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STANDARDS DIVISION

by

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THE FUNCTIONS AND DUTIES OF THE STANDARDS DIVISION  
PLANNING BRANCH, O.A.S.W.

You are familiar with the responsibility placed upon The Assistant Secretary of War by the National Defense Act. You are, also, familiar with the set-up of the Planning Branch to carry out the duties imposed upon The Assistant Secretary of War and this talk this morning is on the office procedure in the Standards Division of the Planning Branch.

The mission of the office as it is visualized today and as it is laid down in the Unit Plan of the Division covers three activities as follows:

- a. Clearance of type as to questions of procurement.
- b. Clearance of specifications.
- c. Coordination of War Department activities on Standardization and Specifications with other Federal Agencies and with National Engineering and Technical Societies.

We will discuss these three duties in that order.

It is a War Department policy that standardization of at least one item of equipment be completed in peace-time for every required type so that, in an emergency, quantity production will not be delayed. Perhaps we should define the term standardization before we go further and I like the definition as contained in "Industrial Standardization" a book prepared by the National Industrial Conference Board in 1929 which definition is both simple and comprehensive and reads as follows

"Standardization is the selection of a small number of types or sizes which are most suitable, and giving specifications to them in measurable terms so that large quantities can be made which will be uniform."

If we break this definition down into its two steps or phases, the first being the selection of type and the second being the preparation of specifications, we

see that these are two of the duties covered in the mission of the office in the Unit Plan.

However, if we study the first of the duties in the Unit Plan, we find that Standardization insofar as The Assistant Secretary of War is concerned is limited to "questions of procurement."

The other duties in connection with Standardization, such as preparation of military characteristics, classification of type, etc. are functions performed by the General Staff and Supply Arms. These two agencies and The Assistant Secretary of War are all intimately concerned with various phases of Standardization.

It may clarify this relationship and give you a better picture of the responsibilities of these agencies if we briefly follow an item through its various phases.

The first step in procurement planning is to determine what to procure. This involves a determination as to types of equipment needed, their design and development, and the preparation of proper specifications to enable industry to manufacture them.

Let us assume that someone in the field has conceived the necessity for a new item or a major modification of an existing item. He will submit his ideas in as much detail as he can at the time to The Adjutant General. The Adjutant General will send them to the proper procuring agency for comment. Assuming that the idea is considered to have merit by the Technical Committee of the Procuring Agency to which it was sent, it will be forwarded to the General Staff with comments and recommendations for consideration.

If it meets with approval in the General Staff, G-4, Section, it will be classified as a required type, development type, experimental type and funds will be allotted and the procuring arm authorized to proceed with a model.

First the military characteristics are set-up by the Technical Committee of the procuring arm. By using the technical committee for this, coordination with the using arm and all other branches of the War Department is assured.

The military characteristics are reviewed by the General Staff and the action taken is by the authority of the Secretary of War. The military characteristics cannot be changed except by the same authority. These constitute the first brief specification for the item.

The design is usually a function of the procuring service but it must be concurred in by the using arm and approved by the General Staff.

During the development period, which includes the shop and tests and the engineering tests conducted by the procuring service, it is classified as experimental type.

After it has successfully passed through this stage, it is sent to the board of the service which will use the item and is classified as a service test type. If it is a general item like blankets, samples will be sent to all service arm boards. Upon favorable recommendation by the Chiefs of Arms made to the procuring arm for standardization, the item is recommended for standardization to the General Staff, through the Assistant Secretary of War.

It sometimes happens that the using arms may desire an extended service test and the item is classified as limited procurement and a quantity is purchased or manufactured and issued to certain designated units for further tests. All items do not go through the extended service test, however, and may be recommended for standardization without such a test.

You remember I said that the procuring arm forwards the recommendation for standardization through The Assistant Secretary of War, also, I said that The Assistant Secretary of War issues a clearance as to questions of procurement. The Assistant Secretary of War does not take into consideration the suitability of the item for military use or whether or not it has real tactical requirement. He is concerned only with its procureability. In carrying out this responsibility he requires that the Chief of Supply Arm consider it as "most essential in all stages of development work that adaptability of the item to quantity production in an emergency be considered as one of the most important requirements of design."

In submitting items for procurement clearance the Office requires the Chief of each Supply Arm to show that he

has fully considered the procurement difficulties. Answers to the following questions should be covered in the forwarding papers.

- a. Are adequate sources of supply available or can they be made readily available?
- b. What effect will the procurement of this item have on the procurement program as a whole?
- c. Will the procurement of this item delay, interfere with or complicate the procurement of other items already standardized?
- d. Is it contemplated that this item will be procured from commercial sources or will it be manufactured at a Government Arsenal?
- e. If manufactured at a Government Arsenal are the facilities for its manufacture already available?
- f. If procured from commercial sources does it possess characteristics which restrict its procurement to one source of supply?

Following a consideration of the above information, the Standards Division either clears the item for procurement as to type and designates the procuring Supply Arm or Service or takes such other action as appears best suited to meet the procurement problem presented. If clearance is given, recommendation for the classification of the item as one of the adopted types by the General Staff is in order. The procurement clearance of the Assistant Secretary's office is considered by the General Staff in its action and a copy of such action is furnished the Standards Division.

Favorable action by the General Staff places the item in the standard classification and it is incorporated in the Book of Standards and procurement planning for the item can proceed.

In the past it has sometimes happened that standardization of an item has been delayed for various causes. When this has happened procurement planning for the item has also been stopped. This has introduced large errors in the procurement plans for related equipment.

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In June 1927, The Assistant Secretary of War, in a memorandum to the Chief of Staff stated that: "Procurement Planning cannot be authorized in advance of standardization, there must be an item to procure. It can be most efficiently prosecuted after the establishment of requirements, which in turn depend on the basis fixed therefor. In those cases where substitute or limited standard items of long life must necessarily be employed at the outset of hostilities, it is also necessary to have a decision whether procurement planning shall or not, if possible, include the ultimate replacement of such items with standard items."

"Procurement planning for existing types should not ordinarily be suspended in expectation of new development. On the other hand, when such improvement is imminent, a reasonable suspension of activity is sensible but every effort should be made to complete the standardization and establish the basic data of requirements therefor so that planning may proceed with the least possible delay."

The policy announced by The Assistant Secretary of War in 1927 was undoubtedly influenced by the very unsatisfactory condition existing at that time in regard to standardization of material. It is believed it was hoped to accelerate standardization in order that procurement planning could proceed. It is the opinion of this office that insofar as procurement planning is concerned the situation was not materially improved.

Procurement Planning is a supervising responsibility of The Assistant Secretary of War, but is dependent upon the requirements and basis of issue which are functions of the General Staff. Army Regulations were recently changed to permit a supply arm or service to initiate procurement planning for an item which has successfully passed the engineering and service test but for which standardization is withheld either through the using arm failing to recommend it or to the General Staff refusal to approve the standardization. The initiation of procurement planning under this regulation requires the prior approval of The Assistant Secretary of War and the establishment of tentative basis of issue for procurement planning purposes by the General Staff in each case.

The second duty laid down for the office is the clearance of specifications. Army Regulations charge The

Assistant Secretary of War "with the supervision of activities concerning the preparation of specifications and the progress of the work." It also lays down a definition for a specification as follows "A specification is a clear and accurate description of a material, an article or a service which it is necessary to procure and the procedure which the purchaser will follow to satisfy himself that the requirements of the specification have been complied with."

A specification should be complete so as to cover all requirements either directly or by reference to other specifications. It should not repeat matter covered in other specifications to which reference has been made or matter covered by notes on drawings forming a part of the specification, and should not contain matter contradictory to provisions in such other specifications.

Specifications with which the Standards Division is concerned fall into three classes Federal Specifications, U. S. Army Specifications and Tentative Specifications. We will discuss them in that order.

Federal Specifications are prepared under the supervision of the Federal Specifications Section, Procurement Division, Branch of Supply, Treasury Department, and cover items of material or equipment, non-military in character, that are commonly procured by two or more Government departments. Any department of the Government may initiate a request for the preparation of a Federal Specification and if the request is favorably considered the duty of actually writing the specification is referred by the Federal Specifications Section to a technical committee made up of representatives from all interested Government departments. This committee prepares the specification in tentative form and submits it to the Secretary of Federal Specifications Section, who in turn submits it to all Governmental departments for comment or agreement. These Government departments review the specification and return it with concurrence or recommendations to the Secretary who again sends it to the technical committee for revision or for final draft, depending on the recommendations of the interested Government departments. When the specification is later published its use is made mandatory on all procurement agencies of the Federal Government. Should, however, any executive department find that for administrative reasons a Federal specification cannot be used to meet a

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particular need, it is authorized to use purchase specifications of its own, such specifications however to include all applicable provisions of the Federal specification. In such cases where a Federal specification is not used for purchase in excess of \$1,000, a report shall be made to the Procurement Division, Branch of Supply, showing the necessity for deviating from the Federal Specification.

The Standards Division has several duties in connection with the preparation of Federal specifications. It represents the War Department Federal Specifications Executive Committee, it arranges for War Department representation on all technical committees charged with or engaged in the preparation of specifications of interest to the War Department, and it acts as a clearing house for all War Department administrative activities concerned with the preparation, acceptance, rejection or with revisions of Federal Specifications. The War Department Members of these technical committees are appointed from the Supply Arms or Services having paramount interest in the item on the recommendation of the Chief or Chiefs of such Supply Arms or Services. The tentative Federal specification first prepared by a technical committee is received in the Standards Division for action of the War Department. The Standards Division refers it to the Chief of the Supply Arm or Service who would ordinarily prepare a U. S. Army specification for that class of item. That particular Chief of Supply Arm or Service coordinates the specification with all other interested Supply Arms or Services and recommends to The Assistant Secretary of War the action to be accorded the specifications by the War Department. The Standards Division then completes the action for the War Department on the specification and returns it to the Federal Specifications Section.

The work of preparing Federal Specifications is performed by approximately 73 technical committees, on the large majority of which the War Department has standing representation. To date, about 1157 Federal Specifications have been prepared.

Next for consideration are U. S. Army Specifications. These are prepared by the several Supply Arms and Services for all standard items of equipment and supply. They are also prepared for materials used in the construction of a standard

item if such materials cannot be adequately described in the specification for the item itself. Their use is mandatory on all purchasing agencies of the War Department. The existence of an applicable Federal Specification, however, renders the preparation of a corresponding U. S. Army Specification unnecessary.

It is a function of The Assistant Secretary of War and one that is assigned to the Standards Division to supervise the activities engaged in the preparation of U. S. Army Specifications. In carrying out this duty, the Standards Division does not concern itself with engineering features or technical requirements. It acts purely in an administrative and policy-forming capacity. It prescribes how a specification will be prepared, how and from whom concurrences are to be secured, and how assurance will be obtained that the specification is adapted to commercial manufacturing methods and mass production. It requires that a specification submitted for clearance be accompanied with data indicating its acceptability as an instrument of procurement under policies of The Assistant Secretary of War. AR 850-25 is the medium through which instructions and policies on these subjects are issued. For the benefit of those here who are not entirely familiar with this regulation, I will discuss the preparation and clearance of U. S. Army Specifications in more detail.

Supply Arm or Service in preparing a specification must adhere to the military characteristics that were approved for the item when it was last classified by the General Staff. During the development stage when the design of the article is being determined, its adaptability to quantity production in an emergency must be made a matter of continuous consideration. AR 850-25 not only requires this but also requires that the adoption of standard commercial items or their adaptation with the fewest practicable modifications be always considered a policy of the War Department. The design of the item and the subsequent service tests to which the item is subjected by using and interested arms are matters which enter into a determination of the suitability of the item and constitute the frame-work around which the procurement specification is written. Every specification after it is written must be coordinated with other interested arms and Services of the War Department, before submission to The Assistant Secretary of War. This is required not only as a check of its correctness but to unify as far as practicable the specifications used in common by two or more Supply Arms or Services.

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The draft of the specification, after final coordination, and accompanied by definite statements as to procurability under the specification, is then in shape to be submitted for clearance by the office of The Standards Division. These accompanying statements as to procurability contain information in the following categories

- a. Mention of restrictive feature within the specification which might curtail production or which may operate to give one or more manufacturers an advantage in the field of competition.
- b. Statement showing extent to which the specification has been coordinated with and accepted by industry.
- c. Mention of any features receiving unfavorable comments by industry but which are deemed essential for retention in the specification in order that production will conform to the prescribed military characteristics.

A specification satisfactory to the using or interested Arm or Service which contains no restrictive features and which has been accepted by industry can be and is cleared promptly and with assurance that it meets the responsibilities of The Assistant Secretary of War. This clearance by the Standards Division makes it a U. S. Army Specification. A specification that is not entirely satisfactory in the respects mentioned is returned for further consideration and action by the Supply Arm or Service with view to an elimination of the undesirable features insofar as may be practicable.

Specifications are sometimes returned without clearance for other and less important reasons. These may relate to incorrect or incomplete form, incorrect numbering and apparently excessive use of subsidiary specifications or like administrative matters which involve details of no particular interest in a general discussion of our subject this morning.

The revision or cancellation of U. S. Army Specifications is accomplished generally by the same coordinating process that governs the clearance of an original specification. Cancellation normally becomes necessary when the item is made obsolete or when the specification is superseded by an applicable Federal specification. This work of revising speci-

fications requires almost as much time and effort on the part of Supply Arms and Services as does the preparation of new specifications. Standards do not remain the same over a given period of time. Improvements in design of military equipment and changing methods of commercial manufacture are constantly taking place which require modifications in specifications. Where these modifications are material ones, the revision of existing specifications becomes necessary and is accomplished by the preparation of an entirely new specification to supersede the old one. However, if only a minor change is involved, this does not require complete revision of a specification but is published in the form of an amendment to the specification which becomes a part of the specification until it is revised. Supply Arms and Services are authorized to prepare and use amendments without the approval of The Assistant Secretary's office.

Last of the three classes of specifications we are to consider is the tentative specification prepared and used by the Supply Arms and Services. This type of specification is authorized in AR 850-25 for only two purposes.

- a. To cover the purchase of articles required only occasionally or for temporary peace-time use.
- b. To test the procurability of a specification when it appears desirable to do so before preparing it in the form of a U. S. Army Specification.

The Standards Division has nothing to do with tentative specifications beyond the formulation of policies governing their use. They are not required to be submitted to the office of The Assistant Secretary of War for clearance or for any other action. No record of them is kept except with the Supply Arm or Service that prepared them.

There is one instance, however, where a tentative specification is used in a different way than we have just mentioned. This relates to the purchase of motor vehicles. The General Staff has never included motor vehicles in any standardization program except to approve military characteristics for various types. Consequently, motor vehicles during any one fiscal year are purchased under tentative specifications which are written around these military characteristics. Because of the volume and importance of this type of purchase, The Assistant Secretary decided to make an exception to the

usual practice and to require in the case of tentative specifications for motor vehicles that they be cleared through his office in the same way as U. S. Army Specifications are cleared.

A knowledge of the amount of progress that has been attained in the preparation of U. S. Army Specifications is a matter of particular interest to the Standards Division. We receive a monthly progress report from the procuring arms and services showing the status of the work. The basis of the report are the number of standard items carried in the Book of Standards by each branch. The first three columns of this report are quite definite and capable of being counted. Either the item is fully covered by a U. S. Army or Federal Specification or not and the number of U. S. Army Specifications on hand can be counted. The number of specifications to be written, however, is an estimate and that fact should be remembered in examining the report. The number of clearances issued in a calendar year is an indication of the activity of a branch along this line. The branches as a rule are more fully appreciating the importance of this phase of the work and have created specifications writing organizations at the various arsenals and depots where they have knowledge of the requirements. Equally important with the writing of new specifications is the work of keeping specifications up-to-date by revision. Modifications of the item or changing commercial practice must be constantly watched to see that the specification adequately describes the latest model and is in keeping with the latest approved methods of manufacture.

We have now attempted to outline the work of standardization as it is being carried out in the War Department and to show the responsibilities of the office of The Assistant Secretary of War in this work. We have also considered more or less in detail the necessary qualities of a specification and how, through administrative action, the office of The Assistant Secretary seeks to obtain assurance that proper specifications will be available for production of requirements in an emergency. There is still one other activity in the Standards Division which is concerned with the subject of standardization, although it is separate from the work of supervising the preparation of specifications. I refer to the work of maintaining relations between the Army and certain national agencies concerned with the promotion of standards for commercial materials and practices.

The most important of these are the American Standards Association, and two separate divisions of the Bureau of Standards, Department of Commerce, namely the division of Simplified Practice and the division of Commercial Standards. All three of these organizations provide the forum for independent standardizing bodies and societies and the mechanism for bringing them together in their work of standardization. Proposals for the adoption of commercial standards or for the elimination of excess varieties of sizes, types, dimensions, etc., as the case may be, may come from organizations representing the consumer, distributor or producer. The work of preparing the actual standards or simplified practice recommendations is done by committees, as in the Federal Specifications Section, and the acceptance of them is indicated where agreement among all participating bodies has been reached. The Standards Division arranges the necessary War Department representation on the working committees of these national organizations and indicates the agreement or recommendation of the War Department on a proposed standard or practice. The administrative procedure by which this is done is similar to that previously mentioned in connection with the clearance of Federal Specifications. There is a difference however between a Federal Specification and a Trade Standard or Simplified Practice Recommendation of the agencies we are now discussing. The former is an actual procurement specification mandatory in nature and affecting only Federal Departments, whereas commercial standards and simplified practice recommendations are national in scope, and, although not compulsory, are so widely accepted throughout industry as to be just as effective. By utilizing applicable commercial standards and simplified practice recommendations of these general standardizing agencies and of other numerous technical and trade organizations, Chiefs of Supply Arms and Services may improve the quality of specifications as well as reduce the difficulties of procurement.

Before closing, brief mention should be made of certain work in the Standards Division that fits into other work of The Assistant Secretary's office. It has been stated from this platform many times that an answer to the question of "what to procure" comprises the initial step in procurement planning. Carrying this idea further, no satisfactory determination of "what to procure" can be reached for any item, or procurement planning initiated, until that item has first been covered by a specification satisfactory to industry.

Consequently, every procurement plan that reaches the Procurement Plans Division, Planning Branch, is a matter of concern to the Standards Division. Every such plan received is examined to insure that proper provision has been made in it for the use of U. S. Army Specifications, Federal Specifications, or some nationally approved commercial standard. Any plan that does not make satisfactory provisions for a standard type of specification is referred back to the Chief of the Supply Arm or Service that prepared it, for revision or recommendation.

The Standards Division has interests in common with the Commodities Division with reference to the use of strategic and critical raw materials in specifications. The conservation of these materials and the use of substitutes are constantly sought. These things are usually done before a specification is prepared, since the Chiefs of Supply Arms and Services, by reason of their representation on Commodity Committees, are familiar with the quantities of these materials that are expected to be available and they endeavor to restrict the use of them accordingly. Sometimes, it is found necessary to revise an existing specification or to prepare a substitute specification to meet shortages.

The Standards Division also maintains close contact with the Current Procurement branch of the Office of the Assistant Secretary of War in matters that concern the extent to which proper specifications are used during peace time and the suitability of existing specifications for procurement purposes.

I would like to close by giving you, without comment, two quotations from authoritative sources on the subject of the importance of standardization in the Army.

The first is taken from "Industrial Standardization" by the National Industrial Conference Board. It reads

"The War Department is much interested in Standardization. In time of war it must rely to a large degree upon proper specifications, for the reason that a considerable part of the necessary purchasing will be in the hands of inexperienced people. It is important in such circumstances to know from what sources standard goods and equipment can be purchased. In the actual conduct of war, as was shown during the last two years of the World War, success may depend to a large and even crucial degree upon interchangeability of parts of

machines, ammunition and other types of equipment. Not only is a variety confusing, but it is very expensive, either in war or in peace."

The other quotation is one with which you are probably already familiar. It is taken from the Annual report of the Chief of Staff for the year ending June 30, 1936. It reads

"I have been convinced for some time that the lack of standardization of equipment of every variety in the Army is a distinct detriment to procurement as well as performance, and that standardization is an essential not only for efficiency but to counteract the mounting cost of production. In past years there has been too much of a tendency to delay adoption of an item pending further test and improvement. There is no question that this procedure has resulted in a delay in the procurement of essential items urgently required for the training of troops, especially in new doctrine and tactics. This is particularly true in the procurement of airplanes, tanks, motor vehicles, and automatic rifles. I believe that we can standardize our equipment, purchase the best that is available at the time, and change the standards annually, if necessary, as improvements or defects develop."

STATUS OF SPECIFICATIONS JAN. 1, 1938

Branches	Number of St'd. Articles Covered by USA-Fed Specs	Number of St'd. Articles <u>Not</u> Covered by USA-Fed Specs	U S A Specs On Hand Jan 1, 1938	Number of Specs remaining to be written	<u>Clearances</u> New Specifications	<u>1937</u> Revised Specifications
Quartermaster	939	913	586	818	44	32
Medical	1,555	1,641	391	554	27	3
Engineer	103	16	242	33	6	7
Ordnance	212	451	682	327	43	49
Signal	232	438	638	21	31	46
Chemical	37	27	197	66	7	9
Air	214	454	658	454	73	54
Coast Artillery	27	30	50	70	2	4
Totals	3,369	3,970	3,449	2,343	236	204

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