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By NAVA, Date 2/9/93

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AVHSC-DST (31 Jan 68) 4th Ind
SUBJECT: Operational Report-Lessons Learned (RCS CSFOR-65), for Quarterly Period Ending 31 January 1968.

HEADQUARTERS, US ARMY VIETNAM, APO San Francisco 96375

TO: Commander in Chief, United States Army, Pacific, ATTN: GPOF-DT, 20 MAR 1968
APO 96558

1. This headquarters has reviewed the Operational Report-Lessons Learned for the quarterly period ending 31 January 1968 from Headquarters, 589th Engineer Battalion (CONST) (WDFLAA) as indorsed.
2. Concur with report as indorsed. Report is considered adequate.
3. A copy of this indorsement will be furnished to the reporting unit through channels.

FOR THE COMMANDER:

CHARLES A. BYRD
Major, AGC
Assistant Adjutant General

3 Incl
nc

Copy furnished:
HQ, USAECV (P)
HQ, 589th Engr Bn (Const)

MFR: ORLL was not staffed due to lack of significant unresolved problem areas.

ACTION OFFICER: CPT ARNOLD - LBN 4485

CH DST DIV	S
CH MS BR	
CH DOCT BR	19 Mar
CH TWG BR	
NO	19 Mar

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FROM PROTECTED MATERIAL

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COL HAYWARD, ACoTS, G3
RECORD COPY - RETURN TO AVHSC-DST

228-03

Lat Ind

HEADQUARTERS 15TH ENGINEER GROUP (CONSTRUCTION), APO 96238

Commanding General, USA Engineer Command Vietnam (Prov)
ATTN: AFCC-P&O, APO 96491

Commander in Chief, United States Army, Pacific, AFPM;
GROP-OT, APC 96558

1. Operational Report - Lessons Learned of the 589th Engineer Battalion for the Quarterly Period ending 31 January 1968 is forwarded.

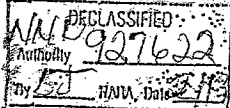
2. Concur with Section 2, Part I, Observations.

3. With reference to Section 2, Part II, Recommendations, paragraph 3, it is recognized that a large volume of administrative reports are required; however, the justification presented does not warrant a TO&R change. The solution to problems of administrative overload can normally be solved by a re-evaluation of unit administrative procedures, and a redistribution of administrative capabilities. The need for supervisors of indigenous personnel in a full time capacity is not justified. Indigenous personnel increase unit productivity above the programmed level, and it is believed that sufficient supervisory personnel are normally available in a unit. Most soldiers can perform this duty since the tasks being done by the indigenous labor are normally simple. On the other hand, skilled workers normally work with skilled U.S. soldiers and require no special supervision.

4. This Headquarters concurs with the recommendation of Section 2, Part II, paragraph 5a. Units deploying to Vietnam should be fully equipped. Specially trained men without their equipment soon lose their skills, and their talents are wasted. Every effort must be made to insure that units deploy with their authorized equipment, especially the uncommon items.

5. This Headquarters concurs with the recommendation of Section 2, Part II, paragraph 5b. Project design should be based to the maximum extent possible on command stockage lists.

George B Link
GEORGE B. LINK
COL, CE
Commanding



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AVBC-C (31 Jan 68) 2nd Ind CPT Ellersood/wt/DRT-163
SUBJECT: Operational Report - Lessons Learned (PCS CSRCR-65), for Quarterly
Period Ending 31 January 1968.

Headquarters, 18th Engineer Brigade, APO 96377 24 Jan 1968

TO: Commanding General, U.S. Army Engineer Command, Vietnam (Prov)
ATTN: AVCC-P&O, APO 96375

1. This Headquarters has reviewed the Operational Report - Lessons Learned of the 589th Engineer Battalion (Construction), as indicated, for the reporting period ending 31 January 1968.

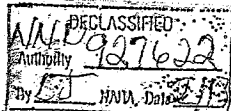
2. This Headquarters concurs in the remarks of the Group Commander rather than the Battalion Commander with respect to the recommendation to augment the TOE with additional administrative people.

3. The remainder of the recommendations of the Battalion Commander are concurred in with the following comment added: A request has been forwarded to establish centralized equipment pools in each Group area to provide the necessary specialized equipment for sophisticated projects.

Harold J. St Clair
HAROLD J. ST CLAIR
Colonel, CE
Deputy Commander

3 Incl
nc

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AVCC-P&O (31 Jan 68) 3rd Ind
SUBJECT: Operational Report-Lessons Learned (RCS CSFOR-65) for Quarterly
Period Ending 31 Jan 68

HEADQUARTERS, UNITED STATES ARMY ENGINEER COMMAND
VIETNAM (PREV), APO 96491 13 MAR 1968

TO: Commanding General, United States Army Vietnam, ATTN: AVHOC-107,
APO 96375

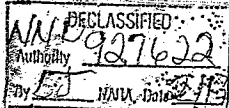
The attached ORLL, submitted by the 589th Engineer Battalion (Const),
has been reviewed by this headquarters and is considered adequate except as
follows:

Item concerning Hasty Mine Clearing, Section 2, Part I, Operations, para-
graph 1. The use of a dozer and sheepfoot roller, critical items of engineer
equipment, to clear mines in the manner described is not an appropriate use of
these items.

FOR THE COMMANDER:

3 Incl
nc

RICHARD B. BIRD
Captain, AGC
Assistant Adjutant General



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DEPARTMENT OF THE ARMY CPT HARBACH/BAGI 161
HEADQUARTERS 589TH ENGINEER BATTALION (CONST)
APO San Francisco 96238

EGD-BC-CO

31 January 1968

SUBJECT: Operational Report-Lessons Learned (RCS CSFOR-65), for
Quarterly Period Ending 31 January 1968.

THRU: Commanding Officer
45th Engineer Group (Const)
APO 96238

Commanding General
18th Engineer Brigade
APO 96377

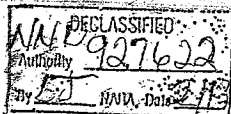
Commanding General
U.S. Army Engineer Command, Vietnam (Prov)
APO 96375

Commanding General
United States Army, Vietnam
ATTN: AVHGC-DH
APO 96307

Commander in Chief
United States Army, Pacific
ATTN: GPOP-OT
APO 96558

TO: Assistant Chief of Staff for Force Development
Department of the Army (ACSFOR DA)
Washington, D.C. 20310

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31 January 1968

SUBJECT: Operational Report-Lessons Learned (RCS CSFOR-65), for
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SECTION 1. Significant Organization and Unit Activities

1. ORGANIZATION: The following units comprise, or are attached as indicated, to the 589th Engineer Battalion (Construction) organized under TO&E 5-115E.

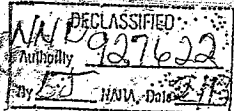
- a. Headquarters/Headquarters Company
- b. Company A, 589th Engineer Battalion (Construction)
- c. Company B, 589th Engineer Battalion (Construction)
- d. Company C, 589th Engineer Battalion (Construction)
- e. Company D, 589th Engineer Battalion (Construction)
- f. 511th Engineer Company (Panel Bridge) (Attached)
- g. 51st Engineer Platoon (Asphalt) (Attached)
- h. 23d Well Drilling Detachment (Attached)
- i. 444th Engineer Detachment (Concrete Mixing and Paving) (Attached)

This quarter has covered the season purportedly characterized by a marked slowdown in construction efforts due to the monsoon. Fortunately this area was not affected to the extent that construction efforts ever came to a complete standstill for any great length of time.

2. UNIT OPERATIONS:

a. Hq/Hq Co: The Utilities Section continued tasks of up-grading drainage in the Battalion Base Camp Cantonment by installing an additional nine culverts and headwalls. In the area of improving base camp security six guard towers were erected. A.I.K. daily hire personnel fortified the S-3 tent with sandbags and 55 gal drums filled with sand. The utilities section also constructed an eight room 20' x 64' dispensary. The Bn Theater was framed and covered with canvas enabling its use during the rainy season, a concrete pad was installed for the maintenance shop in the HHC Motor Pool, and hot water heaters were installed in the messhall providing improved sanitation. The water point, utilizing two Erdalator units, continued to serve an average of 15 company and battalion size units, producing 2,386,874 gallons of potable water during this period.

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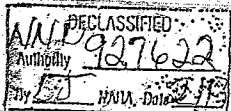
b. Company A: The quarry section had moved half its men and part of its equipment to An Khe from ROK Valley in October. By 1 November the Hon Cong quarry site at An Khe was in full scale production as was the ROK Valley site.

Between the two sites, over 36,000 yards of base course was produced for the month of November. Also produced was over 2,800 yards of 2" concrete aggregate, 270 yards of 3/4" DBST rock and 264 yards of 1/4" fines. By 1 December 1967 the entire quarry section had moved to An Khe and full scale production was beginning. Over 16,000 yards of base course was crushed for the month while running only one crusher for one 12 hour shift, daily. There was no 3/4" DBST rock produced because of the pressing need for concrete aggregate for the projects at that location. Over 3,200 yards were crushed for the month giving the battalion an ample supply of concrete rock. During January over 27,000 yards of base course were crushed along with 2,000 yards of 3/4" DBST rock and 600 yards of 1/4" fines. A multi-bench quarry was excavated with dozers, and front loaders were used to load the 15 yard Euclid dumps which charged the three primary crushers.

The asphalt section enjoyed near full scale operation due to the mild monsoon. During November much work was done on Route QL-1 by the section. One distributor was assigned to the 19th Engr Bn (Cbt) and was used to put a sand-asphalt treatment on QL-1 from Bong Son to Tam Quan.

The other distributor was utilized putting down prime coats and tack coats for work at the Cha Rang Maint Depot. During December the G.S. Maintenance facility and parking areas were given a DBST surface. The Tank Farm at An Khe required more than 16,000 gallons of RC-3 to be hand sprayed in order to protect the berms surrounding the tanks. Rt LTL 6B needed a quick surface treatment to keep down the dust and fill in many potholes developing on the surface. Along with Company "C" over 6 miles of road was given a sand-asphalt treatment in less than a week. January was an equally busy month for the asphalt crew. QL-19 was developing many ruts and potholes and immediate patching was necessary to keep the pavement intact. A six-man crew utilizing two dumps, an air compressor, jackhammer, backfill tamper and a 3-10 ton per hour portable pugmill was able to patch a large part of the road. Over three-fourths of the An Khe Pass was patched as well as many spots from Cha Rang to the An Khe Pass. A mixture of sand and 3/8" rock proved most successful with 5% mixture of RC-3. Company "C" was ripping up large sections of road that failed and the asphalt section sprayed prime coat and tack coat for the hot mix used to replace the old pavement.

The equipment section remained fully committed during this period supporting the other sections as well as operations in the other companies. Lowboys were used to haul equipment and supplies for S-4 daily.



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Dozers, front loaders and dump trucks from the equipment section supported the quarry and asphalt sections as well as projects for the rest of the battalion. One dozer completely re-excavated the ROK Valley Crusher site readying it for the coming spring construction season.

c. Company B: During this quarter, Company B remained at Camp Radcliff, An Khe, engaged in four major construction projects within the confines of the cantonment. The projects consisted of work on the connecting and parallel taxiways and access road to complement the recently completed concrete runway, a 190' by 175' maintenance hangar, two 54 foot airfield control towers, and the Camp Radcliff power distribution system. Completed during this quarter were the Main Post Exchange and berm stabilization at the 65,000 barrel tank farm.

An Khe Army Airfield-In the past three months at the An Khe Army Airfield a 300 foot north and 200 foot south overrun were completed, using compacted 3" minus rock and treated with MC-2 asphalt. The southern-most turnoff was also completed for temporary use during this period. The access road is approximately 25% completed and open to traffic. Upon its completion the road will allow for expansion of airfield parking areas.

Maintenance Hangar-This project is essentially complete save hanging the lights. This structure has a 6" reinforced concrete floor, 12 large sliding doors, and an electrical, compressed air, and grounding system within the floor. A personnel door placed in the rear of the building plus a 20 foot concrete entrance apron were additional items requested by the user.

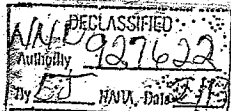
Airfield Control Towers-One tower is being constructed on the "Golf Course" (Helipad Area) and the other at the main airfield. This project entails the tower frame construction, a hexagonal control room module, and complete electrical wiring.

Power Distribution System-During this period the battalion received the mission of completing the permanent power distribution system for Camp Radcliff. This was formally under government contract to RMK contractors. The scope of this project requires installation of primary and secondary wire approximately 26 miles in length, over 300 transformers and 650 poles. The biggest problem has been the lack of proper equipment to complete the project. A power distribution team from the 35th Engr Gp recently joined the unit with their equipment lending a favorable outlook for project completion during the next quarter.

Main Post Exchange-The Post Exchange formally opened on 25 November 1967. Minor work was accomplished during this quarter consisting of steel plating the exterior of all doors on the structure and an attempt to prefab air-conditioning ductwork from masonite. This was unsuccessful due to the weight of the masonite. Upon receipt of ductwork material for the air conditioning system this facility will be completed.

Work has begun on a 75' by 202' Pascoe Maintenance hangar which is presently in the footer stage of construction.

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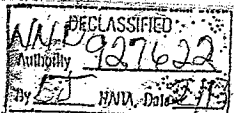
d. Company C: Being the only construction unit of the battalion in the area of responsibility (AOR) east of the An Khe Pass, this unit's responsibilities and workload increased considerably during the quarter. Among the projects completed were the Cha Rang Post Exchange Depot consisting of ten Pascoe 40' by 200' warehouses and 51,000 square yards (SY) of double bituminous surface treated (DBST) hardstand area, a 40' by 200' open warehouse with concrete floor, thirty-one helicopter revetments and a stabilized refueling pad, base preparation of the Qui-Nhon interim access road at DeLong Pier, construction of 160 feet of permanent bridging utilizing two pile piers and "24 WF" steel stringers, four stabilized timber firing platforms for a 175mm howitzer battery, and the erection of 110 feet of "double-double" and 50 feet of "double-single" panel bridging.

Work continued to near completion on a 120' by 400' Butler building and DBST hardstand area at the General Support (GS) Maintenance area at Cha Rang. Operational Support missions and major assistance type and self-help projects included a permanent 201 man cantonment area at Lane Army Airfield in the An Son Valley, site preparation for the installation of a power distribution plant in the Republic of Korea Army (ROKA) Valley near Qui Nhon, a land clearing operation in support of an artillery battery site set-up, salvage and recovery of a downed aircraft, several minesweep missions, and repair of major damage to a blown bridge on QL-19.

Maintenance of Routes QL-19 and LTL-6B continued involving repair of sub-base failures on QL-19 and a sand asphalt treatment on 6.7 miles of LTL-6B. Earthwork preparation has begun on a site location for the installation of 21 Porta-Kamp Trailers which will house employees of the Cha Rang PX Depot. A water-borne sewage system, potable water system, and electrical system will be installed for hook-up with the trailers.

e. Company D: During this period the unit was fully committed to directed projects, operational support missions and civic action activities in the An Khe AOR. Chief among these were the completion of a 400 bed hospital for the ROKA in the An Son Valley, continued upgrading of Route QL-19 from the An Khe Pass to the base of the Mang Giang Pass, upgrading of Route TL-3A from junction with QL-19 to Vinh Thanh, construction of the 1st Cavalry Division Supply Point Class II & IV and Class III yards at Camp Radcliff, rehabilitation of roads and drainage in the 1st Cav Ammunition Storage Area, construction of two taxiways and 11 revetments on the "Goat Course" heliport, frequent mine sweeps on QL-19 and TL-3A, and earthmoving support for an elementary school on Route TL-3A and a refugee village on Route QL-19.

The company experienced a turnover of nearly 70% (106 losses against 158 average strength) during this period, compared with turnover rates of 31% (55 losses against 178 average strength) and 19% (35 losses against 187 average strength) for each of the two preceeding quarters. This personnel turnover caused some deviation of effort from mission activities to training newly arrived personnel from out-of-country and orienting replacements from in-country sources. Toward the end of the quarter, an agreement was reached with the 1st Air Cavalry Division Training Center to accept all replacements for a 4 day training period. This arrangement should prove valuable in providing well trained personnel.



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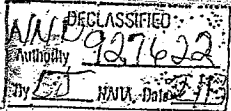
f. 511th Engr Co (PB): During this period, this unit operated primarily under the secondary mission of a dump truck company, logging 133,250 vehicle miles in support of battalion projects. These projects included the upgrading of nearly 50 miles of road requiring select fill and crushed rock, support of the battalion quarry and maintaining stockpile materials for the concrete plant. Additional tasks at the quarry entailed construction of a generator shed and the erection of fighting bunkers on the quarry perimeter.

Under its primary mission the unit made extensive repairs to, replaced wear tread on, and upgraded several panel bridges along Route QL-19.

Other tasks involved installation of culverts, improvement of access road and parking lot at Lazy Acres, Camp Radcliff, cantonment preparation for a newly arrived unit, minesweep of QL-19 for a total of one month during the period, pre-fab yard operation, and transportation support for the 173rd Airborne Brigade during alerts.

This unit also conducted platoon training on the erection, reinforcing, and dismantling of the M-2 panel bridge on five (5) separate days. This was necessary because of the steady influx of new personnel, many of whom have never worked with the panel bridge before.

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g. 51st Engr Plt (ASP): During the months of November and December this unit was engaged in DBST work on Rt LTL 6B and the Cha Rang maintenance depot in support of Co "C". A pothole crew was employed as required on road repair and maintenance on QL-19 from the top of the An Khe Pass, east, to it's juncture with QL-1.

In the latter part of December the asphalt plant arrived and by 7 January site preparation for the asphalt plant began. The plant is located adjacent the battalion crusher at Hon Cong mountain in An Khe and is 60% complete regarding actual erection of the plant.

h. 23d Well Drilling Detach: Due to the non-availability of well drilling equipment this unit's two men were used in support of Company "A" missions as deemed necessary by the Company Commander.

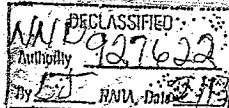
i. 444 Engr Det (CM&P): This past quarter the weather proved to be the prime factor in slowing this unit's concrete production. With the presence of mild monsoon rains, site preparation for the placement of concrete was noticeably hampered due to wet ground conditions. The necessity for a dry, well prepared surface caused many projects to be delayed until those surfaces could be worked to provide a suitable base for the application of the concrete. Consequently, this unit's production output went from slightly under 10,000 cubic yards for each of the two previous quarters to less than 3,000 cubic yards for this quarter.

This unit faced a serious problem with personnel rotation, having over fifty percent rotating on the same day. These problems were solved, at least for the present, when forty-six percent of this unit's personnel extended for an additional six months. Of that forty-six percent, twenty-eight percent extended for another six months, greatly relieving the large rotational hump that would have occurred.

3. PERSONNEL AND ADMINISTRATION:

a. During the quarter, the battalion had an overall enlisted strength level of 998, or 50 below authorized strength. This represents the strength figures of all the units within the battalion; HHC, 4 line companies, 51st Engr Plt (ASP), 444th Engr Det (CM&P), 511th Engr Co (PB), and the 23d Well Drilling Detachment.

b. During the cited period, the Battalion underwent a rotational hump alleviation program. A total of 130 persons were exchanged with other units. There were another six lesser changes. These consisted of swapping five to 15 men at one time with other units within the 45th Engr Group (Const).



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3. Instead of rotating personnel over a one or two month period, as originally intended, the rotation will be accomplished within a two week period. Future rotation hump programs should insure that rotational humps are spread over larger time spans so that units can successfully integrate new members into the command before the next exchange takes place. This would do much to increase the value of the rotational hump program.

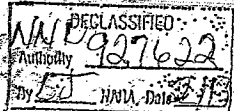
4. CIVIC ACTION: During this period the battalion was recognized by the Commanding General of the Qui Nhon Support Command for having made the outstanding contribution to the civic action program in this area during the month of December. This accomplishment is reflected in the contributions for this quarter which follow:

- a. Completion of the Binh Khe High School, including up-grading the access road and leveling the playgrounds.
- b. An average of 240 patients were examined each month at the battalion aid station and over 400 patients per month on MEDCAP visits.
- c. An average of 18 in attendance at weekly English classes.
- d. Distribution of over 400 gifts at Christmas.
- e. Electrical wiring installed at the Phu Phong Orphanage.
- f. Donation of \$421.00 from the Chaplain's Fund for civic action work in Phu Phong.
- g. Continued construction of the elementary school at An Khe.
- h. The donation of lumber, paint, and cement to aid in the construction of a resettlement camp.

These highlights reflect the going concern for and participation in the civic action program of the battalion.

5. MORALE AND WELFARE OF BATTALION: In the last quarter there has been an increase in chapel attendance and continued high morale of the battalion. The chapel services have been scheduled where maximum participation is possible. The high state morale is due to several factors: Most of the battalion has been in Vietnam for ten months and they have adjusted well; the physical facilities have improved; there is a movie scheduled every night; and the men are aware that they can discuss their problems with their immediate superiors. The battalion sundry fund continues to enjoy a considerable profit enabling the contracting of floor shows on a regular monthly basis.

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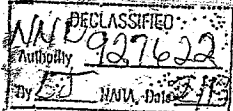
6. INTELLIGENCE AND SECURITY: During this period 13 mining incidents have been recorded in our area of operations. Seven of these occurred on Route TI3A during the time that Company "D" was upgrading the road. Company "D" had two vehicles involved in the minings, one a 3/4 ton truck in which two personnel were injured requiring hospitalization, and the other a 5 ton dump truck in which the driver was only slightly injured. The remaining incidents were responsible for 3 US WIA, 6 Vietnamese KIA, and 1 Vietnamese WIA. The majority of the minings happened during the period that Company "D" was working on the road. The mines were believed to be 105mm rounds detonated by pressure devices.

Six minings have occurred in this time period on QL 19. Two of these were placed along the shoulder of the paved road and the remaining four were placed on the road in unpaved areas. In the past mines have also been placed under the asphalt pavement, but none during this period. The minings on QL 19 have resulted in 2 US WIA, 3 Vietnamese KIA, and 8 Vietnamese WIA. All minings were followed by a minesweep of the immediate area and subsequent road repair. At no time has there been any delay in movement of traffic as a result of damage to the road caused by mines.

During this period there have been two attacks on bridges on QL 19. The first attack occurred on 6 December on bridge 19-12. The enemy placed what appeared to be shaped charges on the westbound lane. The blast tore a hole in the concrete deck 4 feet long and 10 feet wide slightly damaging one of the steel stringers. The bridge was repaired by reinforcing the stringer and replacing the damaged portion of the concrete deck. The damaged lane was receiving traffic seven days after the attack.

On 27 January 1968 one concrete hammer-head pier on the 6 pier bridge 19-11 was blown by the enemy dropping two 50' spans of permanent bridging into the river. One of the spans had been previously placed by this unit in August 1967. Within twelve hours of notification, traffic was again flowing over 160' of double-single panel bridging erected over the gap.

There have been no instances of attack or attempts to attack the Bn Base Camp or the Cha Rang area where Company C is cantoned. The elements at Camp Radcliff have experienced several overt attempts by the enemy to infiltrate Camp Radcliff often accompanied by mortar and B-40 rocket barrages. The 511th Engr Co (PB) has suffered the first casualty due to hostile action since the Bn has been in VN, in action at Camp Radcliff during one such enemy breach of the barrier at that location.



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7. LOGISTICS:

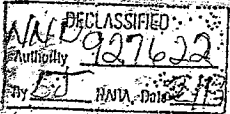
a. Maintenance: The maintenance sections at all levels performed admirably, maintaining much needed construction equipment on projects throughout this period. The Direct Support (DS) section continued to provide complete maintenance support at the battalion's base camp and An Khe locations. The DS section accepted 186 job orders for repair, evacuating only six of these to higher maintenance. Additionally, the Battalion Maintenance Section which handles all ordnance job requests had to evacuate only 66 pieces of ordnance and equipment to the direct support level. This internal repair of equipment is indicative of the battalion's capability to maintain its own equipment and attribute to the success of its preventive maintenance programs. Deadline percentages for this period were six per cent ordnance and eleven per cent engineer, with an overall deadline rate of eight per cent.

b. Supply: To meet project and "Self Help" material requirements, the S-4 has continued to operate with Class IV yards in the battalion's two operational locations at the Battalion base camp and Camp Rodoliff, in the. The acquisition of one of the two 10,000 lb forklifts, authorized by special letter, during the latter part of this report period eased construction material handling problems experienced during the previous nine months in country. The full time availability of organic material handling equipment has allowed the S-4 Section to begin a much needed re-warehousing of Class II & IV items at its base camp supply yard thereby making materials more accessible for issue, restockage and inventory.

With the close of the calendar year the S-4 began a recheck of all its outstanding Class IV material requisitions. The S-4 discovered many of its requisitions were not in fact valid though supposedly valid "due-out" status had been received from the support depot's Automatic Data Processing (ADP) machine. Consequently the S-4 had not been receiving all its requested materials. This problem of valid "due-outs" will be eliminated during the coming year as the support depot now plans to publish 30, 60 and 90 day ADP due-out reconciliations to each requisitioner for verification.

Administratively the S-4 has continued to handle the property book and supply responsibilities for units attached to the battalion. This has proved a very satisfactory arrangement. The permanent local hire yard foreman has been trained to handle minor material handling tasks and this has helped off-set lack of TOE personnel in the Class IV base camp yard.

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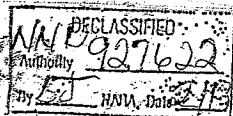
Section 2. Part I. Observations (Lessons Learned)

PERSONNEL:

1. ITEM: Cross Training of Skilled Laborers
2. DISCUSSION: Being employed in many jobs requiring the same type of work often finds an element without the required skilled labor on hand when necessary. This is particularly true when it is a skill that is not available in large quantities such as welders, Dewalt saw operators, steel cutters, etc.
3. OBSERVATION: Through an interesting cross training program of all personnel in the unit, these types of skills can be learned and are available to all levels when the need arises. This makes small elements less dependent, and more functional as an independent work force.

OPERATIONS:

1. ITEM: Hasty mine clearing
 - b. DISCUSSION: While working on Route TL-3A, an area of frequent recorded enemy mine action, a dozer and sheepsfoot roller were used to clear the road of pressure sensitive mines prior to beginning work. On one occasion, a 3/4 ton vehicle following the dozer was damaged by a mine which the sheepsfoot failed to detonate.
 - c. OBSERVATION: The spacing between a sheepsfoot roller's feet will not assure detonation of pressure sensitive mines after one pass. A road should not be assumed clear until at least two passes and possibly several have been made.
2. ITEM: Enemy Mining of Road Shoulders on sharp or hairpin curves.
 - b. DISCUSSION: On QL-19, in An Khe Pass, recent enemy mining incidents on the shoulders of hairpin curves indicate enemy anticipation of vehicles leaving the road when making wide turns.
 - c. OBSERVATION: Enemy mining activity on asphalted areas are rare, therefore the placement of asphaltic cement on road shoulders or other areas noted as frequent mining locations is valuable.



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3. a. ITEM: Concrete screed for large placements of concrete.

b. DISCUSSION: While placing concrete in large pad areas with long screed distances it was found difficult to maintain any reasonable amount of level on the screed itself.

c. OBSERVATION: To screed effectively over large distances the following was found to be very effective. The screed was constructed as usual, utilizing a 3" x 8" as the base of the screed, while along the base and leading edge of the screed a 3"x3"x1/2" angle iron was bolted. This was found to be very effective because of its rigidity and smooth leading edge.

4. a. ITEM: Fluorescent light fixture installation.

b. DISCUSSION: During the installation of fluorescent fixtures on one of the projects it became evident that the number of fixtures required to be hung would entail considerable man hours and materials hard to acquire.

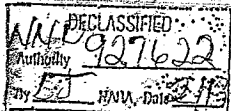
c. OBSERVATION: Since the lights were to be hung in groups of five and six, a system was devised to tie them together to be hung as a unit. The lights were first connected end to end with a piece of stock steel 1/2"x2"x desired length. A 1/2" nut was welded on the stock steel strap at specific locations. 1/2" rebar was cut in lengths to match the slope of the roof, and 1/2" bolts with heads cut off were welded to the ends of the bar. One end of the bar screwed into the bolt which was mounted on the steel on the fixtures. Holes corresponding in spacing to the nuts on the strap were burnt into the flange of the truss where the lights were to be hung. The bar with the bolts attached to the ends was then put through the hole and the nuts were put on securing the fixtures (See Inclosure #1)

5. a. ITEM: Steel picket driver

b. DISCUSSION: Throughout the past year we have been engaged in both fence repair and installation. Utilizing indigenous personnel we found it slow and difficult for them to drive pickets with a sledge hammer.

c. OBSERVATION: To make the operation more productive a picket driver was designed that slides down over the picket, and was found to effectively increase production. (See Inclosure #2).

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6. a. ITEM: Installation of doorrunners on pascoe buildings

b. DISCUSSION: During the first periods of utilization of the buildings at the PX Depot, the door runners (3/4"x3/4" angle iron) which were ramset and welded to the ramset bolts were found to be too weak to carry the traffic.

c. OBSERVATION: A more secure method was devised. Still using the same angle iron, a section of #3 rebar shaped in a U was welded to the inside of the angle with the open end down, and then the ends were grouted into the concrete.

7. a. ITEM: Handling of large sheets of metal roofing material.

b. DISCUSSION: During the past a large amount of roofing was done on prefabricated buildings. This roofing was in large sheets, and very difficult to handle.

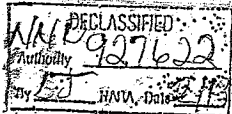
c. OBSERVATION: It was found to be faster and safer to lift the roofing sheet by sheet as they were used. To do this a pair of vise-grips with an eye welded on them was attached to a rope. They were clamped down on the end of the sheet and pulled up by the rope.

8. a. ITEM: Installation of a pneumatic vibrator on the cement debagging hopper screen of the Johnson Batch Plant.

b. DISCUSSION: The debagging hopper utilizes a one inch grate screen to separate any large chunks of cement from going into the hopper and clogging doorways and chutes. The screen performs its function satisfactorily but it takes a long time for the cement to sift through the grate utilizing gravity or manually forcing it through.

c. OBSERVATION: To speed up the sifting process a pneumatic vibrator was attached to the screening grate. The pneumatic pressure to manipulate the vibrator was tapped from the plant's compressed air system. This allowed the cement to be fed into the hopper as fast as it could be handled and practically eliminated any manual work in the screening process.

9. a. ITEM: Installation of a hinged trap door on the Johnson Batch Plant surge hopper.



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b. DISCUSSION: The manner in which the Johnson Batch Plant is designed requires that the cement surge hopper be filled first, before filling the cement storage silo. The silo is then filled from the overflow of the hopper, in other words, whenever the silo is to be filled so must the surge hopper. This is not advantageous if there is not to be any concrete production within the next twenty-four hours, the reason being that the hopper stored cement is very susceptible to moisture absorption. If the cement is left to stand for this period of time, especially in damp weather, it tends to become hard with the result of clogged doors and chutes, and cement build-up on diagonal and horizontal surfaces.

c. OBSERVATION: By the insertion of a hinged trap door in the top portion of the surge hopper, in the entrance way between the silo and the surge hopper, the cement goes directly into the silo, thus keeping the cement out of the hopper until it is needed for operational use, at which time the door is swung open and the cement allowed to flow into the surge hopper.

NOTE: EIR is being submitted

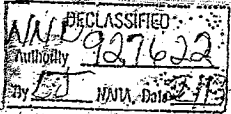
10. a. ITEM: Temporary turnout failure

b. DISCUSSION: In correcting failures in M8A1 matting due to sub-base collapse, $\frac{1}{2}$ " steel plate had been placed over the failed area. This proved to be unsatisfactory, so a new plan which required only a short time to execute was tried and has proven most effective time after time at the airfield. On the first temporary taxiway the area between the old runway and the subgrade placed for the new turnout failed because of channelized traffic and poor subgrade. The old runway and shoulder had no preparation prior to matting with M8A1. After the plate steel failed, it was decided to cut the matting out of the failed area, remove 12 to 18 inches of earth and replace it with a dry sand, cement, and aggregate mixture. This was hauled in 5 tons, graded off with a grader, and rematted with the joints of overlapping matting being welded. The water distributor then flooded the area so the lean mix would set up under the matting.

c. OBSERVATION: This was done in two areas on that particular taxiway and has given excellent results. Recommend it be used under matting where a stability is desired and the soil conditions require an increase in strength of the base course.

11. a. ITEM: Temporary Taxiway

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b. DISCUSSION: It was decided that the south turnout on the an Khe AAF would provide the airfield with two exits of temporary nature while permanent work was started on the north end. A lesson learned on the first turnout was that matting, although harder to lay on a crowned surface, will provide drainage for the base course. Therefore a slight center crown was placed on the south turnout before matting. Subgrade was placed up to the old south turn-around which was composed of PSP on an asphalt surface. After cutting down about five feet to place fill, groundwater was found seeping from under the old runway turn-around. At that junction a three foot cut was made with an intrenching machine, one foot of 2" minus rock was placed, 6" perforated pipe was set, and covered the remainder with clean 2" rock forming a French drain. On top of this was placed M8A1 matting. The connecting taxiway was treated with MC-2 prior to matting the surface to seal off the base course. The entire turnoff was put in with a crown to improve the drainage. A 10" timber was also implemented for the transition between the concrete runway and the M8A1 matting. After locking the timber into place with three foot rebar, the matting was lag screwed to the timber forming a smooth transition.

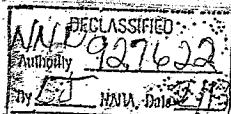
c. OBSERVATION: The timber connection used on both temporary turnouts has proven to be excellent with no sight of failure areas. The crowned turnout has proper drainage and the French drain has formed just the wall that was needed to drain the subgrade under the old runway and prevent contamination of the base course placed for the permanent turnout.

12. a. ITEM: Erection of doors for Nichimen 175 x 190 foot maintenance hangars.

b. DISCUSSION: The Nichimen 175' x 190' maintenance hangar has twelve sliding doors which make up the front of the building. The key to installing the doors is utilizing the center roll-up door and using false door rails. By using the space provided by the center roll-up door, the boom of a crane can lift the doors upright and place them on line. Then by using a 2"x6" lumber member as a false door rail, the door can be rolled into place. While the door is being rolled into place, two tag lines should be fastened to it in order to help pull the door along. The top of the door should be tied to the boom of the crane as shown on the plans.

c. OBSERVATION: If the door rails are level and the door guides straight, by using the above method all twelve doors can be installed in a day and a half.

13. a. ITEM: Reuseable concrete floor slab forms (See Inclosure #3)



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b. DISCUSSION: A reusable form for concrete floor slabs can be made by using two pieces of 2"x6" lumber, one vertical and one horizontal. To insure that the vertical form and horizontal form remains perpendicular, a brace should be placed every two feet. The form is held in place using at least a #6 rebar driven in the ground every five feet. The form can be brought to the exact elevation desired by placing a layer of sand beneath it. The sand is used as a leveling course to get the form to the desired elevation. If a keyed joint is desired, a fence picket nailed to the form provides an excellent joint.

c. OBSERVATION: This method of forming was used on a 190' x 175' hangar and it will be used on future large buildings, saving many board feet of form lumber and numerous man hours.

TRAINING AND ORGANIZATION:

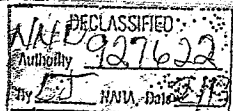
a. ITEM: Training of indigenous personnel.

b. DISCUSSION: The utilization of indigenous personnel, both skilled and unskilled has been habitually restricted to repetitive type tasks such as prefabricating trusses and frames from patterns, simple masonry work, and manual labor. Rarely are local national employees provided with any but their own tools. Supervision is at a minimum. As an exploratory project, 15 local national carpenters, previously utilized in a prefabrication facility, were reassigned from that facility to work on a 1:1 ratio with military carpenters. Their personal tools were confiscated and replaced with US made tools. Their assignments were programmed to start with simple tasks, hopefully working up to unsupervised projects calling for highly developed skills.

c. OBSERVATION: As expected, a great reluctance on the part of the 15 local carpenters was evident, but countered somewhat with a short briefing on what the program was to accomplish. Though visibly skeptical, all 15 agreed to work with the program and learn the American way.

Less expected was the reluctance on the part of the military personnel assigned to the program. Reasons for the reluctance varied from excuses that "they will slow us up on our jobs" to "they can't understand me". By way of briefings, the initial reluctance disappeared, only to reappear on the job. When unsupervised, the local national and military groups broke apart and returned to familiar tools and procedures; only constant supervision forced the program along. Within six days, a change was noticeable. The locals no longer brought their own tools, to which they had reverted when no supervision was around. The military were beginning to call their trainees by name and were seen with them in small groups teaching them measurements, how to hold a hammer, and how to saw with one hand.

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c. OBSERVATION: (Continued) By two weeks, the relationship between the two groups became a natural one and duties were assigned only on the basis of ability to understand what had to be done, a problem that should be resolved as greater English fluency is obtained by the locals. After four weeks, the program is a moderate success and the 15 indigenous personnel are performing useful tasks, which have increased production markedly.

INTELLIGENCE: None

LOGISTICS: None

Section 2, Part II.- Recommendations

1. PERSONNEL: None

2. OPERATIONS: None

3. TRAINING AND ORGANIZATION:

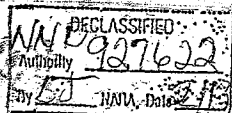
The great volume of operational and administrative reports at company level overwhelms the clerical and administrative personnel assigned by TO&E. Augmentation, pulled from line platoons, must be used in order to meet deadlines and handle the load. Additionally, with indigenous personnel authorized for hire, provision of trained military personnel as guards and administrators is wasteful and diverts from intended duties.

Future Tables of Organization should provide for administrative personnel in quantities commensurate with anticipated work load in the Theater of Operations. Provision for supervisors of indigenous personnel as a full time duty is also recommended.

4. INTELLIGENCE: None

5. LOGISTICS:

a. This battalion deployed with serious air compressor shortages and none of its authorized water distributors. After nine months in country the battalion received one of its six authorized water distributors. No projected date for the issue of other deployment TCE shortages has been received. The 51st Engineer Platoon (ASF) arrived in country September 1967, less its entire asphalt plant, all its rollers and paving equipment. Toward the end of this report period they received most of their asphalt plant and one of two paving machines. No information has been received on their rollers. Similarly the attached 23rd Well Drilling Detachment deployed less its well drilling capability.



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The projected date of delivery of their equipment is 31 July 1968 or nearly 10 months after the 23rd Detachment arrived in-country. Engineer units, especially specialized units, should be deployed with all authorized items of equipment to effectively perform their intended missions.

b. Several projects presently under battalion directives were originally intended to be constructed by civilian contractor. Many of the materials specified on the construction plans, which came through command channels, are not available in normal depot construction materials stockage. Therefore there is considerable lag of construction time while specialized materials are individually requested through channels. Construction materials specified by designers for projects should be taken from the command wide approved construction materials stockage list to allow expeditious construction

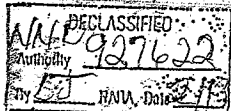
6. COMMANDER'S COMMENTS:

a. Enemy Activity: As noted previously the unit experienced a marked increase in enemy activity both in An Khe and in the Cha Rang area. An Engineer Construction Battalion is not ideally organized for the combat role thrust on this unit as it lacks sufficient crew served weapons, M79 Grenade launchers, and ammunitions. In addition, local depots have refused to issue hand held flares to Engineer units. The Battalion has supplemented its weapons and communication by loans from other units. Its response to enemy incidents has been commendable.

b. Organization Day: On 21 January 1968 the unit celebrated its second anniversary of its activation at Fort Hood. Suitable programs were conducted at both Cha Rang and An Khe which included company competitions, picnic fare and professional entertainment. The highlight of the day was the awarding of 28 decorations (Bronze Stars, Army Commendation Medals, and Purple Hearts) to members of the 589 Engineer Battalion (Construction).

c. Equipment Pools: The MTO&E system has proven to be notoriously unresponsive to the ever changing situation of units in Vietnam. This unit, in addition to its need for combat capability cited in paragraph 1, has been called on for construction more sophisticated than that envisaged by TO&E proponents. An example of this is the installation of a primary and secondary high voltage system at Camp Radcliff. In addition, the Battalion is scattered at three locations some fifty miles apart. Land line communication is non-existent, and we must depend on radios. The TO&E does not furnish sufficient radios for this environment. The situation of this unit, while not unique, is far different from a Battalion in the Long Binh area, as an example, which is far more centralized.

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The answer to this problem would appear to be a Class IV equipment pool of Engineer, Ordnance, Signal, QM, etc. equipment that would be readily available for justified requirements. Early and vigorous implementation of this scheme would materially assist many units in Vietnam.

4 Incl
as
Allen F. Grum
LTC, CE
Commanding

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