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IN REPLY REFER TO

AGDA (M) (7 Jan 70) FOR OT UT 694220

9 January 1970

SUBJECT: Operational Report - Lessons Learned, Headquarters, 18th Engineer
Brigade, Period Ending 31 October 1969

AD 864140

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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, 18TH ENGINEER BRIGADE
APO 96377

AVBC-CG

31 October 1969

SUBJECT: Operational Report - Lessons Learned, 18th Engineer Brigade,
Period Ending 31 October 1969, RCS CSFOR-65 (R2)

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

THRU: Commander in Chief
U.S. Army, Pacific
ATTN: GFCF-DT
AFR 96558

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

1. Section 1, Operations: Significant Activities

a. Personnel

(1) Awards: During the period 1 August to 31 October 1969, the following awards were presented to Brigade personnel:

Legion of Merit	1
Silver Star	5
Bronze Star (Valor)	37
Bronze Star	209

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Inclosure

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Air Medal (Valor)	2
Air Medal	81
Army Commendation Medal (Valor)	64
Army Commendation Medal	848
Distinguished Flying Cross	1

Total 1254

(2) Casualties: Casualties incurred by the 18th Engineer Brigade during the reporting period were:

Killed in Action	17
Wounded in Action	149
Nonhostile Deaths	11

Total 177

(3) Strength: On 31 October 1969, the personnel status of the Brigade was 11,840 assigned of 12,684 authorized, or 93.6 percent of authorized strength. During the reporting period, the 116th Engineer Battalion and the 131st Engineer Company, both National Guard units, were returned to CONUS for deactivation. On 1 September 1969, the 497th Engineer Company (PC) was assigned to the Brigade (35th Engineer Group). On 25 October 1969, in accordance with USARPAC General Order 609, 31 July 1969, the 84th, 815th, and 864th Engineer Battalions were reorganized to full strength, resulting in increased authorization of 225 enlisted personnel for each battalion. On 1 September 1969, the manning level strength of the Brigade was set at 1000 enlisted spaces below the MTOE authorized strength. The Brigade continues to experience personnel shortages, due to low personnel fills in August and October. Critical shortages in MOSC 12E40 (Combat Engineer), 62F30 (Crane Operators), 62G20 (Quarryman), 62J20 (General Construction Machine Operator), 05B20 (Radio Operator), and 36K20 (Field Fireman) have hindered operations and relief does not appear to be forthcoming in the near future. Appropriate requisitions have been submitted.

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b. Intelligence

(1) Enemy Activity: Enemy activity decreased sharply during the reporting period throughout the Brigade AOR. KIA dropped 63%; IA dropped 66%; total number of incidents decreased 57%. The enemy was primarily engaged in mining and route interdiction as of 31 October.

(2) Base Camp Security: Based on a survey conducted in July by the Brigade Intelligence Officer, base camp security requirements were published and directed to all subordinate units. These requirements constitute a two-phase construction program. Brigade units were engaged in the first phase (minimum essential security requirements) at the end of the reporting period.

(3) Security Violations: There was a significant increase in security violations during the reporting period. The most frequent violations involved either the loss or compromise of SOIs. Investigations revealed that loss of SOIs was most often due to carelessness of individuals. A more stringent policy on proper handling and safeguarding of classified documents has been established throughout the Brigade. SOI holders are now required to account for the document on a daily basis and, unless the document is needed during the night, it will be turned in to the appropriate custodian.

c. Operations

(1) Operational Support: Approximately 54% of the Brigade construction effort was spent in operational support missions during the period. Major activities are summarized below.

(a) Land Clearing: The three Brigade land clearing companies continued full-scale operations in I and II Corps Tactical Zones. With the support of bulldozer equipment organic to the combat and construction battalions, these companies cleared 27,615 acres during the period.

35th Group AOR: The 687th Engineer Company (LC) completed clearing 6,848 acres in the Le Hong Phong Forest (BIN1020) on 8 October. A platoon of the 687th participated with III MAF in Operation Pipestone Canyon, in which 11,743 acres were cleared, and rejoined the company on 1 September at Phan Thiet. Following the Le Hong Phong operation, the company moved to Phan Rang, where it conducted maintenance stand down before beginning coastal operations along ML-1 and in the Cam Ranh Bay area on 30 October.

45th Group AOR: The 59th Engineer Company (LC) cleared 1,280 acres on Route 54C. Other missions in the period 5 August to 2 September included strip clearing from FSB Rendezvous to FSB Currahee and clearing near the old A Shau air strip. A platoon of the 59th was attached to the 14th Engineer Battalion on 10 August. Having cleared 3,643 acres at LZ Nancy, LZ Sharon, and FSB C-2 by 21 September, this element began work west of Camp Evans in the vicinity YD 5026. 2,420 acres had been cleared at the end of the period.

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Another platoon of the 59th, attached to the 39th Engr Bn, had cleared 2,175 acres along Rte 529 as of 12 October. After maintenance stand down, this element began operations in the Mo Duc area, coordinates BS 7852, and cleared 865 acres by 31 October. A third platoon of the 59th, which was attached to the 27th Engr Bn, was given missions along the Song Ta Trach (Perfume) River at Nam Hoa, coordinates YD 125765. From 26 September to 4 October this element cleared 485 acres. 867 acres were cleared by the end of the reporting period in a mission at coordinates YD 865246.

937th Group AOR: The 538th Engineer Company (IC) completed operations along LTL 6B from BR 929187 to BQ 950832 on 21 July. A total of 4,844 acres were cleared, including 772 acres of regrowth. The 538th cleared 1,426 acres in Ngo Chan, vicinity BN 988890, by 3 August. 2,420 acres along Rte QL-19 were cleared as of 31 October. The 20th Engr Bn cleared 129 acres in Kontum Province.

(b) Major Projects Completed:

35th Engineer Group: Among the 34 operational support projects completed during the period were the following:

JDOC, Cam Ranh Bay

Bunkers, Camp Jerome

Revetments, Ban Me Thuot East

Resupply Points, Song Mao

FSB Susan, 5/22 Artillery

Airfield Repairs, Duc Lap

Repair QL-1, Phan Rang to Phan Thiet

Aircraft Revetments for Air Force, Phan Thiet

45th Engineer Group: 35 Operational Support projects were completed in support of XIV Corps and III MAF in I CTZ. Among them were:

Timber Bridge 1-1, 410, BS 685658

Revetments, 101st Abn Div, Phu Bai

Bunkers, 108th Artillery

TSFC Medical Bunkers, YD 240610

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Bridge, Route 550, VD 727202

Defensive Structures, III MAF, Phu Luc

937th Engineer Group: 24 Operational Support missions were completed during the period, including the following:

Joint TOC, Kontum

Dial Control Revetments

Airfield Repair, Ben Het

Guard Towers, 3/6 Artillery, LZ Panther

POL Yard Improvements, Pleiku

MACV Press Bunker

Bunkers, 52d Artillery

In addition to the projects listed, all elements of the 18th Engineer Brigade provided normal combat and operational support, including repair of enemy and weather damage to roads and bridges, daily route minesweeps, technical assistance, and miscellaneous tasks.

(2) Base Construction: 8.5% of the Brigade construction effort was expended on base construction in the reporting period. In August, General Mildren ordered suspension of all vertical construction which was less than 90% complete at that time. This action resulted in the suspension of only 27 active Brigade projects. However, these projects did represent 9.02 million dollars worth of construction in a total Brigade base construction program of 11.20 million dollars. As of 31 October, 19 of the suspended Brigade projects were still undergoing re-evaluation by the USARV Facilities Review Board. Eight projects had been terminated.

(a) Open Projects: The Brigade Open Project List, consisting of USAECAV directed projects, decreased from 113 to 64 in the period. As of 31 October, there were 48 active projects, including 19 projects suspended by USARV, and 16 inactive projects, which are awaiting completion reports. Estimated total cost of the construction backlog for the unsuspended active projects was only \$650,000 as of 31 October.

(b) Major Projects: The two most significant projects which were completed in the period are the tandem switch in Qui Nhon (Vung Chau Mountain) and the Class II & IV pre-engineered warehouses at Long My Depot. The latter facility provides 48,000 square feet of storage space.

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(c) MACV Advisors' Facilities: Construction was completed on 3 MACV advisors' facilities during the period. Four projects were redirected from contract to the Brigade. Of the 42 projects which have been directed to date, 23 are complete, 14 are under construction, and 5 have yet to be started.

(3) LOC Construction: 37.5% of the Brigade construction effort of this period was expended on LOC projects. 102,257 cu of rock were crushed and 46.8 KM of road paved to CENCOM Standard. Monsoons slowed rock production throughout the Brigade. Consequently, much of the available effort was devoted to LOC maintenance and repair. Re-evaluation of the LOC program continued in the period. The program, as of 31 October, calls for completion of all priority I routes and QL-14 from Pleiku to Buon Blech by 31 December 1970. This includes the upgrade of QL-1 from Phan Rang to the II/III CTZ Border, a recent addition to the LOC program. A command management program was developed to coordinate all phases of LOC work, including safety, maintenance, quality control, and construction procedures. An Industrial Complex Assistance Team was organized as the action committee for emphasizing command interest and implementation of this program.

(a) LOC Projects Completed: The following sections of road were completed in the period:

QL-1, I/II Corps Border to Duc Pho

QL-1, to Duc to Quang Ngai

(b) LOC Projects Started: None.

(4) Engineering Plans:

(a) The Brigade Engineering and Plans Section (EPS) continued to review designs and completed a number of studies dealing with construction problems and techniques. Designs were produced for bridge QL-11/16 (900 feet long) and bridge QL-1/408 (600 feet long). A feasibility study was made of the production and use of precast bridge members which resulted in the recommendation that, although production of precast members is within the capability of the Brigade, such members should be purchased from RMK. In addition, living-fighting bunker plans were revised for safety of construction and disassembly.

(b) Effort was directed in the period toward implementation of the Brigade Quality Control Plan. Field visits were made and on site classes in effective construction techniques were conducted. The Engineering and Plans Section has been engaged in monitoring the assignment of officers and enlisted men with knowledge of soil mechanics in order to best utilize these personnel.

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In addition, a pocket size "Asphalt Inspectors Guide" was published and distributed as an aid for supervisors and inspectors involved in hot mix production and paving.

(c) EFS was tasked in the period with monitoring turnover of completed LOC routes to MF through appropriate MACV highway detachments. A policy letter was sent to the groups which states the correct procedure for this action.

(d) Organization: The current Brigade Unit Station List is attached as Inclosure 1. Unit moves during the period were the following:

(1) The 585th Engr Co (DT) was reassigned from the 84th Engr Bn (Const) to the 815th Engr Bn (Const).

(2) The 588th Engr Det (CD) (Core Drilling) was reassigned from HHC, 18th Engr Bde to HQ 35th Engr Gp (Const).

(3) The Rock Processing and Quarry Section of the 630th Engr Co (IE) was reassigned from the 27th Engr Bn (C) to HQ 35th Engr Gp (Const).

(4) The Rock Processing and Quarry Section of the 517th Engr Co (IE) was reassigned from the 27th Engr Bn (C) to the 14th Engr Bn (C).

(5) The 19th Engr Bn (C) was reassigned from the 45th Engr Gp (Const) to the 35th Engr Gp (Const).

(6) The 27th Engr Bn (C) moved from FSB Blaze to Phu Bai (Gia Le Base Camp).

e. Logistics

(1) Shortages of Construction Materials: In July 1969 USAFV assumed control of lumber, due to a critical shortage of this material. A monthly allocation was established for small dimensioned lumber (1x, 2x, 3x, and 4x). Use of this material has been limited to field fortifications. USAFV control of asphalt and cement was established in September 1969. Allocations of these materials through February 1970 were scheduled according to an estimate of monthly requirements for each Group, and are expected to preclude future work stoppages due to unavailability of these materials. However, a serious shortage of cement had developed by the close of the reporting period due to late arrival of the monthly allocation. The restrictions on vertical construction which have applied throughout the reporting period have served to lessen the demand for various materials which may have otherwise become critical.

(2) RVNAF Transfer: During the last week of June, the 18th Engineer Brigade was tasked by USAFV Headquarters, Engineer Troops, to provide Engineer, Ordnance, Quartermaster, and signal equipment for two ARVN construction battalions and one heavy equipment company. The items were to be shipped

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to a transfer point in Long Binh and laterally transferred to the 40th ARVN Base Depot. Equipment began to arrive at the transfer point on 20 August 1969. Between 22 August and 29 September, the 35th, 45th, and 937th Groups of the 18th Engineer Brigade transferred approximately 193 separate items to the 40th ARVN Base Depot. The transfer was completed on 29 September 1969. On 26 October the 18th Engineer Brigade was again tasked to provide equipment for transfer, this time to the 805th ARVN Heavy Equipment Company (Da Nang) and to the 63d ARVN Engineer Battalion (Nha Trang). The Brigade will supply most of the equipment of these two units, the remaining equipment coming from the 20th Engineer Brigade. The 35th Engineer Group will supply items for the ARVN battalion, while the 45th Engineer Group will supply those for the ARVN company. The 937th Engineer Group will back up the other two Groups, in the event that these units have trouble meeting transfer requirements. Equipment supplied by the 20th Engineer Brigade will be shipped to Nha Trang for transfer to the 63d ARVN Engineer Battalion.

(3) TOE Equipment: The Brigade continues to be understrength in certain items of TOE equipment. Upon departure of the 116th Engineer Battalion and the 131st Light Equipment Company, the equipment of these units was redistributed to fill existing TOE shortages. The Commander's Critical Items List, which is submitted to 1st Logistical Command, was expanded in August to include end items. This has facilitated checks for valid requisitions at USAICCV and insures that the programming of end items by 1st Logistical Command is responsive to existing shortages.

(4) MCA Activities: The last items of MCA-LOC equipment (92 each 12 CY GMC dump trucks) arrived in September. At the close of the reporting period, 322 items of MCA-LOC equipment were in the hands of Brigade units. Of these, 31 items of equipment were deadlined, giving a deadline rate of 9.6 percent. During the period, Dynallectron Corporation received large quantities of repair parts from CONUS and the system for delivery of repair parts was simplified and improved. An estimated 30 days time enroute was saved by arrangements for shipment directly to Cam Ranh Bay rather than to Long Binh Depot. An agreement between Dynallectron Corporation and US RV also provides for utilization of U.S. Mail for shipment of small items. Furthermore, manufacturers' part numbers were cross referenced with federal stock numbers on stock record cards so that needed items can be drawn from in-country assets as they are available. This minimizes procurement of repair parts. Also during the period, the Dynallectron field maintenance teams at Nha Trang and LZ Lowboy were relocated at Phan Thiet to support the 73d Heavy Equipment Company and the 589th Battalion in QL-1 roadwork, including the quarry/crusher operation at Whiskey Mountain. Training for operators of MCA equipment was accomplished by representatives of Quinton Engineers, Ltd. In addition, Quinton provided technical assistance in setting up several MCA rock crushers and soil stabilization plants.

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2. Section 2, Lessons Learned: Commander's Observations, Evaluations,
and Recommendations.

a. Personnel - None.

b. Intelligence - None

c. Operations

(1) Waterproofing Living/Fighting Bunkers.

(a) Observation: Penepime has a tendency to seep through the matting roof when applied as a sealant to the roofing paper on living/fighting bunkers.

(b) Evaluation: Care should be taken in placing roofing paper to avoid leaks.

(c) Recommendation: Two layers of roofing paper placed perpendicularly are adequate to preclude seepage of penepime into the bunker interior.

(2) Length of Revetments for Lightweight Rotary Aircraft.

(a) Observation: 1st Platoon of Company A, 14th Engr Bn, received a request from D Company, 101st AHB, to reduce the length of aircraft revetments from 54' to 30'.

(b) Evaluation: In high winds the aircraft is difficult to control; under this circumstance, the chance of having the tail boom strike the revetment is greater with the longer revetment.

(c) Recommendation: That the length of revetments for lightweight rotary aircraft be held to the minimum required for protection.

(3) Burns from Creosote.

(a) Observation: Extended contact with creosote can result in disabling skin burns.

(b) Evaluation: Provision should be made to allow personnel who handle creosote to cleanse their skin periodically as required; a solvent rinse followed by soap and water scrubbing will adequately remove creosote.

(c) Recommendation: A wash stand should be erected at the work site and a quantity of solvent kept on hand for the use of personnel who handle creosote.

(4) Rebuilding of Destroyed Bridges.

(a) Observation: The 19th Engr Bn was tasked in July to rebuild Bridge

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QL-1-251. The timber pile bridge was destroyed by fire three times in the course of a year, the last time on 16 July 1969. The existing piles posed a problem in reconstruction. Rather than drive new piles, a new approach was used. The existing piles were cut low and reinforced concrete footers were poured for support of timber bents.

(b) Evaluation: The new design eliminated time-consuming driving of piles and shortened total construction time. Furthermore, in areas of heavy enemy activity, this type of construction is advantageous from the standpoint of future rebuilding. Unless the enemy uses explosives to destroy the footers, the bridge can be easily restored. Concrete abutments are a useful extension of this idea.

(c) Recommendation: In areas of heavy enemy activity, consideration should be given to the above type of bridge construction, contingent upon soil conditions in the stream bed.

(5) Rock Crusher Transportation

(1) Observation: The MCA 250 TPH Cedar-Rapids Rock Crusher arrives in country with one set of tires for transporting the assemblies to the crusher site. Travel by road in undeveloped areas is frequently attended by tire punctures. One such journey over 35 miles of improved and unimproved roads resulted in four flat tires and 9 hours transit time. Fortunately, the establishment of an overnight security perimeter on the road was not required.

(b) Evaluation: Provision for spare tires is an absolute must for transporting such equipment over rough roads.

(c) Recommendation: When the above conditions apply, a spare tire float of at least one tire for each wheel-mounted assembly should be provided on a loan basis until the crusher arrives at the site. Alternatively, a two step move can be made. One or two of the lighter assemblies can be transported with spare tire back up from the remaining assemblies. These units can then be blocked up to provide sufficient spares for the second-stage move.

(6) Earth Fill By-Passes

(a) Observation: Earth fill by-passes are normally constructed in conjunction with timber trestle bridge construction. Upon completion of the bridge, the by-pass is often left intact. The Bo Bang Bridge project is a case in point. Flood flow from Typhoon Doris exceeded the capacity of the upstream by-pass causeway and broke the fill near the north shore. The diverted flow washed out the bridge abutment.

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(b) Evaluation: A 30 foot cut at the center of the causeway would have prevented the damage at Bo Bang. In general, a cut at the main stream channel will insure that flood stage flow will not be diverted into either abutment.

(c) Recommendation: That cuts be made in upstream by-pass causeways at the main stream channel upon completion of a bridge.

(7) Replacing Gear Box Bolt on Asphalt Plant.

(a) Observation: The 610th Engr Co (CS) reports that during maintenance stand down on a 150 TPH asphalt plant, a broken $1\frac{1}{4}$ " diameter bolt, which supports the top gear box on the hot elevator, was repaired by welding. After only a few days use the bolt broke again, causing damage to the gear box. No replacement bolts were available.

(b) Evaluation: When the bolt was welded, the metal crystalized. This resulted in a loss of tensile strength.

(c) Recommendation: Attempts to repair broken bolts with welding should not be made. In the above case, the bolt was long enough to square off, drill a new safety pin hole, and put back in place. The only other solution is to have such bolts manufactured by third shop personnel.

(8) Use of Pneumatic Pile Extractors

(a) Observation: There is a tendency for crane operators to keep maximum tension on the extractor, perhaps in an effort to pull the pile faster.

(b) Evaluation: The above practice is not necessary and puts undue strain on the crane clutches.

(c) Recommendation: The proper method of extraction is to maintain steady but moderate tension, allowing the extractor to do the work. Once the extractor has broken suction on the pile, the crane can easily pull the pile.

d. Organization - None

e. Training - None

f. Logistics - None

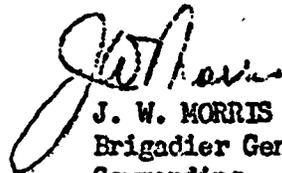
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Period Ending 31 October 1969, RCS CSFOR-65 (R2)

g. Communications - None

h. Material - None

~~1 Incl~~
~~18th Bde Station List~~
Incl wd HQ, DA


J. W. MORRIS
Brigadier General, USA
Commanding

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AVHGC-DST (31 Oct 69) 1st Ind

SUBJECT: Operational Report-Lessons Learned, 18th Engineer Brigade,
Period Ending 31 October 1969, RCS CSFOR-65 (R2)

HEADQUARTERS, UNITED STATES ARMY, VIETNAM, APO San Francisco 96375 1 0 DEC 1969

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

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

1. This headquarters has reviewed the Operational Report-Lessons Learned for the quarterly period ending 31 October 1969 from Headquarters, 18th Engineer Brigade.

2. Comments follow:

a. Reference item concerning "Personnel Strength", section I, page 2, paragraph 1a(3); the low replacement fill in August was due to substantial cancellations and diversions required to reduce operating strength to the lower 31 August ceiling. The low fill in October was due to a considerable shortfall from our overall arrival objective. The 18th Engineer Brigade is even with or exceeds the USARV average in MOS 05B20, 12B40, 36K20, 62G20/30 and 62J20/30. In MOS 62F they are slightly behind and are now receiving a priority fill. An emergency requisition for 250 engineer MOS has been submitted to compensate for the additional requirements generated by the reorganization of the 84th, 815th, and 864th Engineer Battalions.

b. Reference item concerning "Shortages of Construction Materials", section I, page 7, paragraph 1e(1); concur in part. Small dimension lumber has been placed under command control by USARV, G4 because of critical supply status. Proportional allocations of lumber were made for packing and crating operations, construction of MACV Advisor sites as well as construction of field fortifications. The shortage of cement is no longer a matter of concern. On hand quantities of cement within the 18th Engineer Brigade are consistent with consumption rates.

c. Reference item concerning "Length of Revetments for Lightweight Rotary Aircraft", section II, page 9, paragraph 2c(2); concur. USARV letter, AVHAV-OPT, 6 Aug 69, subject: Aircraft Revetments, specifies inside dimensions of 40 x 20 feet for OH-6, OH-13, OH-23 and OH-58 aircraft. The 40 foot length is required to provide adequate protection for the longest aircraft of this type, the OH-58. However, in the majority of instances, the engineering effort required to reduce the size of existing revetments is not warranted.

AVHGC-DST

10 DEC 1969

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d. Reference item concerning "Burns from Creosote", section II, page 9, paragraph 2c(3); concur. Due to the potential toxicity of organic solvents, it is recommended that Hand Cleaner, Grease, Grime, and Stain Remover (FSN 8520-634-1596) be used when possible instead of solvent. Further, that gloves should be worn and clothing cover exposed skin surface when handling creosote or creosote treated materials whenever practical.

e. Reference item concerning "Earth Fill By-Passes", section II, page 10, paragraph 2c(6); concur in part. By-passes should be cut only in those cases where predicted maximum runoff will exceed the flow capacity of the by-pass water course and where ponding or scour would be detrimental to the bridge abutments or foundations.

f. Reference item concerning "Replacing Gear Box Bolt on Asphalt Plant", section II, page 11, paragraph 2c(7); concur. Bolts should not be repaired by welding. Replacement bolts are available through the supply system. Appropriate FSN's are 5306-206-0402 and 5306-515-8892 as listed in TM 5-3910-209-35P dated November 1968.

FOR THE COMMANDER:


B. A. GOODWIN
MAJ, AGC
Assistant Adjutant General

Cy furn:
18th Engr Bde

GPOP-LT (31 Oct 69) 2d Ind
SUBJECT: Operational Report of HQ, 18th Engineer Brigade for Period
Ending 31 October 1969, RCS CSFOR-65 (R2)

HQ US Army, Pacific, APO San Francisco 96558 16 DEC 69

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

This headquarters concurs in subject report as indorsed.

FOR THE COMMANDER IN CHIEF:



C. L. SHORTT
CPT, AGC
Asst AG

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