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AUTHORITY

AGO D/A ltr, 29 Apr 1980

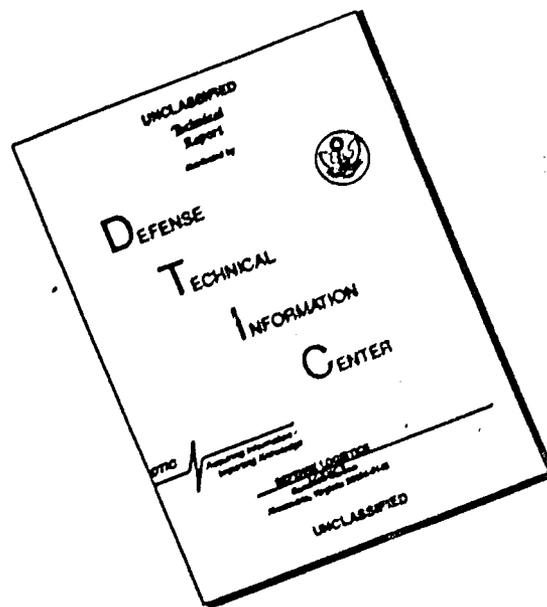
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**DEPARTMENT OF THE ARMY**  
 OFFICE OF THE ADJUTANT GENERAL  
 WASHINGTON, D.C. 20310

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IN REPLY REFER TO  
 AGAM-P (M) (5 Oct 67) FOR OT RD 670302 16 October 1967

**SUBJECT:** Operational Report - Lessons Learned, Headquarters,  
 577th Engineer Battalion (Construction)

**TO:** SEE DISTRIBUTION

1. Subject report is forwarded for review and evaluation by USACDC in accordance with paragraph 6f, AR 1-19 and by USCONARC in accordance with paragraph 6c and d, 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 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:

*C. A. Stanfield*

**C. A. STANFIEL**  
 Colonel, AGC  
 Acting The Adjutant General

1 Incl  
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DEPARTMENT OF THE ARMY  
HEADQUARTERS, 577TH ENGINEER BATTALION (CONSTRUCTION)  
APO US Forces 96316

3

EGD-BC-CO

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SUBJECT: Operational Report - Lessons Learned (RCS CSFOR-65), for  
Quarterly Period Ending 30 April 1967

THRU: Commanding Officer  
45th Engineer Group  
APO 96238

Commanding General  
18th Engineer Brigade  
ATTN: AVBC-C  
APO 96377

Commanding General  
United States Army Engineer Command, Vietnam  
ATTN: AVCC-FO  
APO 96491

Commanding General  
United States Army, Vietnam  
ATTN: AVGC-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

FOR OT RD File  
670302

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Section 1. Significant Organization or Unit Activity FOR OFFICIAL USE ONLY

1. The 577th Engineer Battalion (Construction) is organized under TO&E 5-115E. Company C, this organization, is attached to the 159th Engr Gp (Const). At present the 553rd Engr Co (FB); the 572nd Engr Co (LE); Co B, 39th Engr Bn (C); Co C, 39th Engr Bn (C); and one section of the 513th Engr Co (DT) are attached to this organization. Battalion headquarters, Co A, a platoon of Co B, Co D, the 553rd Engr Co (FB), the 572nd Engr Co (LE) and the dump truck section are operating in the Free World Forces (FWF) Cantonment in Tuy Hoa. Co B (-) is stationed at Port Lane on Vung Ro Bay. Co B, 39th Engrs is located at north Tuy Hoa and Co C, 39th Engrs is at Ninh Hoa. A task force is at Cung Son. The battalion and attached units are further attached to the 45th Engr Gp (Const). 4

2. At the beginning of this reporting period Co B was engaged in construction port facilities at Port Lane. The causeway earthwork had been completed and upon the conclusion of the monsoon season a double bituminous surface treatment (DBST) was applied. The DeLong Corporation erected a DeLong Pier and on 25 March the pier was operational and turned over to the port authorities.

3. The 1,775 foot access road to beach Alpha, Port Lane, was opened for traffic in early April 1967. Approximately 5,700 cu yds of solid rock was blasted and excavated to establish the single lane road. The roadway presently is being brought to final grade and a DBST will be applied. This road will provide ready access to the Transportation cantonment on beach Alpha. This cantonment is being constructed under the self help program and at present is about 5% complete. Other facilities on beach Alpha include the pump station for a 6 and 8 inch line to Tuy Hoa Air Force Base, South (THAFB) which is complete, and a POL tank and fill stand complex which is presently being constructed.

4. Extensive earthwork was accomplished at the logistics hardstand at Port Lane during the reporting period. The existing 100,000 square feet of hardstand on the beach level was stabilized with 1500 cubic yards of 3" minus aggregate. Four terraces have been cut into the side of the mountain behind the existing hardstand. Two of the terraces have been stabilized with 1300 cu yds of 3" minus rock. Drainage structures for this hardstand complex have been designed and are being constructed. A DBST will be applied to the hardstands.

5. A low voltage power system was installed on the beach level of Port Lane to provide power to a lighting system which consists of 43 prefabricated panzermast poles. Two 100 KW generators furnish the power for the hardstand lighting system while the DeLong pier has a self contained lighting system powered by a third 100 KW generator.

6. Company B, 577th Engineers continued to assist Port Lane authorities in the maintenance of the port facilities at Vung Ro Bay. Continual dredging using a dragline maintains a shifting shoreline. Two LST ramps, badly battered by monsoon season, required maintenance consisting of concrete patching.

7. Bryant Road, the access road from AL-1 to Port Lane, received a DBST during the reporting period. The 1.7 mile, 2 lane road, was completed using 1,650 cubic yards of sand and 41,000 gallons of RC-3.

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8. The maintenance of the line of communication (LOC) extending from Ninh Hoa to the Song Cai River, a distance of 110 km, is one of the prime missions of this organization. Units from Co B and Co D, 577th Engr Bn, and Co E, Co C, 39th Engrs performed maintenance on this vital link. A total of 2600 cubic yards of dense graded asphaltic cold mix was produced by 577th Engr Bn and applied to the road surface. Extensive widening and raising of the access road to the FWF Cantonment was also accomplished.

9. During this reporting period construction was completed on the pipeline system from Port Lane to THAFB South, excluding the submerged tanker hookup and mooring system. This project consisted of a pumping station for a 6 and 8 inch line at Port Lane and approximately 16.5 miles of pipeline. The two POL lines parallel each other over mountainous terrain and proceed along a railroad right-of-way to the THAFB. Additionally, a spur services the FWF Cantonment area. Co D is presently constructing the Army portion of the tank farm at the THAFB by erecting three 10,000 barrel bolted steel tanks. Co B is constructing two 250 barrel tanks at Beach Alpha.

10. Another project assigned to this battalion is the construction of the 91st Evacuation Hospital within the FWF Cantonment. This 400 bed facility is being built primarily by Co D with self help assistance from the user. The beneficial occupancy date (BOD) was met on this facility on 1 March 1967. The hospital initially opened with a 100 bed capability 85 days subsequent to the initiation of construction. The electrical system, deep well pump, chlorinator and water distribution system became operational during period. The hospital admitted the first patient on 17 March 1967.

11. Co D, 577th Engrs completed the 180th Aviation Company (CH-47) helipad and maintenance facility in early February 1967. This project consisted of a stabilized crushed rock base and a single surface treatment of RS-1 asphalt emulsion. Steel matting was superimposed on the base as a wearing surface.

12. Co B, 577th Engrs (Const) constructed a microwave relay building on Hill 430, vicinity Port Lane, in support of the communications effort. The 2000 square feet prefabricated Pascoe building, was completed on 1 April 1967.

13. The battalion continued to monitor self help construction in the FWF cantonment. The Republic of Korea, Army (ROKA), opened the 9th Mobile Army Surgical Hospital on 15 March 1967. The 180th Aviation Co, the 176th Aviation Co, the 5/27th Arty Bn, the 261st Signal Co, Tuy Hoa Sub-area Command and the 577th Engrs participated in cantonment construction during the reporting period. Assistance was given in placing concrete pads and erecting mess halls, showers, latrines, administrative buildings and day-rooms.

14. Work in the FWF Cantonment Logistics area continued with the construction of 3 ea Direct Exchange (DX) Warehouses, a Bakery and Reefer Storage Facilities.

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15. Company A, 577th Engrs produced over 62,000 cubic yards of crushed aggregate during this period for a proposed road resurfacing program. The asphalt section produced approximately 2,600 cubic yards of asphalt cold mix in support of road maintenance activities. Crusher scalpings provided an excellent road base material and to date approximately 2,500 cubic yards have been applied to the roads in this area. The quarry section is augmented by the 571st Engr Co (LE) quarry section. 6

16. Both Co B and Co C of the 39th Engrs were placed under operational control of the 577th Engr Bn (Const) during mid April. Company C, Ninh Hoa assisted in ROKA self help projects, combat support and engaged in upgrading bridges on QL-1. Co B, 39th Engrs is engaged in combat support, road maintenance in the Tuy Hoa North area and repair of the Cung Son airfield.

17. At the beginning of the reporting period the 553rd Engr Co (FB) was attached to the 39th Engr Bn (C). The company is located at Tuy Hoa minus one platoon located at Cam Ranh Bay, maintaining the My Ca Bridge. In the Tuy Hoa Area, the 553rd raised a blown 84ft reinforced concrete bridge (CG 115647) and constructed timber trestle bents under the spans to facilitate the construction of a reinforced concrete pier. The unit supported 4th Infantry Division assault river crossings with boats, motors and personnel for a search and destroy mission. Several tactical bridges were removed, throughout the reporting period, as permanent structures were constructed. At one time this company supported the 1st Brigade, 101st Airborne Division with a raft at bridge 1115 (CG 065735). At present the company is raising bridge 135 (CG 229290) which is a 100 ft reinforced concrete bridge. A center pier will be constructed to provide bearing for the two dropped spans.

18. During this reporting period the 572nd Engr Co (LE) constructed a road to Signal Hill No. 430 in the Fort Lane area. The road is a 1.5 mile single lane, dry weather road from QL-1 to the microwave relay site. The road has a maximum grade of 15% and was blasted through dense jungle and rock ledges. The company provided the 39th Engr Bn (C) with a 20 ton crane in support of pile driving bridge construction operations. The light equipment company supported the battalion quarry site and supported airfield construction at Cung Son. At present one platoon of the company is attached to the 19th Engr Bn (C) in Qui Nhon.

#### Section 2, Part I, Observations (Lessons Learned)

1. Personnel - None
2. Operations
  - a. ITEM: "Boulder" Quarry Demolitions

DISCUSSION: Demolitions in this type of quarry is different than in a normal bedrock quarry. The granite boulders are highly fractured and are in varying stages of decomposition. This condition does not lend itself to economic blasting and requires an abnormal amount of explosives. Considerable secondary blasting (mudcapping) is required. This procedure also requires greater amounts of explosives than used in normal quarry operations. This method of blasting produces 1,000 cubic yards of rock per 5,000 pounds of explosives, 600 ft of detonating cord and 600 electric caps. TNT and C4 are more effective than military dynamite for secondary blasting.

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OBSERVATION: Boulder quarries require abnormal amounts of detonation materials.

b. ITEM: Rock Drilling Equipment

DISCUSSION: Drilling equipment requirements in a boulder quarry are greater than in normal quarry operations. Drilling on a two shift basis, using three 600 CFM air compressors and 4 wagon drills, will produce enough rock to keep a 75 TPH rock crusher operating for 20 hours per day.

OBSERVATION: Rock drilling is critical in a "Boulder" quarry.

c. ITEM: Crusher Unit Requirements

DISCUSSION: In order to maintain a reliable level of production of crushed aggregate, it is desirable to have two primary crusher units located at the quarry. Although rock production will permit charging only one crusher unit, experience has indicated that by operating one crusher for one ten hour shift and then shifting to the stand-by unit, the operation is more efficient and a steady production will be maintained. Further, this arrangement permits a rapid change-over in case of equipment break-down. The overall result is that one crusher is always available for operation.

OBSERVATION: The installation of two crusher units in a rock quarry will insure a constant and more effective production rate.

d. ITEM: Primary Crusher Waste for Road Stabilization

DISCUSSION: Primary crusher waste (tailings) has proven to be an excellent road binder and consists of aggregate, sand and a clay binder.

OBSERVATION: Primary waste is an effective road base material. Limited production of this material restricts its use to high priority projects.

e. ITEM: Check-valves in POL Facilities

DISCUSSION: The design of a pipeline often does not include adequate check-valves to facilitate pumping over mountainous terrain.

OBSERVATION: Check-valves should be installed on both sides of steep grades to preclude a siphoning action concurrent with a break or leak in the pipeline.

f. ITEM: Raising Blown Bridge Spans

DISCUSSION: When concrete bridges are blown, the center pier destroyed, and little damage done to the span itself, an efficient and economical method of repair is to raise concrete slabs. Generally the bridge can be repaired as opposed to complete rebuilding. Two methods are employed in the Tuy Hoa area to raise damaged bridge spans.

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The first method involves construction of 2 ea 25 foot towers on either side of the span. An I-beam was placed on top of the tower and a block and tackle system suspended from the I-beam. Cable was then strapped around the span and attached to the block and tackle system. The span was raised using a winch (a vehicle tank retriever, VTR, 50 ton winch works well). Temporary timber piers were constructed on each side of the permanent pier. While the spans were supported in this manner, the permanent pier was placed. After the concrete cured, the two slabs were lowered to the new pier and the temporary piers removed.

The second method involves placing 2 ea class 60 trestles on both sides of the blown span. Aluminum balk was then placed between the trestle parallel to the bridge. Two I-beams were placed perpendicularly under the bridge supported by the balk. Heavy-duty jacks were positioned between the I-beam and the concrete stringers and the spans were alternately raised. After the spans were raised a new concrete pier was placed. The advantage of this system is that traffic continues during the actual jacking operation.

OBSERVATION: Dropped spans can be raised by using block and tackle or jacks.

h. ITEM: The issue of common nails in lieu of roofing nails presents leaking roof problems because of the lack of felt or rubber washers to prevent precipitation passing through roof nail holes.

OBSERVATION: By fabricating square ( $\frac{1}{2} \times \frac{1}{2}$ ) "washers" out of an old inner tube, common nails can be used on roofs providing a leak free connection. It is still important to drive these nails into ridges of corrugated roofing. This approach is time consuming but considered worthwhile.

### 3. Training and Organization

a. ITEM: Consolidation of battalion communications personnel

DISCUSSION: With a battalion in an administrative posture, it is often difficult and unnecessary to maintain a Net Control Station (NCS) for all assigned and attached units.

OBSERVATION: The consolidation of communications personnel into a centralized NCS permits more efficient utilization of communications personnel and facilitates optimum training of newly assigned communicators. Additionally, centralized radio maintenance personnel reduces maintenance problems considerably.

4. Intelligence - None

5. Logistics - None

6. Maintenance

a. ITEM: Rock Crusher Maintenance

DISCUSSION: Often the rock crushing unit is located in an area removed from the maintenance base and considerable time is lost due to travel by mechanics.

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The placement of a small 2nd echelon repair shop team at the quarry site eliminates travel time and minimizes maintenance "down time".

OBSERVATION: Attaching a 2nd echelon repair team shop at the quarry site improves crusher maintenance and better utilizes time.

b. ITEM: H-90 Front Loader

DISCUSSION: The bucket teeth on the H-90 Front Loader are in short supply.

OBSERVATION: Cutting edges from a dozer may be used to fabricate an acceptable substitute.

c. ITEM: Damaged Spindles on Cat 12 Grader

DISCUSSION: Graders often become unserviceable due to damaged spindles. Loosened hub nuts create free play resulting in damage to the hub. The 2nd or 3rd echelon tool kits do not have adequate tools to accommodate the tightening of hub nuts.

OBSERVATION: A suitable wrench should be included in the OVE designed to tighten these hub nuts.

Section 2, Part II, Recommendations:

This organization has been in Vietnam approximately nine months and has maintained round the clock operation of key pieces of construction equipment (i.e. cranes, asphalt distributors, bucket loaders, and graders). By operating in adverse environmental conditions in sustained operations, equipment "life-span" is greatly reduced. Recommend that a replacement program be established to exchange these key items for rebuild eight to twelve months after the organization has been in country.

*Carl P. Rodolph*  
CARL P. RODOLPH  
LTC, CE  
Commanding

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- 3 - CG, USARV, ATTN: AVGC - DH (Courier)
- 15 - CG, 18th Engr Bde, ATTN: AVBC-C (Courier)
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EGD-3 1st Ind  
SUBJECT: Operational Report-Lessons Learned (RCS CSFOR-65) for Quarterly  
Period Ending 30 April 1967

HEADQUARTERS, 45th Engineer Group (Construction), APO 96238, 11 June 1967

THRU: Commanding General, 18th Engineer Brigade, ATTN: AVBC-C, APO 96377  
Commanding General, USA Engineer Command Vietnam (Prov), ATTN:  
AVCC-P&O, APO 96491  
Commanding General, United States Army, Vietnam, ATTN: AVHGC-DH,  
APO 96307  
Commander in Chief, United States Army, Pacific, ATTN: GROP-CT,  
APO 96558

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

1. Operational Report-Lessons Learned of the 577th Engineer Bat-  
talion (Construction) for the Quarterly Period ending 30 April 1967 is  
forwarded.

2. Concur with observations.

  
K. T. SAWYER  
Colonel, Corps of Engineers  
Commanding

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AVBC-C (30 April 1967) 2nd Ind Cpt Mills/dlr/DBT-163 12  
SUBJECT: Operational Report - Lessons Learned (RCS CSFOR-65) For The  
Quarterly Period Ending 30 April 1967

Headquarters, 18th Engineer Brigade, APO US Forces 96377

TO: Commanding General, U.S. Army Engineer Command, Vietnam, (Prov)  
ATTN: AVCC-P&O, APO US Forces 96491

1. This Headquarters has reviewed the Operational Report - Lessons Learned (RCS CSFOR-65) submitted by the 577th Engineer Battalion (Construction) for the period ending 30 April 1967 and considers it an adequate account of unit activities and accomplishments.

2. Concur with the observations and recommendations of the battalion commander, as indorsed by Commanding Officer, 45th Engineer Group (Construction), with the additional comment:

Page 7, paragraph c, Item: Damaged Spindles on Cat 12 Grader - The checking of these nuts should be a part of daily services performed on the equipment, wrenches in the general mechanic's tool box will fit these nuts. The use of unit contact maintenance teams can overcome this problem.



C. M. DURE  
Brigadier General, USA  
Commanding

9  
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AVCC-F&O (30 Apr 67) 3d Inrd CPT Hubbard/ccb/BNH 497  
SUBJECT: Operational Report-Lessons Learned (RCS CSFOR-65) for Quarterly  
Period Ending 30 April 1967

HEADQUARTERS, UNITED STATES ARMY ENGINEER COMMAND  
VIETNAM (PROV), APO 96491

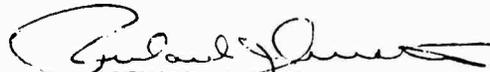
TO: Commanding General, United States Army, Vietnam, ATTN: AVHCC-DE,  
APO 96307

1. The subject report, submitted by the 577th Engineer Battalion (Const), has been reviewed by this headquarters and is considered adequate.

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

Section 2, Part II, page 7, Recommendations. 1st Logistical Command has a program for maintenance float, evacuation of repairables and replacement of major end items. When fully implemented by receipt of sufficient end items, the problem of the "shortening" rebuild age of equipment used in RVN should be solved.

FOR THE COMMANDER:

  
RICHARD J. LUCOTE  
Colonel, CG  
Chief of Staff

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AVIAC-DST ( May 67) 4th Ind  
SUBJECT: Operational report-lessons learned for the period ending  
30 April 1967 (ACJ ODFOR-05)

HEADQUARTERS, UNITED STATES AIR FORCE VIETNAM, APO San Francisco 96307 13 JUL 1967

TO: Commander in Chief, United States Air Force, Pacific, AFM : AFOP-CT,  
APO 96350

1. This headquarters has reviewed the Operational Report-Lessons  
learned for the period ending 30 April 1967 from Headquarters, 577th In-  
fantry Brigade (Command).

2. Pertinent comments follow: Reference items concerning exchange  
of 14 pieces of construction equipment, para 7 and paragraph 8, 3d In-  
tersegment: Concord in comments contained in paragraph 1, 3d Intersegment.

THE AIR COMMANDER:

  
K. P. LASSER  
CPT, AFM  
Asst. AD

75

GPOP-DT (Undtd) 5th Ind )  
SUBJECT: Operational Report for the Quarterly Period Ending 30 April 1967  
from HQ, 577th Engr Bn (Const.) (RCS CSFOR-65)

HQ, US ARMY, PACIFIC, APO San Francisco 96558 2 . SEP 1967

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

This headquarters has evaluated subject report and forwarding  
indorsements and concurs in the report as indorsed.

FOR THE COMMANDER IN CHIEF:

*G. L. McMullin*  
G. L. McMULLIN  
MAJ, AGC  
ASST. AC