Modern Warfare...

GAMING WITH DUNN-KEMPF

THE ARMY'S PACKAGED BATTLE SIMULATION SYSTEM

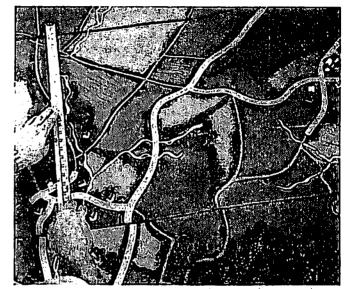
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EDITOR'S NOTE: The following article is a Special Release to WARGAMER'S DIGEST from Richard P. Fulton, Command information Officer of Headquarters, Combined Arms Center and Fort Leavenworth, Kansas. It explores, in detail, the wargame developed, as a project, at the Army Command and General Staff College by Captains Hilton Dunn and Steve Kempl. They based the rules for this wargame on the rules presented in "Armor and infantry - 1950 to 1975" published by War Games Research Group. These rules should be available at your favorite hobby shop, or are available through our "Reader's Service Department".

Captains Dunn and Kempf further refined the rules using U.S. data on U.S. and Soviet weapons and vehicles. Fort Leavenworth has adopted this wargame — under the fille Dunn/Kempf — and is now distributing some 1,800 to units in the field for combat training. The 1/285th vehicles used in this game were supplied by GHO MICRO ARMOUR under contract to the U.S. Army. These are the same 1/285th scale vehicles which you can purchase at your favorite wargaming hobby shop.

We feel that this article provides an excellent overview of what the U.S. Army is doing — in the area of wargaming — towards training its combat units to a high degree of battle proficiency. Of necessity, the article could not go into many specific details on weapons capabilities since this information is classified. However, the article does go far enough to provide a clear picture of how the Army has developed its wargaming for the modern battle environment. Within this article you have the necessary information for a contemporary wargame of your own — using the rules mentioned above — and you have the methods being used by our military professionals in their own wargaming.

We wish to extend our thanks to Richard P. Fulton, Command Information Officer, and Lt. Colonel Jim Wilson, Public Affairs Officer at the Combined Arms Center, Fort Leavenworth, Kansas. We add



Taking a range measurement on the 1/285th scale Dunn/Kempf wargame table. U.S. Army photo by Sp-5 Jim MacNell.

a special note of thanks to Specialist Five Jim MacNeil for the photos presented with the article. We appreciate this opportunity to present to you the wargame — and the methods used within this wargame — which the U.S. Army is currently using to train the men in our combat units who must be at the highest state of readiness, and combat proficiency, should they be called upon to "Mount Up and Move Out".

T. LEAVENWORTH, Kan. — The reconnaissance element, roughly a kilometer ahead of the Opposing Force (OPFOR) tank battalion it was leading, was almost at the junction of the Oberweisenborn Road (having just passed through Unterweisenborn) enroute southwest towards Elterfeld. Off to the west of the concrete highway, along which the five vehicles of the recon unit were moving, was Hill 451. The hill was a forested dome running north-south and crossed by a secondary dirt road. The reconnaissance element was commanded by a yet unblooded lieutenant. It consisted of three tight PT-76 amphibious tanks and a brace of BRDM-2 rubber-tired armored cars each mounting a light cannon in a powered turret.

Suddenly, an American TOW (a heavy anti-armor wire-guided missile) streaked from the vicinity of the south end of Hill 451 and hit the side of the lead vehicle, a PT-76. The ensuing explosion and fireball blocked the road. Before drivers and crews of the surviving vehicles had time to react, a second missile, fired at a distance of 2,000 meters, exterminated the trailing PT-76. Then the second vehicle in the column, a BRDM-2, was flipped on its back by an explosion that ripped all tires from its right side. One crew member did escape with only slight injuries but the men in the second BRDM-2, the fourth vehicle in the column, weren't so lucky. They all perished in a fireball.

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Through the fire and smoke, the officer-in-charge, riding in the column's third vehicle, (a PT-76) had time to see who was shooting at him and to get off an incomplete radio warning to the tank battalion before his first and last war ended in an explosion of a pair of TOWs.

"Unit under attack, vicinity Hill 451. They are firing missiles! Send help! Have lost two veh-----"

What the lieutenant didn't have time to tell his commander was that "they" were American Cobra helicopters mounting TOW missiles (up to eight per ship). Their attack totally wiped out the forward reconnaissance of the Opposing Force tank battalion. The helicopters also had a mission of forward reconnaissance for the American Force. The choppers didn't finish that job as effectively as their first, though.

The Cobra initiating the attack hovered in one place, the south end of 451, and fired its second and third missiles. It then lifted 300 feet to see what had been following the small lightly-gunned and armored force. An Opposing Force ZSU-23-4 anti-aircraft artillery tracked vehicle, quad mounting 23mm guns controlled by sophisticated radar, was just over two kilometers away. Its crew locked onto the Cobra, fired a burst, and hit it. The pilots of the second Cobra had time to catch gilmpses of T-62 medium tanks before their ship, too, was hit. They didn't crash but limped south trailing smoke and radioing warning of a probable attack in the Company B area of operations.

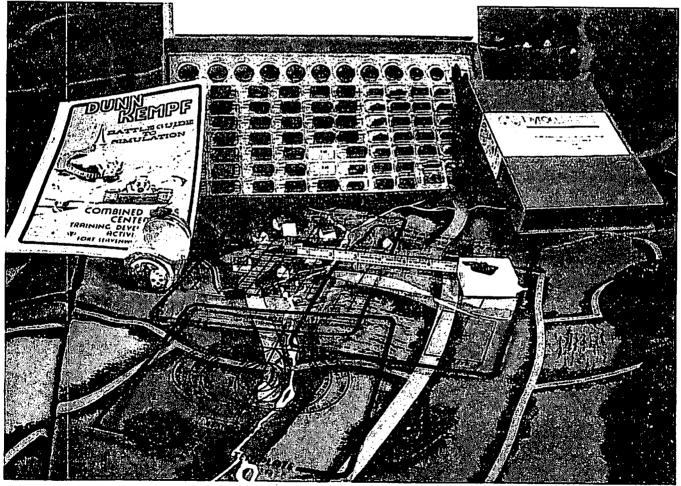
Several hours before this air-ground skirmish, an American mechanized infantry battallon (part of a U.S. brigade) had moved in and set up along the highway running from the west side of Elterfeld southeast through Leibolz and Grobentaft to Treischfeld. The company commanders of the battallon had been told to expect an

attack by elements of an Opposing Force tank division believed to be moving south through the sector with a mission of capturing the West German city of Hunfeld. The men were told they could expect to face numerous Opposing Force T-62 tanks, BMP infantry personnel carriers and anti-tank BRDM mounting Sagger missiles, and PT-76 light tanks. With Company A on the left and Company C on the right, Company B was given the center of the battation sector which ran from the eastern outskirts of Elterfeld to Hill 446 and was told to defend it at least 12 hours.

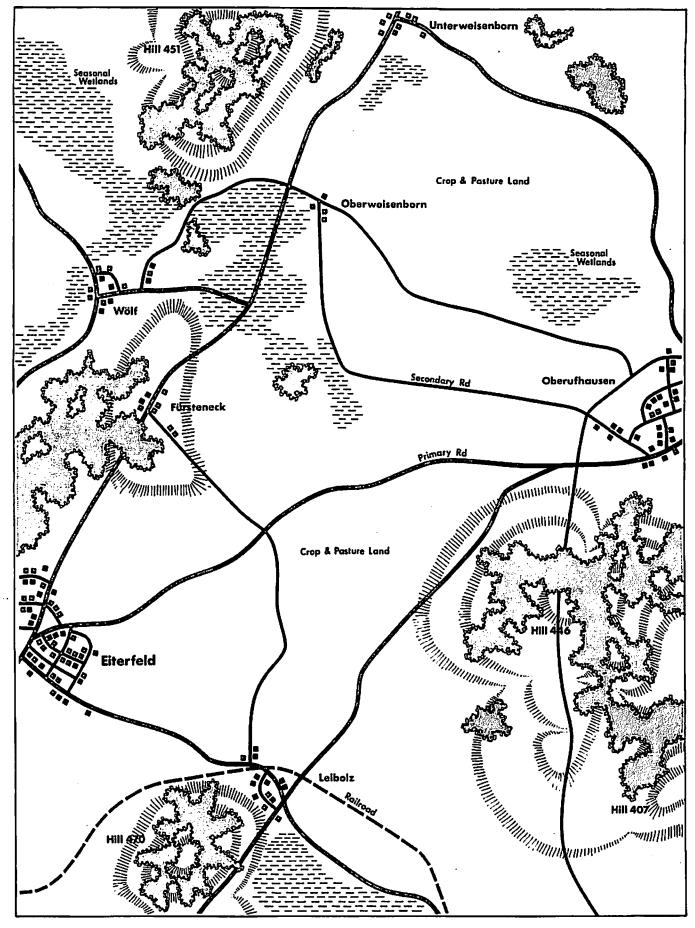
The battalion commander briefed all company commanders that he envisioned an active defense with fighting positions established in depth to both attrite and delay the Opposing Force as much as possible. He told his officers to get security elements forward and insure that they took full advantage of all available longrange fires in order to engage the Opposing Force early in its assault.

The Company B commander was advised that he had priority of fires. This included three 155mm howitzer missions from the direct support artillery battalion and two 4.2 inch mortar fire missions from the battalion itself. The officer was told two attack helicopters, each mounting four TOW missiles, were available for use as needed. Also, he was advised, there was the possibility of two fixed-wing aircraft sortles depending on how the situation developed. One aircraft would be armed with MAVERICK and 20mm cannon; the other, also armed with 20mm, would be carrying ROCKEYE.

During the briefing, the B Company commander asked about the possibility of a plateon of M-551 Sheridan light tanks being attached to him for reconnaissance purposes. He was given a negative reply but instead he and the other company commanders received a plateon of five U.S. M-60 medium tanks to reinforce his



The Dunn/Kempf wargame set laid out on the wargame table provided. Note templates, rules and vehicles. The armored vehicle package in this game was supplied by GHQ MICRO ARMOUR under contract to the U.S. Army. Army photo by Sp-5 Jim MacNeil.



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mechanized infantrymen. Other resources made available to the B Company commander were combat engineer support consisting of two 200 by 50 meter minefields and three abatis or road craters (his choice).

Company B was still light on resources though (with respect to the force being faced) and the commander, looking at a map of the area he had to cover, shook his head. His command, even with the attachments of tank and engineer support — and the promise of priority on indirect fire and air support, numbered only ten M113 APCs (Armored Personnel Carriers) to carry troops and support with .50 caliber heavy machine gun fire; six APCs mounting TOW missiles; three organic 81mm mortar tracks (APCs); eight DRAGON (medium anti-tank wire-guided missile) teams; a REDEYE anti-aircraft team — attached earlier from the battallon combat support company; and six rifle squads. Not much force to cover such a big area and, more than that, hold it for 12 hours!

The commander then looked at the precise area he had to defend. Prominent geographical features included the built-up areas of a section of Eiterfeld and of the town of Leibolz; Hills 407 and 446 (a north-south wooded ridge line forming the boundary on the company sector right, with 448 being forward); and Hill 470, the highest elevation in the company area and the key ground the Opposing Force would have to take in order to successfully capture and hold Eiterfeld. Hill 470, located just to the southeast of that city, loomed high above the north-south and east-west highways and the only rail line in the immediate area. While the top of 470 was an open meadow, the slopes were thickly forested and offered plenty of good cover and concealment.

Further map study convinced the commander any Opposing Force coming at him could be effectively directed south towards Hill 470 but only if proper use were made of available long-range fires and of limited delaying actions (an active defense) fought by small units on the flanks. Using the 407-446 ridge on the right, the



The television instruction set, seen bohind the wargame table, which details game play for students. U.S. Army Photo by Sp-8 Jim MacNell.



The wargame terrain board set up for battle action. U.S. Army Photo by Sp-6 Jim MacNell.

U.S. commander considered the possibility of that position being the location of a force to attack the Opposing Force flank once it was committed to an assault on Hill 470. This idea had many good points, not the least of which was the many available concealing positions offering good to excellent long-range observation. One thing worrying the U.S. commander about the ridge though, was the extreme range at which his weapons would have to fire in order to support company elements defending Hill 470. He finally decided the ridgeline would be a good position for three M-113 APCs mounting TOWs (extremely accurate out to 3,000 meters) but that defense-in-depth offered greater possibilities of success than a complicated ambush involving a centralized kill-zone.

Turning his map around, the American officer then looked at the area as it would appear to the Opposing Force commander and calculated the courses of action open to his opponent. He first noted Hill 451, then Unterweisenborn and Oberweisenborn in the north center of the area of operation (a/o). Coming down the right of the Opposing Force area of operation, along a major highway from Unterwelsenborn, at a point just south of 451, was the hamlet of Fursteneck. The highway continued on south, passing through some heavy woods, into the northern outskirts of Eiterfeld. On the Opposing Force's left, another major highway teft Unterweisenborn in the north-center and ran southeast to the town of Oberufhausen, From Oberufhausen, major roads led both across the area of operation to Eiterfeld and also, more southwest to Leibolz (both of which were dominated by Hill 470). The key question then seemed to be the route the Opposing Force would take from Unterweisenborn to attack Hill 470.

A blacktop road ran south from Oberufhausen along the top of the 446-407 ridge. It seemed unlikely the Opposing Force would use it because this would cut down the speed of their armored attack force. Even so, the commander decided to crater the road right at the crest of 446 and put minefields on either side of the blasted obstacle and then to back it up with a DRAGON team. The three M-113 TOWs deployed south on 407 — facing west towards 470 — were flankers who didn't need a flank surprise attack themselves!

What about on the west side of the area of operation though? The woods along the highway south of Fursteneck seemed to offer the best possibility. The U.S. officer decided to use a combination of abatis and a road crater to block this route and to back the obstacles up with a rifle squad armed with LAW (light, five-pound, anti-armor man-portable rocket) weapons.

The commander then looked at Hill 451, north of Fursteneck. The hill, he calculated, could be used by the pair of attack helicopters to screen their movement. If an Opposing Force element moved southwest towards the hamlet, the helicopters could attack and give the impression of large American strength in the area.

Finally, the road southeast from Unterweisenborn would be a viable option for the Opposing Force. The American commander decided to allocate most of his indirect high explosive fire along this highway and to use 81 mm mortans to fire a smoke screen just outside Oberufhausen ilself. This would be a device to confuse the Opposing Force and possibly make them believe American strength in the built-up area wasn't worth a head-on attack.

It was hoped these actions would then force a movement across country south-southwest from Unterweisenborn towards the ob-



jective of Hill 470, movement that would bring the enemy within range of a defense-in-depth posture. On and behind Hill 470 itself, the U.S. commander decided to put his REDEYE team, three remaining TOW missile carriers, and his 81mm mortar tracks. The tank platoon was emplaced along the Elterfeld-Leibolz highway, well concealed in positions at the base of the hill. North of this primary route the remaining seven DRAGON teams were scattered in staggered formation and dug in. The remaining APCs and rifle squads were interspersed with these units. The attack helicopters flew forward. Half an hour later, they made their attack on the Opposing Force reconnaissance force.

OPERATIONS ORDER — OPPOSING FORCE COMMANDER

You are the commander of an Opposing Force tank battalion reinforced with a motorized rifle company. Your recon element, operating about a kilometer ahead of the main force, has just been knocked out. The mission of your 31 T-62 tanks, 10 BMP infantry tracks, two BRDM Sagger missile carriers, and a pair of ZSU-23-4 anti-aircraft weapons is to capture Hill 470 and charge on to rupture American defenses in the area, and destroy all their units. You are well supported by indirect fire with at least two 122mm howitzer fire missions continually working on your behalf. What course of action do you follow?

A real battle in a 1980s war in central Europe? No, but the force designs and geography are real, even if the scenario isn't.

It's a battle simulation fought on a terrain board with 1/285 scale models. Developed by U.S. Army personnel at Ft. Leavenworth, Kansas, in 1974/75, the simulation is called DUNN/KEMPF. Named for its designers, then Captains Hilton Dunn and Steve Kempf who did the project when they were students at the U.S. Army Command and General Staff College, the game is based on "War Game Rules, Armor and Infantry, 1950-1975," published by the War Games Research Group (January 1975). Further refinements were made and a prototype

was produced and evaluated during 1976. A production model was completed and fielded in 1977.

It's more than just a wargame. It's a high resolution company team level battle simulation system, run against a thinking opponent, designed to promote tactical understanding at the squad, platoon and company level. DUNN/KEMPF (referred to hereafter as D/K) provides training in U.S. and Opposing Force small unit combined arms tactics, weapon systems capabilities and employment techniques, techniques of fire, battlefield observation, employment of indirect fire and close air support, use of attack helicopters, suppression, obstacles and fortifications, use of smoke, communication in an electronic warfare environment, and proper use of terrain.

For the squad, D/K specifically offers training in movement to contact, anti-armor and ambush techniques. The mechanized infantry platoon can use the simulation to physically obtain an overview of hasty attack, movement to contact, active defense, preparation of strong points and deliberate attacks. At the company level, learning with D/K involves movement to contact, hasty attack, deliberate attack as well as active defense, delay, strong point preparation, and disengagement under enemy pressure.

Before getting into the mechanics of the simulation and a discussion of the kit components, the item of greatest interest to most people is the models used in "play". Each one of the 500 kits produced is force-structured the same way — and each is equipped with numerous 1/285 scale model vehicles and miniature figures.

The U.S. "Blue" force consists of a tank company of 17 M60A1 tanks and a M113A1 personnel carrier; a mechanized infantry company of 15 M113A1s, three 81 mm mortar tracks (M125A1), two M113A1 TOW carriers, nine rifle squads, six M60 machine gun teams, and 12 DRAGON teams; and numerous other items to structure various localized scenarios. Included in this grouping are four additional TOW APCs, four 4.2 inch mortar carriers



(M106A1), a REDEYE ground-to-air missile team, 10 Sheridan M551 light tanks, a pair of armored vehicle launched bridge units, an M88 tank recovery vehicle, an M578 light recovery vehicle, two M559 POL tankers, a pair of M561 Gamma Goat cargo vehicles and a pair of AH 1-G TOW equipped attack helicopters.

The Opposing Force consists of a tank battalion of 31 T-62 medium tanks, three BTR-50 personnel carriers and a pair of BRDM armed with Saggers; a motorized rifle company of 10 BMP tracked personnel carriers armed with a 73mm main gun and rail-mounted Sagger each, nine rifle squads; and augmentation equipment including three additional BRDM with Sagger, a pair of ZSU-57-2 anti-aircraft tracks, six light trucks, nine additional T-62 tanks, three PT-76 light recon tanks, a pair of recon BRDM-2 mounting a light cannon in a turret, and two Hind-A helicopters.

The models are covered with a single base color and the moveable parts, such as tank turrets, are painted shut. This is to decrease breakage because of the number of people who handle the models.

The terrain board used in the D/K kit represents the Hunfeld area, northeast of Fulda, in West Germany. The scale used in the game is: one inch equals 50 meters. The vertical scale is exaggerated approximately 2:1 to give added relief to the terrain board.

The terrain model measures eight feet wide and ten feet long and symbolizes an area of operation three miles wide and three and three-quarter miles long (approximately 4,800 meters wide by 7,000 meters long). Each one of the ten sections used to make up the total gameboard measures 23 1/2 by 47 inches. Each section is made of thin vacuum molded sheet plastic.

The idea of "built in obsolescence" in the model makes the system dynamic and easily localized to the area in which the users are actually living and working.

According to Harry Weeks, visual illustration specialist, who worked on the development of D/K, "Each D/K set was built with the idea that the terrain board enclosed would only be played five or six times. Part of the kit itself is a booklet telling local training officials how to build a terrain board of their own specific training areas or possible "Areas of Operation."

Another visual illustration specialist, Greg Smith, added, "The value of the vacuum terrain board in each kit is really intended to give scidlers a concept and a place to apply game techniques while they are learning them. When the game system itself has been learned, that is, the techniques of play, the unit will construct their own terrain board representing land forms they physically occupy in real life training missions, or places where they may be sent to perform a military mission."

Both Mr. Weeks and Mr. Smith are Department of the Army civilian employees assigned to the Media Support Center at Fort Leavenworth. The Media Support Center, under the direction of Mr. Maurice Julian, is the agency responsible for translating ideas and conceptions into working models. (See Wargamer's Digest February and March, 1978 issues for a discussion of other work in the field they have accomplished). From these working models, production models are then planned, and their kits assembled.

A curtain that hangs across the table chin-high at the half way point prevents the teams from getting a "helicopter view" of their opponents' positions. The controller goes on either side as needed to make judgments and decisions on the various actions. D/K is played with a controller and three or four men on each side.

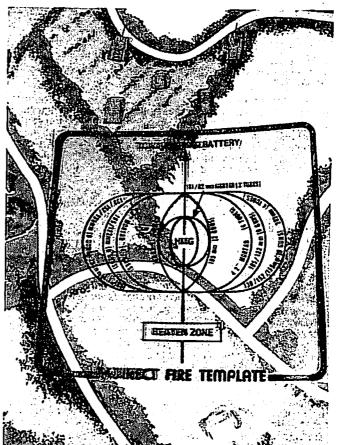
The curtain hangs down to a point about two inches above the surface of the board. The players bend down or squat to get line-of-sight on what a tank commander or other soldier on the "battlefield" could actually see. A tool included in the D/K set is a mechanic's mirror used to help players get a proper view of the action.

The curtain is hung with adjustable clamps and, if a scenario requires one side to have greater terrain knowledge than the other, the curtain is easily moved to reflect that situation.

D/K is more than a plastic terrain board and some pieces of lead military vehicles — the heart of the game is an intricate, detailed, yet easy-to-apply set of rules covering almost any imaginable situation in modern small unit combat. Each full game set contains a television videotape program approximately an hour in length which fully explains the game concept and various fine points of the rules. This way a new unit receiving the training is able to obtain the same introduction to D/K that all other units using the system get. The television tape not only has a moderator explaining the rules but also shows examples as he goes along. This orientation concept has proven to be highly effective in teaching wargaming to those who have not had experience with the subject before.

D/K is played with each side moving alternately by bounds. The attacking force begins the play. Artillery fires are requested and impact determinations from previous requests are made. Direct fires are then computed and, finally, movement of equipment and personnel is made. In each 30 second turn, vehicles can move six inches (300 meters) on roads or four inches (200 meters) cross country. Personnel can move two inches (100 meters) at a maximum. Each bound represents 30 seconds of actual time.

The D/K systems, like many wargames, use a pair of six-sided dice, one red and the other white. One is designated the "tens" die and the other the "ones" die. Various charts (direct fire, indirect fire, close air support) use the random numbers generated to give the results. For instance, a Sheridan M551 fires its main armament at a PT-76 light tank at 1,500 meters distance (30 inches). The "Probability of Hit" table on the "whiz wheel" that comes with the game requires a roll of 52. If a five and a two, or greater, is rolled, the "Probability of Kill" table then requires a roll of 21 on a PT-76. If the target was a T-62 medium tank though, 31 would be the needed roll for the kill. In addition to the whiz wheel, each side has charts giving the same information. Tape measures are included in the set to assist in getting line of sight as well as to accurately check the range.



Indirect Fire Template laid over wargame table indicates actual impact area of various weapons. Armored vehicles were supplied by GHO under contract to the U.S. Army. Army photo by Sp-5 Jim MacNell.



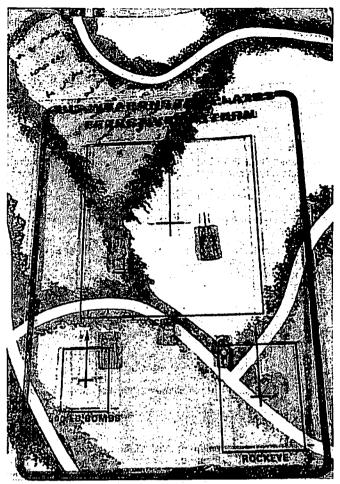
The "Wespons Impact Locater" laid over the wargame table. Note numbers along sides which correspond to die rolls. U.S. Army Photo by Sp-S Jim MacNell.

For Indirect fire, one die is rolled. A 1 or 2 means the round was either short or over. A 3 or 4 means the shot was left or right, and 5 or 6 means the round impacted right on the specified target. If the round was short or over, a die roll is again made and the number that comes up is multiplied times 50 meters to get the range error. If the round hit left or right, the second die roll made is multiplied by 25 meters to get the deflection error.

Let's say the target was a road junction at map grid coordinates "123456" a planned, unobserved effect fire mission. The side firing the round roils a die and comes up with a 2. They then roll again and come up, this time, with a 5. This means the round hit 250 meters over the target (5 inches). The controller takes a clear acetate template having circles for the various types of ordnance and places the center of it on the actual spot the round impacted, not on the original aiming point.

Within the circle for the type of ordnance fired, as an example, let's say there was the front one-third of a medium tank, all of a second medium tank, a POL truck, and an APC. The controller, knowing the firing player can't see the numbers of vehicles of his enemy possibly affected, tells the person to roll a single die six times and call out the numbers. The reason for six rolls is to deny intelligence (only three rolls are actually needed).

The first tank doesn't count because, under D/K rules, half a vehicle must be inside the designated ring on the clear plastic to be a possible victim. For a tank to be killed, a 6 must be rolled; for it to be suppressed, a 5 is needed. Regarding suppression of other armored vehicles, a 4 is needed on the die roll, while a 5 or better will kill it. Wheeled vehicles are suppressed by a die roll of 3 and are killed with a roll of 4,5 or 6. Suppression of troops requires a 4 and kill is 5 or better. Aircraft delivered ordnance also use a similar combination of clear plastic templates, charts and dice roll.



U.S. weapons templates indicating effective patterns for various ordnances. Armored vehicles were supplied by GHO MICRO ARMOUR under contract to the U.S. Army. Army photo by Sp-5 Jim MacNeil.

Questions that come up that aren't answerable by data in the D/K Battle Guide, the game's rulebook of which numerous copies are available in each set, may be answered by checking the copy of "War Game Rules, Armor and Infantry, 1950-1975," placed in each kit.

Developed at Ft. Leavenworth as a Command and General Staff College student project, Dunn/Kempf has evolved into an excellent Army training aid which is inexpensive, yet one that more than adequately articulates problems of armed combat in a technological age. Exported from Ft. Leavenworth throughout the U.S. Army, to various combat units and training commands. Dunn/Kempf pragmatically demonstrates to Army members the need to win the first battle of any modern war and allows practice for that mission in a realistic, dynamic fashion.

