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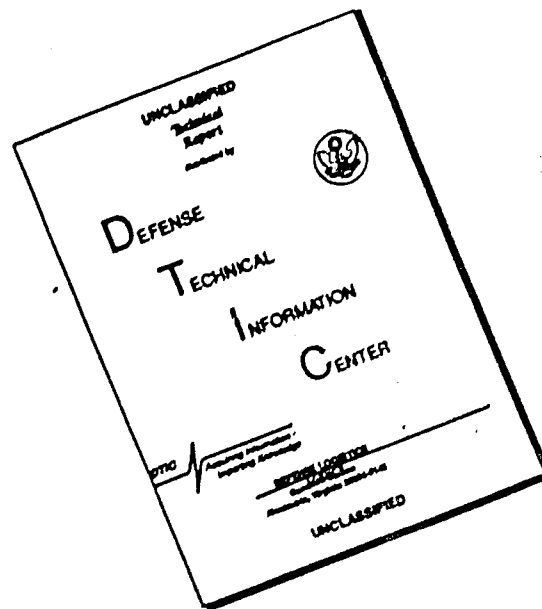
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OFFICE OF THE ADJUTANT GENERAL  
WASHINGTON, D.C. 20310

IN REPLY REFER TO

AD 861636

AGDA (M) (24 Oct 69) FOR OT UT 693148

7 November 1969

SUBJECT: Operational Report - Lessons Learned, Headquarters, 589th Engineer Battalion, Period Ending 31 July 1969

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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:

*Kenneth G. Wickham*

KENNETH G. WICKHAM  
Major General, USA  
The Adjutant General

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DEPARTMENT OF THE ARMY  
Headquarters, 589th Engineer Battalion (Const)  
APO San Francisco 96321

EGACBF-CO

31 July 1969

**SUBJECT:** Operational Report of 589th Engineer Battalion (Construction)  
For Period Ending 31 July 1969, RCS CSFOR-65(R1)

**THRU:** Commanding Officer  
35th Engineer Group (Const)  
ATTN: EGA-3  
APO SF 96312

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

Commanding General  
United States Army, Vietnam  
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Commander in Chief  
United States Army, Pacific  
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APO SF 96588

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

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31 July 1969

SUBJECT: Operational Report of 589th Engineer Battalion (Construction)  
For Period Ending 31 July 1969, RCS CSFOR-65(R1)

1. SECTION 1, OPERATIONS: Significant Activities

a. Organization: The organizational structure of the 589th Engineer Battalion (Construction) during the report period is found at Inclosure 1.

b. Command and Staff Changes: 1LT Perry L. Price assumed command of HHC on 17 May 1969 replacing 1LT Kenneth P. Koppers, who was reassigned to Company B. LTC Donald A. Ramsay assumed command of the battalion on 4 June replacing LTC Al S. Rosin. Also on 4 June, 1LT Anthony C. Muse became the Battalion S-4 Officer, replacing 1LT Bruce Fernandez. CPT Joseph Feast Jr. assumed the duty of Battalion S-3 on 15 June replacing MAJ Martin M. Warvi who rotated. MAJ Eugene W. Bennett, Battalion Executive Officer, was reassigned to the 35th Engineer Group as S-3 on 7 July, leaving the position vacant for the remainder of the period. On 9 July CPT James A. Lewis was assigned to Company D as commander, to replace CPT John R. Logue, who was reassigned as Battalion Adjutant. Also on 9 July, 2LT David G. Bennett was assigned as Battalion Pipeline Engineer. 1LT Samuel L. Lamey was transferred from Company D to replace the commanding officer of Company C, CPT Richard Comiso, who rotated to CONUS on 25 July. Also on 25 July, CPT Frederick M. Howard assumed command of the 687th Engr Co (LC) to replace CPT Howard H. Reed who rotated. 2LT Donald E. Alsted became the Battalion Signal Officer on 26 July, replacing 1LT Arthur M. Davis.

c. Headquarters and Headquarters Company (HHC):

(1) The Headquarters Company water point at Company C, Song Pha, produced 638,000 gallons of water during the report period. The other water purification unit moved to Song Mao on 23 May to support an element of Company B in the Song Mao area. This water point produced 268,000 gallons of water during the period 23 May to 31 July 69.

(2) The utilities section continued to improve the living conditions of the battalion area through light construction and minor repairs. One new bunker was constructed to provide a convenient fortified shelter for transient personnel. All bunkers in the company area were renovated. The use of sandbags was minimized through the utilization of sandfilled 55 gallon drums which also provided increased protection.

(3) Additionally, the utilities section began construction of fifty writing desks utilizing scrap lumber as it became available. Desks will be given to a Buddhist school near Phan Rang as a Civic Action project.

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d. Company A

(1) The organizational structure of the company remained the same with personnel and equipment of the 51st Engineer Platoon (Asphalt) remaining attached to the company to assist in the battalion paving operation.

(2) Civilian contract mechanics were assigned to the battalion on 3 June 1969. Although their main responsibility is maintenance and repair of MCA equipment, their base of operations was in the Direct Support Maintenance Platoon area and their knowledge and manpower were also utilized to supplement company TOE capabilities.

(3) During the report period, the company paved 24.4 kilometers of single lane asphaltic pavement on Highway QL-11 between Phan Rang and Song Pha. During the report period, 9424 tons of asphalt were hauled from the 554th Red Horse asphalt plant at Phan Rang and 3276 tons from the RMK asphalt plant at Cam Ranh Bay. Difficulties in obtaining asphalt were caused by breakdowns at both the 554th asphalt plant (asphaltic concrete source) and the Company A quarry (asphalt aggregate source). Competition with a civilian contract organization (RMK) which is also paving portions of highway QL-1 and the Air Force Base for asphalt from the 554th caused many days of relatively low production, therefore, in order to maximize output and decrease conflict, a paving schedule was established which allowed the battalion to draw asphalt two days out of every three with RMK obtaining asphalt on the third day. The overall effect was increased weekly production and a better maintenance program for the paving equipment.

(4) The battalion has two pavers. One (SA 35) was operational throughout the period and the other (Barber Greene 879-B) has been deadlined since 5 June 1969 for various items.

(5) During the report period, the following amounts of crushed rock were produced: 75,724 cubic yards of base course (2 1/2" minus), 16,729 cubic yards of asphalt aggregate (1" minus, plus 1/2"), 9,064 cubic yards of asphalt aggregate (1/2" minus), and 534 cubic yards of concrete aggregate (1 1/2" minus, plus 1/2"). The following amounts were stockpiled at the quarry at the close of the period: 71,039 cubic yards of base course and 1,473 cubic yards of 1" (-) rock.

(6) Although the quarry has not surpassed its quota of total crushed rock 11 weeks out of the past 13, maintenance problems have made

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its support of the asphalt plant less than desirable. The quarry initially employed the following units of the 225TPH crusher in its crushing operation: a primary, jaw crusher; a secondary, 54 unit; and a tertiary, 42 unit. The quarry initially employed only the primary jaw crusher and the secondary roll crusher of the 225 TPH crushing plant. The plant quota of total crushed rock was normally met or surpassed, however, the percentage of 1"(-) rock had to be increased in order to meet gradation specifications for the asphaltic concrete aggregate. This was not possible with the then two-unit set-up and a third crusher ("42" smooth roll crusher) was added. It was decided, after experimental arrangements of screens and conveyor belts, that a 70 foot conveyor belt returning 1"(-) rock from the third unit to the second unit, plus the replacement of a 1/2" screen for a 1" screen in the third unit, would allow the efficient production of the required quantities of 1" rock. The 70 foot conveyor was fabricated and installed on 2 June 1969. The entire crusher complex required approximately 1 hour of routine maintenance for each hour of operation and yielded an average of 20% fine asphaltic concrete aggregate (1/2"(-)), 25% coarse aggregate (1"(-)) and 55% base course (2 1/2"(-)).

(7) The major portion of crusher maintenance problems during the report period involved the secondary (54 unit) crusher. The cross drive shaft and bearings were replaced due to excessive wear; extreme vibration caused the engine frame to frequently crack and motor mount bolts to occasionally shear; a new motor was required and installed for the shaker box; and the V-12 engine was replaced due to frequent loss of compression.

(8) The company provided equipment and operator support to the battalion. Track drills, compressors, welders, D-9 dozers, and the gradall and crane were utilized by the line companies for LOC upgrade, MACV projects and base camp construction. The S-4 relied on crane and low bed support to move materials and equipment. The entrenching machine and operator were sent TDY to the 937th Engineer Group for a 90 day period on 18 July 1969.

(9) The Direct Support Maintenance Platoon received 362 job orders during the report period. All except 52 have been completed: 21 are awaiting parts, 6 are awaiting evacuation, and 25 are being worked on or are awaiting welding or machine shop work. Machine shop work has been slowed by lack of metal stock which has been depleted by routine repair work and special construction projects, such as the 70 foot conveyor, water tanks, and hardening of 2 1/2 ton trucks. A significant amount of 3rd shop effort was expended on the repair of paving and

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quarrying equipment during the period.

(10) The company was authorized to stock 6100 line items and thirty-nine percent were at zero balance at the close of the period. Three hundred sixty-six red ball requisitions were submitted during the period and, of that number, 145 were received or cancelled.

e. Company B

(1) On 15 June the Company D Earthmoving Platoon was detached and returned to its parent unit. Major projects during the report period included: road upgrading and drainage structure construction along a 12.6 mile stretch of Highway QL-11 between Thap Cham and Tan My Bridge, road clearing and maintenance on a 102 mile stretch of Highway QL-1, upgrading of MACV Facilities in Phu Quy subsector, base camp construction for the 2/1st Cavalry Squadron at Song Mao and Vinh Hoa, technical assistance for base camp construction at Song Mao for the 5/27th Artillery, helipad installation for the MACV Hoa Da subsector, construction of MATS Team compound in Than Hai District and application of non-skid paint to the Song Mao Airstrip. Civic Action projects included land clearing and access road construction in Loung Tri Hamlet near the Phan Rang Air Base, Popular Force (PF) outpost clearing in Hoa Da, fill hauling for hospital construction in Phan Ly Cham and canal excavation in Hiop Duc. The company also provided support to the ARVN 44th Regiment which included berm construction, site preparation for dependent housing and road repair and maintenance.

(2) Principal earth work on QL-11 consisted of clearing and grubbing, stripping, widening and filling. In addition, 13,500 cubic yards andesite rock on Doe Cau Ridge was drilled, blasted and used as fill material elsewhere on the road.

(3) Effort on QL-11 during the report period resulted in the placement of 89,391 cubic yards of fill, 5,089 cubic yards of base course, 60 cubic yards of blast rock and 182 cubic yards of concrete. Stripping of unsuitable material from the roadway and borrow pits required removing 16,310 cubic yards of spoil. The construction platoons have completed construction of twelve culverts totaling 180.8 meters this period. All culverts were backfilled and tamped, compacted, and headwalled on both the upstream and downstream sides.

(4) The most significant problems encountered in horizontal construction were maintenance and water supply. Maintenance problems included the periodic nonavailability of the high-demand replacement parts

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which resulted in deadlined equipment. Examples were truck tires, inner tube patches, lug nuts, filters, cutting edges, ripper teeth, cutting edge bolts and ripper teeth shear pins. The replacement of GVM tools and grease guns is a continual problem. The nonavailability of these items had a significant impact on vehicle and equipment maintenance. MCA equipment augmentation including a D-9 dozer with rippers, a Hyster segmented compactor, a Raygo vibratory roller, and a Gradall made a significant contribution to production. The efficiency of the compactors and rollers created an urgent requirement for increased water capability to achieve optimum moisture content while maintaining the maximum production rate. Equipment currently not authorized that would have significantly increased productivity were gasoline driven tampers for back filling, self-loading distributors with 2500 to 3000 gallon capacity, and pumps with a minimum of 500 GPM capacity for loading salvaged 5000 gallon POL tankers which have been converted into water distributors.

(5) Road maintenance responsibility on the 102 mile stretch of highway QL-1 between Bridge #119 and Bridge #21 required occasional work during this period. A two-platoon task force constructed and maintained by-passes at bridges #24, 25, 27, 29 involving the placement of five sandbag headwalled, corrugated metal culverts at each site.

(6) The upgrading of MACV Facilities was accomplished at Ca Na, Ninh Thuan Province. Work at that location consisted of a 20'x30' live-in/fight-in bunker, 4'x4' latrine and shower, cyclone fence, concertina and double apron barb wire protective barriers. At the close of the period, a platoon-size force was engaged in operational support construction of facilities for the 2/1st Cavalry Squadron. The project included the construction of live-in/fight-in bunkers, guard towers, latrines, showers, mess hall and protective revetments.

(7) The most significant problem encountered in the vertical construction area was the nonavailability of tools such as power saws, saw blades, hand tools, sledge hammers, fifty foot tapes and the nonavailability of high demand, standard construction materials such as door hinges, culvert nuts and bolts, 3/4" plywood and 1" lumber.

f. Company C

(1) During the report period from 1 May - 31 July, Company C, 589th Engr Bn (Const) was engaged in the upgrading and maintaining of highway QL-11 from bridge #16 to bridge #41 (32 kilometers of roadway). Company C was also engaged in the improvement of their cantonment area,

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completion of a 50 foot machine gun tower for MACV Facility at Ba Rau on QL-1, and construction of seven live-in/fight-in bunkers for Company D at Phu Quy.

(2) Improvements were made in the cantonment area with the construction of a wash and laundry room for local national employees, the replacement of canvas tent with corrugated metal roofing on the orderly room and operations bunker, the placement of a 40 foot radio antenna pole and a 20 foot tower supporting a 2300 gallon water storage tank to provide gravity flow to the mess hall and all shower tanks.

(3) A continual maintenance program was established to insure that QL-11 was kept open to traffic. The maintenance consisted of pot-holing, cleaning out culverts and ditches to improve drainage in the pass (mountainous region between Song Pha and Don Duong), grading the existing road directly after each rain and providing rescue teams for disabled US, ARVN and civilian vehicles in the company area of responsibility.

(4) During the period, 138,340 cubic yards of select fill material were hauled, graded and compacted. The average haul distance remained fairly constant at between 1,000 and 2,000 meters. The production capability increased considerably with the arrival of a new grader and two 5-ton dump trucks in May and three 290 tractors, three D7E dozers and one scoop loader in June.

(5) The construction platoons completed construction of eight culverts totaling 415 meters this period. All culverts were backfilled and tamped, compacted, headwalled, and rip rapped on the upstream and downstream sides. Additionally, five culverts were in various intermediate stages of construction at the close of the period. Headwall construction progress was seriously slowed this period due to the non-availability of plywood and tie wire necessary for formwork.

(6) The second general construction platoon assisted with the construction of the Company D base camp at Phu Quy from 29 June to 17 July. The platoon constructed seven live-in/fight-in bunkers and assisted with the mess hall construction.

(7) Eight men from the first general construction platoon began construction on 7 July of a 50-foot machine gun tower for the MACV Facility located at Ba Rau. Construction of the tower consisted of placing 4-60' telephone poles and bracing them with 4x12 and 2x10 lumber. Two platforms were constructed on the tower to permit clear fire coverage

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and observation over the surrounding territory. Construction was completed on 19 July.

g. Company D

(1) During the report period, Company D was involved in the following activities: construction of an operations bunker in Cam Ranh Bay, transfer or completion of projects in the Dong Ba Thin area, unit move from Dong Ba Thin to Phan Rang, construction of the company base camp at Phu Quy and the upgrade of highway QL-1 from Phan Rang to Xom Noi.

(2) On 7 May, the second construction platoon commenced work on a tactical operations center bunker for the Cam Ranh Bay Support Command. The platoon remained in the Cam Ranh Bay area to continue work on the project when the company deployed to Phu Quy. A total of 150 cubic yards of concrete was placed during the period for the 20'x50' structure. It was 60% complete at the close of the period.

(3) The company was involved in ten construction projects in the Dong Ba Thin area at the beginning of the report period. Nine of these were transferred on 10 June 1969 to the 864th Engr Bn which included a power plant, two aviation support facilities, an engine repair shop, two warehouses, a microwave terminal facility and two airfield repair projects. The remaining project was a direct fueling facility for helicopters located at the 10th Aviation Battalion in Dong Ba Thin. The second construction platoon pushed up berms on 12 July to complete the facility while concurrently working on the bunker in Cam Ranh Bay.

(4) On 11 June Company D (less the 2nd construction platoon) began to shuttle its property and personnel by truck convoy to a holding area on the Phan Rang Air Base. A total of four days was spent in the unit move to Phan Rang. Operations were conducted from Phan Rang until facilities at Phu Quy gradually became available.

(5) On 15 June the company began construction of minimum essential living requirements which included live-in/fight-in bunkers, security lighting and fencing, perimeter berms, guard towers, showers and latrines. Personnel returned nightly to the Phan Rang Air Base for quarters until the camp was fortified. On 22 June the company moved to the new camp and utilized 72" culverts for sleeping quarters until more permanent facilities became available. From 29 June to 17 July the second construction platoon, Company C, 589th Engr Bn was attached to Company D to assist in construction of the Phu Quy cantonment area. While attached,

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Company C constructed a total of seven live-in/fight-in bunkers and assisted with the mess hall construction. The Company D effort for this period included erection of five 20'x50' live-in/fight-in bunkers, one 16'x96' mess hall, one 30'x10'x5' POL stand, a berm of 3200 cubic yards, a 20'x30' BOQ, 80' of culvert for drainage, a sump and catch box, 10 revetments for tanks and APC's, 1000 feet of double apron barbed wire fence, 4000 feet of triple standard concertina wire, 14 - 30' poles for perimeter lighting, upgrading a 200 meter access road to the base camp, and the erection of a shower and latrine. Work was hampered considerably due to the nonavailability of lumber through the supply system.

(6) - The Company D earthmoving capability was greatly increased on 6 July when the earthmoving platoon, Company C, 93rd Engr Bn, was attached to assist in upgrading highway QL-1.

(7) On 11 July Company D commenced construction on highway QL-1 by stripping unsuitable material from the roadbed in an area approximately 14 kilometers south of Phu Quy. A total of 19,558 cubic yards of earth was moved on QL-1 during the last three weeks of the quarter. The placement of subbase was curtailed considerably due to the lack of water hauling capabilities. Water utilized for proper compaction had to be hauled a distance of 13 kilometers.

(8) The absence of an adequate and dependable external security force significantly curbed progress on road construction through enemy infested areas. This problem was partially solved by the formation of an internal security force from the vertical platoons to support the earthmoving operations. This, however, reduced the vertical construction capability and created the need for additional automatic weapons, grenade launchers and radios which were not authorized and not available.

h. 513th Engineer Company (DT)

(1) During the period Headquarters, Maintenance, and First Platoons were attached to the 589th Engr Bn (Const) at Phan Rang, and the Second Platoon was attached to Company B, 577th Engr Bn at Phu Hiep and subsequently attached to Company A, 864th Engr Bn at Minh Hoa.

(2) For the first three weeks of May, the trucks of the First Platoon hauled asphalt from the RMK asphalt plant at Can Ranh Bay for paving operations on highway QL-11. Initially the trucks carried ten tons of asphalt and each made two round trips daily. Almost half of the

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vehicles involved in this activity had sufficient time to return to Company D cantonment at Dong Ba Thin for quarters from which they were able to return to the plant for asphalt early the next morning. This practice effectively precluded the possibility of a "bottleneck" at the asphalt plant and contributed to the success of the operation by insuring a continuous and evenly distributed delivery of asphalt to the paving site. Following the first week of operations a reappraisal of the operation was made and a more realistic figure of seven and one-half tons of asphalt per load was decided upon, due principally to badly rutted sections of QL-1 between Can Ranh Bay and Phan Rang. This revised figure resulted in an immediate decline in the number of time-consuming delays due to multiple tire failure and allowed a more efficient operation. From 19 May to the end of the report period, asphalt was obtained mainly from the Air Force Asphalt plant at Phan Rang.

(3) During the report period the 513th Engr Co (DT) hauled the following in support of the 589th Engr Bn operations: 10,377 tons of asphaltic concrete, 9648 cubic yards of base course, 174 cubic yards of 3"(-) rock, 1186 cubic yards of  $\frac{1}{2}$ "(-) rock, 638 cubic yards of blast rock and 1086 cubic yards of sand.

i. 553rd Engineer Company (Float Bridge): The 553rd Engr Co (FB) was attached to 589th Engr Bn (Const) until 19 June 1969 at which time it was attached to the 864th Engr Bn (Const). While attached to the 589th Engr Bn, the unit was more active in performing its secondary mission of transportation which included general hauling and supporting the relocation of the 547th Asphalt platoon, Company B/577th Engr Bn and Company D/589th Engr Bn. A total of 457 bridge truck days and 238 cargo truck days was expended while attached to the 589th Engr Bn.

j. 687th Engineer Company (Land Clearing)

(1) The primary mission of the company during this report period was to clear along highway QL-11 from Song Pha to Phan Rang, conduct general clearing operations in the Phan Thiet area and assist in clearing an island during operation Pipestone Canyon. Additionally, the 2nd platoon, under operational control (OPCON) of the 937th Engineer Group, was directed to clear along highway QL-19 in An Kho and along highway QL-1 north of Bong Son.

(2) On 8 May the company completed clearing 554 acres along QL-11. The company then performed intensive maintenance at Phan Rang for one week and subsequently cleared approximately 500 acres within the Phan Rang Air Base perimeter.

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(3) On 15 May the company (less one platoon) was transported south by Landing Ship Tank (LST) and closed Phan Thiet on 17 May. Since base camp facilities were not available at Phan Thiet, the company built bunkers and erected tents while coordinating support through the Logistical Support Activity (LSA) and MACV. On 19 May the company moved to the field and began clearing a 1000 meter-wide strip from QL-1 to the South China Sea. The unit made two moves and cleared 1917 acres to complete the project by 6 June. Additionally, bull dozers pushed up a 2200 meter-long berm around Phan Thiet from 3-5 June.

(4) On 6 June the 3rd platoon departed by LST for Da Nang to participate in Operation Pipstone Canyon. They remained OPCON to the 45th Engr Gp for the remainder of the period.

(5) Also on 6 June, the company (-) moved to highway QL-1 to begin clearing from Go Goi south to the III Corps border. The company continued along QL-1 and Highway #342, clearing 1258 acres by 19 June, when it was joined by the 2nd platoon which had been OPCON to the 937th Engr Gp. It then proceeded to clear a one kilometer-long strip along the railroad tracks northwest of Phan Thiet. On 23 June the company moved to a location near Landing Zone (LZ) Sherry where it began clearing operations in an area reputed to be a VC base camp. From 26 June to 4 July the company cleared 458 acres, destroying 59 bunkers and numerous foxholes and spider holes. While in this area dud rounds and booby traps were encountered daily and a total of 16 booby traps were tripped with dozers. On 5 July the company moved to the edge of Lee Hong Fong Forest and cleared two known infiltration areas totalling 1562 acres. The company returned to Phan Thiet on 17 July and performed maintenance for the remainder of the period. While operating in the Phan Thiet area the company moved field locations eleven times and assisted in numerous small civic action projects.

(6) The company continued to enjoy an excellent maintenance record in both engineer and ordnance equipment. Maintenance support, drawn from the LSA's at Phan Rang and Phan Thiet and the 69th Maintenance Battalion at Can Ranh Bay, was handled efficiently by a parts expediter with the 35th Engineer Group in Can Ranh Bay. Work ranged from replacing blown engines to repairing fuel and hydraulic lines.

(7) Company administration was handled in the rear area and operated efficiently despite communications problems resulting from the move to Phan Thiet. Although the company experienced a large turnover in supervisory personnel, replacements were adequately provided and they

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insured continuity of operations. Courier service is used to handle distribution to both detached platoons and the 589th Engr Bn (Const). Mail service improved when mail was handled by a central agency and then flown to the company in the field.

(8) Security during the report period was excellent. Along QL-11 it was provided by E Troop, 17th Cav, 173rd Abn Bde and occasionally by local Popular Force (PF) platoons. Security during operations in Binh Thuan Province was provided through MACV in conjunction with the Province Operations Officer (ARVN). Usually two Regional Force (RF) or ARVN companies were placed in direct security support. The RF's also "opened" (cleared by reconnaissance) all roads necessary for daily resupply and frequently ran additional operations in the area being cleared.

(9) Resupply was obtained through the ISA at Phan Rang until 14 May when the ISA at Phan Thiet assumed the responsibility. All rations, POL, water, and other supplies were drawn from the ISA and transported to the field on daily resupply convoys.

(10) All training was integrated with daily clearing operations except the one hour weekly command information class. New operators accompanied experienced operators for several days to become familiar with the Rome Flow operations and an NCO walked them through their first day of maintenance to insure they knew what was expected of them. Chaplain services were obtained whenever possible.

(11) Unit medics handled medical evacuations and all field problems rapidly and efficiently. Personnel on sick call were taken to a servicing aid station on the daily resupply convoy.

**k. Personnel and Administration**

(1) During the report period ending 31 July 1969, the assigned strength of the battalion plus attached units went from 86% at the start of the period in May to 93% at the close. This gain is attributed to an increase of replacements, plus an effective retention program through extensions of foreign service tour and reenlistments.

(2) The most critical shortages of required MOS's in the officer ranks are platoon leaders and engineer maintenance warrant officers at the company level. The enlisted MOS shortages continued to be truck drivers, supply sergeants, and trained equipment operators. The issue of MCA equipment without a special allocation to provide operators caused an

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acute shortage of TOE equipment operators that had to be filled from other unit resources by OJT. Other MOS's, although short at the present time, are being filled from normal replacement channels and the OJT program.

(3) During the report period the 553rd Engr Co (FB) was transferred to the administrative and operational control of the 864th Engr Bn. The earthmoving platoon of Company C, 93rd Engr Bn was attached to Company D, 589th Engr Bn for construction support.

(4) During the report period, 55 personnel were recommended for awards.

1. Intelligence and Security

(1) Enemy activity directed against friendly forces in the battalion area of responsibility was concentrated primarily at two locations. In the Phan Rang area, the Air Base was the principal target of activity, being mortared or rocketed on twelve separate occasions during the report period, and considerable activity was encountered by the 687th Engineer Company (Land Clearing) while clearing an enemy stronghold near Phan Thiet in Binh Thuan Province.

(2) The nature of activity during the period ranged from booby trap encounters to mortar and rocket attacks against friendly installations. Incidents of enemy activity affecting operations of the 589th Engr Bn were as follows:

(a) On 12 May 1969 at approximately 1230 hours elements of Company B found a hand-made Viet Cong (VC) grenade along the roadway near Bridge #8 on highway QL-11(QL-11-8)(BN 672915). The device, fabricated from a C-ration can, was detonated in place by Explosive Ordnance Disposal (EOD) personnel from the Phan Rang Air Base.

(b) At 1630 hours on 16 May the paving crew of Company A received small arms fire from the north side of highway QL-11 near the village of Trai Nho Ho(BN 702867). Friendlies returned fire by M-79 and M-16's.

(c) Elements of Company B, camped near the village of Tuy Phong(BN 523419) received automatic weapons fire at approximately 2200 hours on 27 May. Friendlies in the area returned fire with 40mm mortars.

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(d) Twice in the early morning hours of 6 June, the Company C base camp at Song Pha (BP 482088) came under mortar attack, receiving a total of ten (10) rounds. Forimeter defense returned fire by small arms, automatic weapons and mortars.

(e) On the morning of 14 June, convoy elements of Company B were detained by a booby trapped roadblock on highway QL-1 near the village of Ap Hiep Phuoc (BN 290411). Road block was destroyed in place by Company B personnel.

(f) At 0110 hours on 19 June elements of Company B received 5-6 rounds of 60mm mortar fire at Vinh Hoa (BN 600530). Fire was returned by ARVN artillery.

(g) On 21 June a 687th resupply convoy detonated a mine on route #342 near the village of Ap Pho Phong (AN 755120). Mine sweeping personnel who preceded the convoy located and destroyed four additional mines.

(h) At 1630 hours on 23 June, a 3/4 ton vehicle received small arms fire while traveling near Phu Quy (BN 763757) on highway QL-1. The vehicle immediately accelerated and exited the fire zone.

(i) During the morning of 26 June, dozers of the 687th Engr Co (LC) detonated three (3) booby trapped 105mm rounds in separate incidents.

(j) At approximately 0915 hours on 26 June, 687th dozers uncovered a VC bunker/tunnel complex near the village of Binh Lam. Investigating security elements found fresh food and personal effects. The complex was demolished by an artillery strike.

(k) On 26 June at approximately 1100 hours, three personnel of the 687th Engr Co (LC) were walking in an area where clearing was in progress. One of the personnel detonated an enemy anti-personnel mine.

(l) During the morning of 27 June, dozers of the 687th detonated two booby trapped 105mm rounds near the village of Binh Lam. The work effort was uninterrupted.

(m) On 30 June dozers of the 687th Engr Co (LC) discovered a VC bunker complex made of shell casings. Security personnel found numerous cooking utensils and miscellaneous personal items. The complex was destroyed by bull dozers.

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(n) Later in the morning of 30 June an eight-bunker complex was discovered by 687th dozers near the hamlet of Binh Lam. The recently occupied complex, believed to be an assembly point for fabricating mines and booby traps, and several nearby observation towers were destroyed. Contents of the bunkers included one mortar tube, four artillery rounds, four batteries, five fuses, miscellaneous electrical wiring, cooking utensils and clothing. Bull dozers destroyed the complex.

(o) On 1 July elements of the 687th were involved in three separate mining incidents. Two of the mines were booby-trapped 105mm rounds and one was an anti-personnel mine.

(p) On the afternoon of 1 July dozers of the 687th uncovered a five-bunker complex near Binh Lam Hamlet. Contents included 201bs of rico, a motorbike, cooking utensils and clothing. The complex was destroyed by bull dozers.

(q) On 2 July near Binh Lam Hamlet a 687th dozer detonated a mine believed to be a 250 lb bomb, which temporarily delayed the work effort.

(r) During the afternoon of 4 July near LZ Sherry the 687th uncovered twelve VC bunkers and 300 rounds of 30 caliber ammunition. Bunkers were destroyed by bull dozers.

(s) During the early morning hours of 11 July, a box culvert near bridge #59 on highway QL-1 was partially destroyed by enemy demolitions. The culvert remained passable to one-way traffic until emergency repairs could be made.

(t) At 0845 hours on 14 July near Long Rho Hamlet, a 687th minesweep team found one dead VC and two fresh graves beside a mine crater. Disinterment revealed two VC bodies. Three Chinese Communist (CHICOM) grenades, one damaged M-1 rifle and one plastic mine with detonation system, were found nearby and destroyed in place.

(u) Also on 14 July elements working in the vicinity of Hoa Thanh Hamlet detonated a plastic mine and destroyed a booby-trapped 155mm round in place.

(v) At 2123 hours on 18 July, the Company D base camp at Phu Quy came under attack. A total of four 82mm mortar rounds were received.

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(w) On 21 July at 2233 hours the Phu Quy base camp again came under attack, receiving one 60mm mortar round.

(x) Elements of Company B received small arms fire on the morning of 28 July while working on highway QL-11 in the vicinity of Dong Mo.

(y) At approximately 0900 hours on 30 July, security elements for Company D sighted a squad of VC near the village of Thon Hieu Thien. MACV provided artillery support.

(3) In summary, there was a slight increase in enemy activity this period as compared to the previous period. This increase is largely attributed to intensified aggression against US units in general and the increased number of battalion projects in areas more densely populated with the enemy.

n. Communications

(1) During the report period, major accomplishments included the installation and operation of the new AN/GRC-142 Radio Teletype Set and related KW-7, cryptographic equipment. The AN/GRC-142 system with cryptographic attachments allowed secure land-line teletype and secure radio teletype (AM) transmissions, thus eliminating the necessity of manual encryption and decryption of classified messages. The system was most useful in maintaining fast and efficient communications of classified information with the 35th Engr Gp in Can Ranh Bay.

(2) Additionally, by utilizing the basic radio set AN/GRC-106, the Amplitude Modulated (AM) mode of communications was established. This increased the battalion's dependable radio transmission range from approximately 15 miles to the current 50 mile effective radius. The increase in dependable range greatly improved communications to the outlying units of the battalion located in Song Pha and Phu Quy.

(3) Due to the arrival of the newer, more effective signal systems and the shortage of qualified, school trained equipment operators, an extensive QT program to provide qualified operators for the battalion was established. The need for a continuous training program was created by personnel turbulence and training is conducted daily.

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n. Religious Activities

(1) The religious program of the 589th Engr Bn continued to increase the number of services available to battalion personnel. The total attendance at services by battalion personnel numbered 2387 this period.

(2) A weekly Catholic mass was started in the battalion chapel this period with a Phan Rang Air Base chaplain officiating. Catholic services for Company C personnel at Song Pha were conducted by the Catholic chaplain from the Can Ranh Bay Support Command. Jewish and Latter Day Saints (LDS) services are conducted regularly at the Phan Rang Air Base Chapel.

(3) The battalion Chaplain's Fund Council designated that the May and June offerings be used to support the Christian and Missionary Alliance Church work in the Phan Rang area. Additionally, several Civic Action projects to support religious and educational institutions in the area have been coordinated by the battalion chaplain.

(4) During the report period, 90% of the battalion participated in the Character Guidance Program.

(5) The chaplain attended the monthly one-day Chaplain's Retreats at the Can Ranh Bay Support Command Headquarters and at the Nha Trang IFFV Headquarters. The retreats proved to be most helpful by allowing greater cooperation for religious coverage for isolated units.

o. Medical Activities

(1) The Medical Section of the battalion provided primary medical support for elements of HHC, A, B, and C Companies and the 513th Engr Co (DT) throughout the reporting period. Additionally, the section directly supported Company D, 589th Engr Bn at Phu Quy from 10 June to the close of the report period. Supply support was provided to the 687th Engr Co (LC) and primary medical support was also provided for elements of D/36th Sig Bn, HHT-2/1 Cav and DA civilians during this period.

(2) The total number of US personnel out-patient visits during the report period was 2603. A total number of 2010 laboratory tests were performed, 1346 immunizations were given and 1784 prescriptions were filled. Vietnamese patients number 418.

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p. Logistics

(1) The major effort was support of the construction and LOC projects. During this quarter additional support was furnished 2 platoon elements 30 miles south of Phan Rang and the relocation of Company D to new site with full logistical response for both.

(2) In early June, stocks of one and two inch lumber reached the critical point in depot. Immediate rigid controls were placed in effect, and problems developed in meeting construction goals. Shortly after, a moratorium on all requisitions for all types of lumber was established, an inventory was taken and new requisition procedures established for all lumber in size 1 inch through 4 inch and plywood. Controlling agency was designated as the 14th ICC Hqtrs, USARV. One to three weeks delay was added to the already delayed processing time for requisitioning lumber. Heavy timber continued to be available.

(3) By the middle of July, critical shortages developed for the controlled items as depot stocks were exhausted. Additional items essential for construction such as cement, 60" and 72" culvert, liquid asphalt (AP-3), treated lumber and corrugated sheet metal were also in short supply.

(4) Complete plans were reassessed, reviewed, and substitution materials were incorporated into the bill of materials which necessitated cancellation and re-requisitioning action.

(5) The transportation system required an average of 11 days reaction time upon notification of items to be shipped from the depot, therefore, organic equipment was used to transport these materials as soon as they became available such that the construction of high priority projects could be expedited.

(6) Electrical power for base camps continued as an area of primary concern. All companies in this battalion must provide its own electrical power. Internal lighting, maintenance machine area, mess hall, water supply and perimeter lighting require approximately 70kw. This requirement is very dependably satisfied with one 100kw generator. Colocated companies can be serviced from a central bank of generators which will reduce the overall generator and operator requirement. Power for the electrical rock quarry equipment and flood light system requires one 100kw generator. The total battalion 100kw generator requirement is 7(2 for 2 each outlying, non-colocated units, 2 for a 4-unit base camp, 1 for the quarry and two each 100kw generators would be required as back-up).

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The battalion is presently authorized 2 each 100kw generators for the quarry only. There were 7 each on hand at the close of the report period, 2 of which are long-term doled-in items and four of the remaining five generators have been operated for a period far in excess of that which is authorized for efficient operation. Proposed MTOE has been submitted requesting additional generators be authorized this battalion.

### g. Operations and Training

(1) Road construction continued to be the dominate portion of the 589th EBC work effort for the report period. It placed a total of 227,731 cubic yards of fill, 6169 cubic yards of base course and 12,720 tons of asphaltic concrete. A total of 12.2km of two-lane asphalt concreted road was completed at the end of the report period.

(2) The two most significant problems during the report period were the lack of qualified equipment operators and the inadequate water haul and water fill capability for base course and earth fill operations.

(a) Contributing factors to the lack of qualified drivers were: departure and replacement personnel differed unfavorably as to phasing and likeness of MOS's; the receipt of 15 pieces of MCA equipment (and 12 more due in shortly) with no accompanying increase in driver allocation and the lack of qualified instructors and facilities for training the personnel to fill required positions. This situation was partially alleviated by cross-training through on-the-job training (OJT) of personnel with other than operator MOS's. Some of these personnel were also sent to a driver school operated by the 36th Transportation Battalion in Can Ranh Bay. The operator problem continued at the close of the period.

(b) The present primary mission of the battalion is the upgrade of approximately 95km of roadway. Present organic earthmoving and compaction equipment and the newly acquired "MCA-BUY" equipment are able to handle earth at a much faster rate than that at which present water distributors are able to wet the fill to the optimum moisture content (OMC). The battalion had, at the close of the report period, only one of its six authorized water distributors. The problem has been partially alleviated by utilizing condemned 5000 gallon POL tankers and converting them to water distributors.

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**2. SECTION 2, LESSONS LEARNED: Commander's Observations, Evaluations and Recommendations**

**a. Operations**

**(1) MCA Equipment Operators**

(a) **OBSERVATION:** Qualified operators must be trained and assigned to MCA equipment for which no personnel are authorized.

(b) **EVALUATION:** Receipt of MCA equipment which can outproduce TO&E equipment and which required special handling, necessitates the training of personnel with vertical construction skills as equipment operators.

(c) **RECOMMENDATION:** When MCA equipment is assigned to a unit to supplement its capabilities, additional equipment operator spaces should be authorized.

**(2) Pressure Water System**

(a) **OBSERVATION:** Water pressure sufficient to serve a shower is not solely dependent upon the existence of a water tower.

(b) **EVALUATION:** A pressure water system can be constructed by sealing a water tank and welding a standard valve stem on the tank. The tank should be fitted with a gate valve and two-thirds filled prior to pressurizing to 30 psi. This air pressure can be provided by any truck, 2½ ton or larger and is sufficient to push water high enough to serve a shower.

(c) **RECOMMENDATION:** In the event that a water tower is not available the above system can handle any immediate need for water pressure.

**(3) Land Clearing in Sandy Areas**

(a) **OBSERVATION:** When "floating" Rome Plow blades in sandy soil much brush was merely pushed over and not cut.

(b) **EVALUATION:** A combination of loose or sandy soil and supple underbrush renders "blade floating" relatively ineffective in cutting the brush when land clearing.

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(c) RECOMMENDATION: Operators should pitch the Rome Plow blade forward and attempt to keep it 3 to 4 inches underground while clearing in sandy areas.

(4) Thick Bamboo (Land Clearing)

(a) OBSERVATION: Totally clearing thick bamboo clumps proved to be extremely difficult.

(b) EVALUATION: Rome Plows could cut thick bamboo clumps only with difficulty and often just ripped the bamboo stalks. Bull blades also merely ripped off the stalks with difficulty.

(c) RECOMMENDATION: By raising either type blade up near maximum elevation and pushing the clump partially over, the edge of the root mass was lifted. Then, by backing up and digging, this root mass was easily dug up and the entire clump destroyed completely.

(5) Demolition Teams (Land Clearing)

(a) OBSERVATION: When clearing in areas where combat operations have been held many dud rounds are found.

(b) EVALUATION: Land clearing operations were held up when the company had to rely on only company officers or NCO's to blow the rounds.

(c) RECOMMENDATIONS: When operating in such areas, clearing companies should be augmented with at least two demolition men.

b. Intelligence

(1) VC Observation Towers (Land Clearing)

(a) OBSERVATION: While clearing in a known VC assembly area it was noticed that observation towers were placed in many large trees.

(b) EVALUATION: Observation towers were detected by long pieces of bamboo with branches partially broken off which were attached to the trees in the manner of a ladder. Bunkers were always found in these areas.

(c) RECOMMENDATION: While clearing, a sharp lookout should be kept for these observation towers, and the area around them carefully checked for bunkers. All large trees should be destroyed.

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**c. Logistics**

**(1) Portland Cement Storage**

(a) OBSERVATION: Often, when Portland cement arrives for projects, many of the bags are torn.

(b) EVALUATION: In order to minimize hydration, the bags can be emptied into 55 gallon drums and covered with tarpaulins. Only the top  $\frac{1}{2}$  inch, at most, will be hydrated, thus saving the majority of the cement.

(c) RECOMMENDATION: Portland cement should be stored by the above method when hydration due to broken bags seems inevitable.

**d. Organization**

**(1) Venereal Disease Control**

(a) OBSERVATION: The venereal disease rate among US troops in relatively secure areas with ready access to local nationals is usually much higher than the USARV average.

(b) EVALUATION: When troop access to local establishments was restricted, the venereal disease rate dropped with no noticeable decrease in troop morale.

(c) RECOMMENDATION: Troop access to sources of infection should be restricted permanently. A variety of alternative activities for leisure time should be provided such as a well equipped gymnasium, tennis courts, ball diamonds, swimming facilities and organized intra-unit competition in several sports.

**e. Other (Maintenance)**

**(1) Reinforcing 5-ton Dump Truck Cab Mounts (see Incl #2)**

(a) OBSERVATION: Excessive wear and vibration due to rough operating conditions causes the front cab mounting bolts on 5-ton dump trucks to tear out.

(b) EVALUATION: The normal method of securing the cab to the frame is by using a  $\frac{5}{8}$ " bolt through a U-shaped bracket which is welded

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to the cab. The bolt passes through the bracket and the truck frame, with a rubber mounting between the frame and the bracket. Excessive vibration causes the bracket to tear out, releasing the bolt. This has been eliminated by spot welding a metal strip ( $\frac{1}{4}$ " x 2  $\frac{3}{4}$ " x 10") on the upper face of the mounting bracket. The strip is slotted to allow positioning of the bolt.

(c) RECOMMENDATION: That cab mounting brackets be reinforced to prevent their tearing out under normal stress.

### (2) Starting Dozers on Landing Ship Tank(LST)

(a) OBSERVATION: Tracked vehicles are often difficult to start when aboard LST's.

(b) EVALUATION: Heavy tracked vehicles, such as dozers, are usually transported on the metal bottom deck of LST's. The deck will often short-out jumper cables when attempting to start the vehicles.

(c) RECOMMENDATION: When transporting dozers by LST, insure that a rubber-wheeled vehicle is strategically placed near tracked vehicles to facilitate jump-starts.

### (3) Transmission Filter Cap O-Rings

(a) OBSERVATION: Transmission filter cap O-rings are often difficult to obtain.

(b) EVALUATION: Aircraft flares have an O-ring in the cannister.

(c) RECOMMENDATION: The O-ring from a flare should be used to replace worn transmission filter cap O-rings when not available.

2 Incl

1. Organizational Structure
2. Cab Mounting Bracket

*Donald A. Ramsay*  
DONALD A. RAMSAY  
LTC, CE  
Commanding

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EGA-CO (31 July 1969) 1st Ind  
SUBJECT: Operational Report of 589th Engineer Battalion (Construction)  
For Period Ending 31 July 1969, RCS CSFOR-65(R1)

DA, Headquarters, 35th Engineer Group (Const), APO 96312, 21 August 1969

TO: Commanding General, 18th Engineer Brigade, APO 96377

1. This headquarters has reviewed the Operational Report - Lessons Learned for the 589th Engineer Battalion (Construction) for the period ending 31 July 1969. The report is an excellent summary of the battalion's activities for the reporting period.
2. This headquarters concurs with the remarks of the Battalion Commander.

*Harry A. Griffith*  
HARRY A. GRIFFITH  
COL, CE  
Commanding

AVBC-CG (31 Jul 69) 2nd Ind

SUBJECT: Operational Report of the 589th Engineer Battalion (Const) for  
the Period Ending 31 July 1969, RCS CSFOR-65 (R1)

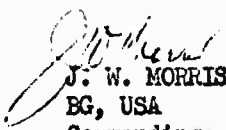
DA, HEADQUARTERS, 18TH ENGINEER BRIGADE, APO 96377 1 SEP 1969

TO: Commanding General, U.S. Army Vietnam, ATTN: AVHGC-DST, APO 96375

1. This headquarters has reviewed the Operational Report - Lessons Learned for the 589th Engineer Battalion (Const), as indorsed by the 35th Engineer Group (Const). The report is considered to be an excellent account of the Battalion's activities during the reporting period.

2. This headquarters concurs with the observations and recommendations of the Battalion and Group Commanders, with the following comments added:

Reference: Section 1, paragraph k(2). Overall personnel shortages are recognized as problem areas by this headquarters and USARV. This headquarters is in daily contact with the replacement battalions and USARV. Up-dated requirements, to include casualty losses and medevacs, are now being incorporated in these requirements. These procedures were recently discussed with a representative from USARV G-1, Personnel Management. Our personnel posture should improve considerably in the immediate future, if our requisitions are honored. USARV was also advised that notification of cancellations of lower grade EM fills would be of assistance in updating our requisitions. Currently, this information is being provided for senior grade personnel.

  
J. W. MORRIS  
BG, USA  
Commanding

CF:

1-CO, 35th Engr Gp

1-CO, 589th Engr Bn

AVHGC-DST (31 Jul 69) 3d Ind

SUBJECT: Operational Report of 589th Engineer Battalion (Construction) for Period Ending 31 July 1969, RCS CSFOR-65 (R1)

HEADQUARTERS, UNITED STATES ARMY, VIETNAM, APO San Francisco 96375 25 SEP 1969

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

1. This headquarters has reviewed the Operational Report-Lessons Learned for the quarterly period ending 31 July 1969 from 589th Engineer Battalion (Const).

2. Comments follow:

a. Reference item concerning "MCA Equipment Operators", section II, page 20, paragraph 2a(1); nonconcur. The concept which called for the use of MCA/LOC equipment with its higher production yield did not call for additional personnel. As a result, there are no spaces within the command which could be made available for the recommended augmentation.

b. Reference item concerning "Reinforcing 5-ton Dump Truck Cab Mounts", section II, page 22, paragraph 2e(1); concur. This is the first report received by this headquarters regarding the failure of front cab mounting bolts on five ton dump trucks. Reinforcing the cab mounting brackets with steel plates as described by the unit is a satisfactory field fix. The unit will be advised that all failures of this nature should be reported to TACOM by forwarding an Equipment Improvement Report.

FOR THE COMMANDER:

  
RICHARD V. FULP

CPT, AGC

Assistant Adjutant General

Cy furn:  
589th Engr Bn  
18th Engr Bde

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GPOP-DT (31 Jul 69) 4th Ind  
SUBJECT: Operational Report of HQ, 589th Engineer Battalion (Const)  
for Period Ending 31 July 1969, RCS CSFOR-65 (R1)

HQ, US Army, Pacific, APO San Francisco 96558 8 OCT 69

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

1. This headquarters concurs in subject report, as indorsed, except as follows.
2. Reference paragraph 1c(2), page 2 and paragraph 2c(1), page 22. U. S. Army, Vietnam, will be advised that serviceable 55 gallon drums are to be returned to the supply system when empty.

FOR THE COMMANDER IN CHIEF:



Cy furn:  
CG USARV

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ORGANIZATION

1. During the report period, the following units were either assigned or attached as indicated to the 589th Engineer Battalion (Const).

- a. Headquarters and Headquarters Company \*
- b. Company A \*
- c. Company B \*
- d. Company C \*
- e. Company D \* (plus the attached earthmoving platoon, Company C, 93rd Engr Bn, effective 6 July 1969)
- f. 513th Engineer Company (Dump Truck) (TOE 5-124G) (One platoon was under operational control of the 577th Engr Bn and 864th Engr Bn during the report period.) (Attached)
- g. 553rd Engineer Company (Float Bridge) (Detached 20 June 1969)
- h. 687th Engineer Company (Land Clearing) (TOE 5-5000) (Attached)

\* Assigned Units

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**CAB MOUNTING BRACKET**

CAB

CAB FRAME

U BRACKET

STEEL PLATE

RUBBER BUSHING

FRAME

Incl 2

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Security Classification

| DOCUMENT CONTROL DATA - R & D                                                                                                      |                                                                             |                                    |
|------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------|------------------------------------|
| (Security classification of title, body of abstract and indexing annotation must be entered when the overall report is classified) |                                                                             |                                    |
| 1. ORIGINATING ACTIVITY (Corporate author)                                                                                         |                                                                             | 2a. REPORT SECURITY CLASSIFICATION |
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|                                                                                                                                    |                                                                             | 2b. GROUP                          |
| 3. REPORT TITLE                                                                                                                    |                                                                             |                                    |
| Operational Report - Lessons Learned, HQ, 589th Engineer Battalion                                                                 |                                                                             |                                    |
| 4. DESCRIPTIVE NOTES (Type of report and inclusive dates)                                                                          |                                                                             |                                    |
| Experiences of unit engaged in counterinsurgency operations, 1 May 69 to 31 July 69.                                               |                                                                             |                                    |
| 5. AUTHOR(S) (First name, middle initial, last name)                                                                               |                                                                             |                                    |
| CO, 589th Engineer Battalion                                                                                                       |                                                                             |                                    |
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