

HEADQUARTERS VII CORPS ARTILLERY
APO 307 U S Army

ARTERN, Germany,
12 June 1945.

BATTLE EXPERIENCE CONFERENCES ON
VII CORPS ARTILLERY OPERATIONS IN NORTHERN EUROPE

FOREWORD

On 9 May 1945 the VII Corps Artillery had completed 11 months of continuous active operations. The operations included the assault landing on the Normandy Coast, and the Campaigns of NORMANDY, NORTHERN FRANCE, RHINELAND, ARDENNES, and CENTRAL EUROPE. The fighting included: hedgerow fighting, breakthrough operations, wide-open pursuits, defensive actions, river crossings, assaults on fortified positions and defended towns, fighting in cities and in heavy woods, and operations in snow and extreme cold.

All conclusions drawn from these operations are affected by certain overall conditions -- the European terrain, our air supremacy, and our great artillery superiority in both materiel and technique -- all of which were very advantageous.

Between 23 May and 6 June 1945, at ARTERN, Germany, I conducted seven conferences to get the ideas of the Corps Artillery units, and especially of the Captains and Lieutenants who actually did the fighting. Report of each conference is enclosed under its proper title:

1. GROUND OBSERVERS
 2. AIR OBSERVERS
 3. BATTERY EXECUTIVES
 4. S-3's, GROUP and BATTALION
 5. S-2's, GROUP and BATTALION
 6. MOTOR OFFICERS, BATTALION and BATTERY
 7. COMMUNICATION OFFICERS, GROUP and BATTALION
- D92663*

All officers in VII Corps Artillery with combat experience in a conference subject attended that conference. (See list enclosed.)

Because of sudden movement orders for this headquarters, it was not possible to hold a culminating conference of Battalion Commanders as had been intended.

W B Palmer
W B PALMER

Brigadier General, U S Army

RECEIVED

Aug. 5-1947
LIBRARY OF A SCHOOL
D92663

1st CONFERENCE: GROUND OBSERVERS

(23 May 1945)

Ground-observers of VII Corps Artillery units assembled at ARTERN, Germany, on 23 May 1945 to discuss their experiences in the campaigns in Northern Europe. The actual views of this group of 56 ground observers are reported below, without distortion by senior officers.

Units represented:

Groups	}	Hq Btry, VII Corps Arty	802d FA Bn (105 H)
		18th FA Bn (105 H)	951st FA Bn (155 H)
		87th AFA Bn (105 H SP)	957th FA Bn (155 H)
		183d FA Bn (155 H)	980th FA Bn (155 G)
		188th FA Bn (155 H)	981st FA Bn (155 G)
		195th FA Bn (8" H)	991st FA Bn (155 G SP)
		660th FA Bn (8" H)	

1. TARGETS AND TYPE AMMUNITION.

a. Target: Tanks and SP Guns.---(1) High explosive shell, fuze quick, was favored by 155mm units, as more likely to knock out the tank without a direct hit. A near miss with delay fuze will not harm a tank. For direct fire, use T-105 fuze or delay fuze.

(2) No observer present had seen HEAT ammunition fired.

(3) White phosphorus is very effective in frightening tank crews, but it does very little actual damage, and forms a screen under cover of which the tank can withdraw.

(4) If hostile tanks are well out and friendly fighter bombers are in the vicinity, fire red smoke to draw the aircraft to that area.

b. Target: Infantry.---(1) In open: Observers favored adjustment with fuze quick and fire for effect with time or pozit. Time fire frequently was not used because of the additional time required to adjust. The impression was that neither time nor pozit had been used to full advantage.

(2) In woods: In general, fuze quick gives tree bursts with excellent effect. When the enemy is dug in, fuze delay in woods is more effective because of its deeper penetration.

c. Target: Pill boxes and strong emplacements.---105mm howitzer ammunition was ineffective. 155mm and heavier calibers were used with success. Delay fuze was used in adjustment, to get ~~incidental-effective-hits.~~ For direct fire, T-105 fuze with supercharge was used. One observer reported having used base ejection smoke to mask a pillbox while his infantry, receiving no injuries from the smoke shells, moved in on the pillbox.

d. Target: Machine guns, Mortars, etc.---High explosive with air bursts was used generally. In one case, delay fuze was used with intent to shake the mortars off their base plates.

c. Target: Vehicles.--Used fuze quick for adjustment and for effect against tires and personnel. When the vehicles had been stopped they were destroyed by precision methods or additional fire for effect.

f. Target: Observation posts.--Fuze depends on the type of shelter. Often enemy OP's are well dug in, indicating delay fuze. Air bursts are sometimes required.

g. Target: Towns.--TOT's on towns should include all types of fuze (air, quick, and delay) to catch the enemy on the streets and inside the buildings. White phosphorus frequently was included, both because the Germans hated it and also to start fires.

2. GENERAL CONCLUSIONS ON AMMUNITION.--a. Good ricochet conditions were found very seldom.

b. Most observers felt that time fire is generally too difficult to adjust; consequently they consider it of little value. (These observers from Corps Arty units were mostly dependent on mechanical fuze M67; however, even the 105mm observers seemed leery of time fire.)

c. Time fuze M67 is too erratic to be of much value.

d. Pozit is very good and entails no difficulties of adjustment. The observers generally felt that it could have been used more. All observers with pozit experience state that when fired above a woods, it bursts too high to be effective on the ground beneath the trees. Pozit when used in conjunction with massed fires of several battalions gives too many early bursts by sympathetic detonation.

e. M51A3 fuze fired with delay action from 155mm howitzer was found to give a high percentage of duds.

f. The French and British projectiles which were issued to 155mm and 8" howitzer units were not satisfactory because of excessive dispersion.

g. From a forward observer's standpoint, the highest charge possible should always be used because it gives least dispersion.

3. INITIAL DATA.--a. Initial data were usually from the map; coordinates were estimated to the nearest 100 yds, and tied in if possible by announcing a terrain feature appearing on the map. When small shifts were made, initial data were usually given from the last concentration fired.

b. When no map was available, an estimated compass and range were used. If the battery location was not known, a town

shown on a road map could be used as a reference point for the initial data. (Even in Europe, observers once in a while had no map, usually because they had advanced off the sheets available.)

4. BATTERY SHEAF.---a. For ^{4-gun 105mm batteries,} light-artillery, a sheaf of 100 yds was believed ideal and was found in nearly all cases to be well aligned

b. For ^{4-gun 155mm batteries,} medium-artillery, a sheaf of 200 yards was believed too wide for the average target. A width of 150 yards was suggested by most observers.

c. Additional exactness is needed in sensing the sheaf. A suggested standard message from observer to FDC is (for example): "Converge on #3 to 50 yards".

5. ADJUSTMENT OF TIME FIRE.---Most forward observers used the standard sensings: graze, mixed, air and high air. They recommend a change of "Up 10" to follow at FDC from an initial graze sensing. They think that positive height sensings should be given by the observer (for example: "Air 50 yards").

6. METHOD OF FIRE.---a. Adjustment.---Most observers favored adjustment by one gun. A minority favored one platoon. In special cases, such as a counterattack, the battery should be used.

b. Fire for effect.---The most important consideration is the proximity of the target to our own troops. If the target is within 150 yards, only the adjusting battery should be fired for effect. For targets between 150 and 300 yards, the rest of the battalion may be brought in. For targets beyond 300 yards, other battalions may be used for effect. Observers generally agreed that the spread of battalion and larger concentrations made these restrictions necessary to avoid serious risk of hitting our own troops.

7. CONDUCT OF FIRE.---a. All missions were processed through the battalion fire direction center, except when a battery was separated from battalion control.

b. Forward observer sensings were invariably used by all observers. They feel that a sound understanding of the principles of lateral observation increases the efficiency of an observer.

c. High angle fire has been used very little by these observers and results were not conclusive. Excessive dispersion of high angle fire was reported by several.

d. The following is a compilation of written estimates prepared by observers during the conference; figures are not reliable statistics.

(1) Distance of Target from observer:

<u>Weapon</u>	<u>Maximum</u>	<u>Minimum</u>	<u>Average</u>	<u>Based on estimated No of missions</u>
105 H	6,000	25	500 to 800	380
105 H (SP)	7,000	50	700 to 800	1870
155 H	14,000	50	1000 to 2000	2680
155 G (SP)	12,000	400	4000	190
155 G	14,000	300	3000 to 7000	400
8" H	15,000	1000	3500 to 5000	60

(2) Distance of Guns from observer:

<u>Weapon</u>	<u>Maximum</u>	<u>Minimum</u>	<u>Average</u>	<u>Estimated No of missions</u>
105 H	8,000	1500	4000 to 5000	380
105 H (SP)	6,000	100	3000 to 4000	1870
155 H	14,000	4000	8000	2680
155 G (SP)	10,000	0 (direct fire)	7000 to 8000	190
155 G	12,000	0 (direct fire)	8000 to 12000	400
8" H	10,000		5000	60

(3) Relative locations of Observer - Gun - Target:

<u>Weapon</u>	<u>Extreme</u>	<u>Average</u>
105 H	Lateral & Flank	Axial and Small T
105 H (SP)	Target between O and G	Small T and Large T
155 H	Lateral	Small T
155 G (SP)	---	Axial and Small T
155 G	Lateral	Axial and Small T
8" H	---	Axial and Small T

(NOTE: Conclusion is that fire is usually requested by an observer near the target, in an "axial" position, who 50% of the time, at least, is not a member of the battalion which fires.)

8. PREARRANGED FIRES.---a. These observers recommend clean breaks of several minutes in long preparations, to entice the enemy out of their holes expecting the attack. Then start preparation again and catch them exposed.

b. These observers do not favor rolling barrages. Used at request of infantry in one case to protect open flanks of advancing unit; observer considered this firing wasted. Observers consider a plan of successive concentrations to protect attacking troops much better than a rolling barrage.

c. Training in the planning of defensive fires after the day's fighting, with the FO planning with an Infantry Company Commander and the Liaison Officer planning with an Infantry Battalion Commander, was insufficient at all stages prior to reaching the battlefield. FO must work with the Infantry Company Commander in planning defensive fires. Planning of defensive fires must start at all levels simultaneously; there is no time to develop them successively from company up to division.

d. Whenever possible, data for defensive fires should be verified by actual adjustment on several of them, especially those which are close to our own troops.

9. FORWARD OBSERVER EQUIPMENT.--It was agreed that the following equipment should be taken by the forward observer.

Offensive mission

1 - $\frac{1}{2}$ ton truck
1 - 610 Radio (with Armor, 510)
1 - 609 Radio (with Armor, 509)
2 - 536 Radios
1 - Remote control set
1 - Set extra radio batteries
1 - Power telephone
1 - mile W-130 wire
2 - Pr field glasses
1 - Coordinate square
1 - M2 compass
1 - Flashlight
1 - Watch with sweep second hand

Defensive mission

Same as offensive, adding:
1 - BC Scope
1 - Small plotting board
and plotting equipment

10. HEARTFELT GRIEVANCES OF THE OBSERVERS.--a. When a Corps Artillery observer picked up an important target, such as a tank holding up our infantry, it was often almost impossible to obtain a clearance to fire on it (Observer to Bn to Gp to Div Arty to 105 Bn and return).

b. S-3's lacked confidence in their observers. Examples: not firing requested amounts of ammunition for effect; not clearing fires in doubtful areas.

c. All captains and lieutenants in the battalion should take their turn as forward observers, and the highpriced FDC staff should come up and see the battle the way the observers see it, so they can visualize it at the FDC.

d. In hard continuous fighting, 72 hours is the maximum time an experienced forward observer can be expected to operate effectively, and 48 hours is the maximum for a green man.

2nd CONFERENCE: PILOTS AND AIR OBSERVERS

(27 May 1945)

~~Pilots and air observers of VII Corps Artillery units assembled at ARTERN, Germany on 27 May 1945 to discuss their experiences in the campaigns in Northern Europe, 6 June 44 - 9 May 45. The actual views of this group of 44 pilots and air observers are reported below, without distortion by senior officers.~~

Units Represented:

Hq Btry, VII Corps Arty	195th FA Bn (8" H)
Hq Btry, 142d FA Gp	660th FA Bn (8" H)
Hq Btry, 188th FA Gp	802d FA Bn (105 H)
Hq Btry, 224th FA Gp	951st FA Bn (155 H)
18th FA Bn (105 H)	957th FA Bn (155 H)
87th FA Bn (105 H SP)	980th FA Bn (155 G)
183d FA Bn (155 H)	981st FA Bn (155 G)
188th FA Bn (155 H)	991st FA Bn (155 G SP)

1. PLANE AND EQUIPMENT. --a. Plexiglass or a better grade of pyrolin should be installed to improve all-around visibility. One piece should be used in the left side rather than the present three sections.

air observer

b. Every officer used field glasses on many of his air observation missions. A special field glass, light and compact, with 8-power lens and a wider field of vision, is needed for air observers.

c. The observer very seldom faced to the rear. The general opinion was that observers should face to the rear only where enemy aircraft are particularly active. All observers want an adjustable seat.

d. All observers want an intercommunication system between pilot and observer. Many had improvised their own in the L-4 airplane.

e. The most serious defect in the air sections was lack of messing arrangements. The section is rarely convenient to a unit kitchen. T/O & E should furnish a cook, a cooking unit and mess equipment for 10 men.

f. The general opinion was that, while transportation currently available gets the air section around, the habitual serious overloading would be avoided by substituting a 1½-ton personnel carrier for the 3/4-ton weapons carrier.

g. Spare parts supply was usually satisfactory. A suggested list of additional spare parts to be carried by the air section follows:

Carburctor	Shock strut
Piston rings	Spark plugs
Propeller	Tail wheel

2. HAZARDS OF FLYING.--a. 40 of the 99 major accidents in the Corps during combat occurred in takeoffs and landings. The first consideration in selecting a field should be suitability for takeoffs and landings. The second consideration should be exposure of the field to enemy artillery fire. In a stable situation, the base field should be 10,000 yards from our front lines, with a strip farther forward.

Pilots and observers commented on the difficulty of safeguarding planes on landing strips when operating with Armored Combat Commands in a rapidly-moving action. No general agreement was reached on a solution but some remedial suggestions were:

- (1) Keep all planes working with the Combat Command on one strip.
- (2) Keep the strip close to Combat Command Headquarters.
- (3) When the Combat Command pulls out during the night, arrange for a platoon of light tanks to remain behind and protect the landing strip until the planes and ground crews can move up in the morning.

b. The enemy aircraft warning system often did not work satisfactorily for separate battalions. Suggested remedies:

- (1) The mobile AAA battery accompanying each Corps Artillery battalion receives all aircraft warnings. The AAA battery should notify its Field Artillery Bn FDC immediately, and the FDC immediately relay the warning to the air observers over SCR-608 net.
- (2) Any Corps, Division, Group or Battalion FDC which receives an Air Warning Message should immediately broadcast the warning over the SCR-193 net to all FDC's for further relay as in (1).

c. It was learned the hard way that German ^{AA Art, would fire} flak-fired at Air OP's. The best counter-flak measures were to avoid known flak areas, and to use varied evasive patterns when attacked.

3. COMMUNICATION.--a. Radio.--(1) The SCR-619 has not been available to any unit present at the conference.

(2) Observers agree that the SCR-610 has been satisfactory. An important advantage is its interchangeability with any other 610 set. The best place for the SCR-610 is the shelf in rear of the observer. The trailing antenna should not be used with the SCR-610 as it has definite directional characteristics. The recommended settings on the SCR-610 set for each battalion Air OP are battalion "common channel" and air channel of next higher headquarters. Observers also recommend that the FA Group combine its air and command channels, as observers get much useful information by listening in on the normal command traffic.

(3) T17 microphones and P23 earphones are preferred to the present ear plugs and throat microphone, the latter in fact are not ever used.

(4) Present radio procedure is satisfactory but proper priority in many cases was not given to fire missions.

b. Wire.--Wire should always be maintained between the (Group or separate battalion) FDC and airstrip. In a fast moving situation, a field should be selected where good communication can be maintained with the battalion.

4. MAPS AND PHOTOS.--a. The best all-around map, was the 1/50,000. It was the best compromise between amount of area covered and detail shown, and also gave a very good duplication of the view from the plane. ^{for air observers}

b. The 1/25,000 map often was used in a stable, limited area.

c. No type of photograph was considered really necessary. Gridded obliques were rarely used. Ungridded obliques were preferred for briefing. Some observers thought that a 1/25,000 gridded, colored photo map would be very helpful in all except fast-moving situations, ^{but not for basic observers}

5. TARGETS.--Most targets were picked up by seeing a flash or movement. German camouflage and camouflage discipline were excellent and targets were difficult to find except by prolonged study of suspected areas. Many targets were picked up by observing reactions of friendly troops. In some cases communication with friendly forward observers was helpful. German dummy gun positions were not seen at all except when flash pots were used in conjunction with them. Enemy flak installations were often spotted when they fired at our fighter bombers. Targets were taken under fire in the following order of frequency:

- no space >
- (1) artillery in position
 - (2) registrations
 - (3) tanks and vehicles
 - (4) moving foot troops.

6. GUNNERY.--a. Registration.--(1) For a registration, Give the observer an area in which to select a registration point rather than designate a specific point (from the ground) which may be unsuitable from the air.

(2) Center-of-impact was obtained by firing 2 groups of 3 rounds after splitting a 100-yard range bracket.

b. Adjustment. All observers agreed that:

(1) The gun - target line must be known. If not determined otherwise, it must be shot in.

(2) The target must be bracketed when adjusting. A yardstick on the ground, such as two crossroads a known distance apart, is very helpful and usually easy to find in this theater.

(3) The use of an auxiliary target to get surprise was not successful because the shift could not be fixed accurately enough.

(4) In snow, delay fuze is helpful in spotting bursts.

c. Fire for Effect,--(1) Average area covered by one battalion was 300 yards by 300 yards.

(2) Amount of fire for effect given by S-3 was felt generally to be sufficient.

(3) Observers noted that a smoke screen with 155mm Howitzer was difficult to maintain due to the large number of duds from the M67 fuze.

d. Time Fire.--Air observers rarely used time fire except for time registrations. Accurate sensings on height of burst are impossible; air or graze are the only possible sensings. All grazes with M67 fuzes are "lost".

7. GENERAL.--a. Each Division and Group air officer should keep an accurate up-to-date situation map at the air strip with the following information:

- (1) Front lines.
- (2) Plan of operation of supported troops.
- (3) All FA battalion position areas.
- (4) Known enemy installations.
- (5) Areas in which flak has been received.

In the best combat divisions, this was done; in green divisions, it was not done.

b. The present VII Corps method for warning Air OP's of posit fire (POZIT, LEFT ZONE, UNTIL 1305) is satisfactory except that warnings were rarely given in time. Observers recommend:

(1) Broadcast the warning at least 10 minutes prior to the firing and include both starting and ending time for the fire. (example: POZIT, LEFT ZONE, 1235 UNTIL 1305).

(2) Broadcast the warning over the SCR-193 net so that all FDC's in the Corps can notify their planes.

c. No agreement was reached on the best zone or area in which to operate an Air OP. It was generally agreed that in a stable situation with good visibility the plane should stay 2000 to 3000 yards behind the front line. Many observers, when enemy resistance seemed disorganized or feeble, frequently went well into enemy territory for reconnaissance or for a detailed search of a specific area. The average patrolling altitude is 1500 feet, but altitudes up to 4500 feet are favored by some observers if visibility is good. Some feel that there is more danger from flak and enemy aircraft at such higher altitudes; others disagree. In support of a tank breakthrough, altitudes as low as 300 feet must sometimes be flown.

and say there is less.

d. Depending on visibility, which was extremely variable, the distance from plane to target on the majority of missions was between 3500 and 5000 yards. The maximum distance was 15000 yards on a day of exceptional visibility.

subject? ->

e. On their primary mission of flying for field artillery, the present Air OP section (2 airplanes) can handle 4 two-hour missions per day. Reconnaissance flights, flying for infantry commanders, messenger service, etc, simply reduce the flying time for field artillery. The maximum flying time of a pilot and observer should not exceed 5 hours in the air per day, and this rate cannot be continued for more than 5 or 6 days. Observers feel that 2 two-hour patrols per day are much better than 4 one-hour patrols because the former permit more detailed study of the terrain and more continuous attention (see Par 5 above).

f. All pilots and observers felt strongly that two trained air observers should be regularly assigned to each air section. Some units had detailed many officers haphazardly as air observers; these ^{such} observers saw nothing. No observer had received reasonably adequate training before working as an observer in combat. Training should include intensive work on map reading and aerial orientation; also Air OP firing.

3d CONFERENCE: BATTERY EXECUTIVES

(29 May 1945)

~~Battery executives of VII Corps Artillery units assembled at ARTERN, Germany on 29 May 1945 to discuss their experiences in the campaigns in Northern Europe. The actual views of this group of 42 battery executives are reported below, without distortion by senior officers.~~

Units Represented:

18th FA Bn (105 H)	802d FA Bn (105 H)
87th AFA Bn (105 H SP)	951st FA Bn (155 H)
183d FA Bn (155 H)	957th FA Bn (155 H)
188th FA Bn (155 H)	980th FA Bn (155 G)
195th FA Bn (8" H)	981st FA Bn (155 G)
660th FA Bn (8" H)	991st FA Bn (155 G SP)

1. FIRE CONTROL.--a. Battalion FDC's handled practically all missions. 105mm batteries occasionally operated independently and then took missions direct from observers. 105mm and 155mm howitzer batteries occasionally handled registrations direct with the observer.

b. Except in one 105mm Battalion, battery executives had few occasions to set up an OA instrument at the gun position. Due principally to the unreliability of the 167 fuze, medium and heavy calibers made few high burst adjustments.

c. In correcting for irregular positions of the individual guns within the battery, 4 battalions used the "Sandsgraph", while 8 battalions had the position corrections both for range and for sheaf computed at the FDC. The 87th Armored FA Bn especially was vehement on behalf of the "Sandsgraph" as a quick easy solution. No one had found it necessary to compute corrected time fuze settings for individual pieces.

d. All executives control each volley in zone fire.

2. COMMUNICATIONS.--a. From Executive to Guns.--(1) In all units, the executive communicates with each gun by telephone. Some batteries run a party line from the executive post around the battery position, with each section T-spliced onto it. One battery runs a complete circuit around the position but puts a telephone on each end at the executive post; if the line is broken, the spare telephone fails to respond to a ring. In one 8-inch howitzer battalion, each gun runs a line to a control box and terminal strip in the center of the battery, so arranged that the executive can talk to the guns individually or collectively.

c. Defects in equipment:

c (1) So much maintenance is required to keep the telephones in the gun position dry and clean that there is needed some type of box to protect all telephones at the executive post and a waterproof container for the individual telephone at each gun. Light and medium battalions need a total of ten telephones in each firing battery position.

c (2) b. All battery executives want w110 wire for all purposes instead of w130.

c. (2) All executives want a hand-set telephone at each gun. No executive wants head-and-chest sets, because in 24-hour operation the telephone must be where any one can pick it up and start a mission, and also because the head set ties the wearer too closely.

d. No executive wants a loudspeaker system.

b. From base to FDC:

e. In all battalions the FDC and battery executive can communicate through the switchboard. 8 Battalions also run a direct line from battery executive to FDC, while 4 Battalions simplex a line from battery executive to FDC. Many executives object to a simplex line because of too much crosstalk. All Battalions install lateral lines between batteries.

c (3) f. All executives agree that a small generator is needed at the gun position. Most batteries had acquired German Army generators. (Only one battalion had not.) A few batteries light the Executive's post with trouble lights from their trucks.

c (4) g. Six batteries improvised remote control lighting systems on their aiming stakes for night firing. All executives want this as standard equipment.

c (5) h. The majority agree that not enough flashlights are provided, that at least fifty percent of the battery should be issued flashlights; and that present issue plastic flashlight is not sturdy enough to be satisfactory.

3. OCCUPATION OF POSITION.---a. (per Battalion) All batteries follow these procedures: The Battery Commander normally selects the gun positions. He takes forward the Assistant Executive, Chiefs of Section, and other personnel to prepare the position. If possible survey is completed before the guns arrive. Some Battalions always send one gun forward to register. In short, as much as possible is done before the guns arrive. When moving in at night, all units have a guide for each section waiting at the new position. The 8-inch howitzer Battalions when moving in at night set up aiming stakes with lights before dark and determine the deflection for each gun.

b. Minimum times required by various calibers after the guns arrive at a new position, before the battery is ready to fire, are:

← 105mm How (Towed & SP)	3 - 5 minutes
155mm How	4 - 6 minutes
155mm Gun (Towed)	15 - 30 minutes (with direction stakes previously emplaced.)
155mm Gun (SP)	5 - 8 minutes
8" How	45 - 60 minutes (if holes are dug prior to the arrival of the piece - 30 minutes)

c. The executives in general agree on the following maximum and minimum battery fronts and distances between pieces:

<u>Caliber</u>	<u>Battery Front</u>	<u>Distance between pieces</u>
105mm How (Towed)	150-200 yards	50-75 yards
105mm How (SP)	120-200 yards	60-80 yards (hexagon)
155mm How	150-300 yards	50-100 yards
155mm Gun (Towed)	200-400 yards	100-200 yards
155mm Gun (SP)	200-300 yards	75-100 yards
8" How	200-400 yards	75-200 yards

With battery fronts greater than the above, the executives found that control difficult, wire to guns was broken too often, too much trouble arose in the delivery of ammunition to the guns, and there was too much traffic of other troops thru the position. ~~Vehicle movement in the position area must be held to a minimum.~~

d. The following times are needed to dig in:

<u>Weapon</u>	<u>Trails and Slit Trenches</u>	<u>Weapons, ammunition pits, & slit trenches</u>		
		<u>Dry Ground</u>	<u>Mud</u>	<u>Frozen Ground</u>
105mm How	1-2 hrs	4-5 hrs	4-5 hrs	10-15 hrs
155mm How	1-2 hrs	12 hrs	12 hrs	36 hrs
155mm Gun	2 hrs	2 hrs*	4-6 hrs*	4-6 hrs*
8 inch How	2 hrs	18 hrs	36 hrs	didn't dig

* All times for 155mm Gun are based on the use of a bulldozer.

e. Some units dug one large hole for the entire gun crew instead of slit trenches. 105 and 155 SP's did not dig in; usually gun crew dug a hole underneath the carriage. All troops used cellars and houses as much as possible.

f. Almost every battery kept its prime movers within 200 yards of the battery position. Some kept the ammunition vehicles equally near the position. All other vehicles were kept in a truck park about 800 yards away.

g. All executives complain that they were not given accurately enough the azimuth for center of traverse upon occupying a new position; too often, as soon as the battery was laid, the FDC sent down a base angle which required shifting trails. The executives feel that more careful attention by higher headquarters to determining the initial direction of fire would save much useless work by cannoneers.

4. MOVEMENT.--a. With good weather conditions, but without advance warning, it took the following average times to "March Order" a battery in an organized position and get it on the road:

<u>Caliber</u>	<u>Day</u>	<u>Night</u>
105 trucks	20-30 minutes	2 hours
105 SP	15-30 minutes	45 minutes
155 Howitzer	30-90 minutes	3 hours
155 Gun	1½ hours	3-4 hours
155 Gun SP	1 hour	2 hours
8 inch howitzer	3-4 hours	5 hours

b. Battery maintenance sections always accompanied the gun sections.

5. MATERIEL AND EQUIPMENT.--a. Defects.--(1) 105 truck drawn. Winches wanted on all gun trucks. Stronger trail spade needed. Cut down left front shield so the sight can be used more readily. Redesign range quadrant so that night-lighting devices can be repaired in the field. One executive suggested wicker wheel mats.

(2) 155 Howitzer.--Obturator spindle plug (bushing) wears out too frequently. Safety latch plunger breaks frequently. Make spades of better steel. One executive suggested a larger surface on the spade to eliminate trail logs. Provide sight extension bar so that the gun can be laid from the right. Redesign the M5 tractor body (1) to provide room for more men and (2) to increase the ease of loading and unloading ammunition.

(3) 155 Gun.--M2 limber is unsatisfactory; should be replaced with M5. Either firing pins are too short or some primers are defective since some units had trouble in firing the primers. Need two M23 ammunition trailers per battery.

(4) 8-inch Howitzer.--Each battery needs a spare equilibrator. Need better seal around the upper and lower carriage to keep out water and dirt. Need more carrying space for men. M4 tractor needs an exhaust manifold that does not emit sparks. M23 trailers need dual wheels; frequent blowouts occur due to heavy road pressure.

b. Spare parts.--All executives agree that more replacements for small parts should be carried in the battery or battalion.

c. Tractors.--All executives agree that tractors are much better than trucks in mud and that all tractors should have chevroned rubber tracks.

d. Lighting devices.--All calibers need a better lighting system for aiming stakes; a remote control device should be standard equipment. (See Par 2g).

e. Instruments.--(1) All executives criticize the present BC scope and want an instrument with a smaller tripod, which can be set up closer to the ground, and is not so heavy and large.

(2) Medium and heavy batteries need one more aiming circle. 105mm batteries have three aiming circles and need only two.

(3) All executives agree that too many field glasses are provided. Some would like to get one pair of 10-power glasses in exchange for 3 pair of the 6-power glasses.

g. Personal Equipment.--(1) Most executives say that the present raincoat and overcoat are unsatisfactory for cannoneers; they want rainsuits and Armored Force combat suits.

(2) The canvas-topped arctic overshoe soaks through rapidly and is unsatisfactory. The supply of large-sized overshoes was unsatisfactory.

(3) Heavy wool-lined leather gloves are necessary. A knitted wool head and face cover is desired for cold-weather wear.

(4) The present issue sleeping bag is too small and not warm enough.

h. Equipment.--(1) Allowances of shovels and hand tools are insufficient; no executive of any caliber was satisfied.

(2) Camouflage equipment was adequate. Nets should be fireproofed and issued with garlands. Too much cable is issued with camouflage nets. 155mm gun and 8-inch howitzer Battalions want a carrier for camouflage nets built over the tube. 980th IFA Bn (155 G) has used them very successfully.

i. Cleaning and preserving equipment was always inadequate. The following were always short: Rags, sal soda, wire bore brushes, bristle brushes, primer vent cleaners, crocus cloth, heavy oil, grease, paint, and cleaning kits for individual weapons.

j. Ammunition trailer, M-10.--Executives want one-ton trailers in lieu of M10's. The M10 has no springs, is too heavy, ruins anything but ammunition that is carried, and has limited ammunition-carrying space; the ammunition racks take too much space, are too heavy, and it is difficult to get the ammunition out of them. A general-purpose trailer is preferred.

k. A better wrench is needed for pozit fuzes.

l. Most executives have fired their pieces faster than the prescribed rate, without causing serious damage so far as they know. One 105mm battery fired 100 rounds per gun per hour for several hours and the recoil started to leak. A 155mm howitzer battery found that the recoil oil emulsified after considerable firing at excessive rate. The tubes remained in good condition, according to the speakers.

m. All executives agree that the Ordnance service has been excellent and that Class A Ordnance inspections were beneficial.

6. AMMUNITION.--a. Keeping track.--All executives say they rarely had a 100% accurate count of ammunition on hand, primarily because the actual rounds loaded at ASF's rarely agree with the tally-sheets. There is apt to be a gross error of 5 or 6 rounds, but also discrepancies between types of projectile that sometimes turn out to be really embarrassing. Most executives have a close count made at the battery position when received, and have the 5th Section Sergeant keep a running inventory, checking in with the recorder. All batteries take careful inventory whenever possible.

b. Basic load.--Executives said they had no difficulty keeping the basic load of ammunition on hand. Some detailed comments: Medium and heavy Battalions carry too many time fuzes. Empty propaganda shells should not be in the basic load; they can be drawn as needed. Some 105mm executives want more white phosphorus and less HC Smoke. No 155mm gun Battery ever fired HC Smoke (BE M17 HC) and they consider it should not be carried. RED smoke was the only colored smoke needed in Europe by most batteries.

c. Lots.--Most executives tried to use a single lot number and weight on each observed mission, and particularly for registration. Odd lots were used up on harassing and interdiction fires. Executives want the same ballistic characteristics built into high explosive, white phosphorus, and smoke shells for obvious reasons.

d. Propellants.--(1) Most executives want a flash reducer or a flashless-smokeless propellant.
(2) 155mm howitzer batteries report no need for the M4 white bag powder charge.

e. The 18th FA Bn (105 towed) splits its ammunition train into three sections, each of which accompanies a howitzer battery.

7. PERSONNEL.--a. For 24-hour operation, all light and medium Battalions agree that one more cannoneer per section is needed. 155mm gun Battalions need two more cannoneers per section, and 8-inch howitzer Battalions need 1 sergeant, 1 corporal, and 9 privates in each battery ammunition section (an increase of 6 men). It was suggested that every No. 1 cannoneer be given a T/5 rating.

b. All executives agree that the battery recorder should be a corporal or T/5. Heavy battalions want two recorders per battery.

8. PRE-COMBAT TRAINING.--a. Opinion was divided as to whether the battalions had sufficient training in infantry minor tactics before entering combat. Some executives recommend pre-combat infantry training in: street fighting, cleaning out snipers, clearing areas, organization and control of squads, and coordination of arms, such as machine guns and anti-aircraft weapons.

b. The artillery should fire over friendly troops during training, to give the men confidence in themselves and their unit.

c. The artillery received sufficient pre-combat night training, on the same line as their experience in combat, except that little night firing was done in training.

d. One battery feels that more pre-combat training in knowledge of the uniforms, habits, and materiel of the German Army would have been profitable.

e. Executives feel that training time was wasted digging too many foxholes, since any man learns that in combat in one lesson.

f. Each individual should be taught more than one job when possible so he will be more flexible; he also should know how his job fits in with the battalion, and generally should have a better knowledge of the larger units and higher headquarters.

g. As many officers and key NCO's should go to specialized schools as possible. NCO's should be taught to conduct fire, especially members of observer parties. Several executives feel that officers were not rotated sufficiently in various jobs.

9. HEARTFELT GRIEVANCES.--a. Executives complain that schedules for night harassing fires reached them too late; they want earlier information merely of the number of rounds to be fired, so they can assemble the correct ammunition at each gun before dark.

b. A suggestion by one executive that the cannoneers be told the nature of their target on each mission brought out that in VII Corps it has been SOP in most units to do this as a great morale factor.

c. Executives complain that other units and tanks frequently go through their battery positions disrupting communications and generally messing up the area. They feel that more coordination at higher headquarters would stop such trespassing. Movement of vehicles through gun positions must be held to a minimum.

4th CONFERENCE: GROUP AND BATTALION S-3's

(31 May 1945)

Group and Battalion S-3's of VII Corps Artillery units assembled at ARTERN, Germany, on 31 May 1945 to discuss their experiences in the campaigns in Northern Europe. The actual views of this group of 26 S-3's are reported below, without distortion by senior officers.

Units Represented:

Hq VII Corps Arty	195th FA Bn (8" H)
Hq Btry, 142nd FA Gp	660th FA Bn (8" H)
Hq Btry, 188th FA Gp	802nd FA Bn (105 H)
13th FA Obsn Bn	951st FA Bn (155 H)
18th FA Bn (105 H)	957th FA Bn (155 H)
87th AFA Bn (105 H SP)	980th FA Bn (155 G)
183rd FA Bn (155 H)	981st FA Bn (155 G)
188th FA Bn (155 H)	991st FA Bn (155 G SP)

1. FIRE DIRECTION CENTER.--a. Groups.--(1). Both 142nd and 188th Groups used three S-3 teams of 1 officer and 2 enlisted men. The S-3's prefer for each team to work one 12-hour shift every 36 hours; less continuity is lost with long shifts.

(2) Both Groups used a switchboard in the FDC, connected to higher FDC's and to Battalion FDC's by simplex lines. In addition, three trunk lines connected this FDC switchboard to the main Group switchboard, providing metallic communications. In 2 situations on stabilized fronts, direct lines were laid from the Group FDC switchboard to the Battalion FDC's to eliminate crosstalk of the simplex lines.

(3) During displacements, Groups established an advanced FDC before closing the old headquarters.

b. Battalions.--(1) Usually a complete crew of 1 officer and 5 enlisted men was necessary 24 hours a day. In quiet periods a smaller crew consisting of 1 officer and 2 enlisted men was sufficient at night. During intense periods, ^{105mm} Battalion fire direction personnel worked shifts of 6 or 8 hours, while medium and heavy Battalions had shifts of 8 or 12 hours. The T/O does not allow enough men for fire direction. This was remedied by using radio operators as computers. S-3's recommend that 2 men trained for all fire direction duties and 3 men trained as computers be added to the T/O for the operations section of each Battalion.

(2) Wire communications within the FDC varied in different Battalions. The 4 medium Battalions used switchboards in the FDC. The 3 light and 5 heavy Battalions did not. 5 Battalions used simplex lines to their batteries. 7 Battalions used direct metallic lines. All S-3's agreed there was excessive crosstalk and weak voice transmittal on the simplex lines.

(3) During displacements, Battalions handled fire direction by one of the following methods:

(a) Installed a forward switching central and operated from the old FDC until the new FDC was established.

(b) Augmented with Battalion FDC personnel the FDC of the first Battery to displace, and operated it as Battalion FDC until the new Battalion FDC was ready.

(4) A Battery attached to a Battalion of different caliber usually established its own FDC and received missions in the same form as an attached Battalion. In a few cases, the attached Battery sent a computer to the Battalion FDC and received missions as a 4th Battery in the Battalion. Tank Destroyer companies firing as additional unit to M. Battalions always operated their own FDC.

c. Radio nets and procedure proved satisfactory. In fast-moving situations, radio was the only means of communication 20% of the time. The SCR-508 was always in operation during daylight, with a communication check each hour; it was operated at night only when forward observers were operating or wire communications were faulty. With the SCR-608, there is a constant interference by nets on other channels. To keep good communications when working with armor, relay stations were required. On the "Corps Arty Comar's Net" (SCR-193), the Battalion set was normally only a listening station, altho occasionally the net was assigned to a Group for fire direction.

2. CORRECTIONS.--a. All Battalions used the Graphical slide rule with latest R marked on the rule. All carried the latest deflection corrections on the HCO and VCO fan.

b. All Battalions used a chart or blackboard to record the latest corrections and metro data.

c. Metro data were good except when the metro stations were too far away. Some divisions did not appreciate the importance of metro data with such accurate maps.

d. Velocity calibration data were used to determine the ~~long and short~~ shooting medium and heavy calibers. Guns were grouped into Batteries according to calibration results. Any additional individual piece corrections were applied at the gun.

e. Registration of one gun is sufficient for the Battalion if the other Batteries are checked once by firing on a check point. Experience proves that heavy artillery transfer limits extend to traverse limits if the registration point is in the center. Light and medium artillery need a check point in each area comprising the "book" transfer limits.

f. Both ground and air observation were used for registration. Ground observation was preferred, but was used only 25% of the time due to lack of OP's. An Observation Battalion lateral OP's usually registered the heavy artillery if possible. The M57 fuze is too erratic to obtain high burst adjustments. All artillery should register at least once a day, and light artillery should check the registration twice daily in addition.

3. CHARTS.--a. Group.--The firing chart was a 1/50,000 map and showed the fire possibilities of each Battalion.

b. Battalion.--The BCO chart was a grid sheet, 1/25,000. The VCO chart was a map, 1/25,000 (or 1/50,000 map when the 1/25,000 map was not available).

c. S-3's of heavy battalions want larger size grid sheets to prevent the necessity of joining small ones.

4. FIRE MISSIONS.--a. Adjust with number 2 or 3 gun. Inform the observer which gun is firing. In light and medium artillery, computers for the non-adjusting batteries did not follow commands to the adjusting battery; instead, adjusted data were replotted and new commands announced. In heavy artillery, battery computers followed the adjustment:

b. Fire commands in Ft. S-40 proved sound. S-3's of light artillery prefer to give Range, Method of Fire, and Fuze, in that order, before the other fire commands. Heavy artillery gives "Do Not Load" after "Battery Adjust" if fire is not to be immediate. Higher headquarters in assigning fire missions should give: (1) Concentration number, (2) Time to fire, (3) Coordinates of target, (4) Nature of target, (5) Units to fire, (6) Method of fire. On TCT missions, Time to fire should be given first. If fire mission is not for entire Battalion, it should be so stated before the rest of the data so the entire Battalion will not be alerted.

*What the hell
for targets shoot
the No-Fire line*

c. TOT missions: Time designated should allow Groups 1 minute, light Battalions 3 minutes and medium and heavy Battalions 4 minutes; at night, twice as long. BBC radio time, broadcast hourly, was used by VII Corps Arty.

d. Every target always was cleared with the Div Arty in whose zone it lay. (The "No-Fire" line gave automatic clearance in front of it.) The S-3's state that clearances often took too long. No solution was offered, except the thought that clearance to a Corps Arty Observer from the Inf CO on the spot should constitute ample authority to shoot *in his own zone of attr.*

5. RECONNAISSANCE FOR POSITIONS.--a. Corps Arty.--CG VII Corps Arty determined the area to be covered by the fires of each Battalion, and by map reconnaissance assigned a general area from which the Battalion could accomplish the desired mission. CG VII Corps Arty *always* cleared this general position area with the Div Arty Commander in the sector.

b. Groups.--Group Commander made a ground reconnaissance with the Battalion Commander, and assigned the Battalion Commander a definite area, which the Group Commander cleared with the interested Div Arty Commander.

c. Battalions.--Battalion Commander made a detailed ground reconnaissance with his Battery Commanders, and assigned Battery positions.

d. It was SOP that as soon as one position was occupied, Group and Battalion Commanders initiated reconnaissance for their next positions.

e. VII Corps Arty battalions always looked for positions by "leapfrogging" between the successive areas into which the divisional artillery moved. This system of "leap frog" with the divisional artillery worked well and minimized arguments over position areas between Division and Corps.

f. Service Battery should be located on a main supply route if possible, and not more than 5 miles from the guns.

6. MOVEMENTS.--a. No Group ever marched as a Group. Each Battalion marched as a separate serial. Heavy and medium Battalions used a heavy and light column only when moving more than about 20 miles. The order of march on a short Battalion displacement was normally 2 Firing Batteries, Headquarters Battery, 1 Firing Battery, Service Battery. On short moves, each battery was led by an agent. On long moves, maps and overlays were given to drivers and route markers were put at critical points. Signs were used freely to mark routes on both long and short moves.

b. Traffic clearances were obtained from the VII Corps Traffic Section by Hq VII Corps Arty, upon request of Group Commanders. Hq VII Corps Arty obtained clearances for separate battalions.

7. RECORDS AND REPORTS.--a. Data sheets for lengthy preparations were prepared at the Battalion FDC. Batteries received copies of the data sheet, but fire was controlled by Battalion FDC.

b. Ammunition, record of firing, and log of events reports were kept on file in each Group and Battalion FDC. In light and medium Battalions the ammunition record was kept by a representative of the Battalion Ammunition Section. In heavy Battalions, the computers kept the ammunition record of each Battery, and the operations sergeant kept the Battalion ammunition status.

c. All periodic reports required by higher headquarters should cover the same period and should be called for at the same time, preferably by telephone.

8. TRAINING. ~~---~~ ^{b. Durr's combat} There was ample training in the basic artillery weapon, but there was little opportunity to keep in practice with small arms.

^(replacements)
c. Reinforcements, needed no special training other than that given by the section chief under combat conditions.

^{a. c.} Combat itself gave continuous training far better than could be had elsewhere. The units never needed to "withdraw for training." However it is hard during combat to absorb a new weapon or technique. More pre-combat training in map reading and aerial observation were recommended.

9. GENERAL.--a. Battalion fire possibilities were telephoned to higher headquarters by the coordinates of the Right and Left limits at the maximum range.

b. Fire plans prepared by higher headquarters should invariably be given in coordinates instead of by overlay. The only value of an overlay was to give an overall picture of the plan; but it is neither accurate enough, nor easy to break down for subordinate missions.

c. Batteries should be tied together, before survey control comes in, by pinpointing on a map and by compass. Light and medium Battalions laid by converging on a grid intersection. Heavy Battalions laid on a center line. Base angle and compass must be reported immediately to the Battalion FDC.

6 June 45
9 May 45

5th CONFERENCE: GROUP AND BATTALION S-2's

(2 June 1945)

FA Group and Battalion S-2's of VII Corps Artillery assembled at ARTERN, Germany on 2 June 1945 to discuss their experiences in the campaigns in Northern Europe. The actual views of this group of 24 S-2's are reported below, without distortion by senior officers.

Units Represented:

Hq Btry, VII Corps Arty	195th FA Bn (8" H)
Hq Btry, 142d FA Gp	660th FA Bn (8" H)
Hq Btry, 188th FA Gp	802d FA Bn (105 H)
Hq Btry, 224th FA Gp	951st FA Bn (155 H)
15th FA Obsn Bn	957th FA Bn (155 H)
18th FA Bn (105 H)	981st FA Bn (155 G)
87th AFA Bn (105 H SP)	980th FA Bn (155 G)
183d FA Bn (155 H)	991st FA Bn (155 G SP)
188th FA Bn (155 H)	

1. ORGANIZATION AND EQUIPMENT.--a. Group S-2's proposed no changes.

b. Battalion S-2's.--(1) Need one additional man for Intelligence Sergeant (T/4); he should be a draftsman and typist.

2) Armored Field Artillery Battalion also needs a second Liaison Section.

(2) Need an additional $\frac{1}{4}$ -ton trailer for maps.

(3) Equipment which was never used: Range finder (M9A1); plane table with tripod and accessories; alidade (ES 42-1-2); and altimeter (surveying, 6,000 ft., 10 ft. division).

c. 2. COMMAND POST OPERATION.--a. Group S-2's disagree on best organization of the Group S-2 Section for combat. One Group Hq keeps S-2 and S-3 sections separated; two Group Hqs combine the S-2 and S-3 Sections. All three need all S-2 personnel authorized by T/O.

b. All Battalions combine the S-2 and S-3 Sections for operations.

c. All Groups and Battalions give the S-2 Section such additional tasks as temporary Liaison Officer, Trial Judge Advocate, Special Service Officer, and Information and Education Officer. All S-2's carry on these duties without extra personnel.

3. COMMUNICATIONS.--Normal Corps Artillery communications were adequate for S-2 purposes.

4. OBSERVATION.--a. In Corps Artillery, the personnel available to act as observers were usually busy either as air observers or as forward (front line) observers. Ground OP's on high hills, in towers, etc, were in the main organized and manned by the Observation Battalion; such OP's were organized by Battalion S-2's only for occasional specific tasks and were by no means habitual; Group OP's were very uncommon.

b. Ground OP's were manned by the survey section, the S-2, or by personnel from lettered batteries. Equipment used at OP's included field glasses (in preference to the BC scope), the M49 telescope, aiming circle, and M2 compass. Radio was the primary means of communication. The 1/25,000 map was the most satisfactory for ground observers.

c. Air OP's worked very closely with Group S-2 Sections. Each air observer reported to his own S-2 after each mission if at all practicable; Battalion S-2's reported results to Group S-2's.

5. MAPS AND PHOTOS.--a. Maps were ^{ground} very accurate and highly satisfactory. The 1/50,000 was the best all-around situation and road map for both Battalion and Group. The 1/25,000 was used by Battalions for survey and observation, and by one Battalion as a firing chart. 1/100,000 and 1/250,000 maps were used for the general situation, and in fast-moving situations as road maps. Special maps such as fortification and defense overprints, and town maps, were of great value in the organized German defensive areas. "Terrain study" maps were only of general interest. The maps could have been improved by a systematic and consistent color scheme. On the 1/25,000 map there was too much contour detail, the printing was often blurred, and prominent features such as churches and schools were not distinct. The 1/50,000 was a far better job in these respects than the 1/25,000, which should be raised to its quality. The supply of maps was adequate.

b. Photos.--with 1/25,000 maps available, there was no need for a gridded photomap. Observers used oblique photographs for orientation in conjunction with the 1/25,000 map. Ungridded obliques were preferred to gridded obliques.

6. INTELLIGENCE AND INFORMATION.--a. Most of the information obtained by (Corps-Artillery) Battalion and Group S-2's which was useful at higher headquarters came from Air OP's. Most of the information desired by the Battalion and Group S-2's for their own use came--(1) from Corps Artillery FDC, by telephone to Group, (2) from inspection of the situation map at Corps Artillery FDC, (3) from Corps G-3 situation reports and Corps G-2 periodic reports, and (4) from liaison sections with supported units.

b. The Corps Artillery S-2 was the only level at which artillery intelligence came in constantly from many sources and could be studied carefully. FA Groups, Division Artilleries, Corps G-2, adjacent Corps Artilleries, Army Artillery, the Observation Battalion, and Corps Artillery Air Section were prolific and dependable sources.

7. SECURITY CONTROL.--All S-2's supervised and checked upon censorship, the handling of classified documents, and other security matters. Battalion S-2's checked the effectiveness of camouflage by periodic flights over their battalion areas, but they were not made responsible for camouflage training.

8. SURVEY.--In all units, either the S-2 or Ass't S-2 always accompanied the Group or Battalion commander on reconnaissance. This enabled the survey personnel to start their survey immediately. Since accurate maps were always available, only position area surveys were required. Direction was established always by orienting line.

6th CONFERENCE: GROUP, BATTALION, & BATTERY MOTOR OFFICERS

(4 June 1945)

Group, - Battalion and Battery Motor Officers of VII Corps, Artillery units assembled at ARTERN, Germany, on 4 June 1945 to discuss their experiences in the campaigns in Northern Europe. The actual views of this group of 56 Motor Officers are reported below, without distortion by senior officers.

Units Represented:

Hq Btry, VII Corps Arty	195th FA Bn (8" H)
Hq Btry, 142d FA Gp	660th FA Bn (8" H)
Hq Btry, 188th FA Gp	802d FA Bn (105 H)
Hq Btry, 224th FA Gp	951st FA Bn (155 H)
13th FA Obsn Bn	957th FA Bn (155 H)
18th FA Bn (105 H)	980th FA Bn (155 G)
87th AFA Bn (105 H SP)	981st FA Bn (155 G)
183d FA Bn (155 H)	991st FA Bn (155 G SP)
188th FA Bn (155 H)	

1. ORDNANCE SERVICE AND SUPPLY.--a. Critical items were issued by allocation of the Corps Ordnance Officer. A representative of the unit had to visit the Corps Ordnance Office for a written authorization before getting the item at the Ordnance Service Company. This took valuable time unnecessarily; the whole business could have been done by telephone.

b. Motor Officers feel that Ordnance Automotive Contact Parties maintained insufficient contact. They should maintain contact with units as vigorously as the Artillery Section of the Ordnance does; and they should carry small parts and do minor jobs on the spot in the field. To get quick service, most units found it necessary to send their own mechanics to Ordnance shops to help do the work. Normally the Ordnance shops were located much too far to the rear. When a Battalion became quite distant, it was able to get better results by putting the Battalion S-4 half-way between the Battalion area and the Ordnance shops.

2. DRIVERS.--a. Motor Officers are convinced that each vehicle must be assigned a driver who has no other job. Radio operators and other technicians assigned also to drive a vehicle invariably neglect vehicle maintenance. A radio operator can act as assistant driver in a forward observer's party satisfactorily. Most mechanical failures in combat came from vehicles with no assigned driver. The majority thought it would be well to have such personnel as radio operators and gun mechanics assigned as alternate drivers.

b. The present Driver's Award is not given sufficient prestige. It should be awarded only for excellent performance. Drivers wearing this medal should have definite privileges. One Battalion reports that its drivers received such special privileges as not doing guard and being excused from extra work, with excellent results.

c. Battery commanders and other battery officers show too little interest in drivers and vehicle maintenance. All officers must feel responsible for upkeep of vehicles. The present system of driver's maintenance is very complete and thorough but motor maintenance personnel must have the full support of battery officers in order to get drivers to perform it properly.

(NOTE BY CG VII CORPS ARTY: These difficulties evidently were surmounted. I personally read all spotcheck reports on Corps Arty vehicles. Maintenance has been uniformly extremely good.)

3. MECHANICS,--The mechanics are very well trained for the work they are required to do. Many were civilian mechanics, others were well schooled. More training was needed on the M-5 tractor. It was agreed that more 3rd Echelon repair should be taught to 2nd Echelon mechanics so emergency 3rd Echelon repairs could be taken care of.

4. 2ND ECHELON EQUIPMENT,--a. The present type box voltage tester is too complicated and requires too much training to be 2nd Echelon equipment. It should be left in Ordnance shops.

b. The following items were never used and should be removed from 2nd Echelon sets:

- (1) Echelon set No 4 (block and tackle set w/300 ft rope)
- (2) Holmes Anchor set
- (3) Oil drain pan
- (4) Safety can, 5 gallon

c. The wheelbarrow air compressor should be replaced by a larger compressor. It starts hard, the motor runs too fast, and it is too small for the job required of it.

d. All agreed that a gear puller should be added to the 2nd Echelon set. It is needed for many jobs.

e. Battalion maintenance should have equipment with which to reline brakes. This equipment would have saved many brake drums in the campaign.

5. TRUCK, $\frac{1}{2}$ TON, 4x4,--An excellent vehicle. Suggested improvements:--a. Spot weld the hinge on the hood to make a closed hinge and prevent hood vibration. Place packing around the fenders so the hood will rest on rubber.

b. Use a more solid and larger grease fitting on the spring shackle. It wears out or is broken off too quickly.

c. Hand brake is inadequate. The cable stretches, collects dirt and foreign matter, and thereafter is useless. The brake itself overheats and warps. A brake similar to that of the Dodge or GMC should be substituted.

d. Spring clips proved inadequate during crosscountry operation and on cobblestone roads; recommended, somewhat heavier spring clips, so designed that they may be tightened. In VII Corps Artillery, a $\frac{1}{2}$ -inch spotweld on the clip on the top spring leaf was applied to keep the clip in position.

e. The airplane type shock absorber is inadequate. Little service can be done on it, the fluid runs out, and the ends break off, causing the spring to take all the load and shock; Recommended, a shock absorber similar to that on a 3/4-ton Dodge.

f. The body is weak and sometimes cracks around the sill next to the driver and on the opposite side. A strip of metal welded at these 2 points solved the problem. Recommended, similar reinforcing at the factory.

g. A good muffler is most important for forward observer parties. Placing muffler behind the skid plate assured its good condition because it was higher from the ground and less likely to drag.

6. 3/4-TON WC AND C/R VEHICLES.--a. The carburetors used on the 3/4-ton WC and C/R should be standardized. The Zenith carburetor requires less attention and readjustment than the others encountered.

b. The present 3/4-ton weapons carrier is too small for battalion wire trucks and for battery wire and maintenance trucks. It is recommended that these should be replaced by $1\frac{1}{2}$ -ton trucks. (NOTE: Communication Officers insist the 3/4-ton is essential for wire-laying because $1\frac{1}{2}$ -ton truck is too roadbound.)

7. 2 $\frac{1}{2}$ -TON GMC.--a. A more suitable seal at the constant-velocity joints would prevent an excessive amount of water from getting into the seal.

b. The amount of brake trouble was tremendous. With brake lining such a critical item, something must be done to prevent another experience with wornout brake linings and drums such as occurred after the very muddy Hurtgen Forest operations in November and December 1944. Recommended, brake drums similar to those on the Dodge, to prevent so much mud getting in the drum and wearing out the brake lining and getting the drum out of round.

c. Spark plugs gave much trouble on this vehicle. They do not seem to be of the proper heat range. Some conferees felt that high octane gasoline was a partial cause. Setting the spark gap at .033 instead of .025 helped prevent cracking and chipping. This was not the complete remedy, but no other suggestions were made.

8. 7½-TON MACKS.--a. This vehicle is tiring to drive because road shocks are transmitted through the steering wheel. Recommended, a higher steering ratio.

b. The brake diaphragms should be placed above the axle.

9. M-5 TRACTOR.--a. The battery boils over and ruins the wiring. Recommended, moving the battery away from the engine.

b. The starting motor is too light. The starting motor should be equipped with a solenoid switch.

c. The bumpers are much too light to be of any value; heavier bumpers, made of steel, are needed.

d. The clutch gives trouble; it has to be drained daily during combat operations. The clutch failed frequently because of its light construction. It hampered operations enough to merit redesign.

e. Chevron-type rubber tracks are needed.

f. A guard should be placed over the air brake connections to prevent fouling.

10. HEARTFELT GRIEVANCES.--a. When a vehicle has travelled 10,000 or 12,000 miles, it should be turned in to Ordnance for 5th Echelon repair, after which it should be used only in the Communication Zone.

b. Vehicles should be issued to combat units by vehicle number and motor number in order to prevent rear-area units from diverting new vehicles and sending used vehicles up to combat units.

c. The Parts Corporal in medium Battalions should be a T/3.

d. Light battalions do not need a 4-ton wrecker and could better use a GMC.

7TH CONFERENCE: GROUP AND BATTALION COMMUNICATION OFFICERS

(6 June 1945)

The actual views of this group of 20 Communication Officers are reported below, without distortion by senior officers.

Units Represented:

Hq Btry, VII Corps Arty	195th FA Bn (8" H)
Hq Btry, 142d FA Gp	660th FA Bn (8" H)
Hq Btry, 188th FA Gp	802nd FA Bn (105 H)
Hq Btry, 224th FA Gp	951st FA Bn (155 H)
13th FA Obsn Bn	957th FA Bn (155 H)
18th FA Bn (105 H)	980th FA Bn (155 G)
87th AFA Bn (105 H SP)	981st FA Bn (155 G)
183rd FA Bn (155 H)	991st FA Bn (155 G SP)
188th FA Bn (155 H)	

1. WIRE.--a. Of 12 Battalions represented, 7 Battalions used direct metallic circuits from the FDC to the firing batteries and to higher headquarters, while simplex circuits were used by 5 Battalions. Most Communication Officers hold that simplex is only 75% efficient because of cross-talk, compared to metallic circuits. Simplex circuits were used by Group FDC's, both to higher and lower FDC's and were found satisfactory, altho cross-talk was a handicap. (See S-3 CONF, 1a(2).)

b. Groups usually laid one line to each Battalion and simplexed it. If two lines were laid, the Battalion normally laid the second. Battalions generally had two lines to each firing battery. The Battalion laid the trunk line and the Battery laid a direct line to Battalion FDC. Batteries always laid lateral lines, from right to left.

c. Medium and heavy Battalions laid OP lines (NOTE: when they had OP's) unless the distance was extremely long or the situation so fast moving as to make wire impracticable. Light Battalions rarely laid wire to OP's. When light Battalions laid wire to their forward observers, the Battery furnishing the forward observers laid to the switchboard of the supported Infantry Battalion and the forward observers ran a line to the same switchboard.

d. Forward switching centrals were rarely used by any of these Battalions. They were sometimes installed during a displacement or to reach several forward observers.

e. Prior reconnaissance of wire routes is very important. A map reconnaissance will indicate the most promising routes, but some physical reconnaissance however hasty was always made. Wire crews usually go to the far end of the line and lay back to their own switchboard. This is a form of reconnaissance.

MORRIS SWETT
TECHNICAL LIBRARY
USAFAS SNOW HALL
FORT SILL, OKLA. 73503

D92663

f. After two weeks of combat all Communication Officers learned to install lines carefully the first time, even though it sacrificed speed. Wire was almost invariably laid along the roads. Tanks try to spare wire beside the road, but cross-country lines are not seen by tanks. Cross-country lines are also very difficult to service at night. As a general practice, lines are laid on the ground initially, with overheads wherever traffic may cut them; then as time permits many units go back and get all of their wire overhead on trees, hedges, houses, telephone poles, etc. In extreme cold, frozen lines on the ground are easily broken, also are buried in the snow. Hq VII Corps Arty and some others used commercial lines very successfully. Some units used test stations on long lines and found it a good practice (if personnel were available).

g. Wire was NEVER buried across roads as taught at home. In the first place, a great many wires cross at the same spot, and there would be constant reopening of the trench. In the second place, fast traffic uncovers such a trench at once. OVERHEAD always.

h. Tagging of lines is a "must". In many units, tags are punched, scalloped, or painted for quick identification, but the name of the unit must always be printed on the tag also. With dozens of lines going down one road, no symbolic marking is sufficient.

i. Opinion was divided on the value of loading coils.

2. RADIO.--a. Radio communications were efficient, in all Battalions, at least 80% of the time. The 87th Armored Field Artillery Battalion found radio 100% efficient in fire control; and found 2 channels sufficient for fire direction, altho a few times a third channel would have been useful.

b. Fire control radios were remoted and operated from the FDC. A loudspeaker was always available in the FDC.

c. SCR-608 sets in all Battalions were operated 24 hours a day when forward observers were out; otherwise, only during daylight. If wire failed during the night, the SCR-608's were immediately switched on.

d. The SCR-193 ("Corps Arty Comdr's Net") was in operation 24 hours a day. Its only steady traffic was metro messages; in effect it was an emergency net. Battalion Communication Officers felt that they got little value from the operators they had to keep on this net and suggested using it for fire missions. The Corps Arty Communication Officer pointed out that this net has often been turned over to a Group or an Armored groupment for fire direction.

(NOTE 1. The same discussion occurred in the S-3 CONFERENCE, Par 1c.

(NOTE 2. Air observers and pilots recommend that all warnings of enemy aircraft received by any FDC be broadcast by that unit on the SCR-193 net for relay to all Air OP's.

(NOTE 3. Air observers and pilots recommend that whenever Pozit fuze is to be fired, the standard VII Corps Arty warning message "POZIT, LEFT ZONE, 1235 to 1305" be broadcast on the SCR-193 net for relay to Air OP's.)

e. Only a few officers are proficient voice radio operators. Forward observers, air observers, and S-3's are usually highly proficient, but many other officers cannot use a radio as they would a telephone. Some Communication Officers thought this was a good thing and some thought it was bad.

f. Expedients used to maintain radio communications:

- (1) Sets moved around to find a workable spot.
- (2) Antennas lengthened.
- (3) Relay stations, including relay by airplane.
- (4) Frequencies redistributed to eliminate interference.

g. Link sign procedure was successful. CW was used only when voice reception was poor.

3. HEADQUARTERS INSTALLATIONS.--a. The Message Center was generally in a spot convenient both to incoming personnel and to FDC, as many administrative messages come by phone to FDC. Agents were used as messengers between FDC and batteries and sometimes were the only means of communication (wire cut up by friendly tanks, etc).

b. The Fire Direction Center was the focal point of the Group and Battalion communications. Communication Officers agreed that the Group and Battalion S-3's knew the capabilities of wire and radio communications and fully exploited them. All Groups used a switchboard and 2 additional telephones in the fire direction center, 4 Battalions used a switchboard in the fire direction center, 8 Battalions did not. The 4 Battalions employing the switchboard claimed more flexible communications were possible, while the 8 Battalions not using the board stated they thought it a duplication of communications.

4. GENERAL.--a. Most of the Group and Battalion Communication Officers want to retain their present dual duties as Headquarters Battery Commander and Communication Officer. They feel that the Communication Officer should be Battery Commander because his wire, radio, and message center sections contain most of the Headquarters Battery.

b. It was recommended that radio technicians be more highly trained in special schools outside of the units. Every Battalion should have at least one highly trained radio repairman. He should be qualified for his rating by the same high standards that are required for artillery airplane mechanics and assigned to the Battalion in the same manner.

c. Complaints were registered that the Corps Signal Battalion failed to give satisfactory maintenance and repair on faulty radio equipment.

d. The M-209 converter was used only by Hq VII Corps Arty and was reported to be too slow. Slidex was satisfactory between headquarters but proved to be too slow for rapid transmission of coordinates. A map Coordinate Code is needed to augment Slidex.

d. Recommended changes in T/E:

<u>Item</u>	<u>Basis of Issue</u>
Climbers, LC6 and Belts LC 23	2 sets per wire truck
Gas generator w/193 to use w/12 volt battery	1 per SCR-193
Lance Poles, P02	Not desired in the Artillery
Repeater, EE89a	2 per Bn, 4 per Gp, 8 per Corps Arty
Reel unit, RL26a	2 ea Gp
SCR-608	1 per Ln Off and Btry CO
SCR-284	Not desired in the Artillery
Semaphore Flags	Not desired in the Artillery
Switchboard, BD91 B	1 per Bn
TG5's	Not desired in the Artillery
Wire, W110B	100% increase for Corps Arty, Gp, & Bns
Wire, W130	Not desired in the Artillery

e. Recommended changes in T/O: -- Wire Corporals in lettered batteries should be rated Sergeants or T/4's.

OFFICERS WHO ATTENDED THE GROUND OBSERVERS CONFERENCE

VII Corps Arty:

Brig Gen W B Palmer
Col Andrew P O'Meara
Lt Col Fred P Campbell
Capt William W Carson

18th FA Bn:

1st Lt Eugene W Bates
1st Lt Frederick C Bucher
1st Lt John H Hemphill
1st Lt David J Mc Laren
1st Lt Vernon A Rasmussen
2nd Lt Samuel A Griffin

87th AFA Bn:

1st Lt D H Dawson
1st Lt F A Hartwig
1st Lt J L Hughes
1st Lt R F Kubista
1st Lt J F Mc Carthy
1st Lt J T Meador
1st Lt R H Nelson
1st Lt J E O'Neal
1st Lt L Yoffer
2nd Lt L K Chase
2nd Lt J E Cline
2nd Lt W G Coane
2nd Lt J P Raklovits

183rd FA Bn:

1st Lt F H Caskin
1st Lt H L Glidden
1st Lt A B Sforza
1st Lt L C Smith
1st Lt J Spyropoulos

188th FA Bn:

1st Lt Frank M Cowell
1st Lt Roy E Cox
1st Lt James C Horton
1st Lt Robert G Kappell
2nd Lt Cletus O'Donnell

195th FA Bn:

Maj Robert Y Mann
Capt Le Roy Radford
Capt Thomas H Saxton
1st Lt Lenn H White

802nd FA Bn:

1st Lt J S Cox
1st Lt J P Teehn
1st Lt W B Wood

951st FA Bn:

1st Lt Walter H Eshbaugh
1st Lt Russel L Kelch
1st Lt Stephen J Odor

957th FA Bn:

1st Lt Robert H Kelley
1st Lt Robert S Smith
2nd Lt Howard O Le Shaw
2nd Lt Gordon E Lyons
2nd Lt William T Murray
2nd Lt Robert J Sass

980th FA Bn:

1st Lt Monroe J Ellingson
1st Lt Gustave C Morgan
1st Lt Mervin W Sherron
1st Lt Thomas J Wilson

981st FA Bn:

Capt William P Black
Capt Phillips H Nordli
1st Lt William B Sparrow

991st FA Bn:

1st Lt G J Ghiselli
1st Lt A E Kibler
1st Lt A Kiernan
1st Lt H G Klinowicz

OFFICERS WHO ATTENDED THE AIR OBSERVERS CONFERENCE

VII Corps Arty:
Brig Gen W B Palmer
Col Andrew P O'Meara
Lt Col Fred P Campbell
Maj James E Miller
Capt William W Carson
Capt Franklin A Kekow
Lt John H Van Landingham

142nd FA Gp:
1st Lt Jessie L Guthrie

188th FA Gp:
Capt James P Moe
Capt Lyman C Wear

18th FA Bn:
Capt Robert K Loomis
1st Lt John M Ferry

87th AFA Bn:
1st Lt J L Berry
1st Lt J C Moudy
2nd Lt C A Curtis
2nd Lt A Kowalsky

183rd FA Bn:
1st Lt H W Goodman
1st Lt A Miller
1st Lt I M Piller
2nd Lt A I Jeep
2nd Lt W B Schroeder

188th FA Bn:
1st Lt Ralph L Phillips
1st Lt Gayle Shields

195th FA Bn:
1st Lt Ronald H Duell
1st Lt John W Hunt
1st Lt James J McDoff
1st Lt A S Remus
1st Lt Oliver Star Jr

660th FA Bn:
1st Lt William L. Howell

802nd FA Bn:
1st Lt B M Clark Jr
1st Lt G H Robertson

951st FA Bn:
1st Lt Leo McCollum
1st Lt Karl H Pearson
1st Lt Theodore R Rohde

957th FA Bn:
1st Lt Frederick K Cramer
1st Lt Robert S Smith
Tech 4 Donald C Whitman

980th FA Bn:
1st Lt George E Carlson
1st Lt George D Deppen
1st Lt Thomas H Evans
1st Lt Norman J Furth
1st Lt Max E Young
2nd Lt Richard Hiserman

981st FA Bn:
1st Lt Shirl K Fadel
1st Lt Charles L Heltzel
1st Lt Arthur R Schelling Jr

991st FA Bn:
1st Lt A E Kibler
1st Lt A F Kiernan
1st Lt J V Lowe
1st Lt D D Spear
1st Lt A F Wade

OFFICERS WHO ATTENDED THE BATTERY EXECUTIVES CONFERENCE

VII Corps Arty:

Brig Gen W B Palmer
Col Andrew P O'Meara
Lt Col Fred P Campbell
Capt William W Carson

18th FA Bn:

1st Lt Harold B Filler
1st Lt William J O'Connell
1st Lt Garth W Rameil

87th AFA Bn:

Capt H V Holt
1st Lt J F Mc Carthy
1st Lt H W Harbourt
1st Lt John L Hughes

183rd FA Bn:

1st Lt F H Caskin
1st Lt L J Daley
1st Lt D P Dalton

188th FA Bn:

1st Lt Roy Cox
1st Lt Robert Harris
1st Lt James Horton
1st Lt William Ritchey
1st Lt William Roland

195th FA Bn:

1st Lt William A Cramer
1st Lt W H Pingree
1st Lt Lenn H White

660th FA Bn:

1st Lt Lyle W Appuhn
1st Lt Reuben H Edelstein
1st Lt Conrad H Stengel

802nd FA Bn:

1st Lt J Dick
1st Lt J M Trapp

951st FA Bn:

1st Lt Everitt C Boyd
1st Lt Walter H Eshbaugh
1st Lt Theodore R Rohde
1st Lt Rex E Smith

957th FA Bn:

1st Lt Frederick K Cramer
1st Lt Jack C Hower
1st Lt Robert S Smith

980th FA Bn:

1st Lt Charles B Achard
1st Lt George E Carlson
1st Lt George P Deppen
1st Lt Norman J Furth
1st Lt Marvin W Sherran

981st FA Bn:

1st Lt Shirl K Fadel
1st Lt Allen Greenman
1st Lt Charles H Hamill
1st Lt Wayer A Thorson

991st FA Bn:

1st Lt Habluetzel
1st Lt F Klingler
1st Lt E J Onaetis

OFFICERS WHO ATTENDED THE S-3 CONFERENCE

VII Corps Arty:

Brig Gen W B Palmer
Col W C Bullock
Col Andrew P O'Heara
Lt Col Fred P Campbell

142nd FA Gp:

Maj C D Northcutt

188th FA Gp:

Maj Leroy A Landom

13th FA Obsn Bn:

Maj E N Cox

18th FA Bn:

Maj Frederick M Dearborn Jr
Capt Robert J Hart

87th AFA Bn:

Maj G A Aubrey
Capt Robert L Casler

183rd FA Bn:

Maj W D Hooton
1st Lt W P Smith

188th FA Bn:

Maj Tom A Arnold

195th FA Bn:

Maj L N Halstead
Capt Earnest Lindsay

660th FA Bn:

Capt J A Wallender

802nd FA Bn:

Maj T H Brugh

951st FA Bn:

Maj Boyd J Clark
Capt Edward W Schussler

957th FA Bn:

Lt Col J L Collins
Maj Milton F Weber

980th FA Bn:

Maj Robert Clirehugh
Capt John Mc Ginty
Capt A J Read

981st FA Bn:

Maj H D Wilcox
Capt Wm F Baldwin
Lt Horace R Jackson

991st FA Bn:

Capt W J Tooley

OFFICERS WHO ATTENDED THE S-2 CONFERENCE

VII Corps Arty:

Brig Gen W B Palmer
Col William C Bullock
Lt Col Fred P Campbell
Capt Franklin A Kekow

142nd FA Gp:

Maj John H Davis

188th FA Gp:

Capt Donald L Johnston
Capt Lyman C Wear

224th FA Gp:

Capt C W Heitkamp

13th FA Obsn Bn:

Maj E N Cox

18th FA Bn:

Capt Elmer Hale Jr
1st Lt Walter R Mc Lain

87th FA Bn:

Capt D E Olson

183rd FA Bn:

Capt J R Houser
1st Lt W F Smith

188th FA Bn:

Capt James B McLeod

195th FA Bn:

Capt H H Fisher
Lt Mark Gorber
Lt Rienard Wulkou

660th FA Bn:

Capt Wm S Fulton

802nd FA Bn:

Maj T H Brugh

951st FA Bn:

Capt Ernest H Chamberlain
1st Lt Donald E Boyinga

957th FA Bn:

Capt Edwin G Dewsnup

980th FA Bn:

Capt Arthur J Read

981st FA Bn:

Capt Wm T Baldwin
Capt Archie A Selders

991st FA Bn:

Capt R W Van Horne

OFFICERS WHO ATTENDED THE MOTOR OFFICERS CONFERENCE

VII Corps Arty:

Brig Gen W B Palmer
Lt Col Fred P Campbell
CWO Frank E Hatch

142nd FA Gp:

Capt Darwin C Dunn

188th FA Gp:

1st Lt Wayne C Joslyn
1st Lt John T Martin

224th FA Gp:

Capt A R Stewart

13th FA Obsn Bn:

1st Lt E J Callentine
1st Lt J P Halpine
1st Lt W W Lester
1st Lt E L Tarutz

18th FA Bn:

1st Lt Herbert C Chance
1st Lt George E Jennings

87th AFA Bn:

Capt H J Russ
1st Lt J L Berry
1st Lt J E Cline
1st Lt J T Meador
2nd Lt A Kowalsky
2nd Lt R T Stites

183rd FA Bn:

Capt G K Brittain
1st Lt W F Smith
1st Lt N Spyropoulos

188th FA Bn:

Capt George Michison
1st Lt Frank Cowell
1st Lt James C Horton
2nd Lt William Elmer
2nd Lt Louis J Heims

195th FA Bn:

Capt George K Huffman
1st Lt John W Hunt
1st Lt Chistu A Macrarie
2nd Lt Wm H Pingree

660th FA Bn:

Capt Frederick J Jordan
1st Lt Ruben Edelstien
1st Lt Conrad H Stengel
2nd Lt Lyle W Appuhn
2nd Lt Clair L Rocera

802nd FA Bn:

1st Lt B M Clark
1st Lt C A Dermont
1st Lt F R Frain
1st Lt J P Helley

951st FA Bn:

1st Lt Walter H Eshbough
1st Lt Russell L Helch
1st Lt George L Vogler

957th FA Bn:

1st Lt Richard J Harris
1st Lt Robert H Helby
1st Lt Joseph W Pitrone
2nd Lt Robert J Sass
2nd Lt Roy H Smith

980th FA Bn:

Lt Charles W Barrett
Lt Wm R Miller
Lt Elwin K Kalem
Lt La Verne H Triggs

981st FA Bn:

1st Lt Arthur S Marbach
2nd Lt Reginald A Booth
2nd Lt Wayne A Thorson

991st FA Bn:

Capt J H Edge
1st Lt H W Baldwin
1st Lt G J Ghiselli

OFFICERS WHO ATTENDED THE COMMUNICATIONS CONFERENCE

VII Corps Arty:

Brig Gen W B Palmer
Lt Col Fred P Campbell
Capt R E Williams

142nd FA Gp:

Lt Jesse L Guthrie

188th FA Gp:

Capt Donald L Johnston
1st Lt Wayne C Joslyn

224th FA Gp:

Capt W L Smith

13th FA Obsn Bn:

1st Lt W W Lester

18th FA Bn:

Capt Robert K Loomis
1st Lt John M Ferry

87th AFA Bn:

Lt Joseph C Moudy

183rd FA Bn:

Capt T T McCord

188th FA Bn:

Capt Charles L Welch

195th FA Bn:

Capt Claud W Strong

660th FA Bn:

Capt Henry M Russell

802nd FA Bn:

Capt D W Canon

951st FA Bn:

Capt Claude H Duval Jr

957th FA Bn:

Capt William P Harlin

980th FA Bn:

Lt Elbin M Palen

981st FA Bn:

Capt Wm A Wohler

991st FA Bn:

Capt J R Thinnas