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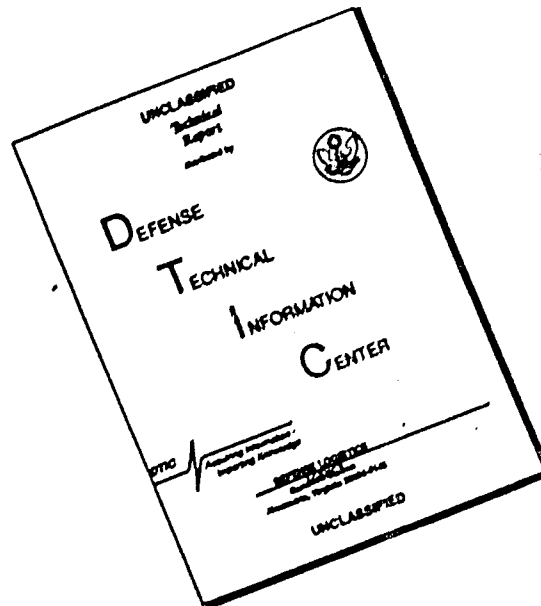
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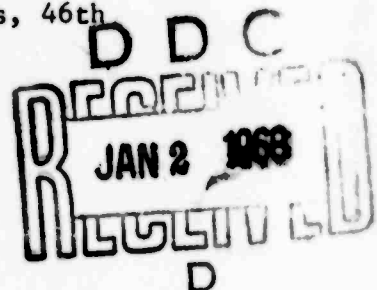
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AGAM-P (M) (27 Jun 67) FOR OT

30 June 1967

AD 824479

SUBJECT: Operational Report - Lessons Learned, Headquarters, 46th Engineer Battalion (Construction)



TO: SEE DISTRIBUTION

1. Forwarded as inclosure is Operational Report - Lessons Learned, Headquarters, 46th Engineer Battalion (Construction) for quarterly period ending 31 January 1967. Information contained in this report should be reviewed and evaluated by CDC in accordance with paragraph 6f of AR 1-19 and by CONARC in accordance with paragraph 6c and d of AR 1-19. Evaluations and corrective actions should be reported to ACSFOR OT within 90 days of receipt of covering letter.

2. Information contained in this report is provided to the Commandants of the Service Schools to insure appropriate benefits in the future from lessons learned during current operations, and may be adapted for use in developing training material.

BY ORDER OF THE SECRETARY OF THE ARMY:

Kenneth G. Wickham

KENNETH G. WICKHAM
Major General, USA
The Adjutant General

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DEPARTMENT OF THE ARMY
HEADQUARTERS, 46TH ENGINEER BATTALION (CONSTRUCTION)
APO 96491

15 February 1967

SUBJECT: Operational Report - Lessons Learned, (RCS CSFOR-65) for
Quarterly Period Ending 31 Jan 67

THRU: Commanding Officer, 159th Engineer Group (Const), APO 96491
Commanding General, US Army Engineer Command Vietnam (Prov),
ATTN: AVCC-BC, APO 96491
Commanding General, United States Army, Vietnam, ATTN: AVC-DH,
APO 96307
Commander in Chief, United States Army, Pacific, ATTN: GPOP-MH,
APO 96558

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

Section 1, Significant Organization or Unit Activities

1. (U) Command: LTC William V. McGuinness, Jr. assumed command of the Battalion on 15 December 1966, replacing MAJ James D. Raudebaugh who temporarily commanded after the departure of LTC George Mason on 10 December 1966.

2. (U) Personnel, Administration, Morale and Discipline;

a. The 46th EBC is organized under TO&E 5-115D. Two units are attached; Company C, 577th EBC under TO&E 5-118E, and the 536th Engr Det (PC) under TO&E 5-129E with change 2 and G.O. 149 U.S. Army Engineer Center. An organizational chart of the Battalion is attached as Inclosure 1.

b. Also employed by the Battalion at the close of this quarter were the following units:

(1) The 617th Panel Bridge Company - under our operational control for two bridge construction missions in the Delta.

(2) Most of the 643rd Pipeline Construction Company under our operational control for a POL project in Saigon and Tan Son Nhut.

(3) The entire quarry platoon of the 103rd Engineer Construction Support Company.

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c. All total there were approximately 2,500 US and Vietnamese working for the Battalion at the end of this quarter.

d. Personnel Strength: The Battalion is authorized a 10% overstrength; however, as of 31 Jan 67, the assigned strength was 90% of authorized, and present for duty strength was 83% of authorized. During this report period, the only critical MOS shortage was 51H40 (Const Supervisor) which averaged 40% below authorized strength. A large number of rotations have been experienced during the quarter which have not been balanced by replacement personnel; however, an appreciable amount of voluntary extensions have prevented aggravation of the problem.

e. Morale and Welfare: Morale is generally very high, even though Battalion operations are maintained on a seven day week and a two shift day. Personnel of this unit take considerable pride, both in their past accomplishments and present activities. As evidence of the state of morale, one hundred and one members of the Battalion have voluntarily extended. Recreational improvements on a self-help basis have been initiated and an active inter-company sports program is being pursued. To get out of tents the billets are slowly being improved on an austere self-help basis, using exclusively US labor on this effort. Furthermore, only that soldier effort is used which is available over and above the normal 70-hour work week.

3. (U) Intelligence and Counterintelligence; Considerable effort has been devoted to strengthening the counter-intelligence procedures of the Battalion. Clearances have been or are being obtained for our personnel in critical positions. S-2 operations were reestablished. The contents of classified material containers were inventoried and destruction initiated on all non-essential and outdated documents.

4. (U) Plans, Operations and Training;

a. The Battalion is committed to heavy construction in three locations: The Long Binh - Bien Hoa - Saigon-Tan Son Nhut area, the Vung Tau - Nui Dat area, and the Dong Tam area. These areas are interconnected on a regular basis only by air and water. Construction is balanced vertical and horizontal and includes base development, port construction, airfield construction, and highway construction. Approximately 35% of the Battalion is currently stationed in Vung Tau as a task force comprised of D Co, 46th EBC (reinforced), the 536th Engr Det (PC), and the attached quarry platoon of the 103rd Engr Const Support Company. Company C, 577th EBC was recently committed at Dong Tam in the Mekong Delta to build the 7,500 man base camp for the 9th Infantry Division. It was the first non-divisional Engineer unit into the Delta.

b. Company A, 46th EBC has been involved in heavy construction in all three locations by providing both equipment and maintenance support. The company's field maintenance platoon has received and processed two new items of equipment: the Caterpillar D7E Tractor and the Clark 290M Wheeled Tractor-Scraper. Personnel from the platoon have greatly assisted in sponsoring classes for training for all elements of the 159th and 79th Engineer

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Groups, on the above items of equipment. During the quarter Company A closed a laterite pit which had contributed to the building of over 50 miles of roads in the Long Binh area. The Company also opened a new laterite pit of excellent quality material which is expected to produce approximately 500,000 cubic yards of fill. The quarry section remained attached to Company D, 46th EBC at Vung Tau and is employed at the quarry which supplies rock for all construction in the Vung Tau area and makes limited shipments to both Long Binh and Dong Tam. Asphalt crews from "A" Company have applied double surface treatments in support of airfield construction at Tan Son Nhut and Vung Tau. The principal dust palliative used has been peneprime, applied either undiluted or cut with diesel.

c. During the quarter, Company B, 46th EBC has been primarily engaged in the following projects: a 6,000 man cantonment, the Long Binh Ammunition Supply Point (ASP) and the Long Binh Supply and Storage Area. During this period, the 6,000 man cantonment was completed and all facilities under the scope of work which included 225 ammunition storage pads, 30 miles of connecting roads, 4.5 miles of perimeter road and 1310 acres of clearing. The Long Binh Supply and Storage Area is 75% complete to include 326,400 cubic feet of refrigerated storage space. During the past quarter, the Class I, II, and IV areas were completed and occupied by quartermaster units. In addition to assigned projects "B" Company has the responsibility to supervise and manage the Battalion Carpenter Shop which employs one hundred carpenters and thirty laborers hired from the local population. During the quarter, over 300,000 board feet of lumber were incorporated into a large variety of prefabricated and pre-cut items to include: one and two story buildings, latrines, showers, water towers, and doors. In an effort to decrease Engineer troop requirements, skid mounted latrines and showers were pre-cut and banded for issue to incoming units which would accomplish erection in accordance with an instruction pamphlet included with the kit. The majority of the carpenter shop effort is directed toward prefabricating standard wall frames and roof trusses in order to expedite base development. Through the combined efforts of the carpenter shop and on-site construction, "B" Company in the past year has built or prefabricated latrines for 45,000 people, showers for 46,000 people and a total amount of vertical construction equivalent to a building 20 feet wide and 6 miles long.

d. During the quarter, Company C, 46th EBC has been primarily committed to the following projects: drainage of Smith Compound at Bien Hoa, base development at II FF(V), construction of a staging area, construction of nurses' quarters at the 93rd Evacuation Hospital and taxiway and hard stand construction at Tan Son Nhut. To date, 463 feet of culvert has been placed for the drainage of Smith Compound, and the project is 60% complete. The major projects at II FF(V) consist of constructing a 70 x 140 foot Inland Steel Building for a map depot, constructing a PX warehouse consisting of a jumbo quonset mounted on four foot foundation walls (75% complete), constructing general officer's quarters (10% complete), constructing an Air Defense Cantonment Area (80% complete). The staging area has been completed to provide roads, hardstands, latrines, showers and drainage system. The airfield construction at Tan Son Nhut consists of providing an open storage area covered with PSP, a double surface treated hardstand area and a double surface treated taxiway. This project is 90% complete. Upon the departure of Company C, 577th EBC "C" Company assumed construction responsibility for the nurses' quarters at the 93rd Evacuation Hospital,

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Long Binh. This project will provide 10,000 square feet of living space and is 50% complete.

e. During the quarter, Company D, 46th EBC has been committed on the following projects: Vung Tau Airfield construction, open storage and ASP construction, and port construction and cantonment construction. The scope of airfield construction included drainage and resurfacing 4,500 feet of runway. The project is complete. The POL storage is of 100,000 barrel capacity and is now 70% complete. "D" Company is also responsible for providing area road maintenance and combat support of operation "Duck". However, commitments in support of operation "Duck" have been kept to a minimum, consisting primarily of maintaining surveillance on the bridges between Vung Tau and Long Binh. The quarry platoon of the 103rd Construction Support Company is attached to Delta Company and produced approximately 100,000 cubic yards of rock during the quarter for Vung Tau, Long Binh and Bear Cat, and the Delta.

f. During the quarter, the 536th Engineer Detachment (PC) continued construction of the causeway portion of the De Long pier facility at Vung Tau, beneficial occupancy was achieved in early January. The Detachment is also constructing an aggregate off-loading facility, a POL Jetty and may soon be committed to extensive causeway and bridge construction across fast-flowing tidal estuaries along Highway 15. The total over water gap is about 1500 feet.

g. Prior to its departure for the Delta, Company C, 577th EBC completed the WAC complex at Tan Son Nhut, hardstands, drainage and water towers for the 15th Support cantonment at Long Binh, and the framing of the Nurses Quarters at the 93rd Evacuation Hospital, Long Binh. On 22 January 1967, the company moved to My Tho and after dismantling an existing Eiffel bridge and constructing two Bailey bridges, opened up Dong Tam for heavily loaded vehicles. The majority of the unit was moved by convoy while the heavy equipment was moved by landing craft. On 29 January 1967 the Company drove across its new bridges into Dong Tam. At Dong Tam, the Company will construct the 7,500 man base camp for the 9th Infantry Division.

h. Due to operational commitments, most training conducted is "on the job" and limited to MOS training. However, two hours are scheduled each Sunday morning for formal training, in both mandatory and technical subjects.

5. (U) Logistics: During an average 30 day period, the Battalion S-4 handle approximately 500,000 board feet of lumber including both issue and receipt, approximately 800 tons of bulk construction materials to include cement, corrugated metal, nails, etc., and a widely varying amount of other Class II and IV items. Discrepancies between materials listed in "on hand" stockage lists and those actually available in supply depots often cause delays in construction, particularly concerning plumbing and electrical supplies.

6. (U) Force Development: The organic work force of the Battalion is currently being augmented by approximately 870 permanent hire Vietnamese appropriated fund employees. This additional work force is disseminated to all Battalion units in the Long Binh Area and is being used on less highly

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skilled tasks in order to free U.S. personnel for more critical positions such as heavy equipment operators. As previously mentioned, local carpenter are being used to great success in the Battalion carpenter shop. One common building which is prefabricated in large quantities is a 20 x 100 foot tropical hutment which takes approximately 19 Vietnamese carpenters, six hours to construct the wall frames and 5 Vietnamese sixteen hours to construct the roof trusses. At an average wage rate of 26.60 Piasters per hour, this represents a labor cost of about \$43.73 for each building, or a little over 2 cents a square foot (prefabrication only). The appropriate Engineer troop labor cost is \$142.51 per building. In the past quarter, the carpenter shop has prefabricated slightly over one and one third miles of standard tropical buildings twenty feet wide.

7. (U) Command Management: The Battalion management is manifested through frequent project inspections, on-site coordination, and liaison with higher headquarters. Daily Battalion operations meetings have proven to be very useful both as a tool for project coordination and as a forum for discussing technical problems that are encountered during construction. A special position, Vung Tau Project Officer, was created to plan and coordinate the several Battalion elements at Vung Tau.

8. (U) Civic Affairs: This Battalion has demonstrated a genuine interest in civic action projects; however, the magnitude of operational commitments prevents any extensive projects of this nature. Weekly medical visits are made to the surrounding villages, enlisted men teach English during off-duty hours, and equipment and technical assistance is given on an occasional basis to the orphanages and refugee villages in the Long Binh area. During the Christmas season, all units extended invitations to children from nearby orphanages for traditional celebrations. At the same time, gifts and individual contributions were given to the orphanage directors.

Section 2, Part 1, Observations (Lessons Learned)

1. (U) Operations:

a. (U) Item: Penetrating Hardstands.

Discussion: Penetrating has been used extensively on laterite hardstands to prevent water penetration and to act as a dust palliative. However, if excessive quantities of fines exist on the surface when the penetrating is applied, the moisture sealing effect is lost due to the lack of cohesion among the fines. The resulting surface will not form a continuous layer and will rapidly abrade under loads of any appreciable magnitude.

Observation: This problem can be avoided by either sweeping or wetting and compacting the fines prior to application of penetrating.

b. (U) Item: Curing of Penetrating.

Discussion: We have experienced considerable damage to freshly penetrating roads due to the premature passage of traffic. We found that penetrating

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primed surfaces must be carefully barricaded and left undisturbed for at least 24 hours in order to cure properly.

Observation: If curing time cannot be permitted, an application of sand will blot the penepime sufficiently to allow the passage of traffic without creating severe damage to the surface.

c. (U) Item: Asphalt Dedrumming.

Discussion: During past operations, personnel dedrumming asphaltic products have not exercised due care in removing drum bungs and have allowed the rubber gaskets to fall into the fluid. When the drums are pumped, those gaskets have been found to consistently lodge in the elbow of the filler line on the distributor. When several bung gaskets become lodged, pump pressure is seriously reduced and problems are created both with dedrumming and spraying the asphaltic product.

Observation: We require dedrumming crews to turn in one gasket for each barrel processed.

d. (U) Item: Skid Mounted Latrines and Showers.

Discussion: Construction of skid mounted latrines and showers for unit cantonment areas is a continuing commitment. Loading, transporting and placing these bulky structures consumes considerable man and equipment hours.

Observation: Engineer man and equipment hours can be saved by fabricating standard precut kits. Each kit is banded for shipment complete with required plumbing and an instruction pamphlet. Non-engineer units have little difficulty in assembling these structures.

e. (U) Item: Clamshell Modification.

Discussion: Valuable equipment hours are consumed in changing from a hook to clamshell and vice versa on a 20 ton crane.

Observation: The following modification has been found successful in reducing the change over time. Place the clamshell bucket on the ground fully opened and cut the closing line above the bucket. Attach a cable thimble on the bucket end of the cable. This gives the bucket a permanent cable that does not need to be removed when attaching a hook. Attach a clevis to the boom end of the closing cable to facilitate connection and removal (See Inclosure 2).

f. (U) Item: Latrine Burnout Cans.

Discussion: Conventional methods of halving 55 gallon drums for use in latrines are extremely time consuming when large numbers are processed.

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Usual methods are with a welders torch, expending valuable oxygen and acetylene, or with hand tools.

Observation: A very effective method for cutting large quantities of drums is with the use of detonating cord. A successful technique is to fill the drums with water and make four complete turns around the drum at the level desired cut. Many barrels can be cut simultaneously using this method.

g. (U) Item: Roofing 70 x 140 Foot Inland Steel Building.

Discussion: The prescribed method for securing corrugated metal roofing to the purlin on this building is to drill holes and fasten with metal screws. This process is very time consuming and requires the use of power tools for speed.

Observation: If time is a critical factor, the roof assembly time can be greatly reduced by bolting 2 x 4 inch lumber over the purlins and nailing the sheet metal metal to the lumber.

h. (U) Item: Reefer Storage Construction.

Discussion: Past experience gained in constructing reefer complexes have saved effort on subsequent projects.

Observation: (1) Concrete pads must be level. Slight deviations will cause problems on box construction.

(2) Whenever possible, reefer panels made by different manufacturers should not be intermixed.

(3) Unassembled panels should be stored out of the weather since water will deteriorate the insulation.

(4) Drainage systems must be carefully planned prior to slab construction to accommodate the continuous condensation.

(5) A continuous, complete concrete complex is recommended to facilitate construction and drainage around reefers.

i. (U) Item: Expedient Fuel Pump.

Discussion: In a situation where fuels must be drawn from 55 gallon drums and mechanical pumping equipment is not available, an expedient pump can be fabricated from readily available materials.

Observation: An expedient pump can be constructed with a five foot length of one inch diameter pipe, a rubber hose of desired length, and a tire valve. Braze the tire valve securely onto the small bung so that air can be pumped through the valve. Braze the one inch pipe onto the larger bung so that when the bung is screwed in place, the end of the pipe will be

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near the bottom of the drum. Apply air pressure from an inflation hose.

j. (U) Item: Sand Cement.

Discussion: Due to a critical shortage of rock in the Long Binh and Delta area, we have been forced to reduce the quantity of this material in all phases of base development. Presently, a ring footer of standard concrete is placed, while sand and cement is being used for interior slabs and other structures not requiring high strength.

Observation: Sand Cement produces an adequate flooring for barracks and other buildings that are not subject to heavy and abrasive traffic. After considerable experience, the most successful mix found is the combination of 4.6 cubic feet of sand and 7.5 gallons of water per sack of cement.

k. Item: Use of Republic Steel Matting (RSM) and PSP on Laterite Pads. (U)

Discussion: In our experience laterite storage pads are adequate for heavy loads only if properly drained, compacted and sealed with peneprime or other sealing agents. Once laterite becomes saturated, its soil bearing capacity is drastically reduced and its value as a hard-stand is nil. It has been noted that many units occupy completed hardstands constructed by Engineer effort prefer to lay PSP or Republic Steel Matting on a self help basis.

Observation: We have encountered numerous examples where these steel surfaces cause serious problems after limited use. When small areas of the laterite become saturated, a weak spot is created which when traversed by heavy loads will cause deformation of the steel surface, progressive pumping and failure of the base. Such steel surfaces eventually become serious obstacles to the maintenance of proper surface drainage. When conditions of the steel renders the pad untrafficable it must be removed and the laterite must be reworked. We have found that a well maintained laterite has more longevity than one which has been covered with a steel surface.

l. (U) Item: Double Surface Treatments.

Discussion: During resurfacing operations at Vung Tau airfield considerable problems were encountered in finding a suitable asphaltic product for the double surface treatment. An RC-3 was ordered through supply channels, field tested, and was applied under the assumption that the properties of the product would be consistent with the published specifications. However, upon application, the RC-3 failed to cure properly even after a two week period. In order to make a final determination, we obtained a laboratory test of the product through the auspices of the Okinawa District Engineer's Office. The results of the test showed that the product was an RC-3 but the penetration value proved to be 138.

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Observation: We concluded from the above test that the asphalt cement in the particular lot of RC-3 used for the Vung Tau airfield was structurally inadequate. The cause of the high penetration value can be attributed either to a faulty product, or most likely, to breakdown of the asphalt due to the long storage. AP-3 was subsequently used for the same purpose even though it produced the desired surface, it was found undesirable because of the difficulty incurred in application. We have concluded that RC-3 is the most suitable product now available but only if it meets the prescribed specifications as determined by laboratory testing. It would be very helpful if such a laboratory testing capability were to be developed in country.

m. (U) Item: Rapid Construction of Headwalls and Flumes.

Discussion: For these purposes we have extensively used sandbags filled with laterite because of the quick and easy construction, simplicity of materials and easy adaptability to Vietnamese day labors. However, when the sandbags rot especially under the wetting and abrasive action of running water, the structure tends to fall apart requiring construction repair.

Observation: Mix dry cement with the laterite (proportion about 12 to 1) before filling the bags. The action of water and aging increase the strength even after the sandbag rots away.

2. (U) Training and Organization:

a. Item: Ozalid Reproduction Equipment. (U)

Discussion: The TOE under which this Battalion is organized does not authorize an ozalid type blueprint machine. With 46 major projects and many task assignments, all of which require either complete or partial design at Battalion level, we have experienced considerable difficulty in reproducing or obtaining prints of drawings. The inability to reproduce such plans readily presents severe complications to the orderly execution of such a major program.

Observation: The one machine authorized at Group level will not meet the demands from the three subordinate Battalions and separate Companies. This situation becomes critical when down-time occurs. Because of the considerable heavy volume of our requirement whenever the Group ozalid is inoperable, we have to prepare work orders and await our turn in priority at other locations willing enough to assist us.

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b. Item: Inadequate Radio Communications. (U)

Discussion: The various units of the 46th Engineer Battalion are engaged on projects in four locations which are separated by a minimum of twenty miles. The in-country telephone system between these locations is totally inadequate for the operational needs of a Construction Battalion. The only long range radio available to the Battalion is the AN/GRC 19 of which the battalion and attached units are authorized eight. At present, one has been turned in, after waiting four months for repair; one has been in for repair for more than a month, and another was recently turned in for repair. Due to the difficulty in obtaining spare parts for these obsolete radios, an effective communications net cannot be maintained within the Battalion. This situation has a significant adverse effect on the Battalion operations.

Observation: The communications that could be provided by the new series of radios, would enable the Battalion to greatly improve its efficiency in the performance of its construction mission.

3. (U) Logistics:

a. (U) Item: POL tanks.

Discussion: During construction of the Vung Tau POL Tank Farm considerable problems were encountered because of the condition of gaskets, sealing compound and sealing putty. Apparently these items had been in storage for a considerable period.

Observation: Replacement items should be ordered for tanks which have been in storage for prolonged periods.

b. (U) Item: Asphalt products.

Discussion: Considerable problems were encountered in construction of the Vung Tau Airfield because the properties of the asphalt product (RC-3) used were not consistent with prescribed specifications. The penetration value of the product used was determined to be 138 through laboratory analysis. Such a high value created bonding difficulties in the surface, especially during the dry season when high surface temperatures undiminished by evaporative cooling, build up on the dark surface.

Observations:

(1) Asphalt cements in tropical climates should have lower penetration values to accommodate the high temperature found in the tropics. Penetration values of 60-70 are recommended for high traffic density surfaces and roads. Penetrations of 85-100 are recommended for light traffic.

(2) Cutbacks are commercially manufactured in three penetration ranges. The preferred ranges are:

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(a) RC - 80 - 120

(b) MC - 120 - 250

(c) SC - 200 - 300

(3) Specifications for military asphalt cutbacks allow a wide variance in penetration value.

(4) The cementing capability of an asphalt cement is inversely proportional to its penetration.

(5) Penetration increases with temperature.

(6) AP-3 is the lowest penetration (85-100) asphalt cement in the country.

(7) In country stocks of asphalt are; RC's, MC's, SC's, and AP-3.

(8) The engineering properties of the asphalt cement constituent of the asphalt cutback can be altered through prolonged storage.

(9) Outbacks can be manufactured in the field. ?

Conclusion: ?

(1) The present in-country stockage of asphalt cements does not have low enough penetration to satisfy the demands for a high traffic volume pavement in tropical climates.

(2) Commercially available cutbacks are not designed for tropical use, since the asphalt cement in the cutback has a minimum value of 85. Therefore it should not be used on high density pavements.

(3) Cutbacks for military usage should have more restrictive specifications to prevent the purchase of asphalt cement with lesser binding properties. Units in the field do not possess the testing equipment to determine the strength of asphalt cement and must assume that this material is good unless told otherwise.

(4) Asphalt testing equipment and personnel should be present at higher level to provide a check on asphalts in country. These may have been altered through prolonged storage or may have been originally satisfactory as far as military specifications are concerned, but still may be unsatisfactory for existing construction demands. This testing equipment should include the following tests:

(a) Marshall or Hveem Stability

(b) Penetration

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(c) Tag Open Cup Flashpoint

(d) Distillation

(e) Ductility

(f) Viscosity

(5) Cutbacks are the preferred materials to use in the most theater of operations construction involving asphalt cement because of their relative ease of handling.

c. (U) Item: Supply Depot Stockage.

Discussion: Many verticle construction projects we have undertaken are delayed because of shortage of construction items which are listed as on hand in supply depots.

Observations: Since project design incorporates construction items listed in the PA&E stockage lists, these lists should be kept up to date to minimize construction delays. Furthuremore, larger quantities of high demand items should be maintained in the depots, particularly electrical and plumbing supplies.

4. (U) Other:

a. (U) Item: Piaster Expenditure by Enlisted Men

Discussion: The excessive piaster expenditure and its accompanying inflationary pressure upon the Vietnamese economy have been recognized by all levels of command. The necessity of controlling piaster expenditure and reducing the inflationary pressure is vital to the future of the Vietnamese economy. A preliminary to any effective piaster control program is the need to know where the piasters are spent and how the expenditures can be reduced. Recently, the Battalion conducted a survey of piaster expenditures of its 600 enlisted personnel assigned to this Battalion and in the Long Binh area.

Observations:

(1) A survey of enlisted men assigned to this Battalion and stationed in the Long Binh area yielded the following information:

	<u>Total for 600 Men</u>	<u>% of Total Pay</u>
Total Pay	\$180,000	100%
Less Deductions from paycheck	-80,000	-44%
Sub Total (Pay received in VN)	100,000	56%
Less pay returned to US	-44,000	-25%
Sub Total (Pay spent in VN)	56,000	31%
Less MPC expenditure	-38,000	-21%
Piaster expenditures	18,000	10%

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SUBJECT: Operational Report - Lessons Learned, (PCS CSFOR-65) for
Quarterly Period Ending 31 Jan 67

(2) The piaster expenditure breaks down as follows:

	<u>Total for 600 Men</u>	<u>% of Total Pay</u>
Recreation	4,300	2.4%
Laundry	3,900	2.1%
Clothes	2,200	1.2%
Transportation	1,900	1.1%
Supplies unavailable in PX	1,700	1.0%
Souvenirs	1,500	.8%
Other	<u>2,500</u>	<u>1.4%</u>
	18,000	10.0%

(3) It is also significant to note that the Battalion's enlisted and NCO club facilities attracted \$20,000. of \$24,300 spent in recreation, and the PX attracted \$18,000 of the \$21,900 spent on PX type supplies and clothes. While both these figures point out the importance of maintaining a strong on-post attraction, it is obvious that there is still room for considerable further improvement in these areas. As the attractiveness of the on-post environment improves, piaster expenditures will decline. Another significant factor influencing piaster expenditure is cash on hand. If savings are increased, cash on hand will decrease causing piaster expenditures to decrease accordingly

Section 2, Part II, Recommendations.

1. (U) Personnel - None

2. (U) Operations:

a. That RSM and FSP should not be used to cover laterite storage pads and that using units be encouraged to maintain said pads and their attendant drainage structures.

b. That asphalt cements intended for use on high volume surfaces be laboratory tested prior to application.

c. That asphalt cements having doubtful characteristics be used for dust palliation, soil stabilization or helipads.

3. (U) Training and Organization: That each construction battalion be authorized an ozalid type reproduction machine.

4. (U) Intelligence - None

5. (U) Logistics:

a. That AF-5 be purchased for heavy duty hot mixed pavements in tropical climates since it has the recommended penetration of 60-70.

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b. That specification tolerances be made more stringent on
asphalt products purchased for U.S. Army use.

c. That asphaltic materials presently in country be subjected
to laboratory analysis and that the results be disseminated to those concerned

d. That if cutbacks containing AP-5 are not available through
procurement channels, Army research agencies in CONUS explore the feasibility of developing a cutback with RC cutterstock containing an asphalt
cement residue from distillation giving a penetration value of 60-70 for
use in hot climates.

e. That the new series radios be issued to construction battalions
at the earliest possible date.

W.V. McGuinness, Jr.

W.V. McGUINNESS, JR
LTC CE
Commanding

2 Incl

1-Organization Chart
2-Sketch of Clamshell
Modification

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SUBJECT: Operational Report - Lessons Learned (AGS-FCR-65) for Quarterly
Period Ending 31 January 1967

DA, Headquarters, 159th Engineer Group (Const), APO 96491, 20 February 1967

TO: Commanding General, United States Army Engineer Command Vietnam (Prov)
ATTN: AVCC/EC, APO 96491

Assistant Chief of Staff for Force Development, Department of the Army
(AGS-FCR DA), Washington, D.C. 20310

1. This report is considered comprehensive and of value for documentation and review of the reporting units activities and experiences.

2. This Headquarters concurs with the Observations and Recommendations in Section 2, with the following comments:

a. Item 3. b. Conclusion: (1): There is a definite need for asphalt testing capability within the Engineer Command to provide verification of asphalt specifications and to insure quality control of asphalt operations.

b. Item 2. b. Inadequate Radio Communications: Communications would be greatly improved if this unit of the Group were issued the new series radios. Present maintenance problems and the inability to communicate with separated engineer construction units would be minimized by replacing the existing outdated radios.

FOR THE COMMANDER:

William G. Flourncy
WILLIAM G. FLOURNCY
1LT, CE
Acting Adjutant

Copies furnished

- 1 CG, USAECV(?)
- 2 AGS-FCR/ECV
- 2 159th Engr Gp Files
- 1 46th Engr Bn

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AVCC-MHD (15 Feb 67) 2d Ind MAJ Fowler/ccb/PA 478
SUBJECT: Operational Report-Lessons Learned (AOS 00701-65) For Quarterly
Period Ending 31 January 1967

HEAD QUARTERS, UNITED STATES ARMY ENGINEER CORPS
VI ANH (PROV), APO 96491 111

TO: Commanding General, United States Army, Vietnam, ATTN: AVCC-MH,
APO 96307

1. The subject report, submitted by the 46th Engineer Battalion (Const), has been reviewed by this headquarters and is considered adequate.

2. The recommendations and comments submitted by the indorsing and submitting commanders have been reviewed and this headquarters concurs, subject to the following added comments:

a. Section 1, paragraph 2d, page 2, Personnel Strength: Replacement personnel have been assigned during February and March 1967.

b. Section 1, paragraph 5, Logistics: The 1st Logistical Command will initiate project "Counter" about mid-March 1967. This is a location inventory of USG's GSG's, and selected depots and supply points. Electrical materials and plumbing supplies are being intensively command managed.

c. Section 2, Part 1, paragraph 11 and 3b, Section 2, Part II, paragraph 5c and paragraph 2a, 1st Indorsement. This headquarters is currently arranging for applicable asphalt testing to improve the quality of construction utilizing asphalt products.

d. Section 2, Part 1, paragraph 2a, Construction battalions organized under the J-series TCE are authorized an Ozlic type reproduction machine. A less effective type machine is authorized under the L-series TCE.

e. Section 2, Part II, paragraph 3. Construction battalions are authorized this type of reproduction machine.

f. Section 2, Part II, paragraph 5b. There is in existence federal and commercial specifications for a wide range of asphalt products. There is no need to establish additional specifications. Procurement of the proper material to achieve the results desired coupled with emphasis on quality control at the manufacturing plant will accomplish the same end.

FOR THE COMMANDER:


Colonel, USA
Chief of Staff

AVHGC-DST (15 Feb 67)

3d Ind

SUBJECT: Operational Report-Lessons Learned for the Period Ending
31 January 1967 (RCS CSFOR-65)

HEADQUARTERS, UNITED STATES ARMY VIETNAM, APO San Francisco 96307

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

1. This headquarters has reviewed the Operational Report-Lessons Learned for the period ending 31 January 1967 from Headquarters, 46th Engineer Battalion (Construction) as indorsed.

2. Pertinent comments follow:

a. Reference paragraph 1k, page 8, and paragraph 2a, page 13, concerning steel surfacing of laterite: The experiences of reporting unit with the use of steel matting on laterite storage pads will be disseminated to other units of the command.

b. Reference paragraph 1l, page 8; paragraph 3b, pages 10 - 12; paragraphs 2b, 2c, and 5a - 5d, pages 13 - 14; and paragraphs 2c and 2f, 2d indorsement, concerning in-country asphalt testing facilities and the establishment of additional specifications for asphalt products: The US Army Engineer Command Vietnam has let a contract through the Officer in Charge of Construction to Pacific Architects and Engineers (PA&E) to conduct continuous testing at every asphaltic batch plant operated by subordinate units of the command. In addition to routine batch testing, PA&E will test all suspect asphaltic products. Concur in paragraph 2f, 2d Indorsement, that no need exists to establish additional specifications for asphalt products.

c. Reference paragraph 2a, page 9; paragraph 3, page 13; and paragraph 2d, 2d indorsement: Concur with statement of US Army Engineer Command in 2d Indorsement.

d. Reference paragraph 2b, page 10; paragraph 5e, page 14; and paragraph 2b, 1st indorsement, concerning the need for the new series of radios: The single sideband (SSB) radio set AN/GRC-106 will replace the AN/GRC-19. An AM radio modernization program survey is being conducted to formulate the basis of issue (BOI) for the new family of AM(SSB) radios. Upon completion of the survey the USARV

AVHGC-DST (15 Feb 67)

3d Ind

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31 January 1967 (RCS CSFOR-65)

BOI will be submitted to USARPAC for approval. Initial distribution of these radios has already begun to units which are authorized them by TOE. New Army Authorization Document System (NAADS) and this program survey will update authorization documents of all units in USARV for subject equipment.

FOR THE COMMANDER:

2 Incl
nc

E. L. Kennedy
E. L. KENNEDY
CPT, USA
Asst Adjutant General

19
GPOP-OT(15 Feb 67)

4th Ind

SUBJECT: Operational Report-Lessons Learned for the Period Ending
31 January 1967 (RCS CSFOR-65), HQ 46th Engr Bn (Const)

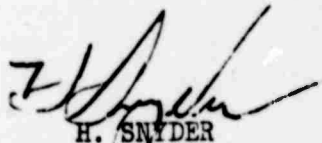
HQ, US ARMY, PACIFIC, APO San Francisco 96358 9 JUN 1967

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

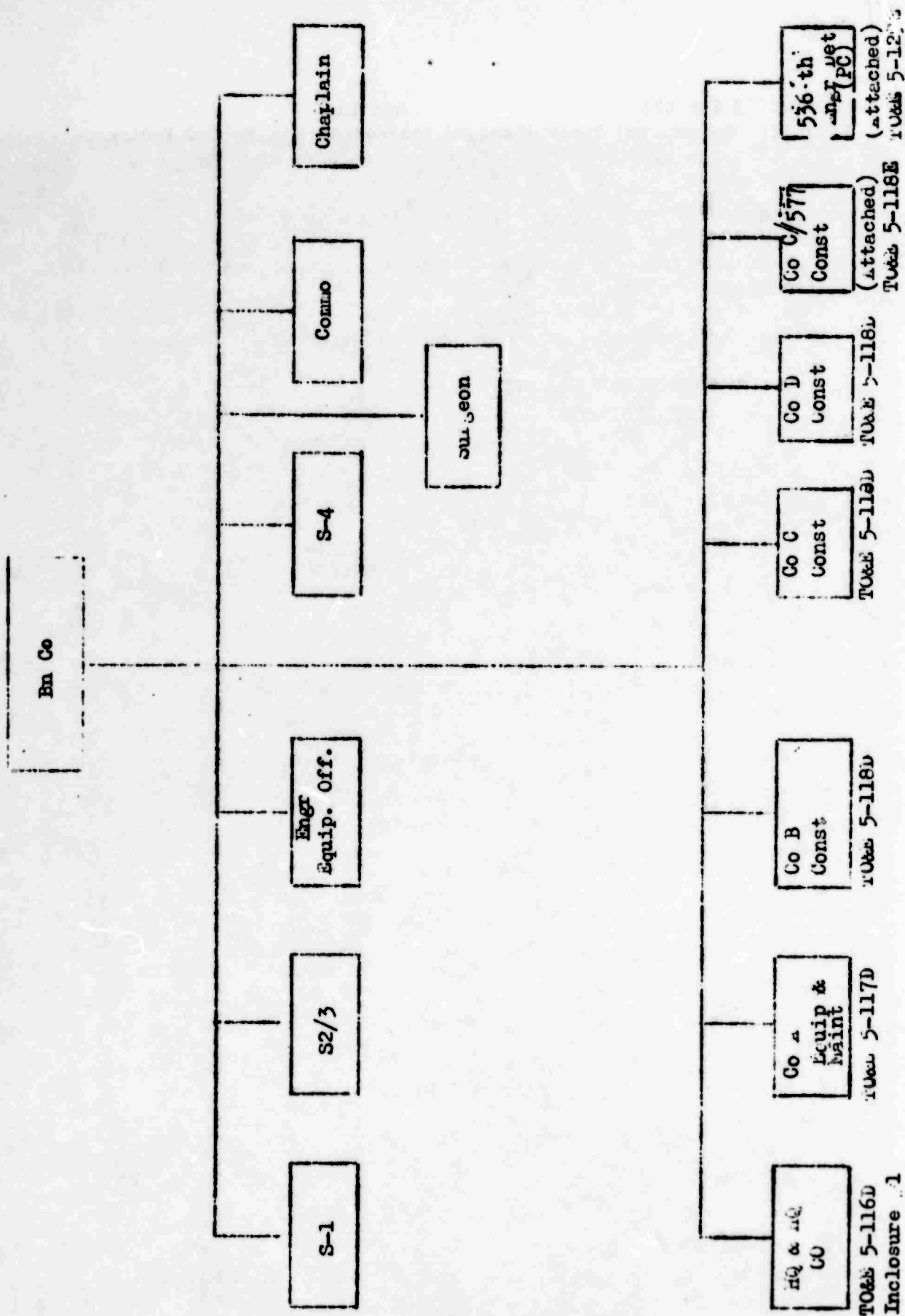
This headquarters concurs in the basic report as indorsed.

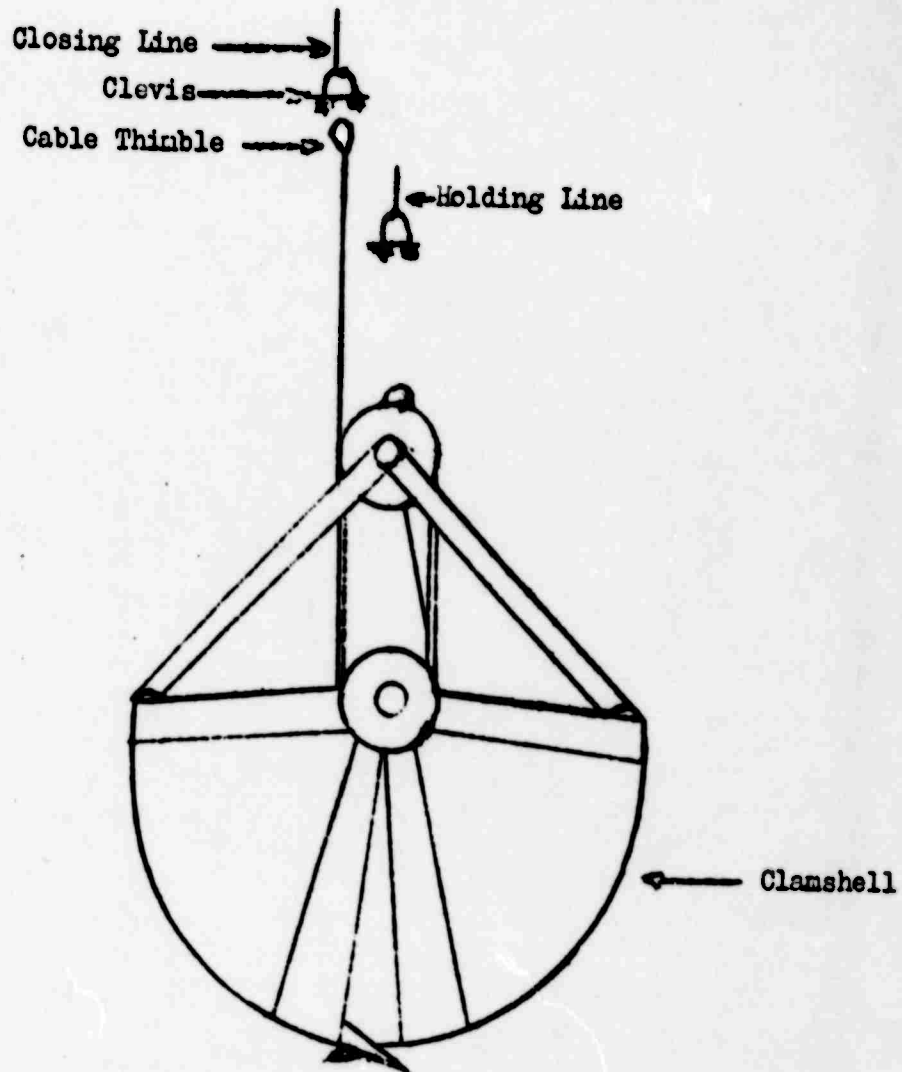
FOR THE COMMANDER IN CHIEF:

2 Incl
nc


H. SNYDER
CPT, AGC
Asst AG

46th Engineer Battalion (Construction) TO&E 5-115D





Sketch of Clamshell Modification in Closed Position