

SECTION 2.0

EQUIPMENT

2.1 TRANSPORTATION

2.1.1 Airlift

Problem 1. The most important aspect of helicopter lifts proved to be rigging the loads. Often there were insufficient slings of the right length and the right capacity to ensure maximum utilization of the helicopters with minimum ground time. There must be knowledgeable, capable riggers available. This was a major problem during these airlifts. Rigging was scrounged from available sources, and Special Forces was relied upon for riggers. During two airlifts the rigging available was insufficient, and the rigger was inexperienced.

Solution 1. Trained personnel are required to perform rigging services for all external Seabee support cargo lifts. The unit should be equipped with sufficient quantities of slings of various lengths and capacities, clevises, pendants, swivel hooks, and padding for the number of lifts required to move equipment from one location to another. This task might logically be assigned to a Marine Air Delivery Platoon.

Each NMCB should have at least four men trained in rigging for external lifts. (It should be noted that parachute rigging, a normal function of riggers, should not be a part of the rigger training received by Seabees.)

Lifting points should be designed and installed on all USN equipment. The installation of lifting points will significantly reduce the risk of losing equipment during airlift. Specific items of equipment used by NMCB-9 which require lifting points are:

Scraper	Code 4710
Crawler Tractor	Code 4810
Front-end Loader	Code 4531
Grader	Code 4420
Dump Truck	2-1/2 Ton
Dump Truck Bed	5-Ton
15-KW Generator	(Do not use lifting eye on top of generator - one unit was dropped when this worked loose.)
Case Bucket Attachment	
Case Backhoe Attachment	
International Backhoe Attachment	

Rigging equipment required for the lift of all construction equipment is as follows:

<u>ITEM</u>	<u>CAPACITY (lbs)</u>	<u>NO. REQUIRED</u>
20-ft sling	20,000	20
9-ft sling	20,000	20
4-ft sling	20,000	20
3-ft sling	20,000	16
Small Clevises	20,000	20
Large Clevises	20,000	10
Sling Connectors		20
Web Doughnut with Swivel Hook	20,000	5
Universal Helicopter Cargo Slings	10,000	8
Pendants with Swivel Hook	20,000	5

Problem 2. Procedure for airlifting air-mount-out equipment.

Solution 2. A step-by-step procedure for the preparation of each piece of airlift equipment should be prepared and kept on file for reference. The following steps for preparation of the TD-6 dozer provides an example:

Remove exhaust pipe.

Secure seat cushions.

Use hardwood wedges for securing the hydraulic rams, so that the dozer weight rests on the wood blocks rather than on the rams.

Secure the front chains in the hoisting eyes at the fifth link and secure the rear chains in the hoisting eyes at the thirteenth link.

Place the sling into position to prevent kinks.

Experience indicates that either a CH "47" B (Skycrane) or a CH "53" (Jolly Green Giant) is required to properly airlift any of the equipment. A Chinook does not have the lifting capability.

The rigging required for airlift is a 40,000-lbs, multiple-leg nylon sling with adjusting chains on each leg. The minimum length of the sling legs for all lifts is six feet, and a nylon lifting ring (doughnut) is necessary for sling loads because shorter length legs and metal clevises cause vibration in the aircraft during flight. Personnel designated to hook up sling loads should wear ear plugs and goggles and must hold the nylon lifting ring as high as possible while the flight engineer directs the aircraft over the load. In the event of an aircraft emergency during hook up, the hookup crew will move to the left, and the aircraft to the right as rapidly as possible. At no time should any member of the hookup crew touch the aircraft hook as it generates a large charge of static electricity.

2.2 CONSTRUCTION

2.2.1 Water Well Drilling

Problem. Equipment and methods successfully used to drill water wells.

Solution. The Winter Weiss Porta rotary well drilling rig is an excellent machine for use in the I Corps Area. The rig can be set up or dismantled in one day and is completely self contained. Important features are the short mast and automatic pull-down. The short mast is an advantage in any area subject to enemy fire. The automatic pull-down allows faster drilling through dense material where the pressure exerted by the weight of the drill string is insufficient.

It is often advantageous to dig a well instead of drilling one where the soil is sandy and the water table is high. One successful method used was: a box was first built of 2- x 10-foot siding and 8- x 8-foot verticals. The size of the box depended on the storage capacity desired and the depth of the water table. A bulldozer was then used to make a trench. It was possible in sand to bulldoze 3 to 4 feet below the water table. The box was then placed into the trench. The box then could be lowered still further by using a small clam shovel to excavate sand from inside the box. The box was then cross-braced on the inside for strength, and the outside trench refilled. Using this method, an emergency well was installed in four days which is still delivering in excess of 20,000 gallons a day.

a. The drilling of wells throughout the Dong Ha Area was a frustrating experience. Typical strata encountered included laterite to 15-feet, a red clay to approximately 40-feet, and below this a relatively hard blue shale formation to an undetermined depth. Wells were usually drilled to a depth of 200-feet with the pump set near the 100-foot level. Well production rates ranged from 5 to 45 GPM.

b. Frequently, customers obtained the construction of a well only to realize that they had neglected to provide a means of collecting or holding the water pumped. In far too many instances, customers abandoned a completed well until they could obtain a storage capability thereby causing the well to dry up from lack of use. This type well may be reactivated by detonating a small charge at the bottom; this should work on wells with diminished flow caused by tight packing of sand and soil particles.

c. NMCB-1 drilled four deep wells and eleven shallow wells. Two of the deep wells were drilled at Red Beach in areas of predominantly level, sandy terrain. The other two deep wells were drilled in the foothill sections beyond the beach. Neither of the wells on the beach developed and were subsequently converted into shallow wells. Both wells drilled at the higher elevations in harder, rocky soil produced ample water supplies. The eleven shallow wells were all from these wells required a minimum of filtration and was sufficient in quantity to satisfy the needs of the average camp or facility. No theories can be derived from these experiences; however, it is recommended that facilities located near sea level, in predominantly sandy terrain investigate the possibility of satisfying water requirements with shallow wells. In most cases this will avoid costly, non-productive drilling for deeper water bearing stratas and the possibility of running into salt bearing veins.

d. Not all wells need be drilled with a rig. Throughout Vietnam, many successful shallow wells have been dug in Vietnamese fashion. Where the water table is high the soil is sandy and surface pollution is not a problem, it is usually fast and economical to hand dig a shallow well.

e. Submersible pumps are better suited to deep wells than are top driven turbine pumps. Submersible pumps are not subject to mechanical damage by artillery or vehicles, can be more quickly installed and removed have no extensive shaft and bearing system, and most important, they are permissive to installation in holes that are neither straight nor vertical.

f. The "Davies 8'M" rotary drill rig is another excellent machine for use in the Northern I Corps. Important features are the short 28-foot-high mast and the hydraulic down pressure. In any location subject to enemy fire, the short mast is a decided advantage presenting less of a target and reducing its utility as an aiming stake. The hydraulic down pressure permits faster drilling reducing the time on site subject to enemy fire. The disadvantages of the "Star 71" combination became evident at Con Thien where its 40-foot-high mast was the prominent feature of the hill.

g. Rotary drilling without water is feasible to depths of about 150 feet. Because Con Thien was completely without water resources, drilling was carried to a depth of 150 feet by surging air from a 600 cfm compressor to blow the cuttings out of the hole without the use of mud. Sufficient water was found at that point to continue drilling by percussion method. Beyond 150 feet, rotary drilling with compressed air would have been only marginally effective, limited by the capacity of the compressed air supply to lift the cuttings out of the hole, in this case a foaming agent could be substituted for compressed air.

h. A hole with enough water capacity can be saved for use even if the rotary drill bit gets struck at a lower level while trying for reserve capacity. Under these conditions the drill bit is sacrificed by lowering explosive charges through the drill steel and blowing the drill steel just above the bit. The blown-off bit precludes any further drilling in the hole, but existing water capacity can be developed and pumped.

i. While sinking shallow wells in the Phu Bai Combat Base, very fine sand was encountered in the 131st Aviation Company Cantonment, the MAG-36 Cantonment, and the NSA Cantonment. At the 131st Aviation Company Cantonment, NMCB-3 installed the water distribution system and a shallow well. An additional shallow well was to be installed by another NMCB in the same area. Three methods were attempted before a successful well was produced. NMCB-3 attempted a standard shallow well, using a culvert perforated at the bottom for a casing. It was abandoned when it became apparent that the well would not be deep enough to be productive during the dry season. NMCB-121 then jetted a 6-inch casing with a 6-inch x 10-foot well screen. The fine sand was not filtered out sufficiently. Both problems were solved by NMCB-3's second attempt.

j. A more sophisticated jetted well with multiple screens succeeded in filtering out the sand and was deeper than the standard culvert casing shallow well. Using this type of well, the water is filtered through three successively finer screens. The first screen is a 10-cubic-yard bulb of 3/4-inch rock. The second screen is a 6-inch x 10-foot, 14-gauge-slot, well screen. Inside this a 2-inch x 1-foot fine well point is placed. The well point is equipped with a foot valve to facilitate back washing the well screens when they become clogged.

k. The procedure for sinking a jetted well is as follows:

Assemble a 24-inch culvert the length of which is approximately equal to or longer than the depth of the water table at the well site.

Clam down to the water table, place the culvert in a vertical position.

Using a 2-inch jet, jet the 6-inch x 10-foot well screen and well casing until a depth of 20 to 25 feet is reached.

At this point start shoveling the rock inside the culvert and continue pumping water, but do not let the 6-inch casing drop further.

After the rock has sunk out of sight, resume jetting the 6-inch casing.

When the casing comes to a halt, continue pumping the water until the rock has settled around the 6-inch well screen. An indication of this is 3/4-inch rock coming up inside the 6-inch casing.

If there is any doubt that the rock has settled down around the bottom of the 6-inch well screen, the following procedure is suggested:

Withdraw the 2-inch jet.

Shovel some rock down the 6-inch casing.

Replace jet and jet rock out the bottom of the 6-inch well screen.

Remove the jet point and replace it with the 2-inch fine sand screen and foot valve assembly.

A 300-GPM fuel pump was used by NMCB-3 to pump a sufficient amount of water to make the sand quick enough to sink the rock.

1. To aid in determining the need for an elaborate screening system, the following simple test is proposed. Using a small glass container about 2- to 3-inches in diameter and 4- to 6-inches in depth, fill it to about 1/2-inch from the top with water and specimen sand at a ratio of about 1:20 by volume. Shake vigorously. Observe the particles settling to the bottom of the glass. In a short time it will seem that all the non-colloidal particles have settled. After that time, there should be no discernable change or settlement for about 10 minutes. The sand from the 131st Aviation Company area required approximately 90 seconds to settle. The NSA Cantonment area sand required 80 seconds to settle. From the experience gained with shallow water wells in the Phu Bai gray sand it is advisable to use this multiple screened well if it takes longer than 80 seconds for the sand to settle in a test similar to the above.

2.3 TOOLS, SHOP, AND HAND TOOLS

2.3.1 Metal Roofing Hammer

Problem. While deployed to the Republic of Vietnam, NMCB 121 constructed numerous buildings which were covered with corrugated metal roofing. Installation of the metal roofing was a slow and costly process because there was no efficient method to put starting holes for the roofing nail in the metal roofing.

In the field, men had to use nails, center punches, electric drills (which required generators), or any means available to make the holes in the metal. All of these methods caused damage to the material, additional tools, body injury, and were time consuming.

Solution. To make installation of metal roofing more efficient, a standard claw hammer was modified. A hole was drilled in the side of the head and tapped with a 1/4-inch-20 N.C. Tap. A 1/4-inch-20 N.C. Stud (RAMSET) was screwed into the tap hole and locked with a 1/4-inch Hex nut. But using this hammer and ramset stud as a punching device, the roofing metal could be installed with much increased efficiency. By using this device, NMCB 121 saved approximately \$5,000 on the erection of SEA-Ruts alone. In general the modified hammer can be used in the installation of any sheet metal to save time and material, improve methods, improve safety, and simplify work.

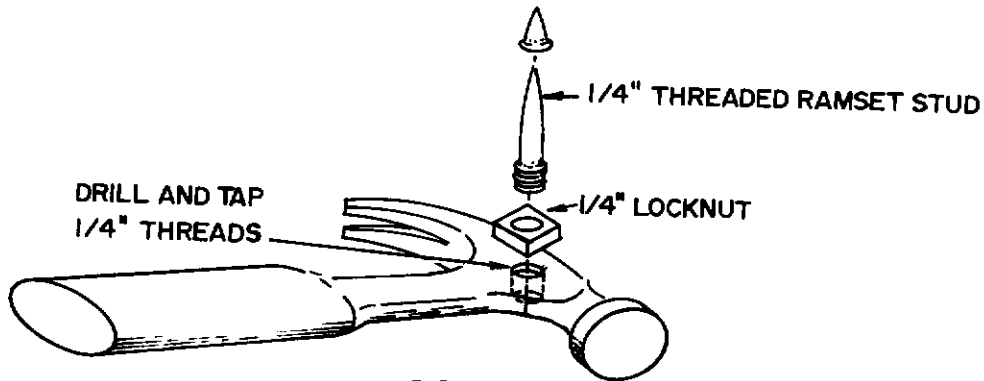


FIGURE 5

2.3.2 Safety

Problem. The battalion had two accidental deaths. One occurred while a construction mechanic was airing a forklift tire and the rim separated. Although there was no direct safety violation involved, the battalion policy now requires that all split rim tires regardless of type will be aired in tire cages only, or mounted on the equipment. The second death occurred on POL tank erection involving the use of electrical impact wrenches. The impact wrench had a defective ground which was not noticeable at the time of use.

Solution.

- a. Use tire cages when tires are not mounted on equipment.
- b. Continual inspection of electric powered tools for defective grounds prior to issue.
- c. Establish rigid safety programs and enforcement thereof.

2.4 COMMUNICATIONS

2.4.1 Communications with Detached Units

Problem. Problems were encountered in maintaining communications with detached units. Of particular significance was the limited range of battalion radios due to climatic conditions and mountain barriers. Thus detached units often had to rely on relaying information through other friendly units. As the number of relays increased, the probability of error in transmission also increased.

Solution. It is suggested that when prospective detached unit sites are being considered, more emphasis be placed on these communications planning factors.

NMCB-9's detached units initially relied upon Special Forces communication systems for contact with the main camp. Messages received were garbled, delayed, or not received at all. Units were thereafter equipped with radio gear, and regular contact was maintained with the main camp. It is highly recommended that each detached unit be provided its own radio for communications with the base camp.

The TRC 75 radio mounted on the MK83 jeep and the PRC 47 radio were used by NMCB-9. The TRC 75 performed very well, and reception 85 miles from main camp was excellent. The only disadvantage of the TRC 75 was the lack of on-site repair capability. Malfunctions of the radio required that the entire vehicle be returned to Da Nang for repair by a Marine communications unit. The PRC 47 performed adequately, but range and reception were limited in mountain valley locations.

It is strongly recommended that a battalion radioman initially set up the radio at the site and thoroughly check out the individual who will be operating the set.

Record keeping and radio reporting were the keys to providing timely logistic support and keeping the command and customer informed of job progress.

Daily reports were required on (1) equipment deadline and parts requirements and (2) construction progress. The battalion used a coded report format which permitted detailed construction progress reports to be transmitted by a brief message.

Weekly reports were required on (1) inventory of construction material, POL, food, beer, and soda; (2) material put in place for the week; and (3) direct labor for the week.

2.4.2 Communication Equipment, Utilization, Maintenance, Training

Problem. Communication Equipment Utilization, Maintenance, and Training.

Solution. The Motorola PT-300 proved to be a useful radio for the construction net. Because the maintenance contractor was Da Nang based and made only infrequent visits to Phu Bai, some units were deadlined longer than normal. The communications maintenance crew, who had PT-300 factory training courses could have made basic repairs if parts had been available. Some difficulties will always exist due to the fact that the radios are not sealed units. Dust, rain, and rough roads tend to affect the radios more than any other military gear.

The civilian test equipment provided would have been adequate for a CONUS repair shop, but the dusty atmosphere encountered in RVN caused maintenance problems. The lack of availability of spare parts precluded third and fourth echelon maintenance for which some of the test gear was intended.

The primary Battalion tactical net consisted of 19 PRC 25s, and 4 GRC 125 radios. These radios proved extremely easy to maintain and very reliable. The only problems were as follows:

Batteries for the PRC 25, obtained from "Crown Battery Company" in Okinawa had only 1/4th the life of a Rayovac or Eveready. Purchase of American manufactured batteries

is recommended

Fiberglass ship antennas for the GRC 125s crack and break easily. The shortage of replacement antennas again was overcome by using 3/4-inch thin-wall conduit, scrap steel, and a "jury-rigged" antenna. PT-300 steel whips were also used on the GRC 125 when necessary.

The main interbattalion net consisted of the PRC 47 and TRC 75 radios. No problems were encountered with either of the radios with the exception that a number of large hills between Da Nang and Camp Wilkinson often interfered with radio reception.

Platoon tactical communications were maintained with sound-powered phones.

The EE-8s and TA 312s proved satisfactory for the camp telephone net, and the Army-installed telephone system made offbase calls easier.

Virtually everyone in the battalion should receive from one to two days training in voice radio procedures. About 50 lower-rated men should receive about two weeks advance training in communications gear and voice radio procedures.

Lessons learned and recommendations based on experience gained are as follows:

If the AN/MRC-83 radio is to be used to any great extent, a PU 499/U power-supply unit should be provided:

The lead time for ordering batteries for the PRC-25s was about six months. This should be considered by battalions planning to deploy to Vietnam.

As many spare parts for the EE-8 field telephones as possible should be obtained before departure from CONUS.

The mouth piece and ear piece of the sound powered telephone should be removed and the threads coated with vaseline and other petroleum products to prevent corrosion from freezing these pieces to the headset.

The PRC-25s do not come with a speaker. This problem can be corrected by removing the cord from the H-161 headset (that comes with the PRC-25) and connecting it to the LS-133 speakers (that comes with the PRC-10). The LS-133 speaker will then have the correct connections for the PRC-25.

The TA-1 test phone (section 0047 of TOA) is a valuable aid in repairing land lines, and should be added to the MCB allowance in the near future. The TA-1 has a variety of uses, including use on the defensive perimeter in place of sound power phones. It has the advantage of being able to signal a switchboard or another field phone.

When a battalion deploys, it should carry 23 one-mile reels of WD-1 TT field wire to meet requirements. (TOA Section 0047(28) and 0100(5)). If the construction of a camp is planned, cable for a permanent telephone system should be acquired ahead of time. Each new camp will also require a number of terminal strips, TM 184, or terminal cans, TA 125, for its line system. In routing its lines, the communications section should coordinate closely with Operations to ensure that future construction will not necessitate changes.

An ET Shop should be protected from the dust and the rains. The standard hut is not adequate. It is recommended that a quonset hut be provided for a combination ET Shop and Armory. Individual plastic cases (bags) for the various radios are available on the market and should be supplied to all battalions.

SECTION 3.0

LOGISTICS

3.1 BUILDING MATERIAL

3.1.1 Material Accountability During Transport

Problem. When a project involving extended convoy operations is undertaken, accountability of the large amount of material transported is difficult but critical.

Solution. It is recommended that one man (preferably a 2/C or Senior Petty Officer) be in charge of dispatching the convoy from its origin. An accurate record of the contents of each truck, and a shipping list signed by the drivers should be retained. The drivers should retain a copy of this shipping list. Another man (preferably a 2/C or Senior Petty Officer) should be at the convoy's destination to receive the shipping lists from each driver, and should check the list against the material inventory arriving at the site. Once the contents are confirmed, they should be stockpiled in a central source MLO yard for re-issue. The individual drivers should be held accountable for any discrepancies found in their loads.

3.1.2 Storage, Security

Problem. The myriad of materials available for construction by a Seabee Battalion, which turned out to be prized items to other military units, were disappearing during the night hours.

Solution. The many construction sites prevented erection of costly security fences, or the posting of nightly security patrols. A stern Battalion policy concerning theft was instituted and found to be the best solution. The customer was informed that all material staged at the construction sites would be completely used in the facilities under construction, and the theft of this material would result in incomplete facilities. Once the facilities were "completed" having only half a roof, or part of a floor, the stolen material usually reappeared.

3.1.3 Requisitioning

Problem.

a. Blanket MTOs for large Construction Projects - the Hoi An project was assigned to the Battalion under a single work order with a general project description to "Build an 8,000-man cantonment for the ROK Marines". When the scope became more defined and the number of buildings set, the material take-offs were prepared. Standard MTOs were used to prepare blanket MTOs for the various types of buildings, i.e., 500 strong-back huts (16- x 32-foot), 150 four-capacity heads, 2 chapel buildings, etc. The material was requisitioned from the MTOs. Delivery under the blanket MTOs became a problem since the particular MTO might cover buildings in several separate locations, and it was not possible to determine how much or where the material went. Material control was also a problem because it could not be determined if the material for a particular job site had been issued without an on-site inventory of material in-place and staged at the construction site. This applied both for the particular construction site and for the job as a whole.

b. In an endeavor to lessen the effect of material limitations, NMCB-11 grouped all materials present in Dong Ha into a common pool for reassignments to projects as construction priorities required. This assisted to some extent but only on project work that utilized common-type materials such as plywood, lumber, cement, etc. Specialty items or materials not already delivered for other deferred work continued to be a problem. Of special importance were various electrical or water distribution materials and culvert, piling, and bridge decking materials.

Solution.

a. On large-scale construction projects, a blanket MTO should be used for requisitioning purposes and should be backed up by an MTO for each construction site.

COMCBPAC Inst. 10370.1 series requires - Master Stock Record Card and

Project Record Card. Recommend a Sub Project Record Card - in case of multiple sites for the same project.

b. The unsatisfactory material situation experienced was partially solved during the last months of deployment when the Battalion requisitioned materials in advance of the project assignment. However, the full solution required permission for advance ordering and force feeding of materials to Dong Ha in larger quantities. This process, strongly recommended when Battalions are remote from major stocking points, would permit taking advantage of the constantly changing shipping or tactical situation and allow a unit to react to military priorities or emergencies. Acceptable administrative procedures could be developed to insure proper use of accounting of such material stockpile if this area were to present difficulty to the issuing agency.

3.2 GENERAL

3.2.1 Supply Support

Problem. General comments on supply support.

Solution. Mezzanines had to be built in the Camp Wilkinson Central Tool Room, automotive parts warehouse, and project warehouse. It is considered a necessity that every new Butler building constructed in Vietnam for storage have a mezzanine on one side at least, otherwise valuable storage space is lost.

The MLO (Material Liaison Officer) was located in the Project Yard Office early in the deployment. This worked very well and is recommended as opposed to having the MLO located in the Supply Office.

In order to monitor augment repair parts carefully a Storekeeper is recommended for expediting duties in Da Nang. This man must be careful to obtain THIRD Naval Construction Brigade requisition numbers for requisitions passed to CONUS, monitor those requisitions closely, and keep requisition status up to date weekly. He should also check to see that a copy of the battalion augment request, NAVSUP 1250s, are returned within 48 hours either with material or with a notation concerning the CONUS requisition number. Battalions should be careful to cancel augment vehicle requisitions when the vehicles are assigned to another battalion or surveyed because repair parts will be sent to camp sites where vehicles no longer are located.

CBC Port Hueneme should continue to utilize air parcel post whenever possible for small shipments. This mode of shipment proved outstanding and greatly enhanced supply support.

Battalions should be careful of USMC Standard Transfer Voucher billings. Many of these were found to be in error and could not be certified for payment until corrected.

All requisitions for projects should be canceled at the end of the deployment for completed jobs. This action should help clear Brigade supply records.

3.2.2 Expediters

Problem. Coordinating movement of construction materials, equipment, and supplies.

Solution. The Battalion kept expediters and embarkation personnel in Da Nang throughout the deployment to coordinate the movement of all construction materials, equipment, and supplies required by the Battalion. A normal requirement is considered to be 2 or 3 personnel, however, this may vary according to logistic and operational conditions.

3.2.3 MTO (Material Take-Off) Preparation

Problem. Vast amount of paperwork in the preparation of the MTO. If a construction crew realized that it needed material which had not been ordered on the original MTO, a supplemental MTO was initiated by the P&E and routed to MLO, however, on most occasions the material requested was already in stock; therefore, it should not have been necessary to prepare an MTO for only one or two items.

Solution. The "has been issued" (HBI) system was devised to eliminate the constant use of the MTO for only one or two items and reduce the waste of paper and manpower. When a crew needed additional material which wasn't in stock at MLO, an HBI was issued by a P&E. On the HBI form was recorded a description of material, quantity, and work order number. At the time the HBI was issued, the identical information was recorded in a log in P&E for accumulating data against a particular job. The HBI was delivered to MLO where the material was issued, all pertinent information recorded in a log (items grouped under the same work order number), and a receipt signature entered in the log. At the time of issue, the material is also deducted from the stock control card and initials placed in the HBI log. When a sufficient number of HBIs had been issued against a particular work order, an MTO was prepared by P&E and each HBI item was indicated by the letters "HBI" being placed on the MTO alongside the item. When MLO recorded the MTO, a DD-1250 was drawn up for

each HBI and filed for normal processing. This procedure saved significant amount of time which was used for handling additional material requirements.

3.2.4 Advance Party Flyout

Problem. There is little activity in the supply office at home port.

Solution. Recommend that the bulk of the supply office be sent with the second advance party flight. The supply office should be in complete operation before the camp is officially turned over.

3.2.5 Project Materials and Receipt Control

Problem. Difficulty was encountered in the receipt of material ordered by battalions which had previously occupied the camp. Considerable time-consuming research was required to identify material and ascertain the intended use.

Solution. The battalion being relieved should turn over receipt control files to the succeeding battalion for all material on order for the camp and automotive construction repair parts.

SECTION 4.0
ORGANIZATIONAL STRUCTURE/POLICY

4.1 WORKLOAD AND ASSIGNMENTS

4.1.1 Detail/Detachment Advance Party

Problem. Coordinating details away from the main Battalion.

Solution. Advance planning is the key to a successful detachment assignment. Deployment of an advance party to a new project site to coordinate and investigate material delivery, equipment and tool requirements, logistics, work conditions, resources available, etc., often will assure that the right number of adequately equipped and supported personnel are deployed on a high priority project thereby saving time and money. Preparation and distribution of a simple OP order encompassing the various factors that would effect a detail is also recommended.

4.1.2 Detail/Detachment Manning Level

Problem. Detachments were manned with the absolute minimum number needed to complete the job.

Solution. Consideration should be given to manning crews with approximately 10-15 per cent over the minimum in order to compensate for normal time loss due to sickness, personal problems, requiring men to return to the main camp. Particular attention should be given to providing back-up for critical positions. Personnel with cross-rate training should be considered for assignment to the maximum extent.

4.1.3 Detail/Detachment Planning

Problem. Days lost due to sick call.

Solution. Men to be deployed on projects removed from the main camp should receive a thorough medical and dental examination prior to being sent on detachment. This should save considerable lost time due to return trips to the main camp for sick call.

4.1.4 Detail/Detachment Communications

Problem. Lack of communications between Battalion and detachment.

Solution. Detachments should have their own radio for communications with the base camp. Communications procedures should be documented and exercised with particular attention directed to emergency measures. Periodic radio checks with the base camp should be made.

4.1.5 Detail/Detachment Personnel

Problem. Lack of personnel accountability.

Solution. Positive personnel accountability is essential. This can be accomplished by issuing group TAD orders for all details.

4.1.6 Detail/Detachment Support

Problem. Lack of support of a detached detail.

Solution. Maintain the umbilical command control and support between the Battalion headquarters and the detail. The parent Battalion must not fail to look out for the needs of a detached detail. Arrangements for support with adjacent units should be developed by the advance party if possible and confirmed by correspondence or OP order.

4.1.7 Detail/Detachment Personal Gear

Problem. Problems are created when personal gear is left behind when the owner is assigned away from camp.

Solution. No personal gear should be left in the huts when owner is assigned

away from camp. If all gear cannot be taken to the detailed worksite, each company can establish a "hot locker" in a conex box to maintain good storage conditions and security of gear belonging to company members away from camp.

4.1.8 Detail/Detachment Field Mess Facilities

Problem. Sanitation.

Solution. Whenever possible, galley personnel should operate a scullery and not allow the individuals to clean their own mess gear to prevent improper cleaning. If necessary for individuals to clean their own mess gear, close supervision is essential. The galley should receive frequent inspection by the Food Services Officer and Leading Commissary man in order to insure against the development of poor sanitation and food services practices. Ensure that the maximum number of commissary men have attended the Field Food Service School and that they are familiar with the maintenance and operation of the M-1937 and M-1959 field range. If a detail is to be in the field for most of the deployment, rotate the assigned commissary men at least every three months as commissary men need the experience gained in a large galley for advancement.

4.2 TRAINING

4.2.1 Personal Readiness Capabilities Program

Problem. Uniform interviewing standards for the PRCP.

Solution. The Personnel Readiness Capabilities Program was administered by the Training Department. Approximately 90% of the Battalion enlisted personnel were interviewed every two months to enable profile cards to be updated. PRCP cards were processed for all augment personnel as part of their in-processing routine. All interviewing was accomplished by two people from the Training Department. This practically eliminated variation in evaluating skill level which would have been evident had this program been carried out on a company or platoon level. It is recommended, however, that the squad leader be present for interviews of his squad to insure a proper personal skill evaluation.

4.2.2 Communications Training

Problem. The importance and dependence on radio gear for communications requires adequate training.

Solution. The communications officer should receive two to three weeks of formal training in the use and capabilities of the communications gear in the MCB allowance, on radio procedures and on communications security.

The electronics technicians should receive about four weeks on-the-job training in tactical communications gear at an organization equipped to perform third and fourth echelon maintenance and repair.

All Battalion personnel, as practicable, should receive about two weeks advance training in communications gear and voice radio procedures.

The S-2 office should initiate a training program for all assigned communicators on the proper operation of the radio equipment and also the proper voice procedures for submitting tactical reports.

4.2.3 Special Guest Lectures

Problem. Creation of an understanding and appreciation of the role each individual Seabee plays in the objectives and goals of the U.S. involvement in RVN.

Solution. Special guest lecturers from other units in the area were invited to give a presentation to the men on the mission of their unit or their particular job. This program helped the men to grasp how Seabee support helped these units, such as Marine Air Group 12, to accomplish their mission, and in turn, how accomplishment of this mission fit into the tactical and political "Big Picture" of the United States commitment in Vietnam.

4.2.4 Formal Training

Problem. Insuring the present and future effectiveness of the Battalion.

Solution. To obtain a maximum amount of thorough training on a regularly scheduled basis without seriously detracting from the construction effort, formal training was conducted on Sunday mornings from 1100 to 1200. This training could also be scheduled immediately after quarters so as not to interfere with the scheduled work programs. The first portion of this period was devoted to general military (leadership) training and basic military training. The second half of the period was reserved for technical training, special guest lectures, and, in some instances, for continuation of military training. The entire formal training program was based on squad, platoon, and company training so as to improve the effectiveness of the military organization through the actual implementation of the training program itself and to insure that each man received training in all subjects included in the syllabus. The majority of the lectures were prepared and presented by petty officers. Each instructor selected to present a lecture was required to submit two copies of his lesson plan for review prior to the beginning of the training program. The lesson

plans had to be in sufficient detail so that a supernumerary instructor could present the training if required, and it had to include a list of thought provoking questions to assist in establishing group discussion after the lecture. This outline was improved by the lecturer as the deployment progressed. Following each training session, the lecturer was required to submit a training report form to the S-2 officer giving the date and title of the training lecture given, the duration of the lecture, the number of persons attending, and the platoon and/or company.

4.2.5 PAO Staff Training

Problem. Lack of experience and background of the PAO staff.

Solution. Both officers and enlisted personnel who are to perform PAO duties during the RVN Deployment should be selected early in the homeport deployment and given as much formal (special schools) and informal training as possible before deploying to RVN.

4.3 SECURITY/INTELLIGENCE

4.3.1 Evaluation of Intelligence Information

Problem. To get a true picture of the intelligence information accumulated.

Solution. All intelligence information must be closely coordinated, double checked and cross checked.

4.3.2 Sources of Intelligence Information

Problem. Discrimination between different sources of intelligence.

Solution. It was found that personal analysis of the enemy situation and potential trouble areas between the Battalion's S-2 Officer and the S-2 of other units was the most productive means of information gathering. Another fairly accurate measure of enemy intentions and of immediate impending action was in casual observation of the actions of the civilian populace. Close contact with the Vital Area Coordinator S-2 was necessarily continuous and therefore adequate.

4.3.3 Security Force

Problem. Maintaining, organizing and motivating an efficient Security Force to be responsive to potential enemy action is dictated by area security requirements and varies considerably by location.

Solution. The security force should have the full status and responsibilities of a line company. The recommended security force tour of duty is from 6 to 8 weeks with the individual having the option of remaining longer with the approval of the S-2 officer and his company commander. Where the situation warrants, a rotation schedule could be used as security force team members are subject to recall by their respective company commanders.

NOTE: Decisions on security requirements will vary considerably by location and security situation. What is best for one situation may not be appropriate for another.

4.3.4 Convoy Operation

Problem. Planning and executing the convoy operation in a forward, insecure area.

Solution. Determine the military situation along the proposed route of travel.

Determine the condition of roads and/or bridges along the route.

Determine bridge capacities and dimensions before loading trucks.

Determine the type of security force that is necessary and who will provide it. (For the convoys conducted by the Battalion, a security platoon of Korean Marines, distributed between four trucks was utilized. Each truck was heavily reinforced on the sides of M8A1 matting and was well sandbagged.)

Obtain frequencies and call signs of friendly forces along the route.

Obtain maps of route and establish checkpoints; check in with home base as convoy passes checkpoints.

Try to arrange for aerial observer if possible.

Determine number of trucks, load, and their respective place in line. (Lead truck should have assistant convoy commander, radio, and part of security force. It is this truck that sets the pace. The convoy commander should be in the middle. The next to the last truck should be a wrecker and the last truck should be a security truck.)

Organize security force, truckdrivers, and shotgun riders into a fighting organization. Put the corpsman with the convoy commander.

Brief drivers of situation, explaining chain of command, enemy situation, and what you expect of them.

4.3.5 Intelligence Summary

Problem. Keeping a complete detailed record of enemy movements.

Solution. Battalions should keep a map of the area within 15KM of the vital area of which all VC incidents and sightings were plotted for the previous 30 days. A log should be kept current for all incidents within each 5KM square section of the map from the start of the deployment. This includes grid coordinate location data, brief summary of incidents and should be used as a reference source.

4.3.6 Control of Classified Material

Problem. The receipt of a large volume of classified documents and its accumulation was a constant problem.

Solution. A weekly purge of the documents was conducted to remove all "stale" documents older than two weeks. Those of lasting value were retained indefinitely and turned over to the relieving Battalion.

4.4 ENGINEERING

4.4.1 As-Built Drawings

Problem. Timeliness in completing as-builts.

Solution. Strictly enforce the policy requiring the preparation of as-built drawings by pertinent construction companies. A set of prints should be kept in the offices of the companies participating on each job and marked appropriately as field changes occur.

4.4.2 Construction Drawings

Problem. Constant customer changes in scope and/or design resulting in delays of completion of construction projects.

Solution. Have construction drawings approved and signed by customer representatives.

4.4.3 Standard Drawings

Problem. Accuracy of standard drawings.

Solution. All prints received from others should be closely checked for errors and omissions; topographic drawings should always be checked by surveyors.

4.4.4 Title Blocks on Construction Drawings

Problem. Manually drafting title blocks on all drawings.

Solution. Manually drafting the title blocks on all drawings requires many man-days during the deployment. Recommend preprinted sheets or a title block stamp.

4.4.5 MTO Preparation

Problem. Careful preparation of MTO.

Solution. Scrupulous attention must be given to the preparation of drawings and MTOs including acceptable substitutes on the MTO for hard-to-get materials, in particular, alternate sizes or lengths of lumber.

4.4.6 MTO Preparation and Accounting

Problem. Job costs of assigned projects.

Solution. The Regiment should monitor the job costs between the Battalion and the 3NCB. Since the Battalions have little or no opportunity to be informed about actual funding available for a job, the Battalion should submit the original cost MTO to the Regiment for review then advise the Regiment at any time the MTO costs exceed the CWE due to additional material requirements.

4.5 RECORD KEEPING

4.5.1 Combat Work Order

Problem. The administrative effort involved in authorizing many small work orders for combat support projects such as the construction of bunkers, and the excavation of trenches or mortar holes.

Solution. One combat support work order was assigned during the deployment which eliminated much administrative effort in authorizing small projects which assisted the battalion, its customers and the project assigning agency.

4.5.2 Work Order Status

Problem. Updating of status charts to plot work order progress.

Solution. A work order log was established and a separate page was used for each work order processed. Drawings received were noted and entries made for significant stages in development of the project work package.

4.5.3 Monthly Operations Report

Problem. Computation of labor figures.

Solution. After the timekeeper computes the direct labor figures for the weekly situation reports, he should then compute and convert all other categories for use in the monthly operations report.

4.6 ADMINISTRATION

4.6.1 Personnel Accounting

Problem. A significant number of manhours is required in maintaining records on each individual Seabee and utilizing this information in listings for disbursing, company and platoon manifests, etc.

Solution. The Personnel Office in coordination with the data processing platoon at FLC developed a program on IBM punch cards for rapid organization, sorting and printing of personnel data including: name, rate, service number EAOS, rotation date, date of birth and number of deployments.

4.6.2 PAO News Releases and Photos

Problem. Timeliness and physical condition of news releases and photos often determines whether or not the release is printed.

Solution. A lead time of at least one week should be programmed. Releases and photos should be submitted with a "Hold for Release Date" heading along with an adequate number of photo mailers and protective cardboard inserts.

4.6.3 Air Detachment Personnel Lists

Problem. Advance planning for Air Detachments.

Solution. Current personnel lists should be maintained for two air detachments. The status of air detachment equipment, kits and other gear should be regularly updated. Company personnel status boards should reflect these and other assignments.

4.6.4 Critical Path Method

Problem. Planning and scheduling of construction projects.

Solution. The critical path method of scheduling was adopted on all complicated and large projects. This proved advantageous as critical materials were pinpointed well in advance of the required dates and in scheduling of various crews and equipment was facilitated, resulting in earlier completion dates and better utilization of personnel. The CPMS were generally prepared by the company assigned the prime contractor responsibilities.

4.6.5 Legal Aid

Problem. Meeting the legal aid requirements for the Battalion and individual Seabees.

Solution. A Navy lawyer from NSA Da Nang made periodic visits to the camp.

4.6.6 R & R Requests

Problem. Changes in choice of R & R site causes a burden in cancellation procedures.

Solution. R & R requests should be submitted by individuals the month before they go on R & R rather than in the beginning of the deployment.

4.6.7 Visits/Inspections

Problem. Many questions and misunderstandings can arise at construction sites removed from the main camp.

Solution. Scheduled visits by administration and personnel key supervisors to Battalion job sites and detail sites can alleviate many of the questions that arise due to the absence of face-to-face communication. It also creates a sense of personal involvement

with the construction mission of the Battalion.

4.6.8 Special Services Officer in Advance Party

Problem. The incoming Battalion experiences difficulty in purchasing items from the Battalion being relieved and in arranging its inventory.

Solution. The Special Services Officer, or someone familiar with Special Services, should be in the Advance Party along with the Special Services bookkeeper in order to arrange for the inventory and purchase items from the departing Battalion.

4.6.9 Battalion Newspaper

Problem. Weekly publication of the Battalion newspaper hindered the output of news releases and FHTNC.

Solution. Battalion newspaper was published biweekly which left more time for adequate and detailed coverage of news events and enabled an expansion in quality and quantity in the FHTNC program.

4.6.10 Financial Accounting

Problem. Reconciliation of Battalion and CBC fiscal records.

Solution. A part of the problem was created by transmission problems and this was partially alleviated or eliminated by use of air mail for backup. To reconcile the Battalion's allotment records, they were sent to CBC, Port Hueneme.

4.6.11 Mount-Out OPLAN

Problem. A Mobile Construction Battalion must be able to deploy to any site quickly and upon arrival to begin construction operations in support of U. S. Forces.

Solution. An operations plan for mount-out was written based on the following basic tenets:

- a. The movement will require a minimum of four convoys. The first and last convoys will be self sustaining in all respects.
- b. Cargo carrying vehicles will be required to shuttle between the two sites.
- c. Men, equipment, tools, and supplies will be distributed horizontally throughout the convoy. It is important that the total allowance of any given item or even a major portion of the allowance not be transported on any single vehicle or in any given convoy.
- d. The first convoy will be capable of establishing the advance Seabee Camp and building defenses. This convoy will also have a limited project construction capability.
- e. The last convoy must be capable of dismantling the rear camp and leaving a clean site for any future unit.
- f. The exact manner of movement will depend on such factors as route conditions (capacity of bridges, width of roads, etc.), type and relative location of advance and rear sites, and future construction projects.

4.6.12 Battalion Safety Program

Problem. Keeping the men interested in safety was difficult.

Solution. It was found that innovations must be made throughout the deployment to keep interest from lagging. Midway in the deployment a safety incentive program was established whereby the company with the best safety record for a month was given a morning

sleep-in and the name of the company placed on the safety record board. High command interest was exhibited in the safety program throughout the deployment.

4.6.13 Civilian Labor Administration

Problem. The Battalion experienced labor problems with the Vietnamese people over payrolls, working hours, and promotions.

Solution. A civilian labor coordinator was hired and assigned to the operations department to handle personnel administration management. It is further recommended that this individual be trained in the Vietnamese language.

4.6.14 Creation of an Civic Action Team in the Battalion Organization

Problem. There is need for adequate planning, coordination and implementation in support of the Civic Action Program.

Solution. The addition of an Civic Action Team to the battalion would provide a nucleus for coordination, development and execution of the Civic Action Program. It would resemble a Seabee Team. One officer, plus six Seabees would compose the team. The ratings would be EO, UT, BU, HM, DT and YN with SK training. They would be trained in Counter-guerrilla Warfare in addition to Vietnamese language, customs, religion and political history. The YN/SK would be tasked with the office operation plus Civic Action involvement.

The group eight ratings would of course work closely with the Vietnamese villagers on the projects. The DT and HM would coordinate and execute sanitation and pest control in addition to supplementing the Battalion MEDCAP sickcall routine. Among other training courses, instruction in agriculture pertinent to Vietnam would be essential. The Civic Action Team would need adequate equipment to perform their task. Material and fiscal support would be essential in addition to that presently available from USAID and the small Civic Action Funds of CBPAC, 30th NCR and NSA. In order to gain a meeting of minds with the village and hamlet chiefs a Vietnamese interpreter would be invaluable. The interpreter should be from the local area and screened with regard to his attitude as well as capability. It has been demonstrated that the personality and attitude of the interpreter contribute to or hinder the development of rapport with the Vietnamese.

4.6.15 Civic Action Procedures

Problem. Civic action must be a Battalion function in order to be effective.

Solution. Two typical battalion approaches to the Civic Action Program are as follows:

a. NMCB-128

The Battalion's program was carried out with the Chaplain acting as Civic Action Officer and by volunteers assisting him. The medical-dental departments had an assigned MEDCAP team. The Chaplain's assistant and PAO personnel executed the social welfare program. The Civic Action construction projects were carried within the same manner as military projects, with the exception that much of the work was performed during off duty working hours.

(1) Working with other units and agencies

Work performed by individual military units must be coordinated with other units in the area as well as with civilian agencies and the Vietnamese Provincial Government. Every Civic Action construction project should have the approval of the Province Chief. This means going through the government chain of command, and involves much red tape and requires a long period of time to obtain approval. Projects for private agencies (such as church and missionary agencies) however, can be done without the Province Chief's approval, since they are done to help his people.

Construction material was in constant demand. Most of that used was

obtained from 30th Naval Construction Regiment, demolished buildings, project scrap materials, and excess materials.

(2) Working with Vietnamese in the Hamlets

The people were assisted in every way possible. They were given needed medical treatment, and also taught health and hygiene practices. They were given soap and clothing, and taught to take proper care of the clothing by washing, and also to use the soap on themselves to minimize skin rashes and diseases and combat minor infections. Movies were shown on various subjects to instill a desire in the people to improve their lives through self help.

b. NMCB-7

(1) Working through the Battalion

In order for a civic action program to be effective within a construction battalion, it is necessary that it be looked on not as a peripheral function of the mission of the Battalion, but as an internal part of its effort in relating effectively to an indigenous culture. The Battalion participated in civic action. After some pioneering work in obtaining funds for the project work order and for materials, the Battalion was handling projects in the same way as combat support construction was handled. The support obtained from top military levels had much to do with the success of the program.

(2) Working with Civilian Authorities and Military Agencies

In addition to working and receiving cooperation from the Battalion, it was also necessary to work through other agencies and commands and seek their support and advice where needed, and also important to work through them for coordination and effective planning. No project should be planned without first going through the chain of command from the hamlet through the district to the province. In addition to this, every project on a Battalion level should be cleared through the military coordinator, being the Civic Action Director of NSA, in MCB-7's case. Civilian government agencies are available for assistance and help in projects and should be taken advantage of where necessary. The most important of these are USAID, CARE, PROJECT HANDCLASP, CATHOLIC RELIEF, and NSA CIVIC ACTION. Great support is also available in obtaining materials and funds from COM3ONCR, Deep Water Piers, Bridge Cargo Facility, NSA Covered Storage, and III MAF Civic Action Office.

(3) Working directly with the people in the hamlets

It was found in most instances that the people were willing to work for themselves if they were provided with the means to do so. MCB-7's function then was to be the means of providing those necessities which the people could not obtain in completing a project. Assistance was rendered not only with construction materials, but also economically with food, clothing, and jobs, and medically with MEDCAP service, soap, medicines, etc., where available.

A constant consciousness of the danger of corrupting the people with vast "do it for them progress" was maintained and, with added experience, it was learned to be very selective in the dispensing of assistance. Where the people were motivated or wanted something without a commensurate effort on their part, assistance was withheld.

In most cases the people were very industrious and motivated if they were provided with adequate tools for accomplishment.

If Civic Action is conducted in a responsible, realistic, business-like manner, then it can be effective in benefitting the people of Vietnam.

4.7 OFFICE SUPPLIES AND EQUIPMENT

4.7.1 Sepia Paper

Problem. Lack of and poor quality sepia paper resulted in redrawing of many sepia prints to allow for reproduction.

Solution. In contracts with agencies supplying sepia paper, it should be noted that it will be going to Vietnam and the highest quality should be purchased.

4.7.2 Administrative Type Forms and Paper

Problem. Procurement difficulties of paper and assorted administrative supplies.

Solution. A more than adequate supply should be kept on hand at all times for assorted administrative supplies and paper.

4.7.3 Advance Party Office Supplies

Problem. The Battalion being relieved is likely to be low on office supplies and forms.

Solution. The Advance Party should bring sufficient office supplies to be self-sufficient.

4.7.4 Battalion Completion Report

Problem. Writing of Battalion Deployment Completion Report.

Solution. A system should set up early in the deployment for the orderly accrual of information for the Completion Report in order that when the deployment is over, the requisite facts and history are all accumulated in one place.

4.8 PERSONNEL

4.8.1 Disbursing Officer

Problem. The cashiering responsibilities of the Disbursing Officer involve a considerable percentage of his time.

Solution. It is recommended that deputy and agent cashier positions be established to free the officer assigned to disbursing duty for work as an assistant to the Supply Officer in areas where his abilities could be put to better use.

4.8.2 Non-deployable Personnel

Problem. What to do with non-deployables in homeport just prior to deployment.

Solution. Recommend the transfer of non-deployables to a Regiment approximately six weeks prior to mount out. These transfers should be TEMDU separation vice TAD in order to purify the Battalion's 1080.

4.8.3 School Assignments

Problem. Maintaining accurate personnel records from the deployment site.

Solution. Recommend whenever possible to avoid sending personnel to schools which end after the deployment commencement date. For personnel who are left behind in school, it sometimes requires persistent queries to homeport via speedletter and messages on the status of personnel to insure that manpower loss is minimized and accountability is assured.

4.8.4 Counseling

Problem 1. Counseling family problems.

Solution 1. It was found that family counseling problems, those involving parents, wives, sons, divorce, etc. were best solved with the help of a third party in the U. S.. Counseling had a better chance to succeed with a third party than when the Chaplain dealt with the man's wife or parents.

Problem 2. The need for a thorough grounding of the Chaplain in assisting men in resolving their marital difficulties.

Solution 2. Recommend that senior chaplains at homeport give incoming chaplains the benefit of their counseling experience with the Seabees by way of some educational sessions which would serve to prepare the new chaplain for the kind of situation he may face on deployment.

4.8.5 Medical Examinations

Problem. Loss of Battalion personnel due to physical ailments.

Solution. Recommend that all personnel over the age of 35 be given an extensive physical examination prior to deployment.

4.8.6 Corpsmen

Problem. Overstaffing of medical department.

Solution. When a Battalion is deployed to relatively secure and established camps with hospitals in the vicinity, only seven corpsmen would be needed to carry out the duties of the medical department.

4.8.7 Battalion Staffing

Problem. Overstaffing and understaffing.

Solution. The Battalion learned

- a. Close scrutiny must be used in the staffing of a camp exchange.
- b. Rigid control must be exercised in the area of mess cooks, bearing in mind a ratio of approximately 30:1 personnel to mess cooks as a maximum.
- c. Two dental technicians is sufficient for normal Battalion operations vice three which are currently in allowance. However, to effectively carry on a DENTCAP program, three technicians are a must.

4.8.8 Quality Control Inspectors

Problem. Assignment of personnel and duties.

Solution. All P&Es should be designated as quality control inspectors. They should be appointed in writing and each inspector should have his duties defined, including points in construction where critical inspections must be performed.

4.8.9 Interpreter

Problem. There is a frequent need for the services of an interpreter on vital construction projects, such as the Vietnamese National Railroad System.

Solution. Recommend that an interpreter be assigned to the Regiment for use by Battalions as the need arises.

4.8.10 Equipment Operations

Problem. Personnel assignments.

Solution

- a. A permanent night dispatcher should be assigned to assure continuity of operations.
- b. The gas attendant should be a rotating job with each man keeping the position for about six weeks, in order to prevent poor record-keeping as a result of boredom.
- c. A man should be assigned permanent responsibility for collateral equipment and crane attachments. This results in proper storage and accountability of equipment.
- d. An administrative chief should be assigned to handle routine daily company administrative business.

4.8.11 Supply Department Staffing

Problem. The most efficient use of personnel assigned to the Supply Department.

Solution. After extensive experimentation, one Battalion found the following staffing levels to be most adequate for a Battalion of 500 men:

<u>Function</u>	<u>Crew Size</u>
Auto/Construction Equipment Repair Parts	4
Central Tool Room	4
Shipping, Receiving and P25A, Part II	1
Project Material Control	4
Material Expediter, Okinawa/Da Nang	3

<u>Function</u>	<u>Crew Size</u>
Disbursing	4
Supply Office	7
Food Service (Cooks)	14
Food Service (Mess Cooks)	19
Clothing, Infantry Equipment and Office Supplies	2
Officer's Mess and Berthing	3
Exchange	1
Barbershop	1
	<u>67</u>

4.8.12 Battalion Strength

Problem. Optimum Battalion strength.

Solution. The optimum size Battalion is considered to be the size which will produce the greatest direct labor mandays without the necessity of adding to the officer strength, the P-25 allowance, or adversely affecting the Battalion's mobility and responsiveness. The following figures reflect one Battalion's experience:

a. Overhead

(1) Requirements Remaining Constant

(a) Legal	1
(b) Career Counselor	1
(c) Chaplains Assistant	1
(d) PAO	2
(e) Photographers	2
(f) Special Services	6
(g) Store	1
(h) Supply	5
(i) GSK	5
(j) Stewards	6
(k) Reproduction	1
(l) MAA	4
(m) Boiler Watch	4
(n) Generator Watch	4
(o) Head Cleaners	4
(p) Water Plant Watch	2
(q) Camp Maintenance	12
(r) Company Clerks	5
Total	66

(2) Variable Overhead Requirements

Battalion Size	500	600	700	800	900	1000
(a) Post Office	3	4	4	4	5	5
(b) Administration	4	5	5	5	6	7
(c) Personnel	3	4	4	5	6	7
(d) Medical	5	6	8	8	9	10
(e) Dental	2	2	2	2	2	3
(f) Barber Shop	1	2	2	2	2	2
(g) Laundry	3	3	3	4	4	5
(h) Disbursing	3	4	4	4	5	5
(i) Mess Cooks (1 for 30)	17	20	23	27	31	34
(j) Cooks (1 for 80)	6	8	9	10	11	13
Total	47	58	64	71	81	91

(3) Total Planned Overhead

(a) Constant Requirements	66	66	66	66	66	66
(b) Variable Requirements	47	58	64	71	81	91
Total	113	124	130	137	147	157

(4) Unplanned Overhead (Based on actual experience of a Battalion averaging 672 men)

(a) Leave & Liberty R&R	6	7	9	10	11	12
(b) Sick call	5	6	6	7	9	9
(c) Personal Affairs	2	3	3	4	4	5
(d) Lost Time	1	1	1	1	1	1
Total	14	17	19	22	25	28

(5) Total Overhead

(a) Planned	113	124	130	137	147	157
(b) Unplanned	14	17	19	22	25	28
Total	127	141	149	159	172	185

b. Indirect Labor

(1) Indirect labor remaining constant as Battalion size increases.

(a) Construction Maint Repair and Records	67
(b) Operations and Engineering	23
(c) Tool and Parts Issue	10
Total	100

(2) Indirect labor varying with Battalion size.

Battalion Size	500	600	700	800	900	1000
(a) Project Supervision	29	34	40	46	51	57
(b) Project Expediting	2	2	3	4	4	4
(c) Location Moving	4	4	5	6	6	7
(d) Project Material Support	13	15	18	20	22	25
Total	48	55	66	76	83	93

(3) Total Indirect Labor

148	155	166	176	183	193
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c. Military Operations and Readiness

(1) Military Operations remaining constant with Battalion size

(a) Military Security	43
(b) Embarkation	1
(c) Mobility Preparation	0 (insignificant)
(d) Contingency Material Readiness	13
(e) Mobility and Defense Exercises	0 (insignificant)
Total	57

(2) Military Operations Varying with Battalion Size

(a) Unit Movement	2	2	3	3	4	4
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(b) Military Administrative Functions	1	1	1	2	2	2
Total	3	3	4	5	6	6
(3) Total Military Operations	60	60	61	62	63	63

d. Training

(1) Since training varies with Battalion size and amounts to a small part of the total men, all categories are grouped together to determine the specific numbers.

(a) Training Total	2	3	3	4	4	5
e. <u>Summary of labor requirements</u>	500	600	700	800	900	1000
(1) Overhead labor	127	141	149	154	172	185
(2) Indirect labor	148	155	166	176	183	193
(3) Military Operations	60	60	61	62	63	63
(4) Training	2	3	3	4	4	5
(5) Direct Labor	163	241	321	399	478	554
(6) % Overhead Labor	21.4	19.8	17.9	16.6	16	15.5
(7) % Indirect Labor	31.2	27	24.7	22.9	21.2	20
(8) % Military Labor	12.6	10.5	9.1	8.1	7.4	6.5
(9) % Training Labor	.4	.5	.5	.5	.5	.5
(10) % Direct Labor	34.4	42.2	47.8	51.9	54.5	57.5

The tabulation of paragraph e above shows the large variance in direct labor. For instance: A comparison between three 600 man Battalions and two 900 man Battalions shows that the two 900 man Battalions would place 233 more men on direct labor; an increase of 33.2%. The importance of this study is concentrated in the 33% increase of direct labor. A particular Commanding Officer may desire ten men in Special Services or 50 men on security. The increase in men available for direct labor will still remain very close to 33%.

Figure F-6 shows the tabulation of paragraph e in a graphic form. Because the % of direct labor line is steep in the 0 to 200 men range, it may appear that more is gained per unit increase in this range. This is not true since a 1% increase for a 1000 man Battalion represents twice as many men as a 1% increase of a 500 man Battalion. It is also graphically apparent that the number of men available for direct labor doubles between a 600 man Battalion and an 800 man Battalion. The percentage of increase in men on direct labor as compared to the increase in Battalion size is considered most meaningful.

Although the increase in men available for direct labor is worthwhile up to a Battalion size of 1000 it is not considered practical to support a Battalion of over 900 men with the rolling stock of the present TOA .

Many Battalion arrangements would accomodate additional personnel. A logical and workable solution would place four fourteen man squads to each of three platoons in "C" and "D" Company. "H", "A", and "B" Company would then not change considerably from the sizes common to Battalions in Vietnam. The Company sizes would range as follows:

H - 183 A - 253 B - 126 C - 169 D - 169

It is intuitively apparent that great savings would result if the number of Battalions was decreased in favor of fewer, larger Battalions. This would be true in any case, but the horizontal capability could only be maintained by retaining selected P-25 construction equipment.

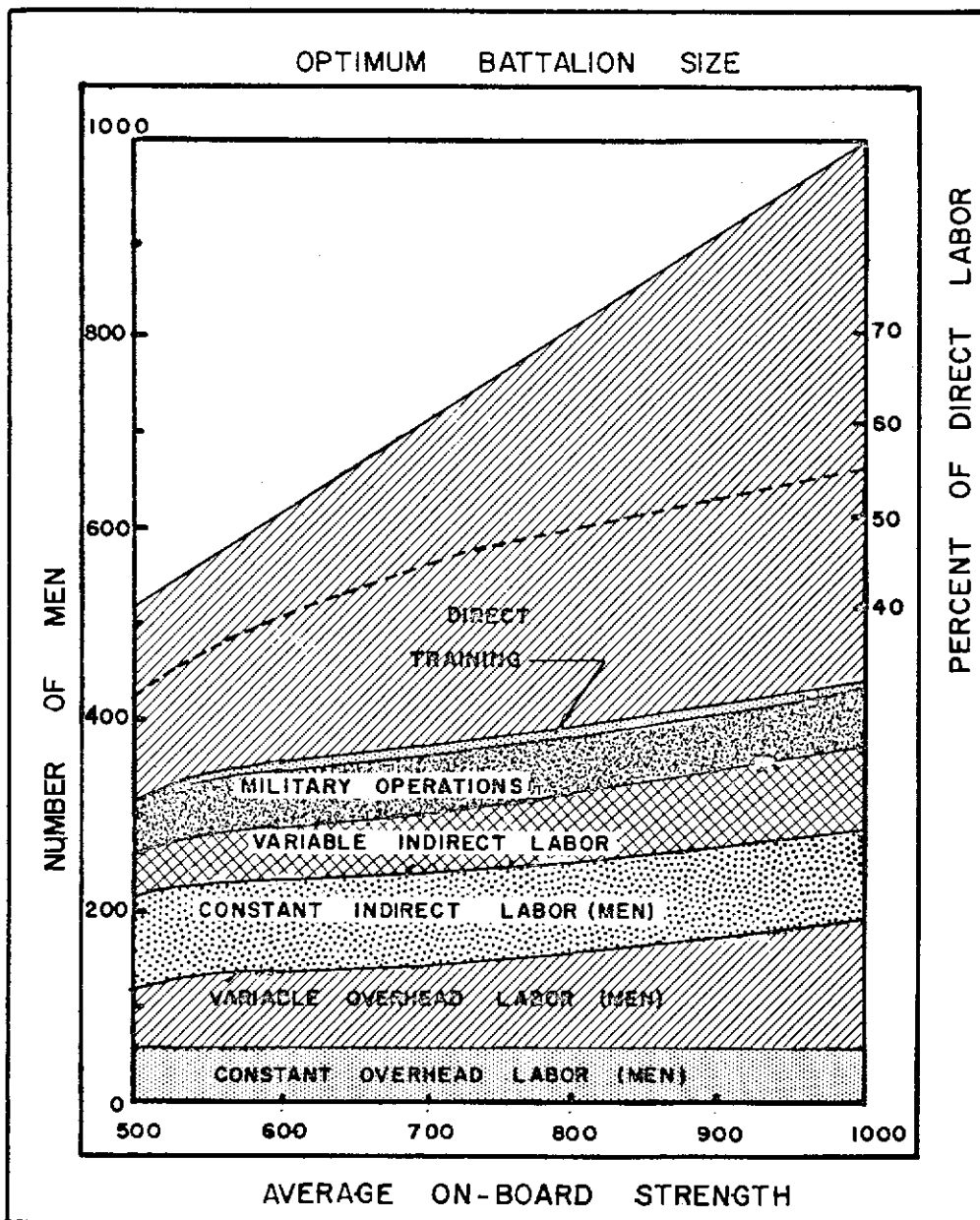


Figure F-6

4.8.13 Overhead Analysis

Problem. Percentage of overhead to direct labor.

Solution. The following analysis by MCB-4 is an example of one Battalion's experience:

During the deployment the on-site enlisted strength of MCB-4 ranged from 494 to 569 with an average value of 531. Through constant efforts to cut down overhead type functions and improve the percent direct labor, a fairly workable pattern of overhead assignments of personnel evolved. As a record of MCB-4 experiences, and as a possible guide for other Battalions, the following breakdown of overhead type functions is furnished. Staffing shown is what was available and is not meant as an ideal rate structure for each function. In most cases the overall numbers are more important than exact rate breakdown. Comments are offered where appropriate. Except for mess cooks, barbers and perhaps the camp repair crew, this overhead allocation is felt to be basically adequate to support a full strength Battalion.

Note that for purposes of comparison with monthly Operations Reports, this listing includes labor codes X04, X06, X07, M02, M06, T06, and Y01 through Y07.

<u>FUNCTION</u>	<u>AVERAGE STAFFING</u>	<u>TOTALS</u>	<u>COMMENTS</u>
a. Administration	YNC, YN1, YN2, 3-YN3, SN	7	
b. Personnel	PN1, 2-PN3, PNSN, SN	5	
c. Special Services	PO3, CN	2	One man not sufficient
d. Career Counselor	CPO	1	
e. Chaplain YN & PAO	2-PO3, CN	3	3-4 necessary
f. Post Office	PC1, PCSN	2	
g. Armory	GM1, GMG2, PO2	3	2 is adequate
h. ET Shop	ETN2, ETN3, CET2	3	Also operate radios
i. S-2 Office (incl. I&E & Embark)	2-PO3, GYSGT	3	Desired: 2YN/PN, 1 Embark PO, 1-CPO and 1 GYSGT
j. Telephone System	4-CET3/CETCN	4	Also intercom and Camp PA system
k. Photo Lab	PH2, PH3	2	
l. Exchange Operator	PO2	1	
m. Barber Shop	SH3, 1/2PO3	1-1/2	1 barber not adequate
n. Laundry	2-SH3, SN	3	Does not include UT support
o. Disbursing	2-DK2	2	Third DK needed
p. Stewards	SK1, SD2, 2-SD3, 2-TN	6	
q. Cooks	13-15 rated cooks	14	

<u>FUNCTION</u>	<u>AVERAGE STAFFING</u>	<u>TOTALS</u>	<u>COMMENTS</u>
r. Central Tool Room	BUC, SF1, BU2, BU3	4	
s. Repair Parts	CM1, 2-CN, SK3	4	Additional rated CM and SK required
t. Project Material Yard	PO2, CN	2	Requires strengthening
u. Shipping, Receiving, PPCC, Camp Material	BU1, SK3, SN, 2-PO3	5	Requires strengthening
v. Mess Cooks	22 CA/CN	22	Adequate
w. MAA Force	CECS, BM1, PO1, PO2 PO3, CN	6	
x. Supply Office, Greens, 782 Gear	SKC, SK1, SK2, SK3, SKSN, 2-SN	7	Marginal
y. Da Nang Expediter	CPO	1	Essential
z. Okinawa Expediter	CPO	1	Helpful
aa. Medical	HMC, HM1, 3-HM2, 2-HM3	8	
bb. Dental	DT1, DN	2	
cc. Security Force	PO1, PO2, 3-PO3, 24 CA/CN	29	Constructed and maintained defensive works. Less secure area would require more men.
dd. Safety	CPO	1	
ee. Vietnamese Labor PO	PO1	1	
ff. Operations Office	CUCM, UTCS, BU1, CE1 EAD3, CN	6	Includes P & E. Requires rated YN.
gg. Surveyors	EAC, 14-rated EASs and CNs	15	Includes soil test.
hh. Drafting	6 rated EADs and CNs	6	Used night and day shifts.
ii. EM Club Manager	PO1	1	After working hours assignment. "H" Co. best source.
jj. Acey-Deucey Club Mgr.	PO1	1	After working hours assignment. "H" Co. best source.
kk. Head/Shower/urinal and grounds cleanup			
(1) Officer's Country	Accomplished by Stewards		
(2) Enlisted	MAA supervisors plus 4 men for 1/2 day each day from Security Force.		Vietnamese used to help with this work when available.

<u>FUNCTION</u>	<u>AVERAGE STAFFING</u>	<u>TOTALS</u>	<u>COMMENTS</u>
11. Camp Maintenance and Operation			
(1) Water Plant	3 rated UTs	3	8 hour watch plus 2 hours work for each per day.
(2) Elect. Gen Plant	4 rated CEs	4	1 full time maintenance man, 8 hour watch plus 2 hours work for others each day.
(3) Camp Maint & Repair	5 men per day average	5	CE, UT, SW, or BU as needed. Includes shop work and field work.
(4) Refrigeration	2 men per day	2	
(5) Trash collection and head burnout	5 men per day	5	Vietnamese used to help out when available.
(6) Laundry	1 Rated UT	1	Operate boiler, repair leaks, etc.
	Total	204-1/2	

4.9 SPECIAL SERVICES

4.9.1 Recreation Materials

Problem. Nonavailability of athletic supplies in-country.

Solution. Hobby Shop and athletic supplies should be carried from CONUS due to difficulty to obtain and expense of in-country purchase.

4.9.2 Movie Projectors

Problem. Repairing of movie projectors.

Solution. Personnel should be trained in the operation and repair of movie projectors. Both parts and services are rare in-country.

4.10 BATTALION ROUTINE

4.10.1 Daily Operations Meeting

Problem. Coordinating progress of construction work.

Solution. A daily operations meeting was instituted with the Operations Officer, his staff, and the construction company commanders in attendance. A supply representative attended concerning logistic matters. This meeting proved invaluable in achieving coordinated progress of construction work.

4.10.2 Zone Inspections

Problem. Maintaining and improving material conditions of the camp.

Solution. In an effort to maintain and improve the material condition of the camp, a weekly zone inspection system was started. The camp was divided, geographically, into four zones and inspection assignments were rotated among the officers of the Battalion. The CO or XO picked up inspection assignment so as to see each zone once a month on the average.

4.10.3 Leadership Sessions

Problem. Establishing a weekly Leadership Session.

Solution. A weekly Leadership Session was instituted for all officers. The program varied but, in the latter stages, each officer presented a topic for discussion. Battalionwide problems and situations were also handled at this meeting. Later in the deployment the leadership training was expanded to the entire Battalion as squad size groups conducted discussions on leadership topics for 1/2 hour every other week on Friday mornings from 0700 to 0730. Quarters was not held on these mornings to devote more time to the topics.

4.10.4 Personnel Inspection

Problem. Continuing emphasis to the maintenance of weapons, uniforms, and huts.

Solution. A formal system of personnel inspections was instituted about mid-deployment. The system evolved into a combined personnel, weapons, and berthing hut inspection for one company each Monday morning. Personnel and weapons were inspected in platoon formation in the quarters area and then personnel moved into their huts to standby for the hut inspection.

4.11 BRIGADE/REGIMENT

4.11.1 Brigade Commander Inter-Service Relationships

Problem. The communications gap when the Brigade Commander is physically remote from the theatre seat of power.

Solution. The Brigade Commander MUST have a senior officer in proximity to the major commands, e.g. MACV, COMNAVFOR, OICC, to represent him. The officer must be senior enough to deal in a senior officers environment and he must not be attached to or subordinate to anyone but the Brigade Commander if he is to adequately represent the Brigade Commander.

4.11.2 Seabee/Customer Relations

Problem. The senior Seabee Commander in-country has to locate his headquarters so as to be readily available to the customer, the senior combat operational commander. Maintaining the customer/Seabee relationship is an important Brigade function.

Solution. As it evolved, the senior Seabee Command was located close to the highest level of combat operational command and this was repeated at subordinate levels, i.e.

Brigade -- III MAF
Regiment -- XXIV Corps
Regiment -- 1/3 MARDIV
Battalion -- Base Commander

4.11.3 Brigade Function

Problem. A Brigade must carry out its functions of command, control, planning, and any other special assigned functions without concentrating undue effort in the details of any one area, such as supply, logistics or engineering, thereby reducing the total effectiveness of the Brigade.

Solution. Possible alternative actions to avoid involvements of this type are:

- a. Creation of a special regiment or support unit with the sole function of controlling logistics for the NCF units in-country.
- b. Formation of a central design staff to deal with engineering detail; this could be placed in a support unit.

4.11.4 Establishment of a Brigade or Regiment

Problem. Determining the need for a brigade or regimental organization.

Solution. There is no set numerical timetable for establishing a brigade or regiment. The following factors must be taken into consideration:

- a. The number of Battalions in the area.
- b. The existence or non-existence of a "logistics regiment".
- c. Geographic dispersion of units.
- d. Command structure of customers.

4.11.5 Policy Guidance

Problem. Policy guidance instruction by the Brigade at the Battalion level.

Solution. The Brigade met with the Officers and Chief Petty Officers of each Battalion on their arrival in-country. These arrival conferences included a

presentation by the Brigade Commander of those policies and philosophies which were considered to be the most important to the overall guidance of the Battalion's efforts. Subsequent communication was limited to CO/Wardroom and was not of such a general audience nature.

4.11.6 Regimental Staff

Problem. The original staffing of the 30NCR was approximately correct as to number, but the distribution and seniority of personnel was inadequate. Most of the ratings of the enlisted personnel were too junior. Other than a small camp maintenance staff, most of the personnel should have been highly qualified senior petty officers. Later as construction became more complex and sophisticated, a quality control capability was absolutely necessary and this required additional personnel. No provision was originally made for the concept of a regimental mess.

Solution. Recommend that a table of organization for both the brigade and regimental staffs be developed and approved by CNO.

4.11.7 Scope of Brigade Authority

Problem. The Brigade was initially set up in Saigon as one of three hats (COM 3NCB, OICC, and DEPSEA), thereby reducing its scope.

Solution. This situation had to be changed as the conflict escalated and the number of Battalions in-country increased.

4.11.8 Progression from Regiment to Brigade Organization

Problem 1. The staffing of the brigade became a major problem as it took months for personnel procedures to be cranked through the mill and for personnel to report aboard.

Solution 1. Personnel were borrowed from the regiment to somewhat ease the situation.

Problem 2. Issuance of policy directives and instructions.

Solution 2. Initially at the time of the Brigade recommissioning, it was not considered necessary to issue policy directives and instructions duplicating or reiterating those put out by the 30 NCR. Eventually the 30 NCR instructions were reissued with minimum policy change.

4.11.9 Functional Split Between Regiment and Brigade

Problem. Operational control of rock production.

Solution. The Brigade usually assigned work to the Regiments which in turn selected the appropriate Battalion to accomplish the work. However, the Brigade retained complete management and operational control over rock production until recently when it turned the OPCON over to the Regiment. An alternate possibility would be the establishment of a special unit for the sole purpose of producing rock.

NOTE: A NCF Module is under development. It provides for a Support Unit normally to be attached to the Regiment. The Regiment and Brigade, if established would function primarily in the roles of command and control. Additional operational units, such as quarry and rock crushing components, asphalt production and paving components, etc., could be attached to a Regiment as required.