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(CHART 16)

(U) AT AN EARLY POINT IN THE ARAB/ISRAELI WAR AFTER THE EGYPTIAN ARMY HAD CROSSED THE SUEZ, THE ISRAELI ARMY COUNTER-ATTACKED, IN THE NORTHERN SECTOR OF THE SINAI. THEY ATTACKED PRIMARILY WITH TANKS, NOT SUPPORTED WITH INFANTRY, AND LIGHTLY SUPPORTED WITH ARTILLERY. AS A MATTER OF FACT, THE ISRAELIS BECAUSE OF THEIR SUCCESS IN THE 1967 SIX DAY WAR, RELIED ALMOST EXCLUSIVELY ON TANKS AND FIGHTER AIRCRAFT.

(C) IN THIS CASE, THEY ATTACKED INTO A DEFENSE WHICH INCLUDED EGYPTIAN INFANTRY. INFANTRY THAT WAS ENTRENCHED AND ARMED WITH RPG7 ANTI-TANK ROCKET LAUNCHERS, BACKED UP BY LITERALLY HUNDREDS, MAYBE EVEN THOUSANDS OF SAGGER ANTI-TANK MISSILES.

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BEHIND THE SAGGER MISSILE POSITIONS WERE EGYPTIAN TANKS,
SOVIET T55 AND T62. WHAT HAPPENED WAS THE ISRAELI FORCE WAS
LARGELY DESTROYED. THE TANKS TRIED TO GO ALONE. THESE TANKS
COULD NOT GET THROUGH, ALONE, BECAUSE THE ENEMY WITH THE RPG7,
THE SAGGERS, AND THE T62 DESTROYED THEM. WE HAVE LEARNED
THAT THESE ANTI-TANK SYSTEMS MUST BE SUPPRESSED. AND SO ALONG
WITH THE TANKS, WE MUST HAVE INFANTRY, AND ALONG WITH THE TANKS
WE MUST HAVE ARTILLERY, EITHER TO FIRE ON AND DESTROY TARGETS
OR TO FIRE SMOKE FOR OBSCURATION. WE NEED AIR DEFENSE WEAPONS
ALONG SO THAT OUR TANK ATTACK WILL NOT BE DESTROYED
BY ENEMY AIR.

(U) NOW AT THIS POINT, I'D LIKE TO BRANCH OFF FOR A MOMENT

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AND TALK ABOUT THE PROBLEM OF AIR DEFENSE, THE PROBLEM OF FIGHTING AGAINST VERY HEAVY CONCENTRATIONS OF SOVIET BUILT AIR DEFENSE WEAPONS. THE USE OF AIR DEFENSE IS A MAJOR LESSON OF THE WAR.

(CHART 17)

(U) THIS CHART SHOWS THE ALTITUDE EFFECTIVENESS AND RANGE OF OUR SELF-PROPELLED AUTOMATIC GUN SYSTEM, THE VULCAN, A 20MM MINI-GUN SYSTEM. ALSO SHOWN IS THE SOVIET QUAD-23MM GUN SYSTEM, THE ZSU 23-4. THE SOVIET TWIN 57MM GUN IS SHOWN BY A DOTTED LINE. WE ARE NOT SATISFIED WITH THE VULCAN GUN PERFORMANCE AND ARE TRYING TO REPLACE IT. THE ISRAELIS FOUND THE ZSU 23-4 TO BE A VERY EFFECTIVE GUN SYSTEM.

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(C) THIS CHART DEPICTS THE LETHALITY OF THOSE SAME AIR DEFENSE WEAPONS. IT SHOWS THE PROBABILITY OF AN "A-KILL" GIVEN A BURST, MEANING THE AIRCRAFT WILL BE A LOSS WITHIN FIVE MINUTES. THE SMALL CALIBER WEAPONS OBVIOUSLY HAVE MORE ROUNDS PER BURST THAN THE LARGER CALIBER WEAPONS. IN THIS CHART THE AIRCRAFT ARE FLYING STRAIGHT AND LEVEL AND DO NOT MANEUVER. WHAT IS SHOWN IS THAT THE QUAD-23 FIRES A 40 ROUND BURST FROM ITS FOUR AUTOMATIC CANNONS, AND IF IT FIRED AT AN F4 AND THE GUNNER IS USING HIS OPTICAL SIGHTS, AT A ONE KILOMETER RANGE, THE ZSU 23-4 HAS A PROBABILITY OF KILL PER BURST OF .12, THE SOVIET TWIN 57 FIRING AN EIGHT ROUND BURST HAS A .05 PROBABILITY. IF THE VULCAN IS FIRING AT A MIG21, WITH A 60 ROUND BURST AND USING IT RANGE ONLY

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RADAR, THE PROBABILITY OF KILL PER BURST AT ONE KILOMETER RANGE IS .08. THE EGYPTIAN AND SYRIAN FORCES BOTH DEPLOYED THE SAM 6, A VERY EFFECTIVE SURFACE TO AIR MISSILE SYSTEM, BACKED UP BY SAM 2 AND SAM 4. ON THE FRONT LINE THEY HAD A HAND-HELD WEAPON, THE STRELLA, NOT AS GOOD AS OUR RED EYE, BUT THEY DEPLOYED THE WEAPON IN LARGE NUMBERS.

(CHART 19)

(C) AS A CONSEQUENCE, WE CONCLUDED THAT THE DAY OF CASUAL AIR SUPPORT, WHERE A BATTALION OF AMERICAN INFANTRY OR TANKS CAN HAVE A LONG DISCUSSION WITH A FIGHTER PILOT TO POINT OUT TARGETS TO BE ENGAGED, IS A THING OF THE PAST. AS A MATTER OF FACT, THE TANK AND THE AIRCRAFT HAVE NOW JOINED THE INFANTRY IN THEIR VULNERABILITY, BUT THIS DOES NOT MEAN

THEY CANNOT BE USED. IT JUST MEANS THEY MUST BE USED JUDICIOUSLY.

THE INFANTRYMAN HAS BEEN VULNERABLE TO THE RIFLE/^{AND MACHINE GUN}FOR MANY YEARS.

HE CANNOT BE EMPLOYED ON THE BATTLEFIELD UNLESS THE WEAPONS THAT
COULD KILL HIM ARE SUPPRESSED. WE'VE LEARNED TO LIVE WITH THAT.

THE TANK CANNOT NOW MANEUVER ON THE BATTLEFIELD UNLESS THE
ENEMY WEAPONS THAT CAN KILL THE TANK ARE SUCCESSFULLY SUPPRESSED.

SO IT IS WITH THE FIGHTER, THE FIGHTER CANNOT FLY THROUGH THE
AIR OVER THE BATTLEFIELD UNLESS THE ENEMY WEAPONS THAT CAN DESTROY

HIM HAVE BEEN SUPPRESSED. AT THE BEGINNING OF THE ARAB/

ISRAELI WAR THAT LESSON WAS FORCEFULLY BROUGHT HOME TO THE

ISRAELI AIR FORCE.

(CHART 20)

(C) IT WASN'T AIR-TO-AIR COMBAT THAT CAUSED THE PROBLEM WITH

THE ISRAELI AIR FORCE. THEY RAN AGAINST A NEW PROBLEM, IN WHICH 73% OF THEIR AIR LOSSES WERE ATTRIBUTABLE TO GROUND SYSTEMS. BUT THIS IS REALLY NOT THE IMPORTANT MESSAGE TO BE DERIVED FROM THE CHART. THE IMPORTANT MESSAGE IS THAT THE ISRAELI ARMY DIDN'T GET THE CLOSE AIR SUPPORT THEY WANTED, PARTICULARLY AT THE BEGINNING OF THE WAR. IN FACT, 90% OF THE ISRAELI AIR SORTIES WERE FLOWN MORE THAN 5KM BEHIND THE AREA OF INTENSIVE AIR DEFENSE. THAT MEANS NOT MORE THAN 10% OF THE AIR SORTIES COULD HAVE BEEN, IN WHAT WE WOULD TERM, CLOSE AIR SUPPORT OF GROUND ELEMENTS IN CONTACT WITH THE ENEMY.

(CHART 21)

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(C) THERE IS ANOTHER SIDE TO THIS POINT. IT'S NOT JUST THAT THE AIR DEFENSES ARE THICK AND LETHAL, WHICH THEY ARE; IT'S ALSO THE FACT THAT AIR TO GROUND WEAPONS ARE GETTING EXTREMELY LETHAL. IF FRIENDLY AIR DEFENSE IS NOT AVAILABLE TO COVER THE TANK FORCE THOSE TANKS CAN BE DESTROYED BY FIGHTERS. FOR EXAMPLE, OUR AIR FORCE HAS SOME MAGNIFICENT PRECISION MUNITIONS. OUT OF 50 TARGETS ATTACKED BY MAVERICK, IN THE ISRAELI WAR, 42 WERE DIRECT HITS. I DON'T KNOW WHAT THE STATISTICS WOULD HAVE BEEN WITH UNGUIDED WEAPONS, BUT MY GUESS IS THAT IN ORDER TO GET 42 DIRECT HITS, THERE WOULD HAVE BEEN SOME THOUSANDS OF MISSIONS FLOWN.

(CHART 22)

(C) THE SAME IS TRUE FOR THE BOMBS. IN NORTH VIETNAM THE AIR

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FORCE TRIED FOR YEARS TO KNOCK OUT ONE BRIDGE AT THANH HOA.

AS SOON AS ^{THE} AIR FORCE DEVELOPED PRECISION MUNITIONS, THEY HIT

THE THANH HOA BRIDGE ON THEIR FIRST TIME OUT. THE FACT IS,

OUT OF 32 TARGETS STRUCK IN THE ISRAELI WAR WITH SMART BOMBS,

^{WERE} 25/DIRECT HITS. THOSE SAME RESULTS MIGHT WELL HAVE TAKEN

1,000 OR MORE SORTIES/ ^{WITH CONVENTIONAL BOMBS.} THEREFORE, WE ARE IN A NEW BALL GAME

IN THE AIR TOO. AIR WEAPONS ARE ENORMOUSLY MORE LETHAL. WE

MUST FIND WAYS TO KEEP THEM OFF OUR BACK. OUR ADVERSARIES

KNOW THIS AND ^{THAT} THEY MUST KEEP OUR MAVERICKS AND PRECISION

MUNITIONS OFF THEIR BACK. IN ORDER TO DO THIS, THEY HAVE

SIMPLY PROLIFERATED A TREMENDOUS NUMBER OF HIGHLY LETHAL

AIR DEFENSE SYSTEMS. THE ENVIRONMENT OF THE MODERN BATTLE-

FIELD IS BECOMING MORE COMPLEX, MORE LETHAL AND MORE

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INTERACTIVE THAN EVER BEFORE.

(U) IN OUR ANALYSIS OF THE LESSONS OF THE WAR, THE FIRST LESSON CLEARLY IS THE INCREASING LETHALITY OF THE BATTLEFIELD, WHICH I HAVE EXPLAINED. LETHALITY IS A PROBLEM BECAUSE OUR CONCEPT OF OPERATIONS REQUIRES US TO MOVE. AND YOU CANNOT MOVE ON THE BATTLEFIELD IN THE FACE OF THAT LETHALITY UNLESS YOU HAVE SUPPRESSED THE ENEMY'S WEAPON SYSTEMS. IN ORDER TO SUPPRESS YOU MUST USE THE ELEMENTS OF THE COMBINED ARMS TEAM. TANKS NEED INFANTRY. TANKS NEED ARTILLERY. AND TANKS NEED AIR DEFENSE.

(U) NOW LET ME GO A LITTLE FURTHER INTO THE CONCEPT OF OPERATIONS, AND I WANT TO TALK FIRST ABOUT THE DEFENSE. SINCE

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THE ANTI-TANK GUIDED MISSILES HAVE APPEARED ON THE BATTLEFIELD,
THERE HAS BEEN A VERY LIVELY DISCUSSION ABOUT THE PROPER WAY
TO CONDUCT A DEFENSE. IN ADDITION, THERE ARE THOSE WHO
FEEL THAT THE ANTI-TANK GUIDED MISSILE MAY HAVE DRIVEN THE
TANK FROM THE BATTLEFIELD. WE DON'T THINK THAT'S TRUE.

(CHART 23)

LET ME ILLUSTRATE. IN EUROPE, THE 1ST ARMORED DIVISION IS
DEPLOYED ON A FRONT WHICH IS ABOUT 60 KILOMETERS IN WIDTH,
A VERY WIDE FRONT FOR THAT SIZE FORCE. IN THAT 60 KILOMETER
ZONE THERE ARE SEVERAL HUNDRED HILL TOPS AND OTHER GEOGRAPHIC
LOCATIONS ON WHICH COMPANIES OR PLATOONS COULD BE DEPLOYED,
IN HULL DOWN ATTITUDE; TAKING FULL ADVANTAGE OF A DEFENDER'S
ABILITY TO DIMINISH HIS OWN VULNERABILITY. HOWEVER, THE
1ST ARMORED DIVISION HAS ONLY SOME 30 TO 40 COMPANY SIZE

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UNITS, WHICH EQUATES TO SOME 100 PLATOONS. THERE IS NO POSSIBLE WAY 100 PLATOONS CAN OCCUPY ALL POSITIONS IN SUFFICIENT STRENGTH TO STOP AN ATTACK. THEY MUST KNOW WHERE THE ATTACK IS COMING FROM AND CONCENTRATE FORCES AT THAT POINT. IF THE 1ST ARMORED DIVISION COMMANDER DISTRIBUTES HIS FORCE EQUALLY, INCLUDING ITS ANTI-TANK GUIDED MISSILES, THERE IS NO DOUBT THAT IT COULD DEFEAT A SMALL ATTACK. BUT THE ENEMY WILL CHANGE THAT EQUATION BY CONCENTRATING. THE ENEMY WILL COME IN GREAT STRENGTH AND IN GREAT DEPTH AT ONE PARTICULAR POINT.

(U) THE DEFENDER WHO IS OUTNUMBERED TO START WITH WILL LOSE. THE POSITION WILL BE PENETRATED. THE ENEMY WILL WIN UNLESS AT THE CRITICAL TIME AND AT THAT CRITICAL PLACE, UNITS FROM THE FLANKS OF THE 1ST ARMORED DIVISION WHICH ARE NOT ENGAGED ARE MOVED INTO THE

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MOST IMPORTANT BLOCKING POSITION. IN OTHER WORDS, THE OUTNUMBERED FORCE HAS GOT TO SEE THE BATTLEFIELD BETTER THAN THE ENEMY AND SEE IT IN SUFFICIENT TIME, SO THAT HE CAN MOVE HIS COMBAT ELEMENTS TO THE CRITICAL PLACE, AT THE CRITICAL TIME TO INSURE THAT A SUITABLE FORCE RATIO IS ACHIEVED. DURING THE BATTLE THESE POSITIONS WILL BE LOST, FOUGHT OVER, REGAINED, OCCUPIED, ABANDONED, AND RE-OCCUPIED. WHAT THAT MEANS IS THAT THE DEFENDING FORCE MUST POSSESS THE ABILITY TO MOVE. IT MUST ENGAGE IN AN ACTIVE DEFENSE OF THE SECTOR. THERE IS NO SUCH THING AS DIGGING IN AND WAITING FOR THE ENEMY TO COME TO YOU; BECAUSE IT WOULD BE A FOREGONE FAILURE.

NOW THE ANTI-TANK GUIDED MISSILE IS A VERY IMPORTANT ADDITION TO THE BATTLEFIELD. IN THE FIRST

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PLACE, INFANTRY ELEMENTS WITH ANTI-TANK GUIDED MISSILES CAN
DEFEND THEMSELVES AGAINST TANKS, BETTER THAN EVER BEFORE.

THEREFORE, TANKS CAN BE CONCENTRATED FOR THE PRIMARY AND
CRUCIAL BATTLES, BUT CANNOT BE SQUANDERED IN ROMANTIC
CAVALRY CHARGES. FURTHERMORE, WE ARE IN THE PROCESS OF PUT-
TING OUR ANTI-TANK GUIDED MISSILES ON ARMORED VEHICLES. IN
THE FUTURE, WE PLAN TO PUT THEM UNDER ARMOR, SO THAT THE
ANTI-TANK GUIDED MISSILES CAN ALSO MOVE WITH THE TANKS.

(U) ON THE MODERN BATTLEFIELD YOU NEED THE HEAVY COMBAT POWER
OF THE TANK. GUIDED MISSILES ON ARMORED CARRIERS CAN ONLY
BE FIRED WHEN THE CARRIER STOPS. THEY ARE NOT HEAVILY ARMED.

IN ADDITION TO THE ANTI-TANK GUIDED

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MISSILE ON AN ARMORED PERSONNEL CARRIER OR DISMOUNTED ON
THE GROUND, WE ARE ON THE VERGE OF DEPLOYING THE TOW ON THE
COBRA ATTACK HELICOPTER. WE ARE CONVINCED THAT THE HIGH
MOBILITY OF THE ATTACK HELICOPTER EQUIPPED WITH AN ANTI-TANK
GUIDED MISSILE SYSTEM MAY PROVE TO BE CRITICAL TO
THE EXECUTION OF THAT KIND OF AN ACTIVE AND MOBILE DEFENSE
I HAVE JUST DESCRIBED. IT MAY WELL BE THAT THE ABILITY OF
THE TOW COBRA TO MOVE ACROSS THE BATTLEFIELD AT 150 KNOTS, WILL
PROVE DECISIVE IN CONCENTRATING HEAVY COMBAT POWER AT THE
CRITICAL PLACE AND AT THE CRITICAL TIME.

BUT IN ANY EVENT, THE TANK IS JUST

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AS IMPORTANT IN THE DEFENSE AS IT IS IN THE ATTACK, BECAUSE THAT DEFENSE IS ACTIVE AND FORCES THAT ARE OUTNUMBERED MUST MOVE ON THE BATTLEFIELD TO SUCCEED. YOU CANNOT MOVE ON THE BATTLEFIELD WITHOUT TANKS.

(CHART 24)

(U) TURNING TO THE OFFENSE LET'S CONCENTRATE ON ONE TINY CORNER OF A BIG BATTLE. BY DOING SO, WE CAN ILLUSTRATE COMPLETELY THE INTERACTION OF THE COMBINED ARMS TEAM. LET US ASSUME THAT WE ARE TALKING ABOUT A TANK COMPANY. TANK COMPANIES NORMALLY HAVE THREE TANK PLATOONS. WE ARE GOING TO TAKE ONE OF THOSE OUT AND SUBSTITUTE A MECHANIZED RIFLE PLATOON, A NORMAL BATTLEFIELD PROCEDURE, BECAUSE WE NEED INFANTRY. THE COMPANY COMMANDER IS GIVEN A MISSION OF TAKING

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A BLOCKING POSITION, THE HILL AT THE LEFT TOP OF THE CHART. IN ORDER TO MOVE ACROSS THE TERRAIN, HE DECIDES TO PUT ONE OF HIS TANK PLATOONS IN A HULL DOWN POSITION ON THE HILL (LOWER LEFT) TO OVERWATCH THE TERRAIN AND TO DESTROY ANY ENEMY TANKS THAT MAY TRY TO INTERFERE WITH HIS ATTACK. DIRECTLY IN FRONT OF HIM IS A HILL (LEFT CENTER) WITH A NUMBER OF ENEMY 73MM RECOILLESS RIFLES, THE KIND THE SOVIETS BUILD. THESE WEAPONS ARE PROTECTED BY INFANTRY. FARTHER OUT IS A BIGGER HILL, THE OBJECTIVE, WHICH IS PARTLY WOODED. ON TOP OF THIS HILL THERE ARE SOME T62 TANKS. ON THE /RIGHT OF THIS SMALL BATTLE AREA IS ANOTHER BIG HILL WHERE THE ENEMY HAS SOME SAGGERS. ALONG THE BOTTOM RIGHT IS A WOOD LINE WITH SOME RPG7 AND PERHAPS OTHER SAGGERS. CENTER RIGHT IS A LITTLE TOWN AND SOME ROADS THAT GO THROUGH

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THE AREA, AS INDEED THE TERRAIN OFTEN LOOKS IN EUROPE.

(U) THE COMPANY COMMANDER DECIDES HE WILL TAKE THE OTHER TANK

PLATOON AND MOVE UP AND OCCUPY A SECOND OVERWATCHING

POSITION, THE HILL IMMEDIATELY TO HIS FRONT, BY DESTROYING

THIS PARTICULAR DEFENSE. TO GET THERE HE'S GOT SEVERAL

PROBLEMS. IF HE MOVES HIS OTHER TANK PLATOON OUT INTO THE

OPEN ANY OF THOSE ENEMY WEAPONS COULD DESTROY HIS TANKS, SO

HE MUST SUPPRESS ALL OF THE WEAPONS. THE COMPANY COMMANDER

DECIDES TO PUT ARTILLERY ON THE SAGGERS. HE ALSO KNOWS

THAT THE T62 ARE HARD TO SUPPRESS. HE WANTS TO SPRINKLE

A LITTLE HIGH EXPLOSIVE ON THEM, SO THEY BUTTON-UP AND

THEN SMOKE THEM SO THEY CAN'T SEE HIS MANEUVER. HE WILL

OR MORTARS
PUT ARTILLERY/ON THE RECOILLESS RIFLES TO KEEP THE GUNNERS

FROM THEIR WEAPONS.

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(U) WE HAVE NOW DONE WHAT WE SAID WAS IMPORTANT WITHIN OUR CONCEPT OF OPERATIONS. TO WIN YOU HAVE GOT TO MOVE. WE ARE GOING TO MOVE. BUT IF YOU MOVE IN THE FACE OF THAT LETHALITY YOU WILL LOSE UNLESS YOU SUPPRESS.

(U) IF THE COMMANDER DOES ALL OF THAT RIGHT AND IF THE AIR DEFENSES ARE UP CLOSE ENOUGH, SO THAT HIS FORCE IS NOT HIT BY ENEMY FIGHTERS, HE HAS A VERY GOOD CHANCE OF SUCCEEDING. THIS IS NEVER A COMPLETELY SUCCESSFUL OPERATION. YOU CAN'T AVOID SOME CASUALTIES ON THE BATTLEFIELD. YOU CAN'T SUPPRESS ALL THE WEAPONS.

(U) THE WOOD LINE IN THE LOWER RIGHT OFFERS SOME INTERESTING VARIATIONS. FOR EXAMPLE, THE COMMANDER MIGHT WANT THE MECHANIZED INFANTRY TO ACCOMPANY THE ADVANCING TANK PLATOON.

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IN WHICH CASE, THEY WOULD SUPPRESS THE ENEMY IN THAT WOOD LINE WHILE MOVING. IF SO, HE MUST HAVE A WEAPONS SYSTEM CAPABLE OF DOING THAT, SUCH AS THE MECHANIZED INFANTRY COMBAT VEHICLE (MICV) WITH A STABILIZED TURRET. ON THE OTHER HAND, THAT MIGHT NOT ALWAYS WORK AND HE LOSES A COUPLE OF TANKS ANYWAY.

(CHART 25)

(U) THE MECHANIZED COMBAT VEHICLES DISMOUNT THEIR INFANTRY, TAKE UP HULL DOWN POSITIONS, SUPPRESS THE ENEMY WITH A HIGH VOLUME OF FIRE, AND THE INFANTRY GOES IN WITH ITS M16 RIFLES AND HAND GRENADES. THAT IS THE HARDEST WAY TO DO IT.

(U) THIS GAME OF SUPPRESSION ONLY TILTS THINGS YOUR WAY, YOU DON'T WIN IT COMPLETELY. IT IS A CONTINUOUS RUNNING GUN FIGHT AND THE OTHER FELLOW PLAYS IT TOO. FOR EXAMPLE,

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