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NOTES FOR LECTURE BEFORE ARMY INDUSTRIAL COLLEGE

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*by*  
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"SPECIFICATIONS, STANDARDIZATION, AND SIMPLIFICATION".

*\* Standardization*

OFFICE OF THE ASSISTANT  
SECRETARY OF WAR  
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PLANNING BRANCH  
PROCUREMENT DIVISION

1. Proposed to present the case of a single article of equipment from the inception of its need to the time when the procuring agency turns a supply of the item over to troops for their use as a standard item of their equipment.

2. Believed preferable to a boresome theoretical discourse on standardization in general. Some theory will come out in discussion.

3. In presenting this hypothetical case history, will try to bring out:

a. Agencies involved in each step and their inter-relationships.

b. Actions taken by each agency and the authority and reasons therefor, where not manifest.

4. Following the presentation of this case, will touch upon certain incidental phases of the work involved in standardization of equipment for the Army - but please remember that these phases are incidental and that the only purpose in undertaking them is to assist in accomplishing the main mission, i.e. to insure that there are developed suitable types of equipment and supply to enable combat troops to win battles. Such types must meet two criteria -

- a. Must be suitable for the purpose for which designed and
- b. Must be procurable in quantities and at the time needed.

Ideal as to either of these criteria can seldom be reached and compromise between the two must often be effected.

5. Before proceeding with typical example, want to hedge a little on promise not to resort to theoretical talk in order to dispel one or two popular misconceptions:

a. Standardization not a process of stifling progress but rather of facilitating it. Intelligently applied, standardization leads to possibilities for better development of things to appease mens wants - daily life requirements or those of the battlefield. Standard defined as a criterion, measure, or example, of procedure, process, dimension, extent, quantity, quality, or time which is established by authority, custom, or general consent, as a definite basis of reference or comparison. As human activity becomes more complex, the need for standards becomes more acute. This is especially true in war. Every weapon, every piece of equipment requires the setting up of new and more rigid standards to govern its manufacture, its performance, and its tactical employment.

b. Simplification or simplified practice is not the antithesis of standardization. It is but one form of standardization, namely standardization of variety. It is based on the principle that

a single item should fulfill as many purposes as possible. It is made necessary by the tendency to set up a distinct standard for each distinct purpose. We in military life are especially prone to follow this tendency. We strive to achieve the ideal of the first criterion of suitability of an article, i.e. that it shall be suitable to perform its task. We sometimes forget how this detracts from the second ideal, i.e. that it shall be procurable in the quantity and at the time needed.

6. Now let us consider the development of an article of equipment. Case presented is typical but not necessarily exactly same as any particular case. While A.R. 850-25 prescribes procedure, not to be followed blindly. Designed as guide because necessary to follow generally uniform system. Conceive case as follows:

- a. Major Bright on duty Ft. Sill, Okla., sees need for special fuze to detonate shell in barbed wire. Discusses idea with C.O. who directs
- b. Letter sent to Chief of F.A. containing arguments for the need for such a fuze together with a statement of military characteristics it should possess. Authority for this procedure is generally accepted privilege of individuals to propose improvements in matériel and specific authorization in par. 9 A.R. 850-25.

- c. Chief of F. A. concurs in need for the article and concurs in or appropriately modifies statement of military characteristics. Submits proposal to The Adjutant General who refers it to General Staff for study.
- d. Interested Divisions of General Staff consider the matter and G-4 Division prepares staff study in which Adjutant General is directed to send communication by indorsement to Chief of Ordnance for comment and recommendation.
- e. This study referred to Assistant Secretary of War to note. Thus Assistant Secretary of War apprised at an early stage of the proposed development. May make comment or simply initial the study as having noted. No record kept in O.A.S.W. unless comment made. In latter cases copy of A.S.W. comment filed and synopsis of study made.
- f. Adjutant General files study and indorses communication to Chief of Ordnance who
- g. Refers matter to Technical Staff which causes a sub-committee of Ordnance Technical Committee to study and report upon. Duties and composition of technical committees found in par. 4, A.R. 850-25.

- h. Subcommittee makes investigation called ~~for investigation~~  
~~tion called for~~ in par. 10c A.R. 850-25 which reads as follows: \* \* \* . Then prepares a report containing results of its investigation and recommendation. Assume in this case it believes project to be feasible and recommends development be proceeded with.
- i. Ordnance Technical Committee considers and adopts report of subcommittee at meeting attended by representatives of interested arms and services, of Assistant Secretary of War and General Staff.
- j. Chief of Ordnance approves action of Technical Committee and indorses communication back to Adjutant General, recommending that development project be set up, that the article be designated by a certain nomenclature which will indicate its nature and its status as to development and recommending the classification of the item.
- k. Adjutant General attaches previous staff study and refers all papers to appropriate Division of General Staff. New staff study prepared. Adjutant General directed to return communication to Chief of Ordnance by indorsement stating the recommendations of Chief of Ordnance are approved, the statement of military characteristics is approved, the item will be known

as Fuze, model so-and-so, and is classified as required type, development type, experimental type.

- l. Adjutant General files study and indorses communication to Chief of Ordnance who refers it to Manufacturing Service for design of the article.
- m. Design made and appropriate arsenal directed to manufacture pilot model.
- n. Pilot model inspected by technical members of Ordnance Department. If no material defects noted and no material difficulty of manufacture reported, arsenal directed to manufacture sufficient number for engineering tests.
- o. Engineering tests conducted at Aberdeen Proving Ground. Careful record made of functioning of fuze and of other pertinent data. Aberdeen Proving Ground submits report to Chief of Ordnance of tests indicating design satisfactory.
- p. Chief of Ordnance recommends to Adjutant General that item be advanced to service test type, that expenditure of ammunition necessary for conduct of service test be authorized, that expenditure of funds necessary for manufacture of limited quantity be authorized, and that Field Artillery be designated as arm to conduct service test.

- q. Recommendations approved by Secretary of War, fuzes for service test manufactured and turned over to Field Artillery Board.
- r. Field Artillery Board conducts service test and reports item satisfactory but recommends extended service test be conducted.
- s. Chief of Ordnance concurs and requests Assistant Secretary of War to clear the item for procurement, furnishing data necessary to show any difficulties of production and any likelihood of shortage of materials involved.
- t. Assistant Secretary of War clears item and Chief of Ordnance recommends to Adjutant General that item be advanced to limited procurement type.
- u. Adjutant General approves in manner stated before.
- v. Sufficient quantity manufactured to supply a complete battery of Field Artillery with sufficient rounds to test the article from a tactical standpoint.
- w. Field Artillery reports item satisfactory and Chief of Ordnance recommends it be designated as Fuze, cal.-, M7 or other symbol to indicate that it is a standard item of supply, that it be classified as an adopted type, standard type, and that it be classed as an essential item, \* \* \* (Urgent) priority. In making this recommendation all pertinent information called for in par. 13, A.R. 850-25 is shown.

- x. Adjutant General approves and the item is placed in the Book of Standards of the Ordnance Department.
- y. A standard U. S. Army Specification is prepared, coordinated through the Ordnance Technical Committee and presented to The Assistant Secretary of War for procurement clearance.
- z. The Assistant Secretary of War clears the specification and the Ordnance Department manufactures or purchases a quantity dependent on funds available and the allowances set up by the Secretary of War, and issues them for the use of troops.

Epilogue.-Initial issues of this fuze have just been completed when it is discovered that, at the instigation of the Infantry Board, the Corps of Engineers has developed a portable sidewalk which is rolled up, carried to the enemy's barbed wire and unrolled so as to form a walk over the obstacle. There is accordingly no need for a wire cutting shell and the new fuze is reclassified as limited standard and six months later when the stock has been exhausted it is declared obsolete and removed from the Book of Standards. One fuze is retained and placed in the Ordnance museum.

7. Let us examine a few questions which frequently arise in connection with the work of the Standards Division of the Planning Branch.

a. What does clearance of an item of equipment or supply as to questions of procurement connote and upon what is such clearance based?

(1) Concisely stated, it indicates that the Assistant Secretary of War has been informed of the fact that the item has been placed on the requirements list of the Army and that, from the data furnished by the supply arm or service concerned, there appear to be no great difficulties in the way of its procurement in the quantities necessary.

(2) Specifically, in clearing the item for procurement, the Assistant Secretary of War has reached the conclusion:

(a) That the item is intended to meet a demonstrated need

(b) That, insofar as can be foreseen, it does not call for an inordinate quantity of any critical material and that the use of any critical materials which are included is unavoidable.

(c) That it appears to be adaptable to mass production.

(d) That it does not duplicate existing equipment of the same or another supply arm or service.

(3) This clearance has no relation to planning for the procurement of the item. That follows later.

(4) Clearance for procurement is based largely on the statements of the Chief of the supply arm or service but it should be remembered that the representatives of the Assistant Secretary of War are in touch with all stages of the development of the item. They are likewise in contact with various other government and commercial standardizing agencies which will be mentioned later. While any information or knowledge which may have a bearing on the case should be and is used, the Assistant

Secretary of War must rely largely on the supply arm or service to present the case so convincingly that the wisdom of clearance is indicated. In case of any doubt in the Office of The Assistant Secretary of War, the supply arm or service may be and often is called upon to defend its recommendation with further data.

(5) Finally, even if clearing the item for procurement accomplishes no other purpose, it causes the supply arm or service concerned to consider the procurement aspects in order to present the case to the Assistant Secretary of War.

- b. Since all items of equipment and supply and all standard U. S. Army Specification pass through the O.A.S.W. for procurement clearance how is it possible for two officers to pass intelligently on all the questions with which they are confronted? Answer - it is not possible to arrive at a mature judgment in all cases and, as pointed out before, the supply arms and services must be relied upon to perform their functions intelligently and efficiently. After all, they are responsible for their supply programs. However, by picking up a case here and there which clarification of policy or alteration of procedure is necessary and by giving careful and thoughtful study to the more important cases, we can and do avoid complete debasement to a "rubber stamp" status.

c. What is implied in the clearance for procurement of a specification?

(1) A specification is defined in A.R. 850-25 as "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". So first we examine the specification to see if it conforms to this definition. I suppose the theory is that if we can understand it anyone can. No doubt some people think this is carrying the matter too far.

(2) We want to know if the specification as written will permit full and free competition among producers, especially in the case of commercial articles. This is often difficult to tell. If any doubt exists ASW calls on supply arm or service to defend the requirements of the specification in this respect.

(3) Does the specification conform to the approved military characteristics?

(4) Are critical or strategic materials involved?

If so can other materials be substituted?

Explain substitute standard.

8. In order to assist the War Department in developing its equipment as nearly along commercial lines as possible, it is represented on several outside standardizing agencies and is in close contact with others.

a. The Chief of the Standards Division is a member of the Standard Council of the American Standards Association.

b. The Division of Simplified Practice of the Bureau of Standards furnishes the War Department with copies of all Simplified Practice Recommendations and proposed and adopted Commercial Standards. The War Department is an acceptor of such standards as a consumer.

c. The Chief of the Standards Division, OASW is the War Department Representative on the Executive Committee of the Federal Specifications Board. In addition the War Department is represented on the various technical committees which draft Federal specifications.

d. Several joint boards and committees exist for the purpose of coordinating standardization activities in matters of joint interest to the Army and the Navy.

9. Hope this brief picture has presented some idea of the general plan of procedure in developing and standardizing equipment for the Army. Please bear in mind that the case presented shows only one case. In any actual case there are many ramifications which were not shown in this one. Procedure is not iron-clad. Regulations are a guide and may be departed from when wisdom of some other procedure is indicated. Anything not covered will undoubtedly come out in questions you ask.