement for Weapons Systems Evaluation Support (WSEG)" (Oct. 6, 1969).

allowing contractor personnel, including those under contract to WSEG, to have access to sensitive information, thus threatening to impair WSEG's usefulness as a vehicle for external analytical support.

## 5. Congressional Relations

WSEG had experienced few difficulties with Congress during its long existence. For the most part it had been treated as a small and inconspicuous agency, carrying out its work in relatively anonymous fashion, little known in Congress outside of a few members of the Armed Services and Appropriations committees. Its budget had generally been effectively defended by JCS and OSD spokesmen, normally without challenge, and it appeared to be regarded in Congress as a necessary and worthwhile organization. Its expansion in the mid-1950's, including its conversion to a contractual arrangement and the creation of IDA in 1956 under the auspices of leading universities, had been widely approved; and when its continuation appeared to be questioned, against known JCS views, in some quarters of OSD in the early 1960's, powerful Congressional voices rose to its support.<sup>38</sup>

WSEG inevitably became embroiled in the FCRC controversies of the 1960's and 1970's, however. Its structure and operations rested on a contractual base, of course, and its working budget was essentially an FCRC budget--exclusively with IDA until 1967, and predominantly with IDA thereafter. It became impossible to justify WSEG budget expenditures without defending the principle of external contractual research, particularly by DoD-sponsored FCRC's like IDA.

The FCRC controversies of the early 1970's went beyond those of the 1960's, and brought about major changes across the board in DoD utilization of contractual advisory services.

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<sup>38</sup>See above, pp. 218-19.

Congressional criticism in the 1960's had revolved around fiscal practices and contractual accountability, including salary levels, which were easily brought under tighter auditing and administrative oversight procedures. Criticism in the 1970's involved a broader questioning of DoD policy that was more difficult to resolve, however, and eventually forced a sharp decline in the support of FCRC's in the DoD at large, both at the OSD/JCS level and in the Services. IDA was not singled out for attack, but neither was it exempted, and WSEG became involved because of its sponsorship role, its close working ties, and its special relationship.

By the early 1970's Congress had become increasingly critical of FCRC's in general on the grounds of their size, cost, and privileged position as compared to private contractual firms. It had imposed restrictions on salary levels and ceilings on overall expenditures, and had consistently resisted DoD requests for budgetary increases. In 1971, for example, the House Appropriations Committee specifically rejected DoD arguments that available alternatives, such as inhouse analytical resources, competitive contracting with colleges and universities, profit-making advisory corporations agreeable to "hardware exclusion" restrictions, or even private consultants, were neither as qualified nor as suitable to carry out the studies needed.

Commenting on the Army's Research Analysis Corporation, the Committee remarked that the salaries and benefits currently paid by the Government made it much easier to attract people to perform the work in house than had been the case when the non-profit "think tank" had been established. In reference to RAND--where Ellsberg had been working when he engineered the publication of the Pentagon Papers--the Committee pointedly observed that "in matters of security better control can be maintained within governmental organizations than outside the Government."<sup>39</sup>

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<sup>39</sup> U.S., Congress, House Committee on Appropriations, Report No. 92-666, *DoD Appropriations Bill* (continued on next page)

Congress proceeded to impose severe cuts in FCRC funds for FY 72, warning that the DoD should plan to phase out "think tank" operations. In the case of IDA, the cuts were almost crippling, requiring sharp reductions in staff, personnel benefits, and supporting services. The Chairman of the IDA Board of Trustees, Mr. William A. M. Burden, wrote Secretary Laird that the impact on IDA staff morale and personnel retention raised serious doubts as to IDA's long-term stability and prospects for continuing its services to the DoD.<sup>40</sup>

DoD officials, including the DDR&E, the Directors of ARPA and WSEG, and the principal R&D officers of the Services, protested the cuts, appearing before Congress on April 5, 1972 to defend the FCRC's and their importance to the defense establishment. Dr. Foster, the DDR&E, emphatically denied that the work performed by FCRC's could be accomplished as effectively by private companies or inhouse civil service personnel. He stressed the advantages of FCRC's in terms of flexibility, independence, objectivity, and detachment from the pressures and distractions of day-to-day responsibilities. He proposed a series of corrective actions "to restore your confidence in these organizations and in our ability to handle them."<sup>41</sup> Among the corrective measures he listed the following:

- (1) Thorough reviews of tasks assigned to FCRC's to ensure that they could not be performed effectively and objectively by other organizations.

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(cont'd) for FY 1972, 92d Cong., 1st sess. (Nov. 11, 1971), pp. 106ff.

*The New York Times* printed its first Pentagon Papers installment on June 13, 1971, and the purloined material began to flood the market shortly thereafter.

<sup>40</sup>William A. M. Burden, Chairman, Board of Trustees, IDA, to Secretary of Defense Melvin Laird (Apr. 3, 1972).

<sup>41</sup>U.S., Congress, Senate, Committee on Armed Services, *Hearings on S. 3108*, Part 5, "Research and Development," 92d Cong., 2d sess., 1972, p. 3231.

- (2) Limitations on the amount of work that could be assigned to FCRC's, in the form of professional manpower ceilings.
- (3) Stabilization of the total DoD effort in FCRC's at the projected FY 72 manpower levels for the following 3 years.
- (4) Overall budgetary ceilings for each class of FCRC in lieu of individual FCRC budget line items, to secure the advantages of competition among them, with DDR&E managing allocations within each class.
- (5) Assignment of specific responsibility for each FCRC to a military Service or Defense agency, with conflicts among users adjudicated by DDR&E.<sup>42</sup>

Meanwhile, in view of the fact that WSEG's dependence on major contractual support from IDA was now rendered precarious by Congressional uncertainties, the Director of WSEG was asked to examine the possibility of forming a new inhouse study organization to replace it.<sup>43</sup> His report, submitted to both DDR&E and the JCS, weighed various alternatives and concluded, in substance, that an inhouse agency closely resembling the current WSEG organization, built on the same conceptual basis, was still desirable.

The arguments and conclusions of the Director's report provide an interesting commentary, from the perspective of the 1970's, on some of the principal elements of the original WSEG concept. The report assumed the need for professional military participation in any new organization, for example, but

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<sup>42</sup>Ibid. Foster also proposed phasing out RAC and HumRRO as FCRC's, both under contract to the Department of the Army, and deleting university laboratories from the FCRC list.

<sup>43</sup>The WSEG Director at this time was Lt. Gen. Arthur W. Oberbeck, USA, who succeeded Adm. Masterson in September 1969. Gen. Oberbeck had graduated from West Point at the top of his class in 1937, was commissioned in the Corps of Engineers, received an M.S. in Engineering from the University of California in 1940, and prior to his assignment to WSEG was Commanding General of the U.S. Army Engineer Center at Ft. Belvoir and Commandant of the Engineer School.

recommended joint military-civilian staffing in preference to military staffing alone:

Two basic possibilities exist--professional manning by a combination of military and civilian scientists, or military alone. It seems doubtful that an organization of all military members could be supported which would have the range of analytical competence, and the experience and variety in scientific skills necessary to conduct valid studies in the many areas required, and which are now found in the IDA organization.<sup>44</sup>

In addressing the alternative of establishing an inhouse analytical support agency reporting to the JCS alone, the Director suggested that certain benefits could be realized by bringing together all OJCS study resources, currently fragmented among JSIPS, SAGA, and WSEG, into a single "expanded WSEG" type of organization. Possible benefits would include savings in personnel, including some positions at the general and flag officer level; more effective coordination of the whole JCS study program; more effective use of civilian and military analysts; and possibly a "psychological advantage" in greater direct control over the study output. The functions of the three organizations appeared to be sufficiently compatible to permit consolidation, he felt, although it might be necessary to maintain separately identifiable elements for certain highly classified or sensitive functions performed by SAGA.<sup>45</sup> Such a consolidation would create a sizable aggregation of some 215 personnel, at present manning levels, of whom about half would be classified as professional analysts and program monitors,

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<sup>44</sup> Memo from Lt. Gen. Arthur W. Oberbeck, Director of WSEG, to Dr. John S. Foster, DDR&E, and to Lt. Gen. John W. Vogt, Director, Joint Staff, "Development of a WSEG In-house Capability to Perform Studies and Analysis" (Jan. 7, 1972).

<sup>45</sup> Specifically, preparation of the Red Integrated Strategic Offensive Plan (RISOP), wargaming the SIOP versus the RISOP, and conducting senior-level politicomilitary simulations.

most of them military; another 215 or so could be added, about half of this latter number analysts as well, to replace the contract support received by JSIPS and WSEG.<sup>46</sup>

As to whether a new inhouse organization should report to both JCS and DDR&E, as in the past, or to the JCS alone, the Director argued for the former alternative--primarily for the benefit of DDR&E. He cited DDR&E's increasing utilization of WSEG in recent years, due partly to the demands of DDR&E's new operational test and evaluation program, and partly to the "lag" in JCS tasking as a result of "changing ideas" in the Joint Staff about access to sensitive information by contractor personnel--a clear reference to the Ellsberg syndrome. He said that DDR&E could benefit considerably from WSEG's experience in providing "outside, independent, and objective analytical capability" in its operational testing program; that DDR&E needed an operational military contribution as well as civilian technical support; and that other DDR&E alternatives--ad hoc studies by the DDR&E staff, purely civilian contract studies, or studies performed for DDR&E by JCS or Service agencies--would not be as satisfactory:

None of these would appear to provide the direct response by a balanced military operational civilian scientific team to the degree now provided by WSEG.<sup>47</sup>

Moreover, he added, he could foresee no major disadvantages to the JCS from a dual reporting arrangement:

Response to JCS requirements would continue to be direct and of highest priority as it is under current arrangements. Responding directly to two "bosses" for study tasking has created no difficulties in the conduct of the WSEG study program, and there is no evidence that it has

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<sup>46</sup>Without allowing for personnel savings, the consolidated total in Oberbeck's calculation would be some 430 personnel, about half of them professionals and half support staff.

<sup>47</sup>Ibid.

caused any compromise in security for either agency.<sup>48</sup>

The WSEG Director's report on possible inhouse replacements for the WSEG/IDA arrangement, including his provocative suggestion of a single consolidated WSEG-type organization for the JCS, was held in abeyance, and there is no evidence that it was considered further. After Dr. Foster's reclama to Congress in the spring of 1972 and his proposals for tighter DoD management controls, Congressional demands for phasing out the FCRC's appeared to subside and the FCRC problem became less urgent. It did not entirely disappear, however, and surfaced again a few years later, primarily as an internal issue, at the time of WSEG's disestablishment.

#### 6. The IDA Users Group

One of the more significant developments for WSEG during this period was the appointment of its Director as Chairman of a formal "Users Group" of IDA clients, in order to coordinate the DoD tasking of IDA. While the timing of the appointment was strongly influenced by growing Congressional disenchantment with the FCRC's and increasing pressure on the DoD to exercise better management controls, the move was part of a trend that had begun prior to the 1970's.

In December 1965, OSD put DDR&E in charge of all policy and management relationships with IDA on behalf of the entire DoD. This action was taken to impose better order on the tasking of IDA by its multiple clients, to establish a procedure for adjudicating competing demands, to assure more effective utilization of limited IDA resources, and to improve DoD-IDA interaction generally.<sup>49</sup>

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<sup>48</sup> Ibid.

<sup>49</sup> Deputy SecDef (Cyrus Vance), Memo for Secretaries of Military Departments, Chairman of the JCS, DDR&E, and Assistant Secretaries of Defense, "Assignment of Tasks to the Institute for Defense Analyses" (Dec. 18, 1965).

Under procedures adopted at the time, DDR&E coordination of IDA work was relatively loose and informal. The task assignments originated with each IDA client, as before, but there was greater exchange of information and mutual review of tasks among clients under DDR&E's overall supervision. Each of IDA's chief customers--the Assistant Secretaries for ISA and Systems Analysis, and the Directors of Civil Defense, ARPA, and WSEG (the latter on behalf of other ODDR&E and OJCS offices)--simply circulated copies of planned task orders to DDR&E and to each other. If there was no objection from any quarter, the tasks flowed to IDA without interruption. If there were any problems, because of undesirable overlap, redundancy, interference, or conflict of resources, schedules, and the like, comments and suggestions were made to the initiating agency, with copies to DDR&E, and disagreements were then adjudicated informally. Lack of comment signified agreement.<sup>50</sup>

Some dissatisfaction with this process surfaced later in 1966, during the course of Gen. Taylor's wide-ranging discussions on DoD/IDA relations with senior officials in OSD and the JCS. Complaints were registered about inordinate delays and difficulties in processing task requests, about the lack of clear ground rules for allocating IDA resources among prospective claimants, and about the absence of systematic followup and evaluation.<sup>51</sup> In order to expedite and strengthen the process, OSD issued a formal statement of policy guidance on IDA relationships, reaffirming the position of DDR&E as the central point of management contact for IDA business. Drafted by DDR&E and approved by the Deputy SecDef, the policy guidance stated, among other things:

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<sup>50</sup>Deputy DDR&E, Memo for Assistant SecDef for ISA, et al., "Exchange of Information on Proposed IDA Tasks" (Feb. 25, 1966).

<sup>51</sup>Deputy SecDef, Memo for CJCS, DDR&E, et al., "DoD/IDA Relationships" (Dec. 7, 1968); Director, WSEG, Memo for Record, "Meeting with Secretary Vance" (Dec. 9, 1966).

There should be one point of management contact between IDA and OSD. This point of contact is DDR&E and will represent OSD in establishing policy guidance to be used in negotiating contracts ... and to prepare and manage IDA's efforts among the consuming agencies.

Responsibility for coordinating these tasks between OSD components will remain with the head of each of the components. In addition, the Deputy DDR&E will review task statements and insure that coordination has been adequate. Task statements that are of a continuing nature will be reviewed and updated at least annually.

It is proposed that the reports and studies which are IDA's principal means of advising the OSD will be evaluated on a regular basis. The responsible head of the component of the OSD which receives a particular report or study will evaluate the document...<sup>52</sup>

There were several anomalous aspects to this situation, because the DDR&E and the JCS were "lateral" agencies, because WSEG was administratively subordinate to DDR&E but operationally responsive to both DDR&E and the JCS, and because of WSEG's special relationship to the WSED division of IDA, which required special channels and procedures for dealing with the WSEG/WSED portion of the IDA work. Under the circumstances, it was natural for the Director of WSEG to task the WSED division of IDA, and to assume the role of "middleman" in effecting the necessary coordination between the DDR&E and the JCS.

From the standpoint of the Joint Staff, this was an acceptable arrangement. The fact that WSEG was a multiservice military organization, headed by a three-star Director and a board of general flag officers from each Service, modelled on familiar Joint Staff lines, and presumptively disposed toward the protection of JCS interests, made WSEG a congenial information and communication channel and a convenient mechanism for

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<sup>52</sup> DDR&E (Dr. John S. Foster, Jr.), Memo for Mr. Horwitz (Assistant SecDef for Administration), attaching "Policy Guidance for IDA," approved by Deputy SecDef Vance (Dec. 16, 1966).

liaison and coordination with DDR&E and other OSD agencies. WSEG also handled many of the administrative details involved in planning, programming, budgeting, contracting, and similar functions with respect to IDA studies for the JCS, which required negotiations both with OSD on the one hand and IDA on the other. In these respects, the JCS became accustomed to regarding the Director of WSEG as their principal agent for external study management.<sup>53</sup>

For the DDR&E, the Director of WSEG became the contact for those IDA studies that required substantial military participation. For studies of a predominantly technical nature, which did not appear to require major operational military inputs, DDR&E utilized other channels to IDA, working either via ARPA or directly to the RESD division of IDA. Thus, the DDR&E employed the Director of WSEG as a tasking channel only for WSEG/WSED work, which was where DDR&E and JCS interests were most likely to require direct coordination.<sup>54</sup>

After the 1967 reorganization of IDA, which formally terminated the intimate WSEG/WSED relationship and dissolved the WSED division, Gen. Taylor raised the question to DoD of designating an overall authority "to coordinate all aspects of the readjustment affecting more than one agency or DoD as a whole."<sup>55</sup> Because DDR&E had previously been assigned policy coordination responsibilities for IDA matters, and because of the fact that most of IDA's contractual support came from RDT&E funds, the SecDef again designated DDR&E as the coordinating authority. At the same time, however, he confirmed the role of the Director of WSEG as the day-to-day contact point between

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<sup>53</sup> Interviews.

<sup>54</sup> DDR&E, Memo to Assistant Secretaries for ISA and Systems Analysis; Directors for Civil Defense, WSEG, and ARPA, "DoD-IDA Meeting" (July 17, 1967).

<sup>55</sup> President, IDA (Gen. Maxwell D. Taylor), to SecDef (Robert S. McNamara) (June 28, 1967).

IDA and the Joint Staff by designating him--"under Dr. Foster"-- as the individual "to handle the specific study requirements and tasks of the Joint Staff with respect to IDA."<sup>56</sup>

The next stage in the evolution of WSEG into the principal coordinator of IDA tasks occurred in 1972, when the new DoD policies for FCRC's were promulgated. The policies called for the designation of a "cognizant DoD component" for each FCRC, in order to ensure compliance with DoD policies and regulations, including ground rules concerning the need to have the work done; to implement ceiling allocations and distribution of the tasks; and to review and evaluate the studies produced. For IDA as a whole, the DDR&E appointed WSEG as the "cognizant component," with the Director of WSEG as the responsible officer, and instituted the Users Group, chaired by the Director of WSEG, as the coordinating authority for task assignments.<sup>57</sup>

Chairing the IDA Users Group became a major function of the Director of WSEG. The Group consisted of representatives of the OJCS, OSD component offices, and Defense agencies that normally used IDA or wanted to use IDA. The actual number of representatives fluctuated, depending on who wished to participate, but came to include as many as 15 or more members.<sup>58</sup>

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<sup>56</sup>DDR&E (Dr. John S. Foster, Jr.), Memo to SecDef, "Reply to General Taylor's Letter" (July 6, 1967); and Deputy SecDef (Paul Nitze) to Gen. Taylor, President, IDA (July 12, 1967).

<sup>57</sup>DDR&E (Dr. John S. Foster, Jr.), Memo for Secretaries of the Military Departments, Assistant Secretaries of Defense, and Directors of Defense Agencies, "Implementation of New Policies for FCRCs" (Aug. 11, 1972).

<sup>58</sup>In 1976 there were 18 members in addition to the Director of WSEG (Chairman):

Director, Joint Staff, OJCS  
Deputy Director, Research and Advanced Technology, ODDR&E  
Deputy Director, Strategic and Space Systems, ODDR&E  
Deputy Director, Tactical Warfare Programs, ODDR&E  
Deputy Director, Test and Evaluation, ODDR&E  
(continued on next page)

The Group was the chief DoD mechanism for formulating the IDA study program presented each year for the approval of the DDR&E. As it operated under its first Chairman, Lt. Gen. Glenn A. Kent, USAF, Director of WSEG from February 1972 to September 1974,<sup>59</sup> there was no fixed or predetermined apportionment of the IDA effort among users. Established policy required that the tasks bear on important issues to be addressed in the DoD, that there be an identifiable product, such as a report, and that the work be inappropriate for private firms to attempt by reason of its sensitive character.<sup>60</sup> The aim of the Users Group was to select tasks within such guidelines according to their intrinsic merits and according to IDA's capability to accomplish them.<sup>61</sup> Submissions from users were assembled on an annual basis, reviewed for clarity and possible duplication by the Director of WSEG, and examined by IDA representatives to estimate the necessary level

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Assistant Director, Net Technical Assessment, ODDR&E  
Assistant Director, Planning, ODDR&E  
Director, Net Assessment  
Assistant SecDef, Installations and Logistics  
Assistant SecDef, Program Analysis & Evaluation  
Assistant SecDef, International Security Affairs  
Assistant SecDef, Manpower & Reserve Affairs  
Assistant SecDef, Intelligence  
Director, Defense Advanced Research Projects Agency  
Director, Defense Intelligence Agency  
Director, Defense Nuclear Agency  
Director, Telecommunications & Command & Control Systems  
Director, Defense Civil Preparedness Agency

<sup>59</sup>Gen. Kent had a distinguished background in R&D, weapons planning, and operations research and analysis. He had received an M.S. at both Cal. Tech. and Berkeley, served in USAF technical weapons posts in the 1950's, in R&D plans and analysis in both DDR&E and the USAF through most of the 1960's, and prior to his assignment as Director of WSEG had been Assistant Chief of Staff for Studies and Analysis.

<sup>60</sup>See above, p. 299.

<sup>61</sup>Director, WSEG (Lt. Gen. Glenn A. Kent), Memo for Joint Users Group--IDA, "IDA Work for FY 1975" (Feb. 7, 1974).

of effort and the IDA capability to perform each study. A collective screening, selection, and refinement process then followed, intended to formulate a consolidated study program in consonance with the man-years of study effort that could be provided within the IDA ceiling. The proposed study program was then forwarded by the Director of WSEG to the DDR&E for resolution of any disagreements and final approval. DDR&E approval constituted authority for the various users to issue task orders to IDA for the specified studies.<sup>62</sup>

A great deal of time-consuming administrative activity was associated with the Users Group, including arranging the necessary communication among the various users and IDA and monitoring task orders for consistency with the approved study program, in terms both of substance and level of effort. The real crux of the process, however, was the allocation of WSEG funding between the OJCS and ODDR&E. In accordance with a precedent set by Gen. Kent, the initial target was always a 50-50 allocation, but the end result could differ considerably, depending on the actual study proposals, IDA's staff resources, and the bargaining success of the negotiators. The Director of WSEG was clearly in a strategic position to influence the outcome. He was frequently instrumental in determining which DDR&E tasks were appropriate for WSEG funding--that is, which were "operational" studies in which military participation was necessary or desirable--and in mediating competing demands by offices of ODDR&E that were supported by both DARPA and WSEG funding. This gave him considerable leverage vis-à-vis the competing claimants.<sup>63</sup>

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<sup>62</sup>Interviews. See also Lt. Col. Walther, "Weapons Systems Evaluation Group: An Overview."

<sup>63</sup>Col. Charles E. Bayliss, unclassified briefing, "Joint Users Group Schedule," undated, copy in WSEG files. See also Lt. Col. Walther, "The WSEG Administered IDA Contract" (Mar. 8, 1976).

The WSEG Director's role in the Users Group after 1972 did not result in a greater preponderance of WSEG work for the JCS. Any "military" bias toward JCS tasks was apparently overshadowed by a relative decline in JCS study initiatives, triggered in part by reaction to the Ellsberg case, but also--since it coincided with a sharp cutback in the SAGA effort--due to decreasing JCS demands for analytical support. At the same time, there was a compensating increase in DDR&E requirements for WSEG support in weapons testing and evaluation, so that the net effect was a decided swing toward more DDR&E work. The changing balance between JCS and DDR&E studies over the years is shown in Table 2.

Table 2. NUMBER OF PUBLISHED WSEG REPORTS BY SPONSOR, 1967-1977

Year	Sponsor			Total
	JCS	DDR&E	Other	
1967	12	6	-	18
1968	13	5	-	18
1969	13	1	1	15
1970	5	1	1	7
1971	14	6	1	21
1972	7	10	-	17
1973	8	14	1	23
1974	12	20	5	37
1975	10	17	3	30
1976	5	13	1	19
1977	<u>1</u>	<u>2</u>	<u>-</u>	<u>3</u>
Total	100	95	13 <sup>a</sup>	208

<sup>a</sup>Of these 13, 2 were directly for the SecDef, 4 for ASD(I&L), 2 ASD(PA&E), 1 ASD(I), 1 Director, Net Assessment, 1 IR&D Council, and 2 WSEG. The reader should note that these figures mask the degree to which other users tasked WSEG indirectly "through" the JCS or DDR&E.

Source: WSEG Annual Reports.

The specific Users Group allocations made during the last years of WSEG, years after the Ellsberg incident and following personnel changes both in the JCS and at the Director, WSEG, level, indicate that the balance became fairly stable (See Table 3).

Table 3. WSEG/IDA STUDY PROGRAM, FY 75-77T

Sponsor	FY 75		FY 76/77T	
	Man-years	No. Tasks	Man-years	No. Tasks
JCS	20.9	7	33	11
DDR&E	60.6	23	74.5	26
Other OSD	<u>5.0</u>	<u>4</u>	<u>      </u>	<u>      </u>
Total	86.5	34	107.5	37

Source: Lt. Col. Walther, "Weapons Systems Evaluation Group: An Overview."

#### 7. Tasks and Task Output

In the 1967-77 period the balance of WSEG efforts shifted to favor work for the DDR&E--a sharp reversal from nearly 3 to 1 in favor of JCS studies in the 1967-71 period to roughly 2 to 1 in favor of DDR&E from 1972 to 1977. As Table 4 indicates, the shift in primary sponsorship of WSEG studies took place from 1971 to 1972. This change has generally been attributed to the effect on the JCS of the Pentagon Papers episode of June 1971, in which *The New York Times* and other newspapers published the top secret text of an internal OSD history of high-level decisionmaking on Vietnam.<sup>64</sup> The circumstances in which this occurred--the supersensitive material was surreptitiously Xeroxed from copies at RAND and circulated by a RAND research analyst--while representing both a flagrant abuse of the rights of privileged access and open defiance of government security regulations, cast a shadow of suspicion

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<sup>64</sup> Interviews.

Table 4. WSEG REPORTS BY SPONSOR, 1967-1977

Year	Sponsor			Total
	JCS	DDR&E	Other	
1967-71				
1967	12	6	-	18
1968	13	5	-	18
1969	13	1	1	15
1970	5	1	1	7
1971	<u>14</u>	<u>6</u>	<u>1</u>	<u>21</u>
Total	57	19	3	79
1972-77				
1972	7	10	-	17
1973	8	14	1	23
1974	12	20	5	37
1975	10	17	3	30
1976	5	13	1	19
1977	<u>1</u>	<u>2</u>	<u>-</u>	<u>3</u>
Total	43	76	10	129
Grand total, 1967-77	100	95	13	208

on the integrity and reliability of all external research organizations. Agencies like the OJCS reviewed their practices in farming out studies to FCRC's and other outside contractors, and contract managers overhauled their procedures for safeguarding classified information. Fortunately, IDA had an exceptionally clean security record, and the WSEG arrangement provided extraordinarily tight measures for protecting JCS or other highly sensitive material, but even WSEG and IDA were not completely immune from the apprehension and uncertainty in the atmosphere.

Although the impact of the Pentagon Papers episode was undoubtedly considerable, as many interviews suggest, there were also other factors at work. The climate of confidence that had for many years characterized the relationship between the DoD and the world of academic science and technology was changing. The student and faculty protest movements of the late 1960's had strained what were formerly close and cooperative ties. Many academic consulting and advisory relationships, some formalized in DoD-supported university laboratories or research institutes, or in quasigovernmental organizations like FCRC's, had gone sour or become strained and difficult to maintain.<sup>65</sup> IDA itself became a focus for academic antiwar protests, and its member universities were subjected to faculty and student pressures to cancel their ties to IDA. Finally, in 1968, the deteriorating situation compelled IDA to revise its corporate structure, terminate the institutional memberships of leading universities that had been its founding principle, and reorganize as a private corporation of individual members, drawn from the academic community and the public at large.<sup>66</sup> IDA thereafter continued to operate without the formal university sponsorship that had been a conspicuous part of its image and a strong drawing card in attracting professional staff members. Under the circumstances, IDA's ability to maintain the overall high quality of its staff was a subject of some concern.<sup>67</sup>

Another factor that affected the pattern of JCS tasking was the wide distribution given to WSEG/IDA reports. This had an indirect but cumulative effect, building up during the McNamara years, when OSD offices gained virtually unrestricted

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<sup>65</sup> See statement of Malcolm Currie, DDR&E, in U.S. Senate Appropriations Committee, *DOD Appropriations, FY 1976, Part I*, 94th Cong., 1st sess., p. 450.

<sup>66</sup> IDA Press Release (June 4, 1968).

<sup>67</sup> Director, WSEG, Memo for Principal Deputy DDR&E, "IDA Board of Trustees Report" (Jan. 17, 1969).

access to all formal studies and analyses produced throughout the DoD. This was troublesome for the JCS, not only because they considered many of the studies too sensitive for extensive distribution, but also because they feared that, in the hands of officials with incomplete background information, results could be misinterpreted, taken out of context, or otherwise improperly used. The Chairman of the JCS during the early 1970's, Adm. Thomas H. Moorer, expressed such misgivings to the WSEG Review Panel in 1975, in explaining why the JCS had turned away from WSEG to SAGA and other internal sources of analytical support over which the JCS could exercise a greater measure of control in terms of disseminating study results.<sup>68</sup> Other JCS observers cited the traditional protective concern of the JCS for the confidentiality of "internal" proceedings, particularly in the preliminary, deliberative stages of a project when analytical inputs were still being assimilated and consideration of the issues was still underway.<sup>69</sup>

The changes that occurred in the JCS tasking of WSEG during the 1970's are even more apparent in the subject matter of the reports than in the mere number issued. WSEG produced 43 reports for the JCS during the 1972-77 period (one-third of the total WSEG reports produced during those years), but 20 of them, or nearly half, were in one major category, operational test and evaluation. These were primarily on operational testing and evaluation of strategic missiles, an area in which WSEG had played a unique and virtually indispensable role since the early 1960's.<sup>70</sup> The number of reports falling into the other

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<sup>68</sup>Lt. Col. Harry J. Walther, Memo for Record, "WSEG Review Panel Meeting" (Nov. 18, 1975). At the same time, Adm. Moorer also assured the panel that the JCS needed the external perspectives, independence, and expertise of WSEG/IDA, together with the WSEG/IDA ability to carry out studies across Service lines. Ibid.

<sup>69</sup>Interviews.

<sup>70</sup>See above, pp. 242-45.

major subject categories in which WSEG work for the JCS had been concentrated--the strategic weapons/warfare area and command and control--declined markedly. This was a significant development, since in these two areas the JCS had retained special, and relatively undiminished, responsibilities over and above those of the Services or other DoD agencies; that is, in the area directly pertinent to the SIOP, in which WSEG had a sustained record of accomplishment and proficiency, and in the area of NMCS and WWMCCS management, in which WSEG had contributed the bulk of the analytical support required by the JCS in structuring and facilitating the operational military command function. Table 5 shows the annual distribution of WSEG reports for the JCS, by major category, for the periods 1967-71 and 1972-77.

The number of reports produced does not accurately reflect the relative distribution of effort, of course, since individual projects varied considerably in size and duration. Moreover, independent of total size or effort expended, some projects resulted in single, comprehensive reports, while others were reported upon serially, in multiple reports. Complete annual breakdowns of man-month or man-year expenditures by individual report or by subject category are not available. A sample of what is available reveals the distribution of man-year expenditures by subject category for IDA/WSEG studies only, for the JCS, for FY's 70-74, depicted in Table 6.

As the table shows, there were marked fluctuations in the IDA/WSEG effort in support of the JCS during these years, both in the total man-year expenditure and distribution of man-years among project areas. Moreover, the figures do not correlate well with the number of tasks undertaken or the reports produced, because the variations in amount were so great. In FY's 70 and 71, for example, the number of man-years spent on just two strategic weapons studies totalled 17.5 and 15.9, respectively, representing about one-half and one-third of the

Table 5. WSEG REPORTS FOR THE JCS BY MAJOR SUBJECT CATEGORY, 1967-1977

Year	Category				Total JCS	Total WSEG
	Strategic <sup>a</sup>	General Purpose <sup>a,b</sup>	Command & Control	OT&E		
1967-71						
1967	2	4	5	1	12	18
1968	3	5	5	-	13	18
1969	3	3	7	-	13	15
1970	1	1	2	1	5	7
1971	<u>3</u>	<u>3</u>	<u>4</u>	<u>4</u>	<u>14</u>	<u>21</u>
Total	12	16	23	6	57	79
1972-77						
1972	-	-	2	5	7	17
1973	-	2	2	4	8	23
1974	-	4	2	6	12	37
1975	-	5	1	4	10	30
1976	3	1	-	1	5	19
1977	<u>-</u>	<u>1</u>	<u>-</u>	<u>-</u>	<u>1</u>	<u>3</u>
Total	3	13	7	20	43	129
Grand Total	15	29	30	26	100	208

<sup>a</sup>Other than OT&E.

<sup>b</sup>Includes miscellaneous subjects such as logistics.

Table 6. MAN-YEARS OF IDA/WSEG STUDY EFFORT FOR JCS  
BY MAJOR SUBJECT CATEGORY, FY 70-74

FY	Category				Total
	Strategic <sup>a</sup>	General Purpose <sup>a,b</sup>	Command & Control	OT&E	
70	17.5	5.9	5.7	2.3	31.4
71	15.9	17.8	11.7	1.9	47.3
72	-	7.6	9.2	2.5	19.3
73	-	6.2	4.5	2.3	13.0
74	-	<u>15.4</u>	<u>6.7</u>	<u>2.9</u>	<u>25.0</u>
Total	33.4	52.9	37.8	11.9	136.0
Percent	24.6	38.9	27.8	8.7	100.0

<sup>a</sup>Other than OT&E.

<sup>b</sup>Includes miscellaneous subjects such as logistics.

total IDA/WSEG effort for the JCS for those 2 fiscal years. During the same years 38.5 man-years, well over half of the total expended for the JCS, were spent in producing just 4 reports, about one-fifth of the report output for the 2 fiscal years. During the next few years, by contrast, there was no expenditure of man-years at all.<sup>71</sup>

Despite these fluctuations, it is clear from the record that there was an overall decline in JCS tasking of WSEG during the 1970's and a corresponding increase in DDR&E tasking. The latter occurred primarily in the OT&E area, prompted mainly by the Nixon-Laird emphasis on more thoroughgoing testing and evaluation of hardware prior to procurement decisions--"fly before buy" weapons acquisition policies--as a way of reducing the incidence of cost overruns, schedule slippages, and performance

<sup>71</sup>WSEG Records, "JCS Studies Conducted Through WSEG/IDA" (Feb. 27, 1974).

failures experienced in the past.<sup>72</sup> The administration hoped that relying less on educated guesses and paper studies and more on empirical data and realistic operational tests would produce more accurate and reliable estimates for top-level decisions. DDR&E and its expanded Directorate for Test and Evaluation (DDT&E) were charged with ensuring that major operational tests cut across Service lines and took into account multiple system interfaces, combined operations, and realistic combat environments. DDT&E in turn sought the assistance of WSEG as an established agency with the appropriate independence, supra-Service status, joint military participation, built-in technical access, and background of analytical experience. WSEG was asked to assist primarily in developing test objectives, designing and monitoring tests, and analyzing and evaluating test results.<sup>73</sup>

The increased number of DDR&E OT&E studies altered the pattern of WSEG reports considerably.<sup>74</sup> Of the 208 WSEG reports produced during the years 1967-77, fully one-third of the total (73) were OT&E reports. Of these, 63 were produced during the last 5-year period, from 1972 to 1977, 43 of them for DDR&E. These 43 represented well over half of the overall WSEG effort

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<sup>72</sup>This emphasis was twofold, in that the proposal was (a) to defer production decisions until successful development and demonstration, if possible, of hardware prototypes, and (b) to improve the validity and applicability of the tests used and the test results. The 1970 Blue Ribbon Defense Panel found that the ad hoc operational testing on which the JCS and OSD had previously relied was too limited, fragmented, and poorly designed and executed to produce useful data in support of decisionmaking. See the Blue Ribbon Defense Panel, *Defense for Peace*, pp. 88-91.

<sup>73</sup>DDT&E (Lt. Gen. Alfred D. Starbird), Memo for Record, "DDT&E/WSEG Relationships for Joint and Inter-Service Testing" (June 7, 1972).

<sup>74</sup>The reader should again be reminded that these figures reflect output as measured by individual reports, and do not accurately reflect expenditure of effort.

for DDR&E during the 5-year period, which resulted in a total of 76 reports. All 43 considered general purpose weapons and equipment; WSEG's contributions to OT&E in the strategic weapons field were carried out under JCS auspices as part of the WSEG effort for the OJCS.

For the 1967-77 period as a whole, the breakdown of WSEG studies by broad category reflected significant differences between JCS and DDR&E tasking, as Table 7 indicates.

Table 7. WSEG REPORTS BY CATEGORY AND SPONSOR, 1967-1977

Category	Sponsor			Total
	JCS	DDR&E	Other	
Strategic <sup>a</sup>	15	6	-	21
General Purpose <sup>a,b</sup>	29	38	13	80
Command and Control	30	4	-	34
OT&E	<u>26</u>	<u>47</u>	<u>-</u>	<u>73</u>
Total	100	95	13	208

<sup>a</sup>Other than OT&E.

<sup>b</sup>Includes miscellaneous subjects such as logistics.

It is hardly surprising that differences in institutional focus and interest between the JCS and DDR&E should have shown up in the pattern of WSEG reports produced for them, or that their utilization of WSEG should have been quite dissimilar. Their respective responsibilities and analytical support requirements were not the same. Moreover, both the JCS and DDR&E had other sources of analytical support besides WSEG, although none perhaps with WSEG's particular combination of attributes, including its ability to operate in regions where the interests of both sponsors overlapped.

Studies produced by WSEG during the 1972-77 period in the general purpose category are also of considerable interest.

Excluding both a handful of command and control studies that pertained to nonstrategic systems or warfare (6) and the relatively large number of OT&E studies that were concerned with general purpose systems (53), WSEG produced 80 reports during the period that fall into the general purpose/miscellaneous category. Of these, 10 were studies of various aspects of the military operations in Southeast Asia for both the JCS and DDR&E; 3 were on the 1973 Mideast War for a mixed OSD/JCS group; 7 were logistics studies, 4 of which were for the ASD(I&L) or PA&E; and 10 were methodology/model type studies, 8 of which were in support of JCS/SAGA requirements. A total of 31 of the 80 reports considered ground, naval, or air weapons or warfare (other than the above), and the remaining 19 were on a variety of subjects not clustered in any major grouping. The latter included such topics as the cost/effectiveness of NATO force improvements or the analysis of military R&D objectives (for the JCS), and methods for eliminating vulnerability to nonnuclear threats and selected defense systems life-cycle costs (for DDR&E). Table 8 summarizes the distribution of general purpose reports for the period, by subject and sponsor.

Of course, no purely statistical summary can convey the importance or value of the WSEG studies that were produced during the 1967-77 period. However, there is little hard evidence of any kind on the impact of the WSEG output. It was difficult even for WSEG to monitor the utilization of its studies in any systematic manner. As WSEG officials observed, recipients generally regarded WSEG studies as "useful," "timely," or even "influential," but "specific actions and the amount of influence is very often not made known to WSEG."<sup>75</sup> Moreover, the large number and variety of WSEG studies produced in the period--208 reports of all kinds and sizes on a wide range of subjects and

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<sup>75</sup>WSEG Memo, "Some Actions Taken as a Result of WSEG Studies," prepared for Senate Armed Services Subcommittee (Feb. 2, 1972).

Table 8. WSEG GENERAL PURPOSE REPORTS<sup>a</sup> BY SUBJECT AND SPONSOR, 1967-1977

Subject	Sponsor			Total
	JCS	DDR&E	Other	
Ground weapons/warfare	1	11	-	12
Naval weapons/warfare	4	5	-	9
Air weapons/warfare	1	9	-	10
Southeast Asia war	6	4	-	10
Mideast War (1973)	-	-	3	3
Methods/models	8	-	2	10
Logistics	1	2	4	7
Miscellaneous	<u>8</u>	<u>7</u>	<u>4</u>	<u>19</u>
Total	29	38	13	80

<sup>a</sup>Other than strategic, command and control, or OT&E.

a wide variety of potential users, including 100 reports formally sponsored by the JCS--precluded the application of commensurate standards or criteria. As a consequence, only scattered impressions, based on selective feedback, were recorded by WSEG, primarily in the form of illustrative highlights to emphasize positive contributions rather than as representative or balanced appraisals. Nevertheless, keeping the appropriate caveats in mind, it is worth reviewing the major accomplishments reported.

WSEG issued a substantial number of additional studies during this period in the area of strategic warfare, which was one of the main fields in which the JCS had asked WSEG to maintain analytical support capabilities.<sup>76</sup> Some of these were part of the operational test and evaluation series that had been initiated in the early 1960's to develop improved guidelines for missile test and evaluation and assess the validity and comparability of results, for use in SIOP planning and other

<sup>76</sup>See above.

purposes, and performance of these studies demonstrated a continuing JCS reliance on the WSEG/IDA operation for authoritative technical assistance on the subject. The principal reports in this series issued during the 1967-77 period were:<sup>77</sup>

- R-121, *Accuracy of Strategic Missile Systems*, December 1967
- R-140, *The Polaris A3 Evaluation Report*, February 1969
- R-92B, *Revised Guidelines for Use in Evaluating Strategic Ballistic Missile Operational Test Programs*, June 1970
- R-171, *FY71 Assessment of the Polaris A3 Operational Test Program*, September 1971
- R-172, *Special Assessment Report: The Minuteman II Operational Test Program*, September 1971
- R-173, *FY1971 Assessment of the Pershing 1a Operational Test Program*, October 1971
- R-176, *An Assessment of the Initial Test Programs of the MINUTEMAN G Weapon System*, November 1971
- R-180, *Assessment of the Operational Test Program of the MINUTEMAN F Weapon System*, January 1972
- R-182, *Assessment of the Polaris A2 Test Programs*, June 1972
- R-184, *Assessment of the MINUTEMAN B Test Programs*, May 1972
- R-194, *Assessment of the Pershing Test Program*, November 1972
- R-195, *Assessment of the Polaris A3 Test Programs*, November 1972
- R-199, *Assessment of the MINUTEMAN F Test Programs*, January 1973
- R-202, *Assessment of the TITAN II Test Programs*, April 1973
- R-215, *Assessment of the Pershing Test Programs*, July 1973
- R-224, *Assessment of the Polaris A3 Test Programs*, January 1974
- R-229, *Assessment of the Poseidon C3 Test Programs*, March 1974
- R-231, *Assessment of the MINUTEMAN F Test Programs*, April 1974
- R-241, *Assessment of the MINUTEMAN III Test Programs*, November 1974
- R-254, *Assessment of the TITAN II Test Programs*, December 1974
- R-92C, *Revised Guidelines for Use in Evaluating Strategic Ballistic Missile Operational Test Programs*, March 1975
- R-266, *Assessment of the Minuteman II Test Programs*, May 1975
- R-272, *Assessment of the Poseidon C3 Reentry Reliability Test Programs*, July 1975
- R-274, *Assessment of the Polaris A3 Test Programs*, August 1975

In addition to these studies, WSEG undertook a number of broad strategic posture studies in direct support of the joint program for planning, particularly in the 1968-71 period. A number of these, all of which were carried out by WSEG/IDA

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<sup>77</sup>DoD-IDA Management Office, OUSDRE, *Index to WSEG Publications* (September 1978).

project teams, examined alternative strategic concepts and weapons systems applications and considered various strategic force options, changes in Soviet capabilities, budgetary and lead-time constraints, possible arms limitation agreements, and the like. According to JCS sponsors, these studies were utilized as a source of analytical material for strategic force planning, particularly for the JSOP for 1971-78 and for 1972-79.<sup>78</sup> The principal reports issued were:

- R-132, *Strategic Offensive Weapons Employment in the Presence of Defenses*, June 1968
- R-148, *Strategic Offensive Weapons Employment in the Time Period About 1975*, August 1968
- R-154, *Strategic Weapon Systems Study, 1965-1981, Phase I*, August 1970
- R-166, *Strategic Weapon Systems Study, 1975-1981, Phase II*, August 1971

After an interval of some 4 years, during which WSEG's strategic warfare efforts for the JCS were largely confined to the missile test and evaluation studies,<sup>79</sup> the examination of major strategic posture issues was resumed in 1976 with R-290, *The Relative Value of Cruise Missiles to the US and the Soviet Union* (April 1976), and R-297, *Alternative Mixes of Strategic Offensive Forces Within the Vladivostok Accords* (October 1976), both performed by IDA. The latter study analyzed the possible effects of alternative force levels and mixes of systems upon American capabilities to achieve specified national military objectives, and appeared in time to have an effect on the new Carter administration's formulation of new policies and negotiating positions for SALT in early 1977. It received an unusual

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<sup>78</sup>S. J. Deitchman (Assistant Vice President for Research, IDA), "Assessment of Impact of Selected WSEG Studies, 1966-1974," information provided for DDR&E, 1976; Executive Secretary, WSEG, "Studies Completed During FY71," information for Executive Assistant, ODDR&E (Apr. 21, 1972).

<sup>79</sup>The interval coincides with the period of JCS retrenchment in SIOP-related studies after the Ellsberg incident. See above, p. 30.

degree of high-level exposure on the JCS side, with briefings to the Directors J-3 and J-5, the Director Joint Staff, the Chairman, and the full JCS, as well as on the OSD side, with briefings to the Director of the DoD SALT Task Force, the Deputy Director for Strategic and Space Systems in ODDR&E, the Deputy SecDef, and the SecDef himself (Dr. Harold Brown).<sup>80</sup>

The JCS also continued to call on WSEG for substantial analytical support in the command and control area. As indicated in Table 5, above, 30 of the 100 WSEG reports for the JCS in the 1967-77 period dealt with command and control matters, a proportion that was not radically different from that prevalent in the earlier 1960's when there was a compartmentalized WSEG/WSED effort in the field. Close to one-third of them, notably those entailing a degree of collaborative involvement with J-3 staff activities, which IDA preferred to discontinue, were contracted to Serendipity, Inc., a small local research enterprise started by several former WSEG/WSED command and control analysts. The WSEG/Serendipity projects included continuous work in helping to design, carry out, and evaluate JCS command exercises (R-138, *Analysis of Operational Procedures During Exercise HIGH HEELS '68*, March 1969; R-170, *Analysis of Operational Procedures During Exercise HIGH HEELS '71*, July 1971; and R-209, *Analysis of Operational Procedures During Exercise HIGH HEELS '73*, June 1973), as well as selected studies in direct support of OJCS command and control responsibilities (R-142, *Functional Requirements for the Modification of NMCC Facilities*, May 1969, which examined alternative facility and equipment configurations for crisis information processing and presentation; and R-156, *NMCS Concepts and Functional Requirements for 1974-1980*, December 1970, which was prepared as a reference document for planning

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<sup>80</sup>S. J. Deitchman, "Highlights of Completed IDA Program, January 1976 to Present," undated memo.

the evolutionary improvement of the National Military Command System).<sup>81</sup>

The remaining two-thirds of the WSEG command and control studies for the JCS during the period were performed by IDA. Most of these addressed somewhat broader, longer term, or more technologically oriented topics. One was a comprehensive examination of the worldwide military command and control system that was undertaken in 1971 in order to define major problem areas, assess their relative priority, and recommend a research program to seek solutions (WSEG R-159, *Command, Control, and Communications Problems*, February 1971). According to information relayed to WSEG officials, this report increased the emphasis on command and control problems at OSD and JCS levels, influenced the development of a revised DoD Directive on the WWMCCS and its management, and outlined a program of further studies, most of which was adopted by the OJCS for future implementation.<sup>82</sup>

Another major WSEG/IDA command and control project during the period dealt with JCS communications requirements. It reviewed current JCS communications capabilities worldwide, identified deficiencies, diagnosed their causes, and evaluated various programmed and proposed solutions, including both those intended to enhance communications responsiveness in crisis/limited war contexts (R-136, *Communications Study, Phase II: Current/Near-Term JCS Communications Requirements*, February 1969) and those designed to strengthen communications survivability and reliability in general war (R-151, *Communications*

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<sup>81</sup>WSEG *Annual Activities Reports*, FY 68, 69, 70; Executive Secretary, WSEG, Memo for Executive Assistant, ODDR&E, "Studies Completed During FY 1971" (Apr. 21, 1972).

<sup>82</sup>Deitchman, "Impact of Selected WSEG Studies," WSEG, "Some Actions Taken as a Result of WSEG Studies," memorandum prepared for Senate Armed Services Subcommittee (Feb. 2, 1972).

*Study, Phase III: Emergency Action Communications in the Mid-1970's*, October 1969). The studies examined what possible pay-offs would be obtainable from procedural as well as hardware improvements, considering top-level communications with middle and lower echelons worldwide under a range of limited crisis or wartime contingencies, as well as minimum essential communications requirements in extreme emergencies. Both studies stressed the potential military contributions of forthcoming satellite and other technologically advanced communications systems.<sup>83</sup>

Other noteworthy examples of WSEG/IDA command and control studies during the next few years included R-160, *Survivable Military Satellite Systems* (February 1971), which addressed options for achieving a continuously survivable satellite communications system; R-179, *Airborne Command Post Survivability Improvement* (January 1972), which examined major vulnerabilities of current airborne command post systems and evaluated a variety of improvement options; and R-269, *Impact of R&D on WWMCCS Capabilities*, which reviewed R&D programs related to command and control facilities, data processing, communications, sensors, and the like, identified those that appeared most promising, and projected the potential benefits in terms of operational effectiveness. Each of these studies was briefed at various levels in the OJCS, and each was generally well received. R-160 was used as a basis for the decisions involved in developing the next generation of military satellite communications systems.<sup>84</sup> R-179 furnished inputs that influenced both JCS and SecDef proposals regarding advanced airborne command post developments and was utilized by an interagency committee expressly established to oversee the implementation of proposed improvement

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<sup>83</sup>WSEG *Annual Activities Reports*, FY 69 and 70; see also Deitchman, "Impact of Selected WSEG Studies."

<sup>84</sup>WSEG, "Some Actions Taken as a Result of WSEG Studies."

options.<sup>85</sup> And R-269 was cited by the Chairman of the JCS, Gen. George S. Brown, USAF, as "an outstanding job ... useful to organizations throughout the WWMCCS community as well as the Joint Staff."<sup>86</sup>

One of the more unusual WSEG/IDA command and control studies of the 1967-77 period was R-131, *Political Warning in NATO* (April 1968). The study stemmed from JCS concerns that NATO force plans and proposals might be influenced by the expectation that a major conflict in Europe would probably be preceded by an extended period of "political warning"--an ambiguous and controversial concept. At the specific suggestion of the Chairman of the JCS, Gen. Earle G. Wheeler, the JCS turned to WSEG/IDA for an independent study, so that the analysis could be carried out by "a nonmilitary group with no connection with the intelligence community."<sup>87</sup> The resulting study was based on an in-depth review of historical evidence and an examination of the institutional machinery and procedures involved in the NATO warning/response cycle, together with detailed interviews with senior intelligence officials and political/military authorities in the United States and Europe. Received by the JCS as a valuable "source document" that put the political warning issue in clearer perspective, R-131 was briefed to the Chairman and senior personnel in the OJCS and was forwarded to key officials in the Department of State, DoD, and U.S. agencies in Europe concerned with NATO warning and decisionmaking procedures.<sup>88</sup>

A varied assortment of other WSEG studies of the period related to general purpose forces systems and issues, and

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<sup>85</sup>Deitchman, "Impact of Selected WSEG Studies."

<sup>86</sup>Letter to Vice Adm. Edward C. Waller, III, *ibid.*

<sup>87</sup>*WSEG Annual Activities Report*, FY 68; JCSM 652-67, Memo to Director, WSEG, "Study of the Problem of Warning Time" (Sept. 21, 1967).

<sup>88</sup>JCSM 410-68, Memo for SecDef, "WSEG Report 131, Political Warning in NATO" (July 1, 1968).

covered a wide range of subjects. A number of WSEG studies during the latter 1960's dealt with aspects of the military operations in Southeast Asia that were of special interest to the JCS--for example, R-190 and R-128, issued in February 1967 and April 1968, respectively, on *Analysis of Combat Aircraft Losses in Southeast Asia*; R-116, *Air-to-Air Encounters in Southeast Asia* (February 1969); R-130, *Progress Indicators for the Conflict in Southeast Asia* (May 1969); and R-143, *An Indicator System for the Conflict in Southeast Asia* (April 1969). Another series of studies of combat operations was carried out a few years later for OSD, in connection with the 1973 Middle East War.<sup>89</sup> These included R-237, *Data from the October 1973 Middle East War* (October 1974); R-243, *Assessment for the Middle East Task Group* (September 1974); and R-249, *Assessment of Weapons and Tactics Used in the October 1973 Middle East War* (October 1974). These studies evaluated the effectiveness of the U.S. and Soviet equipment employed in the war, including consideration of the interaction of armor and antiarmor weapons, aircraft and ground-based defenses, air-to-air combat, and the like, and added considerably to what was known about actual operational performance. The OSD Director of Net Assessment called R-249 "an excellent piece of work" that provided much of the basis for the SecDef's report to Congress on the subject.<sup>90</sup>

Other studies in the general purpose forces and weapons category included additional inquiries into the "war at sea" concept:<sup>91</sup> R-106, *Analysis of the Utility and Force Structure and Force Level Implications of the War at Sea Concept* (January 1967); R-117, *An Analysis of the War at Sea Concept and Some*

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<sup>89</sup> DDR&E, Memo for Secretaries of the Army, Navy, and Air Force, "Middle East Net Assessment" (Nov. 23, 1973).

<sup>90</sup> Deitchman, "Impact of Selected WSEG Studies." See also IDA, "Five-Year Report, 1971-1975," p. 10.

<sup>91</sup> See above, p. 249.

*Hypothetical Applications in the 1975 Time Period* (September 1967); and R-122, *An Analysis of the War at Sea Concept and Some Hypothetical Applications in the 1975 Time Period* (January 1968). In 1971 a WSEG/IDA contingent also produced R-168 *Anti-submarine Warfare Weapons Systems Study* (August 1971), which was utilized by OJCS planners as background information for antisubmarine warfare portions of the JSOP.<sup>92</sup>

One group of studies carried out by IDA and several other contractors in the early 1970's was oriented toward developing mathematical models and computerized gaming techniques to be used as analytical tools for making force structure comparisons and trade-offs, testing deployments or tactical concepts, and the like. Most of these studies were undertaken in support of SAGA. One, R-165, *Methodologies for General Purpose Forces Planning* (April 1971), developed a model for comparing different combinations of general purpose forces and was utilized by OJCS planners to analyze alternative force levels in Europe, among other things.<sup>93</sup> Others were concerned with computer simulations of warfare to aid in evaluating alternative force mixes and strategies, and included R-222, *Vector-0 Battle Model Prototype* (December 1973), R-251, *Vector-1 Theater Battle Model* (October 1974), R-259, *Lulejian-1 Theater-Level Model* (October 1974), R-275, *IDA TACNUC Model: Theater-Level Assessment of Conventional and Nuclear Combat* (October 1975), and R-299, *Comparison and Evaluation of Four Theater-Level Models: CEM IV, IDAGAM 1, Lulejian-1, Vector-1* (September 1976).<sup>94</sup>

Several computerized simulation studies in the general purpose forces area were carried out for ODDR&E as well. In the mid-1970's WSEG/IDA study teams assessed the combat

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<sup>92</sup>Deitchman, "Impact of Selected WSEG Studies."

<sup>93</sup>Ibid.

<sup>94</sup>WSEG files.

effectiveness of various U.S. tank prototypes, based on simulated engagements against Soviet tanks (R-248, *Main Battle Tank Study*, October 1974, and R-285, *Near-Term Alternatives for the Main Battle Tank--A Comparative Evaluation of Vulnerability, Lethality, and Effectiveness in Small Unit Tank Engagements*, February 1976).<sup>95</sup> Computerized gaming methods were also employed extensively in a number of other weapons systems evaluations undertaken for ODDR&E, such as R-226, *Evaluation of Foreign Short-Range Air Defense Missile Systems* (January 1974), which compared the efficiency of the British Rapier, the French Crotale, and the Franco-German Roland and was used in DSARC deliberations on short-range air defense,<sup>96</sup> and R-273, *Evaluation of the Cost-Effectiveness of Surface-to-Air Defense Systems* (July 1975), which compared use of the improved Hawk, SAM-D, and Nike-H in the NATO environment.<sup>97</sup>

In the 1973-75 period, two consecutive studies of navigation satellite systems were carried out for ODDR&E: R-216, *Defense Navigation Satellite System Study* (July 1973), and R-289, *Impact of the NAVSTAR Global Positioning System on Military Plans for Navigation and Position-Fixing Systems* (October 1975). The latter defined the navigation accuracy required for military purposes, detailed the interaction between accuracy requirements and mission performance, and compared the cost-effectiveness of the NAVSTAR system with that of various alternatives. It was utilized for a Defense Science Board review of the subject as well as for basic R&D planning documents like the DCP on navigation systems.<sup>98</sup>

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<sup>95</sup>Deitchman, "Impact of Selected WSEG Studies," and IDA, "Five-Year Report, 1971-1975," pp. 7-8.

<sup>96</sup>Deitchman, "Impact of Selected WSEG Studies."

<sup>97</sup>S. J. Deitchman, Memo for Record, "Briefings of IDA/WSEG Studies Completed in FY 75" (Jan. 21, 1976).

<sup>98</sup>Deitchman, "Impact of Selected WSEG Studies."

Two logistic studies were also produced under ODDR&E auspices at the request of the ASD(I&L), both involving selected aspects of containerization. R-141, *Resupply in Peace and War by C-5 Airlift and by Containership* (July 1969), provided some background analysis necessary for decisions on the use of containerization methods and was instrumental in the development of criteria for determining the proper use of airlift to carry military cargo.<sup>99</sup> R-157, *Containerized Supply Delivery and Distribution to Contingency Forces* (December 1970), provided guidelines, many of which were adopted, for measuring traffic flow and for determining the economic advantages of surface versus air traffic in various contingencies.<sup>100</sup>

As was already mentioned, WSEG/IDA teams also conducted an extensive program of operational test and evaluation studies related to general purpose forces weapons systems during this period, nearly all of them at the request of ODDR&E. One of the most prominent, R-124, *Operational Reliability Test, M-16A1 Rifle System* (February 1968), was undertaken at the direction of the DepSecDef and involved field tests to help resolve controversies about the rifle that had raised serious questions in Congress. The 1970 Blue Ribbon Defense Panel noted that this WSEG effort was an "urgent, effective and influential operational test," and recommended that WSEG's capabilities in the OT&E area be expanded and utilized more intensively.<sup>101</sup> Following this, in early 1971, DepSecDef David Packard established a Deputy Director for Test and Evaluation within ODDR&E, issued new directives urging greater emphasis on joint OT&E, and specifically asked that WSEG be called upon to participate in the design, conduct, and evaluation of joint Air Force-Army tests

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<sup>99</sup> Ibid. Also, see above, p. 295, for the laudatory appraisal by the Director, WSEG.

<sup>100</sup> WSEG, "Some Actions Taken as a Result of WSEG Studies" (Apr. 4, 1972), Memo for ODDR&E.

<sup>101</sup> Deitchman, "Impact of Selected WSEG Studies."

of the Maverick anti-tank missile prior to the DSARC decision on Maverick production. The result was a series of three WSEG reports: R-181, *Multi-Service Test and Evaluation: MAVERICK Two-Sided Test Design* (January 1972); R-185, *Operational Test and Evaluation of MAVERICK: Analysis of the Results of Two-Sided Test* (September 1972); and R-186, *Operational Test and Evaluation of MAVERICK: Evaluation of Expected Performance of F-4/MAVERICK Against Armored Vehicles in a European Environment* (September 1972).<sup>102</sup>

Between 1972 and 1976 the WSEG/IDA effort in this particular OT&E area involved some 40 separate studies variously involving operational test designs, analysis of instrumentation and data requirements, test monitoring, and assessment of test results. Among them was R-212, *Comparison of Some Aspects of the Relative Operational Effectiveness of the A-7D and A-10 Aircraft Engaged in Close Air Support* (June 1974), based on a Congressionally-directed "flyoff" of the two aircraft, which was briefed to the DDR&E, SecDef, Chief of Staff of the USAF, and four Congressional committees.<sup>103</sup> Others included operational evaluations of Army forward area air defenses (R-276, *Design Definition for an Operational Test and Evaluation of US Army Forward Area Air Defenses*, September 1975), the accuracy of tactical radar bombing (R-253, *Operational Test and Evaluation of Tactical Radar Bombing Results*, November 1974, R-267, June 1975, and R-271, July 1975, both follow-ons), multiple air-to-air combat with air-to-air missiles (R-247, *Multiple Air Combat Evaluation*, September 1974, R-282, *Design of an Operational Test for the Evaluation of Multiple Air-to-Air Combat*, December 1975), short-range air-to-air missiles (R-284, *Design of an Operational Test for the Evaluation of Short-Range Air-to-Air Missile Concepts*, December 1975), the survivability of

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<sup>102</sup> Ibid.

<sup>103</sup> Ibid.

aircraft in close air support (R-252, *Proposed Methodology for Eliminating the Vulnerability of Tactical Aircraft to Non-Nuclear Threats*, January 1975), and electronic warfare (R-288, *Electronic Warfare Joint Test and Evaluation: Evaluation of the Relative Effectiveness of Electronic Warfare Mixes Used in the Electronic Warfare Joint Test*, March 1976, and R-296, *Design Definition for a Joint Operational Test and Evaluation of Close Air Support During Electronic Warfare*, October 1976).<sup>104</sup>

Although because of their highly specialized, technical, and usually detailed nature many of these OT&E studies did not have a direct effect on what was done at the higher decision levels in OSD, they nonetheless played an important role in DoD decision-making processes. As noted above this was in part because of the intensified emphasis throughout DoD on weapons tests and test evaluations.<sup>105</sup> In part it was due to the general recognition accorded WSEG's utility as a relatively impartial, supra-Service "honest broker" for providing both technically and militarily qualified analytical support that went beyond the simple assessment of test results to larger questions of what such results might imply for operational effectiveness.<sup>106</sup> Like other studies of the period, however, these OT&E studies also raised questions as to the specific analytical contributions of participating WSEG military officers as distinct from the IDA staff members who produced the studies, questions that were raised increasingly in ODDR&E during the 1970's.

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<sup>104</sup> Ibid.; also Deitchman, "Briefings of IDA/WSEG Studies," and Deitchman, "Highlights of Completed IDA Program, January 1976 to Present," Memo for Record, undated.

<sup>105</sup> See above, pp. 289-90.

<sup>106</sup> DDT&E (Lt. Gen. Alfred D. Starbird), Memo for Record, "DDT&E/WSEG Relationships for Joint and Inter-Service Testing," recording agreements reached at a meeting between Dr. Foster (DDR&E), Mr. Sullivan (ASD/PA&E), Lt. Gen. Kent (Director, WSEG), and Lt. Gen. Starbird (DDT&E) on assistance to be rendered to the DDT&E by WSEG and inter-Service tests (Apr. 15, 1972).

## 8. Decline of the Analytical Contribution

The 1960's saw gradual but nonetheless pronounced shift in WSEG's primary focus, from participation in study production to study administration, particularly after the clarification of IDA's role as an independent study producer. Through most of the 1960's, however, due to the close-knit nature of the WSEG/WSED arrangement, the appearance was preserved of an integrated military/civilian contractor partnership operating on the theoretical premise of major analytical contributions from both sides and producing joint military/civilian studies. Even after the IDA reorganization of 1967 and the WSEG/WSED "divorce," WSEG studies were described largely as military/civilian team efforts. In 1970, for example, the Director of WSEG presented the following picture to a Congressional committee:

Our studies are performed by integrated military and civilian study teams tailored for the particular study tasks. The military members of the team are selected from the senior colonels or Navy captains ... who are permanently assigned to WSEG, and who provide a wide variety of operational and technical experience; specific knowledge of their parent service problems and capabilities; and, by virtue of their permanent, joint assignment, can be counted on to make objective contributions to the study effort. Their military operational expertise is complemented by the interdisciplinary, scientific-technical personnel furnished to the study teams by our contractors. To maintain the contractor's responsibility, a project team works normally under a project leader designated by the contractor, and is subject to technical direction and review of its work by the contractor's complete supervisory organization. Special technical review panels are established as necessary from outstanding specialists in the study field, employed as consultants to the contractor. In addition to their principal function as full study participants, the military study team personnel arrange through WSEG for access to, and provision of, all defense data necessary to the project, and for contact with all appropriate defense agencies. Thus, military considerations

and the best available information are incorporated in the study during its preparation. In addition, when the contractor completes and submits his study to WSEG, it is subjected to an independent review by senior WSEG personnel to assure practicality and operational feasibility from a military viewpoint, and the resultant WSEG comments form an integral part of the completed study.<sup>107</sup>

That the WSEG Director should emphasize the WSEG-military side of the WSEG/IDA arrangement and the contribution of professional military expertise to the military/civilian study effort is not surprising, but DDR&E officials also portrayed WSEG in approximately the same terms. In 1973, referring to plans for strengthening the DCP/DSARC process, Dr. John S. Foster said:

We are considering, insofar as it is practical and feasible, that WSEG may provide an independent, objective evaluation of each weapon or weapon system before a major new phase in its acquisition process begins. The team that does this would comprise personnel from WSEG and from the Institute for Defense Analyses.<sup>108</sup>

In the following year, his successor, Dr. Malcolm R. Currie, was even more explicit:

...we are relying more on the Weapons Systems Evaluation Group (WSEG) with assistance from the Institute for Defense Analyses (IDA) ... to provide independent inputs to the DSARC process. These inputs are developed by a team comprised of personnel from WSEG and from IDA. The military personnel from WSEG provide a broad

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<sup>107</sup>Statement of Lt. Gen. Arthur W. Oberbeck, Director, WSEG, before Subcommittee No. 3 of the House Armed Services Committee, p. 8429.

<sup>108</sup>Dr. John S. Foster, Jr., Director of Defense Research and Engineering, *The Department of Defense Program of Research, Development, Test and Evaluation, FY 1974*, statement before the Defense Subcommittee of the Appropriations Committee, U.S. Senate, 93d Cong., 1st sess. (Mar. 28, 1973), pp. 3-22.

background of military operational experience from all Services, and IDA civilians provide the scientific and analytical expertise.<sup>109</sup>

In fact, however, WSEG's analytical contribution to the WSEG/IDA study effort had become ambiguous and difficult to define. It had been openly debated during the IDA/WSEG controversies of 1967, and the question was by no means completely resolved by the OSD/JCS decision that WSEG--"with explicit provisions for military participation in studies conducted by its supporting contractor(s)"<sup>110</sup>--should continue. Ironically, perhaps, after the considerable effort and high-level attention expended during the 1960's to ensure that IDA's contractual contribution was clearly visible, it had become increasingly difficult to identify WSEG's. As one of the last Directors of WSEG told the WSEG Review Panel in 1975, WSEG's contribution to studies had become "unquantifiable."<sup>111</sup>

It was particularly difficult to obtain an accurate idea of the WSEG analytical contribution because it varied considerably--over time, from project to project, and even from individual to individual. As a result opinions on WSEG's utility, among both participants and outside observers, ranged widely, from the view that the WSEG contribution was critically important--the "unique" element of the WSEG/IDA operation--to the view that it could be dispensed with without great loss. No simple measure of WSEG's contribution to study reports was really satisfactory, as WSEG officers discovered in 1967 when

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<sup>109</sup>Dr. Malcolm R. Currie, Director of Defense Research and Engineering, *Department of Defense Appropriations for FY 1975*, statement before a Subcommittee of the Committee on Appropriations, U.S. Senate, 93d Cong., 2d sess. (Apr. 5, 1974), p. 590.

<sup>110</sup>JCSM 391-67 (July 18, 1967).

<sup>111</sup>Vice Adm. Edward C. Waller, III, USN, Director, WSEG, cited in Lt. Col. Harry J. Walther, USA, Memo for Record, "WSEG Review Panel Meeting" (Dec. 5, 1975).

they computed WSEG versus IDA man-month expenditures or working-paper pages produced.<sup>112</sup> Any generalization was difficult to validate.

WSEG's personnel strength had declined over the years in several successive reductions. In 1969, the WSEG staff stood at 71 military and 49 civilians, including both professional officer and support personnel. By 1975 this number had been nearly halved, to 38 military and 27 civilians. The Director remained at the three-star level (O-9, lieutenant general or equivalent), but in 1974 the former complement of three major general or equivalent (O-8) senior Service members was reduced to two brigadier general level (O-7) positions, filled from the two Services not currently holding the Director's slot, and one colonel level (O-6) position filled from the same Service as the Director. The remaining military personnel consisted of 30 colonel/captain level (O-6) officers, 10 from each Service (one of whom was Executive Secretary), one major/ commander as security officer; and three enlisted men. The 27 WSEG civilians provided administrative support.<sup>113</sup>

Under the Director, the WSEG portion of the study effort was the responsibility of the 3 senior Service members and the 30 or so colonel/Navy captain level officers. The senior Service representatives were responsible for major external liaison

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<sup>112</sup>Using a sample of 9 studies, their analysis showed that WSEG military officers expended from 30 percent of the total effort in man-months, for example in a strategic weapons study (R-102, *An Offensive-Conservative Analysis of Strategic Exchange for Assured Destruction*, September 1966), to 80 percent in a tactical aircraft study (R-116, *Air-to-Air Encounters in Southeast Asia*, October 1967). Of some 8,700 pages of internal project documents, most of them presumably working drafts of report material, military staff members authored about 1,400, civilians 4,500, and 2,800 were joint. Such measures were hardly persuasive as to the value of the contribution. See Executive Secretary, WSEG, Memo for the Record, "Briefing Material for Discussion with JCS" (June 15, 1967).

<sup>113</sup> WSEG records.

functions; they also carried out various internal supervisory activities, from monitoring military assignments and military participation in projects on behalf of the respective Service to acting collectively as Service advisors to the Director and as participants in the formal WSEG review of completed studies.

The O-6's were expected to serve as working military analysts. Normally assigned to WSEG for 3-year tours, they tended to be line officers chosen on the basis of their general competence and broad military experience. While an attempt was usually made to ensure that officers with the requisite range of military backgrounds would be available, with few exceptions no special effort was made to seek particular specialists or to choose officers on the basis of outstanding analytical or technical qualifications. Selection policy varied, and in practice included a considerable amount of "self-selection," but the basic requirement was first-hand experience, preferably current, with the operational problems and needs of the military services, although not necessarily in a multi-Service context.<sup>114</sup>

These military officers were assigned as working members of project teams, under instructions from the civilian project leader. (Generally one member from each Service was assigned to a project.) They had no authority to direct or control the project, but were expected to serve as professional military staff members in every respect. Under the WSEG/IDA ground rules, the project leader could not refuse them access to project activities or deny them the opportunity to contribute to the study, but he had the right to choose how best to employ them

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<sup>114</sup>Interviews. Some observers felt that this was a weakness, and that WSEG officers should have been selected on the basis of analytical or technical expertise, preferably at a junior (O-4 and O-5) level. This was a minority view, however. Most observers, even those who were critical of WSEG's selection methods, believed that relevant operational knowhow and real-world experience and perspectives were much more valuable as the military contribution to the military-civilian mix.

on project assignments and integrate their contributions into the study product.<sup>115</sup>

The primary mission of the military project members was to promote the integration of operational military considerations into the analysis--to provide the relevant military "inputs," assist in obtaining military information, particularly from the Services, and generally facilitate access to any external military knowledge, advice, agencies, or personnel necessary to the study. They were expected to ensure that different Service views and data contributions were considered in the course of the study, with no gaps or blind spots, and to help ensure the military realism and soundness of the analytical results.<sup>116</sup>

In addition to their duties as project staff members, WSEG military officers were responsible for keeping the Director of WSEG informed as to the status of the project. They were not to act as the Director's agent for managing the project "from within" but to help make sure that the provisions of the WSEG task order were being carried out. Military project members participated in internal project critiques of project memoranda, working papers, and draft reports, but authority remained in the hands of the project leader. When he was satisfied with the study product, he was responsible for submitting it to the IDA technical review processes, and IDA management made the decision to release the study to WSEG. Under the procedures in effect after 1967, WSEG then conducted its own separate review of the IDA study (in which, of course, project officers could be called on to participate as WSEG "customers").<sup>117</sup>

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<sup>115</sup>WSEG, Operating Instruction 3.1, "Duties and Responsibilities of Military Project Members" (January 1969). See also Director, WSEG, to President, IDA (Sept. 5, 1967), commenting on "IDA Principles of Operation."

<sup>116</sup>Ibid. See also Director, WSEG, Memo for Senior Service Members and Executive Secretary, "Assignment of WSEG Officers to Projects" (Aug. 1, 1975).

<sup>117</sup>There was some criticism of this practice of having WSEG military officers serve both as (continued on next page).

Within this basic framework, the actual military contribution to the analytical study effort could--and apparently did--vary considerably. Individual participation ranged from being a "go-fer," utilized mainly for obtaining factual information, making contacts, arranging trips, or other relatively minor administrative purposes, to making a substantive analytical contribution to the study reports that was on a par with the contributions of civilian analysts. One experienced IDA project leader distinguished four levels of military "input": (1) a minimum but useful level, toward the lowest end of the scale, at which the officer was relatively passive but helped answer simple questions and kept the project from making errors of fact or judgment in terms of operational realism; (2) a second level, at which the officer made little personal contribution but provided information, obtained documents, made contacts, "opened doors," and performed similar liaison-type activities; (3) a third level, at which the officer took an active interest in the project, understood the operational factors relevant to the problem and, without necessarily operating as an analyst, could be relied upon as an expert advisor; and (4) a fourth level, at which the officer was enabled, by background and inclination, to participate as a full-fledged analyst, was comfortable in the study context, familiar with study requirements, and able to make a solid contribution to study results.<sup>118</sup>

In the experience of the above observer, some 20 percent of the officers assigned to WSEG fell into the minimum category; another 20 percent were at the analytically oriented end, and the remaining 60 percent were about evenly divided between the

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(cont'd) analysts in preparing the product and as evaluators of the results, as being somewhat akin to a conflict of interest, but the risks were generally recognized and allowed for. Military project members were not responsible for either the product or the WSEG review of it. Interviews.

<sup>118</sup>Interviews.

two middle categories. Other judgments were not dissimilar, though there may have been differences as to the proportions. A good many IDA analysts spoke of the subtle or indirect contribution that resulted from day-to-day interaction with WSEG military officers, the influence of their presence at meetings, the operational "flavor" or "feel" for problems they introduced, and their importance in keeping the analysts' "feet on the ground," regardless of any specific analytical contribution.<sup>119</sup>

The difficulty of measuring the analytical contributions of WSEG project officers added considerably to growing skepticism outside of WSEG with respect to their actual value to the study effort. The survey carried out by the WSEG Review Panel during the winter of 1975-76 indicated that there was widespread criticism of both the qualifications of many WSEG officers and their utilization in analytical support activities.<sup>120</sup> In some quarters, particularly in DDR&E, it was felt that the WSEG military contribution was overrated, and that the WSEG contingent contributed little in the way of operational military inputs that was not readily available from their own staffs or directly from the Services. Others pointed to the growth of a cadre of experienced civilian analysts who had developed considerable military expertise over the years as a result of intensive study of military problems, who had developed their own military contacts, information sources, and background, and who therefore required little of the assistance that WSEG officers could provide.

The views of the next-to-last Director of WSEG were apparently highly influential in this regard. After being on the scene for a year he came to the conclusion that the WSEG

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<sup>119</sup>These judgments were provided by interviews conducted for this study, plus the interview and proceedings files of the 1975-1976 WSEG Review Panel, made available to this study by SAGA.

<sup>120</sup>Ibid.

military structure was too rank-heavy and that only about one-third of the officers were being utilized in a challenging analytical role. He proposed downgrading the rank of the Director's office to a one- or two-star position, reducing senior Service members to "first-rate" O-6's, and cutting the number of officers from ten to seven from each Service, about half of them O-5's.<sup>121</sup> He also proposed, during WSEG's last year, that WSEG officers be utilized more creatively by assigning a WSEG military Project Officer as a "fully equal partner" with the IDA project leader--without displacing the latter or usurping any of his responsibility:

Whereas the Project Leader is responsible for overall project leadership, appropriateness of analytical approach, and management of IDA resources, the Project Officer is expected to insure that the assumptions and constraints are reasonable and militarily practical, that the output of the analytical approach appears to be operationally sound, and that the overall spectrum of areas being looked into shows common sense and lack of triviality from an operational point of view. The Project Officer should also be continually concerned as to the realism and confident meaningfulness of the final output of the project ... to the sponsor....<sup>122</sup>

Some of those skeptical about and critical of WSEG's analytical contribution also questioned WSEG's role in study management--that is, in tailoring tasks to user needs, providing a continuous channel of communication between study producers and consumers, monitoring and reviewing study progress and accomplishments, controlling sensitive information, administering study contracts, and the like. They did not doubt the value of such services, but questioned whether a large number of senior military personnel in an expensive agency like WSEG

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<sup>121</sup>Walther, "WSEG Review Panel Meeting."

<sup>122</sup>Director, WSEG, "Assignment of WSEG Officers to Projects."

were really necessary to perform them.<sup>123</sup> Thus, the perceived decline in WSEG's analytical contribution raised the question of whether WSEG in its current configuration should continue to exist at all.

## B. THE DISESTABLISHMENT OF WSEG

### 1. The WSEG-SAGA Review

The disestablishment of WSEG in 1976 did not come about as the result of any single set of factors or chain of events. A number of trends and actions, not all of them easy to separate out, converged to cause the final decision.

Among these was a set of inquiries that took place in 1975. Several different DoD groups examined WSEG, for different reasons and from different standpoints, so that WSEG was subjected to a multiplicity of reviews during the year. Although certain of these reviews proceeded in parallel, they were essentially independent and not closely coordinated. They produced a mixture of favorable and unfavorable judgments. Nonetheless, the net impact was generally negative and helped bring about the decision of the Secretary of Defense in March 1976 to disestablish WSEG by September 30 of that year, as it was "no longer needed."<sup>124</sup>

The review most directly concerned with the WSEG/IDA role in supporting JCS studies and analysis requirements was instigated by a new Director of WSEG, Vice Adm. E. C. Waller, III, USN.<sup>125</sup> Upon assuming his post in February 1975, Adm.

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<sup>123</sup>SAGA, "Summary of WSEG Review Panel Findings and Possible Recommendations," attachment to SAGAM 4-76 (Jan. 5, 1976).

<sup>124</sup>OASD (Public Affairs), "Secretary Rumsfeld Announces Management Changes as Step Toward Organization Reform" (Mar. 9, 1976), news release.

<sup>125</sup>Adm. Waller graduated from the United States Naval Academy Navy Postgraduate School (B.S. in (continued on next page)

Waller took steps to clarify the respective missions, functions, and division of labor between WSEG and SAGA, approaching them as two separate analytical study agencies working for the JCS (although WSEG performed some work commissioned by SAGA). This clarification was also intended to obtain answers to a question informally put to Adm. Waller by the Chairman of the JCS, Gen. George S. Brown, USAF: "What can WSEG do for me?"<sup>126</sup>

Adm. Waller initiated a dialogue with SAGA, in which it emerged that there was considerable overlap in the activities of WSEG/IDA and SAGA. Most WSEG/IDA tasks and analyses either involved operational tests and evaluations of weapons systems and related end items, or were oriented toward R&D functions or requirements, but WSEG/IDA also performed many studies bearing on policy alternatives or strategic planning issues, including broad studies of U.S. and foreign forces, structures, and postures. SAGA did not engage in operational tests or evaluations of weapons systems, but like WSEG/IDA it carried out studies or analyses related to planning problems, policy questions, and U.S. and foreign force structures and postures. In addition, SAGA engaged in a number of unique activities, such as preparing the Red Integrated Strategic Offensive Plan (RISOP), gaming the SIOP and the RISOP, and managing high-level political-military simulations. In connection with their primary responsibilities, both organizations engaged in a certain amount of methodology, model, data base, and technique development (WSEG/IDA doing so on a somewhat larger scale).

The two organizations were quite different, of course. WSEG was manned by about 35 senior, operationally experienced

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(cont'd) Aeronautical Engineering and M.S. in Electrical Engineering) and the Command and Staff course at the Naval War College. In addition to a number of operational commands, he had also been a Program Officer in the Weapons Systems Test Division of the Naval Air Test Center, and Commander of the Antisubmarine Warfare Systems Project Office.

<sup>126</sup>Director, WSEG, Memo for WSEG Officers, "Users Group Inputs" (Apr. 17, 1975).

officers at the 0-6 level; SAGA had a professional staff of about 60 officers, primarily at the 0-4 and 0-5 level, selected mainly for their specialized backgrounds in mathematics, operations/systems research, or other analytical disciplines, including international relations. SAGA was an organic part of the OJCS, was tasked directly by the Chairman, JCS, and performed its studies routinely in support of CJCS and JCS responsibilities to the NSC and the SecDef; WSEG's clientele was primarily interested in R&D, with DDR&E absorbing some two-thirds of the WSEG effort in FY 75. Moreover, WSEG operated with a contractual technical support base and was heavily engaged in contractual study management and contract monitoring, while SAGA, which did not control specific budgetary funds as such, rarely operated in either capacity, preferred to conduct its studies in house, and obtained such outside technical support as it needed from the Services or through agencies like WSEG or DCA.

The overall conclusion of the WSEG-SAGA "dialogue" was that the two agencies complemented more than they duplicated each other. Senior Defense leaders, including the Chairman, JCS, and the Joint Chiefs, needed the analytical contributions of both organizations in order to develop and evaluate alternative defense policies, operational plans, weapons systems, force structures, command and control systems, communications, and so on. Considering differences in mission, organization, and capabilities, however, it seemed appropriate for WSEG to concentrate more on operational evaluations and analyses of weapons systems, particularly when they involved military capabilities and performance characteristics. It also seemed appropriate for SAGA to handle the more politically sensitive studies that touched on JCS/NSC matters (e.g., NSDM's or NSSM's), or highly sensitive operational plans (e.g., the SIOP/RISOP), because of SAGA's well developed relationships and close ties with the NSC, Joint Staff, and other cognizant agencies. Each, in short, should continue to do the type of work it had done in the past, but with considerably more

coordination, communication, and cooperation between them than before.<sup>127</sup>

The Waller inquiry apparently greatly improved mutual understanding and rapport between WSEG and SAGA, but it also raised issues that remained unresolved, such as the relationship of both organizations to other DoD studies and analysis activities, in OSD(PA&E), for example, or in the Services, and the advisability of having a single office (perhaps SAGA itself) take primary responsibility for OJCS tasking of WSEG/IDA. Nor did the inquiry produce a satisfactory answer to the Chairman's question, "What can WSEG do for me?" It went a long way, however, toward crystallizing Joint Staff views on WSEG at a crucial time for WSEG.<sup>128</sup>

## 2. The Acquisition Advisory Group

A second stream of deliberation and action that had an effect on the WSEG question during 1975 stemmed from a proposal that WSEG be assigned a greatly augmented role in the DoD, specifically in connection with the DCP/DSARC weapons systems acquisition process. In April 1975, the Deputy SecDef, Mr. William P. Clements, Jr., established an ad hoc Acquisition Advisory Group (AAG), composed of former military and civilian officials, to examine a variety of recommendations by the Services for improving DoD decision procedures in acquiring major new weapons. The AAG was chaired by Dr. Alexander H. Flax, President of IDA, former Assistant Secretary of the Air Force for R&D, and included Lt. Gen. Glenn A. Kent, USAF Ret., former Director of WSEG.<sup>129</sup> As a member of the AAG, Gen. Kent was

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<sup>127</sup>Maj. Gen. Lee E. Surut, USA, Chief, SAGA, Memo for Vice Adm. E. C. Waller, III, USN, Director, WSEG "Concept for WSEG/IDA and SAGA Support of JCS Study Requirements" (SAGA 370-75) (Aug. 14, 1975).

<sup>128</sup>Interviews.

<sup>129</sup>Other members of the AAG were: Mr. Charles A. Bowsher, former Assistant Secretary of the Navy (continued on next page)

largely responsible for proposing a significant new role for WSEG in DoD weapons systems decisionmaking (a recommendation from which Dr. Flax dissociated himself, in view of IDA's active relationship with WSEG).<sup>130</sup>

The AAG took up such issues as the centralization or decentralization of the DCP/DSARC system, organizational and management options for operating the DSARC, weaknesses in defining requirements for weapons systems at the "front end" of the acquisition process, and cost analysis and control during the weapons development process, including consideration of the so-called mismatch between the PPBS system for resource management and the DCP/DSARC system for weapons acquisition. In connection with the front end weaknesses, the AAG discussed the need for clearer and more authoritative definitions of mission needs or requirements--more formal "structuring"--during the early stages of the weapons acquisition process. It specifically addressed both the types of mission area analyses needed to assess military capabilities and deficiencies and the mission concept studies needed to explore changes and improvements--"ways and means" to meet the deficiencies--in order to provide a more soundly "documented" basis for the major defense systems to be acquired.<sup>131</sup>

The AAG agreed that OSD should have available, on a current basis, an objective appraisal of all of the mission

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(cont'd) for Financial Management and member of the Navy/Marine Corps Acquisition Review Committee; Mr. Don R. Brazier, former Deputy Assistant Secretary of Defense, Comptroller; Dr. Emory J. Cook, former President of Operations Research, Inc.; Lt. Gen. Welborn G. Dolvin, USA Ret., former Commander, U.S. Army, Japan; Brig. Gen. Alfred L. Esposito, USAF Ret., former Director, Procurement Policy, OSD, and member, Army Materiel Acquisition Review Committee; and Mr. Philip Odeen, former Principal Deputy Assistant Secretary of Defense, Systems Analysis, and Director, Program Analysis, NSC.

<sup>130</sup>See Report to the Deputy Secretary of Defense by the Acquisition Advisory Group (Sept. 30, 1975).

<sup>131</sup>Ibid., pp. 35-7.

area and mission concept studies that were in hand or in preparation throughout the DoD. To assist the SecDef in monitoring this activity, the AAG suggested that a "disinterested third party staff group such as the Weapons Systems Evaluation Group" be responsible for continuously reviewing mission area analyses and mission concept study efforts and "insuring that the sum of these programs represented a coordinated DoD-wide program." In accordance with this responsibility, the Director of WSEG would be called upon to follow the development of major weapons systems, reviewing the validity of the "documentation" and the continuing need for them at the major decision points. He could be asked to carry out selected mission area analyses and mission concept studies that were not being performed by the Services, and he could conduct such additional studies as might be necessary. In carrying out these duties, the Director of WSEG would report directly to the Deputy SecDef.<sup>132</sup>

Such a role, with WSEG serving as a major arm of the Deputy SecDef in managing major weapons acquisition matters, would have drastically upgraded WSEG's stature and influence in the DoD. It represented a considerable expansion of the role that Gen. Kent had promoted for WSEG in the DDR&E test and evaluation program when he was Director of WSEG, and went even beyond the functions that he had proposed for WSEG--or the WSEG/IDA team, as he called it--at the milestone stages of the DSARC process.<sup>133</sup> In providing analytical advisory support to the Deputy SecDef for decisions in the critical mission area/mission concept sphere, WSEG would clearly have become a major force in the weapons systems evaluation world, occupying a strategic leading position among studies and analysis organizations in the DoD.

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<sup>132</sup>Ibid.

<sup>133</sup>See Starbird, "DDT&E/WSEG Relationships for Joint and Inter-Service Testing."

This mission would have had little connection with supporting the JCS, however. As it had evolved in the DoD, the weapons systems acquisition process no longer involved the JCS as key participants, at least in their corporate capacity. The primary actors, under the SecDef and DepSecDef, were ODDR&E and the Services. A major reorientation of WSEG toward supporting the DCP/DSARC process would therefore have implied a further inclination toward OSD/DDR&E work and away from the JCS, continuing the trend that had already become highly advanced during the 1970's. Paradoxically, however, the unique features of WSEG, particularly its military leadership and its built-in military participation, were increasingly being questioned by just these agencies.

Secretary Clements issued his decisions on the AAG recommendations in January 1976. He concurred in the desirability of formally structuring the front end of the acquisition process by explicitly delineating mission needs and carrying out related mission concept studies in a systematic way. As for the role proposed for WSEG in this front end process, he agreed that such a role might be appropriate for WSEG, but noted that DDR&E was currently completing a thoroughgoing review of WSEG. He left the WSEG decision open for the time being, therefore, and asked DDR&E to advise him by the following March as to the feasibility and "methodology" of assigning WSEG this front end role.<sup>134</sup> By March 1976, however, the AAG proposal on WSEG had to be considered in the context of other actions, including an overall organization/management review of OSD and the JCS, a secondary review of all studies and analysis activities in the DoD, and the specific DDR&E review of WSEG mentioned by the DepSecDef.

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<sup>134</sup>DepSecDef (W. P. Clements, Jr.); Memo for Secretaries of the Military Departments, DDR&E, et al., "Acquisition Advisory Group Report of 30 September 1975 to the Deputy Secretary of Defense: Appraisal of and Action Concerning Recommendations" (Jan. 23, 1976).

### 3. OSD Management Reviews

At the time of the WSEG/SAGA dialogue and the AAG examination of the DCP/DSARC process, OSD was well into a major review of the Pentagon headquarters organizations of the DoD-- that is, the staff organizations supporting the SecDef and the JCS, and the civilian and military staffs of the military departments. The review, conducted under the aegis of Mr. William K. Brehm, Assistant SecDef for Manpower, was the follow-on phase of an effort initiated in late 1973 by the then SecDef, James R. Schlesinger, and continued under his successor, Donald H. Rumsfeld.<sup>135</sup> The effort was aimed broadly at streamlining management headquarters and reducing manpower resources devoted to overhead operations throughout the DoD. During 1974 the review had concentrated on the various field headquarters, with significant results in terms of restructuring certain commands and achieving substantial manpower savings. In May 1975 it turned to the OSD/JCS and their supporting organizations, with the announced objective of reducing marginal functions and redundant activities to an absolute minimum. The FY 76 target was a 25-percent reduction in OSD/JCS manpower.<sup>136</sup>

The major thrust of the Brehm reduction/reorganization effort was to cut manpower spaces by eliminating, consolidating, or decentralizing functions.<sup>137</sup> The effort was conducted in a low key fashion by a small staff working primarily with senior

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<sup>135</sup>In 1976 Brehm became Assistant SecDef for Legislative Affairs, but he continued to head this review through January 1977, as an ad hoc activity, working for Secretary Rumsfeld and his Deputy, Mr. Clements.

<sup>136</sup>Deputy SecDef (W. P. Clements, Jr.), Memo for DDR&E, Chairman JCS, Assistant Secretaries of Defense, et al., "Headquarters Review" (May 13, 1975).

<sup>137</sup>This account is based largely on interviews. In the research carried out for the present study, no major effort was made to cover the activities of the Brehm group except insofar as it related to the WSEG experience, and no extensive examination was made of the group's documentary records.

officials. Attention was focused on organizational entities like WSEG, which had been created for special purposes or special needs but which might have outlived their usefulness. When WSEG was examined, the Brehm group encountered mixed feelings about it. It had been established at an early period in the evolution of OSD, when there was no other top-level analytical support capability at the OSD/JCS level. It had been largely superseded since that time by the multiplicity of analytical offices and agencies throughout the DoD and had essentially become an intermediary agency for studies that were performed in the main by IDA and other contractors. It had come to be used less and less by the JCS and the SecDef, and no longer appeared to have a great deal of clout. In the words of one of the Brehm reviewers, "WSEG didn't get a high batting average," and had no strong supporters among the principals consulted.<sup>138</sup>

At the same time, Deputy SecDef Clements had also become concerned about a related issue, the ongoing proliferation and diffusion of studies and analyses throughout the DoD without clear identification as to manpower or budgetary costs and without adequate management guidelines or controls. He therefore formed an Ad Hoc Committee of representatives from the Services, ASD(PA&E), and the OJCS, under the chairmanship of ODDR&E, to examine the cost, study management, and effectiveness of DoD studies and analyses (a "Study of Studies"). The primary conclusion of this committee was that the study and analysis effort in DoD, including that carried on in the Services, OSD, OJCS, and supporting agencies (and therefore WSEG), was poorly managed, and that there was a need for improved guidelines to bring together under common policies and procedures the disparate analytical support elements of all DoD components.<sup>139</sup>

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<sup>138</sup>Interviews.

<sup>139</sup>See SAGAM 286-76, "Review of OJCS Requirements for Studies, Analyses, and War Games" (July 23, 1976). This led to a major rewrite of DoD Directive (continued on next page)

The fragmented and largely uncoordinated nature of study and analysis efforts among the groups at the OSD/JCS level (WSEG, PA&E, SAGA, DNA, ARPA) was also reviewed by the Brehm contingent. One way of altering this situation was to pool some of these efforts into a single "Defense Studies and Analysis Agency" or "Defense Analysis Agency" that would provide analytical support to all elements at the OSD/JCS level. Although this idea was apparently never fully worked out, it was being actively considered in late 1975 and early 1976 at a time when WSEG's future was being determined, and it became closely associated with the ultimate decision on WSEG.<sup>140</sup>

Even without the DoD studies question, the targeted 25 percent manpower reduction in the OSD/JCS headquarters staff would have been enough to give the Brehm effort considerable force. The group operated by asking senior officials in each agency to indicate their priorities in allocating cuts within their own agencies. Although WSEG's mission was to support both the JCS and DDR&E, its manpower spaces were chargeable to DDR&E, and accordingly were subject to DDR&E adjudication as on a par with elements of the internal ODDR&E staff. When the final showdown came, therefore, one of the factors weighing against WSEG was a movement within ODDR&E to attenuate the impact of the manpower reduction there by eliminating WSEG spaces.<sup>141</sup>

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(cont'd) 5010.22, "The Management and Conduct of Studies and Analyses" (Nov. 22, 1976).

<sup>140</sup>See Dr. F. B. Kapper, Scientific and Technical Advisor, SAGA, SAGAM 20-76, "Establishment of Defense Analysis Agency" (Jan. 15, 1976).

<sup>141</sup>Chief, SAGA (Rear Adm. Robert H. Gormley, USN), SAGAM 4-76, Memo for Chairman, JCS, through Director Joint Staff, "WSEG Review" (Jan. 2, 1976).

#### 4. The WSEG Review Group

As a result of several of these developments, in September 1975 the DDR&E established a separate working group to carry out a review of WSEG and its contributions to the DoD. The group was chaired by the Deputy DDR&E for Planning and Policy, Mr. Robert E. Berry, and included Maj. Gen. John G. Albert, USAF, Commandant of the Defense Systems Management School, and Rear Adm. Robert H. Gormley, USN, Chief of SAGA, for the Joint Staff. The executive officer of the group was Lt. Col. Harry J. Walther, USA, also from SAGA. The group was charged with reviewing the current role and "posture" of WSEG, its relations with IDA, and other factors that might influence its organizational impact or performance. It was to report back to the DDR&E by November 1, 1975.<sup>142</sup>

For reasons that are not entirely clear, considering its relatively imminent deadline, the Review Group was slow in starting up. The request for JCS participation, which eventuated in the assignment of the Chief of SAGA, was not made until October 28, a month after the DDR&E appointed Mr. Berry. The group did not begin its inquiries, which consisted primarily of interviewing people with previous "user" associations with WSEG, until early November--a date already past the initial deadline and more than a month after the publication of the AAG Report recommending a major front end role for WSEG in the weapons acquisition process.<sup>143</sup>

By the end of November, the group had conducted a set of major interviews and formed a number of definite impressions, including the following:

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<sup>142</sup>DDR&E (Malcolm R. Currie), Memo for Director, WSEG, "WSEG Review" (Sept. 18, 1975).

<sup>143</sup>Dr. F. B. Kapper, SAGA, Point Paper, "WSEG Review Panel" (Nov. 25, 1975).

- A need still existed for the type of analysis and evaluation support provided by WSEG, i.e. an "objective" supra-Service view.
- WSEG had become an "adjunct" to IDA and contributed little to WSEG/IDA products.
- Satisfaction with WSEG/IDA products varied widely, particularly in terms of responsiveness.
- Some change in direction was called for, perhaps a principal role in the weapons acquisition process.

At this stage in the deliberations, members of the Joint Staff felt that the group was likely to recommend positive changes to strengthen WSEG, such as improvements in the procedures by which the WSEG/IDA program was developed to define user requirements and the expected study output better, and a greater role in weapons systems acquisition, including a reporting channel directly to the Deputy SecDef.<sup>144</sup>

By early January 1976 the Berry panel was apparently grappling with the impact of the announced OSD/JCS manpower reductions, the AAG recommendation on the WSEG front end role, and the proposal for a single Defense studies agency. Without altering its tentative findings that the basic requirement for something like WSEG was still valid, but that WSEG/IDA performance needed considerable improvement and possibly redirection (toward greater responsiveness to OSD/JCS clients, or greater support for OSD on critical DSARC questions), the group had formulated three alternatives:

- (1) Maintain WSEG responsibilities unchanged; reduce staff to balance with current workload.

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<sup>144</sup>Ibid. The group had interviewed such present and former officials as Adm. Thomas H. Moorer, former CJCS; Gen. Maxwell D. Taylor, former President of IDA and former CJCS; Dr. Alexander H. Flax, President of IDA; Mr. Leonard Sullivan, ASD (PA&E); Mr. Andrew Marshall, Director, NA; Messrs. Donald Henry and David Hebner, of DDR&E(TWP); Lt. Gen. Glenn A. Kent, and Vice Adm. E. C. Waller, former and present Directors of WSEG, as well as a number of officers from the Joint Staff, both from J-5 and J-3.

(2) Expand WSEG responsibilities to incorporate AAG recommendations: assign WSEG an active role at the front end of the acquisition process, with direct reporting to the SecDef.

(3) Combine WSEG, SAGA, and parts of OSD(PA&E) to form a small Defense Analysis Agency (with 25 to 50 percent fewer billets than the current total), reporting to JCS/OSD.

In a summary of the group's thinking as of January 2, 1976, the Joint Staff representatives reported that the group would probably recommend a mixture of alternatives 2 and 3. The Chief, SAGA, considered this "a reasonable, workable solution to the basic problems of WSEG/IDA while ... effecting a manpower/cost reduction with minimal impact on the ability to provide essential analytical support for OJCS and OSD."<sup>145</sup>

It seems clear in retrospect that Joint Staff reactions to the idea of a single Defense analysis agency of some kind that would absorb WSEG, SAGA, and other elements were not particularly negative. Considering the inevitability of manpower reductions and the realistic choices available, they apparently recognized that WSEG was a possible candidate for disestablishment and that SAGA was almost certainly going to be phased down, if not entirely out. They might oppose either or both of those losses, but their fallback position was to have the losses predicated on the establishment of a substitute analytical capability. In a staff paper prepared in mid-January 1976, and forwarded to the DJS for the CJCS on January 26, the following general propositions were set forth:

- In any revised DoD organization there would still be a need for objective studies, analyses, and evaluations at the OSD/JCS level. "Sprinkling a few analysts" throughout OSD/JCS offices was no substitute for the capability inherent in an analysis agency.

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<sup>145</sup>Chief, SAGA, SAGAM 4-76.

- The disestablishment of SAGA should be keyed to its replacement by an alternative analysis capability; as a primary user, the JCS should have a say in any disposition of WSEG.
- The proposed Defense Analysis Agency, combining SAGA, WSEG, and the "pure analysis side" of OSD (PA&E), with a 25 to 50 percent reduction in total spaces, could well serve both OJCS and OSD.
- The proposed agency should report to the SecDef through the JCS, or jointly through the JCS and a cognizant OSD office--but it should not be the "satellite" of any single OSD office.
- In order to have the "trust and respect" of both the civilian and military leadership in DoD, the agency should have an "independent" status, not exclusively allied to any "special interest," and it should have both military and civilian personnel in positions of authority.<sup>146</sup>

It also appears evident, both from available J-5/SAGA staff papers and from interviews, that under the impetus of the Brehm reduction/reorganization effort the Joint Staff was prepared to cut back and eventually eliminate SAGA, but it leaned strongly toward preserving WSEG as the nucleus around which to pull together OSD/JCS analytical elements into a new "study agency." In the Joint Staff view, WSEG was the logical contender for this role. It produced studies primarily on a contractual basis, but it did have a military staff with a minimal inhouse capability and it was high enough on the organizational ladder to have access to a wide range of study activities. The WSEG pattern of subordination to an OSD office outside of the OJCS could also be followed, provided that the responsible office performed only the functions of administrative management, quality control, and protection of the independence and professional integrity of the study agency--i.e., provided that the JCS could still obtain analytical support on a level-of-effort basis, with

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<sup>146</sup>Kapper, SAGA, SAGAM 20-76.

direct tasking and liaison prerogatives to ensure that JCS requirements were met.<sup>147</sup>

At the staff level in the Joint Staff--and in WSEG--this solution appeared to be a likely outcome. It seemed that a WSEG in some form would continue.<sup>148</sup> Sometime in January 1976, however, a fourth major alternative emerged, possibly after discussions among the principals, including the DDR&E, the CJCS, and Assistant Secretary Brehm.<sup>149</sup> This alternative was added to the Berry panel's spectrum of choices by the end of January. It was, in brief:

Disestablish WSEG.

Divide and assign WSEG's assets--manpower spaces, funding--to the primary DoD organizations previously utilizing WSEG.<sup>150</sup>

Under this option, WSEG manpower spaces would be reallocated, with about one-half going to DDR&E(T&E), one-fourth to DDR&E(TWP), and one-fourth to OJCS(SAGA). WSEG contract funds would be divided between DDR&E and the OJCS in proportion to those agencies' planned utilization of IDA. IDA would retain its FCRC status, with its scope limited to areas specified by the SecDef and the Chairman, JCS, but including mission area and mission concept work in support of both JCS strategic planning and OSD acquisition management. The Joint Staff would chair the IDA Users Group, provide military expertise to IDA or other study efforts as required, and perhaps take on WSEG's administrative duties as well.<sup>151</sup>

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<sup>147</sup>Ibid.

<sup>148</sup>Interviews.

<sup>149</sup>WSEG Review files, SAGA, undated staff summary.

<sup>150</sup>Ibid.

<sup>151</sup>Ibid. This was the final paper in the SAGA WSEG Review file, prepared sometime after the January 26, 1976 paper prepared for the DJS and the CJCS.

While this fourth alternative was in fact close to the one adopted, it appears that at this point in the flow of events the Berry group was following rather than leading the decision process, and that the fundamental responsibility for the decision had escalated to a higher--and closely held--level. No Berry WSEG Review report was ever issued, and, according to several observers in a position to know, neither Berry himself nor the panel as a group were consulted in the final decision.<sup>152</sup>

#### 5. The WSEG Decision

The final decision on WSEG came in a roundabout manner, much to the surprise of some of the participants. It occurred in response to the Deputy SecDef's request of January 23 that DDR&E appraise the feasibility of assigning WSEG the front end role in the weapons acquisition process recommended in the AAG report of September 30, 1975.<sup>153</sup> In his formal response on March 1, the DDR&E explained that the WSEG role had been examined in the context of the overall structure of the DoD decision-making process, that the WSEG role had declined over the years with the general assimilation and proliferation of analytical capabilities, that the most effective approach to front end improvements was to strengthen the analytical capabilities of the relevant offices directly, and that WSEG should therefore be disestablished. The key paragraphs of the memorandum were as follows:

It was determined that the role of WSEG had changed over the years with the general assimilation of analytical capability and the subsequent establishment of IDA, ARPA, DDR&E, PA&E, DT&E and SAGA. The leadership on projects assigned to WSEG had in practice evolved to IDA. It was concluded that the most effective approach to improved emphasis on mission needs

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<sup>152</sup>Interviews.

<sup>153</sup>See above, pp. 342-80.

and requirements would be the strengthening of the analytical capabilities of the JCS and the elements of the Office of the Secretary of Defense which are held accountable both for functional guidance and evaluation of Service actions and for recommendations and assistance to the Secretary of Defense. It was also concluded that the disestablishment of WSEG could result in the assignment of additional capabilities to the accountable offices in JCS and OSD at lower cost. This would result from a closer coupling of the analytical product to the responsible decision point. ARPA and many OSD offices now task IDA directly, and the adoption of this practice by JCS and DDR&E will enable each to achieve a more direct involvement in the analytical task with fewer personnel assigned overall.

Accordingly, it is recommended that WSEG be disestablished and that approximately half of the former WSEG professional billets be assigned to JCS, DT&E and DDR&E.<sup>154</sup>

On March 9, 1976, the SecDef issued the decision to disestablish WSEG by September 30, 1976. In a memorandum to the Chairman of the JCS and DDR&E, he wrote:

The Department of Defense today has a wealth of analytic and study capabilities available to support its planning, evaluation, and management activities, a situation that stands out in sharp contrast to the situation of fifteen or twenty years ago. Since that time, several study and analysis organizations have been created within the Department, and an abundance of similar talent has become available in organizations external to the Department of Defense.

In view of the above I have decided to disestablish the Weapons Systems Evaluation Group on the grounds that it is no longer needed, given the extensive complex of study and

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<sup>154</sup>DDR&E (Malcolm R. Currie), Memo for Principal Deputy Secretary of Defense, "Feasibility of Assigning to WSEG the 'Front End' Role Outlined in AAG Recommendation IV-4" (Mar. 1, 1976). This memo was drafted by Berry, and may therefore be the closest approximation to the missing "Berry Report."

evaluation activities available to the Department. The disestablishment is scheduled to be completed prior to September 30, 1976.<sup>155</sup>

A DoD Public Affairs announcement on the same day put the decision in the context of the "world-wide management review" that the DoD had been conducting, as a step taken to streamline management at the OSD/JCS level. Such steps included (in addition to disestablishing WSEG) merging J-1 into J-5 and J-6 into J-3 of the Joint Staff, consolidating J-3 and J-5 regional offices under J-5, and realigning J-4. The WSEG decision was considered one of the organizational reforms within the OSD staff, which included establishing a consolidated Office of Safety and Environmental Quality, consolidating health affairs under Manpower and Reserve Affairs, and shifting the logistics and manpower resources divisions of PA&E to the OASD(I&L) and OASD(M&RA), respectively. The wording of the Public Affairs release was virtually identical to the wording in the SecDef memorandum:

The Weapons Systems Evaluation Group (WSEG) will be disestablished by September 30, 1976, as it is no longer needed. The Department of Defense today has extensive analytic and study capabilities available to support its planning, evaluation, and management activities, a situation that stands out in sharp contrast to the situation of fifteen or twenty years ago. Since that time, several study and analysis organizations have been created within the Department, and an abundance of similar talent has become available in organizations external to the DoD.<sup>156</sup>

The SecDef decision on disestablishing WSEG left in midair the question of the reallocation of WSEG manpower spaces,

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<sup>155</sup>Memo from Secretary of Defense to Chairman JCS, Director of Defense Research & Engineering, and Acting ASD(PA&E), Subject: Organization Change-Disestablishment of WSEG (Mar. 9, 1976).

<sup>156</sup>Deputy SecDef. (W. P. Clements, Jr.), Memo for DDR&E, "Disestablishment of WSEG" (Apr. 29, 1976).

either completely (as the Joint Staff thought might occur) or partially (as recommended in the March 1 DDR&E memorandum). On April 26 the Deputy SecDef put this question to rest in a memorandum for DDR&E:

The Secretary's decision to disestablish WSEG was made after full consideration of the availability of professional analytical talent, both internal and external to the DoD, as well as OSD staff organization objectives. Accordingly, WSEG spaces will not be retained within the OSD structure.<sup>157</sup>

On April 29 the Chairman of the JCS requested that six manpower spaces be provided to the OJCS from the disestablishment of WSEG, specifically for study management functions vis-à-vis IDA:

Upon the disestablishment of the Weapons System Evaluation Group (WSEG) on 30 September 1976, the Joint Chiefs of Staff will have no central management office to monitor and control study and analysis efforts contracted to the Institute for Defense Analyses (IDA). Accordingly, request you approve the attached concept which: (a) provides for a Joint User's Group chaired by the OJCS; (b) establishes a small JCS liaison office to manage our IDA studies and analysis efforts; and (c) provides the military representation to IDA previously furnished by WSEG. To accomplish these additional functions, request that six manpower spaces be provided the OJCS from the disestablishment of WSEG.<sup>158</sup>

The JCS request for WSEG spaces was not granted, however. The DDR&E position was that the SecDef's decision as to manpower spaces had been final, and any residual WSEG functions with respect to IDA studies would have to be assumed by the staff

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<sup>157</sup>OASD (Public Affairs), "Secretary Rumsfeld Announces Management Change."

<sup>158</sup>Chairman, JCS, CM 929-76, Memo for the Secretary of Defense, "OSD/JCS Studies and Analyses" (Apr: 29, 1976).

activities sponsoring the studies, in the Joint Staff as well as elsewhere. On August 18, 1976 the JCS issued a revised internal Joint Administrative Instruction updating OJCS policies and procedures for managing external studies for the JCS, establishing Chief, SAGA, as the responsible coordinating officer and central point of contact for study management.<sup>159</sup>

On September 30, 1976, WSEG was duly disestablished. In its place a small Defense-IDA Management Office (DIMO) was established by DDR&E to wind up WSEG business and act as DoD administrative agent on the IDA premises for monitoring the DoD study effort in IDA.

The final WSEG memo was from the last Director to the DDR&E:

In compliance with direction from the Secretary of Defense, the Weapons Systems Evaluation Group, established by Secretary of Defense Forrestal on 11 December 1948, was disestablished effective 2400 30 September 1976.<sup>160</sup>

This recounting of the decision to disestablish WSEG is obviously unsatisfactory from the purely historical standpoint, since it contains major gaps and leaves several important questions unanswered. For purposes of the present study, however, the apparent anomalies of the decision process are significant, chiefly because they underline the central paradox--that no formal JCS position was ever taken on the disestablishment question. While there was Joint Staff participation in the Berry review effort, this review was apparently not material to the decision. Some observers considered it little more than window dressing, if not actually misleading. Until near the end,

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<sup>159</sup>Joint Administrative Instruction 5713.8, "OJCS Study Management Program: Policies, Responsibilities, and Procedures" (Aug. 18, 1976).

<sup>160</sup>Director, WSEG (Brig. Gen. Alfred B. Hall), Memo for DDR&E, "Disestablishment of the Weapons Systems Evaluation Group" (Sept. 30, 1976).

Joint Staff participants were led to believe that the disestablishment of WSEG and cuts in SAGA would be offset by the establishment of a new "study agency"--which did not occur. Others, viewing the disestablishment as essentially a DDR&E/OSD decision, in which WSEG was sacrificed to preserve internal staff spaces in DDR&E, tended to characterize the decision as "capricious" or "cavalier" from the JCS standpoint.<sup>161</sup>

Such reactions stem primarily from the conclusion that the real decisions on WSEG were made in DDR&E, OSD, and other agencies without full OJCS participation. In the formal sense, the JCS were never asked for their views on the disestablishment of WSEG, and hence were never really consulted. A formal Berry report, for example, would undoubtedly have called for formal JCS comments. Balanced against this fact, however, is the undeniable fact that there was no vigorous JCS defense of WSEG during the predecision period, when disestablishment was known to be under consideration, and there was no strong JCS protest against it, even through proper and appropriate channels. If the decision to disestablish WSEG was made primarily for overriding OSD rather than JCS reasons, as seems evident, it also seems fair to say that the JCS found no compelling basis for an official reclama. To the outside world, the disestablishment of WSEG was based upon a de facto consensus.

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<sup>161</sup>Interviews.

Appendix A

DIRECTORS OF WSEG FROM 1949 TO 1976

DIRECTORS OF WSEG FROM 1949 TO 1976

	Assigned	Detached
Lt. Gen. John E. Hull, USA	1949	Feb. 21, 1951
Lt. Gen. Geoffrey Keyes, USA	1951	Aug. 1, 1954
Lt. Gen. Samuel E. Anderson, USAF	March 1954	Aug. 1, 1957
Vice Adm. John H. Sides, USN	Aug. 1, 1957	Aug. 1, 1960
Lt. Gen. William P. Ennis, USA	Aug. 1, 1960	Sept. 1, 1962
Lt. Gen. Harvey T. Alness, USAF	Sept. 1, 1962	Mar. 1, 1964
Lt. Gen. Joseph R. Holzapple, USAF	Mar. 1, 1964	August 1966
Vice Adm. Kleber S. Masterson, USN	September 1966	August 1969
Lt. Gen. Arthur W. Oberbeck, USA	September 1969	Jan. 31, 1972
Lt. Gen. Glenn A. Kent, USAF	Feb. 1, 1972	Aug. 31, 1974
Rear Adm. Merrill H. Sappington, USN	Sept. 1, 1974	Feb. 10, 1975
Vice Adm. Edward C. Waller, III, USN	Feb. 10, 1975	July 27, 1976
Brig. Gen. Alfred B. Hale, USA	July 27, 1976	Sept. 30, 1976 <sup>1</sup>

SENIOR ARMY MEMBERS

WSEG

	Assigned	Detached
Maj. Gen. J. M. Gavin	1949	1951
Maj. Gen. Garrison H. Davidson	1951	1954
Maj. Gen. William L. Barriger	March 1954	February 1957

<sup>1</sup>WSEG disestablished on Sept. 30, 1976.

	Assigned	Detached
Maj. Gen. Paul L. Freeman	January 1957	April 1958
Maj. Gen. Louis V. Hightower	May 1958	October 1960
Maj. Gen. Ralph R. Mace	October 1960	August 1962
Maj. Gen. John F. Ruggles	January 1963	July 1966
Maj. Gen. William A. Enemark	October 1966	August 1967
Maj. Gen. Eugene A. Salet	September 1967	September 1968
Maj. Gen. Arthur W. Oberbeck	November 1968	September 1969
Maj. Gen. Burnside E. Huffman, Jr.	October 1969	February 1973
Maj. Gen. Curtis Chapman	March 1973	February 1975
Brig. Gen. Alfred B. Hale	March 1975	July 26, 1976
Col. William C. Stephens	July 27, 1976	Sept. 30, 1976

SENIOR NAVY MEMBERS

WSEG

	Assigned	Detached
Rear Adm. W. S. Parsons	March 1949	November 1951
Rear Adm. H. B. Temple	November 1951	May 1953
Rear Adm. Paul D. Stroop	September 1953	December 1954
Rear Adm. Frank Akers	March 1955	September 1955
Rear Adm. John S. Thach	September 1955	October 1957
Rear Adm. Andrew McB. Jackson	October 1957	June 1959
Rear Adm. Raymond N. Sharp	June 1959	January 1961
Rear Adm. Harry L. Reiter, Jr.	January 1961	December 1962
Rear Adm. Edward J. O'Donnell	January 1963	January 1965
Capt. Francis D. Walker, Jr.	January 1965	May 1965
Rear Adm. John E. Dacey	May 1965	January 1967
Rear Adm. Roy G. Anderson	January 1967	February 1970
Rear Adm. Emmett P. Bonner	February 1970	April 1972
Rear Adm. Paul E. Pugh	June 1972	May 1973
Rear Adm. Merrill H. Sappington	May 1973	August 1974
Capt. Geo. P. Pavis	September 1974	June 1976

	Assigned	Detached
Col. Donald W. Tardif, USMC	September 1974	June 1976
Capt. John A. Coiner	August 1976	September 1976

SENIOR AIR FORCE MEMBERS  
WSEG

	Assigned	Detached
Maj. Gen. E. W. Barnes	1949	1953
Maj. Gen. Haywood S. Hansell, Jr.	April 1953	April 1955
Maj. Gen. Donald R. Hutchinson	August 1955	September 1957
Maj. Gen. Millard Lewis	May 1958	August 1959
Maj. Gen. Edward H. Underhill	May 1959	June 1960
Maj. Gen. Gabriel P. Disosway	June 1960	June 1961
Maj. Gen. Nils O. Ohman	September 1961	July 1964
Maj. Gen. D. O. Monteith	August 1964	August 1966
Maj. Gen. A. J. Beck	September 1966	July 1968
Maj. Gen. John S. Samuel	August 1968	July 1970
Maj. Gen. Fred J. Ascani	July 25, 1970	July 1973
Maj. Gen. Jimmy J. Jumper	July 1973	November 1973
Maj. Gen. Frederick C. Blesse	November 1973	July 1974
Col. Marvin O. Weber, Jr.	July 1974	February 1975
Brig. Gen. James R. Hildreth	February 1975	May 1976
Col. Marvin O. Weber, Jr.	May 1976	July 1976
Col. Norris J. Hanks	August 1976	Sept. 30, 1976

PRINCIPAL WSEG AND IDA OFFICERS, 1949-1976

Year	Director, WSEG	Director of Research, WSEG	President, IDA
1949	Lt. Gen. John E. Hull, USA (January)	Philip M. Morse (March)	Maj. Gen. James McCormack, Jr., USAF (Ret.) (April)
1950		Howard P. Robertson (June)	
1951	Lt. Gen. Geoffrey Keyes, USA (February)		
1952		E. Bright Wilson (July)	
1953			
1954	Lt. Gen. S. E. Anderson, USAF (August)	William B. Shockley (July)	
1955		Albert G. Hill (December) (Vice President and Director of Research, IDA, from April 1956)	
1956			
1957	Vice Adm. J. H. Sides, USN (August)		
		Director, WSED, IDA	
1958		Charles A. Boyd <sup>a</sup> (July)	Garrison Norton (February)
1959			
1960	Lt. Gen. William P. Ennis, Jr., USA (August)		
1961		George A. Contos <sup>a</sup> (Acting) (October)	
1962	Lt. Gen. Harvey T. Alness, USAF (September)	Robert F. Rinehart <sup>a</sup> (June)	
1963			
1964	Lt. Gen. Joseph R. Holzapple, USAF (March)	Bernard O. Koopman (January)	
1965		George W. Rathjens, Jr. (October)	
1966	Vice Adm. Kleber S. Masterson, USN (September)		
1967		Director, SED, IDA	
1968		John J. Martin (September)	Alexander H. Flax (September)
1969	Lt. Gen. Arthur W. Oberbeck, USA (September)	Alexander J. Tachmindji (November)	
1970			
1971			
1972	Lt. Gen. Glenn Kent, USAF (February)	Andre R. Barbeau (April)	
1973			
1974	Rear Adm. Merrill H. Sappington (Acting) (September)		
1975	Vice Adm. Edward C. Waller III (February)		
1976	Brig. Gen. Alfred B. Hale, USA (July)		

<sup>a</sup> Also served as Director of Research, WSEG. As of Aug. 23, 1962 (DoD Instruction 5129.39), this practice of "dual-hatting" the head of WSED as the Research Director of WSEG was discontinued.

Appendix B

PERSONS INTERVIEWED

## PERSONS INTERVIEWED

Mr. Andre R. Barbeau, Director, Systems Evaluation Division,  
IDA

Dr. Jerome Bracken, Project Leader, Program Analysis Division,  
IDA

Mr. William K. Brehm, former Assistant SecDef (M&RA)

Mr. Samuel E. Clements, Executive Assistant, DDR&E, USDRE

Dr. George A. Contos, former Assistant Director, WSED, IDA

Mr. Israel I. Deutsch, former staff member, WSEG; former  
Assistant Director, WSED, IDA

Mr. Peter G. Freck, former Deputy Director, Systems Evaluation  
Division, IDA

Mr. Daniel H. Gould, former Executive Officer and Secretary-  
Treasurer, IDA

Gen. Andrew J. Goodpaster, USA, former Director Joint Staff,  
former CINCEUR/SACEUR

Gen. Alfred M. Gruenther, USA, Ret., former Director Joint  
Staff, former CINCEUR/SACEUR

Dr. Albert G. Hill, former Director of Research, WSEG; former  
Vice President, IDA

Lt. Gen. James G. Kalergis, USA, Ret., Consultant, OSD Head-  
quarters Review, 1975

Dr. Francis B. Kapper, former Scientific and Technical Adviser,  
SAGA, JCS

Lt. Gen. Glenn A. Kent, USAF, Ret., former Director, WSEG

Mr. John B. Lawson, staff member, Systems Evaluation Division,  
IDA

Mr. Marx Leva, former Assistant Secretary of Defense

Mr. Joseph H. Lewis, former staff member, WSEG; former Project  
Leader, WSED, IDA

Vice Adm. Kleber S. Masterson, USN, Ret., former Director, WSEG

Mr. John H. Ohly, former Special Assistant to Secretary of  
Defense Forrestal

Dr. Don K. Price, former Deputy Chairman, Research and Development Board, DoD; former Staff Director, Rockefeller Committee on DoD Organization; former Member, President's Advisory Committee on Government Reorganization

Dr. David L. Randall, Assistant Director, Systems Evaluation Division, IDA

Dr. George W. Rathjens, former Director, WSED, IDA

Dr. Jack P. Ruina, former Director, ARPA; former President, IDA

Dr. Ralph Sanders, Professor, Industrial College of the Armed Forces

Gen. Berton E. Spivy, USA, Ret., former Director, Joint Staff

Mr. Leonard Sullivan, Jr., former Assistant Secretary of Defense (PA&E)

Gen. Maxwell D. Taylor, USA, Ret., former Chairman, JCS; former President, IDA

Capt. C. M. Woodworth, USN, former Deputy Chief, SAGA, JCS

Dr. Herbert F. York, former DDR&E

Dr. R. A. Winnacker, former OSD Historian

Appendix C

ORIGINAL DIRECTIVE, WEAPONS SYSTEMS EVALUATION GROUP

DIRECTIVE

December 11, 1948

WEAPONS SYSTEMS EVALUATION GROUP

I. ESTABLISHMENT

Recognizing the need for technical and operational evaluation on an inter-service basis, the Joint Chiefs of Staff and the Research and Development Board, with the concurrence of the Secretary of Defense, hereby establish The Weapons Systems Evaluation Group (hereinafter called "The Group").

II. FUNCTIONS

A. The purpose of the Group is to provide rigorous, unprejudiced and independent analyses and evaluations of present and future weapons systems under probable future combat conditions--prepared by the ablest professional minds, military and civilian, and the most advanced analytical methods that can be brought to bear.

B. The Group shall make comprehensive analyses and evaluations of weapons and weapons systems under projected conditions of war at the request of the Secretary of Defense, the Joint Chiefs of Staff, or the Research and Development Board, and analyses and evaluations so requested shall take precedence over those initiated by the Group. The findings and conclusions of the Group shall be advisory and not binding on any group or agency of the National Military Establishment.

C. The Group is authorized to obtain from any agency or group within the National Military Establishment such information as it may deem relevant to its studies, and it shall seek the advice of other groups and agencies within and without the National Military Establishment to the maximum extent appropriate. Information on War Plans and other matter with specific high security classification shall be obtained in accordance with established procedure of the agency in possession of the information.

III. ORGANIZATION

A. The head of the Group shall be a Director appointed by the Secretary of Defense with the advice of the Joint Chiefs of

Staff (JCS) and the Research and Development Board (RDB) from among the senior officers of the National Military Establishment.

B. There shall be a Research Director who shall be appointed by the Director, with the concurrence of the Secretary of Defense, the Research and Development Board and the Joint Chiefs of Staff. The Research Director shall be the chief scientific officer of the Group, and he shall serve as deputy director of the Group. Subject to the general supervision of the Director, he shall supervise and direct the work of the Group.

C. After consulting with the Research Director, the Director shall arrange for the assignment to the Group of such military personnel as he deems necessary, and the appointment of such civilian personnel as he deems necessary.

D. Subject to the provisions of Section IV hereof, the Director shall provide for the internal organization and procedures of the Group.

E. The Director shall prepare, for the approval of the Secretary of Defense, annual budget estimates for the Group, and he shall report annually to the Secretary of Defense, the JCS, and the RDB on the activities of the Group on a date specified by the Secretary of Defense.

F. The Director may recommend to the Secretary of Defense such contractual arrangements for analytical and professional services as he deems necessary from time to time.

#### IV. PROCEDURES AND ADMINISTRATION

A. Prior to accepting requests, the Director will consult with the JCS and the RDB to assure himself that each such request is likely to result in significant findings and conclusions within a reasonable period of time, is acceptable in form and content, and that each task is within the capacity of the Group.

B. After consultation with the parties concerned and subject to Section II hereof, the Director may establish and adjust from time to time the relative priorities of studies undertaken by the Group, provided, however, that serious disagreements may be referred to the Secretary of Defense.

C. The Director shall notify the Secretary of Defense, the Joint Chiefs of Staff and the Research and Development Board of the initiation of studies, together with the estimated dates of submission of tentative and final reports. The Director shall notify the interested parties of any change in such estimated dates, and he shall furnish progress reports on request.

D. Except where the JCS or the RDB or both are clearly not concerned, the report on each study undertaken by the Group shall be submitted to the said agencies for comments. Formal submission of each report shall be directly to the requesting party

and shall include any comments received as a result of such submission. Reasonable time for such review shall be provided by the Director in his time schedules.

E. It is expected that, after an initial period of organization and trial, the Group will have proved its worth and will then become a component of JCS. The Group shall therefore be transferred to JCS one year after the date of its authorization, subject however to the provision that RDB may at that time request of JCS a postponement of this transfer in the event that the one year period has been insufficient to have established the Group as an adequately staffed and effectively working organization.

F. The Secretary of Defense shall provide the Group with such personnel and facilities as he may determine to be required by the Group for the performance of its functions.