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AUTHORITY

AGO D/A ltr, 29 Apr 1980

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



882628

AGDA-A (M) (12 Mar 71) FOR OT UT 703140

22 March 1971

SUBJECT: Operational Report - Lessons Learned, Headquarters, 361st Signal Battalion, Period Ending 31 July 1970

SEE DISTRIBUTION

1. The attached report is forwarded for review and evaluation in accordance with para 4b, AR 525-15.
2. The information contained in this report is provided to insure that lessons learned during current operations are used to the benefit of future operations and may be adapted for use in developing training material.
3. Information of actions initiated as a result of your evaluation should be forwarded to the Assistant Chief of Staff for Force Development, ATTN: FOR OT UT within 90 days of receipt of this letter.

BY ORDER OF THE SECRETARY OF THE ARMY:

VERNE L. BOWERS
Major General, USA
Acting The Adjutant General

1 Incl
as

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Test and Evaluation; 1 Mar 71. Other requests
for this document must be referred to

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ASSISTANT CHIEF OF STAFF FOR FORCE DEVELOPMENT
(ARMY) ATTN: FOR OT UT, WASHINGTON, D.C. 20310

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DEPARTMENT OF THE ARMY
Headquarters 361st Signal Battalion
APO San Francisco 96392

RGCRBB-OI-0

2 August 1970

SUBJECT: Operational Report - Lessons Learned 361st Signal Battalion,
Period Ending 31 July 1970, RCS CSFOR-65 (R2)

Commander in Chief, United States Army Pacific, ATTN: GPOP-OT, APO 96588
Commanding General, United States Army Vietnam, ATTN: AVHGC-DH, APO 96375
Commanding General, USASTRATCOM-PAC, Schofield Barracks, Hawaii, APO 96577
Commanding General, 1st Signal Brigade, (USASTRATCOM), ATTN: SCCVOP,
APO 96384
Commanding Officer, USA Regional Communications Group (Vietnam), ATTN:
SCCPV-RG-MO, APO 96243

1. Operations: Significant Activities.

a. The 361st Signal Battalion operates and maintains a long haul communications network throughout the northern 2/3 of the Republic of Vietnam. The nature of its mission precludes engagement in the typical training and operational activities found in combat oriented units. The 361st Signal Battalion conducts training on a regular systematized basis at all of its sites and operational functions are carried out on a 24-hour a day 7-day a week basis at all of its installations. During this reporting period the 361st Signal Battalion has carried out 92 days of operations.

b. In October 1969 this Headquarters submitted a proposal for elimination of two of the five AN/MRC-85 links for which this Battalion was responsible. These AN/MRC-85 links were installed by the Air Force as a part of the original Back-orch system. While the equipment proved serviceable, its age and its nature as a tube-type troposcatter radio link required excessive repair and replacement of parts. In addition to the physical deterioration of the equipment, the MRC-85 were generally inferior to REL-2600 equipment, as shown by carrier intensity and idle channel noise readings. In May 1970, all groups carried on 77UTC4, Qui Nhon - Da Nang and 77UT3B, Qui Nhon - Nha Trang, were rerouted onto existing REL-2600/FRC-109 links between Qui Nhon and Da Nang and Qui Nhon and Nha Trang. The groups on 77UTC4 now were carried from Monkey Mountain to Vung Chua Mountain and then to Qui Nhon on REL-2600 and FRC-109 links. Groups on 77UT3B were rerouted onto the Vung Chua Mountain - Nha Trang REL-2600 link. When this was accomplished DCA SAM requested deactivation of the two links. TSO's were issued and

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on 27 May 1970 77UTC4 was officially deactivated IAW TSO S02222/77UTC4-02 on 190344Z May 1970. 77UT3B was officially deactivated IAW TSO 02235/77UT3B-02 on 100001Z Jun 1970. This project was accomplished with only minor problems and all groups are now active on their new paths.

c. During this reporting period, the upgrade of the REL-2600 links between Cam Ranh Bay and Nha Trang and Da Nang and Phu Bai has been partially accomplished. The majority of the upgrade of the Cam Ranh Bay - Nha Trang link from 120 to 240 channels was accomplished during the last reporting period. By 30 April 1970, all re-engineering of this link was completed and only 4 TSO's were still pending. These were activated on the new path shortly thereafter. The upgrade of this link was accomplished with a marked degree of efficiency and smoothness of operation. The upgrade of the Da Nang to Phu Bai link from 120 to 240 channels is now approximately 79% complete. The upgrade proceeded smoothly through the initial phases, during which all equipment was wired in at both sites. Fading problems on the link were experienced and it was determined that this was caused by the shifting of the antenna at Phu Bai. This Headquarters requested assistance through Regional Communications Group from Page Communications Engineers for an antenna team and technicians to adjust the antennas and perform radio engineering assistance in order to improve the system to the point where it can accept increased loading conditions. The Page Antenna Team arrived at Phu Bai on 18 July and have completed antenna alignment. The completion of the upgrade is pending the results of this realignment.

d. The Nha Trang Old Technical Control, which was originally built as part of the Air Force Wetwash Cable Project in 1964, does not meet the standards presented by DCA. Its continued operation, with no personnel assigned, presented a severe drain on the manpower resources of the Nha Trang Detachment. Accordingly, this Headquarters submitted a proposal for its deactivation in September 1969. In May 1970 the actual deactivation began. The first step was accomplished by the relocation of modules from the two AN/FCC-25's at the ICS technical control from the cablehead at Da Nang East. The five DC tone packs have been removed to ICS facilities or deactivated. During this reporting period Phase I of the effort toward the deactivation of the Nha Trang Old Control continued according to schedule. The 40th Signal Battalion prepared cable splices for cutting over circuits to eliminate the IDF. Two 300 pair cables from the EE through the IDF to the DCO, two 200 pair cables from the EE through the IDF to AUTODIN, the W3 300 pair cable from the EE through the IDF to the Old Control and the PTT 25 pair cable from the EE through the IDF were spliced so as to eliminate the IDF and have all cables running directly from the EE to the other terminals. The six 100 pair cables between the IDF and the

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EE have been eliminated. This completed Phase I. Phase II included the completion of the 200 pair cable which was laid between the DCO and AACS (459th Signal Battalion) and the 1200 pair Nha Trang City Cable laid by the Air Force. All circuits from Robert Compound, Duy Tan, Rok Hq, and IFFV Typhoon Switchboard have been rerouted over the 1200 pair cable going to the Nha Trang DCO. AUTODIN number one (1-200pairs) and AUTODIN number two (201-400 pairs) have been spliced and no longer appear at the IDF. Work has also been completed on the 200 pair cable between Nha Trang DCO and AACS. With this work done Phase III has started and will eventually come to the final elimination of the Nha Trang Old Technical Control.

e. During this reporting period Phu Tai ICS site #70 was deactivated. Notification to deactivate was received on 19 May 1970. The AN/FRC-109 link between Vung Chua Mountain and Phu Tai was replaced with an AN/TRC-29 link operated by the 21st Signal Group. Official notice of deactivation was issued on 7 July 70. No problems were encountered in the deactivation. 361st personnel remain at Phu Tai pending final shipment of all equipment.

f. During this reporting period a coordinated effort to improve circuit quality has been made by the technical assistance team of Regional Communications Group and this Battalion. A daily periodic check program has been instituted in the Mux room requiring 32E personnel to utilize the Spectrum Analyzer to scan incoming basebands four (4) times daily for high channel levels. Plans to improve link quality have been implemented, including instructions on calibrating the Link Quality Monitor and Angus-Esterline Carrier Intensity Chart Recorders. Personnel are being trained to interpret material from these charts to ascertain what problem exists and where improvements are required. Systems Quality Improvement will continue to be of prime concern with the following steps taken to improve performance: power output of XMTR's are being brought up to the levels required in Page MOP 1.5.1; exciter and receiver performances are being adjusted to insure compliance with Page MOP 4.5.6 and 4.5.7.

g. On 8 July 1970, LTC Frederick L. Martin assumed command of the 361st Signal Battalion from LTC George D. Brosicus. Elements of all companies participated in the change of command ceremony held at Headquarters and Headquarters Company, Cam Ranh Bay.

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

- a. Personnel. None
- b. Intelligence. None

SUBJECT: Operational Report - Lessons Learned 361st Signal Battalion,
Period Ending 31 July 1970, RCS CSFOR-65 (R2)

c. Operations.

(1) Balancing of Hybrids in VF Circuits.

(a) OBSERVATION. A common problem in interfacing sophisticated ICS voice frequency circuits with common ringdown users is balancing the user side of the 2W/4W hybrid. Any impedance other than 600 ohms present on the 2 wire line causes hybrid imbalance, thus generating unwanted feedback and large gains. The normal ringdown circuit on the 4 wire, or technical control, side of the hybrid is engineered for a perfect balance. Unfortunately, the 2 wire, or subscriber side, is commonly subject to cable losses and unterminated switchboards. Due to the variation in cable resistance because of weather, etc., this hybrid imbalance is a daily problem.

(b) EVALUATION. When a hybrid is imbalanced the quality of the circuit deteriorates; therefore, an effective check had to be devised for determining which hybrid is improperly balanced.

If the hybrids at the tech control or the subscriber are imbalanced, a regenerative feedback is produced that completely disrupts the line. Tech controllers that are not familiar with this problem soon blame either their hybrid or the distant end. In order to check the tech control hybrid, set a 1000HZ test tone for +7dbm and insert it into the equipment VF jack of the circuit in question. Then, measure the signal present at the equipment out VF jack. If the subscriber is not properly terminated a high level is reflected through the hybrid. If the subscriber is properly terminated the reading at the equipment out jack will be approximately -40 to -50dbm.

To test the subscriber for imbalance, insert a -16dbm test tone into the mod jack on the VF board and measure the level in the demod out. If a high level is present, the distant subscriber is not properly terminated; however, if the level approximates idle-channel noise measurements, the subscriber is terminated correctly and the hybrid is balanced.

(c) RECOMMENDATION. That the Signal School course for 32D's place the above procedure in their lesson plan.

(2) Installation of FTA-15 on Circuits OT35 and K463 at Nha Trang EE.

(a) OBSERVATION. The FTA-15 is a device designed to integrate a radio circuit into a telephone system. The radio receive level may vary from -45dbm to +6dbm, while a constant level of 0dbm is fed to

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the telephone system. The units also incorporate a noise reduction circuit. This circuit works on the basis of amplification and attenuation of levels which exceed or are below the preset level. The voice circuitry through the FTA-15 operates in a tone switching mode. One of two tones is continuously transmitted over the radio path between the two FTA-15's. These tones are designated "standby" and "function". The standby tone is transmitted when the circuit is idle. This causes the receive circuitry to terminate the radio receive, disconnecting it from the telephone line. When speech is present, circuitry in the transmitting FTA-15 detects this presence, and switches on the function tone. The function tone causes the receiving FTA-15 to connect the radio to the telephone system. One or other of these tones are present over the radio circuit but rejected from the telephone system by band stop filters. At present the circuits OT35 and K463 are routed through two ICS systems before reaching the FTA-15 at the Nha Trang EE. This is subjecting these circuits to level variations, noise, and constant channel loading due to the presence of the operational tones.

(b) EVALUATION. From the foregoing description, the ideal position for the FTA-15 is at the point where the radio system interfaces with the ICS system. The design features of constant level to the system, noise reduction into the system, and elimination of the operating tones from the system are desirable for a circuit entering the ICS. The FTA-15's on the two circuits mentioned should be placed at Navy Base Facilities Control to interface these circuits into the ICS system. This Headquarters has requested that such action be taken for these circuits.

(c) RECOMMENDATION. Recommend that all circuits of this nature be re-engineered to provide for installation of the FTA-15 at the initial point of entry into the ICS.

(3) Improved Tuning of SRD's.

(a) OBSERVATION. ICS MOP 4.6.22c and 4.6.47d both pertain to the tuning of the SRD Multiplier. MOP 4.6.22c is for the SRD Multiplier in the receiver and MOP 4.6.47d is for the SRD Multiplier in the exciter. The procedures in both MOP's are very similar, and only differ in the levels of input and output. Sp5 Andrew Grosz of this command devised an alternate testing procedure for SRD's which has been published by Page Communications Engineers as ICS Technical Bulletin No. 61, Issue 1, dated 18 July 1970.

(b) EVALUATION. The salient feature of Sp5 Grosz's method is the ability to tune the SRD Multiplier to the required frequency and power while observing the spectrum around the center frequency for spurious

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Period Ending 31 July 1970, RCS GSECR-65 (R2)

generation of noise. The visual presentation permits adjustment of relative power, correct frequency, and elimination of spurious noise simultaneously, thereby permitting more rapid tuning, while the final step utilizing the power meter and frequency counter or meter insures that the proper specifications are met. This Headquarters has distributed the Technical Bulletin to its sites and included the procedure in On-the-job training at all REL-2600 sites.

(c) RECOMMENDATION. That the Technical Bulletin be included in training programs for 26V personnel wherever REL-2600 equipment is utilized in the Defense Communications System, and that it be included in the program of instruction for 26V personnel at USASCS, Ft. Monmouth, New Jersey.

d. Organization. None.

e. Training. None.

f. Logistics.

(1) Deficiencies in Maintenance Records.

(a) OBSERVATION. The number of major components which make up the configuration of a REL-2600 link is not fixed. The number of receivers may vary between one REL-2600 link and another REL-2600 link. The above also applies to the AN/FCC-17 systems. It is not defined clearly in the ICS MOP as to how Log Books and maintenance records should be maintained on the above listed equipment.

(b) EVALUATION. This discrepancy in the ICS MOP leads to excessive confusion when using log books and maintenance records on the AN/FCC-17.

(c) RECOMMENDATION. Recommend that each AN/FCC-17 link have a separate log book and records. Thus an effective maintenance program could be initiated for each system or link. The same would apply to REL-2600 links.

(2) Deficiencies in ICS MOP Vol 1.

(a) OBSERVATION. The present ICS MOP Vol 1 is out dated and does not conform with TM 38-750 dated Dec 69. Further it does not contain maintenance schedules or information pertinent to the AN/FCC-19 or AN/FCC-25.

(b) EVALUATION. Because of this lack of information, the scheduling of maintenance on the AN/FCC-19 and AN/FCC-25 is not done by ICS MOP.

(c) RECOMMENDATION. Recommend that the ICS MOP Vol 1 be revised and updated so as to reflect current maintenance guidance and procedures.

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Period Ending 31 July 1970, RCS CSFOR-65 (R2)

Further recommend that TM 11-5805-337-12 be referenced as a guide for scheduling maintenance services for AN/FCC-19 and AN/FCC-25.

g. Communications. None.

h. Material. None.

i. Other.

(1) Cable Tester.

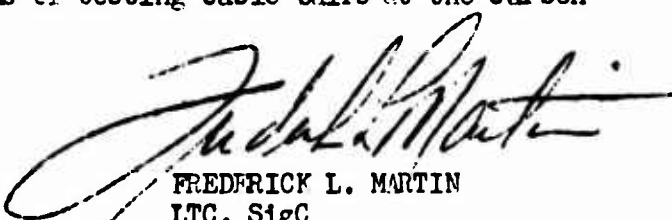
(a) OBSERVATION. A piece of equipment is needed to provide a quick and efficient means of testing cable pairs at the carbon blocks on the combined distribution frame. The conventional equipment used, a field phone and alligator clips, is cumbersome and inefficient and is unadaptable to most applications in terms of speed and accuracy.

(b) EVALUATION. Site personnel designed and built a unit at Qui Nhon which is reliable and efficient and utilizes readily available parts. Equipment used is as follows: Collins 20EL-MX AC ringdown converter (taken from spare equipment assignments, refer to RCG S&P 0512-02), miscellaneous jacks, a field phone and patch cords. The unit is wired as shown in inclosed wiring diagram. As designed, it provides the trouble shooter with the ability to open a given cable pair at the carbon block, short a cable pair, apply tip and ring ground and a 20HZ, 90 volts AC ring towards the subscriber. In addition, the unit allows the trouble shooter to make audio line checks with the field phone. Operation is simple: 1. Insert shoe, designed to fit individual cable termination block, into cable and shoe input test set. 2. Using standard patch cord, patch either equipment to equipment or line to line depending upon whether access to line or equipment side is desired. 3. To apply tip or ring ground or 20HZ ring, press corresponding button on unit (see wiring diagram inclosed).

(c) RECOMMENDATION. That this unit as described above be constructed wherever an efficient means of testing cable pairs at the carbon block is needed.

3 Incl

1. Wiring Diagram -
Cable Tester
2. Organizational Information
3. Organizational Chart to
Addressees



FREDRICK L. MARTIN
LTC, SigC
Commanding

SCCPV-RG-PT-MO (2 Aug 70) 1st Ind
SUBJECT: Operational Report - Lessons Learned, 361st Signal Battalion
for Period Ending 31 July 1970, RCS: CSFOR-65 (R2)

Headquarters, USASTRATCOM Regional Communications Group (Vietnam),
APO 96243, 29 August 1970

TO: Assistant Chief of Staff for Force Development, Department of the
Army, Washington D.C. 20310
Commanding General, 1st Sig Bde (USASTRATCOM), ATTN: SCCPV-OP-AD,
APO 96384

1. Subject report is forwarded in accordance with AR 525-15.
2. This headquarters has reviewed the report and basically concurs with it.
3. Following are corrections and/or comments concerning referenced paragraphs:

a. Section 1, Operations:

(1) Para f - This should reduce the hot level problem. Knowledge and use of LQM data will improve system quality and has been a point of training in the TA effort. However, an increased emphasis on this program at Company, Battalion and Group levels will be required to assure valid data is collected, processed and evaluated.

b. Section 2, Lessons Learned:

(1) Para c(1): Sites are not aware of the proper method of adjusting hybrids to prevent singing. This should not be necessary, in that DCA Engineering calibrates the impedance presented by the subscriber and from this determines the correct strapping of the hybrid. Strapping procedures are covered in the S&P manuals available on site. This information will be submitted to the Signal School for possible inclusion in its training courses.

(2) Para c(2): The FTA-15's on two HF circuits going to the Philippines are improperly engineered. We concur in the recommendations presented and have forwarded them to DCA-SAM Engineering for necessary action.

(3) Para c(3): This method of tuning the SRD was evaluated by Page and a T.B. published. It is valid and USASCS has the information for possible inclusion in its training programs.

(4) Para f(2): The ICS M.O.P. volume I is outdated. Page has been tasked to update volume I, to include letter information requested on multiplex equipment.

SCCPV-RG-PT-110

SUBJECT: Operational Report - Lessons Learned, 361st Signal Battalion
for Period Ending 31 July 1970, RCS: CSFOR-65 (R2)

(5) Para i(1): This is a unique method of testing cable paths which may be of future use. Page has been tasked to evaluate the suggestion and recommend possible improvements. If found acceptable, the information will be distributed to all sites.


JOSEPH F. PARADIS
Colonel, SigC
Commanding

SCCPV-OP-CC (2 Aug 70) 2nd Ind
SUBJECT: Operational Report - Lessons Learned, 361st Signal Battalion
for Period Ending 31 July 1970, RCS C3FOR-65 (R2)

DA, HQ, 1st Signal Brigade (USASTRATCOM), APO 96384 15 Sep 1970

TO: Commanding General, United States Army, Vietnam, ATTN: AVHGC-DST,
APO 96375

1. Subject report is forwarded in accordance with AR 525-15.
2. This headquarters has reviewed the report and concurs in it as indorsed with the following comment:

Reference item, "Deficiencies in Maintenance Records." para 2.f.(1)(c).
Guidance on TAMMS records required for STRATCOM peculiar assets was
forwarded to Groups in letter SCCPV-LOG-MR, 21 July 1970, subject: TAMMS
Equipment Record Requirements.

FOR THE COMMANDER:


T. M. BEYERSDORF
CPT, AGC
Asst AG

CF:
Commanding General, U. S. Army Strategic Communications Command,
ATTN: SCC-OPS-11, Ft Huachuca, Arizona 85613
Commanding Officer, USA Regional Communications Group, APO 96243
Commanding Officer, 361st Signal Battalion, APO 96392

AVHDO-DO (2 Aug 70) 3d Ind
SUBJECT: Operational Report - Lessons Learned 361st Signal Battalion,
Period Ending 31 July 1970, RCS CSFOR-65 (R2)

Headquarters, United States Army Vietnam, APO San Francisco 96375 30 OCT 1970

THRU: Commanding General, United States Army Strategic Communications
Command-Pacific, APO 96557

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

This Headquarters has reviewed the Operational Report-Lessons Learned
for the quarterly period ending 31 July 1970 from Headquarters, 361st
Signal Battalion and comments of indorsing headquarters.

FOR THE COMMANDER:


J. E. THOMPSON
CPT, AGC
Assistant Adjutant General

Cy furn:
1st Sig Bde
361st Sig Bn

SCCP-OP (2 Aug 70) 4th Ind

SUBJECT: Operational Report - Lessons Learned, 361st Signal Battalion,
Period Ending 31 July 1970, RCS CSFOR - 65 (R2)

Headquarters, U. S. Army Strategic Communications Command-Pacific, APO
San Francisco 96557 10/10/70

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

Commanding General, U. S. Army Strategic Communications Command,
Fort Huachuca, Arizona 85613

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

1. Subject report is forwarded in accordance with AR 525-15.
2. This headquarters has reviewed and concurs with the report as indorsed.

FOR THE COMMANDER:



ANN M. RIOU
CPT, WAC
Acting Asst AG

CF:

CG, USARV, APO 96375 wo incl

CG, 1st Sig Bde (USASTRATCOM), APO 96384 wo incl

CO, USASTRATCOM Regional Comm Gp, APO 96243 wo incl

CO, 361st Sig Bn (USASTRATCOM), APO 96392 wo incl

GPOP-DT (2 Aug 70) 5th Ind
SUBJECT: Operational Report of HQ, 361st Signal Battalion for Period Ending
31 July 1970, RCS CSFOR-65 (R2)

HQ, US Army, Pacific, APO San Francisco 96558

24 DEC 70

~~THRU: Commanding General, U.S. Army Strategic Communications Command,
Fort Huachuca, Arizona 85613~~ 12 Jan 71 JAS

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

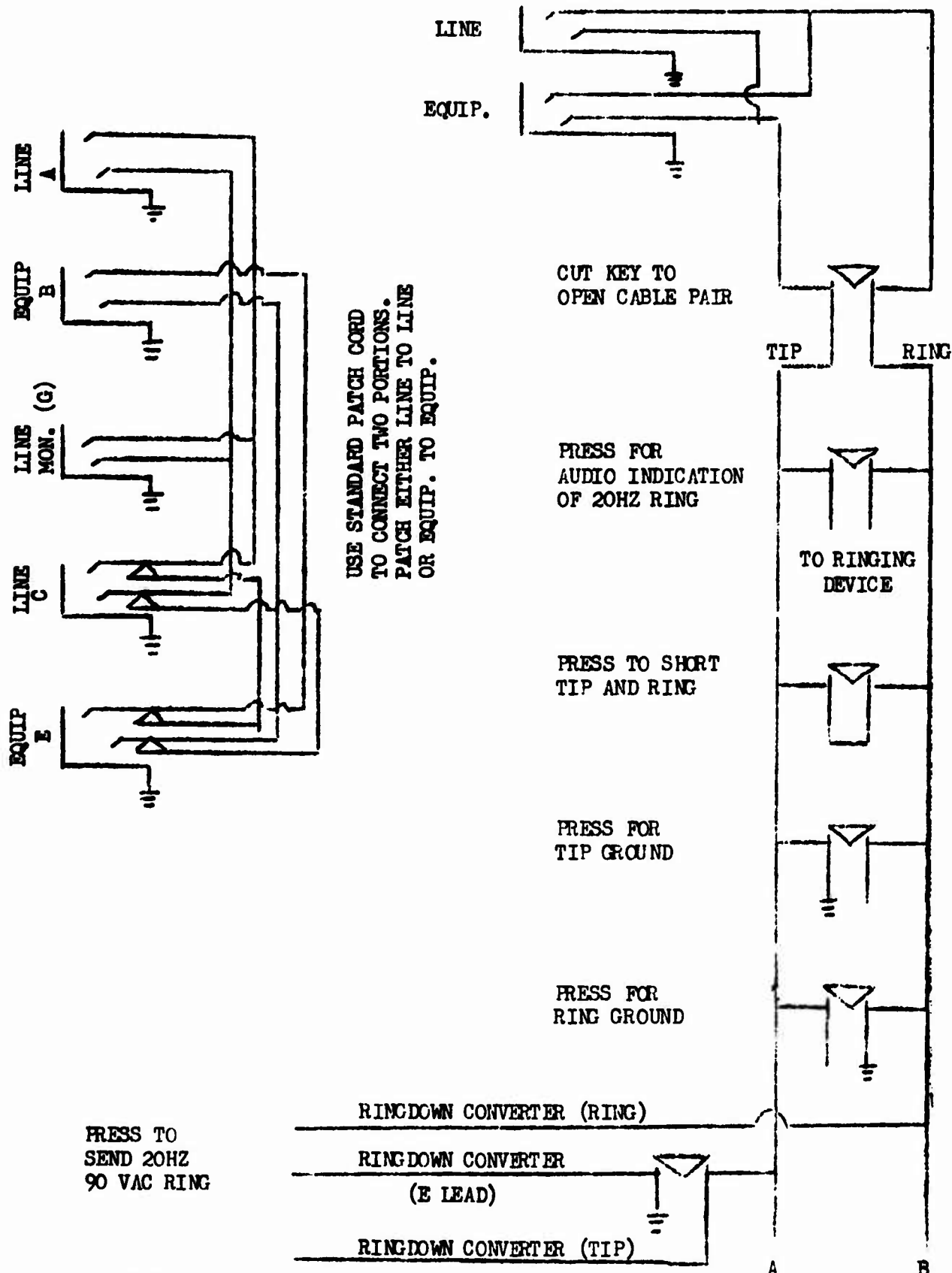
This headquarters concurs in subject report as indorsed.

FOR THE COMMANDER IN CHIEF:

L.M. Oland
7
L.M. Oland
CPT, AGC
Asst AG

CF:
DA ACSFOR
CG USASTRATCOM-PAC

WIRING DIAGRAM - CABLE TESTER



PRESS TO SEND 20HZ 90 VAC RING

DEPARTMENT OF THE ARMY
 Headquarters 361st Signal Battalion
 APO San Francisco 96392

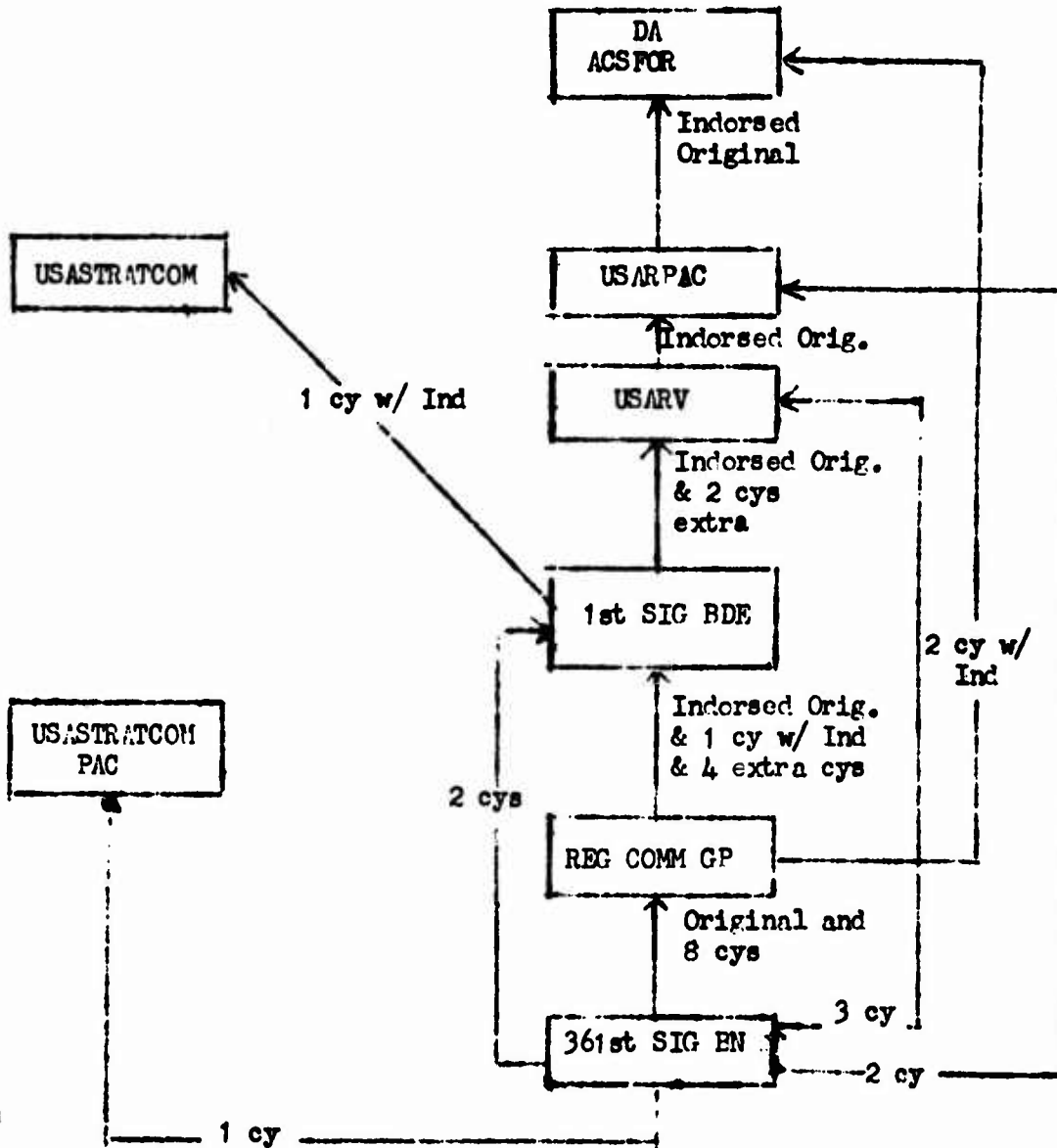
RGCRBB-OI-0

2 August 1970

SUBJECT: 361st Signal Battalion Organizational Information

<u>UNIT</u>	<u>LOCATION</u>	<u>PERSONNEL</u> <u>(Authorized)</u>
Battalion HQs and HQs Company	CAM RANH PAY	99
Company A HQs	NHA TRANG	20
Detachment	NHA TRANG	69
Detachment	BAN ME THOUT	18
Detachment	CAM RANH PAY	46
Detachment	CAM RANH AIR BASE	18
Detachment	DONG BATHIN	18
Detachment	NINH HOA	17
Detachment	PHAN RANG	17
Detachment	PR'LINE	24
Detachment	HON TRE ISLAND	17
Company B HQs	DA NANG	22
Detachment	DA NANG	90
Detachment	CHU LAI	17
Detachment	HUE	17
Detachment	MONKEY MOUNTAIN	45
Detachment	PHU BAI	45
Detachment	QUANG TRI	18
Detachment	QUANG NGAI	18
Company C HQs	QUI NHON	25
Detachment	QUI NHON	51
Detachment	AN KHE	17
Detachment	PHU CAT	18
Detachment	PHU TAI	17
Detachment	PLEIKU	73
Detachment	VUNG CHUA MOUNTAIN	44
Detachment	TUY HOA	19
Detachment	QUI NHON ROK	22

ORGANIZATIONAL CHART TO ADDRESSEES



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4. DESCRIPTIVE NOTES (Type of report and inclusive dates) Experiences of unit engaged in counterinsurgency operations 1 May to 31 July 1970.			
5. AUTHOR(S) (First name, middle initial, last name) CO, 361st Signal Battalion			
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