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U.S. AIR FORCE HISTORICAL STUDY NO. 68

**PURCHASING POLICIES, CONTROLS  
AND  
PROCEDURES FOR AAF MATERIEL**

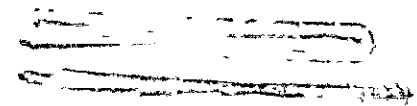
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PURCHASING POLICIES, CONTROLS, AND  
PROCEDURES FOR AAF MATERIEL

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FOR E J O R D

"We'll build them; you fly them" was a wartime poster simplification of the complicated business of planning and purchasing material for the AAF. This monograph, written by Frank C. Bourne, analyzes that business, especially as it was handled from immediately before Pearl Harbor to the end of World War II. It involved the perfecting of tools with which to execute the procurement program, a working organization, sufficient funds, and satisfactory contracts. It also included far-sighted planning, not only for specific items, but also for all the potential sources of supply; negotiating and writing contracts so that the public interest was safeguarded; and terminating contracts and arrangements expeditiously at the end of the war.

Although the subject covered in this study is restricted to the policies, controls, and procedures of purchase, it bears a close relationship to other air historical studies: AHS-6, The Development of the Heavy Bomber, 1913-1944; AHS-10, Organization of the Army Air Arm, 1935-1945; AHS-22, Legislation Relating to the AAF Materiel Program, 1939-1945; AHS-40, Expansion of Industrial Facilities under AAF Auspices, 1940-1945; AHS-47, Development and Procurement of Gliders in the AAF, 1941-1944; AHS-50, Materiel Research and Development in the Army Air Arm, 1914-1945; AHS-54, Development of Aircraft Gun Turrets in the AAF, 1917-1944; AHS-62, The Modification of Army Aircraft in the U. S., 1939-1945; and AHS-67, Standardization of Air Materiel, 1939-1944: Controls, Policies, Procedures.

Like other USAF Historical Division studies, this monograph is subject to revision, and additional information or suggested corrections will be welcomed.

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PURCHASING POLICIES, CONTROLS  
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Chapter I

THE MACHINERY FOR PURCHASE

To facilitate a thorough understanding of the procedures of contract and procurement in the AAF, a brief survey of the air force organization which superintended the acquisition of materiel is necessary. Although continual reorganization, changes of nomenclature, and re-divisions of responsibility characterized this phase of air force administration, the basic principles upon which the structure was built remained constant. Past experience, particularly that of World War I, was inevitably considered when basic policies were being developed, and special care was taken to prevent graft and favoritism.

Organization

In 1939 the Secretary of War maintained direction of the procurement program, the Assistant Secretary supervision, and the chiefs of the supply arms and services had administrative and operative functions subject to the approval of the former.<sup>1</sup> The power to procure materiel for the Army, which was the prerogative of the Secretary of War, was delegated by him to the Assistant Secretary (later Under Secretary) of War. In turn, this authority was further re-delegated in the chain of command to the contracting officers who carried on the actual negotiations with the contractors.<sup>2</sup> The Assistant Secretary of War, and later the Under Secretary, not only supervised procurement, but he or his designated representative was also responsible for the approval

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of contracts which involved more than \$500,000<sup>3</sup> on a cost-plus-fixed-fee basis; by 1942 this figure had reached \$5,000,000. He also approved split awards<sup>4</sup> and "negotiated" contracts valued at more than \$5,000,000.<sup>5</sup> Under Secretary's "special" representative was an Army Service Forces man who theoretically acted for him as head of the service forces when dealing with them and as head of the air forces when dealing with AAF problems. Usually his directives to the AAF were colored by ASF policies, however, but instead of causing undue friction, they engendered a similarity of procurement policy throughout the Army.<sup>6</sup>

Various civilian agencies at high levels were authorized to review and approve consequential purchases. Their basic interest, however, was only the acquisition and distribution of scarce raw materials and the use of limited productive space to the best national interest. In 1940 Commissioner William S. Knudsen of the Advisory Commission to the Council of National Defense reviewed, approved, and coordinated all contracts for aircraft, aircraft parts, and accessories which normally were submitted to the Assistant Secretary of War.<sup>7</sup> In 1941 all orders over \$50,000 for a large assortment of goods were submitted to the Office of Production Management, Division of Purchases two weeks before requests for bids were sent out or negotiations begun, in order that coordination in production might be attained.<sup>8</sup> In 1942 these powers of review and coordination were transferred to the War Production Board (WPB).<sup>9</sup>

On 1 January 1942 the Chief of the Air Corps (and later the Commanding General, AAF) was authorized to approve contracts under

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 \$1,000,000<sup>10</sup> (earlier he had approved all those under \$500,000).<sup>11</sup>

Actually the procurement authority of the Chief of the Air Corps was vested largely in the chief of the Materiel Division. For a time-- April 1942 to May 1943--the Chief of the Air Corps was by-passed in the chain of command, and the authority of the Under Secretary of War was delegated to the commanding general of the Materiel Command.<sup>12</sup>

In the period of emergency and during the early part of the war, the Materiel Division at Washington acted as liaison between the Wright Field organization and higher authority in Washington. With the re-organization of the War Department in March 1942, the Washington offices were assigned supervisory, integrating, and policy-making functions. But, although the chief of the Materiel Division was authorized to approve contracts of \$1,000,000 or less, in practice his Washington office still frequently served only as liaison and reviewing authority to transmit contracts from Wright Field to the office of the Under Secretary.<sup>13</sup>

The Budget and Fiscal Office of AAF Headquarters played a vital role in the work of the Materiel Division, acting as it did in a supervisory and coordinating capacity over the Contract Audit Branch at Wright Field and the offices of the audit districts which functioned in the materiel districts.<sup>14</sup> The freedom of this office from direct Materiel Command control was criticized by the Materiel Command since its contracting officers had to assume full responsibility for vouchers based on the audits and judgment of resident auditors not under its control.<sup>15</sup>

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The materiel organization at Wright Field was responsible for general procurement procedures for the AAF. Serving as the primary purchasing agency, its centralized control was considered essential to insure uniform methods, to bring about economy in quantity procurement, and to build up a body of efficient personnel.<sup>16</sup> The commanding general of this organization was authorized to approve contracts up to \$1,000,000, while the chief of the Contracts section at Wright Field could approve those of \$500,000 or less, and the individual contracting officer could approve those up to \$100,000.<sup>17</sup>

Four principal functions were performed at or directed from Wright Field: planning, engineering, procurement, and inspection; and these functions remained fixed even when their executing agencies were shuffled around or underwent changes of designation. Planning was actually the responsibility of a variety of agencies at the field: Production Engineering, Production Control, and Production Resources, in conjunction with JPB and Joint Aircraft Committee (JAC) agencies.<sup>18</sup> The engineering agencies prepared and approved designs, initiated procurement, and passed on capabilities, airworthiness, and on the performance of specific manufacturers. The contracting agency prepared the formal contract,<sup>19</sup> and the inspection agency supervised the work of the factory inspectors, who in turn saw that the details of the contract were met.<sup>20</sup> Besides its titular duty, the Contracts Section distributed "Authorities for Purchase" to the district offices, analyzed costs, investigated and complied with priorities regulations, and kept the only complete files of contracts.<sup>21</sup>

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Friction inevitably arose as Production Engineering tended to usurp functions which belonged to other agencies at Wright Field; for example, in the field of procurement, it assumed the responsibility of reviewing contract deviations in price, quality, and quantity, and followed up contracts to assure that the procuring agency processed contracts in the minimum time.<sup>22</sup> This brought protests from sources both within and without Wright Field.<sup>23</sup> A tendency to allow contract expiration dates to approach too closely before deciding whether additional production was desired by the Materiel Command apparently resulted from poorly defined and imperfectly respected divisions of responsibility. Many times this kind of administrative lapse provoked contractors to search for new contracts elsewhere, not the least of the reasons being the insufficient time thus allowed them to procure additional materials and supplies.<sup>24</sup>

Another extraneous activity of considerable importance was set up in 1944 at Wright Field, the Aircraft Scheduling Unit, operating as an agent of the Joint Aircraft Committee, the Aircraft Production Board, the Aircraft Resources Control Office, and the War Production Board. The unit acted as a central clearing agency for equipment components and materials necessary to maintain the schedules set up by JAC, and studied the capacity of and scheduled the deliveries from AAF plants.<sup>25</sup>

Despite its responsibility and specialized knowledge, Wright Field was sometimes bypassed by higher authority in Washington in procurement matters. For example, Generals Arnold, Echols, and Giles,

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against the advice of Wright Field engineers, insisted on the production of the abortive MC-1 glider at a cost of more than \$771,277.15 to the taxpayers.<sup>26</sup> The materiel center was chided by Washington headquarters for making what it called "tactical" rather than technical comments on proposed procurements.<sup>27</sup>

Fanning out from the core organization at Wright Field there was a tremendous subordinate field organization of district officers, area officers, contracting officers, inspectors, and auditors. At the beginning of the war there were three districts in the United States, eastern, central, and western, to which were added the midwestern in 1942 and the southwestern and midcentral in 1943. The district offices were organized along the same lines as the Materiel Command at Wright Field,<sup>28</sup> and in the industrial areas or in the factories themselves contract sections were set up.<sup>29</sup> Before the autumn of 1941 the district supervisors were responsible for the proper execution of Materiel Division field functions pertaining to the accomplishment of contractual obligations between the Air Corps and its contractors.<sup>30</sup>

As early as 1941 a decentralization of procurement from Wright Field to the procurement districts was proposed and accepted as Air Corps policy. The move, however, had ardent supporters and equally convinced detractors, so that it resulted in considerable bickering, disorganization in the lower echelons, and uncertainty in the district offices and among manufacturers. Mainly, it was felt that decentralization was needed to maintain closer contact with manufacturers, particularly the smaller ones, and to avert top-heaviness at Wright Field in a time of expanding

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 production.<sup>31</sup> In part, it was to be effected by placing all the actual work of procurement and the handling of awards, contracts, and change orders of value less than \$1,000,000 with the district organizations.<sup>32</sup> Such a program was spurred on by the statement from Secretary Stimson that "decentralization . . . is desired in the interest of speed."<sup>33</sup>

On the part of the Materiel Command, enthusiasm for the move was mixed with fuzziness as to its actual purpose. There appeared to be little realization that although decentralization in administration of contract auditing and inspection might be necessary and desirable, the relegating of procurement duties to district and even plant levels would increase manifold the difficulties of maintaining a directed, integrated plan of procurement. One impracticable feature was early pointed out by Air Corps officials: the districts lacked necessary engineering staffs whereas Wright Field had an excellent one.<sup>34</sup>

In June 1942 the chief of the Materiel Command was asked to what extent the authority had been given to contracting officers to award contracts of less than \$5,000,000 value without reference to higher authority. He replied that contracting officers were approving contracts up to \$100,000 and that those of a greater amount were forwarded to the commanding general of the Materiel Command for approval. Further delegations were unnecessary, he believed, "since local purchases exceeding this amount are rare".<sup>35</sup>

With the appointment of Brig. Gen. C. E. Dranshaw to head the Materiel Command in 1943, decentralization was accelerated. General

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Branshaw had been a district supervisor in the Western District and thought very highly of the plan to allow the districts to administer the procurement program. In June 1943 he ordered all the district supervisors to visit the Western District to observe how their own districts should be organized for maximum efficiency in decentralization.<sup>36</sup>

All Authorities for Purchase (AFP's) presented to the Procurement Division at Wright Field were studied, and the ones which were felt would be readily handled by the districts were extracted. It was generally believed, however, that the following items were not suitable for district procurement: airframes, engines, propellers, materials allocated by the Aircraft Scheduling Unit, lumber, and gasoline and oils; in addition, the following classifications were to be excluded: a general schedule of supply items, items of limited sources and those not all in one district, items whose sources were close to Wright Field, items whose manufacturers had a local representative to clear all orders, small confirming orders, items in the local purchase category, and policy items. With these exceptions 318 contracts amounting to \$4,945,390.18 had been let by the districts by 15 March 1943.<sup>37</sup> Even in this limited amount of procurement, however, the districts experienced difficulties because of (1) time lost by negotiators in seeking further clarification on AFP's from Wright Field, (2) the lack of shipping instructions, (3) the fact that delivery dates were too early to permit the districts to survey potential contracting firms, and (4) a lack of experienced personnel in the districts.<sup>38</sup>

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An AFP Committee was established in the Procurement Division at Wright Field in the Spring of 1943 to expedite the clearance of AFP's through the division.<sup>39</sup> The authorities for district purchase which were then sent out gave detailed instructions concerning the contract, including preference rating and allotment authority.\* Under this system a great increase in the amount of district procurement was effected.<sup>40</sup>

Considerable dissatisfaction continued, however, with the way decentralization of procurement was being carried out. Manufacturers who feared that it was creating confusion for those companies which had branch plants in several localities petitioned Wright Field to handle all procurement in such cases.<sup>41</sup> On the other hand, the interference at Wright Field with the functioning of district offices was resented by district personnel:<sup>42</sup>

The districts are being constantly bombarded with correspondence of various types dealing with reorganization of districts..., [a district supervisor wrote,] There is an endless amount of work being performed in trying to juggle personnel to meet charts prepared by somebody else.... It is strongly recommended that unless some particular district is not operating in an efficient manner, ... there be no further correspondence on the matter for a period of at least several months.... It is recommended that efficient personnel be placed at the district and that that personnel be allowed to run the district.

Complaints also were heard at Wright Field: by sending AFP's to the districts, control and administration by vitally interested agencies

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\* Other information included was as follows: item and description, quantity, shipping instructions, deliveries required, program involved, applicable wage determinations, prospective sources, and estimated price if possible. (FO Memo #61, 30 Nov. 1942, in AISC Central Files, 321.9, Decentralization.)

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such as the Engineering Division were lost.<sup>43</sup> The reaction to these objections was implicit in a memorandum of Brig. Gen. A. E. Jones:<sup>44</sup>

The statement made in... reference individuals of the Procurement Division not agreeing in principle with the over-all policy of decentralization may or may not reflect some opinions. Regardless of their opinion, decentralization is being effected and will be effected to accomplish procurement as efficiently in the districts as at Wright Field.

During the following year, after the departure of General Branshaw from Wright Field, the opponents of decentralization began to regain sway; by July 1944 the district supervisors had agreed to eliminate all district procurement except in extraordinary cases.<sup>45</sup> In the autumn of 1944 all procurement functions other than the administration of contracts were being performed at Air Technical Service Command (ATSC) Headquarters rather than in the districts.<sup>46</sup> Other functions of the districts, however, such as price inspection, continued to be decentralized to area and plant levels in a reasonably effective manner.<sup>47</sup>

A resume of the duties of a district office for the concluding months of the war show it to have been the mainstay of the procurement organization of the air forces despite the loss of the contracting function.\* Charged with the field functions of ATSC with respect to procurement and acceptance of aircraft and related equipment, the district gathered information and furnished recommendations pertaining to the performance and ability of industry within its districts; it procured aeronautical equipment under certain circumstances and administered contractual instruments; it cooperated with industry and

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\* In the interest of speed, latter contracts were issued upon telegraphic instructions from higher authority.

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other government agencies in converting industry and in estimating the capacity of the district to produce required equipment; it assisted industry in the distribution of manpower, materials, and machine tools; it supervised government inspection; and it assisted industry in the general problems of readjustment.<sup>48</sup>

Recruiting and Training

The personnel upon whom the principal burden of responsibility for a successful program of procurement fell were the contracting officers. These men were chosen for business experience, professional and specialized abilities, educational background, evidence of business acumen and intelligence, and knowledge of basic policies.<sup>49</sup> The authority to appoint contracting officers was delegated to the Commanding General, AAF and he in turn gave the responsibility to chiefs of the ATSC Procurement and Readjustment Divisions, to the commanding officers of Wright Field, of each area ATSC and overseas ATSC, and to the commanding generals of the districts.<sup>50</sup>

In June 1943, as a partial result of the decentralization program, a need for more personnel arose in the districts. The acquisition and training of these men were carried out under the direction of the chief of the Legal Branch, Wright Field, where indoctrination courses were held for many of the officers selected. Nevertheless, in the summer of 1943 Col. Donald C. Suttano found the districts understaffed and the officers on hand poorly grounded in A.F. policies and procedures. To alleviate the situation, he ordered the preparation of a training manual (Handbook for Contracting Officers, 1 November 1943) and

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persuaded Brig. Gen. A. E. Jones to agree to a program for the procurement and training of additional officers.<sup>51</sup> This request was presented directly to Under Secretary Robert A. Lovett who gave highest priority to a project to procure 200 officers.<sup>52</sup>

Three types of officers were sought: plant contracting officers, legal officers, and termination officers, a different set of requirements being established for each type. In the beginning, a good many lawyers were selected, but the emphasis came to be placed on the procurement of business men. A preference was shown for men with college and business administration backgrounds who had commanded an annual salary of at least \$5,000. Only 25 of the 180 officers selected were taken directly from civil life, and these were lawyers; most of the others were men who had held managerial positions prior to their entering on active duty.<sup>53</sup>

Beginning on 8 November 1943 and ending 18 March 1944, four successive courses of instruction were instituted at Wright Field. They were planned so that slightly different emphasis would be given officers chiefly concerned with local purchases and those interested in headquarters functions. The training gradually came to include more and more termination indoctrination; indeed, in the last phases the whole program was concerned with termination. The graduates were interviewed at the end of the course and were assigned in accordance with personal wishes and demonstrated abilities. Later (October 1944 to June 1945), eight additional courses were given for retraining men already in the program.<sup>54</sup> Many contracts which would be handled by these officers assigned important administrative details to "the contracting officer," and as a matter of policy and

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practice this come to mean any contracting officer. In view of this interchangeability of obligations and responsibilities, it was necessary to emphasize in the refresher course of instruction the responsibility and authority that they held.<sup>55</sup>

Appropriations

No discussion of the machinery used by the AAF for the procurement of materiel would be complete without a consideration of the amounts appropriated by Congress to carry out the program, and the amounts actually expended by the air forces.\* For the fiscal years 1939-1945 Congress appropriated \$72,291,425,892 for the Army Air Forces;<sup>56</sup> of this amount, approximately \$6,000,000,000 was allocated in contracts.<sup>57</sup> Although the total actually expended during the period 1 July 1940 to 30 June 1945 was only \$38,000,000,000,<sup>†</sup> the immensity of the procurement problems is quite clear.

Approximately five-sixths of the total expenditure by the AAF was for materiel. This was further broken down in many cases into "procurement of production quantities" or "experimental projects," and procurement of "service test equipment." The figures for the years 1942 and 1945 in the following chart will give a fair conception of how the appropriations were allotted:

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\* The story of appropriations is discussed at length in AHS No. 22 (Revised), Legislation Relating to the AAF Materiel Program, 1939-1945, pp. 2-62. Since it is difficult to get exact figures for actual expenditures over an extended period of time because of such things as cut-backs, voluntary reductions, renegotiations, and changes in bookkeeping methods, the overall figures in this section are given in round numbers and undoubtedly vary in accuracy.

† The difference is due to terminations and to unilateral action reducing estimates on CFA contracts.

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Status of Fiscal Year 1942 AAF Expenditure Program as of 30 June 1942<sup>58</sup>

	<u>Budget</u>	<u>Obligation</u>
New Aircraft, Engines, Parts, and Spares	18,212,786,134	14,583,611,988.47
Experimental Projects	80,392,112	58,037,584.55
Service Test Equipment	<u>11,068,270</u>	<u>1,877,321.93</u>
	18,334,246,516	14,646,559,894.95

Status of Fiscal Year 1943 AAF Expenditure Program as of 30 June 1943<sup>59</sup>

	<u>Budget</u>	<u>Obligation</u>
New Aircraft, Engines, Parts, and Spares	7,958,069,328.72	8,422,607,542.23
Experimental Projects	106,775,702.77	95,713,239.81
Service Test Equipment	<u>9,433,000.00</u>	<u>9,392,051.87</u>
	8,071,278,031.49	8,527,712,833.91

Procurement Status Report as of 30 June 1944<sup>60</sup>

	<u>Budget</u>	<u>Obligation</u>
Total for Complete Aircraft	17,449,807,088.32	16,750,202,597.06
Research and Development	117,796,078.00	117,612,416.48

ATSC Expenditure Program Fiscal Year 1945 as of 30 June 1945<sup>61</sup>

	<u>Budget</u>	<u>Obligation</u>
Complete Planes and Parts	8,473,556,817.78	7,660,298,111.20
Aeronautical Experimental	137,114,000.00	137,113,798.85
Service Test Equipment	<u>4,650,000.00</u>	<u>4,464,157.69</u>
	8,615,350,817.78	7,801,906,397.74

Congress fulfilled its monetary obligation to the AAF's procurement program with an unstinting, even lavish, hand, and it built up for the air force an organization of trained personnel who spent the appropriations in a generally efficient manner. Nevertheless, Congress showed a great

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and continuing interest in how the funds were expended. The types of contracts used and the methods of award resulted from years of contract experience, cooperation between Congress and the War Department, suggestions and countersuggestions, trial and error, and the fruits of almost continuous legislative investigation.

#### Types of Contracts

Two types of contracts were primarily used by AAF procurement agencies: the fixed-price (FP) or "Lump Sum" contract and the cost-plus-fixed-fee (CPFF) contract, the former being the usual peacetime method prescribed by the government. In a FP contract, the contractor and the contracting agency agreed on a set amount to be paid to the contractor for specified items of a certain quantity and quality. This type of agreement was favored because it protected the government against excessive costs. The FP contract, however, necessitated a thorough knowledge of the expenses involved in the manufacture of an item, in order that the contractor not assume too great a risk, nor the contractee be overcharged. It also presupposed stable conditions of labor and labor costs, and sufficient time on the part of both parties to study the projects before signing contracts.

Despite the unstable conditions of the war period, the FP contract was used wherever the contracting parties were convinced on the basis of past experience that the cost could be reasonably determined in advance. It was also used at the other extreme, though, for example in contracting for gliders: the government preferred to protect itself in this case by means of the fixed price because so much of the work was undertaken

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by small, inexperienced companies. Unfortunately, though not wholly unexpectedly, constantly rising costs drove to bankruptcy several companies which had accepted these FF contracts.<sup>62</sup>

In order to use FF contracts to the limit at the beginning of the war when production experience was limited, the War Department authorized additional provisions in the contracts which fixed a tentative original price subject to readjustment after partial performance. In January 1944 the department authorized a periodic adjustment of prices,<sup>63</sup> which divided the long-term contracts into a series of shorter periods from four to six months each. The contract price was fixed for only one period, at the end of which the price for the succeeding period could be set either upward or downward, according to conditions then prevailing. The fact that the price was fixed for a short period only, relieved the contractor from making commitments too far ahead. In addition, the contracting officer was authorized, at his discretion, to exempt from renegotiation the price fixed for any period. This possibility of exemption from renegotiation served as an incentive for the contractor to reduce costs during each period.<sup>64</sup>

The number of FF contracts was considerably greater than the CPFF types: from June 1940 to June 1944, 346 FF contracts for aircraft and accessories had been let as compared with 253 CPFF contracts.<sup>65</sup> In dollar value this amounted to 59.6 per cent of the total expenditure for the period 1 July 1940-30 June 1945.<sup>66</sup>

Congress, mindful of the scandalously high prices resulting from the use of cost-plus-percentage-of-cost (CPFC) contracts in World War I and the consequent opprobrium of many prominent citizens, specifically

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outlawed it in almost every law dealing with government procurement. Certain clauses in some CFFR contracts nevertheless approached cost-plus-percentage-of-cost in spirit. For example, a contract with the Ford Motor Company<sup>67</sup> provided a fixed fee of \$5,295,000 for the manufacture of engines (5 per cent of the estimated cost of \$116,498,520); the fixed fee for spare parts, however, was placed at approximately \$529,000 (5 per cent of the estimated cost) and

the fixed fee referred to herein shall be subject to increase or decrease resulting from authorized changes...and the estimated costs and fixed fee for spare parts shall also be changed to the estimated costs and applicable percentage of the fee resulting from the determination of the items of specific parts to be purchased and the estimated cost thereof as compiled from the breakdowns to be furnished by the contractor.

Careful supervision of the terms of proposed contracts and agreements was maintained by the Air Judge Advocate to eliminate, whenever possible, any approach to the cost-plus-percentage-of-cost factor. In a review of the terms of a supplemental agreement with the Ford Motor Company (which covered the procurement of supplies and services for an amount not to exceed \$2,887,500) the Air Judge Advocate maintained that it approached cost-plus-percentage since it left both the cost and the fee for future determinations. To remedy this, he suggested that the available funds be definitely divided and allocated as fixed fee and estimated cost; if the cost could not be estimated, a fixed fee should be provided. If neither of these steps were feasible the contract should be of shorter duration in order that a more appropriate contract could be drawn following the trial period.<sup>68</sup>

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During the war, especially in its earlier phases, many items had to be procured for which the fixed-price type of contract was completely unsuitable. The CFFP contract, therefore, was usually used to procure completely new items, those in the experimental or developmental stage, and those for which the plans and specifications were not complete at a time when it was advantageous that work be started. This type of contract was highly desirable in many cases, especially for contractors who lacked previous production experience and where data covering costs were lacking. On the other hand, contractors often needed such contracts because of insufficient capital, an over-expanded volume of business, or fear of termination losses and delays. (Many items in the aircraft industry were subject to almost continuous specification changes throughout their manufacture, a factor which could increase the estimated cost of production incalculably.)<sup>69</sup>

Until a full understanding of production costs was reached, the use of CFFP contracts often proved more economical to the government than FP contracts because of the additional risks that the contractor felt he must face with the latter. It is significant, however, that the costs incurred by contractors with CFFP contracts often compared favorably with those of FP contracts as the following chart indicates:<sup>70</sup>

R-3350 ENGINE

	<u>Wright-Hoodridge (FP)</u>	<u>Dodge-Chicago (CFFP)</u>
Total Units	6,715	7,769
Total Hours per Unit	3,951	3,833
Per cent Subcontracted	46%	26%
Cost to Government per Unit	\$20,367	\$15,099

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MILITARY PROPELLER, STANDARD DESIGNFrigidaire (FP)      Nash-Kelvinator (CFFF)

Cost per Unit (1944)                      \$1,107                      \$952

Studebaker costs for Wright 1820 engines on a CFFF contract were very close to Buick and Chevrolet costs on FP contracts for comparable Pratt and Whitney 1830 engines.<sup>71</sup>

The use of CFFF obviously necessitated a close government audit of the contractor's expenses, and required not only approval of the manufacturer's expenditures for materials and services, but also of his application of manpower.<sup>72</sup> Costs resulting from experimental contracts on a CFFF basis frequently ran far beyond original estimates, so that close observation of expenses as they accumulated was necessary, as well as a determination by liaison with the Engineering Division at Wright Field whether the value of the project was commensurate with the cost.<sup>73</sup>

The various disadvantages in the use of the CFFF contracts, and the possible danger of their paralleling the history of CFFC contracts, made them the objects of public and Congressional suspicion from the beginning of the war. As late as the summer of 1944, legislation limiting their use was still being discussed. A widespread sentiment was expressed in testimony before a subcommittee contemplating such a move:<sup>74</sup>

Former Secretary of the Navy Daniels...wrote me a personal letter from Mexico shortly after I took office in 1940. He said, "I see that Congress has passed an act to permit contracting on a cost-plus-fixed-fee. As one who saw what went on in World War I, I predict that they will rue the day they ever did that."

I wrote back to him and said, "Congress is determined, as far as possible, to take profiteering out of this war and I am convinced that the CFFF contract is the best way to handle it. We will know, then, what we will pay, and it will be a great improvement on the old World War cost-plus-percentage type of contract."

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Well, Gentlemen, it has proved to be just exactly the opposite; under it waste and extravagance have been permitted and actually encouraged by the contracting agencies--and they are told to be bold, to be realistic, to help the contractor.

Despite an increasing understanding of costs and production, the very nature of aircraft production with its continuous changes in specifications demanded the use of CPFF contracts. It did not, however, provide an incentive for the contractor to control cost or utilize manpower efficiently. To obviate this difficulty, a system of fixing fees in accordance with the number of units produced was occasionally attempted; this afforded the contractor an opportunity to gain a larger aggregate fee by increasing his rate of production, and also tended to reduce costs because of the utilization of more efficient methods.<sup>75</sup> As another incentive to efficiency and lower costs, a modified form of the British "target price contract" was considered. In this system a target estimate of the cost was fixed, and after part performance, the fee was increased if the costs had been reduced below the estimate through efficient manufacture.<sup>76</sup>

The basic problem involved in the system of rewards to the efficient producer was the difficulty in estimating the part of the reduction in costs that resulted from efficiency and the part that resulted merely from increased quantities. In addition, in the administration of contracts which contained an incentive factor, it was almost impossible to determine precisely what was allowable to costs: for example, bonuses to employees, salaries over \$25,000 a year, and state sales taxes, which normally were not levied on government purchases.<sup>77</sup> As a result of the

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difficulties inherent in making awards, the AAF remained generally hesitant in using the incentive type of contract. The fear was ever present, apparently, that the original estimates by contractors would not be made in good faith.<sup>78</sup>

The statutory limit to the amount of the fixed fee was 7 per cent of the estimated cost of the complete contract exclusive of the fixed fee.<sup>79</sup> This figure is of interest particularly when it is compared with the general profit percentages enjoyed by the aircraft industry in 1938. "The 1938 audits...revealed that on all Air Corps contracts the profit had been 12.55%; on airplane contracts, 24.21%."<sup>80</sup> Although Assistant Secretary of War Louis B. Johnson deplored the delimitation of profits to 7 per cent because he felt that this would hinder the expansion of company facilities,<sup>81</sup> actually the AAF made it a policy to decrease steadily the amount of the fixed fee to about 4 per cent.<sup>82</sup> The lower percentage of fixed fee returns was made applicable particularly in those cases where the contractor's business was four times his investment.<sup>83</sup> Thus, contractors ran risks of large disallowances by the General Accounting Office. For the fiscal year 1943, for example, Lockheed was disallowed \$12,200,000; Douglas, \$6,000,000; and Consolidated, \$3,000,000. When the AAF's 4 per cent fee was reduced by disallowances and taxes, the contractors felt that the profit was small recompense for their services: a threefold increase in net profit on a thirtyfold increase in net sales was pointed to as being inconsistent with a doctrine of reasonable compensation.<sup>84</sup> When the estimated costs were less than actual costs, the fixed fee was not increased. On the other

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hand, if the actual costs were less than the estimated costs the fee might be reduced. Thus, there was little incentive to reduce reimbursable costs.<sup>85</sup>

Cost-plus-fixed-fee contracts were usually of considerable size and were distributed among only a small number of important contractors. They were most used in the acquisition of airplanes, where they accounted for 72 per cent of the total procurement.<sup>86</sup> Of the \$20,359,200 spent in CPFF contracts from 1 July 1940 to 30 April 1945, 26 contractors alone accounted for \$24,359,900; 10 companies accounted for 75 per cent of the total, with Douglas, Ford, and Boeing alone receiving 42 per cent.<sup>87</sup>

Another type of contract utilized rather extensively by the AAF was one that had proven successful for the purposes of the Office of Scientific Research and Development. According to this type, the government paid all the actual costs of work and allowed<sup>88</sup> no profit payments. The AAF employed this OSD "no-profit-no-loss" type of contract with educational institutions when the proposed project was one of basic research. It was also used when manufacturers needed new facilities, blackout protection, transport service, or specially trained personnel.<sup>89</sup>

#### Financing

The enormous demands of the Army Air Forces for equipment and supplies required that all available facilities and personnel be employed to the maximum extent possible. Many contractors were capable of meeting a larger share of AAF demands if they were afforded means to expand their

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plants or to purchase additional materials without too great a risk to themselves. These means, of course, usually took the form of financial assistance, furnished primarily in three ways: government-guaranteed loans, advance payments, and direct War Department loans administered by the AAF.<sup>90</sup>

Government-guaranteed loans were authorized by the First War Powers Act and Executive Order 9001. To obtain one, the contractor first applied to a bank or banks who would agree to provide funds on condition that the government guarantee a part of the account. Application was then made to the Army Service Forces liaison officer stationed at the Federal Reserve Bank of the contractor's district. If the financing were for prime AAF contracts, the AAF liaison officer gave his approval only on the basis of satisfactory replies to queries as to whether or not the financing was necessary for the war effort, the technical ability of the applicant was satisfactory, and cutbacks were contemplated. As security, receivables were assigned or earmarked for the AAF and restrictions were placed on salaries and dividends. This method of financing was widely favored because it was available for subcontractors who were not eligible for advance payments. One hundred per cent financing by advance payments was utilized if the contractor was unable to finance his work with his own capital, could not procure private financing quickly, or justifiably refused to use his own capital or a loan. At first the advance was interest free, but after 8 June 1942, 2 1/2 per cent was charged. The interest was computed monthly on the average daily unliquidated balance of advance payments; it ceased to accrue upon the completion or termination of the contract.

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On 30 June 1945, 74 per cent of the total amount loaned under the advance-payments methods of financing was in the hands of 11 GPF contractors; the 99 others who were being financed by this means were chiefly occupied with EP contracts. As of 31 August, AAF contractors had been advanced \$3,706,284,744 of which \$627,497,494 was outstanding or unliquidated. The total losses on advance payments, however, amounted to only about \$1,000,000 (.001 per cent of the total), and it was estimated that the AAF received a minimum of \$15,000,000 in interest.

On GPF contracts the advances were made to finance the "voucher-ing period," which extended from the time of the actual expenditure of the advance-payment funds to the time of reimbursement by the government. The sum advanced was deposited and could be immediately withdrawn with the countersignature of the AAF contracting officer. The advance of 10 to 20 per cent of the estimated cost of a whole contract was usually sufficient to give GPF contractors the necessary working capital. If used improperly, the contractor had to make the amount good.

No liquidation of the advance was effected until near the end of the contract performance when the last unreimbursed portion of the contract equalled the advance payment, at which point the advance was liquidated by application of 100 per cent of all vouchers thereafter submitted for reimbursement.

This method of financing proved very workable since sufficient quantities of money could be obtained at low rates of interest; it was used by Douglas, Boeing, Republic, Goodyear, Martin-Nebraska, Ford, Chrysler, Peckare, Curtiss-Wright, Wright Aeronautical, and General Railway Signal Company.

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On FP contracts, the amount advanced was limited to a certain percentage of the contract price and was determined by cash requirements data submitted by the contractor. The advance was progressively liquidated by deductions from each invoice for delivered goods. The greatest difficulty in the procedure arose from low bids submitted by weak, inexperienced companies who hoped to be bailed out by upward price re-determination. At times these shoe-string businesses caused unsound financial situations to arise: they might be financed by advance payments on one contract by one agency, by a loan from a different agency, or by advance payments and, perhaps, at the same time be in debt to still another agency or the Treasury for taxes. The necessity for speed often precluded investigation of the financial status of contractors. In a few cases where a vital contractor was involved with several agencies and was so weak financially as to make it impossible to get a bank loan without a 100 per cent government guarantee, the War Department made a direct loan, or a special advance-payment agreement to fit the situation. This latter arrangement required the special approval of the Fiscal Director at Washington. The Air Technical Service Command certified the need, and all funds went into a special bank account. Withdrawals were made on the counter-signature of the ATSC contracting officer assigned to supervise the loan.<sup>92</sup>

Method of Award

In the 20 years preceding the national emergency, one of the most difficult problems in the procurement of aeronautical material was the interpretation of basic policy in the method of awarding contracts. As early as the Civil War, government policy was directed toward competitive

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bidding as a basis for the award of contracts.<sup>93</sup> This principle was reiterated by the act of March 2, 1901,<sup>94</sup> which specified that, except in an emergency or when competition was impracticable, all purchase be after advertisement and from the lowest bidder. Army regulations were based on this principle.\* In 1942, however, the Lampert Committee (a House committee) suggested that the purchase of aircraft without the restriction of competitive bidding would be to the government's interest,<sup>95</sup> and in 1925 the Morrow Board suggested a modification in competitive bidding procedures.<sup>96</sup>

After a series of measures had been considered, the Air Corps Act of 2 July 1926 was passed, requiring, among other things, that contracts be awarded only after a 30-day period of advertisement and the submission of designs for competitive judgment. A board was to select the best design and the contract would be awarded to the successful company if it could perform the job at a reasonable cost. In case the designer was unable to fulfill the contract at a fair price the Secretary of War was empowered to award the contract to another company using the accepted design. Aircraft and parts of standard design were to be bought from the lowest bidder.<sup>97</sup> And after a contract was awarded, a careful check was to be made of the company's books.

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\* See, for example, AR 5-240, which stipulates that formal advertising and competitive bidding may be dispensed with only where (1) there is only one producer, (2) there is a patent and the patentee alone sells at a fixed price, (3) articles required are parts of apparatus already in use and can be furnished only by one dealer, and (4) the purchase is of experimental models.

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From 1926 until the beginning of World War II, the interpretation of the intention of this act as to methods of procurement was the source of continual misunderstanding. According to decisions of the Judge Advocate General,<sup>98</sup> a paragraph of the act of 1926, which allowed for purchase of experimental aircraft, parts, and accessories by the Secretary of War "at his discretion," did not rescind the provisions of Section 3709 of the Revised Statutes, requiring advertisement prior to quantity procurement. Almost as soon as the act was passed, however, members of Congress expressed the conviction that the bill permitted negotiated contracts of all sorts; otherwise, it was believed obsolete models would result.<sup>99</sup> The Baker Board in 1934 held that the act had set up three methods of procurement, purchase after design competition, purchase by negotiation, and purchase by open competitive bidding. If the interpretation allowing for negotiated procurement were held to be incorrect, the board stated further, immediate efforts should be made to secure appropriate amendments.<sup>100</sup>

In the years following the passage of the act, the Air Corps, under one pretense or another, procured large numbers of aircraft by direct negotiation. Before a committee investigating profiteering in military aircraft in June 1934, Maj. Gen. Benjamin D. Foulois testified that the purchase of planes "had been chiefly under the negotiated system, almost entirely for the past three years"; Maj. Gen. Oscar Westover admitted the accuracy of the statement. Both were familiar with the fact that the Judge Advocate General had called such negotiated procurement a violation of existing statutes, and as a result of this revelation, the committee recommended that General Foulois be relieved as Chief of the Air Corps.<sup>101</sup>

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After the investigation, the Air Corps followed a policy of procurement after competitive bidding.<sup>102</sup> Nevertheless, serious doubts arose as to the fundamental wisdom of this method of procurement, for it was feared that a few large companies would monopolize the contracts by underbidding their weaker competitors. Senator Warren R. Austin of Vermont in 1939 pointed out this danger, emphasizing the necessity of having as broad a source of supply as possible for times of crisis. At this time Maj. Gen. G. M. Messon replied that the AAF must interest itself primarily in adequate capacity, not in distribution; in any case, he added, the current procedure was according to the law of Congress.<sup>103</sup>

Competitive bidding had in fact distributed awards in an uneven manner: 75 to 80 per cent of all contracts awarded had gone to the north and northeast and only 15 per cent to the west.<sup>104</sup> Until the time the United States entered the period of national emergency, however, the Air Corps continued the policy of buying only after competitive bidding or design competition, except where there was a single source of supply, and under certain other conditions allowed by the law of 1926.<sup>105</sup>

The procurement of adopted types of aircraft and accessories was initiated by the issue of circular proposals to manufacturers containing detailed information concerning specifications, methods of evaluation to be employed, quantity, quality, government-furnished equipment involved, inspections and deliveries, and conditions governing the award of contract. After the circular proposals were forwarded through the Chief of the Air Corps to the Assistant Secretary of War for approval,

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they were then issued to the aircraft industry with the requirement that all who intended to bid must make a monetary deposit as a guarantee of good faith.<sup>106</sup> The procurement of a developmental type was preceded by a statement to the interested companies on type and methods of evaluation, and then a call was issued for bids on preliminary designs. A board of officers appointed by the secretary of War studied the designs submitted and recommended the awardee. The agreement with the winner of the competition called for the construction of an experimental plane, the cost of which was to be no more than the price bid. Upon approval of the experimental airplane an option was to be exercised for quantity production, with all costs of changes in the experimental aircraft being settled by negotiation.<sup>107</sup> In the event the manufacturer offered an original design, the procurement of experimental designs was also permissible.<sup>108</sup> It was the hope of the Secretary of War that this method of award after competitive bidding, if properly scheduled far enough ahead of actual procurement, would provide the best types and designs most expeditiously.<sup>109</sup>

Not until 1940 was a real change in this system made; at that time the use of "multiple awards" was extended.<sup>110</sup> Previously, under the 1926 act, although awards could be distributed in design competition to contestants of equal merit--that is, in case of ties--the secretary of War was not allowed to award work to competing firms who were not rated the same in the competition; now he could award more than one but not more than three bidders, regardless of their standing. Award decisions, which had to be reported periodically to Congress, were to be made on the basis of quality, time and rate of delivery, price, and the prevention

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of an overload of orders in any one plant.

In July 1939, when the close interest of hostile foreign governments in American military expansion was recognized, Congress legalized procurement without advertising where secrecy seemed desirable.<sup>111</sup> The Chief of the Air Corps was authorized to purchase aircraft, parts, and accessories by placing contracts with companies he judged most economical and efficient, but the need for secrecy had to be certified by the Secretary of War in such cases, and the proposal had to be submitted to at least three reputable firms for their bids.

The delays inherent in design competition and competitive bidding continued to gull the services. The acquisition of material was retarded by the need to await appropriations before the initiation of procurement proceedings, and the further delays in advertising for bids after the appropriation was received were considered dangerous.<sup>112</sup> Finally, on 2 July 1940 the Secretary of War was empowered to enter into negotiated contracts to provide for the "development, purchase, manufacture, shipment, maintenance, and storage of military equipment under such conditions as he may deem necessary."<sup>113</sup> This not only permitted speedier procurement, but also a better distribution of orders among the available contractors. In placing negotiated contracts, contracting officers were directed to be guided by the following factors: speed, quality, fairness of price, labor conditions, most effective use of raw materials, plant location, effect on civilian consumers, financial responsibility of prospective contractors, experience resulting from educational orders, and moral responsibility. When possible, an informal inquiry and a request for quotations from manufacturers were still used.<sup>114</sup> In the

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early days of the emergency, it was generally the policy to negotiate if the number of contractors were small or the supply of materials limited, and to advertise when there were many potential contractors and plentiful raw materials.

The use of negotiation was so successful in speeding up the war production that by a War Relocation Authority directive of 2 March 1942,<sup>115</sup> all procurement was based on negotiation, except in a case when, consistent with speed, notification of a proposed procurement might be given to contractors and quotations secured from them. Previously, the assembly lines of many aircraft industries had been slowed down because vital government-furnished items were not available on time. This situation may be laid to the fact that government-procured equipment had been procured after competitive bidding. These delays in production were now eliminated.<sup>116</sup>

#### Educational Orders

An often-expressed need to spread out procurement and prepare a number of sources of supply in case of war was recognized by Congress in June 1938 by the passage of legislation allowing the Secretary of War to place contracts with companies to familiarize them with the manufacture of munitions.<sup>117</sup> These were the so-called "educational orders." They included a complete set of gauges, dies, and tools which were to remain in the name of the United States; two million dollars a year were allotted for the next five fiscal years. In March 1939 an amendment to this legislation assigned \$34,000,000 for 1939, 1940, and 1941 with \$2,000,000 a year for each of the four fiscal years thereafter.<sup>118</sup>

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General Arnold's plan for the Air Corps' part in this program included finding articles that could be standardized for mass production, buying reproduction rights and production analyses, and ordering in sufficient quantities to give the contractor real production experience. A survey instituted by him showed that the PT-13A, BT-9, LC-1, and B-17 aircraft were best suited for standardization.<sup>119</sup> Candidates for the educational orders were asked to demonstrate their financial and managerial stability; their facilities had to be sufficient without enlargement to produce the proposed order, and the contractor was to be a long life manufacturer, not merely an assembler.<sup>120</sup>

Throughout 1936 and 1939 an Air Corps Board met periodically to plan for this program. Estimates had to be revised downward continually, however, as the amounts available to the Air Corps were successively reduced. As result of these reductions, in May 1939, when only 3,750,000 was left, it was decided to concentrate on the BT-type aircraft in the educational program since most postwar aircraft manufacturers who had sufficient experience had entered the heavier field.<sup>121</sup> Nevertheless, by November 1939 most of the educational funds had been withdrawn, in the belief that the large number of foreign orders in this country would perform the educational function for the manufacturers.<sup>122</sup> For example, the French during 1939-1940 had placed orders with Douglas, United Aircraft, North American, and the Aerial Camera Corporation.<sup>123</sup>

In 1940-1941, educational orders were revived as a necessary project, and 11,000,000 was allotted to the Air Corps for this purpose.<sup>124</sup> Part of this fund was used in carrying out plans to make the automotive

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industry subcontractors for the aircraft industry, Chrysler with Martin, General Motors with North American, and Ford with Consolidated and Douglas. For example, an educational order in the form of a GPF contract was arranged with General Motors for the main landing gear and nose wheel struts for B-24D, B-25G, and B-26D aircraft.<sup>125</sup> Other similar orders were placed.

Compulsory Orders

Since the days of the Revolutionary War, the American government had exercised the right of eminent domain in the seizure of property vital to the national interest.<sup>126</sup> In 1916 the President was empowered, when the country was at war or when war was imminent, to place orders with any company for any material needed by the Army or Navy, and to seize the plant of the company involved if necessary.<sup>127</sup> This authority was restated in a law of 16 September 1940; by executive order the President delegated the powers of seizure to the Office of Production Management and the War Production Board.<sup>128</sup>

Compulsory orders were usually placed when patient negotiations failed, when a contractor refused to make a quotation, refused to agree to a delivery schedule, or would not make a reasonable quotation. Even after placing such an order, however, the government continued its efforts to reach a voluntary and amicable settlement with the contractor. If all negotiations failed, the contractor was awarded a settlement deemed fair and reasonable by the Secretary of War.<sup>129</sup>

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Only eight mandatory orders were issued by the AAF from May 1942 to November 1944, and two of these were with the Link Aviation Devices. In all but two cases (Lord Manufacturing Company and Thomas and Betts Company) voluntary contracts were negotiated to supersede the mandatory orders; thus, prices were not fixed pursuant to the mandatory orders. In the case of the Lord Manufacturing Company, the prices fixed by the Under Secretary of War totaled \$284,478.61 as compared with a quotation of \$415,038.08 made by the company. The Lord plant was finally seized and operated by the Navy because of uncooperative management.<sup>130</sup> On the other hand, some contractors furnished goods in emergencies without a formal contract. If the goods were delivered before a contract was negotiated, a confirming purchase order was made by the AAF if the value involved was not over \$5,000,000.<sup>131</sup>

Trained personnel, the framework of an organization within which these personnel could work, sufficient funds to execute a program of expansion, and the contractual instruments by which these funds were allocated were the instruments which made up the AAF machinery for purchase. In general, the framework was based on prewar experience and practice, but Congress and the AAF made improvements through cooperative effort and compromises when they were demanded by the exigencies of the service.

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Chapter II

CONTRACT NEGOTIATION

The productive capacity of the nation, the ability of certain companies satisfactorily to produce specific items, and the problem of how most effectively to marshal the potentialities of the smaller war plants were factors indispensable to formulating a process of contracting. Closely related to these were the difficulties involved in determining cost, both estimated and real, in order that fair prices might be paid. To understand this is to understand the planning, negotiation, and fulfillment of contracts, and the following pages are intended to effect such an understanding.

A survey of the industrial potentialities for producing aircraft was initiated as early as 1920, when six planning districts were set up for that purpose;<sup>1</sup> three years later procurement planning offices were established and surveys were undertaken. The San Francisco office, for example, reported on all of the facilities of that important district, noting the possibilities for emergency production and the resources, capabilities, and regulations of manufacturers.<sup>2</sup> These early approaches to the problem were somewhat haphazard, however, and not until war threatened the safety of the country were more positive, organized efforts made to investigate sources of supply.

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In 1939 Generals Arnold and Brett recognized the increasing necessity for organization and planning for aircraft procurement, and as a result of a productive power survey, the latter proposed a plan for instituting mass production of aircraft and accessories. The plan envisaged assigning the construction of large aircraft to large plants and small aircraft to small plants, in order to develop the capacity of manufacturers to a production of as many as 500 tactical and 450 training type aircraft per month<sup>3</sup>--in retrospect, a most conservative estimate.<sup>4</sup> During July General Arnold called a group of manufacturers to Washington for a discussion of over-all military requirements.<sup>5</sup> It was hoped that by such meetings a clear view of the actual and potential capacity of the aircraft industry would be possible and the cooperation of the industry furthered.

Evaluation Procedures

At this early date there was no difficulty in securing bids from manufacturers. The evaluation procedures of competitive bidding, however, involved annoying and potentially dangerous delays. Manufacturers complained of their uncertainty when preparing bids because of difficult legislative controls (prices increased by liquidated damages clauses, the splitting of awards for propellers and engines, and the like) and the ever-present fear of strikes. The latter probably caused the greatest concern, because it could stop production completely and appreciably increase over-all costs; a stoppage in the plant of a subcontractor could cut off the acquisition of a vital item and halt the production of the prime contractor.<sup>6</sup>

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In the summer of 1940 the Acting Chief of the Air Corps published the Air Corps plan for speedy, efficient procurement. It involved (1) the centralizing of contracting authority at Wright Field; (2) a definite allocation of contracts for the manufacture of aircraft and engines; (3) the procurement of government-furnished and organizational equipment by short-term advertising or by split awards; (4) the use of negotiation where advertising failed; and (5) the procurement of airframes by negotiation, with prices based on audits of previous contracts. At that time it was estimated that the needs of the Air Corps could be met by placing about 290 contracts with 100 plants.<sup>7</sup>

Although basic programs for procurement were rather definitely established by 1940, planning was sometimes held up by indecision as to operational and tactical demands and by outdated procedures. For example, in 1941 B-26 procurement was halted and replaced by B-33; the B-28 was emphasized for a time at the expense of the B-25, and then its procurement was postponed while the substitution of the B-29 was discussed.<sup>8</sup> Two years later, Wright Field contracting authorities were confused because higher authorities could not decide upon the extent of the need for gliders.<sup>9</sup> Other procurement difficulties arose as a result of an obsolescence policy formulated in the early 1930's when procurement was on an extremely small scale. In accordance with that policy, the Air Corps predicted aircraft losses and annual requirements on the basis of a 10-year life for an airplane. Later, the realization that the rate of depreciation must parallel the progress of research and development brought more logical planning. In addition, the willingness of Congress

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to supply funds made it possible to pay less attention to the preservation of old airplanes and to pursue an obsolescence policy more in agreement with current tactical needs.<sup>10</sup>

In spite of the difficulties of making contracts with the government, manufacturers of every description, with expressions of concern for the national welfare, offered their facilities for the production of war material. These offers were referred to the proper Wright Field authorities, or, in the case of some small companies, to the appropriate prime contractors with the suggestion that direct correspondence be opened relative to subcontractual work.<sup>11</sup> In the early days of the emergency period, many manufacturers were completely confused as to whom they should consult about offering their services, a fact which indicated that the planning of the war period had been far from thorough. Apparently only the top layer of manufacturers had been indoctrinated in proper procedures. Letters requesting information pertaining to war contracts were directed to senators, the President, the Secretary of War, the Chief of Air Service, Chief of Air Corps, Office of the Assistant Secretary of War, War Purchasing Department, to a "General George H. Butts," and to Mrs. Roosevelt,<sup>12</sup> whereas proper preliminary advice would have directed all communications to the Contracting Officer, Material Division, Wright Field. It was, in fact, as late as June 1945 before Wright Field was directed to set up an office with personnel capable of answering all manufacturers' questions.<sup>13</sup>

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Some manufacturers were disappointed in their search for war contracts for wholly different reasons. The War Department maintained a confidential list of bidders to whom awards would not be made, and although the list applied only to prime contractors who were violators of the Davis-Bacon or Walsh-Healy acts,<sup>14</sup> all prime contractors were required to obtain the written approval of the contracting officer before letting subcontracts. Lists of unsatisfactory contractors were also maintained at Wright Field. Further, it was believed that some contracting officers carried mental reservations about certain contractors and that the awarding of contracts was influenced accordingly.<sup>15</sup>

Another problem which arose during the interim period was that of encouraging the necessary research and experimentation prior to a decision as to the types of aircraft or accessories that were to be procured in quantities. Although it had been an Air Corps policy since World War I to encourage grants for research by the purchase of experimental types and to offer financial assistance in further development,<sup>16</sup> much of the cost was borne by private companies.<sup>17</sup> If the work proved successful, the company could recoup its expenditures by selling in production quantities; if the research was unsuccessful, the loss had to be absorbed by the manufacturers, an expense which many of them were in no condition to stand.<sup>18</sup>

Plans for Procurement

Once over-all policy had been determined and the preliminary plans for procurement completed, investigations and plans for the procurement of specific items proceeded apace. When this phase was reached, the Production Engineering Section at Wright Field prepared and approved

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designs of standard articles, issued Authorities for Purchase, and counseled manufacturers on their problems to help them speed up production. Also, the capable engineers of the section were called upon to make many decisions as to technical parts of the contracts which the members of the Contract Section, mostly lawyers, were not in a position to handle.<sup>19</sup>

In the early days of the war, the Materiel Division sought to accelerate its planning and experimental work by breaking up specific problems into separate components. For example, in the problem of arming different types of aircraft, various companies were given models with which to experiment, after which the results of their private investigations were pooled to solve the common problem.<sup>20</sup> Another instance was the selection of the Sperry fire-control system for the North American XB-28; because the Sperry Company was overloaded with other orders, the General Electric Corporation was given the contract.<sup>21</sup> But these examples of industrial cooperation were not the exception but the rule: months of research were carried on by Aircraft Associates to produce a power drive for Vickers;<sup>22</sup> the Westinghouse Company, upon request from Wright Field, made great efforts to fabricate a satisfactory power turret;<sup>23</sup> and the engineers at the Glenn L. Martin plant cooperated fully with other manufacturers in the building and testing of various aircraft models.<sup>24</sup>

Some programs entailed planning a complicated yet carefully integrated procurement over large areas of the country. The one calling for nearly 18,000 gliders, for example, involved the awarding of contracts for some 37 experimental models to 23 companies in 10 states, and for

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contracting for 11 production models with 22 different companies in 14 states.<sup>25</sup> In this and similar situations, once a design had been perfected and accepted, proper coordination at Wright Field had to be maintained to cope with the problems of determining the availability of vital materials, the amount of work already undertaken by suitable manufacturers, and the state of the labor market. Dates for executing production contracts were set by the Material Planning section of the Material Division after data on the availability of vital, scarce materials was coordinated.<sup>26</sup> The Contracts Section furnished the necessary information in order to avoid placing new contracts where they would interfere with the fulfillment of previous and/or more important obligations.<sup>27</sup>

The problem presented by an uneven distribution of available labor was met in part by dividing the country into four industrial districts, which were then rated or labeled I, II, III, or IV, depending upon the labor situation in that district. Thus, the districts which already had labor shortages were designated by the symbols I and II; III indicated that a shortage was expected in six months, and IV that a surplus of labor existed or was expected.<sup>28</sup> The geographical location of potential contractors was checked against the list of districts with and without labor shortages, and it was policy not to place new orders in districts labeled I or II. Premiums were sometimes paid by theAAF in order to place orders where no labor shortage existed. For instance, Siegle Inc. of New York received \$6,700 for 5,000 pulvins which could have been procured for \$25,550 in an area of labor shortage; similarly, the Industrial Electronic Corporation of Brooklyn received \$90,840 for watch carrying-cases which could have been bought elsewhere for \$75,680.<sup>29</sup>

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Use of Small Plants

To take full advantage of the country's industrial potential, the utilization and development of small war plants was of great importance. In the first three years of the emergency, little had been done by the supply services as a whole to marshal the productive power of small industry. The Truman Committee reported in January 1942 that orders for aircraft had been concentrated in 19 great aircraft companies whereas more than 60 smaller ones had received no orders at all; nor indeed, had they even been considered, despite the fact that potentially they could produce 2,000 airplanes per month.<sup>30</sup> In a separate hearing the statement was made that 56 of America's 184,320 manufacturing establishments were getting 75 per cent of Army-navy contracts and that the rest was divided between 6,000 prime contractors and 1,000 subcontractors. Thus, more than 174,000 manufacturers had not been touched by OPA in its mobilization of the nation's industrial resources.<sup>31</sup> Nevertheless, the War Department was reluctant to have contractors forced upon it as long as it was accountable for the quality and expeditious delivery of materiel.<sup>32</sup> Thurman Arnold testified that for quick procurement of large amounts, it was generally safer to go to a large, recognized facility.<sup>33</sup>

In spite of this attitude, the chairman of WPB was authorized by Congress on 11 June 1942 to mobilize the capacity of smaller industry. He was ordered to make an inventory of small plants, to call them to the attention of the procurement agencies, and to study the problem of subcontracting. If the Chairman of WPB certified the accuracy of a small plant for a particular project, it was to be used even if the costs were

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somewhat greater than those of large plants. In addition, a Small War Plants Corporation was established with a capital of \$150,000,000 to help finance small companies;<sup>34</sup> the law establishing it was to be in effect only until 1 June 1945, but Congress later extended its life to 31 December 1946.<sup>35</sup>

In the summer of 1941, prior to the organization of the Small War Plants Corporation, the Air Corps had set up a Production Resources Section at Wright Field to find suitable subcontractors. By 31 January 1943 this office had helped allot \$90,000,000 in subcontracts,<sup>36</sup> the bulk of them placed with small war plants. The smaller plants, in fact, were handling about 3 per cent of the prime contracts by the end of March 1943 and 60 per cent of all AAF orders, including subcontracts.<sup>37</sup> A monthly report was originated at Wright Field which indicated month by month the names of the small companies receiving orders, the kind of order, the number of employees in the plant, the normal business, and the amount of the order. A small war plants representative at Dayton disseminated all the information available on the line of procurement appropriate for small plants. He obtained data from his district representatives and then forwarded the pertinent data to the liaison men at Wright Field.<sup>38</sup> The final decision as to how great a portion of the work was to be given to small plants was made at Materiel Command headquarters.<sup>39</sup>

Of the 36 small plants patronized in March 1943, 22 had fewer than 100 wage-earners. Frequently, of course, the small size of these companies meant that their costs were higher than those of large firms, and a premium had to be paid by the contracting agency in order to do business with them. For example, the American Tool Company of Dayton received \$11,000 for an order of nuts which could have been obtained for \$3,065

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from a larger firm; and the Anderson Rubber Company of Akron received \$70,000 for 1,000 seats which could have been procured elsewhere for \$63,850.<sup>40</sup> Similar premiums, however, were also paid to encourage utilization of factories in areas where there was a labor surplus, as has been explained above.

To help the utilization of small war plants to the fullest extent, fixed-price contractors were particularly urged to use such plants as subcontractors, and they were promised that during any future renegotiations, proper recognition would be given to any uneconomical commitments resulting from such contracts.<sup>41</sup> There were certain items, however, whose manufacture by small firms was considered impracticable because of the need for many separately manufactured components and/or the considerable degree of technical experience required. Most significant of these were airplanes, engines, propellers, gas and oil, wheels and brakes, airplane tires, starters, generators, carburetors, superchargers, landing gear, spark plugs, turrets, parachutes, aerial car rigs, and tubes. In the month of July, 1943, \$3,118,182,701 was allocated for the procurement of these items as compared to 192,676,185 for "other purchases"; of the total number of contracts for the latter, 76.0 per cent went to small plants having over 500 employees.<sup>42</sup>

Subcontracting

Although occasionally it was difficult to prevail upon prime contractors to accept subcontractors (often because the former felt he was merely educating a possible costlier competition), this method of manufacture was almost universally used.<sup>43</sup> With it came the need for

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considerable coordination and investigation on the part of the AAF, especially since some companies subcontracted so much of their work that they became little more than assemblers of parts. Two great disadvantages resulted from this trend--the lack of incentive to improve design and the lenient control which the AAF had over the subcontractors. (All negotiations with subcontractors had to be carried on through the prime contractor.)<sup>44</sup> Some indication of the importance of these problems may be gained from the fact that in August 1941 Douglas-Santo Monica was subcontracting 58 per cent of the work on the A-20B and the BD-2; in February 1943, 17 per cent of the A-20G and 30 per cent of the C-54 and C-77; and in January 1944, 75 per cent of all its work. In addition subcontractors furnished some of the main assemblies for Douglas: outwings were supplied by Erlens of Detroit, nose assembly and tail cone by Helmond of South San Francisco, tail stub and nacelle structure by Avion of Los Angeles, flaps by Aircraft Contractors of Southgate, California, and nose wheel and rear gunner's door by Leber Showcase of Los Angeles.<sup>45</sup> Similarly, Fisher Body provided 55 per cent of the work for North American-Kansas City, which also let out subcontracts to numerous other firms.<sup>46</sup> Bellanca subcontracted 60 to 65 per cent of its contract to produce the AT-15.<sup>47</sup>

The practice of subdividing prime contracts over large areas often proved troublesome to the administrative and supervisory branches of the procurement districts. For example, a prime contractor in one district often made arrangements with a manufacturer in another district without the district officials knowing anything about it. An investigation by the Eastern Procurement District discovered 8,400 subcontractors under

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its jurisdiction who did not know that an Eastern Procurement District existed.<sup>48</sup> Although the contracting officer maintained the right to approve or veto subcontractors suggested by the prime contractor, once the arrangement had been made, the government legally had no control over the relationship between the two. It did have, however, a definite interest in the costs charged by subcontractors. Thus, the General Accounting Office was asked by the AAF to rule on a proposed increase of \$600,000 in the amount to be paid to the Armstrong Cork Company, a fixed-price sub-subcontractor to Goodyear Aircraft Company, which was operating on a CDFP basis for Glenn L. Martin-Nebraska, a CDFP prime contractor.<sup>49</sup>

In letting a contract, it was often discovered that the contractor would be unable to furnish all the equipment necessary to turn out a complete item. In this case, the government made up the deficiency by direct procurement (government-furnished equipment), sometimes with the ulterior motive of insuring interchangeability of parts in items secured from several sources. In the spring of 1942 Generals Arnold and Tamm tried to curtail this practice on the grounds that it slowed down production. General Nichols, however, pointed out that there was a greater danger in allowing manufacturers to furnish non-standard equipment, and where the worst shortages existed (races, instruments, armament, and turbo-superchargers), the manufacturers would have as much difficulty in procurement as the government did.<sup>50</sup> In any case, there were a large number of contracts for government-furnished equipment, as is indicated by the fact that in December 1944 the Military District alone was handling 305 GFE accounts.<sup>51</sup> That such an arrangement would be liable

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to a certain amount of confusion is clear, but in some cases haphazard accounting methods and the mixing of government-owned and contractor-owned items made the situation at best extravagant, at worst impossible. In one instance alone, Curtiss-Wright lost \$20,000,000 worth of government property, of which \$14,000,000 could not be accounted for.<sup>52</sup>

Costs

The uncertainty of costs early in the wartime expansion program was the reason for the widespread use of the CPFF contract in aircraft procurement; the constant changes in costs and methods precluded pinpoint pricing, despite the fact that certain values could be determined from past experience. In the summer of 1940 a report on estimating airframe costs was published,<sup>53</sup> and the method there set forth was used by the Materiel Division in the preparation of estimates and in checking bids.<sup>54</sup> Based on a careful study of principal airframe manufacturers, the estimating method was expressed as a formula: one variable, known in the formula as  $F_q$ , was computed from what was known about each manufacturer's costs per unit produced--overhead, labor, material, tools, and profits; a second factor ( $F_0$ ) was determined by the number of aircraft to be built as compared with the construction difficulties created by the design; and the third factor ( $F_c$ ) represented "plant concentration." The relation of the three to each other was stated as follows:  $\text{Airframe Cost} = \text{weight} \times \frac{d}{F_0 \times F_c} \times \frac{1}{F_q}$ . "Plant concentration" and the other factors had been determined previously for most aircraft manufacturing plants and for various designs and quantities of procurement so that substitutions were relatively simple.

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An apparent increase in costs aroused the concern of General Arnold and Congress as early as March 1939.<sup>55</sup> Informal investigations in the summer of 1939 placed the blame on contractual and legal terms, increasingly rigid specifications and inspections, the growth in weight and size of aircraft, the use of more complicated equipment, the need for materials of higher strength-weight ratio, and the use of modern tooling and machinery methods on a comparatively small production scale.<sup>56</sup> On the other hand, the cost per pound of bombardment and cargo airplanes had decreased, and the rise in the cost of engines was only proportionate to the greater horsepower. Audits of 11 leading aircraft companies did not reveal excessive profits; indeed, 2 of them, Bell and Seversky, showed decided losses.<sup>57</sup> Nevertheless, between June and October arrangements were made to investigate production costs, and the resultant study generally corroborated earlier opinion to the effect that more intricate aircraft required far more man-hours in both engineering and production. To eliminate rising costs, an effort would have to be made to simplify specifications. The report criticized the cumbersome delays of procurement and recommended that definite decisions be reached on types and quantities. It urged also that the laws on war contracting be clarified and that the possibility of limited-life tactical planes be studied. The recommendation that designs be frozen, even for a limited period, was unacceptable to Air Corps tacticians, who wanted to make whatever changes in design they felt necessary to maintain operational superiority. Costs for military aircraft were recognized to be usually higher than for commercial types,<sup>58</sup> largely because of prescribed shop inspections. Then again, costs went up when it was

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necessary to set up a new supply in place of sources already over-loaded.\* In addition to the fact that the new manufacturers had to be tested, in-  
 experience also accounted for additional expense. Prices often were high because the number of airplanes ordered was not large enough to absorb the original tooling costs; once a type had been at least partly stabilized, costs declined progressively, or remained relatively stable, as indicated in the following table:<sup>59</sup>

COST OF COMPLETE UNITS<sup>4</sup>

Model	1940	1941	1942	1943	1944	1945
B-29				1,039,702	1,020,458	570,541
I-24	308,269(28)			335,918	283,765	216,787
L-17	251,733(38)	280,931(277)	286,339(235)	315,776	280,475	202,589
P-38	127,608(66)	120,305(210)	128,523(197)			
P-51			22,138(1,010)	20,645(2,070)	24,000	
P-40				51,015	19,616	14,476
AT-6	18,092(1,610)	17,016(2,800)	12,989(2,800)		13,100	
BT-13	19,938	23,571(1,270)	27,106(900)	22,602	22,985	18,948

To analyze and control costs, offices were set up at Washington, at Wright Field, and in the districts.<sup>60</sup> In Washington the Contract, Finance, and Analysis Branch of the Procurement Division observed from a staff level the work of lower echelons and reviewed all prices which required

\* For example, B-1 bombsights were procured from the National Cash Register Company of Dayton at a unit price of 7,100 instead of the previous 5,753 from Sperry. (See memo for Gen. O. F. Nichols from 77, 30 July 1942, in AGO (Bulk) 16111, "Contracts.")

<sup>4</sup> Number in parentheses indicates the number of units procured; asterisk indicates design-change.

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the Under Secretary's approval. A Cost and Price Analysis Unit at Wright Field assisted in negotiating and arriving at reasonable estimates, based on the costs of material, direct labor, overhead, subcontracting, tooling, engineering, and direct charges. At first this unit negotiated "follow-on procurement" before the delivery of the first production article and thus before costs from actual experience were available. In the case of the B-29, though three large procurements were made from one contractor before the delivery of the first airplanes, successively lower prices were negotiated in exhibition of increased efficiency. To determine material costs, the bids from other contractors for the same or similar articles were taken into consideration. Allowances were made for increased efficiency, decreased scrap, and increased wages. In addition, prior to the preparation of contracts, purchase orders, change orders, or supplemental agreements, each case was reviewed; for this purpose Wright Field maintained 32 analysts and 28 statisticians, typists, and clerks to handle approximately 450 price analyses each month.

Similar methods were employed in the district offices. After the summer of 1944, when practically all price contracts were being negotiated at Wright Field, the work load was greatly reduced. Authorities for district purchases were occasionally forwarded from Wright Field, and each Air Technical Service Command district was responsible for issuing contract-change notifications and for making recommendations concerning the effect of the change on the unit price.

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**SECURITY INFORMATION**Procedure in Placing Contracts

The time required to effect all the steps in formal procurement was long. Although experience and necessity shortened this period during the war, the number of interested agencies which had to be consulted was so great, and the necessary training, expansion, and education of manpower so difficult that the procurement of any new item remained a task of great magnitude. For example, the following steps were involved in the procurement of a new airplane: (1) preparation of type specification and method of evaluation, and approval thereof (1-3 months); (2) preparation, approval, and distribution of "request for bids" (1-2 months); (3) preparation of design data by the bidder (1-3 months); (4) negotiation of purchase of an experimental airplane (1 month); (5) design and construction of experimental airplane (6-12 months depending on type and size); (6) engineering tests and changes (1-3 months); (7) negotiation of purchase of service test quantities (1 month); (8) service test by tactical organizations (3-12 months); and (9) approval of type with or without changes. After all of this was accomplished, quantity procurement was initiated as follows: (1) preparation, approval, and formal request for bids (1 month); (2) advertising period (1-12 months); (3) opening of bids, and errors (1-2 months); (4) delivery of first item (6-12 months); (5) delivery of remaining articles starting 1 to 3 months after approval of the first article. In emergencies, however, this complicated procedure was somewhat abbreviated to expedite immediate procurement: (1) preparation of type specifications and methods of evaluation, and approval thereof (1-3 months); (2) preparation,

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approval, and publication of formal requests for bids (1 month); (3) advertising period (3-4 months); (4) opening of bids, declaration of winner or winners, and award of contract (1-3 months); and (5) delivery of first airplane.<sup>61</sup>

The delays caused by advertising and the evaluation of bids were largely eliminated with the advent of the negotiated contract, but since many of the checks and steps of the process were essential to safe procurement, they were left intact. In a few cases, procurement of aircraft straight from the drawing board to the production lines was effected, as in the acquisition of the B-26. Such a method involved obvious dangers, which were quickly made manifest when five of the first six B-26's produced crashed; numerous delays thereafter were necessary for modification. Even so, airplanes of this type were in combat areas some months before they would have been had the regular procedure been followed.<sup>62</sup> Similar speed-up methods were applied in the procurement of the AT-9, AT-10, C-57, C-69, P-47B, O-52, TG-5, TG-6, and TG-8.<sup>63</sup> Again, in view of an urgent need and the early progress on the XCG-3 and -4, production contracts were let with Waco, and before the delivery of the first flight-test article, 11 companies had been given contracts to produce 640 CG-4A's.<sup>64</sup>

In addition to cost and such other matters as the proved worth of the plane (as opposed to excellence on paper), in the evaluation of designs bidders were ranked on performance, engineering, and suitability. Among the factors noted were design, speed at sea level, endurance, service ceiling, rate of climb to 10,000 feet, take off and landing over a 50-foot obstacle, weight empty, gross weight, balance, engine,

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schedule of delivery, and crash of costs in quantity.<sup>65</sup> After examining the aircraft in these terms, the evaluation board made contract recommendations. These were reviewed by the chief of the Materiel Division, the Commanding General, AAF, and the Under Secretary of War. Usually the suggestions of the evaluation board were followed, although occasionally slight changes in scheduling were made.\*

As early as 1940, attempts were made to standardize invitations for bidding as well as the other steps in procurement procedure. The Air Corps immediately opposed such a move, however, on the basis that air force procurement, and other circumstances, varied too radically; in addition, obvious differences in the materiel to be acquired made complete uniformity undesirable.<sup>66</sup> To avoid this kind of duplication of effort, all procurement was examined carefully in order to secure materiel through the service that was normally charged with the development of the item in question.<sup>67</sup> Although the actual steps which were followed from the time that a need developed for a new item to the time that this item was in quantity production varied with circumstances, the diagram on the following page illustrates the basic steps that characterized the procurement process.<sup>68</sup>

To reduce the burden of contract administration an effort was made to simplify the contract. Higher authority in Washington tried to keep the number of separate contracts with individual contractors at a minimum by handling renewals, changes, and cutbacks through

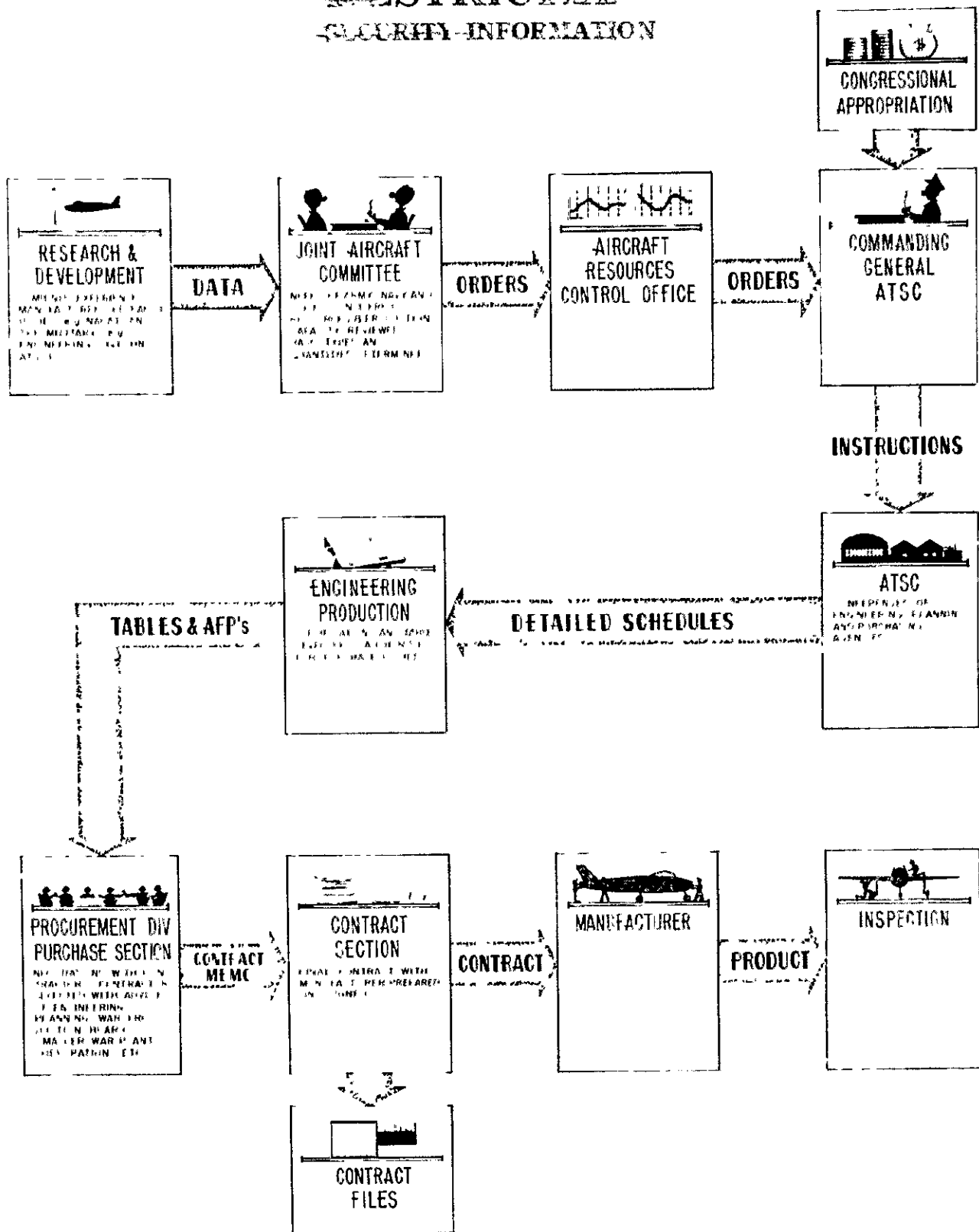
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\* The board suggested an 80-37 split between Seversky and Dell after each submitted single-engine fighter designs; the Assistant Secretary of War changed this to an 80-80 split. (Compare the series of circular proposals for the summer of 1939 in Lyon Project Book 6, Tab. 4)

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# PROCUREMENT PROCEDURE

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supplemental agreements.<sup>69</sup> Similarly, the contracting body at Wright Field attempted to combine into one pact all agreements with a particular manufacturer.<sup>70</sup>

#### Local Purchase

Items of relatively small value and those in general use were normally procured locally by AAF stations;<sup>71</sup> the commanding officer of the field reported all such purchases of more than \$100 to the Commanding General, AAF.<sup>72</sup> The reports included a list of the items and the authority under which they were procured. When in March 1944 a survey of five typical Air Transport Command subactivities showed that 55 per cent of local purchases could have been avoided through requisitioning, a directive was issued prescribing a 25 per cent cut in this type of procurement.<sup>73</sup> A later survey between July 1944 and March 1945 revealed that 98 per cent of all local purchases totaled less than \$5000. It was believed that analysis of costs at this level would be of little economic value.<sup>74</sup>

#### Purchase from Other Arms and Services

Several other sources of supply included procurement agencies of armed forces other than the AAF, civilian agencies of the United States government, and foreign contractors or agencies. The total amount of procurement from all three of these was relatively small and generally the American contractor was the ultimate source. The relationships between the Materiel Command of the AAF and other procurement agencies of the War Department, and between the AAF and the Navy Department differed only in degree. Actually, the other procurement agencies of

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the War Department (included together here under the Army Service Forces) and the Materiel Command (later the Air Technical Service Command) both derived their authority from the Under Secretary of War. His procurement cover was delegated both to the Commanding General, AAF, and to the Commanding General, ASF, the former generally charged with procuring aeronautical equipment and the latter all other equipment.<sup>75</sup> The air forces resisted the grouping of all procurement for the Army in one service, contending that it would be prejudicial to efficiency;\* the Air Corps had a high priority for many items, but if the power of allocation were held by some other agency, this ranking might become meaningless.<sup>76</sup> Therefore, procurement of items which were specifically for the AAF remained under its own control, whereas items for common use were procured by the branch most directly interested.

The division of interests was soon standardized and clarified, and by the spring of 1942 all assignments or changes could be handled by the Director of Procurement and Distribution.<sup>77</sup> Generally this arrangement allowed only a minimum of competition between the services, and where there was a conflict, one of the agencies developed its own source.<sup>78</sup> Information was exchanged so that the proper agency could determine its needs. For example, Services of Supply received information on the percentage loading of airplanes with munition and on the chemical warfare devices by type and purpose necessary for calculating the requirements of the AAF.<sup>79</sup> Coordinated procurement was of two types: (1) procurement by one service of items used in common by all services, such as "subsistence" items by the Quartermaster; and (2) joint

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\* See above, p. 53.

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procurement by several using agencies, such as lumber procurement by the General Procuring Agency on Lumber. Some material, on the other hand, was procured by several different agencies individually: fuels and lubricants were procured by the Quartermaster General, the Army Air Forces, the Bureau of Supplies and Accounts, and the Bureau of Aeronautics.<sup>80</sup> From as early as the spring of 1939 the Bureau of Aeronautics and the Air Corps exchange procurement plans in order to avoid a disproportionate distribution of orders among manufacturers.<sup>81</sup> In 1942 a standing committee was formed to monitor the division of procurement between Army and Navy plants.<sup>82</sup> In the procurement of aircraft and accessories, items representing approximately 76 per cent of the dollar value were coordinated by the AAF and the Bureau of Aeronautics; radio and radar equipment, representing 18 per cent, were coordinated by the Signal Corps and Navy Ordnance through the Joint Radio Board, a subcommittee of the Joint Aircraft Committee. Thus, only 6 per cent of the value of other materiel was left for further coordination.<sup>83</sup> Despite this, however, well coordinated Army-Navy procurement did not obtain throughout the war. Prior to the spring of 1945 there had been numerous disagreements which led the Secretary of War to complain to the Secretary of the Navy regarding duplications, conflicts of interest, competition for contractors, and cumbersome committee action.<sup>84</sup> Much of this was eliminated, and program planning abated, in cases where one arm did procure for both, that is in the categories of training aircraft, engines, propellers, and bombsights.<sup>85</sup>

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Some procurement was arranged by the Office of Scientific Research and Development (OSRD); in large quantities, however, it was more or less an accidental development. At first, the OSRD procured a few "quick items" to expedite testing, but later it was embarrassed by the pressure of demands from the services, whose own organizations did not permit expeditious procurement. Inasmuch as the OSRD lacked proper safeguards for extensive procurement, it was decided in January 1944 to limit OSRD authority to experimental items for the Army and Navy. Beyond this, services were to do all their own quantity procuring, assisted by the National Resources Defense Council in the capacity of advisor and consultant.<sup>86</sup>

The AAF also secured material from a number of less important sources. The Civil Aeronautics Authority, for example, gave 21,000 worth of equipment in the spring of 1943 for the purpose of setting up airport lighting beacons; at the same time the AAF transferred a fund of 10,000 to CAA to cover transportation costs and certain replacement items for the beacons.<sup>87</sup> Prison industries were patronized by the AAF in accordance with federal law,<sup>88</sup> such purchases being cleared by the Attorney General; these purchases were specifically exempted from the Walsh-Healey Public Contracts Act by the Secretary of Labor.<sup>89</sup>

#### Purchase Abroad

Although Congress sought consistently to protect American business by limiting purchase abroad,<sup>90</sup> during the emergency period, the procurement agencies were urged to consider Latin America as a source of

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materials and supplies in keeping with the spirit of the good neighbor policy.<sup>91</sup> The Lend-Lease Act, passed in March 1941,<sup>92</sup> provided for aid to the allies and also, by implication, for reverse lend-lease.<sup>93</sup> That is, the Secretaries of War and Navy were authorized to purchase abroad when such purchases were in the interests of national defense.<sup>94</sup> Inasmuch as the United States was not yet at war, the Air Corps planned no large volume of foreign purchases at that time.<sup>95</sup>

For a while friendly governments built and furnished facilities for American forces that were then on foreign soil, but in February 1942 directives were issued to enable military organizations to establish and supply their own facilities.<sup>96</sup> AAF service commands were organized to make necessary contracts and purchases overseas for the AAF.<sup>97</sup> Under a purchasing and contract section there were set up (1) an engineering division which outlined the requirements for local manufacture and purchase, (2) a production division which made the necessary negotiations with the contractor, and (3) a supply division which wrote the formal contract and performed all the related fiscal work.<sup>98</sup> Whenever the need arose for a specific item, every attempt was made to procure it from stock or from Army sources; if this failed, the procurement agency certified the fact and signed a requisition for the property. This was then submitted to the purchasing and contracting officer of the service group, who in turn submitted a request for local purchase to the arm or service contracting officer.<sup>99</sup> The commanding general of any air force service command overseas was directed in 1942 to supervise the manufacture by foreign concerns of such items of AAF equipment and

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supply as were required, and to arrange for their procurement.<sup>100</sup>

Various over-all organizations were set up in the theatres of operation for this purpose. In India, a Munitions Arrangement Committee, made up of representatives of British, Indian, American, and Chinese forces, assigned the entire Indian production of material to the Allied forces and determined which items were to be tabled.<sup>101</sup> In accordance with a decision of this committee, the production of complete aircraft by the Hindustan Aircraft Ltd. was tapered off to permit using the plant for the manufacture of parts needed by the AAF.<sup>102</sup> Indian resources were also used during the war for manufacture of tires and tubes for AAF aircraft and vehicles.<sup>103</sup>

In Australia V Air Force Service Command had a CFFC contract for tires with the Goodyear Tire and Rubber Company, Ltd. This contract, although cleared by the Australian government, was not part of reverse lend-lease. The decision to procure tires directly from the manufacturer rather than through the intermediation of the Australian government was prompted by the fear that the factory operating on a lend-lease order might experience labor difficulties.<sup>104</sup> Other items, however, were procured through requests to the Australian Ministry of Munitions. An order for 30,000 straps for mounting parachute units on bombs was placed with the Australian government by V AFSC in February 1944. When an order for double-suspension bomb hooks was placed, six men from the local ordnance company were lent to the producer to speed up production.<sup>105</sup> Whenever possible, contract contracts were converted to lend-lease, and cash purchases were kept at a minimum. During April 1944 the purchasing and contracting section of the V Air Force Service Command Supply

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Division assigned 110 contract demands for equipment, supplies, and services, and also made 300 cash purchases for materials and supplies not on lend-lease.<sup>106</sup>

Canada posed a somewhat different problem because of its close industrial interrelation with the United States. Canadian firms were, on the whole, treated exactly like American firms and, indeed, sometimes acted as subcontractors to American manufacturers.<sup>107</sup> All negotiations for procurement in Canada were made through War Supplies Ltd. in Washington, a crown company under the Canadian Department of Munitions and Supply which in turn contracted with the companies concerned. Most of these contracts were on a CPEF basis.<sup>108</sup> In December 1941 all restrictions on the placing of contracts in Canada were removed,<sup>109</sup> but in the winter of 1942 there were accusations that politics played too large a part in Canadian production.<sup>110</sup> As late as the winter of 1944, the procurement agencies were warned that they were to place contracts in Canada for production considerations alone, and not to provide a dollar exchange in Canada.<sup>111</sup>

Minor purchases were made from other foreign governments. In February 1945 the Netherlands returned some training aircraft to the AAF which were credited to the Netherlands lend-lease account;<sup>112</sup> and in the spring of 1943, 25 airplanes were purchased outright from the Norwegian government.<sup>113</sup>

A complete accounting of reverse lend-lease is almost impossible; no itemized statement of materials so procured was preserved, although much information doubtless exists overseas.<sup>114</sup> There was resistance abroad in 1944 to the idea of any accounting of lend-lease in reverse on the ground of its impracticability and, perhaps, unnecessary. Senator Brewster of Maine observed:<sup>115</sup>

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The importance of a possible accounting became more significant as we found places where there is an impression abroad that lease-lease and lease-lease-in-reverse were approximately in balance. In some instances this seemed to have a somewhat official origin although it was likely at variance with the facts.

Part of the reason for the lack of accurate accounts was the fact that the Department of State instructed the United Kingdom not to itemize invoices of the reverse lease-lease that had been furnished.<sup>116</sup> On this subject the Lord Committee reported that "the confusion which has been created will make an accurate accounting of lease-lease transactions extremely difficult, if indeed it is possible to achieve even a reliable approximation of lease-lease balances."<sup>117</sup>

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## Chapter III

## ADMINISTRATIVE AND CONTRACT

The procurement district organization, in addition to their titular function of searching for and exploiting new sources of supply, figured importantly both in the negotiation of the contract, as has already been mentioned, and in the administration of the contract. The latter involved a definite decentralization of responsibilities, so that certain of the , originally assigned to Wright Field or Washington, were later assumed--or delegated to--the officer of the procurement organization nearest the sources of supply.<sup>1</sup> More specifically, inspection duties and the drawing up of necessary clauses came within the purview of the local officers.<sup>2</sup> The fiscal sections of the procurement districts supervised price adjustments, financing, audits, and budgets,<sup>3</sup> while the procurement sections saw close attention in negotiations to establish a judicious balance between pricing and production costs.<sup>4</sup>

Accounting

The audit sections of the procurement districts, in addition to auditing or supervising the audit of GPO contracts, made cost and profit analyses, studied the use of "advance payments," and made recommendations at the time of renegotiation.<sup>5</sup> Area contracting officers verified the manufacturer's expenditures for which reimbursement was claimed; this included not only itemized bills from subcontractors and vendors, but also the original payrolls for labor.

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In 1941 a representative of the Production Engineering Division was appointed to each contracting plant to monitor purchases prior to the placing of orders, to check the number of men employed, and to maintain a check on the work order.<sup>7</sup> The findings of local authorities sometimes helped in the equitable settlement of company claims that are operating at a loss under the terms of the original contract. For example, the Federal Radio Electric Company of Long Island City, sole source of Rescon transmitters, was awarded an order for \$1,400,000 to drive off bankruptcy,<sup>8</sup> and the Eastern Procurement District estimated the need for an increase of \$1,010,000 on Fleet mail contract to produce BT-12s.<sup>9</sup> In this type of problem the reliance of some companies in keeping adequate records, and the failure to agree on allowable and non-allowable costs both proved the value of careful investigation.<sup>10</sup> Investigations of the costs sustained by GFFP contractors were particularly significant to AEP plant representatives, AEP resident auditors, and contractor officials, partly because they were thus brought into continuous contact with the heads of all contracting agencies, the General Accounting Office (GAO). Although the GAO maintained many field project representatives at the plant level, the interchange of information, particularly from the GAO to the AEP representatives, often left much to be desired.<sup>11</sup> The GAO practiced the withholding of credits on cost expenditures submitted for repayment by contractors until it had received a satisfactory clarification of any doubts on the propriety of the expenditure; some of these expenses were recording costs, fringe charges on returned materials, overcharges on contracts with charges by other contractors,

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insurance on test pilots, franchise fees, charges for development work prior to the consummation of the contract, publication of plant information sheets, legal fees, travel expenses incurred in accompanying the body of a deceased employee, excessive train fares, and insect vaporizers for plant exteriors.<sup>13</sup> Despite this practice of suspension of credit, no definite list of allowable and non-allowable costs was ever issued by GAO, a circumstance most aggravating to the contractors. Sometimes, however, the GAO field representatives would notify the resident auditor when the replies to his informal inquiries were unsatisfactory; but gave the auditor, commanding officer, and contractor an opportunity to collect more data before a suspension. But this procedure was not uniform, and resident auditors sometimes complained that suspensions were more frequent and considerably different from those previously indicated.<sup>14</sup> In addition, the close scrutiny of such items as an increase in the price of wrenches<sup>15</sup> tended to discourage initiative among contracting officers in a critical need area. In the summer of 1944, however, the anticipation of many terminations stimulated interest in GAO exceptions. Despite the discouraging remarks involved, field components of the AEC were instructed to furnish promptly to GAO representatives all data requested and, moreover, to discover whether the information was sufficient and satisfactory, in order that termination and reversion should not be delayed.<sup>16</sup>

Many administrative details had to be determined at levels higher than the districts, particularly on large contracts provided by the Office of the Under Secretary of War. District and plant representatives furnished much of the pertinent information in these cases. A discovery

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by test personnel, for instance, that certain goods did not meet the performance specifications of the contract would cause a cancellation or a price reduction. Thus, the price to be paid for each Curtiss-wright P-37 was reduced \$2,800.07 because the high speed requirement of 340 miles per hour at 20,000 feet could not be met; in actual tests the airplane was found capable of only 330. . . at that altitude. Nevertheless, public necessity required the continuous procurement of these aircraft because the lower speed did not disqualify them for tactical usage. The cut in price was determined by a formula wherein the reduction in cost is in direct relation to the figure of merit assigned at the time of evaluation and the price per figure of merit plus a 20 per cent penalty. The application of such a formula eliminated partiality and provided a definite means of determining the actual loss to the government. The arbitrary penalty figure of 20 per cent was set by Harry H. Woodruff.<sup>17</sup>

Changes in Contracts

Throughout the life of a contract, countless change orders and supplements to the original agreements were required. These not only provided for changes in specifications, but also were used to state the conditions of reverse payments, additional purchases, engineering services, and decentralization of production.<sup>18</sup> The large number of changes required by the Material Command caused dissatisfaction among contractors, who blamed the alterations for slow-downs and high costs. Douglas Aircraft estimated that there were 9,000 major changes in the A-20 between 1936 and 1944, with 3,000 more minor reverse changes, all of which involved 2,000,000 design engineering hours.<sup>19</sup> It also asserted

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that by August 1942 it had received 926 change orders in its aircraft designs.<sup>20</sup> Since contract changes and supplemental agreements obviously could not be written for engineering changes in such quantity, a procedure was adopted whereby contract-change notifications were sent to the contractors, who in turn grouped them quarterly, with costs included, so that inclusive contract changes might be made at one time.<sup>21</sup> Recommendations for changes in unit price made necessary by design alterations were initiated by district authorities.\*

It was a policy of the War Department to encourage a change from CFPF to FP contracts wherever this was possible. By May 1941 eight War CFPF contract forms provided for this conversion at a specified time after the completion of a stated portion of the contract.<sup>22</sup> Further, in the autumn of 1942 the AAF was instructed to avoid the placing of CFPF contracts except when absolutely necessary, and the AAF, after informing the principal contractors of the War Department's desire to convert CFPF contracts to FP contracts, asked for a statement of their attitude. Their reply was implicit in the fact that by March 1944 only three contracts--amounting to \$459,470,294--had been converted, and the expectation of orders for new large aircraft made the addition of more CFPF contracts likely.<sup>23</sup>

The idea of making this change was stimulated by congressional opinion that CFPF contracts wasted labor and materials, caused duplications of service, involved excessive costs, and depended too much on taxes

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\* See above, pp. 47-50.

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and renegotiation.<sup>24</sup> It was also felt that by 1944 enough data on the costs of materials and labor would be available to effect a conversion.<sup>25</sup> Further disadvantages in CFFF contracts, such as the amount of auditing necessary, and the lack of incentive for cheap production, were cited in support of the proposed change.

The contractor and the AAF, however, faced such real difficulties in converting the contracts from CFFF to FP that the change-over often proved impracticable. The production of some items still fluctuated so much, because of strategic factors or specification changes, that no reasonable fixed price could be set. Many contractors were inexperienced and, with their small amount of working capital, a slight miscalculation could ruin them. Then, too, both AAF and the contractors' personnel were spread so thin that the necessary computations and negotiations were impossible if full-scale production was to be maintained.<sup>26</sup> The Materiel Command had failed to develop any proof that FP contractors were any more or less efficient or economical than CFFF contractors, and the GAO questioned the assumption that the new cost would be less than that expected if a CFFF contract were retained.<sup>28</sup> Indeed, increased risks under an FP contract often provoked an insistence on higher prices from the contractor. At any rate, from the spring of 1943 on, procurement regulations specified the inclusion in CFFF contracts of clauses for conversion after partial completion<sup>29</sup> or on a specified date.<sup>30</sup>

The size of the conversion problem is indicated by the following breakdown of the number of CFFF contracts for airplane procurement in the various AAF programs approved between June 1940 and June 1944:<sup>31</sup>

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<u>Program</u>	<u>Date Approved</u>	<u>Number of Aircraft</u>	<u>Type of Contract</u>	
			<u>GFF</u>	<u>FP</u>
A	June 1940	4,085	7	28
B	September 1940	14,055	14	32
C	April 1941	10,186	9	28
D	June 1941	13,575	24	30
E	March 1941	10,210	10	37
F	October 1941	3,469	7	18
G	January 1942	30,036	44	26
H	April 1942	31,041	32	43
I	June 1942	30,667	40	55
J	June 1943	59,541	54	42
K	June 1944	25,625	12	7

By the autumn of 1944 only 67 AAF contractors were operating on a GFF basis, conversions having been effected for such large contractors as Emerson Electric, Bell Aircraft, A.O. Smith, and Fisher Body.<sup>32</sup> The relative smallness of this number permitted treating each firm individually and eliminated the need for over-all policies.

One of the main difficulties in this conversion program was the GFF accounting method, which tended to "justify" expenditures in order to secure full reimbursement rather than to present an accurate picture of inventory values or the actual cost of work in progress. As a result, instituting the FP system became a monumental task.<sup>33</sup> Some contractors were loath to negotiate a change-over before straightening out cost and inventory records and reducing the number of GFF sub-contractors.<sup>34</sup> Largely because of these difficulties, the AAF decided in 1944 that conversion to FP contracts was impracticable under certain conditions: (1) if a disproportionate amount of accounting was involved, (2) if inventories would interfere with production, (3) if conversion were to take place at a late date in production, and (4) if conversion had to be made retroactive for an unworkably long period.<sup>35</sup>

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Inspection

One of the greatest responsibilities to be undertaken by the Materiel Command was inspection; since, broadly speaking, it was a phase of production, it played an important part in the acceptance of materiel contracted for by the AAF. The primary purpose of inspection was, of course, to insure that government payments were made for the quality and quantity specified in the contract.

The inspection organization consisted of the AAF resident representative, an inspector-in-charge, and one or more assistants, all of them being kept informed through technical orders issued by higher authorities.<sup>36</sup> Government inspectors were instructed to remain aloof as far as possible in regard to the contractor's policies, except those affecting materiel. Their job was thus designed to supplement and supervise rather than duplicate the contractor's own inspection system. The inspector's duties were (1) to see that the materials and supplies met specifications, (2) to attempt the prevention of production slow-downs, (3) to supervise the contractor's inspections, and (4) to prevail upon the company's inspectors to report mistakes.<sup>37</sup> To avoid delays, the inspector at the factory was authorized to accept goods which did not meet specifications precisely, provided they were reasonable equivalents, involved no safety hazard, and did not adversely affect weight or interchangeability. If the substitute reduced costs, an appropriate contract-change notification was to be issued by the chief of the Production Division.<sup>38</sup>

Contractors' inspection systems were subject to two ratings, "approved" and "deferred," based on the government inspector's opinion of the manufacturer's accomplishment and the "Contractor's Quality

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Control Rating Questionnaire." Plants given an approved rating were subject to a review of their standing every six months, those with deferred ratings every three months.<sup>39</sup> The Navy and AAF agreed to reciprocal inspections at GEPF plants which had contracts with both services,<sup>40</sup> and the Navy maintained direct correspondence with the Materiel Command at Wright Field to report on these factories. The steps taken when the products proved unsatisfactory varied. Occasionally, where managerial or inspection malpractices were blamed, suggestions were made for improvement within the contractor's own organization: thus Bendix was urged to advise its engineers to "live" with their turrets during the last months of production to eliminate the possibility of defective items.<sup>41</sup> The quality of inspection at Douglas-Santa Monica was found unsatisfactory in 1942 and the blame placed on poor company organization; immediate reorganization was advised. Again, in 1944 Douglas-Santa Monica was reproached and the removal of certain key personnel advised because of short cuts, inaccurate labelling, and uneconomical purchasing policies.<sup>42</sup> A third example of the value of inspection occurred when the receipt by the AAF of faulty engines from the Wright Aeronautical Corporation was traced to falsification of tests, improper recording of tests, fudging of records, failure to segregate sub-standard and defective materials, oral changes or tolerances, and allowing production to override inspection; a similar widespread reorganization and close control were ordered by the AAF.<sup>43</sup> Where aircraft performance proved poor or unsuitable for AAF tactical requirements, production was sometimes completely curtailed and all excess parts used elsewhere. For example, production of the A-24 was stopped, and excess parts were used by the Navy for SBD production.<sup>44</sup> However

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faulty production as revealed by the field performance of a product, the manufacturer was required to make, or pay for, the necessary repairs.<sup>45</sup> Reported defects could result in cancellations and removal from the register of potential contractors;<sup>46</sup> usually, however, efforts were made to find alternate sources of supply before contractors were completely disbarred.<sup>47</sup>

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Chapter IV

COST AND PROFIT CONTRACTS

In March 1924 Congress passed an act limiting the profits of Navy contractors--the Vinson-Trammell Act.<sup>1</sup> By this statute, the books and records of the manufacturer were opened to Navy auditors, and the contractor was required to pay back to the Treasury all profits in excess of 10 per cent of the total contract price. The contractors were to obtain similar terms from all subcontractors and to refrain from any subdivision of contracts calculated to evade the provisions of the act. In June 1936 this statute was amended to permit carrying over losses of one year to balance any excess profits the following year.<sup>2</sup> During these same years before the emergency, it was Air Corps policy--in effect, a gentlemen's agreement--to limit the profits of all contractors to an annual average of 10 per cent of their total Air Corps business.<sup>3</sup> On 3 April 1939, however, all the provisions of the Vinson-Trammell Act were made applicable to the Air Corps, except that the amount of profits to be allowed was raised to 12 per cent on aircraft, and losses could be charged against profits over a four-year period.<sup>4</sup>

These modifications were designed to encourage the expansion of the aircraft industry for national defense. Items which were classified as scientific were exempted from the provisions of this bill because they were normally procured in small quantities. Thus, the exemption was applied by the Aeronautical Board to certain vital communication,

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navigation, and fire-control components of the completed aircraft while these items were still in the experimental stage.<sup>5</sup> On 28 June 1940 the legal profit was reduced to 6 per cent mainly because of the rapidly increasing volume of war material procurement.<sup>6</sup> In order to eliminate much auditing and supervisory work, however, firms with a government contract volume of less than \$5,000 were exempted, a profit feature which had the effect of protecting and encouraging small business to participate in national defense.

In October 1940 the provisions of the Vinson-Trammell Act limiting excess profits were suspended,<sup>7</sup> and profits were thereafter controlled by the provisions of the Internal Revenue Code of 8 October 1940.<sup>8</sup> It was the opinion of the Treasury Department that the retention of the Vinson-Trammell Act, applicable to naval vessels and aircraft alone, amounted to a duplication of control inasmuch as an over-all price-limiting statute had been enacted.<sup>9</sup>

Pricing

Pricing and re-pricing could be used to keep costs at a minimum without resorting to taxation, refunds, or renegotiation. It was advantageous to the air forces to avoid the latter method when possible, since the recovered funds were returned to the treasury and therefore lost to the air forces for further use in the programs for which they had been originally appropriated.<sup>10</sup>

The Vinson-Trammell Act and allied statutes had given the Army and Navy the right to audit company books, and this right was not withdrawn by the suspension of the profit-limiting provisions. In September 1940,

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therefore, the Army and Navy decided to install resident cost-inspection forces in plants where a large volume of business was expected. Personnel was to be furnished both by the Navy and by the Air Corps, with the agency having paramount interest in the plant providing the senior resident accountant. It was felt that in this way a uniform determination of costs would be assured. The Air Corps furnished 92, the Navy 48 employees to carry out the program at a complete cost per year equal to one-twentieth of 1 per cent of the estimated expenditures.<sup>11</sup> The primary duty of these inspectors was to safeguard the government's interests in the costs of materials and services in CFF contracts.

In most districts the price inspectors were stationed at the plants of prime CFF contractors. Where prices seemed excessive they made investigations and then, in cooperation with the contractor's purchasing department, usually managed to obtain the items for less. In the Eastern Procurement District, however, the inspectors were stationed in district and area offices rather than in the plants; they went directly to FP contractors, and subcontractors and vendors who might be operating under either CFF or FP contracts, and determined on the spot the costs of subcontracted and purchased items. This method resulted in savings not only for prime contractors and the government within the district, but also for those prime contractors outside the district who had subcontractors within it.<sup>12</sup> In the Central District the chief of the Price Adjustment Section sponsored a program by which manufacturers were rewarded for reducing prices at the time

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of renegotiation, a plan which was adopted later by the War Department. To supplement this, considerable saving was effected from time to time by alert representatives who followed cost trends closely. The General District's Price Adjustment Section, for example, discovered major increases in the costs in three contracts with the Fisher Body Division of General Motors and thereupon negotiated a price reduction amounting to \$6,000,000.<sup>13</sup>

Articles authorizing price adjustments were generally included in the contracts; a periodic review of the costs was to be made in an attempt to reduce the estimate of the whole contract or parts of it. Adjustment articles included (1) recetermination independent of statutory renegotiation, (2) periodic adjustment of price, (3) contingency changes and short-term pricing, and (4) escalation. Recetermination was designed for use in cases when the costs could not be reasonably estimated in advance despite the fact that the FP type contract was considered preferable.<sup>14</sup> This article did not preclude an over-all review of the contract.<sup>15</sup> When periodic adjustments were made, the intervening time was relatively short; prices for each period were based on past experience and more accurate estimates. If close pricing were maintained, the contractor would thus give further incentive to reduce costs in order to increase the margin of profit.<sup>16</sup> The Materiel Command asked approval of five FP contracts calling for delivery after 31 December 1944, when the Renegotiation Act was to expire. When the contractors agreed to include periodic readjustment in the contracts, the value of that move was reflected in the 43 per cent reduction made in an Allis-Chalmers contract in less than a year.<sup>17</sup>

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Special price-adjustment articles took into account cost variations caused by changes in schedules or allocations, and protected contractors against unpredictable risks.<sup>18</sup> In a contract with Gilfillian Brothers of Los Angeles, provision was made for a downward or limited upward price revision after the completion of the contract. From 1941 to 1943 escalator clauses anticipated adjustments in prices resulting from changes in the costs of labor and materials.<sup>19</sup> Clauses of this sort tended to increase profits, perhaps because efficiency rose with an increase in wages: by means of escalation Lockheed netted \$1,500,000 and Wright Aeronautical a similar amount.<sup>20</sup> As a result of this profitable arrangement, most companies waived the right to apply for higher prices under the clause. Finally, in April 1943 recourse to the clause was prohibited,<sup>21</sup> even though interest in an escalator provision increased among contractors looking toward the post-war period, because of the insurance it provided in an era of labor uncertainties and deflated profits.<sup>22</sup>

A new and more direct method of price control was inaugurated on 25 February 1944 by a statute authorizing the secretary of War, if he determined that a given price was unfair, to require the suppliers to establish a more reasonable price; if they refused, the secretary was empowered to set the price himself. The President, whose authority in this case could be delegated to a subordinate in the Executive Department, could seize any plant which did not obey this statute. All later contracts and purchase orders automatically embodied this feature.<sup>23</sup>

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The most spectacular method of controlling costs was renegotiation. Basically, it consisted of a review of the costs of a completed or partly fulfilled contract to determine whether the profits were excessive; if they were found to be unreasonably high, an arrangement was made by which excess profits were restored to the government. This device was both necessary and desirable, inasmuch as many articles were produced at prices based on inaccurate estimates of the probable costs, inaccuracies which were inevitable because of most manufacturers' lack of previous experience in producing war goods. Taxes alone could not recover all overcharges, because higher corporate taxes encouraged higher costs and discouraged economical production. Moreover, a profit percentage alone did not evenly share the risk other manufacturers depending on their financial set-up. Although war contractors were protected by various price-adjustment devices and by the use of GFF contracts, the people of the United States had no over-all protection, and the increased use of Cost contracts, plus the padding of FF contracts (to eliminate risks), gave for continually increased costs.<sup>24</sup>

Before there was any legislation on the subject, the Air Corps usually had been able to obtain reductions from contractors whenever the investigators were sure of their ground. Such assurance was gained by studying the costs of the contractor and certain lower prices were there seen to be unjustified.<sup>25</sup> On 10 April 1942 the President issued an executive order<sup>26</sup> which designated the War Department, Navy Department, Treasury Department, War Production Control, and Construction Finance

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Corporation, and the limiting Classification of Government agencies authorized to increase plant costs. Under this authority the War Department organized a price adjustment board to assist in securing voluntary adjustments or reduce when prices, costs, or profits seemed to be excessive. Later in April 1942 a statute authorized the insertion of a renegotiation clause in any contract over \$100,000. Even the profits could be determined accurately, the excess profits were to be remitted to the Treasury under the head of miscellaneous receipts. Similar clauses were to be included by prime contractors in their subcontracts.<sup>27</sup>

When this legislation was first suggested, the proposal that profits be limited to 6 per cent was opposed by both the Army and Navy; the two services had managed to gain voluntary reductions before, and they believed that if no allowable percentage of profits was specified, the government would remain flexible means of restoring economy and also relieve work on the part of individual contractors. The ultimate purpose of renegotiation, however, was to do away with any incentives that might arise under the old system by encouraging cost, indeed, enforcing a continuous study of costs. It was believed that contracts could then be written on the basis of more reliable information and that the need for contract alterations would tend to disappear. Thus, paradoxically, renegotiation aimed at the elimination of the need for change or renegotiation.

Some flaws in the original law were rectified by the passage on 21 October 1942 of an amending statute.<sup>29</sup> Under it contracting officers were authorized to exempt the whole contract or the parts of it under which excess profits were directly, adequately controlled. Further, no

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renegotiation was to be undertaken more than one year after the end of the fiscal year during which the contract was completed. Recovery of the amounts obtained by renegotiation was to be done by reducing the contract price, withholding amounts due to the contractor, directing the contractor to pay back amounts for the United States, or covering in cash, or by any combination of these means. Under the provisions of the Act of 1942, the chain of command and the delegations of authority with respect to the Air Forces was as follows: the Secretary of War was authorized to carry out provisions of the Act with powers of delegation; under him, the Under Secretary of War had the same powers; next came the War Department Price Adjustment Board to handle all cases over 10,000,000 and all cases below this amount, which could not be expeditiously or effectively handled by lower echelon; under the War Department Board, the Commanding General, AAF could renegotiate for cases under 10,000,000; and finally, district Price and the district adjustment sections could renegotiate cases under 5,000,000, or from 5,000,000 to 10,000,000 with the approval of the War Department Board. The audits and investigations were necessarily performed by procurement district personnel even when the final negotiations are approved or denied by the Commanding General, AAF, or by the War Department Board.

In the first year of renegotiation, it became apparent that it was far wiser and simpler to renegotiate by considering a firm's business as a whole rather than contract by contract.<sup>30</sup> Because it was feared that the contractors might be abused by means of renegotiation,<sup>31</sup> amendments were passed in October 1942 to limit the period of renegotiation

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to one year. It was a serious protest over contract, when renegotiated, amounted to no more than a GPP contract,<sup>32</sup> and, in fact, many Navy and Army renegotiations did approach a cost-plus-percentage contract in spirit. This kind of criticism, however, did not take into consideration the flexibility inherent in the renegotiation process; the War Department Price Adjustment Board noted that in the first year renegotiated profiles ranged from 0.4 to 22.1 per cent of sales prices,<sup>33</sup> a fact which seems to indicate that incentives for exceptional performance were being provided through this medium.

Two significant circumstances characterized the first year of renegotiation: (1) a group of able lawyers, accountants, and business administrators were assembled to conduct renegotiation, and (2) most war contractors learned during this period why they should accept renegotiation as an ultimate benefit both to themselves and to the government.<sup>34</sup>

During 1943 four congressional committees studied the renegotiation law, with the result that revisions were initiated and finally incorporated in the revenue law of 25 February 1944.<sup>35</sup> This statute legalized the AMP policy of rewarding contractors for excellent performance and directed the renegotiating officers to consider efficiency, negotiating profits, capital involved, risks, contributions to the war effort, and the character of the business. The chief administrative change was the formation of a War Contracts Price Adjustment Board which was given the power of renegotiation. Exemptions from renegotiation were increased from 100,000 annual government business to 500,000, a change which resulted from a better understanding of both

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costs and economy of effort, since a large percentage of renegotiations in 1942 concerned firms with less than \$500,000 in government business.<sup>37</sup> By this statute, the terminal date for renegotiation became 1 December 1944, but by an executive order of 16 November 1944,<sup>38</sup> this date was extended to 30 June 1945, and later to 31 December 1945.<sup>39</sup>

Both before and after the legislation, there were many voluntary reductions by the contractors themselves, as a result of lower labor or materials costs, economies effected in plants, or increases in production and sales.\* Some corporations, such as United Aircraft, voluntarily reported and refunded excess profits every few months: from 1941 through 1943 United turned back \$286,000,000.<sup>40</sup> Many contractors, large and small, sought the good will of the AAF instead of insisting on renegotiation, which entailed a loss of AAF appropriations. Such voluntary reductions of profits could be encouraged only by making the manufacturers realize that their present, or future, competitors were being constrained to eliminate excess profits.

After the creation of the War Contracts Price Adjustment Board, the chain of command and authority, for the AAF, was set up as follows: the War Contracts Price Adjustment Board, the Secretary of War, the Under Secretary of War (the War Department Price Adjustment Board), the Commanding General, AAF (Price Adjustment Branch of Materiel, Maintenance,

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\* For example, there are in AAG Bulk Files 161 H, Contracts, a series of letters to the contracting officer at Wright Field from such representative companies as Aviation Division of General Electric (26 June 1942), Bendix Aviation (3 July 1942), Jones and Lawson Machine Company of Springfield, Vt. (14 April 1942), and Chandler Evans of South Meriden, Conn. (15 June 1942).

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and Distribution and the AAF Price Adjustment Board), the Air Technical Service Command at Wright Field, and the district price adjustment sections. Before February 1944 the over-all policy-making agency for the Army had been the price adjustment board, but now its function of initiating, integrating, and directing policy for all arms and services was taken over by the War Contracts Price Adjustment Board. The former had been composed of members appointed by the Under Secretary of War from nominees proposed by the commanding general of SOS, of the Material Command, and the chairman of the War Production Board. The war contracts board consisted of one appointee each of the Secretary of War, the Secretary of the Navy, the Secretary of the Treasury, the chairman of the Maritime Commission, the chairman of the Reconstruction Finance Corporation, and the chairman of the War Production Board. The WDPAB had assisted the Services of Supply (ASF) and the Materiel Command (ATSC) in obtaining competent renegotiation personnel, and, further, it had determined what agency should conduct renegotiation with companies under contract to more than one War Department agency; reviewed settlements whenever local echelons were not authorized to make final decisions; and conducted those which, for one reason or another, could not be handled by SOS or ATSC. One of the chief functions of the board had been to review and make decisions in cases of deadlock between the negotiators and the contractor--the so-called "impasse" cases. Under the 1944 law, this latter function was expressly retained by the board, and the Under Secretary was empowered to approve settlements for all War Department contracts over

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\$10,000,000. One step below the WDPAB was the AAF Price Adjustment Board in Washington, which theoretically had handled cases on the level of AC/AS, Materiel and Services. Actually the latter office came to act rather as liaison between the Wright Field and district boards and also between the WDPAB and Office of the Under Secretary of War.<sup>41</sup> After the creation of the war contracts board the Price Adjustment Branch of Materiel, Maintenance, and Distribution and the AAFFAB could approve settlements of AAF contracts from \$5,000,000 to \$10,000,000 and acted as liaison with the Office of the Under Secretary of War. The ATSC at Wright Field approved local cases up to \$5,000,000 and acted as liaison between the districts and Washington; the district price adjustment sections prepared briefs on all cases and made final settlement on cases under \$5,000,000.

The relative amount of work completed by these boards, as of 28 February 1945, is indicated in the following table:<sup>42</sup>

<u>Settled</u>	<u>AAFFAB</u>	<u>WDPAB (OUS/W)</u>
Unilaterals	0	13
Written Agreements	8	30
Oral Agreements	<u>1</u>	<u>16</u>
	9	59
<u>Not settled</u>		
Probable Unilaterals	0	32
Proposal Made	1	12
Heard (No Decision)	0	6
Hearings Not Completed	<u>2</u>	<u>27</u>
	12	136

Members of these advisory and supervisory bodies often conferred with district personnel, and on the basis of that experience they formulated certain principles to serve as guides in future work. In

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particular, agreements were reached as to the general level of profit to be allowed the contractors; in 1944, by direction of the War Department, an over-all lowering of levels was sought.<sup>43</sup> It was not the policy of these higher boards, when appealed to, to arbitrarily fix some different figure to satisfy the contractor; rather, a complete re-survey of such cases was made, and at times a higher figure was reached than the one under protest. Thus, the Central Procurement District, after renegotiating with the Denison Engineering Company of Columbus, Ohio, requested a refund of \$1,750,000, but a review by the AAFPAB led to raising the amount to \$1,850,000; then the WDPAB reviewed the case and decided upon the original figure.<sup>44</sup> In the case of Bendix Aviation for 1943, the Eastern Procurement District reduced basic profits from 15.9 to 10.75 per cent and required a refund of \$44,000,000, an arrangement which the company accepted. Later, however, the case was reviewed by the War Department board and the refund to the government increased by \$10,000,000; the company demurred and the refund was finally settled at \$53,262,659.<sup>45</sup> Many manufacturers, even while admitting the justice and propriety of making large refunds to the government, found themselves unable to pay because they had put most of their profits back into their plants. In these so-called hardship cases, efforts were made to extend the period of payment.<sup>46</sup>

Another echelon of the administrative control of renegotiation was represented by the price adjustment office at Wright Field together with its district branches. This agency screened out companies which did not require renegotiation, identified those which would be more

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expeditiously negotiated by another arm or service, and recorded the progress and completion of assignment.<sup>47</sup> Final agreements could be made by the Wright Field office and the district sections with any contractor whose annual business with the government did not exceed \$5,000,000. Nevertheless, the volume of renegotiation work performed by the field itself was not large, inasmuch as it concerned, for the most part, companies in the vicinity of Dayton, Ohio.

The district price adjustment sections did the largest amount of spade work in the renegotiation process. By 31 December 1943, for example, the Eastern Procurement District alone had recovered \$268,000,000 in refunds.<sup>48</sup> As soon as a case was assigned to a district office, the contractor was notified and preliminary information was studied by the financial analysis unit. The negotiator assigned to the problem then reviewed all the available data and arranged a meeting with the contractor, during which renegotiation was explained and the contractor given an outline of the statistical information required of him. This information was submitted to and studied by the analysis unit, and a second meeting with the contractor reviewed all the evidence together, and recommendations for settlement were then made by the former. After a review of the negotiator's report by a district panel, a third meeting with the contractor was held, at which an effort was made to agree upon the size of any refund involved. Further meetings were held only when disagreement arose. The reports and agreements were finally transmitted to Wright Field.<sup>49</sup> The number of renegotiation cases handled by the Eastern Procurement District during 1943 and the value of the contracts involved are listed in the following table:<sup>50</sup>

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Gross Assignments	1341
Less Reassignments	76
Less Reassignments Pending	<u>24</u>
	1241
Less Cancellations (probably under \$500,000 in value)	<u>361</u>
	880
Initiated (No Agreement)	8
Impasses Forwarded to AAF Headquarters	2
	<u><u>870</u></u>
Total Verbal or Written Agreements and Impasses	

These 870 cases were broken down as follows:<sup>51</sup>

Refunds	
Concluded by district through delegation (under \$5,000,000)	177
Forwarded to WDPAB for approval (over \$5,000,000)	177
Clearances	
Concluded by district	229
Forwarded by WDPAB	189
Impasses	
In process	57
By agreement	29
Unilateral decision by Under Secretary of War	12
Total Verbal or Written Agreements and Impasses	<u><u>870</u></u>

In practice, refunds were not usually demanded of manufacturers operating on GPF contracts because the original contracts frequently provided for a fixed fee of only 4 or 5 per cent--a fixed fee as large as 8 per cent of the estimated contract cost was permitted by law. Therefore, even if estimated manufacturing costs were materially reduced, the percentage of the fixed fee to the actual cost was still below the legal limit. Accordingly, in 1943 there were no recoveries from GPF contracts.<sup>52</sup> In 1944, however, when some dissatisfaction was expressed by The Inspector General over the large size of the fixed fees in the procurement of aircraft and their components,<sup>53</sup> a program to reduce profits on GPF contracts was instituted. In line with this,

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a refund of \$2,000,000 was requested by the WDPAB from the U.S. Rubber Company for the fiscal year 1944,<sup>54</sup> even though the firm had been cleared on these contracts in 1942 and 1943. The effect of this action was to reduce the basic margin of profit on U.S. Rubber contracts from 7.8 to 5.7 per cent.

Since there was no desire on the part of the government to force the contractors to make unreasonable refunds, one method used to determine a fair profit for a given concern was basing the allowable percentage on the percentage of earnings to sales reported by the company during the period 1936-1939. Also considered were the contractor's efficiency, cost of production, type of business, and contribution to the war effort.<sup>55</sup> Illustrative of such renegotiation methods were the transactions with the Eaton Manufacturing Company of Cleveland, Ohio,<sup>56</sup> and the Republic Aviation Corporation.<sup>57</sup> The latter, the sole source of the P-47, was a prime contractor, but it subcontracted to about 620 other manufacturers. Eaton, a subcontractor or vendor of aircraft parts to General Motors, Wright, Packard, Chrysler, Pratt & Whitney, Ford, Studebaker, and several others, was a highly integrated organization which itself subcontracted less than 1 per cent of its work. Both companies were cleared on their GPF contracts--that is, they did not show excessive profits; Republic received a 5.9 per cent on actual costs, Eaton 4.8 per cent. During the period 1936-1939 Republic had suffered a loss of \$593,946, while Eaton showed a basic profit of about \$2,500,000 on business totalling approximately \$25,000,000.

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Army experts testified to the efficiency of the P-47, various buyers of Eaton products gave unqualified praise to them, and most significantly, each company had carried out radical design changes without material effect on delivery schedules. Out of its total 1943 sales of over \$65,000,000, Republic showed a gross profit of approximately \$9,000,000, of which about \$4,000,000 was refunded to the government by renegotiation. Thus, Republic was left with an 8 or 9 per cent profit, in sharp contrast to the figure for 1936-1939. Eaton, which refunded almost half of its \$10,000,000 profit, was allowed only about half of Republic's percentage, again based partially on the 1936-1939 "normal" figures.

Friction developed from time to time over the activities of the General Accounting Office,\* whose auditors frequently questioned the costs which had been allowed the contractors by the AAF contracting officer. Although GAO review of renegotiation cases was responsible for delays, the AAF contracting officers often agreed that the objections raised were valid. For example, the GAO questioned an allowance of \$1,000,000 made to Republic during 1943; of this amount, the contracting officer admitted that \$100,000 had been incorrectly charged against the contract.<sup>58</sup> The occasional intervention of the GAO prompted some complaints by manufacturers that they served two masters--the contracting officers and the GAO auditors; personnel necessary to production were forced into investigations for which they properly could not be spared, and a feeling of uncertainty was sometimes created among manufacturers.<sup>59</sup>

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\* See also above, pp. 63-64, 67.

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The Office of the Under Secretary of War (WDPAB) reviewed and confirmed all final agreements in purchases exceeding \$10,000,000, those between \$5,000,000 and \$10,000,000 requiring the signature of the Commanding General, AAF. In practice, however, most contracts in excess of \$5,000,000 were forwarded to the War Department Price Adjustment Board for signature; contracts of less than that figure had to be approved by the commanding general of the district performing the renegotiation or by the commanding general at Wright Field. The following tabulation for 1943, prepared by the Price Adjustment Branch of ATSG on 31 July 1945, shows the number and importance of the larger renegotiation cases:<sup>60</sup>

	<u>Total</u>	<u>\$50*Over</u>	<u>\$10-50</u>	<u>\$5-9.9</u>	<u>\$2-4.9</u>	<u>\$1-1.9</u>	<u>\$.5-.9</u>	<u>\$.5Under</u>
Number of Cases	783	26	98	87	182	166	178	46
Base Profit Margin on FP	19.7	18.7	20.6	22.9	22.0	22.3	25.2	27.1
Base Profit After Renegotiation	11.1	11.2	10.9	10.6	11.1	11.1	12.3	12.8
Recovery of FP Fee Percentage	833	460	191	68	64	27	20	2
of Cost on GPF	4.9	4.7	6.2	5.2	3.6	2.2	3.7	0.0
Recovery on GPF	0	0	0	0	0	0	0	0

Thus, the refunds resulting from renegotiation were substantial, even when compared with the total war budget of the United States: up to 31 October 1945 the total amount recovered in this way on AAF contracts was \$2,031,555,809.56;<sup>61</sup> during approximately the same period (1 July 1940 to 30 June 1945) the total war budget for the AAF amounted to \$38,005,200,000.<sup>62</sup> In other words, almost 5 per cent was recovered by

\* All the figures in the column headings are for millions of dollars.

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refunds. There were, moreover, hidden but very real benefits in renegotiation: the elimination of excess profits had a good effect on the public morale in allaying its suspicion of the businessman's relationship with the war, and by maintaining materiel prices at a low but fair level, the program also contributed to the control of inflation.

The renegotiation process was criticized at an early date because some felt that there were too many variations in the policies of the different administrative agencies. Such criticisms were silenced by the formation of the War Contracts Price Adjustment Board to coordinate and direct the efforts of all these agencies. A further, and only partially solved, problem arose from the fact that the conduct of renegotiation proceedings was assigned to that service which had a prime interest in a particular company. That is, a contractor with 55 per cent Army contracts and 45 per cent Navy was assigned to the Army for renegotiation; if the AAF held 35 per cent of the Army contracts, however, the renegotiation was carried out by one of the adjustment sections of the Materiel Command, depending on the location of the contractor's plant. In accordance with this policy, manufacturers in the same industry were sometimes assigned to different negotiators, with the result that the individual negotiators did not gain as much specialized experience in dealing with a particular industry as was desirable. Interboard communications were hampered by the fact that they had to pass through military channels. Further, although it was

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the aim of the renegotiation program to eliminate itself by determining fair prices for future contracts that would, in consequence, not require renegotiation, the military system by its very nature tended to defeat this purpose. To be more specific, it was observed that occasionally a 2d lieutenant serving as a contracting officer at a contractor's plant hesitated to authorize exemptions that might be well justified because he feared the risks inherent in his decision. With reference to this general situation the Truman Committee reported: "The military system does not encourage the exercise of initiative and assumption of responsibility."<sup>63</sup>

Nevertheless, no amount of adverse criticism could obscure the fact that, from the very beginning, the administration of renegotiation was effective and generally commendable, and that the program had a healthful effect on contracting. Certain characteristics germane to the military system did not lend themselves to maximum efficiency in purely business matters, but definite controls of prices and profits were developed.

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## Chapter V

## TERMINATION OF CONTRACTS

In the spring of 1919 an Air Service Claims Board was established to settle accounts arising from the cancellation of contracts entered into by the Bureau of Aircraft Production and the Division of Military Aeronautics.<sup>1</sup> This board, which functioned under the general supervision of the War Department Claims Board, was dissolved in 1921, but based to a certain extent on its experience, an attempt was made during World War II to plan ahead before cutbacks and contract cancellations were actually at hand.

The Need for Legislative Action

Early in the war terminations presented very few problems because they resulted either from tactical considerations or from failures by contractors to fulfill obligations; changes resulting from the former caused little trouble because they generally were replaced by contracts for more essential items, or were designed to expedite the completion of other orders placed with the same contractor.<sup>2</sup> In cases of non-performance, or failure to meet delivery schedules, the government was empowered to terminate a contract and pay the contractor only for completed or partly completed items. The remainder of the order was then procured by the government on the open market, and the contractor was liable for any excess costs incurred.<sup>3</sup> AAF procurement agencies usually gave extensions except in an emergency, but when schedules were repeatedly not met, the contract was terminated. The Hackensack Cable Company of New Jersey, for example, was scheduled to deliver 605,000 feet of cable to the air forces by 30 September

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1940; the company met neither the original schedule nor subsequent extensions of that schedule, and yet the contract was not declared in default until 23 December 1940.<sup>4</sup> At times the government benefited from such terminations, as in the case of the Rex Body Corporation at Canastota, N. Y., which defaulted in furnishing a \$767,000 order of 146 photographic laboratories only to have Oneida Limited fill the defaulted order at \$760,000. Rex also defaulted on a contract for 1800 bomb shackles at \$133,000 which Oneida later supplied for only \$114,000.<sup>5</sup> Non-performance was generally blamed on an inability to secure necessary machinery and materials, and on low priorities,<sup>6</sup> although early in the emergency period it was also ascribed to the greater profits inherent in commercial contracts.<sup>7</sup>

The problems arising from non-performance terminations were few because the cases were clear-cut and there was little room for complaint on the part of the contractor. As the war drew to a conclusion, however, definitive legislative action was needed to establish the policies and aims of the government with respect to terminated war contracts. No such policies existed prior to the summer of 1944,<sup>8</sup> although it was realized by that time that the relatively small capital of most aircraft companies did not equal the obligations assumed by these companies under government contracts. Consequently, any delay in full adjustment at the time of termination might throw such firms into bankruptcy. The vast number of subcontractors, as well as the prime contractors, could conceivably find themselves in this perilous situation. More specifically, the prime contractors did not dare pay their subcontractors prior to a final audit by the government, for they would do so only at considerable risk.<sup>9</sup> Very often,

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then, prime contractors inserted provisions in their subcontracts which barred recovery by the subcontractor in case of termination.<sup>10</sup>

In 1943 and early 1944 the approach to termination was unrealistic. Whereas renegotiation had worked successfully on the theory that it was impracticable to review prices contract by contract, termination had been geared to formulas requiring exact and laborious arithmetical accounting. The supposition was that the exact allowance to be made for surplus inventories could be determined mathematically, but the absurdity of this supposition was apparent in the face of the tremendous volume of orders being processed through the aircraft factories. One corporation alone calculated that it had 50,000 separate orders, only 3,000 of which were valued at more than \$10,000. It was hoped that as the need for renegotiation waned, the renegotiation personnel, trained in administering contracts, could be transferred to termination work.<sup>11</sup>

Termination of a fixed-price and a cost-plus-fixed-fee contract constituted two different problems because of the way in which the manufacturer was remunerated. The lack of policy on this as well as other phases of termination caused a number of manufacturers to refuse war contracts in 1943 and even early 1944, with some consequent impairment of the total war effort.<sup>12</sup>

#### Executive and Legislative Action

On the credit side of the ledger were the efforts of Mr. James F. Byrnes, the director of the Office of War Mobilization. At his suggestion, representatives of the services discussed the problems of termination in October 1943 in the light of the War Department plan for rapid cancellation of contracts in cooperation with the Navy.<sup>13</sup> In November 1943 Byrnes

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established a demobilization unit in the Office of War Mobilization to develop policies on contract termination, and on 8 January 1944 he promulgated a "Uniform Termination Article for FP Supply Contracts and a Statement of Principles for Redetermination of Costs upon Termination of Government FP Contracts." This plan, however, was somewhat modest and did not pretend to tackle all the problems involved.<sup>14</sup>

Of all the contracting agencies, the War Department had the most experienced staff for conducting terminations, partly because it was the first to encounter the problem and partly because it had planned ahead.<sup>15</sup> One of the subjects given early consideration was how to deal with manufacturers whose war contracts were subjected to sharp cutbacks. The policy then established stipulated that an effort be made to allocate another war contract to the manufacturer, and if this proved impossible, the WPB was to try and steer the company into the manufacture of essential civilian items.<sup>16</sup> The government further attempted to place these cutbacks in areas where there was a serious labor shortage. It was generally recognized that "when hostilities actually cease, the great bulk of contracts will be cancelled. When that time comes, a smoothly working experienced administration of contract termination can make the difference between early resumption and business stagnation."<sup>17</sup>

Early in July 1944 contractors were asked to bring their business and contractual projects up to date, the better to meet imminent termination,<sup>18</sup> and at about the same time basic procedures in contract termination were established by law. The purpose of the legislation was to assure speedy, equitable final settlements, to expedite reconversion, to assure uniformity of procedure, and to facilitate the efficient use of materials. An office

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of Contract Settlement was set up, with a Contracts Settlement Advisory Board composed of the heads of interested agencies. Every effort was to be made toward awarding speedy, fair compensation, using the contractor's accounting system for the basic data, and taking into consideration the degree of completion of the contract.<sup>19</sup> On 3 October 1944 the Office of Contract Settlement was placed in the Office of War Mobilization and Reconversion,<sup>20</sup> and to protect the public interest it was directed that all contracts not needed for the prosecution of the war be terminated at that time. This measure was designed to forestall any attempt to use war contracts as a method of reducing unemployment. The legislation also authorized the director of the Office of War Mobilization and Reconversion to integrate the information from all agencies in order to transfer manufacturers from one field to another or into non-war needs. It was specifically forbidden, however, that any contract be continued merely because a peacetime competitor still had a war contract.

Coordination with the Navy in the matter of termination began in 1943 with the publication of the uniform termination article for fixed-price contracts. In November 1943 a Joint Contract Termination Board was set up only to be replaced in July 1944 by the Statutory Office of Contract Settlement. It was not until 1 November 1944, however, that the two departments issued joint termination regulations and a Joint Termination Accounting Manual.<sup>21</sup>

#### Organization and Administration

In February 1945 the Director of Contract Settlements was given all the functions and powers of the Secretary of War in the exercise of contract settlement.<sup>22</sup> As a result, the AAF organization for contract termination

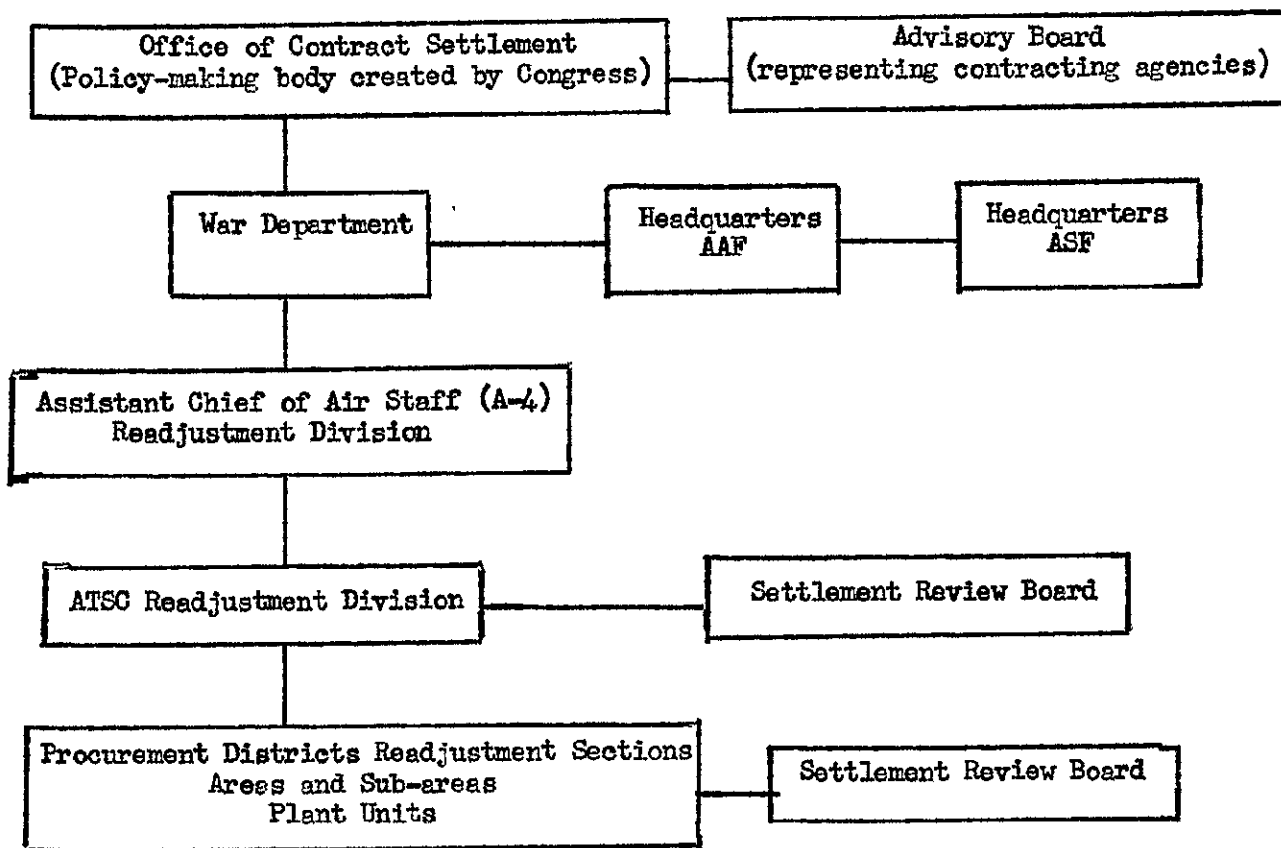
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was as follows:

AAF CONTRACT TERMINATIONS BOARDS<sup>23</sup>



To carry out War Department plans for termination, the AAF had set up termination sections in the procurement districts in 1943, but actually little work was available for them until 1944.<sup>24</sup> Efforts were also made to establish termination units at area and sub-area levels, and even at plants where the volume of business justified them. The chief of a termination section or unit administered the settlement contracts referred to his district as follows: he determined the methods to be followed; formulated a plan for arriving at a final settlement; received and analyzed the contractor's claims;

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authorized, reviewed, and approved settlements between prime and subcontractors; negotiated partial payments and final agreements; and took the steps for final disposition of claims.<sup>25</sup>

In the summer of 1944 the chief of the termination section in the Midcentral Procurement District interviewed each prime contractor with an order of \$10,000 or more, and these interviews became the basis of future negotiations.<sup>26</sup> The War Department, and all the procurement agencies, subsequently adopted this procedure. Thus, pre-termination planning precluded most settlement problems, except for the actual physical inventory, when a company finally faced termination.<sup>27</sup> When the need for a certain contract had passed, the contractor could seek another order with the legal and financial guidance of the settlement branch of the termination section.<sup>28</sup> A vertical system ordinarily was used so that the government dealt with the prime contractor, the prime contractor with his subcontractors, and they with their suppliers. Thus, all settlements were made between the original contracting parties. The contractors themselves could settle all claims of less than \$1,000, and specific authority was given to some firms to handle their subcontractors' claims up to \$10,000.<sup>29</sup>

Although the peak of terminations was not reached until January 1946, the great achievements during the last months of the war are illustrated by a breakdown of AAF contract termination in June and July 1945:

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Field.<sup>34</sup> The men had been trained at Harvard Business School, the Army Industrial College, the Judge Advocate General School, or the Materiel Command School at Vandalia.<sup>35</sup>

Early in 1944 the War and Navy Departments arranged that the agency with the greater share of the contractor's business should provide the accounting and property disposal personnel to be sent to that firm. The assigned personnel, of course, did the accounting-review and plant-clearance work for all the agencies concerned.<sup>36</sup> In addition, at the suggestion of the Bureau of Aeronautics, the Air Technical Service Command administered termination proceedings in all bureau cancellations of contracts in which the AAF had a dominant interest. Accordingly, the Eastern and Central Procurement Districts of ATSC handled over-all terminations with Bendix-Scintilla, the Bendix Radio Division, and Sperry.<sup>37</sup> In September 1945 further cross-delegations for Navy and Army terminations were proposed.<sup>38</sup>

Every effort was made by the AAF to plan for the contingencies that would arise with the end of the war. As early as August 1944 new procurement schedules were drawn up predicated on the fall of Germany in October 1944.<sup>39</sup> With definite plans for procurement and production at hand, an orderly program for reconversion, cutbacks, and terminations was ready as each need arose.

The large contractors presented a special problem because of the size, variety, and number of their contracts: approximately 25 contractors represented 75 per cent of the termination load in September 1944. To cope with this volume, a special unit of seven officers was set up with the idea that it would both expedite termination and maintain liaison.

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Six cases, involving contracts totaling \$950,000,000, were selected for special consideration.<sup>40</sup> Working in the spirit of termination legislation, most cases were concluded expeditiously. Where the company was trustworthy and efficient, there was little difficulty in reaching an agreement satisfactory to the government and the contractor. For example, the Douglas Aircraft Company had a contract to furnish spare parts for the DB-7B; 5 per cent of its work had been subcontracted and the settlements made with these subcontractors were readily approved by the termination contracting officer. The contractor presented to the government the following breakdown which, with adjustments as indicated, became the basis of an agreement:

	<u>Contractors Statement</u>	<u>Negotiation Adjustment</u>	<u>Proposed Settlement</u>
Purchased parts	28,291.06		28,291.06
Work in process	102,854.61		102,854.61
Jigs and dies	None		None
General and Adm. Expense	4,111.35		4,111.35
Other costs	<u>35,956.33</u>	12,774.68	<u>23,181.65</u>
TOTAL COSTS	171,213.35		158,438.67
Profit		9,402.47	9,402.47
Post termination charges	<u>2,488.12</u>		<u>2,488.12</u>
TOTAL	173,701.47		170,329.26
Settlement with subcontract.	1,671.19		1,671.19
Completed units	<u>79,710.21</u>	7,246.38	72,463.83
Interest		2,226.42	<u>2,226.42</u>
TOTAL	255,082.87	8,392.17	246,690.70

The estimated portion of the total contract completed at the date of termination was 19 per cent and the approximate percentage of this proposed settlement of the gross amount was 19 per cent. Since there were no disposal credits, partial payments, or other credits, the net settlement was therefore placed at \$246,690.70.<sup>41</sup>

Sometimes friction arose with the General Accounting Office which

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insisted on continuing an audit for 60 days after being given an audit status date. The AAF objected on the grounds that the auditing of contracts should cease with the date of termination. This stand was dictated by the fact that the contractors needed to receive payment as quickly as possible upon termination. Although the Navy Department had not pressed the issue, the AAF held to their statutory right and duty to overrule exceptions of the GAO if such a step seemed necessary for expeditious settlement. This attitude by the air forces provoked what appeared to be dissatisfaction on the part of the Comptroller General as to the cooperation offered by the War Department.<sup>42</sup>

Though no great difficulty was experienced in settling fixed-price contracts, the directives for settling cost-plus-fixed-fee contracts were sometimes troublesome and even inapplicable.<sup>43</sup> The problems involved have been summarized as follows:<sup>44</sup>

Under a cost-plus contract, a contractor is entitled to recoup costs on the performed part as well as the terminated part of the contract.... This frequently involves settlement of disputes concerning reimbursability of items of cost incurred over substantial periods of performances and often requires considerable time. Since the items or parts of items of cost attributable to the terminated part of the contract are not segregated, it is not possible to know that settlement of the terminated part of the contract has been completed until all claims by the contractor for costs under the entire contract have been settled.

It must be remembered that most of these contracts were very large, and that a longer period was therefore required for auditing and final settlement. In general, the time from the effective date of termination to the receipt of a claim varied from 82 to 106 days; in the no-cost cases, the period was from 58 to 29 days, which was reduced in 1944 to an average of 36 days.<sup>45</sup> Where a continued, but reduced, procurement was to be carried on, the

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schedules were cut under the direction of WPB in order to expedite reconversion to civilian activities. In the case of the A-26 manufactured by Douglas-Tulsa, the schedule was revised to allow the company the greatest opportunity to convert its plants: war production was cut gradually from 210 airplanes in May to 25 in December.<sup>46</sup>

The story of termination was not yet completed as of the early months of 1946, but the foresight of the contracting agencies and of Congress in preparing for the reconversion of industry to peacetime pursuits has been a bright page in the history of the war, and has resulted in a minimum of confusion and dissatisfaction.

Conclusion

As the previous chapters show, the basic purchasing organization of the Army Air Forces was sound. It maintained personnel close to the manufacturers for preliminary negotiation, and for supervising, and administering the contract; and, of equal importance, it had a coordinating body, the Air Technical Service Command, to insure fair and efficient allocation of contracts. The organization in Washington integrated AAF purchasing with that of the other arms and services and with the over-all United Nations program, and the personnel selected to carry out that program proved, with rare exceptions, efficient and devoted. The preliminary contract planning, however, was revealed to be somewhat less than adequate. When most of the small manufacturers were not canvassed and were therefore improperly instructed as to the integration of their plants in the war program, an orderly and efficient conversion to military production was at best a difficult task. Nevertheless, once the program was under way, these

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early mistakes were more than compensated for by the AAF's efforts at profit limitation and later its method of contract termination. Adequate plans were formulated early to gain the interest and good will of the contractors so that the undertaking could be carried out with proper economy. The contracts themselves, however, also posed a problem, even though types of contracts appropriate for the diverse procurement problems faced were evolved: in the awarding of them, the safeguards against collusion and the desire for wide distribution, while justifiable, often interfered with efficiency and economy.

Nevertheless, it may be said in summary that whereas some features of the AAF materiel program were highly touted, and criticized, by private advertisement or public statement, the success of the AAF in effecting savings and reducing the profits of war industry has never received due recognition. The preceding pages are intended as a step in that direction.

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G L O S S A R Y

AAFPAB	AAF Price Adjustment Board
AFP	Authority for Purchase
ASF	Army Service Forces
ATC	Air Transport Command
ATSC	Air Technical Service Command
CPFF	Cost-plus-fixed-fee
CPFC	Cost-plus-percentage-of-cost
FP	Fixed-price
GAO	General Accounting Office
JAC	Joint Aircraft Committee
OPM	Office of Production Management
OSRD	Office of Scientific Research and Development
RFC	Reconstruction Finance Corporation
SWPC	Small War Plants Corporation
WCPAB	War Contracts Price Adjustment Board
WDPAB	War Department Price Adjustment Board
WPB	War Production Board.

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1. AHS-22, Legislation Relating to the AAF Materiel Program, 1939-1944, pp. 100ff. Unless otherwise noted, all sources are in the Archives Branch, USAF Hist. Div.
2. This delegation and redelegation was from AS/W (US/W after August 1941) to CG/AC (Headquarters, AAF after June 1941) to Materiel Division, Washington (Materiel Command, March 1942; AG/AS M&S, July 1944; AG/AS-4, August 1945) to Materiel Division, Wright Field (Materiel Center, March 1942; Materiel Command, April 1943; ATSC, August 1944) to Procurement Districts (three in 1939; six in 1943).
3. Digest of Air Corps Policies, Policy No. 168, in AAG 161C, Contracts [hereinafter cited AC Pol.].
4. AC Pol. 45-1, 1 Jan. 1942, in AAG 161C, Contracts.
5. AHS-22, p. 101.
6. Interview with Col. H. H. Henrie, Chief, Contracts Div., AG/AS-4, 7 Nov. 1945.
7. Memo for C/AC, 10 June 1940, in AAG 40013, Purchase Orders.
8. Circ. ltr., "Items on Which a Notice of Intention to Purchase is Requested," 8 Aug. 1941, in AAG (U) 400.13, Purchase Orders.
9. Department of State, Bulletin, 5 Feb. 1944, p. 157.
10. AC Pol. 45-1, 1 Jan. 1942, in AAG (U) 161C, Contracts.
11. AC Pol. 168, in AAG (U) 161C, Contracts.
12. US/W to Materiel Comd. and SCS, 9 Apr. 1942 (directive), in AFMCG Office Files; memo for CG AAF, 30 Apr. 1943, in AAG (U) 300.8, Procurement Regulations; memo for C/AS, 30 Apr. 1943, in AAG (U) 161, Contracts.
13. Daily Diary, Procurement Div., M&S, 19 Apr. 1943; AHS-22, p. 101.

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14. CM 20-12, Materiel Center, 27 Mar. 1941; AAF Reg. 30-3, 16 Mar. 1943, in ATSC Central Files 321.9, Contract Audit Administration.
15. Exec. for Procurement, Materiel Center, to CG Mat. Comd., 1 Apr. 1943, in ATSC Central Files 321.9, Contract Audit Administration.
16. R&F, AT& C-7A to AFDAS, 31 Dec. 1942, in AAG (U) 161, Contracts.
17. AG Pol. 45-1, 1 Jan. 1942, in AAG (U) 161, Contracts.
18. Survey of Orgn. and Personnel, Production Div., Mat. Center, 6 May 1943, in ATSC TS HIS-3 Files.
19. Functional Charts, Wright Field, 15 Aug. 1939, 29 Apr. 1941, 10 June 1943, and 1 Sept. 1945, in ATSC TS HIS-3 Files; Amend. 1, Sec. IV, Bulletin 31, 5 July 1939, in Lyon Project Book 56, Tab I; Bureau of Budget, Procedural Steps in Airplane Procurement, 30 Mar. 1942.
20. "AAF Inspectors' Familiarization Manual," in AAF Mat. Comd., Hist. Midwest. Procurement Dist. 1942.
21. Orgn. and Functions of the Contract Sec., Wright Field, 30 May 1942, in AAG (U) 321.9, Procurement; Functional Chart of Procurement Div., 30 Dec. 1941, in ATSC TS HIS-3 Files.
22. Survey of Orgn. and Personnel, Production Div. Mat. Center, 6 May 1943, p. 24, in ATSC TS HIS-3 Files.
23. AG/AS MWWD wrote to CG Mat. Comd on 23 Apr. 1943 as follows: "Some of the project engineers at Wright Field have decided that they are the final authorities on requirements for all technical data, and have in some instances deleted requirements from contracts for technical data and have held up action on Authorities for Purchase prepared by the Headquarters in an attempt to secure such needed technical data. The most recent is technical data required for the YPQ-12 airplane. Approximately 50 of these airplanes are being procured, yet the project engineer insisted that due to the fact that they carried a 'Y' designation that no technical data was required. Several instances of cancellations of technical data, with all supporting information, are being collected with a view of requesting higher authority for corrective action if the Materiel Command does not take satisfactory action in the matter." (AAG Q/ Weekly Activity Report, No. 7 of AAG Patterson Field.
24. Survey of Orgn. and Personnel, Production Div., Mat. Center, 6 May 1943, p. 33, in ATSC TS HIS-3 Files.

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25. CM 20-8, AAF Mat. Comd., 20 Apr. 1944, in ATSC Central Files 321.9, Scheduling and Priorities Unit.
26. AHS-77, Development and Procurement of Gliders in AAF, 1941-1944, pp. 42-60.
27. Ibid., pp. 63 ff.
28. The district offices had sections dealing with contracting, accountability finance, price adjustment, terminations, royalties, price inspection, government property, audit, inspection, and small war plants. (AAF Mat. Comd., Hist. Southeast Procurement Dist. 1944, addenda 8, 10, 11, 15; Hist. Midcentral Procurement Dist. 1944, pp. 97-107; Hist. Western Procurement Dist. 1943, p. 10; and Hist. Midwestern Procurement Dist. 1943, p. 4.)
29. Draft, Hist. Western Procurement Dist. 1943, p. 12. These sections had branches for price inspection, property accounting, audit, and inspection. See chart for June 1943 in ATSC Central Files 321.9, Decentralization.
30. CO 4, 9 Oct. 1941.
31. ICM, Chief, Contract Sec., to CG Mat. Comd., 5 Nov. 1942, in ATSC Contract Files, 323.11, Decentralization; draft, Hist. Midcentral Procurement Dist. 1943, pp. 2-3.
32. Purchases and Contracts General Directive #61, 20 Dec. 1941, in AAG (U) 400.12J, Procurement Methods and Programs.
33. Memo for US/W from S/W, 16 Dec. 1941, in AAG (U) 400.12J.
34. 2d ind. (basic missing but sub.: Decentralization of Procurement), CG/AC to US/W, 7 Jan. 1942, in AAG (U) 400.12J.
35. Memo for C/IC from Procurement and Distribution Div., 16 June 1942, and 1st ind. thereto, 18 June 1942, in AAG (U) 400.12, Procurement.
36. TX 13, CG/IC to 27, 19 June 1943, in ATSC Central Files 321.9, Decentralization.
37. The following breakdown shows the amounts by district: Eastern, 152 contracts valued at \$1,821,718.18; Central, 122 contracts valued at \$2,215,751.26; Midwestern, 12 contracts valued at \$108,341.82; and Western, 32 contracts valued at \$799,578.92. (Chief, Dist. Procurement Sec., Wright Field, to Chief, Procurement Div., Wright Field, 16 Mar. 1943, in ATSC Contract Files 323.11, Decentralization.)

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38. Ibid.
39. Draft, Hist. AAF Mat. Comd. 1943, pp. 38-42.
40. In the Central District the contract section negotiated, prepared, and executed 3,586 contractual instruments representing \$311,611,363, and in addition supervised 75 CFFP contracts for \$6,697,423,528.92. (Central Dist. ATSC, 1944 Annual Rpt., pp. 8-9, in TS HIS-3 Files.) The contract section of the Western District made a net procurement of \$28,000,000 of material while supervising the administration of 82 CFFP contracts worth \$6,596,000,000 and 709 FP contracts worth \$3,325,000,000. (Western Dist. ATSC, 1944 Annual Rpt., pp. 12-13, in TS HIS-3 Files.)
41. Vice Pres. Douglas Aircraft Co. to CG Mat. Center, 7 Aug. 1943, in ATSC Contract Files 323.11, Decentralization.
42. Brig. Gen. R. C. Harris, Dist. Supt. Proc. Dist., to CG Mat. Comd., 3 July 1943, in ATSC Central Files 321.9 Decentralization.
43. Memo for Chief of Laboratories, Wright Field, from Chief of Engr. Div., 17 Sept. 1943, in ATSC Central Files 321.9, Decentralization.
44. Memo for Maj. Gen. G. E. Branshaw from Brig. Gen. A. E. Jones, 15 Sept. 1943, in ATSC Contract Files 323.11, Decentralization.
45. Memo for Chief, Procurement Sec., and Chief, Aircraft Procurement Sec., from Chief Procurement Div., Mat. Comd., 14 July 1944, in ATSC TS HIS-3 Files.
46. Daily Diary, W&D Procurement Div., 9 Oct. 1944.
47. Southeast Procurement Dist. ATSC, Annual Rpt. 1944, p. 11, in ATSC TS-HIS Files; Hist. ATSC Southeast Dist. 1944, pp. 65-69.
48. Speech by Col. A. H. Johnson at Wright Field, 15 Nov. 1945, in AC/AS-4, Contracts Div. Files.
49. Daily Diary, W&D Procurement Div., 5 July 1944.
50. ATSC Reg. 70-33, 24 Jan. 1945, in ATSC TS HIS-3 Files.
51. Interview at Wright Field with L. A. Mincer, Legal Div., ATSC, 17 Dec. 1945.
52. Capt. G. W. Mitchell was detailed to screen the 201 Files and to draft anyone suitable. Actually about 180 were drafted. (Interview at Wright Field with Capt. Mitchell, Procurement Div., ATSC, 17 Dec. 1945.)

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53. Ibid.
54. Mincer interview.
55. Chief, Procurement Div., Wright Field to CG AAF, 17 July 1943, in AAG (U) 161, Contracts.
56. Ibid.; Budget and Fiscal Office, Mat. Div., Status of Expenditure Program, FY 1945.
57. Status of Expenditure Program, FY 1945; Special File, CFFF Contracts, p. 2, in ATSC Control Room Files.
58. Draft, Hist. Mat. Comd. 1943, App.
59. Ibid.
60. Prepared by Budget and Fiscal Office, Mat Comd., Wright Field, 20 July 1944, in AFG TS HIS-3 files.
61. Prepared by Budget Office, ATSC Materiel Div. in ATSC TS HIS-3 files.
62. AFS-47, pp. 11-12, 46-48.
63. S/W to Sen. Robert Reynolds, 27 Jan. 1944, in Hearings before a Subcommittee of the Committee on Military Affairs, U. S. Senate, on S. J. 80, (6 Mar. 1944) p. 658.
64. Testimony of US/W Patterson in hearings cited in n 63, p. 667.
65. AAF Aircraft Procurement Programs 1941-1945, 31 July 1945, in AAG (C) Bulk 452.1, General.
66. Special File, CFFF Contracts, p. 2, in ATSC Control Room Files.
67. Contract W535 AC 16528, Article 3(A), 5 Nov. 1940, in AC/AS-4 Contract Div. Files.
68. RSR, Col. E. H. Snodgrass, AJA, to AFACG, 12 June 1942, in AAG (U) 165, Cost-Plus-Percentage-of-Cost.
69. S/W to Sen. Robert Reynolds, in Hearings cited in n 63, p. 658.
70. 1st ind. (Hq. ATSC to CG AAF, sub.: Inquiry for Sen. Kilgore, n.d.), Procurement Div. to P/, n.d., in Special File, CFFF Contracts, ATSC Control Room Files.
71. Testimony of US/W, in Hearings cited in n 63 (7 Mar. 1944), p. 686.

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72. Asst. for Procurement, OG/AG, to OG/AG Fiscal Div., 23 Jan. 1942, in AAG (U) 132.3.
73. Memo for CG Mat. Comd. from AG/AS MM&D, 19 June 1943, in AAG (C) 161F, Contracts.
74. Testimony of Lindsey Warren, in Hearings before Subcommittee No. 3 of the Committee on the Judiciary, House of Representatives, on H. R. 4789 and S. R. 1718, (17 May 1941) p. 213.
75. S/W to Sen. Robert Reynolds, in Hearings cited in n 63, p. 659.
76. Testimony of US/W in Hearings cited in n 63 (7 March 1941), pp. 688-89.
77. Daily Diary, M&S Procurement Div., 24 Aug. 1943; Acting Asst. Chief, Mat. Div., OG/AG, to Chief, Mat. Div. OG/AG, 22 May 1941, in AAG (U) 161, Contracts.
78. Interview with Col. H. H. Herrie, Chief, AG/AS-4 Contracts Div., 7 Nov. 1945.
79. 54 Stat. 676, 28 June 1940.
80. AHS-22, Legislation Relating to the AAF Materiel Program, 1939-1945, p. 85.
81. American Aviation Daily, Vol. X, No. 4 (5 July 1940), in AAG (U) /OO.12, Procurement.
82. For 1943 the fee percentage for all GFFF contracts was 4.9. (Procurement Analysis Br., ATSC Analysis of 783 AAF Refund Cases for 1943 Fiscal Year, 31 July 1945, in AG/AS-4 Price Adjustment Br. Files.)
83. Memo for Special Rep., US/W, from Chief, Procurement Div., AG/AS M&S, in AAG (C) 161, Contracts.
84. Ibid.
85. Memo for TAI from Chief, Procurement Div., AG/AS, 30 May 1945, in AAG (C) 161, Contracts.
86. Special File, GFFF Contracts, I, 6, in ATSC Control Room Files.
87. Ibid.
88. The Government's Wartime Research and Development, 1940-1944, n. 225.

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89. Control Br., Services Subsec., Production Sec., ATSC, Listing of Completed Cost and CPFF Contractors as of 31 March 1945, in AC/AS-4 Contract Div. Files.
90. The subsequent discussion was drawn almost wholly from a report, "Summary of A&F Financing During the War," prep. by ATSC Procurement Div., 30 Oct. 1945, in AC/AS-4, Contract Div. Files.
91. Ibid., Sec. 5.
92. Ibid., passim.
93. Sec. 3709, R. S.; U. S. Code, Title 41, Sec. 5.
94. 31 Stat. 905.
95. Rpt. of Lampert Committee, 14 Dec. 1925, par. 5, in Lyon Project Book 56, Tab 2.
96. Rpt. of Morrow Board, 10 Dec. 1925, in Lyon Project Book 56, Tab 2.
97. 44 Stat. 787.
98. Memo for AS/N by JAG, 3 Aug. 1929, in Lyon Project Book 56, Tab 2.
99. Extension of Remarks of Hon. R. A. Collins, in Cong. Rec., 5 Apr. 1934, App., p. 6361.
100. Baker Board Rpt., 18 July 1934, p. 21.
101. Lyon Project Book 4, Tab 1.
102. Actine S/N to Comptroller General, 18 July 1937, in Lyon Project Book 56, Tab 2.
103. Remarks of Sen. Austin and Maj. Gen. C. M. Wesson, in Hearings before the Committee on Military Affairs, U. S. Senate, on H. R. 3791, v. 292 (17 Jan.-22 Feb. 1939).
104. Memo by Maj. Gen. George H. Brett, 8 Mar. 1941, in AAG (U) 1610, Contracts.
105. Mat. Div. Bulletin 30-1, 1 July 1939, in Lyon Project Book 56, Tab 1.
106. Ibid., pp. 21-22.
107. Ibid.
108. Ibid., pp. 22-23.

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109. Memo for TAG from Asst. Sec., General Staff, in AAG (G) 121.2, 5 Yr. Replacement Prog.
110. 54 Stat. 45.
111. 53 Stat. 1000.
112. Testimony of Capt. C. W. Fisher, USN., in Hearings before the Committee on Naval Affairs, House of Representatives on H. R. 9822, (14-21 May, 1940) pp. 3282-84.
113. 54 Stat. 712.
114. Memo for C/AC from AS/7, 9 Oct. 1940, in AAG (U) 400.12, Procurement.
115. WFB Directive #2, 2 Mar. 1942.
116. Chief, Engr. Unit, Aircraft Sec. OFM to Chief, Procurement Div., CC/AC, 29 Mar. 1941, in AAG (U) 400.12, Procurement.
117. 52 Stat. 707, 16 June 1938.
118. 53 Stat. 560.
119. Memo for AS/7 from Brig. Gen. Arnold, 20 Sept. 1938, in AAG (U) 400.13, Purchase Orders.
120. Brig. Gen. B. E. Yount to Pres. Bowdley, Crow Aircraft Corp., Detroit, 16 Aug. 1939, in AAG (U) 400.13, Purchase Orders.
121. Resume of Air Corps Educational Order Programs, 19 July 1938-13 July 1939, in AAG (U) 400.13, Purchase Orders.
122. Chief, Mat. Planning Sec., to Ainsworth Mfg. Co., 1/ Nov. 1939, in AAG (U) 400.13, Purchase Orders.
123. AAG 167 (Bulk), Special French & Swedish Contracts.
124. Col. F. W. Brown, Finance Dept. to C/AC, 9 Dec. 1940, in AAG (U) 400.13, Purchase Orders.
125. Memo for Gen. Arnold from Brig. Gen. Echols, in AAG (U) 400.13, Purchase Orders.
126. Journal of the Continental Congress (Sept. 7, 1777), VIII, 751.
127. 39 Stat. 213.
128. 51 Stat. 892; Executive Order 8572, 21 Oct. 1940; 8612, 15 Dec. 1940; 8629, 7 Jan. 1941.

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129. AAF Contract Handbook, II, 600.1.
130. Daily Activity Report, AC/AS M&S, 29 Nov. 1974.
131. Daily Diary, Procurement Div. L. #0, 18 Aug. 1974.

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Chapter II

1. Mt. Comd. Central Procurement Div. Hist. Data, 1939-1940, pp. 1-2.
2. Hist. Western Procurement Dist. 1923 thru 1941, no. 1-3.
3. Rpt., Chief, Mt. Div., to C/AC, 7 May 1939, in AAG (U) 321.98.
4. Aircraft Resources Control Office, Aircraft, Engine, Propeller, and Glider Production, Sum. of Mt. 15 of Calendar Year 1944, p. 2, in WSC AS HIS-3 Files.
5. C/AC to Chief, Mt. Div. 30 June 1939, in Lyon Project Book 4, Tab 33.
6. Memo for AS/I from Acting C/AC, 30 Sept. 1939, in AAG (U) 100.12, Procurement.
7. Memo for AS/V from Acting C/AC, 17 July 1940, in AAG (U) 100.12, Procurement.
8. Memo for US/W from Chief, Mt. Div., 23 Sept. 1941, in AAG (U) 100.12, Procurement.
9. AFS-47, pp. 98-100.
10. Memo for C/AC from Chief, Mt. Div., 6 Mar. 1939, in AAG 121.2, Plans.
11. Asst. Chief, Contract Sec., Mt. Div., to Aero Technical Industries, Pittsburgh, 16 Nov. 1940, in AAG (U) 1636, Awards to Contractors.
12. Letters in AAG (U) 165, Bidders.
13. Daily Diary, WAD Procurement Div., 9 June 1945.
14. Ibid., 23 May 1944.
15. Interview with Col. H. H. Henrie, Chief, AG/AS-7 Contracts Div., 7 Nov. 1945.
16. Maj. J. P. Taylor, WAD, Army Air Forces Research and Development Program, n. 6. [circa April 1944], in PAS 700.430, Kilgore Committee.

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17. AHS-50, Material Research and Development in the Army Air Arm, 1914-1945, pp. 80-101.
18. Martin took a \$300,000 loss in a bomber competition; Seversky was in a "very strained financial condition" in 1939 because of private research; and while the large engine manufacturers charged their development costs to overhead, smaller manufacturers could not afford such work. (Memo for C/AC from Maj. B. Meyers, 21 Mar. 1939, in AAG (Bulk) 337.8.
19. AHS-70, Expansion of Industrial Facilities under AAF Auspices, 1940-1945, pp. 61ff.
20. AHS-54, Development of Aircraft Gun Turrets in the AAF, 1917-1944, pp. 108ff.
21. Ibid., p. 150.
22. Ibid., pp. 211ff.
23. Ibid., pp. 135ff.
24. Ibid., p. 134.
25. AHS-47, p. 10.
26. Memo for CG/AC from Maj. Flanning Sec., Mat. Div., 29 Nov. 1940, in Lyon Project Book 34, Tab 18.
27. AHS-47, p. 179.
28. Memo 55-5-13, Maj. Gen. Ulio, 7 Jan. 1943, in AAG (U) 300.8, Procurement Regulations.
29. Memo for Chief, Smaller War Plants Br., Purchases Div., n.s., Mar. 1943, in AAG (U) 400.12, Procurements.
30. Report of the Special Committee Investigating the National Defense Program, Annual Report, No. 480, Pt. 5, 15 Jan. 1942, pp. 61-65.
31. Statement of G. W. Fowler, Exec. Sec. of Senate Committee for Small Business, in Hearings Before a Subcommittee of the Committee on Banking and Currency, U. S. Senate, on S. 2250, 17 Feb.-4 Mar., 11 Mar.-24 Mar. 1942, p. 20.
32. Ibid., pp. 329ff.
33. Ibid., pp. 23ff.

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- |           |                             |
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- |        |  |
|--------|--|
| 113.3  | Transfer of Funds to Other Departments |
| 160    | Contracts, Miscellaneous               |
| 161    | Contracts, Formalities                 |
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