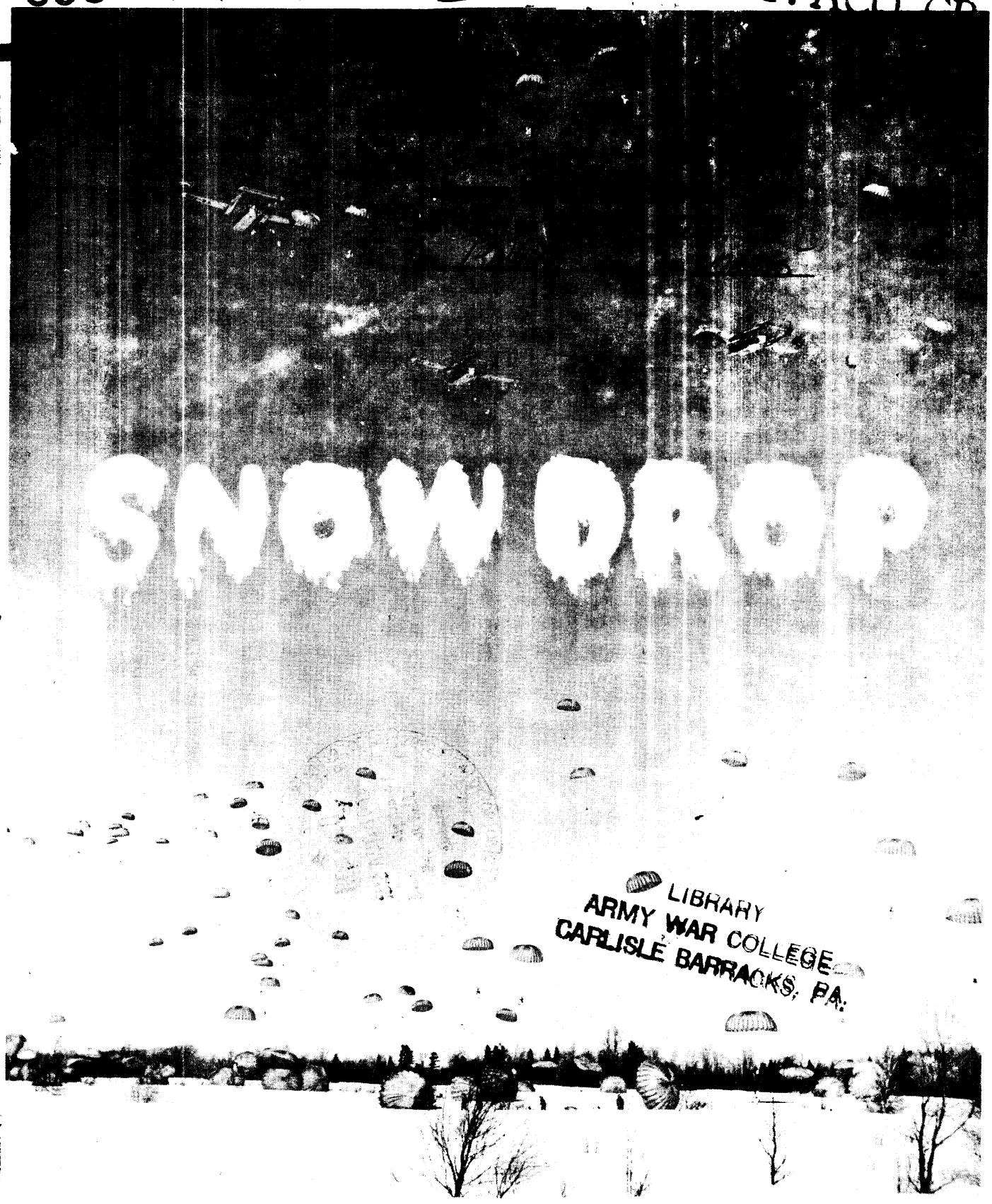

PARACHUTE DROP, FINAL BATTALION COMBAT TEAM AIRBORNE FIELD EXERCISE.

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INDEX

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INTRODUCTION

This is a condensation of the official report of "Exercise Snowdrop." The basic report is too voluminous and detailed to warrant reproduction. Copies of the detailed report are to be found in the Office of Director of Organization and Training, Washington, D. C; Headquarters First Army, Governors Island, New York; Office, Chief, Army Field Forces, Fort Monroe, Virginia and Headquarters 82d Airborne Division, Fort Bragg, North Carolina.

This condensation follows the basic report in general but omits some of the appendices such as detailed maps, plans, rosters, training schedules, etc.

For details of cold weather operations see FM 30-70, "Arctic Operations."

Chapter I

PRIOR PLANNING

In March 1947, Headquarters Army Ground Forces issued a directive to Commanding General, Fifth Army to initiate plans for an airborne winter exercise.[1]* The troop participation was to be a Regimental Combat Team of the 82d Airborne Division. The proposed location of the exercise was Camp McCoy, Wisconsin. The purpose of the exercise as outlined in the original letter was:

a. General indoctrination of cold weather operations for an element of the General Reserve.

b. Develop Airborne and Airtransportability tactics and technique in cold weather operations, particularly over-snow operations.

c. Develop and test Airborne equipment essential to over-snow operations.

d. Develop resupply and evacuation by air involving dropping of equipment by parachute and landings and take-offs of airplanes and gliders on ice, snow, and other unusual conditions.

e. Develop logistical aspects of the operation of an airhead. This Office will consider recommendations for the formation of provisional unit to be employed in the construction, establishment and operation of an airhead. An engineer type unit supplemented by quartermaster personnel is deemed desirable.

At a conference held in April it was decided that because of the lack of snow at Camp McCoy a new location must be selected. From several proposed, Pine Camp, New York was selected (see sketch). Pine Camp at that

*Raised numbers refer to references at end of Chapter I.

time was an inactive station. While this fact had no bearing on the purpose of the exercise, the problems inherent to the reactivation of a camp, together with the special supply problems of this type exercise, placed an abnormal load on the First Army, the Camp Commander, and in turn on the Commanding Officer of the participating troops.

On 12 May 1947, the responsibility for the exercise was transferred to Commanding General, First Army.[2]

Planning progressed rapidly, requisitions for special equipment were processed, and by 19 July 1947 the First Army plan, including ten Annexes, was submitted to Commanding General, Army Ground Forces for approval.[3]

Following several conferences, the plan as submitted was approved by Army Ground Forces subject to exceptions as follows: Reduction in civilian personnel, nonavailability of certain intelligence agencies, nonavailability of dog teams, and a final review of Special Field Exercise funds to be allotted.[4]

This plan included the details of activation of the camp which will not be discussed in this paper. The important responsibilities assigned were:

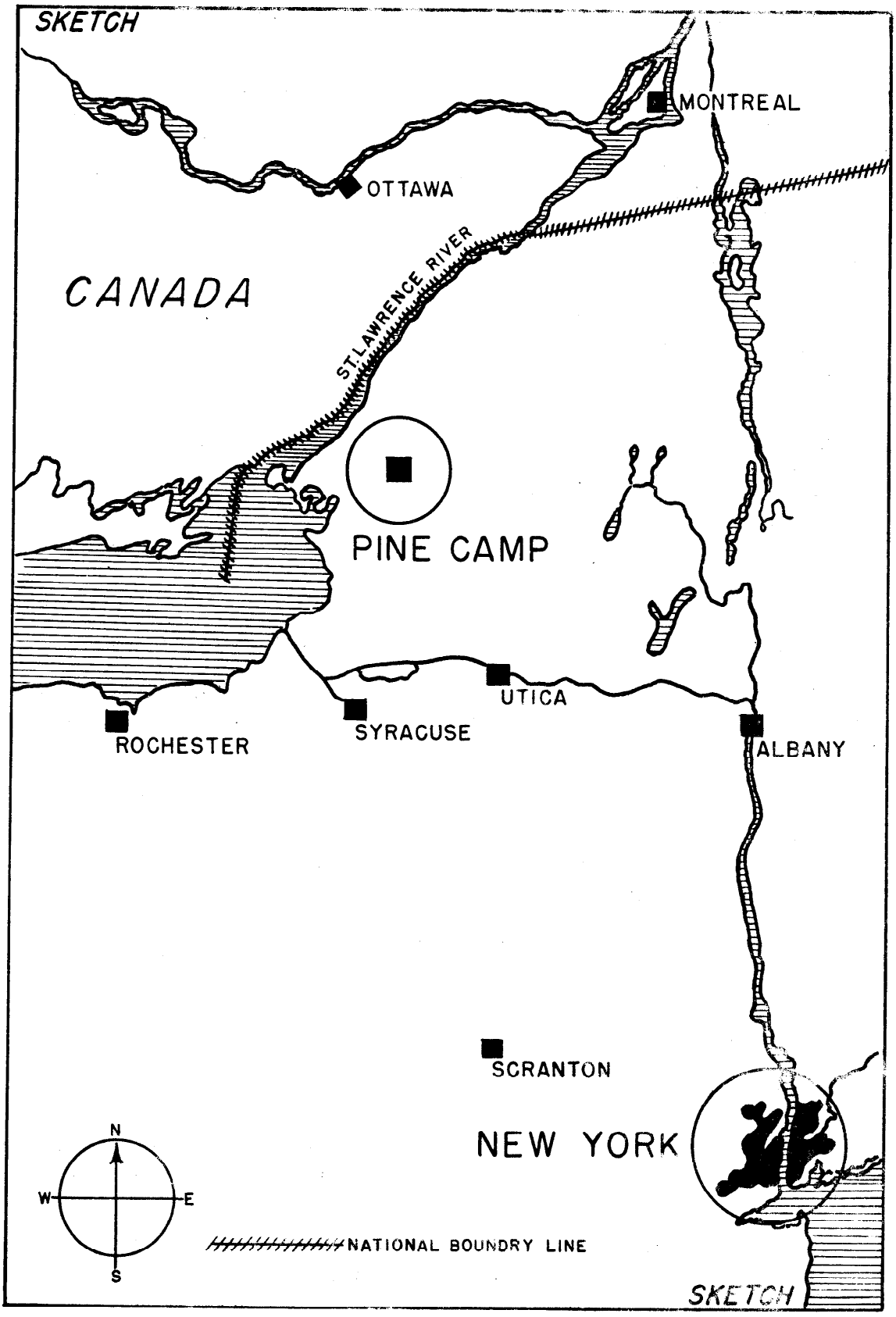
a. That the Commanding General, First Army was responsible for the planning, conduct, and supervision of the exercise.

b. That the Commanding Officer, 505th Regimental Combat Team was, under the direction of the Commanding General, First Army, to conduct the cold weather training, tests, and tactical exercises, as outlined in Annex No. 7 (see Appendix I).

c. That Commanding General, Ninth Air Force, was responsible for training and indoctrination in cold weather operations of Troop Carrier Units supporting the exercise as outlined in Annex 8 (see Appendix II).

d. And, although not stated in the plan, it was included in the paragraph on "Implementation" that the Commanding Officer, Pine Camp, would be charged with the administration and operation of Pine Camp to support the exercise.

Shortly thereafter the low troop strength in the 82d Airborne Division together with other standing commitments brought about a revision of plans as it applied to the strength of the unit to be employed. At a conference held at Fort Monroe, Virginia (Hq AGF) attended by representatives of First and Third Armies, V Corps, and the 82d Airborne Division, it was decided to employ only a Battalion Combat Team. On 25 September Army Ground Forces published a revision of the plan[5] followed by a First


SKETCH
MONTREAL
OTTAWA
CANADA
ST. LAWRENCE RIVER
PINE CAMP
UTICA
ROCHESTER
SYRACUSE
ALBANY
SCRANTON
NEW YORK
N
W
E
S
NATIONAL BOUNDRY LINE
SKETCH

Army change on 13 October.[6] The troop strength of the Battalion Combat Team was published as follows:

UNIT TO PARTICIPATE	OFF	WO	EM	AGGREGATE STR
2 Bn, 505th Prcht Inf Regt	31	1	400	432
Det, Sv Co, 505th Prcht Inf Regt	2	1	61	64
Det, Regt Hq Co, 505th Prcht Inf Regt	2		11	13
Det, Med Det, 505th Prcht Inf Regt	1		14	15
Btry A, 456th Prcht FA Bn	5		82	87
Det, Hq, Hq & Sv Btry, 456th FA Bn	1		15	16
1st Plat, Co "B", 307th Abn Engr Bn	1		38	39
Det, Hq Plat, Co "B", 307th Abn Engr Bn			3	3
Det, 82d Prcht Maint Co	1		22	23
Det, 307th Abn Med Co	1			1
Det, PIO	1		2	3
Det, Lt Acft Sec, 82d Abn Div	1		1	2
Det, Hq Co, 82d Abn Div (Cml)			1	1
	47	2	650	699

The closing date of the exercise was moved up to 8 February 1948 to correspond to the basic plan (see extract of Annex 7, Appendix I).

By 19 October the Ninth Air Force had published their final plan[7] assigning the 316th Troop Carrier Group as the supporting Air Force unit. This directive provided:

a. A Mobile Weather Detachment, two (2) officers and twenty (20) enlisted men.

b. An Engineer Detachment, two (2) officers and twenty (20) enlisted men (colored).

c. A Liaison Officer to the Battalion Combat Team.

d. Airdrome Control Facilities (Jeep Radios).

e. Ambulance and crash equipment.

f. A Public Relations Officer.

To assist in the technical training of the Battalion Combat Team in snowshoeing, skiing, use and care of winter equipment, and living in extreme cold, the 38th Regimental Combat Team, through Commanding General, Fifth Army, was directed to furnish an instruction team.[8] (This team, consisting of three (3) officers and eleven (11) enlisted men, arrived at Pine Camp 29-30 October 1947.)

On 4 October 1947 the Battalion Combat Team was activated by GO 67, Headquarters 82d Airborne Division. Since the camp was being reactivated, it had been considered necessary to send a rather large advance detachment of the Regimental Combat Team. This detachment had proceeded to Pine Camp on 24 September 1947. The reorganization from Regimental Combat Team to Battalion Combat Team was accomplished with relatively little confusion by transfers within units. The remainder of the Battalion Combat Team proceeded by rail and motor, and closed in Pine Camp 22-23 October 1947.

References

1. Letter, Hq AGF, 353(Winter)(20 Mar 47)(C) GNGCT-20, 20 March 1947, subj: "Cold Weather Exercises," to: CG, Fifth Army.

2. Letter, Hq AGF, 353(Winter) (C) (12 May 47) GNGCT-27, 12 May 1947, subj: "Cold Weather Exercises," to: CG, First Army.

3. Letter, Hq First Army 353AHFKC(4), 18 July 1947, subj: "Plan for Cold Weather Exercises, Pine Camp," to: CG, AGF.

4. 1st Ind, Hq AGF, 353(18 Jul 47)GNGCT-27, 6 September 47, subj: "Plan for Cold Weather Exercise, Pine Camp," to: CG, First Army.

5. Letter, Hq AGF, 354.2/411(25 Sep 47)GNGCT-46, 25 September 1947, subj: "Revision of Exercise Snowdrop," to: CG's, First and Third Armies.

6. Letter, Hq First Army, 353AHFKC(4), 13 October 1947, subj: "Revision in Plan and Directive for Exercise Snowdorp," to: commanders of installations indicated in distribution.

7. Letter, Hq 9th Air Force AF9AF 353(16 October 47), 16 October 1947, subj: "Pine Camp Mission - Exercise Snowdrop," to: CO, 316th TC Wing.

8. Letter, Hq AGF, 322(Team)GNGCT-27, 9 July 1947, subj: "Training Team for Cold Weather Exercises," to: CG, Fifth Army.

Chapter II

ORGANIZATION OF BATTALION COMBAT TEAM AND AIR FORCE UNITS

The Battalion Combat Team was organized under the Airborne T/O&E's, dated 16 December 1944. The Parachute Battalion had only four companies, the heavy weapons being in the Headquarters Company, and the other three companies being rifle companies. The battalion staff, being designed for tactical use only, had to be reinforced to handle the administration not normal to a line battalion.

The Field Artillery Battery of the CT was a parachute battery equipped with four 75-mm howitzers. This battery was reinforced with one (1) officer and fourteen (14) enlisted men from the Headquarters and Headquarters Battery of the parent battalion.

The Engineer Platoon was without equipment normally in the Headquarters Company of the Engineer Battalion. The platoon was reinforced with three (3) enlisted men from the Company to provide administration personnel.

A Parachute Battalion under the old T/O had no motor section; neither did the Field Artillery Battery. To overcome this difficulty, a detachment from the Service Company of the Regiment was assigned (attached to Battalion Headquarters Company) and from the Headquarters and Headquarters Battery of the Field Artillery Battalion (attached to the battery). These detachments were pooled under supervision of one officer who reported direct to the S-4.

Since the Regiment had only a medical detachment there was no organic platoon which could be assigned. One (1) officer and fourteen (14) corps men were attached to the Battalion Headquarters Company. This detachment was reinforced by a Medical Administrative Officer from the Division Medical Company.

The detachment from the Parachute Maintenance Company was without administrative assistance and was therefore attached to the Battalion Headquarters Company for administration. However, the equipment furnished from the parent organization was adequate for the mission assigned.

One L-5 light aircraft was attached with pilot and mechanic.

The Battalion Headquarters was furnished one (1) officer and two (2) enlisted men from the Division Public Information Section.

For organization chart, see Appendix III.

The Battalion Combat Team arrived at Pine Camp with forty-seven (47) officers, one (1) warrant officer, and six hundred thirty-five (635) enlisted men, a total of six hundred eighty-three (683) individuals. This was one (1) warrant officer and fifteen (15) enlisted men less than had been prescribed by Army Ground Forces. This understrength was caused by shortage in the regiment of enlisted men who would not be subject to discharge during the period of the training. In fact there was a substantial turnover of personnel in the battalion (particularly in the lower grades) caused by the redeployment of draftees.

No effort was made to select volunteers. It is believed that if the opportunity to volunteer had been opened to the entire division the BCT could have been filled with volunteers. However, because of other commitments of the division and the serious change in organization that would have resulted, this was not authorized. Approximately one half of the BCT had never been in snow country to use either skiis or snowshoes. The remainder had varying experience, none claiming to be experts. Even though "E" Company of this battalion was the company that had been to Alaska in "Task Force Frigid," there were only two (2) officers and a half dozen men in the BCT who had actually been to Alaska.

The Air Force units to support the exercise are graphically represented on chart (see Appendix IV).

The weather detachment of the 67th Base Unit (one (1) officer, ten (10) enlisted men), the detachment of 104th Army Airways Communication Service (one (1) officer, twenty-six (26) enlisted men), and the detachment of 838th Aviation Engineer Battalion (two (2) officers, nineteen (19) enlisted men), were under the control of the advance detachment of the 316th Troop Carrier Group (two (2) officers, twenty-one (21) enlisted men)(total six (6) officers, sixty-seven (67) enlisted men) and were stationed at Pine Camp. These units operated, on a limited basis, the Wheeler-Sack Airfield.

The weather detachment maintained the records of weather conditions and were extremely helpful in making long range predictions on which to base plans for the joint exercise.

The Aviation Engineer Battalion maintained the runways and hangar. On several occasions, when there was a large snow-fall or heavy drifting, this detachment was reinforced with station complement equipment and personnel to meet these unusual situations.

The communications personnel installed sufficient equipment to meet the peak loads, maintaining contact through Rome Air Force Base which was the Air Force base finally selected to service the Ninth Air Force planes when on exercises.

The advance detachment of the 316th Troop Carrier Group exercised over-all control and was responsible to the camp commander for routine

administrative matters and to its parent organization for all planning and execution of missions.

Considering the limited and temporary basis on which these groups operated, they accomplished a splendid record in face of trying conditions.

Chapter III

TERRAIN

General. The military reservation of Pine Camp is located in Jefferson County of upper New York state, south of the point at which the St. Lawrence River leaves Lake Ontario. Pine Camp is approximately eight and one-half miles east by northeast of the city of Watertown, on Highway No. 3. The Black River, flowing into Lake Ontario, is along the southern border of the camp. A network of good roads connects the reservation with adjacent towns and villages.

Of the 107,000 acres comprising the reservation, about 40 square miles are of varied terrain and located to provide excellent maneuver area for unit training, the balance being marginal land that has been used for artillery firing and small arms ranges. Terrain varies from a flat plateau to rugged foothills with many streams and rock outcroppings. The camp and air field are located on the west side of a flat plateau which contains many open fields suitable for drop zones but lacks varied topography that was desired for the exercise.

Following a careful study of the reservation, three DZ's were selected.

Drop Zones. DZ "A," which was used for individual training and test drops of equipment, was flat, about 1500 yards square, and close to the airport and main travelled roads.

DZ "B" was about seven (7) miles from camp, accessible by a network of secondary roads. It included a flat area of about 1000 by 1500 yards, with a swamp (frozen) at the south end. Close by were several abandoned settlements, several wooded areas and a small hill mass which provided a suitable problem area for squads, platoons and companies.

Selection of DZ "C" was made after careful deliberation since this area was to be used for the final battalion exercise and had to be tactically sound. By aerial reconnaissance a DZ was selected which was about 1200 by 500 yards and traversed by a small stream. There were tall trees on one side and a deep wooded ravine on the other. This was considered marginal but a good tight formation of planes with a drop altitude of 600 to 800 feet did permit the entire battalion to be delivered within this area.

Chapter IV

WEATHER

General. The climatic conditions encountered at Pine Camp consisted of "cold, wet weather" and not arctic conditions. More intense cold might affect the conclusions drawn here. The extreme conditions were a temperature of minus 26 degrees (Farenheit) with a depth of snow from two to three feet. The cold was aggravated by a wind that at times developed to gale velocities with a mean average of 23 mph persisting for several days at a time.

Effect of Weather on Exercise.

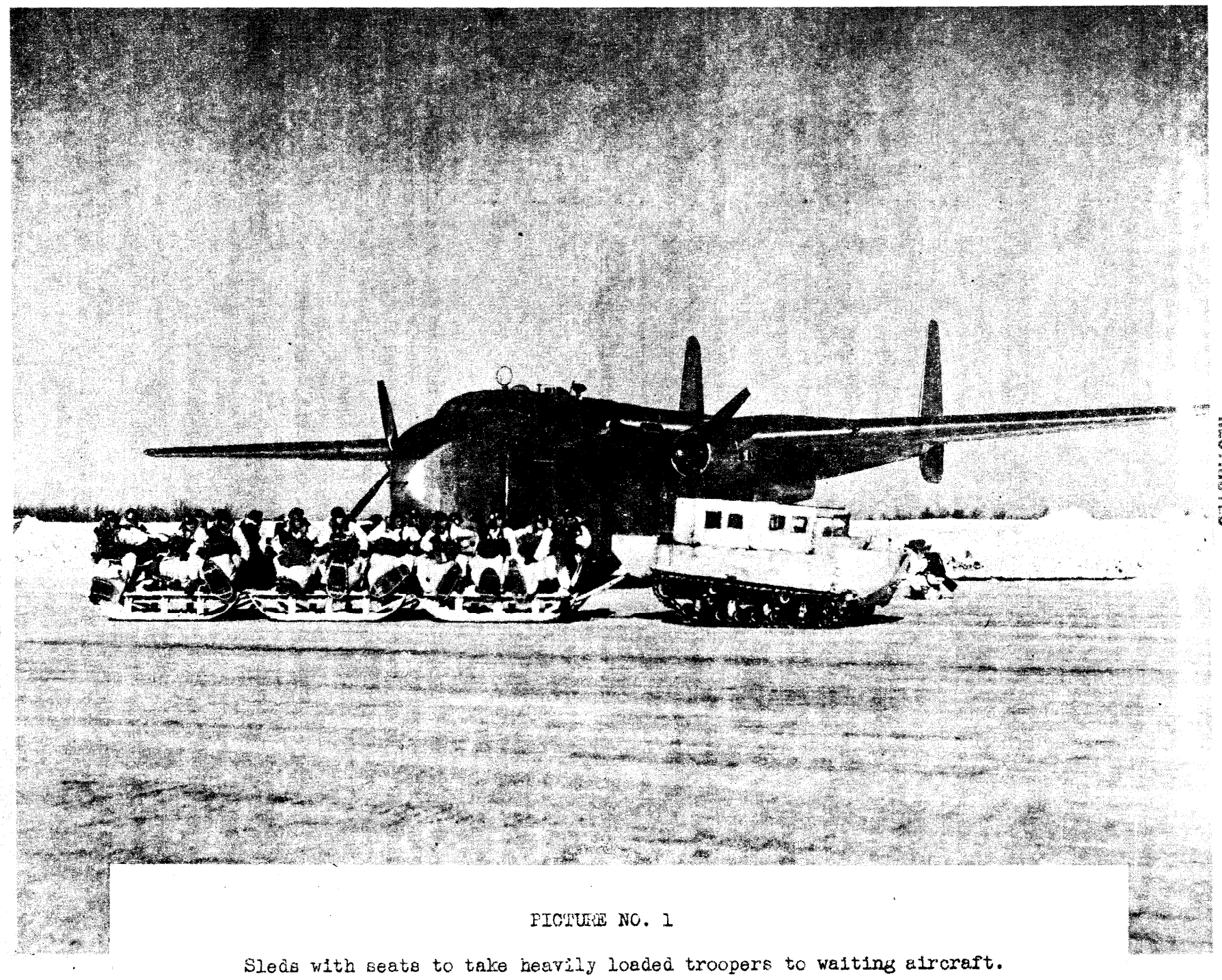
a. Air Lift. The location of Pine Camp just east of Lake Ontario with a prevailing westerly wind caused low visibility and low ceilings which adversely affected airborne operations. It was found that stormy weather usually persisted for a period of three days at a time and this was the basis for a request that planes be available for five-day periods. Deep snow presents a serious problem to the Air Force in keeping runways clear. A sudden snow of one foot or more, particularly in drifting, will tie up the runways until cleared. This would seriously hamper an airborne operation where a snow storm at one or two of the take-off fields could delay the assault until runways were cleared. Frozen ground presents no problem to the Air Force except that iced runways are hazardous for landings. Cinders, sand, etc., overcame this problem at Pine Camp. No gliders were used, so the effect of snow on glider operations is unknown.

b. Selection of DZ's. Deep snow permits a wider selection of DZ's, but movement from the DZ, particularly of heavier equipment, is correspondingly slowed down. Light snow, i.e., four to six inches, has no material bearing on airborne operations.

c. Personnel. Ice and frozen ground create a serious problem for the parachutists, making landing very hazardous on the slippery, hard surface. The presence of snow in depth is no obstacle to parachute jumping; in fact, it permits heavier and more cumbersome loads to be carried by personnel with safety. Other than for the scattering effect, winds from 15 to 20 mph do not hinder a parachute drop in deep, soft snow. However, winds as low as 10 mph over crusted snow or icy ground will drag the parachutist great distances as it is extremely difficult for him to gain a footing to collapse his chute.

Extreme cold weather requires that a shelter be provided in the marshalling area for briefing, checking equipment, making up loads, etc. In this exercise, the hospital and the Air Force hangar were utilized.

To conserve the energy of the troops, they were transported, together with equipment, from the hangar to the planes on sleds which were specially constructed for the exercise. (See Picture No. 1.)



PICTURE NO. 1

Sleds with seats to take heavily loaded troopers to waiting aircraft.

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Under cold weather conditions, the troops arrive on the DZ in a much more exhausted condition than under temperate conditions. The long, cold ride in the plane consumes energy and stiffens muscles which results in more landing injuries.

Reorganization was materially slowed down by the time required to fix the snow shoes to the feet. (See Picture No. 2.) Each individual had to break his trail to the initial assembly area and the dragging of equipment further slowed his progress. (See Picture No. 3.) Cold and deep snow made an exhausting job of running wire lines and the movement of supplies. Experience indicated that communications and supply personnel should be substantially increased for cold weather operations.

In extreme cold, all movement is slowed down and the requirement for survival outweighs the desire for speed. Further, when temperatures reach 15 degrees below or lower, a feeling of lethargy overtakes the individual and leadership calls for the most aggressive and determined officers and noncommissioned officers.

d. Tactics. Tactics and techniques remain basically the same but snow slows the movement and maneuverability of troops. The use of snow equipment (skiis and snowshoes) tends to channelize attacking formations because of the exhausting job of breaking trails.

Defensive sector capabilities remain essentially the same but the number of troops occupying front line positions should be reduced to a minimum to permit the majority of troops to be in a reserve position where shelter, hot food, and warmth are available.

Reconnaissance is not too effective if limited to ski patrols and should be augmented by aerial reconnaissance.

Security is difficult to maintain in cold weather and constant supervision is necessary to insure that alertness is maintained. Security on the march is extremely difficult and the maintenance of flank patrols becomes a critical problem. Air OP's are definitely needed to provide security for foot troops in over-snow operations.

Camouflage of troop dispositions, movement, equipment, etc., is very difficult if not impossible to obtain, since tracks in the snow show very clearly from the air. Camouflage discipline must be rigidly enforced and, in general, the same principles apply as in the absence of snow. White cloth should be used to cover gun positions, CP's etc. Men should walk in tracks already made wherever possible and movement should take advantage of the cover of woods and broken ground.

The layer principle of keeping warm is satisfactory. However, the tactical situation may call for rapid changes in the amount of clothing worn. Since changing the clothing arrangement requires taking off the

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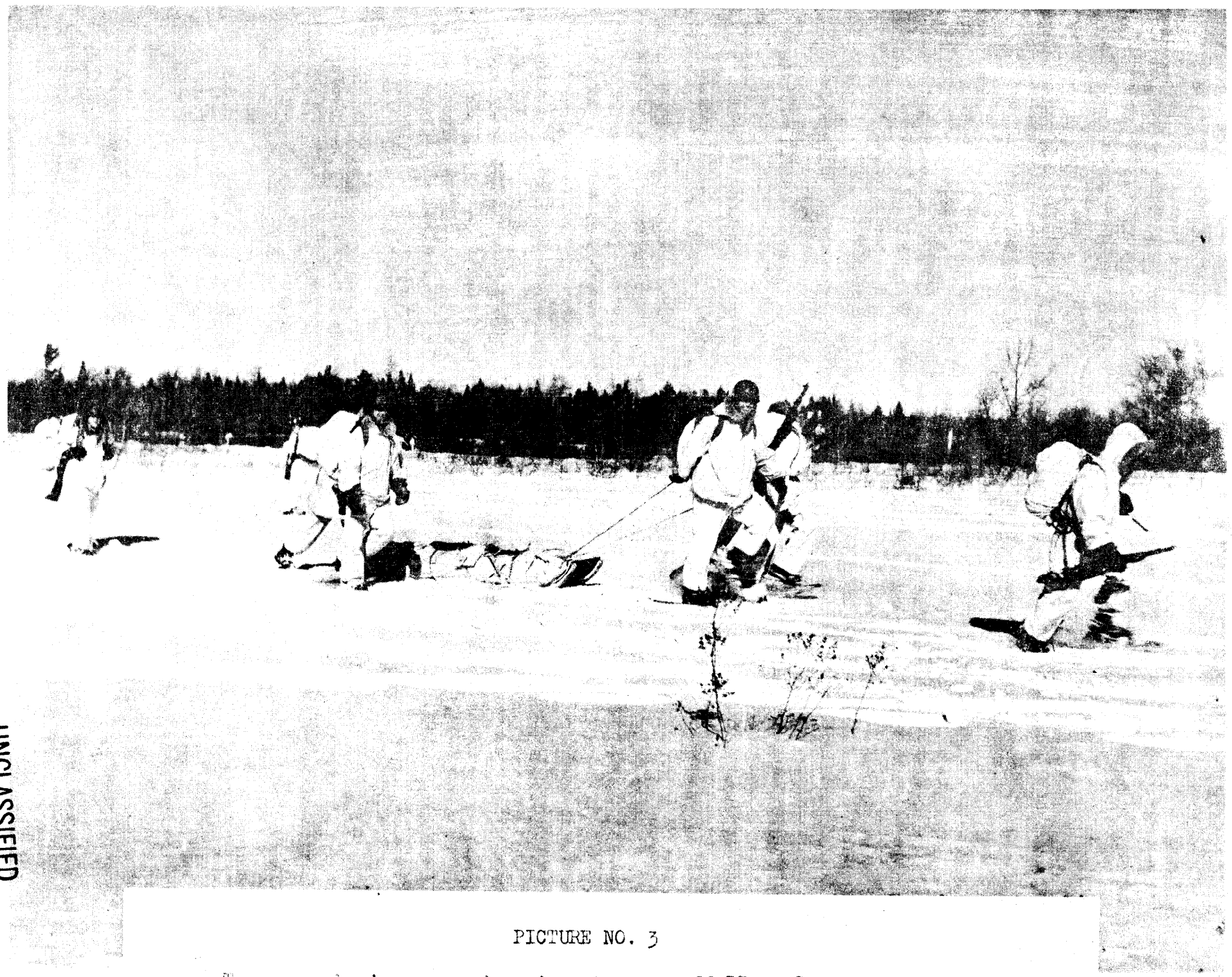
PICTURE NO. 2

Troopers on DZ securing equipment from ski bundle. See picture No. 8 for close-up of bundle in door of plane.



PICTURE NO. 3

Troopers, having secured equipment, move off DZ to Co assembly areas.

Parka, it is time consuming. The individual has a tendency to start off with too much clothing and sweats, which is very dangerous. Putting a zipper on the Parka and adoption of fibre glass clothing is considered desirable.

e. Equipment. Too much foot gear was issued. However, both the mountain ski boot and the shoe-pac are necessary. The boot should be worn during snow conditions and the shoe-pac held available in the event of a thaw. The preservation and waterproofing of the boot is most important, and for this purpose the commercial product called "Snow Seal" is recommended as an item of issue.

The ski gaiter is awkward and permits the snow to get in. A ski trouser is recommended.

The mountain sleeping bag is a most satisfactory item and, with the wool insert, is warm enough for temperatures as low as thirty degrees below zero (F). It is believed, however, that the individual would sleep more comfortably if the wool insert went outside of the mountain bag, since the wool leaves crevices and permits the cold air to enter. Approximately 10% of the bags should be of a larger size for the taller men.

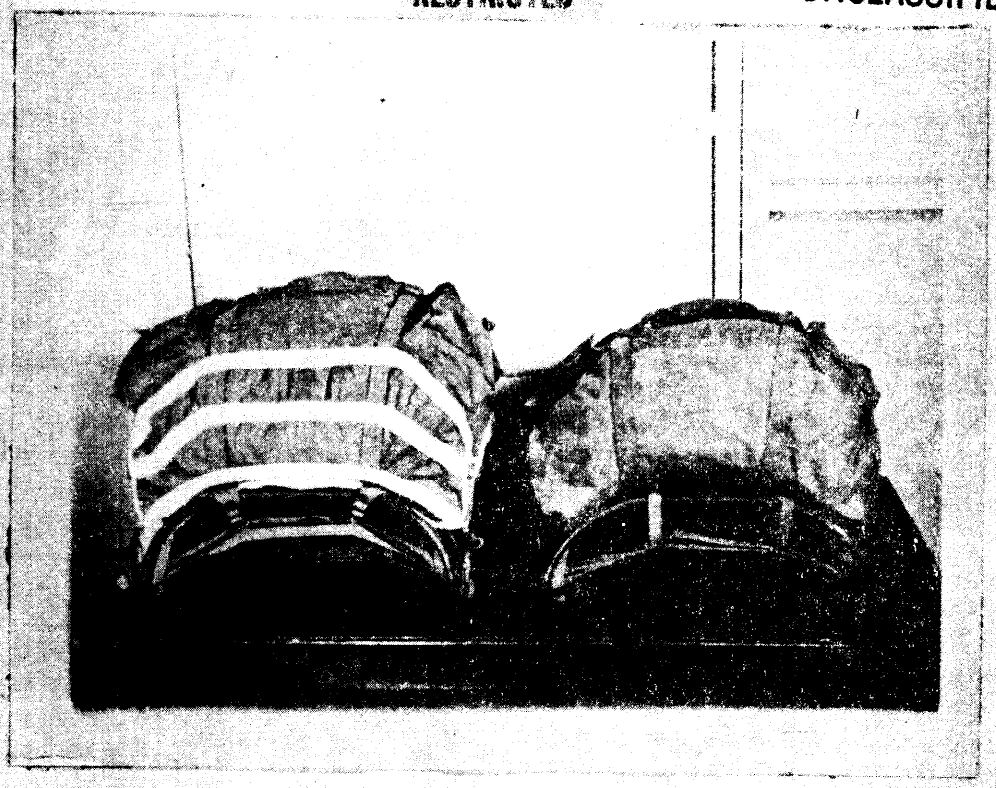
The rucksack is a splendid item of equipment and essential to carry the many items required by the man in operations of this nature, but must be reinforced to prevent tearing from the opening shock of parachute jumping and a quick release device must be added. (See Pictures Nos. 4, 5, 6 and 7.) The rucksack was found to be very bulky when worn during tactical operations. If removed and stored under company control, careful consideration must be given to the plan for returning the rucksack to the individual so that he will have his survival equipment immediately available after the action.

The dark green webbing over the white Parka creates a silhouette discernible at a considerable distance and should be replaced with a white or undyed webbing.

The white Parka should carry insignia of rank of the NCO's.

The T-7 parachute assembly is satisfactory for winter operations down to minus twenty degrees Farenheit. The elastic in the reserve parachute loses its elasticity at low temperatures and should be replaced with steel springs. The handle of the reserve should be reversed to permit easier pulling by the individual wearing arctic mittens. (Note: This has since been accomplished.) All parachute assemblies should be white for snow operations.

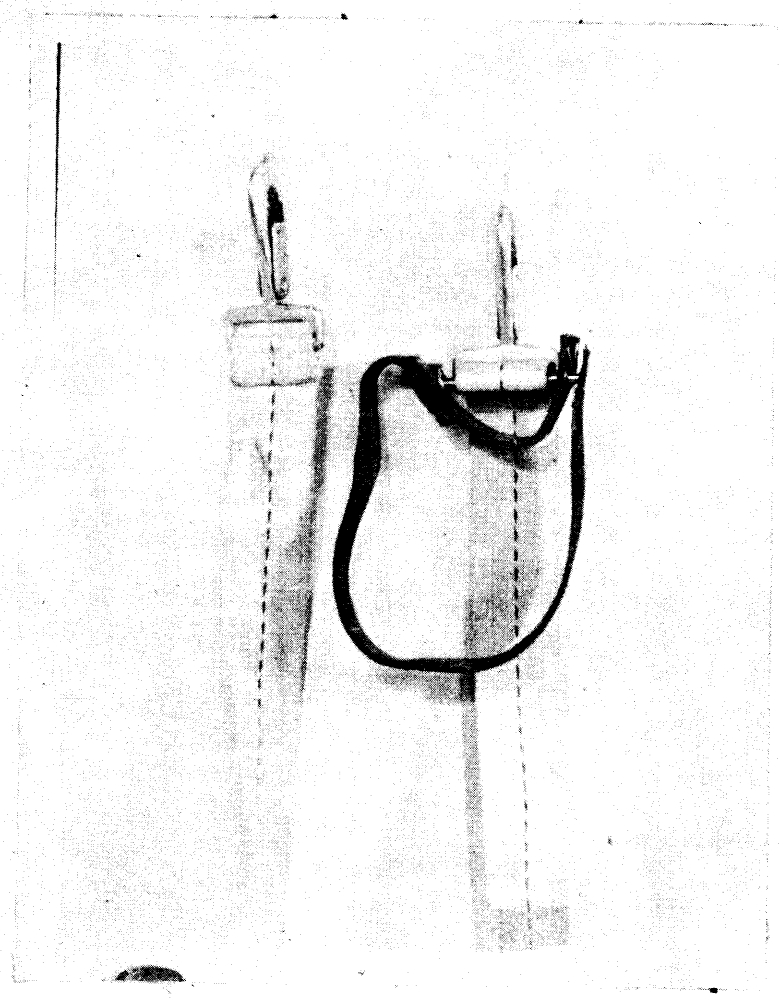
Machetes and hand axes are indispensable, particularly in the wooded areas. It is recommended that the men be grouped in threes for shelter



PICTURE NO. 4

PICTURE NO. 5

The photo shows how the side straps on the modified rucksack tie on to the 750 pound tensile strength webbing, instead of the duck of the rucksack proper. It also shows how the quick release webbing is threaded through the rucksack frame.



PICTURE NO. 6

This photo shows the proper assembly of the quick release. Note how a downward pull of the large loop will disengage the cotter pin, permitting the withdrawal of the securing pin to the left, allowing the duck webbing to slip through the eyelet of the snap fastener.

PICTURE NO. 7

A paratrooper with his hand on the quick-release loop ready to drop the rucksack off.

construction and each group carry one machete, one hand axe, and one entrenching shovel. The hand axes seemed of poor quality and the heads frequently flew off into the deep snow and were lost.

The one-burner cooking outfit is very practical and, when time and shelter permitted, the men were able to prepare hot food. Difficulty, however, was experienced in trying to heat a frozen can of "C" ration with this stove.

Skiis were furnished in two types: the mountain and the cross-country. In the comparatively flat country encountered, the issue of skiis to all troops is not essential. Scouts and patrols, however, do need skiis. The problem of bringing skiis into action by airborne troops is serious because of their awkward size and the increased bulk of equipment. (See Picture No. 8 for typical ski bundle.) Skiis should be assembled, fitted to the individual, tagged, and kept in company supply. In this comparatively flat country the basis of issue should be two pairs of mountain skiis per squad and the balance cross-country skiis.

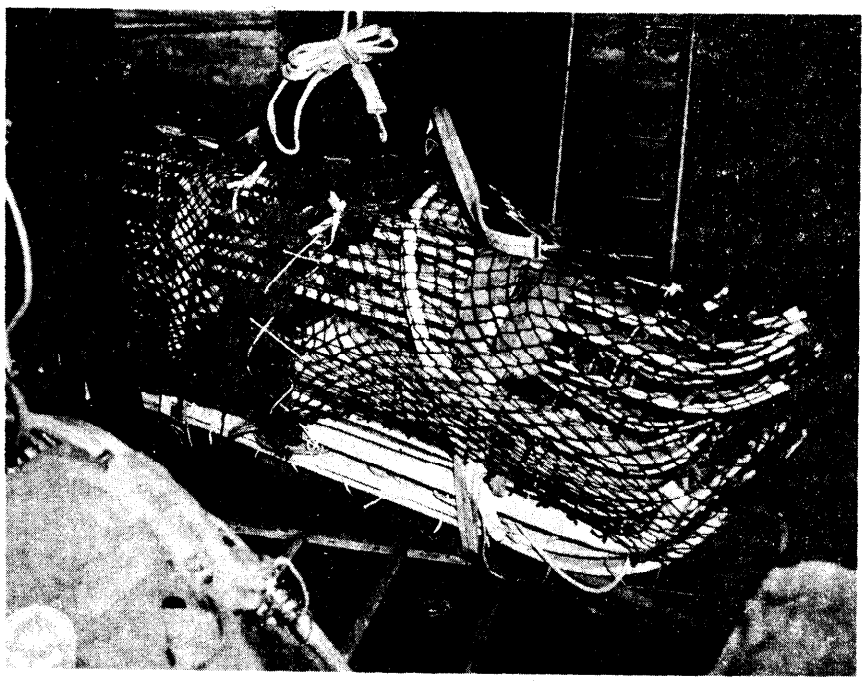
Snow shoes provided were of two types, the "Bear Paw" and "Trail." The "Trail" snow shoe was found to be excellent but its increased size makes it a luxury item. The "Bear Paw" was found very satisfactory and, carried by the jumper, enables him to move about the DZ to secure equipment and assemble. An improved and simpler binding with a "snap-on" device would be desirable. Issue should be on the basis of one per individual for operations in snow.

The convertible toboggan sled, because of its size and shape, made an awkward bundle to drop and it was very difficult to drag in the deep snow.

Tents, light weight, pyramidal, proved to be very efficient and desirable. It is recommended that at least one tent and stove be taken by each company to provide latrine facilities in weather at zero Farenheit or colder to encourage men to take their normal bowel movement. Supply of gasoline for the Yukon stove is quite a problem since five gallons are consumed in ten to twelve hours.

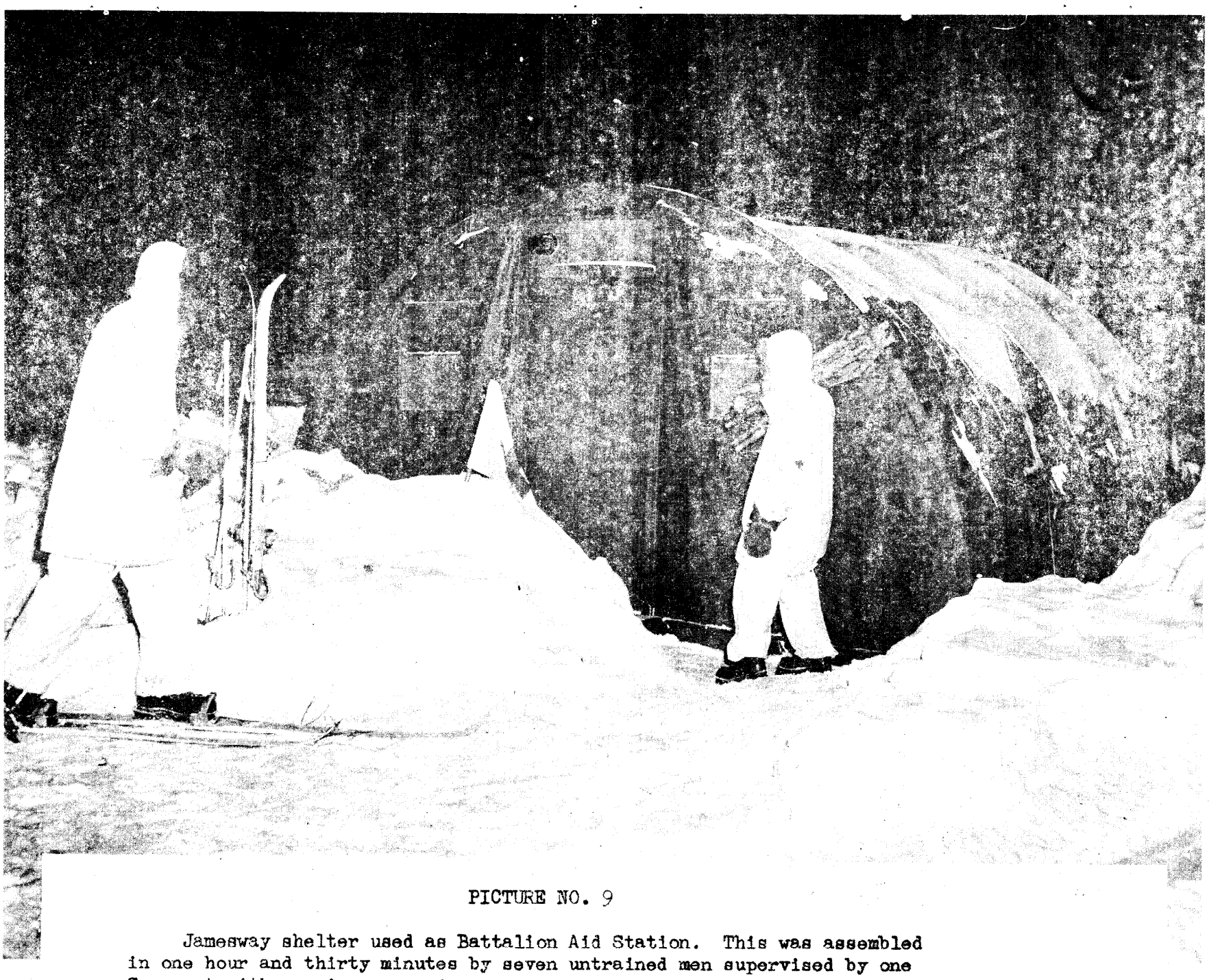
The housing unit, prefabricated (Jamesway Shelter)(see Picture No. 9) is excellent but, because of bulk and weight, it is impracticable to bring in during the airborne assault phase. When air landed support is available, these are recommended for various purposes, such as medical aid stations, CP's, repair shops, supply depots, and shelter for troops. Erection of these units is simple, even by untrained crews, but in a rapidly moving situation where they must be broken down and reassembled frequently, they become ineffective through loss of vital nuts and bolts and breakage.

Wheeled vehicles are of no value except on well cleared roads. Tactical employment of trucks, 1/4-ton, etc., is nil.



PICTURE NO. 8

Close-up of ski bundle in door of C-82 aircraft, as later developed. Note method of lashing skis to frame.



PICTURE NO. 9

Jamesway shelter used as Battalion Aid Station. This was assembled in one hour and thirty minutes by seven untrained men supervised by one Sergeant with previous experience.

The only special vehicle issued was the M29C (Weasel) which proved to be the most satisfactory for over-snow work. These vehicles serve the same tactical purpose as the 1/4-ton truck (Jeep) and it is recommended that they be provided on the same basis of issue for over-snow operations.

f. Weapons.

In general, weapons functioned normally when properly prepared for the cold weather. For example, the linkage in the 57-mm RAT would freeze up if not kept dry but, when dry, fired properly and easily. The deep snow produces duds and, in general, projectiles with point detonating fuses should be employed on point targets. No tests were made to check fragmentation effects, but all combat experienced observers agreed that the effect must be considerably reduced. Consideration should be given to the use of a proximity fuse or a time fire device for the 81-mm mortar. The 60-mm mortar crews must be trained for high proficiency to use their weapon on point targets except when tree bursts are possible.

g. Artillery.

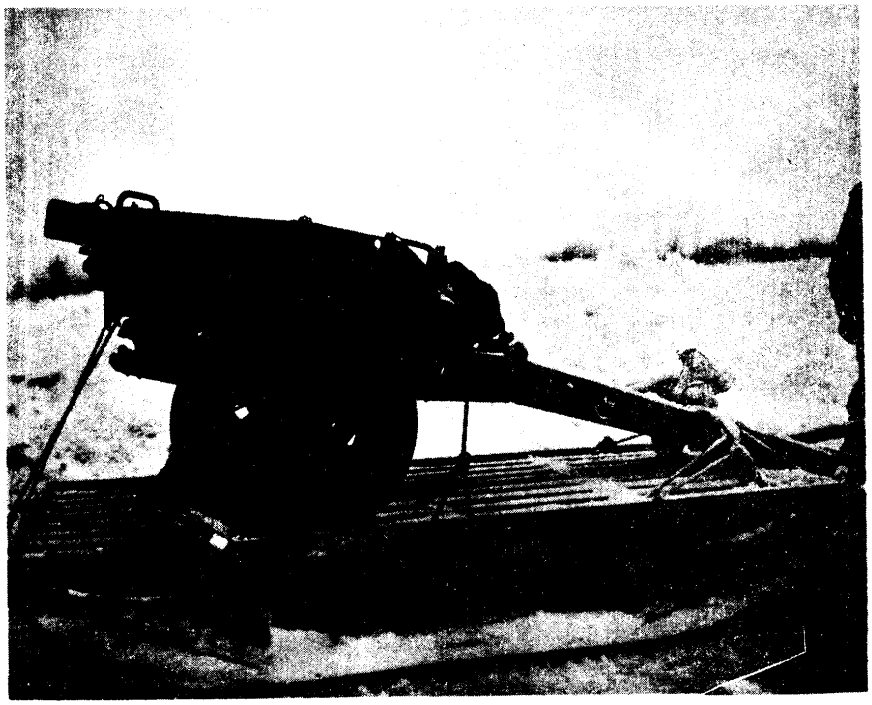
Great difficulty was experienced in assembling the howitzer in the wet snow because it adhered to the metal surfaces and caused parts to bind upon being assembled. Moving the piece without a prime mover was an extremely laborious operation. The general purpose howitzer ski was found to be entirely inadequate because it provided too little flotation and was too heavy. The expedient of using two Quartermaster sled-toboggans reinforced with 2" x 4"'s permitted the piece to be pulled by ten (10) men. In deep snow the piece could be moved only 250 yards before the men towing it were completely exhausted.

The Weasel was useful in towing the howitzer but in deep snow it bogged down on the slightest upgrade. (See Pictures Nos. 10 and 11.) The dropping of the Weasel together with the assembled howitzer would be desirable. A minimum of six Weasels should accompany each battery.

The cross level and angle of site level bubbles of the 75-mm howitzer should contain a different liquid to prevent the extreme cold from causing the bubble to divide into several bubbles when the piece is fired. Difficulty was experienced in manipulating the knobs on the scales and these should either be constructed of a larger diameter or the gunners should be provided with a more satisfactory mitten to allow sufficient manual dexterity.

In general, the normal field artillery tactics and technique appear to be satisfactory but additional time must be allowed for the delay due to snow and cold conditions. Timed fire must be relied upon to overcome the cushioning effect of the deep snow upon fragmentation. It is difficult to observe the effect of an air burst over snow and so adjustment must be made with a graze burst.

PICTURE NO. 10



PICTURE NO. 11

75-mm pack howitzer on sled, one ton secured for towing by M29C (Weazel). Not used in parachute operation since one ton sled and weazel could not at that time be dropped from aircraft in flight. Suitable for air-landed or glider operations only.

h. Light Aviation. The L-5 aircraft used during the exercise was found most useful. Equipped with skiis, it experienced no difficulty landing or taking off, although taxiing was difficult in soft snow. The plane functioned satisfactorily without any special equipment except skiis. It is ideal for reconnaissance, liaison, spotting of bundles and artillery observation, as well as for supervision of training.

i. General. The effect of cold weather on equipment has been adequately covered in the tests conducted in Alaska by "Task Force Frigid." The discussion herein has been limited to the effects of cold weather on the tactical employment of equipment available to the battalion combat team.

The law of diminishing returns aptly applies in operations of this nature. The additional clothing worn to keep warm tires the individual more quickly. Additional supplies are required for the added transportation to carry the additional shelter equipment, etc. In extensive cold weather operations, the logistical problem may quickly outweigh the tactical problem.

Chapter V

TRAINING

The training during the first seven-week period was designed to complete the instruction in the "School of the Soldier," make the individual proficient in the use of his weapon, train him to operate over-snow by means of snowshoes, skiis and toboggans, make him proficient in survival technique in snow and cold, and to train the squad as a tactical unit capable of airborne over-snow operations.

Physical conditioning, consisting of cross-country runs and calisthenics, was started prior to departure for Pine Camp and continued throughout the exercise. At the completion of the exercise, troops were in such excellent condition that 72 hours duty in the cold, including long marches, did not fatigue them excessively.

Extensive training in the use of skiis and snowshoes was necessary since approximately one-half of the personnel had never been in snow while the remainder had had a varying degree of snow experience. Men were trained to fire individual weapons upon snowshoes and skiis. Weapons training was conducted by battalion committees and included field firing of individual and crew served weapons, care and maintenance in extreme cold. (See Pictures Nos. 12, 13, 14 and 15.)

Survival procedure for cold weather, winter field sanitation and First Aid, wearing of winter clothing and equipment, loading, lashing and use of sleds and toboggans was taught by means of training films, lectures, demonstrations and by practical experience on marches, problems and bivouacs.

Normal airborne training, including preparation of bundles, loading of aircraft, drop and assembly, etc., continued throughout this period.

All squads participated in four ground problems and all platoons in two. These were both blank firing problems with enemy details and live ammunition attack problems. Airborne squad problems were held in December and it was estimated on 20 December that these units were up to 75% of maximum efficiency.

Communications personnel were trained continuously under direction of the BCT Communications Officer.

A breakdown of the hours of instruction for the infantry and artillery during the period 3 November - 6 February 1948 is shown in Appendix V.

Training under winter conditions does not vary from the training in temperate climates except that the commander must be prepared to order

his men out of warm and comfortable barracks into what seems to be impossible weather. Blizzard conditions are hazardous, but early and short periods of exposure will condition the troops for more severe and lengthly exposure to extreme cold.

Because of the lassitude which comes to individuals during cold weather, more than ordinary attention must be given to the supervision of training. The chain of command assumes even greater importance than under temperate conditions and frequent checks are necessary to see that orders are carried out.

Whenever plans are made for the use of aircraft, alternate plans must be made to provide for organized training in the event of weather prohibiting the flying of aircraft.

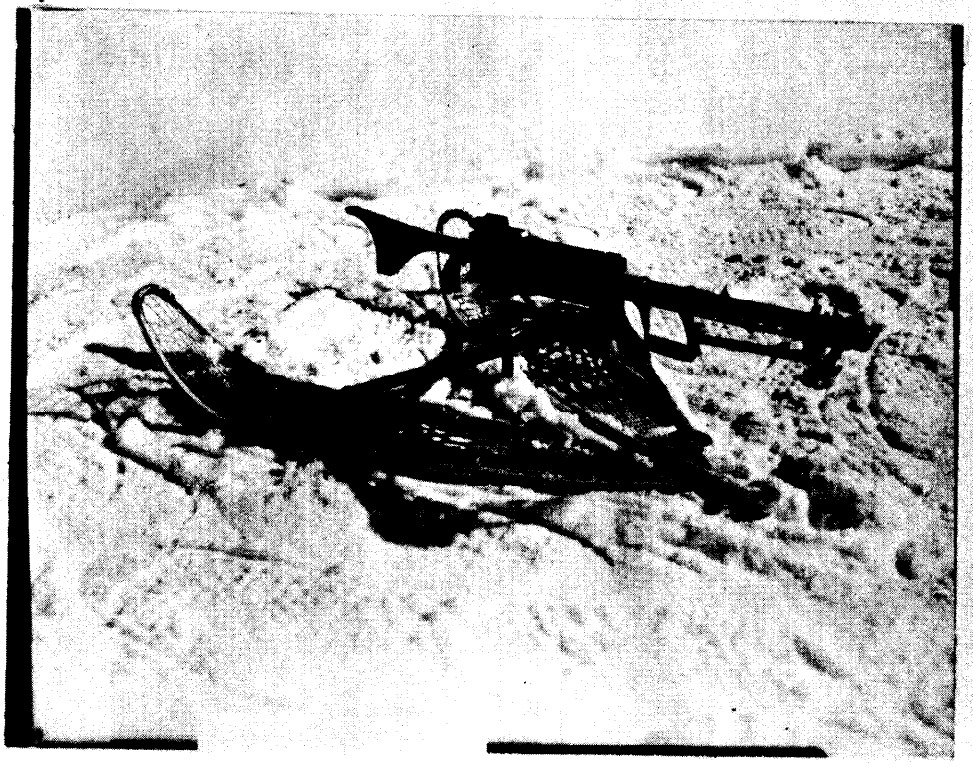
.30 calibre LMG in position using the steel helmet as support for legs of tripod. (Below)

57-mm RAT in position, using "bear paw" type snowshoes for tripod support. (Below)

MATERIEL - Over-snow operations.

.30 calibre LMG in position, using Ammunition boxes for support of legs. (Below)

.30 calibre LMG in position, using trail type snowshoes for support. (Below)



Chapter VI

EXTRACT OF MEDICAL REPORT

The medical detachment consisted of one (1) officer and fourteen (14) enlisted men who brought with them one (1) ambulance, one (1) litter jeep and the usual battalion T/O equipment.

There was a low number of upper respiratory infections despite sub-zero weather, attributable to the excellent general health of the troops, good diet, extensive outdoor activity, and well-chosen clothing.

A great number of ski injuries occurred, most of them while the individual was skiing during free time, when the inexperienced attempted fast down-hill skiing.

Tabulation of the jump injuries showed that arctic equipment, although cumbersome, is not hazardous when worn and carried by properly trained jumpers.

Thirteen (13) cases of frostbite were treated during the exercise. These were of the feet, hands, ears and nose and were attributed either to carelessness of the individual or to the nature of the duty, such as patrol or guard, where the men were exposed to the effects of extreme cold. One aggravated case of frostbite was given heparin and responded satisfactorily to treatment and was discharged from the hospital in eight days.

Several instances of wet feet, socks, and boots were caused by breaking through the ice or from snow melting within the boots. With a warm shelter these men were warmed, dried and returned to duty. It is believed essential that every man have extra socks and that additional boots be available within the company.

Men that had some place to warm up periodically lasted longer and performed more efficiently.

Company aid men experienced difficulty in giving treatment without shelter. All liquid medications and ointments froze solidly except the tinctures. Application of dressings was almost impossible because the hands became numbed too quickly. Adhesive tape would not stick. Wherever possible, aid men, working in pairs, constructed lean-to shelters and built wood fires to provide warmth.

Evacuation was by Weasel to the nearest point that could be reached by ambulance. The hand-carrying of litters in deep snow is nearly impossible and towing of a toboggan is extremely difficult. A sled improvised by two skiis, two rucksack frames and four metal contraction

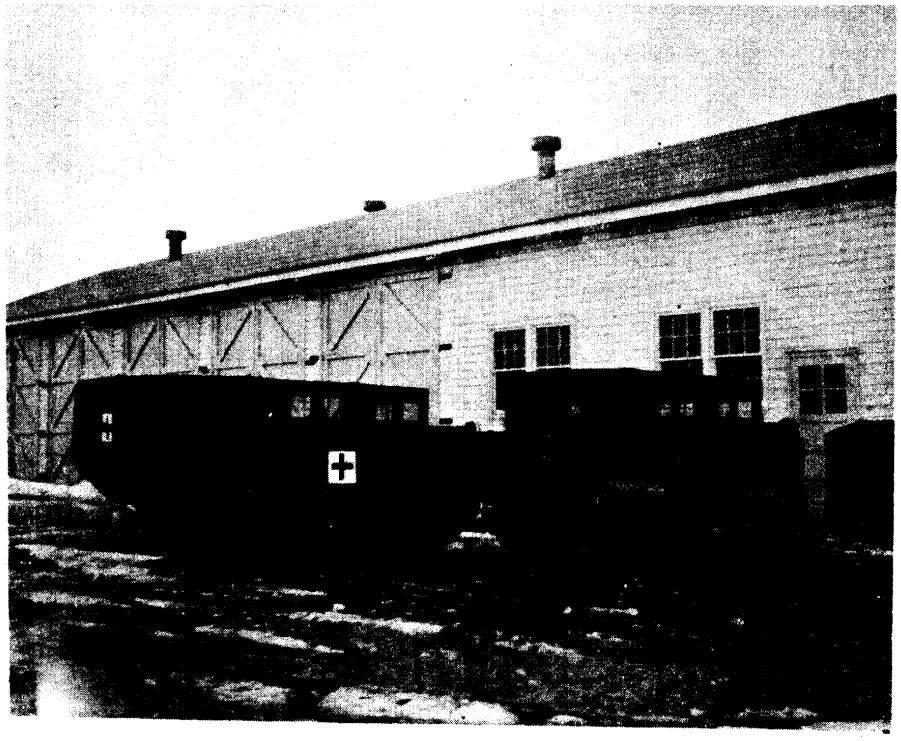
bands was used to carry a casualty but towing was still impractical except over well-broken trails.

Provision must be made for shelter to treat casualties. For this purpose, the small Jamesway Shelter with two Yukon stoves was found excellent.

The Weasel, or similar tracked vehicle, is a MUST for evacuation of casualties and transportation of medical equipment. It should have a clear and level rear deck with rollers to permit ease in placing the litter upon the deck. Extending the canvas top on the present Weasels permitted two litter patients to be carried instead of one. (See Picture No. 16.)

The effects of wound shock is multiplied by the cold and every effort should be made to evacuate as rapidly as possible.

Casualties due solely to weather can be minimized by training, proper clothing, and experience in living in the snow.



PICTURE NO. 16

M29C modified by extending canvas top to permit two stretcher-borne patients to be carried inside. The exhaust muffler was shielded and used as a source of heat.

Chapter VII

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

Exercise "Snowdrop" was successful within the means and personnel available.

The original directive dated 30 August 1947, and amended 13 October 1947, gave the following mission to the CO of the BCT:

"(a) General indoctrination in cold weather operations for an element of the General Reserve.

(b) Develop Airborne and Airtransportability tactics and techniques in cold weather operations, particularly over-snow operations.

(c) Develop and test airborne equipment essential to over-snow operations.

(d) Develop resupply and evacuation by air involving dropping of equipment by parachute, landings and take-offs of gliders on ice, snow and other unusual conditions, to the extent feasible with equipment provided by the Air Force.

(e) Develop such aspects of an organization and operation of an initial airhead as means and personnel will permit."

The BCT was thoroughly indoctrinated in cold weather operations. The individual soldier was 90% trained for these operations; the 10% deficiency is a matter of skill which could only be obtained by continued practice of the knowledge acquired.

Air transportability was not thoroughly covered because of lack of planes. However, loading plans were worked out for the BCT which varied from standard plans only to the extent that twenty-five per cent more planes were required because of bulky and additional equipment. Loading plans for special equipment such as Weasels and one-ton sleds were developed.

Airborne tactics for cold weather over-snow operations were developed to the extent that the BCT was approximately fifty per cent prepared for combat operations in the Arctic. This apparently low estimate of efficiency can be broken down and explained as follows:

(a) The rifle companies were eighty per cent efficient. Two more company problems (one airborne, and one ground), followed by another BCT Airborne Exercise, would have brought these companies

to a state of training wherein they would have been ready for cold weather combat.

(b) The FA battery was only twenty-five per cent efficient. The personnel, as individuals, were ninety per cent trained, the battery headquarters and survey section were eighty per cent trained, but the gun sections, through no fault of their own, were woefully inadequate. Dropping the howitzer (75-mm pack) in seven sections and then assembling it in conditions of snow and cold is not practical. Dropping the artillery pieces, preferably the 105M2 Howitzer, assembled with a prime mover, is considered a MUST for airborne over-snow operations.

(c) The Engineer Platoon acted as a "Pioneer Platoon." Equipment organic to an Engineer platoon is negligible. The platoon, as such, was eighty per cent efficient.

(d) The BCT conducted only three exercises, one ground attack problem of forty-eight hours duration, and one airborne field exercise, including seizing an objective, establishing a defense, a cross-country displacement, and a limited objective attack. The skills developed in these exercises left much to be desired, particularly as pertains to supply and communications.

(e) Communications in battalion, company, and artillery were seriously hampered by radio failure. Present communication equipment for rifle companies and FA batteries is inadequate and further development in this field will be necessary.

(f) Supply facilities organic to an airborne BCT for sustained ground operations are inadequate.

Airborne equipment presently available is satisfactory for cold weather parachute operations. For camouflage, white main canopies are desirable. The CG-15A Glider is not suitable for airborne over-snow operations since it will not carry the M29C. The combination of the parachute and the glider (CG-18A) are considered essential for airborne cold weather over-snow operations.

Resupply was limited to one parachute drop in the final field exercise. Through error, the loads dropped four miles from the DZ and added realism to the problem. There are no unusual problems in preparing and delivering supplies by parachute in cold weather. Recovery, however, is more difficult and takes much more time and effort because of the snow. Resupply by glider or air landed is still considered more efficient.

Evacuation by air was not tried because of lack of equipment. The landing and take-off of gliders was not tried because no gliders were available.

The development of an airhead was beyond the scope of the battalion combat team. Troops to accomplish this are properly part of corps and/or army. A BCT is a small part of the assault force necessary to seize and hold an airhead. The final BCT Exercise envisioned a theoretical airhead in which the BCT played a minor role.

In conclusion, it is believed that Exercise "Snowdrop" conclusively proved that airborne cold weather over-snow operations are feasible and practical. Further, that well disciplined and conditioned troops can be thoroughly indoctrinated in cold weather training in a three-month period.

APPENDIX I

Annex 7, "Schedule of Cold Weather Exercise," included the following essential items:

a. Training Objectives.

(1) General indoctrination of all personnel of 505th Airborne RCT in cold weather operations.

(2) To develop airborne and airtransportability tactics and techniques in cold weather operations, particularly in over-snow operations.

(3) To develop and test present airborne equipment and such other equipment as directed by Commanding General, First Army, particularly that essential to over-snow operations.

(4) To develop procedures for resupply and evacuation by air to include resupply by both glider and parachute, and landing and take-offs of gliders on ice and snow and other unusual conditions to the extent feasible with equipment provided by the Army Air Force.

(5) To develop such aspects of an organization and operation of an initial airhead as means and personnel will permit.

b. General Outline.

The over-all training period will be from 1 November 1947 to 29 February 1948, both inclusive, at Pine Camp, N. Y., and will be divided into five phases as follows:

(1) Phase I - Individual training and indoctrination, 1 November-30 November 1947, both inclusive.

(2) Phase II - Small Unit Training to include Squad (Gun Section) and Platoon, 1 December 1947 - 10 January 1948, both inclusive (less Christmas holidays, 20 December 1947 - 2 January 1948, both inclusive).

(3) Phase III - Company (Battery) Training, 11 January 1948 - 24 January 1948, both inclusive.

(4) Phase IV - Battalion Training, 25 January 1948 - 8 February 1948, both inclusive.

(5) Phase V - Regimental Combat Team Training, 9 February 1948 - 29 February 1948, both inclusive. Airhead operations will be included during this period.

APPENDIX II

Annex 8, "Air Support Plan," included the following essential items:

a. Requirements for Troop Carrier aircraft are to be based on individual tactical exercises, planned not to extend over one to three days.

b. For the purpose of planning, it is expected that one Troop Carrier Group consisting of three squadrons of C-82 type cargo aircraft will be available for this exercise. Each Squadron has a total of 16 C-82's allotted on present Table of Equipment. In view of the present maintenance "in commission" percentages, it is requested that no exercise be planned requiring in excess of 50% of total number of aircraft assigned.

c. Development of take-off and landing of gliders under ice and snow or other unusual conditions is not considered feasible at this time.* However, a limited number of gliders, principally for ground instruction, "Loading and Lashing," and general "Air Portable" training, can be made available.

The aircraft were not to be based at Pine Camp but to remain at Greenville, North Carolina and to refuel either at Stewart Field or Rome AFB, both in New York.

* This statement was included in the Ninth Air Force directive because such tests had been conducted by USAF in Alaska. Also at this time there were only a few operational gliders available.

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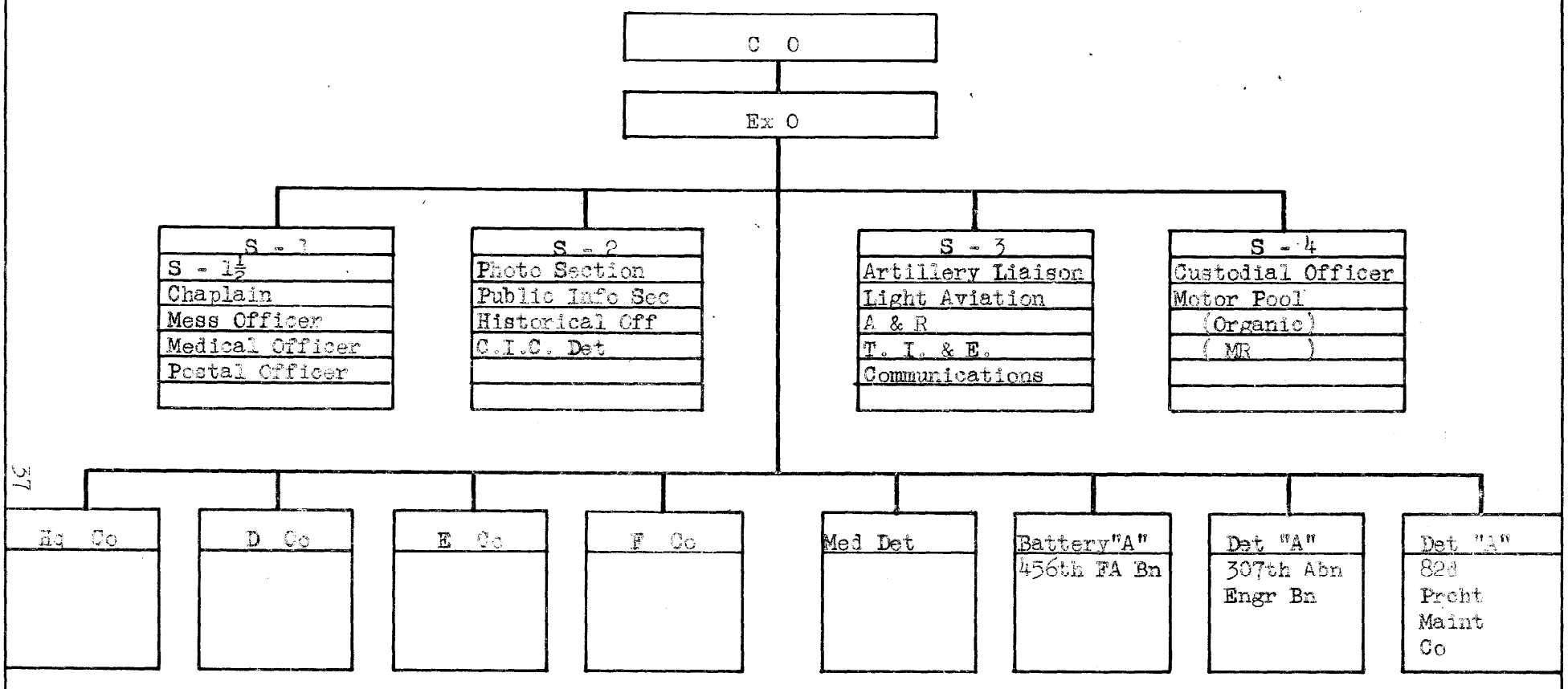

505th AIRBORNE BATTALION COMBAT TEAM

EXERCISE "SNOWDROP," PINE CAMP, N.Y.

APPENDIX III

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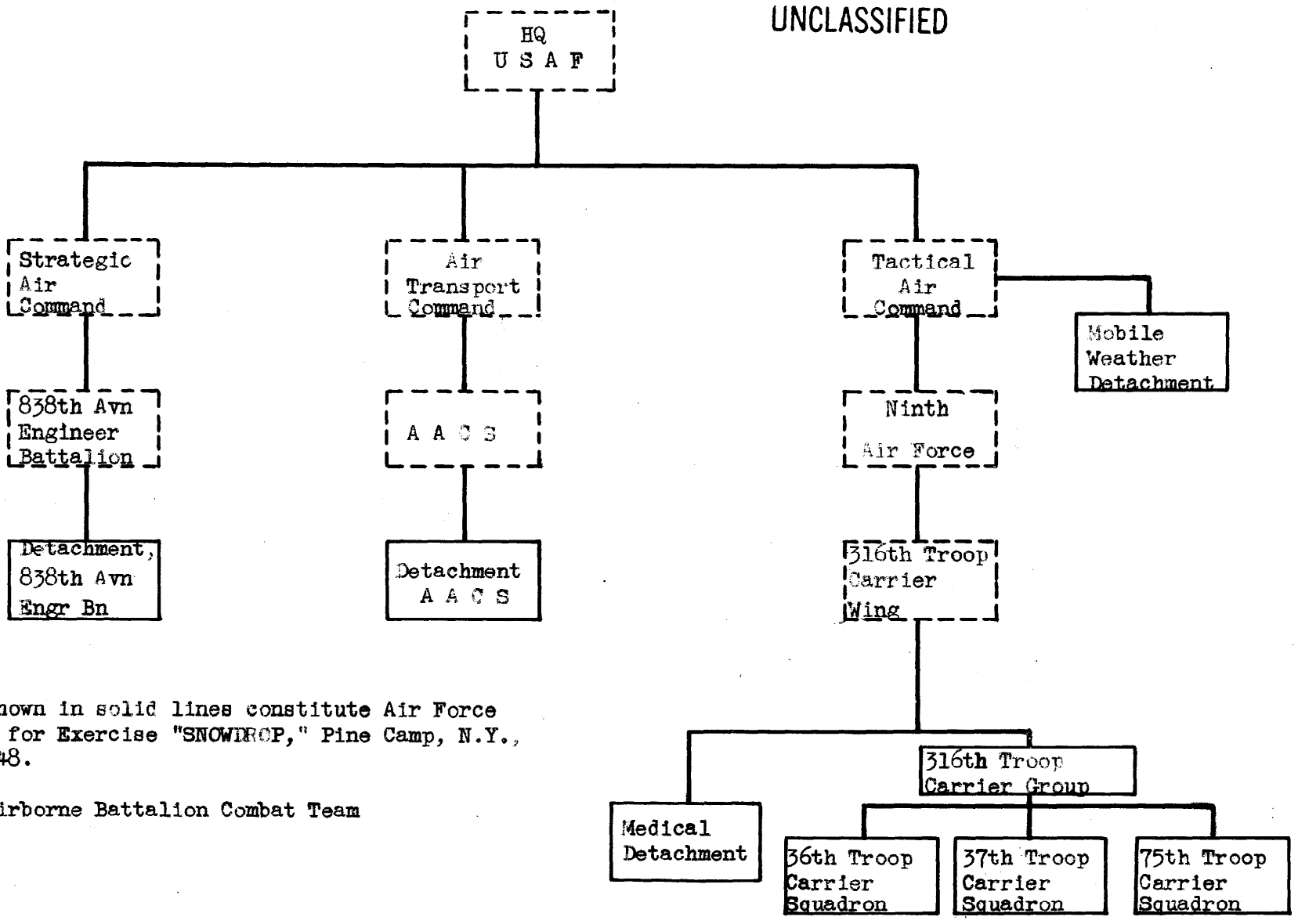

Units shown in solid lines constitute Air Force support for Exercise "SNOWDROP," Pine Camp, N.Y., 1947-1948.

505th Airborne Battalion Combat Team

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Appendix V

BATTALION HOURS OF INSTRUCTION
Period 3 November - 22 December 1947

Subject	Hours
Fitting of Clothing, Winter, and Special Items	8
Airborne Training and Instruction	40
Survival Training for Cold Weather	20
Heating and Fire-break Instruction	4
Map Reading	8
Driver Training (Carrier, Cargo, M-29-C)	40
TIP	4
Cold Weather Health and Hygiene	4
Troop Leadership (Officers)	1
Physical Conditioning	47
Ground Problems (Squad and Platoon)	24
Airborne Squad Problem	24
Bundle Rolling	2
Weapons Firing	36
Loading and Lashing Toboggans and Sleds	8
Heating and Fire-break Technique	4
Cooking (Survival)	2
Bivouac	24
Care and Cleaning of Weapons	6
Crew Served Weapons	8
VD Lectures	3
Tactical Marches	30
Citizenship and Morality	4
Paracrate and Paracan Packing	2
TOTAL HOURS	353

Artillery Hours of Instruction

Fitting of Clothing, Winter, and Special Items	8
Airborne Training and Instruction	40
Survival Training for Cold Weather	20
Heating and Fire-break Instruction	4
Service Practice 75 mm Howitzer (Pack)	32
Section Training	50
Map Reading	6
TIP	4
Cold Weather Health and Hygiene	6
Troop Leadership (Officers)	1
Physical Conditioning	48

Subject	Hours
Care of Materiel	15
Paracrate Packing	3
Citizenship and Morality	4
VD Lectures	3
Preparation for, and Inspections	8
RSOP	12
Driver Training (Carrier, Cargo, M-29-C)	40
Bivouacs	24
Computation of Surveys	4
Use of Compass M-2	1
Tactical Marches	30
TOTAL HOURS	353

BATTALION HOURS OF INSTRUCTION
Period 5 January - 6 February 1948

Subject	Hours
Ski Training	54
Snow Shoe Training	8
Over-snow Firing	8
Company Attack Problems (Ground)	8
Battalion in Night Attack (Ground)	8
Bushwhacking Technique	2
Battalion Problems (Ground)	48
Company Airborne Problems	72
Fire Prevention Instruction	1/2
Care and Cleaning of Equipment	4-1/2
Marches and Bivouacs	53-1/2
VD Lectures	2
TIP	4
Preparation for, and Inspections	5
Final Battalion Airborne Exercise	144
TOTAL HOURS	421.5

ARTILLERY HOURS OF INSTRUCTION

Subject	Hours
Ski Training	54
Snow Shoe Training	7
Map Reading	2
Reading of Articles of War	1
Care of Materiel (and Cleaning)	10
Athletics and Physical Conditioning	8-1/2
Section Training	8-1/2
Marches (and Field Problems)	40
Service Practice and Tests	35
TIP	4
Preparation for, and Inspections	4-1/2
Battalion Problems (Ground)	48
Fire Prevention	1
Airborne Training and Problems	46
Use of Sleds	2
VD Lectures	2
RSOP (Reduced Distance)	4
Final Battalion Airborne Exercise	144
TOTAL HOURS	421.5

Additional pictures of value and interest suggested for inclusion but not specifically referred to in the text.

Loaded trooper boards aircraft for final exercise. Note reversed handle on T-7 reserve to permit pulling handle when wearing heavy mittens.

Jumpmaster in the door watching for panel on DZ and green light from pilot

SCR 300 taken from container which is jumped on the operator and used in reorganization immediately after the parachute drop. Note trooper wearing bear paw snowshoes.

Part of light Machine Gun Section on skiis preparing to leave DZ for pre-planned position. Note that bear paw snowshoes are carried to act as floatation base for machine gun tri-pod in deep snow.

Troopers in bivouac in training. Note fire permitted in non-tactical situation.