

SOME ASPECTS OF ARMY ENGINEER OPERATIONS

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THE LABOR PRODUCTION PROBLEM AND ITS CONTROL

IN THE face of some dozen agencies dealing with labor during the war, the armed services established labor and production branches to work with their contractors. Why? The simple fact is that total war forces two basic changes in procurement. The armed services do not, as in peace time, actually have a choice of able and unhampered suppliers from whom to choose, and there is no time in which to reschedule production with a second supplier if the first proves inadequate. The order must be given to (sometimes forced upon) the most promising* supplier, and he must then be contacted and often assisted to ensure that deliveries are made on time to meet the changing needs of battle. The mechanism of war production had in fact to be geared to this end by channeling men, materials and facilities under control procedures, for example, the Controlled Materials Plan; procuring agencies worked with the supplier to ensure the meeting of all requirements along the line to gain the final goal of output on schedule according to needs.

Thus in the labor field there were established manpower freezes and referral priorities which covered not only production but the construction of facilities for production. Special conditions for securing a certain few but vitally needed pay increases were made a regular part of War Labor Board procedure. The entire machinery for preventing and quickly terminating work stoppages was necessarily tied in with the procurement agency responsible for moving supplies to the troops. The basic expression of the armed services' functions in labor matters was to ensure production first and defer any argument or red tape. For example, the functions of established conciliation machinery were not superceded, but merely were helped to operate in an "at work" condition. The procurement agency was in position to do this for two basic reasons. First, it had the information and was in closest touch with operating conditions in the plant or on the construction job, thus nipped most troubles in the bud. Second, it had certain contract provisions to back it up so far as the contractor was concerned, besides the close touch and the prestige of its mission, and other factors tending to foster cooperation from unions, government agencies and other parties involved.

ORGANIZATION FOR PROCUREMENT

The Corps of Engineers in the Zone of the Interior, United States proper, operates† chiefly through some fifty-three Districts, supervised by six Divisions which are under the Chief of Engineers in Washington. District areas are primarily based upon physical considerations, such as rivers and harbors, the peacetime work of the Corps having dealt primarily

with the work of the Engineer Department, mainly rivers and harbors. The Corps has also, since its inception in 1775, been responsible for fortifications. West Point originated as an engineer school, which it remained until 1866 when it became the U. S. Military Academy. In November, 1941, the Corps took over all military construction such as barracks, airports, and hospitals, from the office of the Constructing Quartermaster, together with the latter's personnel and facilities. During the early part of the war, procurement of engineer equipment and supplies for this country and for troops abroad was carried on by six special procurement districts reporting directly to the Chief of Engineers. This was similar to the procurement organization of the four so-called "technical services," i.e., Quartermaster, Medical, Signal, Chemical Warfare, Transportation, and other parts of Army Service Forces, Army Air Forces having an independent set-up. However, due to the unique organization and functions of the Corps of Engineers it was possible to consolidate activities to the end that districts procured material available in their own area, with certain exceptions made where necessary due to local conditions. For example, specialization by commodities was made in some cases, being favored by factors such as the extremely technical nature of the equipment, involving continuous development, e.g., pontoon bridges, water purification and storage equipment, and searchlights. Also, specialization was often best to tie in to the Controlled Materials Plan of the War Production Board or where there were a limited number of suppliers, as with tractors, motor graders and similar heavy earth moving equipment. For example, the Great Lakes Division at Chicago was responsible for buying this type of equipment for both Army and Navy, while barrage balloon winches were a specialty of the Pittsburgh District. Other factors were the parts problem and need for special crating or transportation arrangements. The Manhattan District atomic bomb project was given top priority by all, and their contracts, labor, and other needs were expedited in every way even by such seemingly remote Districts as San Francisco and Los Angeles.

On the west coast, partly due to the difficulty of contacting suppliers over such wide areas, the Districts were all engaged in procurement either directly or via the commodity organization, as agents for the order placing office. Chief burden fell on the San Francisco District which inherited the old west coast procurement office, and on Seattle, which procured for points north. After V E Day procurement was centralized in fewer Districts, San Francisco taking over much of that on the coast.

A notable example of commodity procurement was that for lumber, the engineers being responsible for securing lumber for the Army, Navy, and other governmental agencies. In 1944, a special organization was set up in the Corps to do this, called "C P A," which stood for central procuring agency. There were six regional offices, one being in Portland to handle the northwest pine and fir, and one in San Francisco for redwood and such fir and other woods

* Unfortunately this word "promising" was sometimes all too literally descriptive.

† As of autumn, 1945.

as are produced in the southwest, both production and shipment being handled by these offices. The latter office was originally a part of the San Francisco District and maintained its staff and location there, its labor problems being handled by the District.

SOME SPECIFIC LABOR PROBLEMS

Why, it has been asked, do men quit work during the crucial needs of war? Probably for the same reason as at any other time; the parties responsible believe they are not getting their due, and that all ends are in the long run best served by the temporary interruption. While of course tremendous pressures are some do occur. Stoppages from any cause are deplorable brought during war to greatly reduce stoppages, able but the important thing is to end them quickly and then profit by the lesson apparent in the situation if possible.

Some labor problems grew out of peculiar physical changes in otherwise normal processes. For example, because of a shortage in rolling stock, an agreement to load railroad cars to a percentage above normal capacity made it necessary to stack 94 pound sacks of cement ten and eleven high instead of eight or nine high as formerly. Nine was the normal load for the hand truck by which the sacks were transported from the conveyor at the car door to the body of the car. To place eleven on the truck meant difficulty in getting men able and willing to handle it, due to the weight and height of the load, while if fewer than a full stack were loaded, it was necessary to make an extra trip by armload or truck for the remainder. This meant extra men. Either way the critical problem of labor supply was aggravated, especially in view of the fact that the only men available for this type of work at relatively low pay were youths, old men, and transient service men. Variable factors, besides the extreme differences in men available, were the sizes of cars, condition of flooring, availability of conveyor extensions and other loading equipment, and attitudes of all concerned. Solution was a compromise which minimized rehandling by ensuring that most stacks were of hand truck height, and the securing of maximum ingenuity and cooperation from all concerned, once they realized that theirs was not an isolated "impossible" problem.

"Quickie" work stoppages often hit the headlines, some involving only the grievance of one man. Unjustified as these seem on the surface, there is frequently a much longer story behind them, which at least explains why they happen. One case involved a large manufacturer of equipment, where the men, allegedly with the consent of local union officials, walked off the job because an employee was transferred to the night shift against his wishes. Investigation showed that the man had been operating a certain machine for some seven months on the day shift, having been promoted from a simpler machine on which he had done satisfactory work, on the night shift. The probationary period on the present job was three months, therefore he had been considered a regular operator for at least four months. However, the company claimed that his spoilage was excessive, that he had been repeatedly warned about it, and that it was now necessary to demote him back to his old job on the night shift. The union claimed the man had not been previously told his work was unsatisfactory, and that his continuance beyond the probationary period was an admission by the company of his competency, and that to concede the point would mean giving up contract rights of long standing. To this the company replied that due to the

shortage of competent help it was necessary sometimes to keep men on jobs for which they were not qualified, but that it was still their right to demote them when replacements were available. The union denied this, reiterating that if the work was satisfactory through the probationary period, the man must be retained unless "bumped" by a senior operator. The case was finally settled after a loss of 4,000 man days by giving the man a new probationary period of 60 days, with the company and union checking on all entries of spoilage.

This case, like so many, is analogous to an iceberg in that the greater and most significant part is below the surface, and its real character is belied by the merely apparent or obvious aspects. Here the underlying facts included the union's desire to reopen wage questions before the permitted contract date, in line with their hitherto successful technique of "jumping the gun" and confusing the management into ill-considered hasty action. The new manager, on the other hand, was attempting to correct what he felt to be loose conditions wherein the union had failed to comply with certain contract conditions. This was aggravated by the fact that the old management, under long existing labor scarcity conditions, had often winked at the union's violations or at most given only lip service to enforcement. Finally, the new manager was actually carrying the ball for a segment of local industry, and the union was correspondingly determined in its fight to control what it considered a key plant in the area, and also to keep the major competing labor union from gaining strength at its expense in this and other plants.

Personnel relations problems often assumed serious proportions under stress of war, and the majority of these were of course settled between the parties or through regular grievance procedures. Yet there were some where judicious assistance by the interested third party helped tip the scales toward harmony, if only by giving the parties a better opportunity for expression and perspective. Bucking crews were failing to report for work on new "shows" in a timber operation. Their stated grievances were that piece work earnings on those shows would be inadequate, that the particular location was hazardous, and that the timber wasn't being felled fast enough. Check showed that, in spite of all these difficulties, the men would return if a certain gang boss was removed from supervision of them. He had only recently been given this position by the woods boss, who felt that the man's abilities outweighed his admitted disadvantages of personality and habits. The woods boss was adamant as long as he felt that the men were questioning his authority. When all the facts were clear to all the parties, the man was restricted to his previous responsibilities, a new man acceptable to all was placed in charge of buckers, and operations resumed at the old rates and location.

Sometimes union regulations are nominally very restrictive as written in union by-laws or even in contracts, but in practice operate satisfactorily. Thus on a certain project to which there had been adverse pressure by certain outside interests, it was found very difficult to maintain operations effectively. Grievances arose over pay, quantities of work loads, travel expense, and certain forgotten clauses such as that requiring one man for each type of a certain unit. In this last instance, the units were started and stopped but twice a day, and required practically no other attention. Where before, a man handling other work readily handled two of the units, all at once it seemed

necessary to have two more men to handle a unit apiece. Furthermore, the union was not in a position to supply the extra men, and no others seemed available. Yet, after all parties were fully informed, and the project was unquestionably under way, the difficulties melted away.

SPECIALIZED ITEMS AND PROCEDURES

Of particular interest to engineers are many of the specialized types of equipment procured. Some of these are either adaptable to peace or constitute new developments which can be used in their present form. For example, among the many forms of "quickie" shelter were portable barracks shipped knocked down in numbered crates. One type of these, developed not long prior to V E Day, uses aluminum panels for siding, keeping step with the changing availability of critical materials. Steel angle framing was selected as best meeting the needs of strength, size and production, while available plywood sections proved to meet the flooring requirements most readily. The barracks were of conventional rectangular shape, with a moderately pitched roof. In order to meet every reasonable shipping, storing, erection and occupancy need for troop housing, hospitals, and the divers other needs of the field, a scheme of standardized units was devised, limited to three types and designated A, B and C.* All consisted of complete sections of the standard barracks height, width of 20 feet, and a uniform length of eight feet. One section contained a window on each wall, while another contained a door on the side. The third section was the end section with windows. Thus, to make a standard 20 x 48 foot building, two of the end sections, one or more of the door sections, and three or fewer of the window sections were used. Any length was possible, on the 8 foot modulus. Mass methods in production, crating†, shipment, transportation, and erection were readily applicable and speedily demonstrated the peculiar suitability of the product in meeting the problems of the Pacific theatre.

Perhaps the most spectacular of the war created devices which applied construction tools to battle needs was the so called "tank-dozer," or armed bulldozer, technically known as a converted medium tank. This consisted of a medium tank equipped with removable dozer blade, special cargo space for explosives, and side doors. Its purpose was to cover or wreck enemy fortifications by direct action and to place men and explosives at the objectives under otherwise impossible fire conditions. It was possible, for example, to advance to a concrete wall or other structure, lay several hundred pounds of explosives, back away, and then remotely fire the charge. Under severe conditions the units were used in pairs with men slipping out the doors under the relative cover of the tanks on either side. Space was secured by removal of the main piece and its ammunition, but the revolving turret was retained as a base for rocket

launchers. Rockets ideally filled fire needs during both the advance and the periods of maximum exposure. Machine guns were retained as needed.

This product was not made or supplied to the field in its final form, but only in the form of a "conversion kit" containing all necessary extra parts required. Nothing was wasted, and existing parts were re-used wherever possible. For example, the door openings were made by torch, and the resulting segment was at once reattached to the machine by hinges to form a door. This followed the "modification" principle of production economy used by the services, notably in aircraft. Thus the primary product is manufactured at capacity speed with a minimum of changes or variations which retard production. Late developments or special items are then incorporated after delivery to the services, at special centers, or even in the active theatres.

The tank dozer is also an example of rapid changes in procurement in line with lessons learned the hard way on the field of battle. Its genesis has been attributed to the dogged seabee dozer operator on a Pacific island, who, despairing of completing his allotted portion of airstrip on time in the face of withering pillbox fire, made the now historic moves which constitute a battle born invention. He raised the blade for protection and drove straight at the enemy until within a few feet, then literally "lowered the boom" on him and simply wrecked and filled the pillbox for later exhumation.

The services maintain special branches to ensure the most rapid translation possible of battle inventions or battle needs to new equipment and methods to ensure fulfillment of the mission. The Corps of Engineers has its section with headquarters in Washington. An interesting if somewhat homely example of the process by which the resources of the service are placed behind an idea was the development of space heaters. The origins of the oil drum heater may indeed be found in the ingenuity of an Alaskan engineer service G I, or it may go back further to civilian construction days and even the hoboes' "jungle." In any event, men were there and they were cold. Transportation was critical, and the luxuries, both of production and use, of peace type space heating were out of the question. But soon came amazing stories of novel ways to adapt oil drums to make heaters, often with urgent pleas for non-available parts like burners or valves. Out of the urgency, the new information, and the standard practice, there were evolved conversion units best suited to the needs, whether for oil or other fuels. These essentials were quickly put into production, and could be supplied in needed quantities, since the resulting simplicities of design enabled a minimum use of critical materials, production facilities, and cargo space.

CONCLUSION

Besides the accomplishments of the Corps in the field of procurement, there are of course the parallel accomplishments of war construction at home and overseas, of which space precludes mention here. "The Military Engineer," official publication of the Society of American Military Engineers, is suggested to the interested reader as being one of the best sources of information on operations and methods. One of the few bright spots of the war was the spontaneous co-operation and coordination in the field between personnel of all types of organizations working with the armed services, including industry, labor, governmental and other agencies.

* Many of these buildings are now being used for emergency housing for veterans on college campuses.

† Each unit crated contained all parts necessary to erection plus special tools and full instructions. Even the crates were used in part for steps and other functional needs of the completed building. A complete treatise might well be written on the science and art of packaging, packing and crating as developed during the war. In 1942, due to use of inadequate domestic commercial methods, millions of dollars' worth of desperately needed material was lost to moisture, fungi, and physical violence, especially in the Pacific. By 1943 specifications were adequate, crating was a specialized industry, and such losses were negligible.