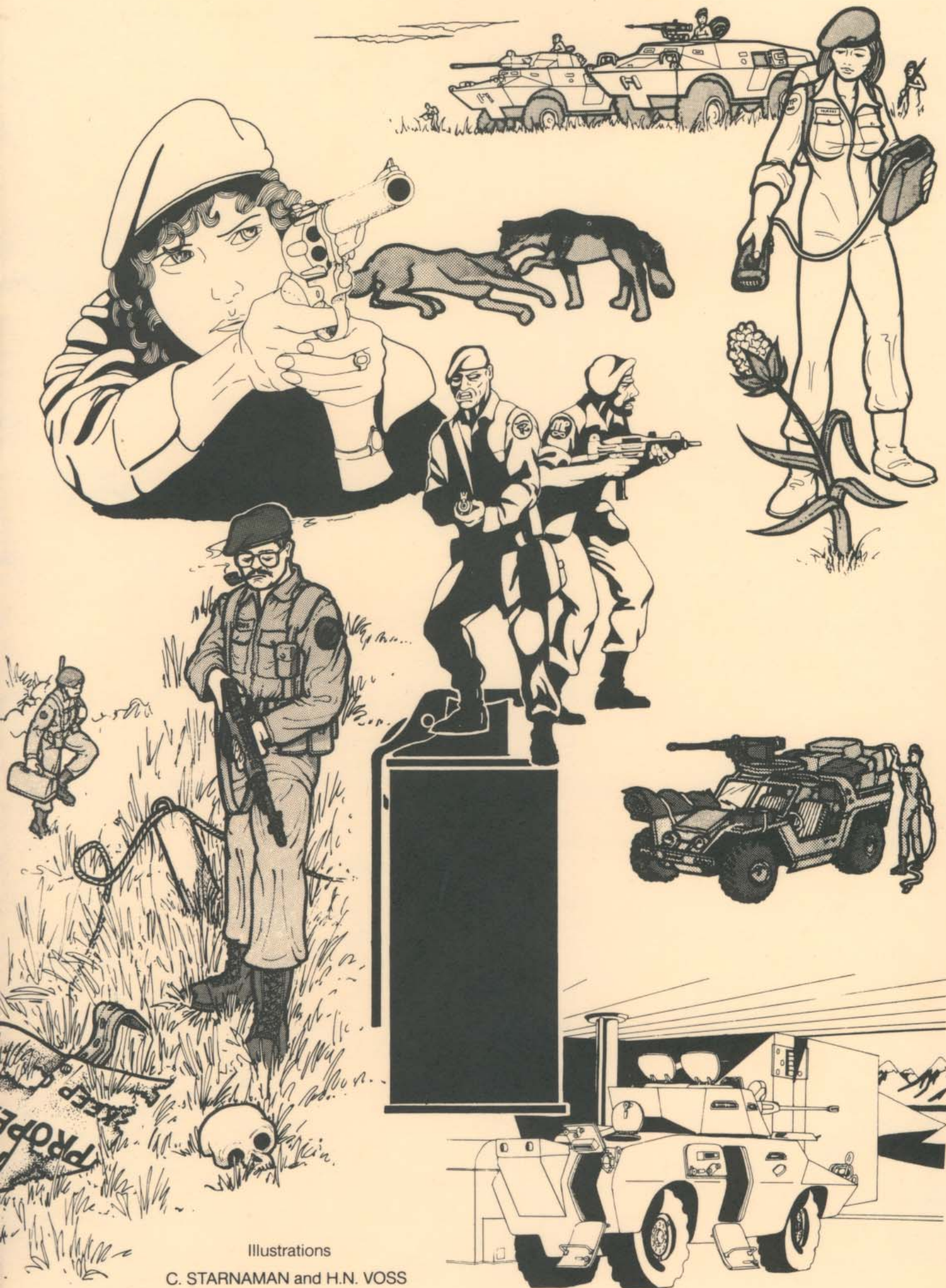


TIMELINE LTD

THE MORROW PROJECT

PROJECT DIRECTOR'S
SCREEN



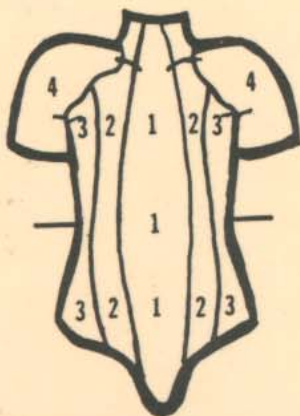


Illustrations

C. STARNAMAN and H.N. VOSS

DAMAGE, MEDICAL TABLES

TORSO CHART



DIE
ROLL
1 Upper left
2 Upper right
3 Lower left
4 Lower right

BODY PERCENTAGES

BODY PART	PERCENTAGE	DECIMAL EQUIVALENT
Torso	38%	.38
Leg (each)	19%	.19
Thigh	8%	.08
Calf	5%	.05
Foot	4%	.04
Hip Joint	1%	.01
Knee	1%	.01
Ankle	1%	.01
Arm (each)	9%	.09
Upper arm	2%	.02
Lower arm	2%	.02
Shoulder joint, Hand, Elbow and Wrist	1%	.01
Head	6%	.06

DEATH PERCENTAGES

HEAD DAMAGE

Dp	DEATH %
Dp GREATER THAN 5	90%
Dp LESS THAN OR EQUAL TO 5	75%
Dp OF 1	10%

CHANCE OF DECAPITATION

Dp	% CHANCE
Dp GREATER THAN OR EQUAL TO 10	25%

CHANCE OF UNCONSCIOUSNESS

Dp	% CHANCE
Dp GREATER THAN OR EQUAL TO 6	95%
Dp LESS THAN 6	50%

Note: Unconsciousness lasts for at least 1D20 + 20 turns, minus 1 turn for each point of constitution the character has.

TORSO DAMAGE, DEATH PERCENTAGE

ZONE	Dp LESS THAN 16	Dp 16 OR GREATER	Dp 35 OR GREATER
1	60%	90%	99%
2	40%	70%	80%
3	20%	40%	50%
4	10%	30%	40%

A strike on a limb of over 10 Dp has a 25% chance of amputation (this includes the throat). Any strike on a limb has a 16% (roll 1 on 1D6) chance of striking a major blood vessel and rupturing it.

BODY HITS ROLL 1D100

DIE ROLL	AREA HIT
1-5	Head
6	Neck
7	Right Hand
8	" Wrist
9-10	" Lower arm
11	" Elbow
12-13	" Upper arm
14	" Shoulder joint
15	Left Hand
16	" Wrist
17-18	" Lower arm
19	" Elbow
20-21	" Upper arm
22	" Shoulder joint
23-26	Right Foot
27	" Ankle
28-32	" Calf
33	" Knee
34-41	" Thigh
42	" Hip joint
43-46	Left Foot
47	" Ankle
48-52	" Calf
53	" Knee
54-61	" Thigh
62	" Hip joint
63-71	Torso Area 4
72-80	" Area 3
81-90	" Area 2
91-00	" Area 1

WOUND SHOCK

Dp	CHANCE OF UNCONSCIOUSNESS	ROLL OF 1D6 FOR UNCONSCIOUSNESS
1-4	16%	1
5 OR MORE	32%	1,2
10 OR MORE	64%	1,2,3,4

Unconsciousness lasts for 1D20 + 20 turns* minus one turn for each point of constitution the character has.

* In most cases a turn means a combat turn, GM's discretion.

Note: The wound shock table is not used in the case of a head wound.

BLOOD LOSS

SITUATION	SIMPLE WOUND	BLOOD VESSEL STRUCK OR LIMB AMPUTATION
NO ASSISTANCE	Dp x 3 turns	Dp x 5 turns
W/FIRST AID	Dp x 2 turns	Dp x 3 turns
W/MEDICAL ATTN.	Dp	Dp x 2 turns

NPC FAST KILL

HIT WITH SINGLE SHOT

DIE ROLL	EFFECT ON NPC	HIT WITH AREA WEAPON, SHOTGUN, OR AUTOMATIC WEAPON
1-2	No effect on combat.	DIE ROLL
3-4	May complete 2 actions next turn before death.	EFFECT ON NPC
5-7	May complete 1 action before death.	3-4
8-10	Immediate death.	5-10

ACCURACY, HITTING THE TARGET

#1 ACCURACY

INDIVIDUALS

ACCURACY	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
OR LESS TO HIT	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19		
OR MORE TO MISS	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20		

#2 RANGE AND VISIBILITY

Situation	Point Blank 0-10m	Short 10-50m	Range			Extreme Max. Eff. Max. Rng.
			Medium 50-250m	Long 250-		
Can See	+2	+1	Normal	-1		Luck
Can hear, Can see vaguely	+1	Normal	-1	Luck		N/E
Cannot hear, can see vaguely	Normal	-1	Luck	N/E		N/E
Cannot see, can hear	-1	Luck	N/E	N/E		N/E
Cannot see or hear	Luck	N/E	N/E	N/E		N/E

N/E-No Engagement, the target is too far away for there to be a reasonable chance to hit it. If an attempt is made anyway roll 1D100 on a 00 Luck may be used.

#3 RANGE AND WEAPON MODIFIER

Weapon	Point Blank	Short	Range		
			Medium	Long	Extreme
SHOTGUN	+4	+2	Normal	N/E	N/E
MACHINEGUN*	+2	+2	+1	+1	Normal
SUBMACHINEGUN*	+2	+1	Normal	N/E	N/E
ASSAULT RIFLE*	+2	+2	+1	Normal	Normal
SINGLE SHOT	Normal	Normal	Normal	Normal	Normal
PISTOL	Normal	Normal	Luck	N/E	N/E
TELESCOPIC SIGHT**	Normal	Normal	+2	+1	+1
MACHINE SHOTGUN*+8	+4	+1	N/E	N/E	
GUIDED MISSILE	-2	Normal	+4	+6	N/E

* = Points per short burst. Add 1 point for each multiple of the burst on one target (i.e. Medium burst = +1, Long burst = +2).

** Includes starlight scope, must be mounted on weapon. N/E - No Engagement, in this case the projectile cannot normally reach the target due to the range being too long.

#4 HEARING

Range short or less, roll 1D10, if the number rolled is in the range shown on the following chart the other party is heard.

SITUATION	TERRAIN				
	BRUSH	ROCKY	WET	SANDY	INSIDE BUILDING
Both moving	1-4	1-2	1-3	1	1-3
Their moving your not moving	1-8	1-3	1-6	1-2	1-5
Their not moving, your moving	1-2	1	1	Luck	Luck
Neither Moving	1	Luck	1	Luck	1

#5 FIRER OR TARGET MOVEMENT

SITUATION	RATE OF MOVEMENT			
	SLOW (WALK) 1-8 kph	MEDIUM (JOG) 8-16kph	QUICKLY (RUN) 16-24kph	FAST (DEAD RUN) 25-48+kph
Their moving, your not moving	0	-1	-2	-4
Your moving, their not moving	-1	2	-4	-6
Your both moving	-2	-4	-6	-8

Note: the speed given in kph is for use with vehicles.

#6 TARGET SIZE

SIZE	MODIFIER
¼ MANSIZE (Lying prone or shooting over an obstacle, firing tripod mounted heavy gun)	-4
½ MANSIZE (Kneeling or shooting through a window, standing in current of vehicle)	-2
MANSIZE	0
1½ MANSIZE	+1
2xMANSIZE	+2
2½ xMANSIZE	+3
3xMANSIZE	+4
4xMANSIZE (Most vehicles)	+5

#7 FIRING TERRAIN

TERRAIN	MODIFIER
GRASSLAND, DESERT, WATER	0
FORESTS, HEAVY BRUSH	-2
ROCKY, MOUNTAINOUS	-1
MARSH, SWAMPLAND	-1
BUILT-UP (Cities)	-2

#8 LUCK

Roll 1D20 and 1D6. On an odd roll on 1D6 (1,3,5) and if the results of the roll of 1D20 is less than the persons luck they receive a "lucky" hit on their target.

#9 AUTOMATIC FIRE

When firing a weapon on full automatic a short burst is needed for each target.* For two targets a medium burst (two short bursts) would have to be fired, and so on. Accuracy to hit must be rolled for each target. The number of bullets hitting the target is found by using the following table.

WEAPON	SHORT BURST	DIE ROLL EQUAL TO BULLETS HIT
Submachineguns, Carbines, Assault Rifles	4 rds	1D4
Light Machineguns	6 rds	1D6
Heavy Machineguns	10 rds	1D10
Machine Shotguns	4 rds	1D4 see Shotguns
Shotguns	12 "bullets" per shell	1D12 per shell
Grenade Launchers (w/ M576E2 Multiple Projectile)	20	1D20

EXPLOSIVE DAMAGE

The following table lists the whole body damage points (Dpw) caused by contact with the explosion of various items of ordnance. The Dpw go down by 100 points for each meter distance from the point of detonation.

EXPLOSIVE DAMAGE POINTS

EXPLOSIVE	Dpw	EXPLOSIVE	Dpw
M112 C-4	1300	20mm M56A1 HE	40
M183 Demolition charge	20,800	81mm M374A2 HE	1,240
Mk3A2 Grenade	295	2.75 in. Rocket	2,600
M26A1 Grenade	232	M47 Dragon	3,120
Primercord	10 (per m)	M151E2 TOW	3,120
Blasting cap	1	Stinger	2,900
M72A2 LAW, ARMBRUST			
300	533	Chapparral	13,260
40mm M381 HE	100	Maverick	76,700
40mm M433 HEDP	120	M19 AT mine	20,355
M25 AP mine	20	M18A1 Claymore mine	1,460
M16A1 AP mine	888		

ARMOR CLASS

ARMOR CLASS	CM. OF STEEL	CM. OF WOOD	CM. OF CONCRETE	CM. OF STONE	MATERIAL
A	-	-	-	-	Skin
B	-	-	-	-	Cloth (heavy)
C	-	-	-	-	Leather
1	-	2.54	.03	-	13mm light plastic
2	-	5.08	.5	-	13mm heavy plastic
3	.25	7.62	.76	-	Chain mail
4	.34	10.16	1.02	7.62	3mm Armor plate
5	.42	12.7	1.27	8.89	
6	.5	15.24	1.52	-	Nylon body armor
7	.57	17.78	1.79	-	Resistweve cloth
8	.64	20.32	-	-	6mm Fiberglass plate
9	.7	22.86	-	-	6mm Aluminium plate
10	.76	25.4	3.18	16.51	
14					Kelvar vest
15	1.02	34.29	7.62	22.86	
16	-	-	-	-	19mm Lexan
18	-	-	-	-	Fiberglass/Titanium plate
19	-	-	-	-	13mm Aluminium
20	1.27	45.72	10.16	30.48	
21	-	-	-	-	3mm Boron carbide ceramic
25	1.52	55.88	15.24	36.83	
30	1.79	66.04	19.05	43.18	
35	2.03	78.74	22.86	49.53	3mm Boron/carbon filament plate
40	-	88.9	29.21	55.88	
42	2.29	-	-	-	
45	-	99.06	34.29	60.96	
48	2.54	-	-	-	
50	-	109.22	39.37	66.04	
55	-	121.92	45.72	71.12	
60	-	129.54	50.8	76.2	
65	3.18	-	-	-	
82	3.81	-	-	-	
90	4.06	190.5	91.44	106.68	
100	4.45	-	-	-	
120	5.08	-	-	-	
160	6.35	-	-	-	
200	7.62	-	-	-	
250	8.89	-	-	-	
300	10.16	-	-	-	
350	11.43	-	-	-	
400	12.7	-	-	-	

ACTIONS

Below is given a list of several common actions and the movements required to complete them. The list is by no means complete and is intended as a guide in determining other actions and their movement requirements.

MOVEMENTS ACTIONS

1	Move
1	Mount/ Dismount
1	Draw weapon/equipment (each piece)
1	Fire weapon
1	Aim weapon (maximum accuracy)
1	Reload weapon (clip feed)
1	Holster or sheath weapon
1	Prepare explosive charge (set detonator)
1	Arm weapon (pull pin on grenade or detonator)
1	Throw weapon (grenade, knife, or explosive)
1	Prepare ammunition (arm fuse or shell)
2	Prepare disposable weapon for firing
2	Assemble weapon (attach scope, silencer, etc.)
2	Clear action (work action or clear jam)
2	Open/Close hatch or door
3	Load revolver or belt fed weapon
3	Unpack weapon or ammunition (remove from carrying container, case, or crate)
3	Aim or re-aim mortar
3	Put on protective mask (gas mask)
6	Reload missile launcher (TOW or Dragon)
30	Don or remove powered armor (HAAM Suit)

PC/NPC RELATIONS

PC/NPC REACTIONS

		PC's CHARISMA									
NPC's	0-2	3-4	5-6	7-8	9-10	11-12	13-14	15-16	17-18	19-20	
H&M											
0-2	H	H	G	G	F	F	E	E	D	D	
3-4	H	G	G	F	F	E	E	D	D	C	
5-6	G	G	F	F	E	E	D	D	C	C	
7-8	G	F	F	E	E	D	D	C	C	B	
9-10	F	F	E	E	D	D	C	C	B	B	
11-12	F	E	E	D	D	C	C	C	B	B	
13-14	E	E	D	D	C	C	C	B	B	B	
15-16	E	D	D	C	C	C	B	B	B	A	
17-18	D	D	C	C	B	B	B	B	A	A	
19-20	D	C	C	B	B	B	B	A	A	A	

RESULT DESCRIPTION OF RESULT

A	Full cooperation, will volunteer information to questions not asked, will definitely assist if asked and may volunteer.
B	Partial cooperation, will volunteer some information, will answer any question asked, may assist if asked.
C	Little cooperation, will give simple answers and volunteer nothing, will not assist, can be insulted into action.
D	No cooperation, will give neutral answers to questions, giving little or no information, provokable.
E	Mild distrust, may give false answers to questions, will not hinder but may pass on information to hostiles.
F	Distrust, will give false answers to questions if pressed, May lead into trap or openly hinder group.
G	Open dislike, will not give any answers, may attack, will attempt to hinder or even kill if possible.
H	Hostile, no time to ask questions, will attack immediately, if hopelessly outnumbered or outgunned, will try to lead into trap.

THE MORROW PROJECT^{T.M.}

GAME MASTER'S SHEILD and REFERENCE TABLES



CONTENTS

1- 11x24 inch REFERENCE SHEILD

3- 8½x11 inch PAGES OF TABLES

ALL MATERIALS ARE DESIGNED TO AID
THE GAME MASTER IN RUNNING THEIR CAMPAIGN.

RADIATION: CHARACTERISTICS AND EFFECTS

BOMB RADIATION ZONES

	SUBSURFACE BURST	SURFACE BURST	AIR BURST	HIGH AIR BURST
ZONE I	150 rad/hr	100 rad/hr	30 rad/hr	20 rad/hr
ZONE II	75 rad/hr	50 rad/hr	n/a	n/a

RADIATION EXPOSURE DOSE RATES

RADS/HR.	RADS/GAME TURN	RADS/COMBAT TURN
6000	800	4
5000	500	3.3
4000	400	2.7
3000	300	2
2000	200	1.3
1000	100	0.7
150	15	0.1
100	10	0.07
75	8	0.05
50	5	0.03
30	3	0.02
20	2	0.01

RADIATION SHEILDING

Multiply the Dose Rate times the number of turns exposed and then multiply the result times the Transmission Factor, the resultant number is the Total Dose of radiation absorbed by the character.

SHEILDING MATERIAL

	TRANSMISSION FACTOR
Vehicles	
MARS ONE, Scientific One	0.002
M60 Tank	0.04
M48A2 Tank	0.02
HAAM Suit	0.1
Commando Vehicles, SK-5	0.2
M113A1 APC, M114	0.3
1 Ton (Jeep), XR311	0.8
2 1/2 Ton Truck, Aircourt	0.6
Structures	
Multi-story Buildings	
Upper Floor	0.01
Lower Floor	0.1
Frame Buildings	
First Floor	0.6
Basement	0.1
Woods (Heavily Forested)	0.8
Underground Shelter (1m earth cover)	0.0002
Foxholes	0.1

RADIATION EXPOSURE CLASSES

CLASS	EXPOSURE	RISK
RS-0	0 Exposure.	May take normal risks.
RS-1	Greater than 0, less than or equal to 70.	Should avoid further exposure.
RS-2	Greater than 70, less than or equal to 150.	Should not risk any further exposure.
RS-3	Greater than 150.	Only in absolute emergency should any further exposure be risked.

EFFECTS OF ACUTE RADIATION DOSAGES

DOSE RANGE (IN RADS)	INCIDENCE OF VOMITING	CHARACTERISTIC SIGNS	CONVALESCENT PERIOD	DEATH RATE
0-100	None	None	None	None
101-200	5%	Blood Change (-1 Const.)	2 Weeks	None
201-600	100%	Blood Change (-2 Const.) Hemorrhaging (-50 Bp)	1-12 Months (1D12)	200rad-20% 400rad-50% 600rad-80%
601-1000	100%	Same as above.	1-12 Months (1D12)	800rad-90%
1001-6000*	100%	Same as above + Diarrhea and Fever (-4 Const., -75 Bp)	4-48 Months (4D12)	1000rad-99% 99%
10,000	100%	Convulsions	None	Death within 20 minutes.

BIOLOGICAL WARFARE AGENTS

DIE ROLL	AGENT	INCUBATION TIME	% OF DEATHS	LENGTH OF ILLNESS	SYMPTOMS
1-2	Lugo Fatigue	2-5 Days	10%	3 Months	Incapacitating, sores in nose and throat.
3-4	Septemher Fever	1-3 Days	3%	10 Days	High fever, aches, vomiting, exhaustion.
5-6	Toledo	1-3 Days	90%	n/a	High fever, swollen glands, coughing, open sores on skin.

The average infectiousness of these biological agents is 75%.

MOVEMENTS

DEXTERITY

DEXTERITY	MOVEMENTS
0-4	1
5-8	2
9-13	3
14-18	4
19-20	5

Movements are per Combat Turn and are not used during normal game time.

TRAVEL MOVEMENT

FOOT MOVEMENT RATES

(meters per Game Turn)	ROADS	CROSS COUNTRY	SWAMPS OR MOUNTAINS	WATER
RATES				
Normal	800/534	400/267	200/134	270*
Double time*	1600/1068	800/534	400/267	405**
Searching	400/267	200/134	100/67	n/a
Movement under cover	200/134	100/67	50/34	n/a
Running**	2400/1602	1600/1068	n/a	n/a
(meters per Combat Turn)				
Normal	5/4	3/2	1/1	2
Double time*	11/7	5/4	2/2	3
Searching	3/2	1/1	1/1	n/a
Movement under cover	1/1	1/1	1/1	n/a
Running**	16/11	11/7	n/a	n/a

VEHICULAR MOVEMENT RATES

(meters per Game Turn)	ROADS	TRAILS	CROSS COUNTRY	SWAMPS OR MOUNTAINS	WATER
RATES					
WHEELED					
Normal	4000/4000	3000/3000	1200/800	800/400	500
Blackout	1800	1200	800	400	n/a
Searching	2000/2000	1500/750	1000/1000	500/500	n/a
Cover and movement	1000/1000	750/750	500/500	250/250	n/a
(meters per Combat Turn)					
Normal	27/27	20/20	8/5	4/3	3
Blackout	11	8	5	3	n/a
Searching	13/13	10/5	7/7	3/3	n/a
Cover and movement	7/7	5/5	3/3	2/2	n/a

(meters per Game Turn)

RATES TRACKED	ROADS	TRAILS	CROSS COUNTRY	SWAMPS OR MOUNTAINS	WATER
Normal	2400/2400	1800/1800	1600/800	800/400	500
Blackout	1800	1200	800	400	n/a
Searching	1600/1600	1200/1200	800/800	400/400	n/a
Cover and movement	1000/1000	750/750	500/500	250/250	n/a

(meters per Combat Turn)

RATES TRACKED	ROADS	TRAILS	CROSS COUNTRY	SWAMPS OR MOUNTAINS	WATER
Normal	16/16	12/12	11/5	5/3	3
Blackout	11	8	5	3	n/a
Searching	11/11	8/8	5/5	3/3	n/a
Cover and movement	5/5	4/4	3/3	1/1	n/a

* Uses 3 times the Endurance points

** Uses 6 times the Endurance points

*** Amphibious vehicles only

Note: Vehicles running at night with no headlights or vision devices move at 1/2 the Blackout rate.

In the tables the first number given refers to the daylight movement rate and the second number refers to movement at night without lights or vision devices. Vehicles normally move at night with headlights on.

NON-HUMAN MOVEMENT RATES

Biped animals move at twice the human Foot Rate.
Quadruped animals move at four times the human Foot Rate.
Animals who normally live in any of the specialized terrains (i.e. Swamps or Mountains) would use the Cross Country rate of travel for moving through their normal environment.

ENDURANCE

- 1 Point for each turn that the character plays in.
- 2 Points for each turn the character is moving Double time or swimming.
- 6 Points for each turn the character is running or swimming Double time.
- +2 Points for each turn the character is resting (sitting) in.
- +4 Points for each turn the character is asleep.
- +5 Points for sitting and eating a meal (only given once in 4 hours).
- +50 Points for each Stimulant injection.

GRENADE EFFECTS (CONT.)

GAS EFFECTS

CN-DM Gas, -10 points Accuracy, -6 points Strength, -6 points Dext., effects last for up to 1 hour (1DM) Game Turns) after exposure.

CS Gas, -5 points Accuracy, -2 points Strength, -4 points Dexterity, effects last for 15 minutes (1½ Game Turns).

BZ Gas, Accuracy = 0, -10 points Strength, -15 points Dexterity, effects last for 6 hours.

GRENADE OPTIONS

1. Anyone with a Dexterity of 4 or less has a 10% chance of dropping a grenade when they try to throw it. They may, of course, immediately try to pick up the grenade and throw it, but they are unable to aim properly at the target. Roll 1d6 the characters Accuracy.

2. A saving throw for a Morrow Project grenade or a fresh grenade needs a 00 on 1D100. If the 00 is made the grenade duds and fails to function. Very old or crudely made grenades have a 50% chance of failing to function.

USE OF EXPLOSIVES

The most common explosive in the Morrow Project is Composition 4, better known as plastic explosive or C-4. Almost all explosives need an explosion to set them off. This is most often done with a blasting cap or primercord. Black Powder or Primercord may be set off with a flame from a fuse. Primercord may also be set off by impact from bullets. C-4 cannot be set off (detonated) by fire, impact or electricity.

The explosive amount given in the following table will blast a man-sized hole (1.5m square) through the thickness of material listed.

BREACHING CHARGES

THICKNESS OF MATERIAL	C-4 NEEDED FOR CONCRETE		C-4 NEEDED FOR ROCK	
	WT.	# OF M112 BLOCKS	WT.	# OF M112 BLOCKS
.5m or less	3.5kg	6	1.75kg	3
.6m	4.8kg	8	2.4kg	4
.8m	9.2kg	17	4.8kg	9
.9m	13.2kg	24	6.8kg	12
1.1m	21kg	38	10.5kg	19
1.2m	31.5kg	56	15.75kg	28
1.4m	44.7kg	80	22.35kg	40
1.5m	48.1kg	86	24.05kg	43

A single block (M112) of C-4 will blast a man-sized hole through a normal wooden wall (less than 12cm thick).

To calculate the weight needed of some other explosive besides C-4 the following table is used.

RELATIVE EFFECTIVENESS (RE)

EXPLOSIVE	RE	EXPLOSIVE	RE
PETN (Primercorn)	1.24	Picric Acid	0.70
Nitroglycerine	1.12	Gun cotton	0.69
C-4 or C-3	1.00	Dynamite (60%)	0.62
Tetryl	0.93	Nitrostarch	0.60
Amatol	0.87	Dynamite (40%)	0.49
RDX	0.85	Black Powder	0.41
TNT	0.75	Ammonium Nitrate	0.31

To use the table, find the RE of the explosive you want to use and divide the weight of C-4 needed by this number. This gives you the weight of explosive you would need to do the job.

E-FACTOR

The E-factor accounts for a projectile's ability to penetrate armor and inflict damage. The E-factor is calculated by multiplying the projectile's diameter (in thousandths of an inch) times the speed it travels at launch (in feet per second). The result is divided by 50 and rounded off to the nearest whole number. This number is the E-factor. The formula is as follows:

$$\frac{\text{Dia.} \times \text{V}}{50} = \text{E}$$

Where- Dia. = Projectile diameter
V = Velocity at launch (muzzle vel)
E = E-factor

The amount of damage caused by a projectile is found by subtracting the armor class of the target from the E-factor of the projectile. Any remaining E-factor points are the Damage points (Dp) taken by the target. If there are no E-factor points left, there was no penetration of the target's armor and hence no damage.

Note: The E-factor formula is not used for weapons which penetrate armor through the use of explosives or other energy. The E-factor for these weapons is found by finding the amount of material the weapon will penetrate and taking the armor class of this amount of material as the E-factor of the weapon.

E-FACTORS, MISCELLANEOUS CARTRIDGES

CARTRIDGE	E-FACTOR
.25 Automatic	4
.30 Luger	8
.32 Long Colt	5
.44-40 Winchester (pistol)	9
.22 Long Rifle	6
.22 Hornet	12
.250 Savage	16
.270 Winchester	18
7mm Remington Magnum	19
30-30 Winchester	15
30-40 Krag	15
300 Savage	15
300 Winchester Magnum	19
.375 Holland & Holland	20
.444 Marlin	20
.458 Winchester Magnum	20
.460 Weatherby Magnum	25
.600 Nitro Express	23

ARMOR CLASS

ARMOR CLASS	MOD. ARMOR CLASS	CM. OF STEEL	CM. OF WOOD	CM. OF CONCRETE	CM. OF STONE	MATERIAL
A	0	-	-	-	-	Skin (human)
B	1	-	-	-	-	Cloth (heavy)
C	3	-	-	-	-	Leather
1	6	-	2.54	.03	-	13mm light plastic
2	12	-	5.08	.5	-	13mm heavy plastic
3	13	.25	7.62	.76	-	Chain mail (normal)
4	14	.34	10.16	1.02	7.62	3mm armor plate
5	15	.42	12.7	1.27	8.89	
6	16	.5	15.24	1.52	-	Nylon body armor
7	17	.57	17.78	1.79	-	Resistweave cloth
8	18	.64	20.32	-	-	6mm fiberglass plate
9	19	.7	22.86	-	-	6mm aluminium plate
10	20	.76	25.4	3.18	16.51	
14	24	-	-	-	-	Kelvar armor vest
15	25	1.02	34.29	7.62	22.86	
16	26	-	-	-	-	19mm Lexan plastic
18	28	-	-	-	-	Fiberglass/Titanium plate (4mm)
19	29	-	-	-	-	13mm aluminium
20	30	1.27	45.72	10.16	30.48	
21	31	-	-	-	-	3mm boron carbide plate
25	35	1.52	55.88	15.24	36.83	
30	40	1.79	66.04	19.05	43.18	
35	45	2.03	78.74	22.86	49.53	3mm Boron carbide/Carbon filament plate
40	50	-	88.9	29.21	55.88	
42	52	2.29	-	-	-	
45	55	-	99.06	34.29	60.96	
48	58	2.54	-	-	-	
50	60	-	109.22	39.37	66.04	
55	65	-	121.92	45.72	71.12	
60	70	-	129.54	50.8	76.2	
65	75	3.18	-	-	-	
82	92	3.81	-	-	-	
90	100	4.06	190.5	91.44	106.68	
100	110	4.45	-	-	-	
120	130	5.08	-	-	-	
160	170	6.35	-	-	-	
200	210	7.62	-	-	-	
250	-	8.89	-	-	-	
300	-	10.16	-	-	-	
350	-	11.43	-	-	-	
400	-	12.7	-	-	-	Bow armor M60 tank
450	-	13.97	-	-	-	
500	-	15.24	-	-	-	
560	-	16.51	-	-	-	
620	-	17.78	-	-	-	HAAM suit armor class
680	-	19.05	-	-	-	
740	-	20.32	-	-	-	
800	-	21.59	-	-	-	
860	-	22.86	-	-	-	
920	-	24.13	-	-	-	
1000	-	25.4	-	-	-	
1010	-	27.94	-	-	-	
1025	-	30.48	-	-	-	
1040	-	33.02	-	-	-	
1055	-	35.56	-	-	-	
1070	-	38.1	-	-	-	
1080	-	40.64	-	-	-	
1095	-	43.18	-	-	-	
1125	-	45.72	-	-	-	
1130	-	48.26	-	-	-	
1150	-	50.8	-	-	-	
1160	-	53.34	-	-	-	
1175	-	55.88	-	-	-	
1190	-	58.42	-	-	-	Penetration of TOW

WEAPONS DATA

	CAL.	E FAC.	WT.	EFF. RNG.	MAX. RNG.	RATE OF FIRE	FEED DEVICE	DEV. WT.	ADDITIONAL COMMENTS
PISTOLS									
Browning HP-25*	9x19mm	9	.88kg	45m	2012m	40 rpm	13rd mag.	.2kg	
S&W M27-34*	.357 Mag.	10	1.238kg	75m	2150m	24 rpm	6rd cyl.	n/a	
S&W M29-64*	.44 Mag.	13	1.35kg	150m	2290m	24 rpm	6rd cyl.	n/a	
Colt Peacemaker	.45 Colt	8	1.02kg	50m	-	18 rpm	6rd cyl.	n/a	
Colt M1911A1	.45 ACP	8	1.13kg	50m	-	35 rpm	7rd mag.	.23kg	
P-08 Luger	9x19mm	9	.89kg	50m	2012m	32 rpm	8rd mag.	.198kg	
P-38 Walther	9x19mm	9	.772kg	50m	2012m	32 rpm	8rd mag.	.188kg	
M1951 Beretta	9x19mm	9	.87kg	50m	2012m	32 rpm	8rd mag.	-	
Colt Police .38	.38 Spec.	7	1.02kg	50m	-	24 rpm	6rd cyl.	n/a	
M1896 Mauser	7.62x25mm	9	1.22kg	50m	-	30 rpm	10rd clip	-	
.44 Automag	.44 A MAG.	14	1.5kg	200m	-	35 rpm	7rd mag.	-	
Gyrojet Mk II	12mm	9	.420kg	75m	2000m	21 rpm	7rd clip	n/a	Fires underwater (1/2 Rng.).
.44 New Model Army	.44BP	9	1.02kg	30m	-	12 rpm	6rd cyl.	n/a	Percussion, black powder revolver.
.54 Flintlock	.54BP	8	1.25kg	10m	-	6 rpm	1 shot	n/a	Black powder flintlock.
SUBMACHINEGUNS									
Ingram M10*	9x19mm	9	2.84kg	100m	2012m	40/96 rpm	32rd mag.	.62kg	Issued with silencer
UZI*	9x19mm	9	3.6kg	200m	2012m	64/128 rpm	32rd mag.	.62kg	
American 180	.22LR	6	3.9kg	150m	-	354/708 rpm	177rd drum	.6kg	Issued with Laser-Loc sight for aiming.
Thompson M1928A1	.45 ACP	8	4.9kg	200m	1600m	100/200 rpm	50rd drum	2.23kg	
Schmesser MP40	9x19mm	9	4.03kg	200m	2012m	120 rpm	32rd mag.	.67kg	
M3A1 Greasgun	.45 ACP	8	3.47kg	200m	1550m	120 rpm	30rd mag.	.98kg	
Bushmaster	5.56x45mm	13	2.38kg	150m	-	60/120 rpm	30rd mag.	.45kg	Uses M16A1 rifle magazine.
Sterling L2A3	9x19mm	9	2.72kg	200m	2012m	40/102 rpm	34rd mag.	.75kg	
STEN Mk II	9x19mm	9	2.8kg	200m	2012m	40/128 rpm	32rd mag.	.64kg	
Walther MP-K	9x19mm	9	2.8kg	200m	2012m	40/96 rpm	32rd mag.	.62kg	Uses Ingram M10 magazine.
Stechkin	9x18mm	8	1.03kg	50m	-	40/80 rpm	20rd mag.	.20kg	May be fitted with shoulder stock.
Mauser Schnellfeuer	7.62x25mm	9	1.2kg	50m	-	40/80 rpm	20rd mag.	1.66kg	May be fitted with shoulder stock.
S&W M76	9x19mm	9	3.28kg	200m	2012m	72/144 rpm	36rd mag.	.68kg	
Vz-61 Skorpion	7.63x17mm	7	1.59kg	50m	-	40/80 rpm	20rd mag.	.41kg	Issued with silencer.
RIFLES									
Stoner M23*	5.56x45mm	14	3.7kg	300m	2600m	40/94 rpm	30rd mag.	.455kg	
Stoner M22*	5.56x45mm	15	3.7kg	400m	2653m	40/94 rpm	30rd mag.	.455kg	
M21 (M14)*	7.62x51mm	17	5.3kg	1000m	3725m	40 rpm	20rd mag.	.68kg	Issued with scope and silencer.
M16A1*	5.56x45mm	15	3.18kg	400m	2653m	45/150 rpm	30rd mag.	.455kg	
FN-FAL	7.62x51mm	17	4.25kg	650m	3725m	60/120 rpm	20rd mag.	.73kg	
Galil	5.56x45mm	15	3.9kg	600m	2653m	40/105 rpm	35rd mag.	.71kg	Built-in wirecutter and bottle opener.
AK-47	7.62x39mm	15	4.3kg	300m	2200m	40/100 rpm	30rd mag.	.827kg	
KAR-98	7.92x57mm	19	3.89kg	600m	-	15 rpm	5rd clip	n/a	
M1 Garand	7.62x63mm	18	4.3kg	600m	3155m	30 rpm	8rd clip	n/a	
M1 Carbine	7.62x33mm	12	2.286kg	300m	2100m	40 rpm	15rd mag.	1.25kg	
.45 Springfield	.45-70	12	4.5kg	400m	3200m	25 rpm	1 shot	n/a	"Trapdoor" rifle model.
.50 Hawkins	.50BP	11	4.07kg	70m	1200m	10 rpm	1 shot	n/a	Black powder percussion rifle.
.69 Musket	.69BP	8	5.03kg	50m	200m	12 rpm	1 shot	n/a	Black powder smoothbore flintlock.
MACHINEGUNS									
Stoner Mk 23*	5.56x45mm	14	4.5kg	700m	2650m	150 rpm	150rd belt	1.95kg	
Stoner M207*	5.56x45mm	15	5.4kg	800m	2650m	150 rpm	150rd belt	1.95kg	
M60*	7.62x51mm	17	10.51kg	1200m	3100m	200 rpm	100rd belt	2.94kg	Tripod wt. 6.35kg (M122).
MAG-58*	7.62x51mm	17	10.85kg	1200m	3100m	250 rpm	100rd belt	2.94kg	Fits on M122 tripod.
M55C*	12.7x99mm	30	30.6kg	1000m	6660m	70/150 rpm	105rd belt	13.05kg	Tripod wt. 19.35kg.
M2HB*	12.7x99mm	30	38.1kg	1300m	6660m	70/150 rpm	105rd belt	13.05kg	Tripod wt. 19.35kg.
Rh 202*	20mm	57	81.5kg	2000m	7000m	70/100 rpm	100rd belt	41.7kg	Mounted in vehicles.
MG-42	7.92x57mm	16	11.8kg	800m	-	250 rpm	50rd belt	-	
Browning M1919A4	7.62x63mm	18	14.06kg	1000m	3155m	120 rpm	250rd belt	-	Fits on M122 tripod.
BAR M1918A2	7.62x63mm	16	8.82mm	600m	3155m	100 rpm	20rd mag.	.68kg	
BREN Mk II	.303 Mk 7	16	10.52kg	600m	3000m	40/120 rpm	30rd mag.	1.25kg	
MISCELLANEOUS									
M10A*	12 Ga.	8	3.6kg	90m	510m	25 rpm	5rd mag	n/a	Has flashlight built-in for aiming.
Atchafson*	12 Ga.	8	5.2kg	90m	510m	45/90 rpm	20rd drum	1.8kg	
M79*	40mm	**	2.72kg	350m	400m	15 rpm	1 shot	n/a	
M203*	40mm	**	1.36kg	350m	400m	15 rpm	1 shot	n/a	Used when mounted on M16A1 rifle only.
M174E3*	40mm	**	7.25kg	400m	400m	40/90 rpm	12rd mag.	4.5kg	Fires HE & HEDP, mounts on M122 tripod.
HK69A1*	40mm	**	1.8kg	350m	400m	15 rpm	1 shot	n/a	Fits in holster, has folding stock.
HAFLA-35L	35mm	n/a	.625kg	70m	70m	n/a	1 shot	n/a	Disposable, burns at 1300°C for 120 sec
M9A1-7*	n/a	n/a	11.8kg	55m	55m	5 rpm	4 1/2 gal tank	10.9kg	1 shot burns at 1200°C for 120 sec
M29A1 Mortar*	81mm	**	40.48kg	4595m	4595m	6 rpm	1 shot	n/a	Crew-served, smooth bore cannon.
Remington 870P	12 Ga.	8	3.2kg	90m	510m	24 rpm	8rd mag.	n/a	Pump-action riot shotgun.
ROCKETS									
M72A2 LAW*	WT.	E FAC.	MIN. RNG.	EFF. RNG.	MAX. RNG.	BURST RADIUS	ADDITIONAL COMMENTS		
ARMORUST 300*	2.37kg	1010	50m	350m	1000m	5m	Disposable, 25m backblast.		
M202A1*	6.3kg	1025	30m	300m	1000m	5m	Disposable, flashless, noiseless, .8m backblast.		
M47 Dragon*	5.175kg	n/a	20m	750m	750m	15m	4rd clip (wt. 6.75kg), burns at 1000°C. for 40 seconds.		
TOW*	14.6kg	1190	65m	3000m	3000m	10m	Wire-guided missile.		
Stinger*	78.5kg	1190	65m	3750m	3750m	10m	Wire-guided missile.		
3.5in. M20 Bazooka	13.4kg	n/a	300m	4800m	4800m	20m	Infra-red, heat-seeking anti-aircraft missile.		
RPG-7v	5.89kg	1010	5m	300m	920m	10m			
	7kg	1030	30m	300m	920m	5m			
GRENADES									
M26A1 Frag*	.448kg	40m	4 sec.	15m	Fragments E-factor = 4.				
M34WP*	.756kg	30m	4 sec.	35m	Burns at 2700° C. for 60 seconds.				
M6, CN-DW*	.476kg	35m	2 sec.	n/a	Tear/Vomit gas, burns for 60 seconds.				
AN-M8, HC*	.672kg	30m	2 sec.	n/a	Smoke grenade, burns for 120 seconds.				
M7A2, CS*	.434kg	40m	2 sec.	n/a	Tear gas, burns for 60 seconds.				
M9A1, BZ*	.45kg	40m	2 sec.	n/a	Hallucinogenic gas, burns for 60 seconds.				
AN-M14, TH3*	.896kg	25m	2 sec.	2m	burns at 2200°C. for 40 seconds. Will burn through 1 cm armor steel.				
Mk3A2, HE*	.437kg	40m	4 sec.	2m	.226kg of TNT.				
Mk I, Illum.*	.28kg	40m	7 sec.	n/a	Illuminates a 200m area for 25 seconds.				
Mk II, "Pineapple"	.596kg	30m	4 sec.	10m	Fragments E-factor = 4.				
AMMUNITION (LARGE)									
	WT.	MIN. RNG.	EFF. RNG.	MAX. RNG.	E FAC.	BURST RADIUS	EFFECTS		
40mm M381, HE*	.226kg	30m	350m	400m	n/a	5m	Fragmentation E-factor = 4.		
40mm M433, HEDP*	.226kg	30m	350m	400m	120	5m	Fragmentation E-factor = 4, will penetrate 5cm of steel.		
40mm M651, CS*	.308kg	30m	200m	400m	2	n/a	Tear gas, burns for 30 seconds filling a 2.5x4.5x2m room.		
40mm M576E2, Buckshot*	.226kg	0m	35m	50m	4	n/a	Fires 20 00 buckshot E-factor = 4.		
40mm M583, Flare*	.226kg	n/a	200m	200m	n/a	n/a	Illuminates a 400m circle for 40 seconds.		
40mm Star Cluster*	.226kg	n/a	200m	200m	n/a	n/a	Fires 5 green (M663), red (M664), or white (M585) "stars".		
40mm Stunbag*	.226kg	0m	50m	70m	n/a	n/a	Fires a 15cm "beanbag" which stuns inflicting 1D6 damage.		
81mm M374A2, HE*	4.23kg	72m	4595m	4595m	85	34m	Fragmentation E-factor = 8.		
81mm M375A4, WP*	4.23kg	72m	4737m	4737m	n/a	20m	Burns at 2700° C. for 120 seconds.		
81mm M301A3, Illum.*	4.89kg	100m	3150m	3150m	n/a	n/a	Illuminates a 1200m circle for 75 seconds.		
3.5 in. M28A2, HEAT	4.08kg	5m	275m	945m	1010	10m	Armor piercing, E-factor = 4 for fragments.		
3.5 in. M30, WP	4.06kg	5m	275m	945m	n/a	20m	Burns at 2700° C. for 120 seconds.		

* Morrow Project Issue

** Dependent on Ammunition

MEDICAL TABLES

BLOOD TYPES

DIE ROLL (1D20)	BLOOD TYPE
1-8	O
9-16	A
17-19	B
20	AB
	Rh FACTOR
1-17	+ (Positive)
18-20	- (Negative)

BLOOD TRANSFUSIONS

DONOR	O+	O-	A+	A-	B+	B-	AB+	AB-
O+	+	+	+	+	+	+	+	+
O-	+	+	+	+	+	+	+	+
A+	-	-	+	+	-	-	+	+
A-	-	-	+	+	-	-	+	+
B+	-	-	-	-	+	+	+	+
B-	-	-	-	-	+	+	+	+
AB+	-	-	-	-	-	-	+	+
AB-	-	-	-	-	-	-	+	+

+ = Transfusion possible
 - = Transfusion impossible
 ++ = Transfusion possible but may be given only once.

HEALING

Given total rest the body's structure points are replaced at a rate of 1 point per day (game time). Blood points are replaced at a rate of 2 points per day. If a joint was damaged it has a 75% chance of healing normally. If the joint was destroyed (Dp was more than the joints Sp) or does not heal normally the character loses 2 Dexterity points per joint destroyed.

MULTIPLE HITS DAMAGE

The amount of damage received from a multiple hit is equal to the E-factor of the weapon (minus the target's armor class) times the number of hits. When determining the blood loss or death percentages, treat the multiple wounds as one and use the total Dp. The death percentage is taken from the Torso, Area 3, except when the head is involved in which case the head's death percentage is used.

WHOLE BODY DAMAGE

Sp RANGE	10%	20%	30%	40%	50%	60%	70%	80%	90%	99%
100-150	50	55	60	65	70	75	80	85	90	95+
151-200	75	83	91	99	107	115	123	131	139	147+
201-250	100	110	120	130	140	150	160	170	180	190+
251-300	137	149	161	173	185	197	209	221	233	245+
301-350	150	165	180	195	210	225	240	255	270	285+
351-400	175	192	209	226	243	260	277	294	311	328+
401-450	200	220	240	260	280	300	320	340	360	380+
451-500	225	247	269	291	313	335	357	379	401	423+

Dpw REQUIRED

ELECTRIC SHOCK DAMAGE

VOLTS	Dpw	VOLTS	Dpw
50	50	440	268
75	78	800	346
110	106	1,000	425
150	134	2,000	600
200	162	5,000	800
220	190	10,000	1,000

BURN DAMAGE

	F*	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
100	0	0	1	1	1	1	2	4	6	8	10	20	40	80	160	320
200	0	1	1	1	1	2	4	6	8	10	20	40	80	160	320	500+
T 400	1	1	1	1	2	4	6	8	10	20	40	80	160	320	500+	
E 600	1	1	2	4	6	8	14	20	40	80	160	320	500+			
M 800	1	1	2	4	6	8	14	20	40	80	160	320	500+			
P 1000	1	2	4	6	8	14	20	40	80	160	320	500+				
E 1200	2	4	6	8	14	20	40	80	160	320	500+					
R 1400	4	6	8	14	20	40	80	160	320	500+						
A 1600	6	8	14	20	40	80	160	320	500+							
T 1800	8	14	20	40	80	160	320	500+								
U 2000	14	20	40	80	160	320	500+									
R 2200	20	40	80	160	320	500+										
E 2400	40	80	160	320	500+											
2800	80	160	320	500+												
C 2800	160	320	500+													
3000	320	500+														
3200	500+															

* Flash, momentary exposure while moving of less than one second.

BURN SEVERITY

1st DEGREE	8-14 Dp
2nd DEGREE	21-40 Dp
3rd DEGREE	80 Dp or more

BURN RESULTS

1st DEGREE	No loss of Strength or Dexterity, normal healing.
2nd DEGREE	Loss of 1 point Strength, 2 points Dexterity, normal healing.
3rd DEGREE	Loss of 4 points Strength, 8 points Dexterity for every 20 Dp above 80, 1/2 normal healing rate.

DEATH PERCENTAGE (OPTIONAL)

1st DEGREE	0%
2nd DEGREE	10%
3rd DEGREE	20% (add 10% for each additional 20 Dp above 80)

POISONS

POISON VIRULENCE TYPES

TYPE	POISON
A	Most poisonous insects, lesser poisonous spiders and snakes such as tarantulas, copperheads, etc.
B	Poisonous snakes and spiders such as rattlesnakes, coral snakes, moccasins, black widow and brown recluse spiders, banana spiders, and most plant poisons.
C	Giant snakes and spiders, mineral poisons such as cyanide, arsenic, strychnine, mercury, etc.
D	Nerve agents, mutant poisonous animals.

POISON DEATH PERCENTAGES

CONSTITUTION	A	B	C	D
0-1	35%	45%	70%	99%
2-3	30%	40%	70%	95%
4	30%	40%	65%	90%
5	25%	35%	60%	90%
6	25%	35%	60%	80%
7-8	25%	35%	55%	80%
9-11	20%	30%	50%	75%
12	20%	30%	45%	70%
13	15%	25%	45%	70%
14-15	15%	25%	40%	65%
16-17	10%	20%	30%	55%
18	5%	15%	30%	55%
19	5%	15%	30%	55%
20	1%	15%	30%	50%

COMBAT TABLES

HAND-TO-HAND (UNARMED) COMBAT

The strikes (blows or kicks) an individual may attempt during a Combat Turn is equal to their movement allowance.

HAND-TO-HAND DAMAGE

Hand, elbow, and knee strike	Dp = 1/2 St.
Kick, edge of hand strike (requires training)	Dp = 1/2 St.
Claws and teeth (bite)	Dp = 1/2 St.

In a face-to-face confrontation, the character with the highest Dexterity strikes first. If both characters have equal Dexterity roll 1D6 for both and the one with the highest roll strikes first.

In the case of an ambush, the initial blow takes effect. After the first blow has been determined, combat resumes as normal with the highest Dexterity striking first (if he is able).

The characters Accuracy is used to determine the success or failure of a strike or block. Roll 1D20, if the number rolled was LESS than the characters Accuracy their attempt was successful. If the number rolled is EQUAL to or MORE than the characters Accuracy, their attempt failed. If a character throws a strike that a subsequent block stops there is no damage taken.

The Dp of a blow is found by subtracting the armor class of the character struck (Modified Armor Class) from the Dp of the blow. The medical tables are used to find the point of impact of the characters strike if the player did not earlier state an aiming point.

HEAD STRIKE DEATH AND UNCONSCIOUSNESS PERCENTAGES

STRIKE AT HEAD Dp	% CHANCE OF DEATH	% CHANCE OF UNCONSCIOUSNESS
1-5	20%	30%
6-10	30%	40%
11-15	40%	50%
16-20	50%	60%
21-25	60%	70%
26-30	70%	80%
31-35	80%	90%
36-40	90%	99%
41 and up	99%	99%

Unconsciousness lasts for 1D20 + 20 turns, minus one turn for each point of Constitution the character has. A successful strike on the groin, throat, or head gives the initiative to the other player for the next turn.

Note: The use of teeth and claws as well as blows can be used for both human and non-human combat.

BLUNT WEAPONS COMBAT

The damage resulting from blunt weapons is based on 1/2 of the character's Strength added to the factor of the weapon used.

Striking is determined the same as for hand-to-hand combat with the following addition. If the weapons factor of the attacking weapon is greater than the weapons factor of the blocking weapon, a block is not totally complete but only 1/2 of the attacking Dp are received.

WEAPON FACTORS, BLUNT WEAPONS

FACTOR	WEAPON
0	Stick Light (.5 kilo or less) thrown object
+2	Small rock Blackjack Brass Knuckles Pistol (empty) Bottle
+4	Club Baseball bat Rifle butt Quarterstaff Heavy (.6 kilo or more) thrown object
+5	Pipe (metal, .75m or longer) Large rock (1 kilo or heavier) Crowbar
+6	Sledgehammer Mace

The medical tables are used the same as for hand-to-hand combat.

COMBAT TABLES (CONT.)

EDGED WEAPONS

The damage taken from edged weapons is found by taking $\frac{1}{2}$ of the characters Strength and adding the weapons factor of the weapon used.

WEAPON FACTORS, EDGED WEAPONS

FACTOR	WEAPON
+1	(will not penetrate armor class C) Small throwing or regular knife (under 12cm blade) Butcher knife Broken bottle Straight razor
+2	Throwing or combat knife (larger than 12cm blade) Dagger Bayonet (KCB-70)
+4	Machete (regular) Hatchet Cleaver
+5	Machete (large) Saber Broadsword
+6	Ax Pickax Spear Shovel (large)

EDGED PROJECTILE WEAPONS CHARACTERISTICS

WEAPON	EFF. RNG.	MAX. RNG.	E-FACTOR
Small throwing knife	5m	10m	2
Large throwing knife	15m	30m	3
Tomahawk	10m	30m	4
Ax	10m	20m	6
Short Spear	20m	60m	10
Spear	30m	70m	14
Short bow (15kg pull)	30m	400m	8
Long bow (25kg pull)	60m	600m	14
Compound bow (35kg pull)	80m	700m	16
Crossbow-wood (25kg pull)	40m	400m	14
Crossbow-steel (50kg pull)	100m	800m	18

Note: All arrows and quarrels are equivalent to razor broadheads.

VEHICULAR DAMAGE

ANTI-ARMOR WEAPONS CLASSES

CLASS	WEAPON
A	Maverick
B	TOW, Dragon
C	2.75 in. Rocket
D	M72A3 LAW, ANHURUST 300, 81mm HE, M19 AT mine, M183 Demo.
E	40mm HEDP, 20mm API
F	20mm HEI, M112 C-4, 12.7x99mm AP
G	40mm HE, M36A1 Frag.
FLAME	M202A1, M9A1-7, RAFLA-35L

VEHICLE PENETRATION PERCENTAGES

WEAPONS CLASS	MARS	MSO	Commando	M113A1	XR-311	SK-5
	Scientific	Tank	vehicles	M114	Jeep	Normal Vehicle
A	60	95	99	99	99	99
B	30	90	99	99	99	99
C	10	90	99	99	99	99
D	0	50	99	99	99	99
E	0	5	80	90	99	99
F	0	0	50	70	90	99
G	0	0	1	40	99	99
FLAME	n/a	50	n/a	90	95	95

Note: In the case of flame weapons there is no actual penetration except for open vehicles and those not sealed against flame. The number in the table indicates the possibility of flame damage to a vehicles crew.

In the situation where the vehicle was struck but no penetration occurred use the following table to find the damage against the vehicle itself.

VEHICLE DAMAGE
Roll 1D6

DIE ROLL	DAMAGE
1	Tire/Track hit, vehicle can no longer move.
2	Weapon system hit, main weapon damaged.
3	Engine/power train hit, vehicle can no longer move.
4	Antennas hit, no radio communication.
5	Body hit, vehicle sensor systems (if any) damaged.
6	Steering damaged, vehicle moves at $\frac{1}{2}$ speed.
7	No effect
8	No effect

Note 1: Any damage has a 50% chance of being repaired in 1-6 hours (roll 1D6).

Note 2: The above table is not used for a MARS or Scientific vehicle if the weapon striking the vehicle is less than class A or B.

Use the following Table to find the crew casualties if the vehicles armor was penetrated.

CREW CASUALTIES

DIE ROLL	1	2	3	4	CREW SIZE 5	6	7	8
1	W	W-	W-	W-	W-K	W-K	W-W	W--
2	K	W	W-K	W-K	W-WK	W-W	W-W	W-W
3	-	K-	W-K	W-K	W-WK	W-W	W-W	W-W
4	W	W-K	W-K	W-K	W-WK	W-W	W-W	W-W
5	-	W-K	W-K	W-K	W-WK	W-W	W-W	W-W
6	W	W-K	W-K	W-K	W-WK	W-W	W-W	W-W
7	K	W-K	W-K	W-K	W-WK	W-W	W-W	W-W
8	K	W-K	W-K	W-K	W-WK	W-W	W-W	W-W

K = Killed

W = Wounded (1-6 Dp, 1D6, use medical tables ignoring death 3)

- = Not effected

INDIRECT FIRE

Indirect fire is used when the gunner cannot see the target but knows its direction and distance from him. It is most commonly used with mortars, cannons, some missile launchers, and can be used with grenade launchers.

The gunner fires with his normal accuracy. However, if there is a "forward observer", someone who can see the target and call back corrections to the gunner, ADD 1 point to the gunners accuracy each time he misses, receives a correction, and readjusts his weapon. The direction and range of misses are as follows:

DIRECTION OF MISS

Roll 1D6

1	Left and past the target.			
2	On line and past the target.			
3	Right and past the target.	1	2	3
4	Left and on line with the target.			
5	Right and on line with the target.	4	T	5
6	Left and short of the target.			
7	Short and on line with the target.	6	7	8
8	Right and short of the target.			

DISTANCE OF MISS

Roll 1D20*

1-20m	6-70m	11-150m	16-275m
2-30m	7-80m	12-175m	17-300m
3-40m	8-90m	13-200m	18-350m
4-50m	9-100m	14-225m	19-400m
5-60m	10-125m	15-250m	20-500m

*When firing 40mm grenade launchers roll 1D6 and use the ranges from 1 to 6 on the table.

USE OF GRENADES

To determine a hit use the standard firing tables. In the case of a miss use the following tables.

GRENADE MISS

Roll 1D6

DIE ROLL	RESULT
1	Left and past the target.
2	On line and past the target.
3	Right and past the target.
4	Left and on line with the target.
5	Right and on line with the target.
6	Left and short of the target.
7	Short and on line with the target.
8	Right and short of the target.

DISTANCE OF MISS

Roll 3D6, the number rolled being the distance of miss in meters.

GRENADE EFFECTS

The fragmentation grenade (M36A1) will blast a $\frac{1}{2}$ m hole in a normal wooden wall (interior).
The number of fragments hitting a target is equal to the number rolled on 1D20.

The Dp is found by multiplying the number of fragments hitting the target times the E-factor of the fragments minus the armor class of the target.
Note: WP fragments 4 Dp burn damage per fragment and burn for 1D4 Combat Turns.

Gas and Smoke grenades make a cloud normally 10m long, 4m wide, and 2m high.

A gas grenades effects last for 4 times the grenades burning time. (60 Combat Turns.)

A smoke grenades cloud lasts twice the grenades burning time. (60 Combat Turns.)

A White Phosphorus grenades smoke lasts the grenades burning time. (15 Combat Turns.)