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AGO D/A ltr, 29 Apr 1980

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DEPARTMENT OF THE ARMY
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IN REPLY REFER TO

AGDA (M) (20 Jan 70) FOR OT UT 694071

27 January 1970

SUBJECT: Operational Report - Lessons Learned, Headquarters, 538th Engineer Battalion, Period Ending 31 October 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

1 Incl
as

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DEPARTMENT OF THE ARMY
Headquarters, 538th Engineer Battalion (Construction)
APO San Francisco 96232

THCON-AOP

1 November 1969

SUBJECT: Operational Report for the Quarterly Period Ending
31 October 1969 RCS CSFOR-65 (RI) UIC WBAN AA

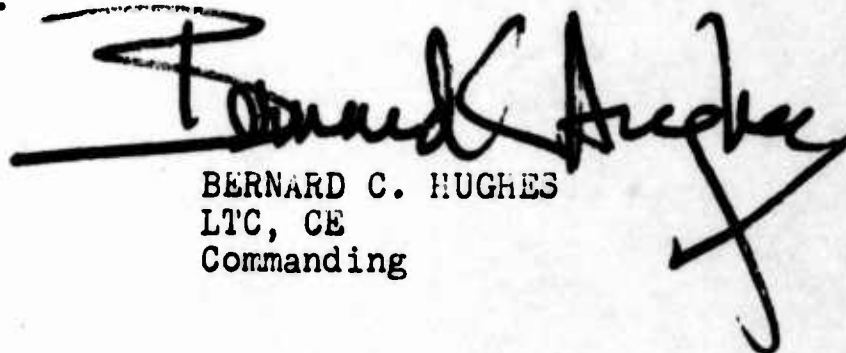
THRU: Commanding Officer
44th Engr Gp (Const)
APO 96233

Commanding General
USARSUPTHAI
ATTN: 5th MHD
APO 96233

CINCUSARPAC
ATTN: GPOP-DT
APO 96558

TO: OACSFOR
Department of the Army
Washington, DC 20310

Attached is the operational report for the quarterly period
ending 31 October 1969.


BERNARD C. HUGHES
LTC, CE
Commanding

INCL

DEPARTMENT OF THE ARMY
Headquarters, 538th Engineer Battalion (Construction)
APO San Francisco 96232

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31 October 1969

SUBJECT: Operational Report of the 538th Engr Bn (Const)
for the Period Ending 31 October 1969 RCS CSFOR-65
(RI) UIC WBAN AA

1. SECTION 1, OPERATIONS: SIGNIFICANT ACTIVITIES

a. Mission:

(1) The 538th Engineer Battalion (Construction) MTOE 5-115E PO3 P00269 continues to execute its assigned missions in Southeast Thailand as follows:

(A) Perform the troop construction portion of the Camp Samae San Cantonment and Depot Complex near Sattahip, Thailand.

(B) Perform selected MCP construction projects for the US Air Force at U-Tapao Royal Thai Air Force Base (RTAFB).

(C) Accomplish civic action projects

(D) Perform construction support missions for neighboring units in the area as directed.

(2) It is pertinent to note that a significant addition to the assigned missions during this reporting period was the assumption of responsibility for construction of selected MCP projects for the US Air Force at U-Tapao RTAFB.

b. Location:

(1) The 538th Engineer Battalion is located at Camp Samae San near Sattahip, Thailand (see Incl 1 & 2). Company D, 538th Engineer Battalion (Construction) is engaged in MCP construction projects at U-Tapao RTAFB (Incl 3) in addition to projects in Camp Samae San (Sect 1, para d2).

(2) During this reporting period, the 2nd General Construction Platoon of Company B was relocated to Camp

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Charn Sinthrope (see Incl 2) for a period of two weeks while constructing a 24-man "Porta-Kamp" Cantonment Area (Sect 1, para d4, a).

c. Organization:

(1) The 538th Engineer Battalion (Construction) accomplishes its assigned missions utilizing the organization reflected in Inclosure 4. Officers currently assigned to the battalion are listed in Inclosure 5.

(2) Three (3) significant changes in troop disposition have occurred since the last reporting period:

(A) On 15 August 1969, the 697th Engr Co (Pipeline) was reduced to minimum strength. All 697th personnel were transferred to this Battalion or to the 809th Engr Bn (Const) at Camp Raum Chit Chai. All of the 697th Engr Co TOE and station property was transferred to units within the 44th Engr Gp (Const) or turned in to project stock as directed.

(B) On 8 August 1969, the Headquarters and two general construction platoons of the 561st Engineer Company (Construction) were detached from the command and control of the 538th Engr Bn (Const), and relocated from Camp Lightning to Camp Friendship in Korat to assume responsibility for MCA and MCP construction projects under the control of the 44th Engr Gp (Const).

(C) On 8 August 1969, Company D of the 23rd Engr Bn (RTA) was released from the operational control of the 538th Engr Bn (Const) and relocated from Camp Lightning to Camp Charn Sinthrope at Phanom Sarakam.

d. Significant Activities

(1) MCA Construction Mission, Camp Samae San, Thailand

(A) Vertical Construction: Vertical construction in the Camp Samae San Cantonment Area, Depot Complex and Facilities Engineer Complex comprised the major portion of the Battalion's operations during this reporting period. Facilities under construction are semipermanent structures of concrete block, bolted timber trusses, corrugated asbestos-cement roofing, hardwood doors, and permanent glass

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windows. All of the facilities have finished interiors to include acoustic ceiling treatment, ceramic tile walls and floors, quarry tiled kitchens and other special treatments as required. Structures have complete latrine facilities and electrical wiring and some are equipped with air conditioning. Construction is similar to that in many of the newer CONUS installations. To date, the Battalion has completed 434,690 square feet of vertical construction at a total cost of \$3,049,483. The current status of vertical construction being accomplished by the 538th Engineer Bn (Const) at Camp Samae San is given in Tables I and II below. A plan layout showing status of construction is shown in Inclosure 6.

TABLE I
FACILITIES COMPLETED TO DATE
CAMP SAMAE SAN

<u>No of Bldg's</u>	<u>DESCRIPTION</u>	<u>COST</u>
55	EM Billets, 28 Man	\$887,424.00
6	Company HQ's Bldg's	97,000.00
2	Mess Halls, 750 Man	165,060.00
6	Motor Maint Bldg's	91,470.00
14	BOQ's	350,000.00
1	USO Club	25,000.00
1	PX P/ASCOE, Interim	7,193.00
1	Fire Station	33,840.00
1	Dispensary/Medical/Dental Bldg	59,280.00
16	P/ASCOE Bldg's	186,100.00
1	Thai Security Guard Mess Hall	10,440.00
1	Thai Security Guard Admin Bldg	8,070.00
11	Thai Security Guard Billets	237,490.00
1	Thai Security Guard Dayroom	9,122.00
1	Latrine Addition	3,167.00
	538th Engr Base Camp	190,000.00
1	Quartermaster Sales Store	27,065.00
1	Library	36,600.00
1	Signal Bn HQ's Bldg	22,689.00
1	Signal Bn HQ's Bldg Extension	5,772.19
1	POL Laboratory (Deep Water Port)	27,825.00
1	APO Bldg	32,722.30
1	Finance Bldg	36,310.02
1	Provost Marshal Office Bldg	50,118.00
1	Facilities Engr Admin Bldg	57,562.00
1	CSA Latrine	17,043.80

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<u>No of Bldg's</u>	<u>DESCRIPTION</u>	<u>COST</u>
	Culverts	\$ 27,162.48
1	Dial Central Office	41,130.00
1	Stock Control Bldg	41,200.00
1	9th Log Hqs Bldg w/ext	140,800.00
4	Covered Storage, CSA Area	83,000.00
1	ADPS Bldg	41,800.00
	TOTAL	\$3,049,483.47

TABLE II
CURRENT PROJECTS
CAMP SAMAE SAN

<u>DESCRIPTION</u>	<u>% COMPLETE</u>
Chapel	85
PX/Snack Bar	26
Area Support Hqs	56
Relocation of HHC Motor Pool	85
Drainage Morale Area and Company Area 4, 5 & 6	09
Craft Shop	40
Pipe/Lumber Storage	35
Flammable Storage	30
POL Dispensing Point	25
Motor Pool Drainage & Fence (7800 Area)	30
Fire Hydrant Ext	05
BOQ No. 10	64
BOQ No. 11	58

(i) Company A (Equipment and Maintenance) continues to support the vertical construction effort by operating the Battalion concrete batch plant and providing special equipment, such as a ditching machine, earth auger, and 40T cranes, as required. The concrete batch plant, which became operational at the end of the last reporting period, is a valuable asset to the construction effort (see Sect 2, para b, 6). The plant is capable of providing up to 110 cubic yards of concrete a day. During this reporting period the plant produced and delivered 1495 cubic yards of concrete. (See Incl 12).

(ii) Company B completed the Army Post Office Building, the Finance Building, and an extension to

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the 379th Signal Battalion Headquarters Building during this reporting period. Work continues on the Chapel, the PX/Snack Bar, and the Area Support Headquarters Building. The Company B vertical construction platoons have also been involved in modifications of already completed buildings, and the construction of the culverts and drainage structures. (See Incl 13 to 22 for project descriptions and photographs).

(iii) Company C has continued assigned vertical construction projects in the Cantonment Area and Facilities Engineer Complex. The Post Craft Shop and FOL Dispensing Point, both located in the Cantonment Area, were started. In addition, construction of the Pipe and Lumber Storage Shed and the Flammable Storage Shed, both located in the Facilities Engineer Complex, was initiated. The Facilities Engineer Administration Building was completed as was the 100-man capacity Latrine for the Consolidated Supply Activity (CSA) located in the 9th Logistical Command Complex. An additional and continuing vertical mission assigned to Company C is the construction of culverts and drainage structures as directed. (See Incl 22 to 25 for project descriptions and photographs).

(iv) Company D completed the Provost Marshal's Office, located in the 7800 Area, and one (1) 16-man BOQ, located in the 6500 Area during this reporting period. Construction continues on two (2) additional BOQ's scheduled for completion in November. A significant portion of the vertical construction effort of this company was relocated to MCF construction at U-Tapao RTAFB on 1 October 1969 (Sect 1, para d, 2). (See Incl 25 to 28 for project descriptions and photographs).

(B) Horizontal Construction

(i) The horizontal construction mission of the Battalion during this reporting period involved the following categories of effort:

(a) Preparation of roads and hardstands for paving.

(b) Filling large areas for motor pools, hardstands, and open storage areas.

(c) Preparation of foundation pads for vertical construction sites.

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(d) Construction of comprehensive area drainage for the Camp Samae San Cantonment and the Depot Complex.

Primary emphasis during the first half of the quarter was on the preparation of road and hardstand surfaces for paving. During this reporting period, a total of 8,146 tons of pavement were placed, covering an area of 52,958 square yards. This effort completed the scheduled paving in the Camp Samae San Area. The overall paving operation to date has consisted of the placement of 34,916 tons of asphalt concrete covering an area of 199,907 square yards. During the remainder of the quarter, earthfill projects and drainage structures were continued. A total of 175,000 cubic yards of earth fill and 42,500 cubic yards of sand were hauled during this reporting period.

(ii) Company A (Equipment and Maintenance) continues to provide the Battalion with Engineer Direct Support Maintenance, organizational maintenance support, special equipment in support of the horizontal construction mission, as well as operating the Battalion laterite borrow pit and supervising contract paving operations. Company A also has responsibility for drainage construction within the Depot Complex. (See Incl 29 to 32 for project descriptions and photographs).

(iii) Company B earthmoving operations were widely varied in nature during this reporting period. Areas prepared for paving included the 9th Logistical Command Headquarters parking lot, storage areas in the Covered Storage portion of the CSA Area, the parking lot for the APO, Finance and QMSS complex, and all the radii at intersections in the Cantonment Area. On 1 October 1969 Company B assumed responsibility for earthfill operations in the 7800 (Motor Maintenance) Area. Company B also constructed foundation pads for the Craft Shop and Signal Battalion Headquarters Extension. Other horizontal construction tasks included extensive drainage structures in the 6900 Area, landscaping company areas and hauling topsoil. (See Incl 32 to 34 for project descriptions and photographs).

(iv) Company C expended the major portion of its available horizontal construction effort during this

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reporting period on preparation of the CSA Open Storage I hardstand for paving. Due to the weak subgrade conditions and the presence of ground water special techniques had to be developed for placement of the fill material to produce a satisfactory hardstand surface for paving, (Sect 2, para b, 2). Due to the time limitation of the asphalt paving contract around-the-clock filling operations were initiated. After one (1) month of 24 hour operations, the 350,000 square feet area was ready for paving. Other earthmoving projects accomplished by Company C involved placement of compacted fill in the 7700 Area in preparation for construction of a Cantonment Area Supply Complex and construction of drainage structures as assigned. (See Incl 34 to 36 for project description and photographs).

(v) The horizontal construction effort of Company D involved placement of the initial fill in the 7800 (Motor Maintenance) Area during the first two (2) months of the quarter and construction of the MCP Perimeter Road project at U-Tapao RTAFB after 1 October 1969 (Sect 1 para 2a). The special techniques used in placing this fill material are described in Sect 2, para b, 2. A total of 76,678 cubic yards of fill were placed in the 7800 Area prior to 1 October when Company B assumed the mission. Other horizontal construction accomplished by Company D during this reporting period included fill and fine grade of the Area Headquarters parking lot and Provost Marshal Office parking lot in preparation for paving. Foundation pads for BOQ structures were also constructed.

(G) Utilities Systems: As reported last quarter, the installation of primary utilities systems at Camp Samae San is virtually complete. All programmed main lines in the potable water system and waterborne sewage and treatment system have been installed. The 12,000 volt primary electrical distribution system is finished. Construction of secondary utilities continued during this reporting period with the installation of water and sewer laterals, transformer banks, and secondary wiring above and below ground as buildings under construction were completed. Approximately 600 feet of 4" AC sewer line, 400' of 2" galvanized steel water line, and 5200' of secondary electrical wire were installed during the

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quarter. Additionally, fire hydrants initially installed at too low an elevation to be accessible are being extended and returned to serviceability.

(D) Security Fence and Lighting: Camp Samae San and the Depot Complex are to be inclosed by approximately ten (10) miles of chain link and barbed wire security fence. The entire perimeter, including the beach, will be illuminated with mercury vapor flood lights. The fence consists of chain link fabric 8 feet high mounted on precast reinforced concrete posts set in concrete footings. The top of the fence is surmounted by three (3) strands of barbed wire. During this reporting period, Company C completed the erection of the fence around the Facilities Engineer Complex, and started construction of the fencing around the individual motor pools in the 7600 Area. To date, approximately 9 miles of fence have been installed. Construction of the perimeter lighting by Company C to complete the security package is scheduled to start 1 December 1969.

(2) MCP Construction, U-Tapao RTAFB: On 1 October 1969, Company D assumed the responsibility for selected MCP Construction projects at U-Tapao RTAFB. To date, two projects have been assigned as follows:

(A) Perimeter Road: Current scope of this project is the construction of 2.5 miles of perimeter road around U-Tapao RTAFB as a part of the air base security package. An additional 3.0 miles of road are proposed. The project includes a 300 foot wide cleared zone, fill of a 12' wide traveled way road, all drainage structures necessary, and erection of guard towers. Due to the fact that the majority of the fill is placed in swampy areas, over 80,000 cubic meters of fill will be required for the initial 2.5 miles and a proportionate additional volume when the proposed road construction is undertaken. (See Incl 36).

(B) Revetment Construction: Scope of this project involves the construction of eight (8) "ARMCO" steel revetments on the flight apron at U-Tapao RTAFB. The individual revetments are 130 feet long, 16 feet high, 7.7 feet wide. Each revetment will be filled with 16,000 cubic feet of compacted fill. Sections 30 feet long are

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presently being prefabricated in a yard near the flight line prior to being transported to the apron for erection. Once erected, each revetment will be filled by conveyor belt fed by dump trucks. Prefabrication and placement of large sections of revetment have been so scheduled that interruptions to air operations will be held to an absolute minimum. (See Incl 37).

(3) Civic Action Projects: Civic action continues to be of command interest in the activities of the Battalion. During this reporting period the 538th participated in small area projects and medical treatment of Thai Civilians.

(A) Small Area Projects

(i) Soccer Field, Royal Thai Navy: 9 August 1969 the Earthmoving Platoon, Company B, provided assistance to the Royal Thai Navy in upgrading and providing drainage for a soccer field at the Royal Thai Navy Recruit Training Center near Bang Sare, Thailand. The 16,000 square meter field was graded and ditched so that RTN personnel at the Training Center could complete the project with a minimum of shovel work. During the same time frame, two (2) 5T dump trucks and a front loader were utilized to stockpile 20 cubic meters of fine aggregate and 10 cubic meters of coarse aggregate to be utilized in the construction of a Supply Annex at the training Center. At this time the soccer field is being utilized daily for physical training and recreation, and construction of the Supply Annex by RTN personnel is under way. (See Incl 38).

(ii) Interdenomintional Retreat Facility: This Battalion has provided engineer surveying assistance and salvaged construction materials for a new Retreat Facility being constructed by Father Brennan of the Redemptorist Father Missionaries of Thailand. Throughout the quarter, dunnage lumber, concrete block culls, and other salvage materials were donated to the project. On 18 and 19 October surveyors from Headquarters and Headquarters Company spent the weekend period accomplishing the initial survey of the construction site. As time permits, a survey crew will return to lay out the structure and complete the site survey.

(B) Medical Treatment: The Battalion Surgeon and his staff treated 986 Thai Civilians during this reporting period.

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(4) Area Construction Support Missions

(A) 24-man "Porta-Kamp" Cantonment Area, Camp Charn Sinthrope, Phanom Sirakam, Thailand: On 18 September 1969, Company B was assigned the mission of constructing a Porta-Kamp Facility near Phanom. In 16 days, a complete 24-man cantonment area was planned and constructed. Porta-Kamps are prefabricated, skid mounted units similar to house trailers. They are delivered in a collapsed configuration and each unit contains all of the appurtenances required for occupancy when erected. A total of thirteen Porta-Kamps, including four six-man billets, one latrine, one five-section dining room, one two-section Kitchen, and a storage building were erected. In addition to the erection of the Porta-Kamps, the scope of the project included installation of water, electricity, and sewage facilities. A 21,000 gallon water storage tank, a 1,000 liter surge tank, and two electric pumps were included in the water supply system. To provide electrical power, Company B installed a 60KW generator and a 2,000 gallon elevated diesel fuel tank for the generator. Utility poles were set by the troop construction force and primary, secondary, and interior wiring was installed. The sewage system required construction of a septic tank and a drain field, methods of sewage disposal not employed at Camp Samae San. Fundamental to the construction effort was earthwork performed by a detachment from B Company's earthmoving platoon. The mission required transportation of heavy equipment and supplies some 100 miles from Camp Samae San to Phanom. This sizeable operation was performed with vehicles and tractor-trailers organic to the Battalion. The mission was accomplished rapidly in spite of consistently inclement weather which resulted in a considerable depth of mud at the construction site. Also notable is the fact that the entire project was accomplished using all US personnel without the assistance of Local Nationals which are normally used in the construction of Battalion projects.

(B) Support of Area Signal Units: During this reporting period support was provided by the 538th to the 379th Signal Battalion, located at Camp Samae San. The 379th, engaged in installing underground telephone communications cable for the Camp Samae San Area, requested and received an engineering survey of the proposed construction in order to determine the full scope of the 4.5 mile installation project. This Battalion is presently providing the 379th

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Signal Battalion with the sand bedding required for the installation of the cable.

(5) Official Visits

During this reporting period, the Battalion hosted many distinguished visitors. Among these were the following:

<u>DATE</u>	<u>OFFICIAL</u>
26 Aug 1969	COL Hatch, Engr, USARSUPTHAI
22 Sep 1969	MAJ Carpenter and CPT Whitehead, Office of the Chief of Engineers
26 Sep 1969	COL Griebeling, Chief, Engr Branch, J4, MACTHAI
30 Sep 1969	COL Hakala, USARPAC, G4 Office
9 Oct 1969	BG OTT, CG USARSUPTHAI
16 Oct 1969	CMDR Olsen, Office of Secretary of Defense, Installations and Logistics and LTC Clark, HQ, CINCPAC
21-22 Oct 1969	COL Goldblum, Dep Cmdr USARSUPTHAI
24-25 Oct 1969	LTC Sadler, USARV Engr Sect
27 Oct 1969	Gen Haines, CG USARPAC

Itineraries were prepared for each visitor to include a tour of the construction sites and a short briefing.

2. Lessons Learned: Commanders Observations, Evaluations, and Recommendations.

a. Personnel

(1) Battalion Disposition

(A) OBSERVATION:

(i) Present distribution of the enlisted grades in the Battalion is as follows:

	<u>E9</u>	<u>E8</u>	<u>E7</u>	<u>E6</u>	<u>E5</u>	<u>E4</u>	<u>E3/1</u>	<u>TOTAL</u>
AUTH	1	8	27	56	175	454	141	862
ASGD	1	9	27	35	118	315	291	808
PDY	1	8	25	32	110	282	290	746

(ii) Present distribution of the Officers and Warrant Officers in the Battalion is as follows:

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	<u>OFFICERS</u>	<u>WARRANT OFFICERS</u>
AUTH	33	10
ASGD	40	7
PDY	36	8

(iii) Critical MOS shortages are as follows:

<u>MOS</u>	<u>JOB TITLE</u>	<u>GR</u>	<u>AUTH</u>	<u>ASGD</u>
621A	Engr Equip Rep Tech	WO	3	1
62F30	Crane Shovel Oper	E5	16	5
62J20	Gen Const Mach Oper	E5	31	10
31B20	Field Radio Mech	E5	4	0
51C20	Structures Spec	E4	6	1
51D20	Mason	E4	12	2
51K20	Plumber	E4	19	5
71T20	Maint Data Spec	E4	6	1
73C20	Pay Dispersing Spec	E4	4	0
62B10	Engr Equip Repairman	E3	60	20

(iv) The following officers arrived in the command this quarter:

<u>RANK</u>	<u>NAME</u>	<u>TITLE</u>
MAJ	Greene, Everett H.	Chaplain
CW4	Reid, William R.	Bn Maint Officer
1LT	Ford, Sammy L.	Bn Communications Officer
2LT	Miller, Thomas N.	Plt Ldr, D Co

(B) EVALUATION: During the last quarter there has been a significant improvement in the personnel status of the Battalion. Assigned strength has increased from 619 to 808 EM, while the critical shortage of NCO's has been virtually eliminated. Although the Battalion has not reached full TOE strength, the increase in US personnel has resulted in the capability to increase the use of organic personnel on the construction projects with a subsequent reduced requirement for augmentation by a Local National work force. Although the overall personnel situation has improved considerably, several position vacancies have an adverse impact on accomplishment of the Battalion mission. Foremost are maintenance positions to include the Warrant Officer Section Leaders (621A) and Engineer Equipment Repairmen

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(62B10). The Warrant Officer positions are being filled by lieutenants and senior NCO's while the enlisted repairman positions are being filled by cross-trained US personnel and Local Nationals.

(C) RECOMMENDATION: That continued emphasis be placed on filling the critical MOS shortages in the Battalion and that Local Nationals continue to be used to augment the US work force as required.

(2) Reduction in LN Work Force

(A) OBSERVATION: During this quarter the Thai Local National (LN) civilian employee work force was reduced from 807 to 593.

(B) EVALUATION: At the beginning of this quarter the Battalion had 807 LN's employed to assist in the accomplishment of it's mission. An examination of this strength level was made to determine the current requirement for LN augmentation based on increased US strength and the anticipated scope of the Battalion mission. It was determined that a smaller LN work force was required and a reduction in force was initiated. Although the Battalion LN force has been reduced by over 200 personnel the construction effort and the mission accomplishments of this Battalion have not been hampered. It is evident in some cases that the output of LN employees and the US personnel has increased significantly due to more effective utilization of personnel and more challenging assignments.

(C) RECOMMENDATION: That periodic evaluation of the Local National civilian employee work force be made to determine the optimum work force consistent with mission requirements, funding levels and available supervisory capability.

b. Operations

(1) Construction Management

(A) OBSERVATION: The utilization of construction management techniques is emphasized at all levels of command in this Battalion.

(B) EVALUATION: The comprehensive use of all

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available construction management techniques has increased the efficiency of the Battalion work effort and the quality of the final product. Junior Officers heretofore inexperienced in construction techniques have rapidly gained experience through analysis and planning required by the various construction management techniques used in planning and controlling projects within the Battalion.

(C) RECOMMENDATION: That development and utilization of construction management techniques continue to be emphasized at all levels of command in this Battalion and by other units with construction missions.

(2) Earthfill Procedures

(A) OBSERVATION: If fill is to be placed over a weak saturated, silty-clay subgrade, and lateritic soil is to be used, special construction drainage is required in order to construct a trafficable, stable hardstand surface.

(B) EVALUATION:

(i) When the 538th Engr Bn (Const) used lateritic soil to raise to grade a previously filled area containing 2 to 4 feet of laterite fill over a weak, relatively plastic subgrade, it was found that heavy equipment traffic developed numerous isolated soft areas consisting of saturated silt and clay which was pumped to the surface. Removal of the overburden was both economically and operationally infeasible and an alternate solution had to be found. It was determined that the most reasonable solution was to construct 4 foot-deep, sub-surface drainage ditches, terminating at the edge of the fill, throughout the entire fill area in a criss-cross grid pattern. These ditches were filled with two feet of sand and brought to grade with laterite. The ditches provided relief channels for the subsurface water and assisted in the stabilization of the surface as filling operations proceeded.

(ii) Another project undertaken by this Battalion involved a proposed fill over weak, saturated, silt subgrade with no over/burden and a large amount of ground water. Initial drainage was established and a two foot layer of sand placed over the entire site. The sand was hauled to the site by 290M tractors with scrapers and

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spread over the area using D-7 dozers. This layer of sand functioned as a filter and flow channel for the ground water which eventually reached the outer drainage ditches. Laterite was hauled in and compacted in lifts directly over the sand. This pad is presently being brought to grade.

(C) RECOMMENDATION: When fill operations are required in areas characterized by weak subgrade materials and considerable amounts of subsurface water, adequate subsurface drainage be planned and constructed for relief of subsurface water.

(3) Drainage Design

(A) OBSERVATION: Recommended standard slope criteria for the design of drainage structures are not appropriate for large level areas susceptible to torrential rain storms.

(B) EVALUATION: Initial drainage structure designs for the near sea-level area of Camp Samae San based on standard slope criteria were not adequate. Ditches reached depths of up to 12 feet below finish grade, and erosion caused by torrential rain flows could not be controlled. Drainage structures were therefore redesigned based on the criteria established by terrain limitations. Capacity, based on rainfall of a 25 year frequency, rather than slope, has been determined to be the critical design factor. Drainage structures are therefore relatively shallow and flat; but have sufficient capacity. Sheet flow and erosion are controlled, flooding prevented, and provision made for maximum flow conditions.

(C) RECOMMENDATION: That additional standards and specifications be established for large, level areas subjected to heavy rainfall and that these new standards be set forth in Army publications.

(5) Subgrade Failures During Fill Operations

(A) OBSERVATION: Standard filling procedures with 290M tractor/scrapers cause shear failures in fill areas over weak subgrades.

(B) EVALUATION: To alleviate this problem, fill hauled in with tractor/scrapers was dumped on an adjacent

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stable area and pushed out into the marshy area using D-7 dozers. After a supporting layer of laterite or sand was placed, an additional two to three feet of fill were placed to permit the bridging strength of the fill to develop. Normal fill operations with tractor/scrapers were then resumed. It was observed at this point that continued 290M traffic over the fill still resulted in limited pumping of silt up into the fill, reducing its strength. An immediate solution was to reduce the weight of the haul vehicle by substituting 5T dump trucks for 290M tractor/scrapers. This worked quite successfully, but availability of 5T dump trucks was limited due to the scope of the Battalion mission and production rates were reduced. Fill operations were resumed utilizing tractor/scrapers delivering fill to stabilized areas where dozers pushed the material out into the fill area. This has proved to be the most efficient method commensurate with good engineering practices and the overall mission of the Battalion. Augmentation of the Battalion's dump truck hauling capability would further increase the overall effectiveness of the fill operations.

(C) RECOMMENDATION: That push-fill operations utilizing the 290M tractor/scrapers and D-7 dozers be considered as an appropriate technique in areas characterized by weak subgrade conditions. In addition, dump truck augmentation as required based upon the overall mission, should be used to increase the capability of a construction Battalion engaged in a fill operation of this nature.

(6) Concrete Batch Plant

(A) OBSERVATION: This unit has developed and constructed a centrally located concrete batching facility.

(B) EVALUATION: Bulk concrete requirements for the construction at Camp Samae San have run as high as 110 cubic yards per day. At the end of last quarter, a new batching facility was constructed using four (4) organic 16S mixers. Designed to provide either wet or dry batches, the plant uses modified 5 ton dump trucks to deliver the materials to job sites. Dry batches are delivered to 16S mixers spotted on job sites in a dump truck with a four compartment bed, each compartment holding a four-sack batch. Wet mix is delivered in a dump truck with a modified tailgate, segmented chute, and flow control gate. Segregation of the

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wet batch while being transported to the site is minimal as the maximum distance to any site is 1.5 miles. Both dry and wet batches are measured by weight for quality control of the mix. This singular feature is provided for by a two-compartment hopper with balance beam scales, which measures aggregate and sand by weight before dropping it into the skip of the 16S mixer (or the back of the dry batch dump truck). The plant is capable of delivering concrete of many compressive strengths by simply adjusting the scales and dumping the hoppers. It is significant to note that the limiting factor in production rates is the capacity of the 5T dump trucks to deliver the concrete. Currently, the plant is producing enough concrete to meet not only the demands of the Battalion, but to support other units in the area as directed.

(C) RECOMMENDATION: That other construction units with bulk concrete requirements and short haul distances consider this method of producing and delivering concrete.

(7) Paving Without Base Course Material

(A) OBSERVATION: The 538th Engr Bn (Const) has laid most of the asphalt concrete at Camp Samae San over subbase material rather than well graded angular base course.

(B) EVALUATION: Prior to initial paving operations in Camp Samae San it was determined that, based on the anticipated traffic loads, available funds, and the quality of the laterite fill available from the borrow area operated by the Battalion, it was feasible to place asphalt concrete paving at finish grade without the use of a crushed stone base course material. A majority of the areas paved, when brought to final grade, were capped with material containing a significant quantity of either lateritic soils or fines. Paving over this material resulted in the following major problem areas:

(i) Difficulty was encountered in sealing the finished graded laterite surface using a prime coat due to the tendency for the clayey fines to absorb the asphalt.

(ii) Finished graded areas were frequently weakened by rain storms and required 4 to 5 days for restoration.

(iii) Restoration of the top surfaces required

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either removal and replacement of the top 4" to 6" or blading of the same with graders until naturally dried.

(iv) The top layers of fill areas were very susceptible to failure from settlement under heavy loads due to shifting of the fine material, subsequently causing pavement failures.

(C) RECOMMENDATIONS: That future construction operations, involving fill preparation for placement of asphalt pavement be provided with good base course material.

c. Training

(1) OBSERVATION: During this quarter the Battalion continued to conduct classes in the required basic military subjects as well as mission oriented subjects. Night classes of one to two hours duration per week were conducted for officers and senior NCO's. On-the-job site classes for equipment operators were conducted as required.

(2) EVALUATION: In addition to required classes, training was directed toward mission-oriented subjects for officers, senior NCO's and equipment operators. These classes were given with the intent that platoon level classes would later be conducted by platoon leaders and platoon sergeants for individuals not fully qualified in their MOS. Classes were given in the operation of the 290M tractor/scrapper, proper use of motorized road grader, construction and equipment management, masonry construction, rough and finish carpentry, rough plumbing and electricity. These classes were beneficial in increasing the quality of work done by the Battalion.

(3) RECOMMENDATION: That classes continue to be held on mission-oriented subjects.

d. Intelligence: N/A

e. Logistics:

(1) Supply Liaison Section

(A) OBSERVATION: The Battalion S4 Section recently established a Supply Liaison Section to coordinate

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Battalion-wide construction materials requirements and deliveries.

(B) EVALUATION: Following the refinement of materials requirement schedules through the use of critical path methods, the Battalion S4 Section determined that to meet timely materials delivery schedules and provide adequate substitute materials where critical shortages existed, a Supply Liaison Section was necessary. The primary function of the section is coordination between the construction job sites and the S4 MCA Section in the areas of scheduling materials requirements, keeping abreast of shortages, and improvising and substituting with supplies on hand to meet critical shortage demands. A further function in this area is liaison with the Bn Operations Section concerning supplements to initial BOM's, field changes, and materials issue priorities for those materials in short supply. To date, the liaison system, together with controlled materials requirement schedules, has been beneficial in meeting the critical supply demands of the Class IV supply operation required by the construction effort at Camp Samae San.

(C) RECOMMENDATION: That job site and operational liaison, together with accurate materials scheduling be utilized to the maximum to insure timely delivery of critical construction materials.

(2) Timely Handling of Requisitions with Required Delivery Dates (RDD)

(A) OBSERVATION: Experience to date has indicated that the majority of the construction supplies required by this unit are not available in present depot stocks and that the correct supply procedure being used does not meet required delivery dates (RDD).

(B) EVALUATION: The technical nature of the materials utilized in the "non-military-standard" construction at Camp Samae San and the continuous flow of short lead time requisitions (less than 60 days) has restricted the ability of the Army Supply System to meet the construction supply demands of the 538th on a timely basis. We continually receive delivery of requested items more than 6 months after the date of the requisition. Construction supply shortages would be of little consequence if local procurement were authorized when the shortage of item became critical to a project. However present policy requires a valid cancellation.

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from Okinawa as the basis for local procurement action. These needed cancellations are not being received in time to allow local procurement to prevent the slippage of project completion dates as a result of supply shortages.

(C) RECOMMENDATION: That the 9th Logistical Command be authorized to initiate local procurement for selected critical Class IV materials at that point in time when it becomes obvious that processing through the Army Supply System will not meet required delivery dates. This local procurement action should not be contingent on having a valid cancellation from Okinawa.

(3) Maintenance

(A) OBSERVATION: A comprehensive maintenance program has been developed which provides for before-and-after operations maintenance each day as well as a concentrated four-hour maintenance period once a week.

(B) EVALUATION: In order to provide adequate time for proper operator level maintenance, the following minimum times are allotted: thirty minutes the first hour of each duty day; one hour at the end of each duty day; and four hours of a designated day each week. The before-and-after operators maintenance periods give the operators and mechanics sufficient time to thoroughly check over the equipment and correct all problem areas. The four hour maintenance period (normally Saturday morning) is to be used by the unit commander for a more thorough maintenance check and also to accomplish adequate maintenance inspections without interrupting his mission. During previous quarters it was a practice to schedule 10% of the operational equipment for daily maintenance. This system has been replaced by the maintenance schedule as outlined above together with the accomplishment of scheduled maintenance in accordance with the applicable Technical Manuals.

(C) RECOMMENDATION: That continuous evaluation of the maintenance program be made to determine the most effective procedure required to insure a high level of maintenance, and that continued command emphasis be placed on mission oriented maintenance at all levels.

f. Organization: N/A

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g. Other:

(1) 697th Engineer Company (Pipeline) Reduction in Strength

(A) OBSERVATION: The 697th Engineer Company (Pipeline) was reduced to minimum strength on 15 August 1969.

(B) EVALUATION. Instructions to reduce the 697th Engineer Company (Pipeline) to minimum strength were received by this Battalion by OPOD 69-2, Headquarters, 44th Engineer Group (Construction), dated 11 July 1969. The personnel strength of the company was scheduled to be reduced to one man. All property and records would be disposed in accordance with appropriate regulations. To implement this reduction each Battalion staff section prepared an annex to an operations plan which provided a checklist of required actions, the responsible individual or staff section, and the appropriate reference regulation. Although this operation was executed smoothly, time and manpower could have been conserved if there had been a single source document published at DA level which outlined those actions required in an inactivation or reduction to minimum strength of a troop unit. Similar documents are available for other operations such as TM 55-60, Preparation for Unit Move Overseas.

(C) RECOMMENDATION: That a single source document be compiled and published for inactivation/reduction to minimum strength for troop units. This document would include the necessary actions to be taken, the reference material for this action, a brief description of this action, and the responsible individual or staff section.

(2) Other: N/A

40 Incl
~~1. Location Map, Thailand~~
~~2. Unit Location Map~~
~~3. Site Map~~
~~4. Unit Organization~~
~~5. Officer Roster~~
~~6. Plan of Cantonment, Status of Const~~
~~7. Plan of Cantonment Paving~~
~~8. Plan of Laterite Pit Operation~~
~~9. Plan of U-Tapao Projects~~
~~10. Plan of Camp Charn Site~~
~~11 to 40. Construction Photographs~~
Incls 1 to 40 wd HQ, DA

Bernard C. Hughes
LTC, CE
Commanding

THCON-OP (1 Nov 69) 1st Ind
SUBJECT: Operational Report for the Quarterly Period Ending 31 October
1969 RCS CSFOR-65 (RI) UIC WBAN AA

DA, Headquarters, 44th Engineer Group (Construction), APO 96233, 15 Nov 69

THRU: Commanding General, USARSUPTWAI, ATTN: THOP-MH, APO 96233
Commander in Chief, United States Army Pacific, ATTN: GPOP-DT,
APO 96558

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

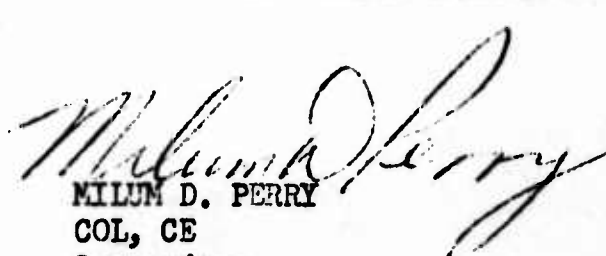
1. The subject report is forwarded with comments as indicated.
2. Section 2, Lessons Learned: Commander's Observation, Evaluations, and Recommendations.

This headquarters concurs with all comments except as indicated below:

e. Logistics

(2) Timely handling of Requisitions With Required Delivery Dates (RDD). Concur, with the additional recommendation that closer coordination between G-3, G-4 and Staff Engineer at higher headquarters be effected to provide coordinated Project Directives and established BODs in sufficient time to allow adequate requisitioning and supply lead time at this level.

(3) Maintenance: Concur; the additional daily scheduled maintenance program of this unit has in fact resulted in a major reduction in their organizational deadline rate.


MILUM D. PERRY
COL, CE
Commanding

THOP-O&T (1 Nov 69) 2d Ind

SUBJECT: Operational Report of the 538th Engineer Battalion
(Construction) for the Period Ending 31 October 1969
RCS CSFOR-65 (RI) WBAN AA

DA, Headquarters, United States Army Support, Thailand
APO 96233 19 DEC 1969

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

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

The Operational Report of the 538th Engineer Battalion (Construction) has been reviewed and is forwarded with the following comments:

a. Reference para 2a. There is little scheduled personnel input for Dec 69 due to requisition cancellation; however, nearly all MOS shortages should be filled in Jan 70. MOS 51D20 is not authorized in the 538th Engineer Battalion. The battalion is authorized 58 MOS 62B10. 44th Engineer Group assets are being redistributed. This action will assist in maintaining the required personnel status of the 538th Engineer Battalion.

b. Concur with all recommendations in para 2b.

c. Concur with para 2c.

d. Concur with para 2e(1).

e. Nonconcur with para 2e(2). AR 725-50 requires testing of the supply system prior to initiating local procurement. USARPAC position is that a valid rejection of a requisition by 2d Logistical Command qualifies as testing of the supply system. Timely submission of fill/kill requisitions should permit rejection from 2d Logistical Command in sufficient time to permit local procurement. Further, nonconcur with the comments made by HQ, 44th Engineer Group reference this para. Coordination on project directives does take place. Problem of lack of lead-time is more frequently due to late receipt of funds or approval for construction or directed changes in mission and composition of the command.

THOP-O&T (1 Nov 69) 2d Ind

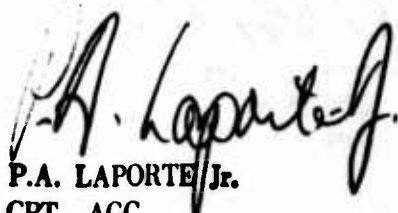
SUBJECT: Operational Report of the 538th Engineer Battalion
(Construction) for the Period Ending 31 October 1969
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f. Concur with recommendation in para 2e(3). It is necessary to continue to evaluate a unit's maintenance system in order to maintain a high state of logistic readiness. This headquarters will continue to evaluate this area during its liaison visits.

g. Concur with recommendation in para 2g(1).

h. Appropriate action will be taken to initiate recommendations.

FOR THE COMMANDER:


P.A. LAPORTE Jr.
CPT AGC
Asst. Adjutant General

GPOP-DT (1 Nov 69) 3d Ind

SUBJECT: Operational Report of HQ, 538th Engineer Battalion (Construction)
for Period Ending 31 October 1969, RCS CSFOR-65 (RI)

HQ, US Army, Pacific, APO San Francisco 96558 6 JAN 70

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

DOCUMENT CONTROL DATA - R & D

(Security classification of title, body of abstract and indexing annotation must be entered when the overall report is classified)

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