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*for your Den. attn. Fol. OF RD
Wash. D.C.*

HEADQUARTERS
35TH ENGINEER GROUP (CONSTRUCTION)
APO U. S. Forces 96312

EGA-CO

15 May 1966

SUBJECT: Operational Report on Lessons Learned for Quarterly Period
Ending 30 April 1966 (RCS CSGPO-28 (RI))

TO: Assistant C of S for Forces Development
Department of the Army (ACS for DA)
Washington D. C. 20310

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1. Significant organization or unit activities:

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a. During the period from 1 January 1966 to 30 April 1966, the 35th Engineer Group (Construction) was responsible for all non-divisional troop construction in the central third of the Republic of Vietnam. The area of construction responsibility is further defined as: That portion of the RVN lying South of 13 degrees North Latitude, excluding the area bounded by the right bank of the Song Da Rang River, extending southwest to a straight line boundary drawn between coordinate YU 2545 to coordinate 250278. Map Series Sheet NK 48-16, NC 48-4 and NC 48-8, Series L-509, 1/250,000.

b. The main construction effort continued to be concentrated at Cam Ranh Bay for the development of the Cam Ranh Bay Logistics Area, Depot and port facilities. The effort of one construction battalion was employed at Phan Rang, RVN, in the construction of an expeditionary airfield. One combat battalion was employed at Dong Ba Thin, RVN, in the construction of the Dong Ba Thin Military Complex. Additional construction forces were also employed at Nha Trang, Tuy Hoa, Phan Thiet, and Boa Loc.

c. During the reporting period the following units were attached to and under operational control of the 35th Engineer Group (Construction).

<u>UNIT</u>	<u>LOCATION</u>
20th Engineer Battalion (C)(A)	Dong Ba Thin
39th Engineer Battalion (C)(A)	Cam Ranh Bay
62d Engineer Battalion (Const)	Phan Rang
87th Engineer Battalion (Const)	Cam Ranh Bay
864th Engineer Battalion (Const)	Cam Ranh Bay
102d Engineer Company (CS)	Cam Ranh Bay

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<u>UNIT</u>	<u>LOCATION</u>
497th Engineer Company (PC) (-)	Cam Ranh Bay
553d Engineer Company (FB) (-)	Cam Ranh Bay

During the reporting period the 584th Engineer Company (LE) and 513th Engineer Company (DT)(-) were attached to and under operational control of the 20th Engineer Battalion (C) (A). The 572d Engineer Company (LE) was attached to and under operational control of the 39th Engineer Battalion (C) (A).

This report will include only activities of the Headquarters, 35th Engineer Group and separate companies, as the attached battalions are required to prepare individual separate reports.

d. 102d Engineer Company (Construction Support)

(1) Asphalt Operations

(a) On 22 February 1966 the asphalt plant produced its first mix. The project was in support of the 864th Engineer Battalion (Const). 2,394 tons of cold asphalt mix consisting of one inch minus aggregate and MC-2 was produced. The mix was used to pave three fourths of a mile of road in the Cam Ranh Bay Depot area. On 8 March 1966 a one tenth mile test strip was successful and all paving is now done with hot mix. To date, the asphalt plant has produced 6,066 tons of hot mix. Two and three quarters of a mile of road have now been paved in the Cam Ranh Bay area.

(b) The asphalt plant is now fully operational and is capable of supporting all paving missions.

(2) Quarry Operations

(a) During the period from 1 January 1966 to 20 April 1966 the quarry produced 10,771 tons of rock. This rock was used entirely for the asphalt plant. On 20 April 1966 the 102d Engineer Company quarry ceased operations. All equipment was moved to the new 864th Engineer Battalion quarry.

(b) To date, aggregate produced by the 864th Engineer Battalion Quarry is of a low grade for asphalt production. The new quarry has just recently been opened and a large amount of overburden and decomposed granite is present. As the new

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quarry is developed a high grade aggregate for asphalt will become available.

(3) Equipment Support: During this reporting period the unit supported the 864th Engineer Battalion Quarry with three items of Quarry equipment and had a number of pieces of equipment, such as rollers, distributors, 20-Ton and 40-Ton cranes and trucks in support of other units. The receipt of three new 40-Ton cranes and two AC tractors has increased the units effectiveness in its support mission.

(4) Maintenance: The readiness posture of this unit has steadily been improving. The arrival of new equipment and the continued success of Red Ball requisitions has kept the majority of equipment operating.

(5) Civic Action:

(a) The unit has three civic action projects. School supplies, medical, and dental aid are being given to Cam Ranh Village and Xon Moi schools.

(b) Food, clothing, and medical supplies are being donated by the Camas-Washougal Washington Chamber of Commerce. Private families are sending these supplies to the Chamber of Commerce who then send them to the unit. This unit then donates the clothing and supplies to the Nha Trang orphanage.

(c) In appreciation for the support the families in the state of Washington have contributed, plaques making the families honorary members of the 102d Engineer Company have been sent to them.

e. 497th Engineer Company (Port Construction)

(1) Projects, Cam Ranh Bay.

(a) Design and construct sheet pile bulkhead. During this period the company completed (19 February 1966) a sheetpile bulkhead of approximately 500 LF between the MAP Pier and the DeLong Pier Causeway. Facility was designed and construction was begun in December 1965. The hydraulic fill area behind the bulkhead provides 250,000 square feet of storage area.

(b) Barge discharge facility. The facility, designed and constructed by the 497th, is a timber pile U-shaped pier 220' x 113'. The facility was started on 1 February. The pier has ample mooring facilities for two barges. The project was completed on 15 April.

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(c) Permanent LST Ramps. The 497th was directed to design and construct two LST ramps and adequate anchorage system. The overall project is 60% complete. The first ramp, constructed of sheet piling and reinforced concrete, was started on 20 January and completed on 25 March 1966.

(d) Roll-on, roll-off ramp. The company designed a permanent connection link from the storage area adjacent to the DeLong Pier, across the sheet pile bulkhead to barges, in turn to be joined with the USNS Comet. The connection consists of one 30-foot fixed span and one 30-foot articulating ramp. The design was started on 12 April and was completed on 22 April 1966.

(e) Diving Support. From time to time, the diving section is called upon for miscellaneous diving operations. Some examples include:

1. Submarine pipeline maintenance. The divers have repaired leaks and tightened underwater connections on submarine lines at Phan Rang and Nha Trang.

2. Remove Obstacles. Divers are in process of removing a 145 foot sunken vessel which is currently blocking the proposed path of a second sheet pile bulkhead. The general project of removing obstacles is continuous.

3. Underwater demolition. Diving section has performed underwater demolition work for the coral quarry operated by the 87th Engineer Battalion (Construction).

(f) Phan Rang interim marine POL terminal. The company provided technical assistance and diving support for the installation of a mooring system and submarine pipeline.

(g) Design and construct 497th Engineer Company cantonment area. The slabs for troop billets, administrative offices, officer's and NCO quarters, mess hall and day room, which were 90% complete on 1 January, were completed on 2 February. The framing of 12 medium tents started on about 4 April and to date is 75% complete.

(2) The company conducted about 20 hours of training in the following subjects: Maintenance of equipment, Code of Conduct, Survival, Escape and Evasion, the Vietnamese Soldier, Inflation in Vietnam, Vietnamese Customs and Traditions, Supply Economy, and Safety. In addition, the company adds to its classroom training a continuous OJT program.

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(3) No days were spent during the quarter for movements.

f. 553d Engineer Company (Float Bridge)

(1) During the reporting period the 553d Engineer Company (FB) carried out operations, activities, and administration appropriate to the units primary and secondary missions. The primary mission of this unit is to provide technical personnel and equipment to load, maintain, transport and supervise the erection of tactical stream crossing equipment. During the reporting period, this unit fulfilled its primary mission by the following activities:

(a) Provision of technical personnel and equipment for the erection of 1155 feet of M5T6 Floating Aluminum Highway bridge at My Ca, Vietnam. This unit did not have enough organic bridging equipment to span the existing gap, and additional equipment was acquired from an ARVN Floating Bridge Company.

(b) Seventy-five (75) feet of balk deck and trestle were erected at the DeLong Pier, CRB to facilitate loading and unloading of ships.

(c) Total Company man hours expended in the performance of primary mission activities for the reporting period was 15,640 man hours.

(2) The secondary mission of this unit is to provide general cargo hauling capabilities, by immobilizing the bridge loads. During the reporting period this unit fulfilled its secondary mission by providing cargo hauling for the following:

(a) RMK-BRJ Construction Company.

(b) ROK Marine Brigade

(c) 35th Engineer Group (Const)

(d) Total Company man-hours expended in the performance of secondary mission activities for the reporting period was 9,720 man-hours.

(3) In addition to performing its primary and secondary missions the following activities were carried out by this unit.

(a) Support Platoon equipment was utilized for reconnaissance, survey and soundings, and security patrols in the CRB area.

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(b) Organic Cranes (2) and air compressors (2) were utilized as construction support equipment.

(c) The Company moved to a new area and undertook self-help projects to provide living facilities for its personnel.

(d) Rivers in and around Tuy Hoa, were reconnoitered for possible missions.

(e) A water point was operated and improved for use of units in the CRB area.

(f) Two platoons remained attached to the 509th Engineer Company (PB) at Qui Nhon. These two platoons have been attached since 3 December 1965.

(g) Two platoons were placed on TDY 7 April 1966 to the Cam Ranh Bay Security Company (Prov) for a period of 90 days.

(h) Three (3) men and two (2) trucks were assigned TDY to A/326th Engineer Battalion (Airborne) and C/39th Engineer Battalion (C)(A) in Tuy Hoa in early February 1966 to provide 472 feet of Aluminum footbridge for tactical use.

(4) The following training was carried out for unit personnel:

- (a) Personal and Document Security
- (b) Escape and Evasion
- (c) Code of Conduct
- (d) Maintenance Responsibilities
- (e) Driver Training

2. Commander's Recommendations and Lessons Learned.

a. Commander's Recommendations.

(1) Planners at higher level should initiate action with procurement section at the highest level to program special type supplies in bulk rather than wait for projects to be assigned to units and have units requisition through normal supply channels if item is not available in Engineer Supply yard. The regular supply system can not respond in the time frame required, in order for units to meet their completion dates. Some excellent examples of this are as follows:

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- (a) Sheet Piling 30 ft and 45 ft length
- (b) 1" and 1 1/8", Cable, Galvanized
- (c) Turnbuckles, 2" dia.
- (d) Burlap
- (e) Pipeline Supplies, POL
- (f) Welding Rod
- (g) Lumber

(2) Generators and Refrigeration:

(a) Engineer Combat units should be permitted to make changes to augment their TO&E's prior to leaving CONUS, to allow such units to bring sufficient generators to operate when in a static position. Present TO&E authorizes one 5KW generator per company, other than the 10KW's required to operate the water points.

(b) Due to climatic conditions in RVN, units should be authorized to bring refrigerators and deep freezers with them and not have to wait 5-6 months for the supply system to react.

(3) Return complete control of Engineer Construction supplies to Engineer Channels, along with the Engineer Supply Point Companies to give the commanders the control of the supplies that are needed to fulfill their mission.

(4) That previous detailed planning be initiated to preclude the extensive use of power boats and outboard motors. At the time of this report many powerboats and outboard motors were still on deadline status since their deadline in late 1965 due to excessive use. Rafting operations should not exceed one week to insure serviceability of powerboats and outboard motors.

(5) That training units in CONUS emphasize driver training for individuals who are to be deployed to RVN. Driver training should include:

- (a) Road test
- (b) Maintenance responsibilities
- (c) International road signs

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(6) That a special anti-fouling paint be supplied to prevent barnacle growth on power boats and rubber pneumatic floats.

(7) There is an urgent need for modifying the TO&E of the port construction company. Present TO&E 5-129E is excessively conditioned by operational requirements of World War II and does not afford flexibility required for supporting port construction work at separate coastal bases. Recommend that MTO&E submitted through command channels for approval by USARV be considered as basis of new TO&E if additional port construction companies are activated.

(8) Additional diving sections are needed in this theater to maintain 1st Logistical Command facilities. Requirements to use the port construction company divers for maintenance of submarine pipelines, inspection and repair of Transportation Corps Vessels, and salvage of Army aircraft, is jeopardizing successful accomplishment of the 497th Engineer Company diving section's primary mission of underwater construction. Recommend that 1st Logistical Command be allocated diving sections on TD basis as required for efficient maintenance of TC and QM facilities.

PART B

b. Lessons Learned

Pile Driving Hammers

Item: Diesel Hammers.

Discussion: The diesel pile driving units organic to the 497th Engineer Company (PC) unit have been found to be much more effective than a three thousand (3000) pound drop hammer. Use of the diesel hammer has expedited completion of projects requiring driving of large quantities of piling, such as timber pile piers and sheet pile bulkheads.

Observation: That diesel hammers could be effectively used by other units having pile driving capabilities, such as construction battalions, light equipment, and construction support companies.

Utilization of Port Construction Company

Item: Productivity of port construction company is reduced when company is split for operational control between two engineer groups.

Discussion: Experience in RVN has demonstrated that when platoons and/or sections of company are separated from company headquarters by considerable distance, standards of maintenance decline, flexibility in using specialized personnel and equipment is decreased, and adequate technical assistance is curtailed.

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Observation: Rather than split a company, it is preferable to assign separate port construction missions. The separate company could be utilized on an extensive basis in conjunction with an engineer group developing a major port facility such as Cam Ranh Bay.

Aggregate Stockpiles

Item: Segregation of Aggregate in Stockpiles.

Discussion: In large stockpiles of one inch minus rock, poor gradation has occurred because of segregation in the stock pile. This has resulted in a waste of aggregate in asphalt production.

Observation: Separating the stock pile into two piles, then recombining them in the asphalt plant has greatly reduced segregation. The one inch minus is now separated into piles of 1" to 3/8" and of 3/8" minus.

Retention of Fines

Item: Loss of fines during rock crushing.

Discussion: It has been found that nearly all fines produced during crushing of blast rock are lost by being blown away by the slightest breeze. These fines, passing the #200 sieve, are an essential component of aggregate used for the production of asphalt.

Observation: A spray bar was installed over the main feeder conveyor belt coming from the primary crusher. The crushed rock coming from the primary was sprayed with water before passing to the secondary crusher. In this manner, nearly all fines were retained.



WILLIAM F. HART JR.

Colonel, CE

Commanding

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CG 18th Engr Bde, ATTN: AVEB-3 (Copy 6, 7)

AVEB-DBC (15 May 66) 1st Ind
SUBJECT: Operational Report of Lessons Learned for Quarterly Period Ending
30 April 1966 (RCS CSGPO-28 (R-1))

HEADQUARTERS, 18TH ENGINEER BRIGADE, APO 96307, 21 July 1966

TO: SEE DISTRIBUTION

The following comments are furnished pertaining to the Operational Report of Lessons Learned, 35th Engineer Group (Const):

a. Paragraph 2a(2) and 2a(2)(b): All units departing COMUS after 1 January 1966, are authorized additional generators and refrigeration equipment.

b. Paragraph 2a(3): This Headquarters does not concur with return of engineer supplies and supply units to engineer control. The current concept which ensures that all requirements are reviewed and supplies issued on a priority basis is considered satisfactory.

c. Paragraph 2a(5): It is considered impractical to train as drivers, all personnel being deployed to Republic of Vietnam from basic training units. An adequate number of trainees should receive this special training to ensure a normal input of reasonably qualified vehicle operators. Subjects noted in ORLL are worthy of added emphasis during such training.

d. Paragraph 2a(6): This Headquarters initiated a letter through R & D channels in April 1966 requesting a suitable type paint to prevent barnacle growth on power boats and pneumatic floats.

e. Paragraph 2a(7): Organization of certain types of units is under consideration at present with the objective of determining adequacy of present TO&E of those units. Final results will, if appropriate, lead to submission of recommended changes.

f. Paragraph 2a(1): Planning of procurement and placement of supplies as indicated in referenced paragraph could not be accomplished during early FY 1966 because of the short notice that a major construction program was planned for Vietnam. FY 66 MCA funds were not received until September 1965 and materiel could not be ordered until October and November 1966. Materiels have been delayed in delivery both because of lack of adequate sea transportation and also because of long procurement lead time. This was especially true of port construction materiels, i.e. sheet piling, cables, turnbuckles. More adequate planning was possible for the current fiscal year and stockages of construction materiel are beginning to develop in depots throughout RVN.

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AVEB-DBC

21 July 1966

SUBJECT: Operational Report on Lessons Learned for Quarterly Period Ending
30 April 1966 (RCS CSGF -28 (R-1))

g. Paragraph 2a(8): Recommendation has been made to the 1st Logistical Command (Reference letter, 10th Engr Bde, Subject: Divers, 24 Mar 66) to request 500 series HB diving teams for maintenance of port facilities.



P. W. RAMEE
Colonel, CE
Deputy Commander

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Washington, D.C. 20310 (Thru Channels)

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- Cy 2 - Commanding General, USARPAC, APO US Forces 96558, ATTN: GPOP-MH
- Cy 3, 4, 5 - Commanding General, USARV, ATTN: AVC
- Cy 6 - Unit Files

AVHOC-DH (15 May 66) 2d Ind
SUBJECT: Operational Report on Lessons Learned for the Quarterly Period
Ending 30 April 1966 (RCS CSGPO-28 (R1))

HEADQUARTERS, UNITED STATES ARMY, VIETNAM, APO San Francisco 96307 2 AUG 1966

THRU: Commander in Chief, United States Army, Pacific, ATTN: WPOP-MH,
APO 96558

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

This headquarters concurs with the 35th Engineer Group operational
report on lessons learned as indorsed.

FOR THE COMMANDER:

WR Autry
W. R. AUTRY
1st Lt, AGC
Asst Adjutant General

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GPOP-MH (15 May 66) 3d Ind (U)
SUBJECT: Operational Report on Lessons Learned for the Quarterly Period
Ending 30 April 1966 (RCS CSGPO-28 (R1))-(U)

HQ, US ARMY, PACIFIC, APO San Francisco 96558 9 SEP 1966

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

1. The Operational Report on Lessons Learned of the 35th Engineer
Group for the period 1 January - 30 April 1966 is forwarded herewith.

2. Reference paragraph 2b, Item on Diesel Hammers, basic ORLL. The
lesson learned has merit. However, the normal employment of construction
battalions, light equipment companies, and construction support companies
does not appear to warrant the sweeping change in TOE suggested by the
commander's observation.

3. For the rest, this headquarters concurs in the basic ORLL and
the preceding indorsements.

FOR THE COMMANDER IN CHIEF:



Copy furn:
CG USARV, Attn: AVHGC-DH

D. A. HARRISON
Capt, AGC
Asst AG

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