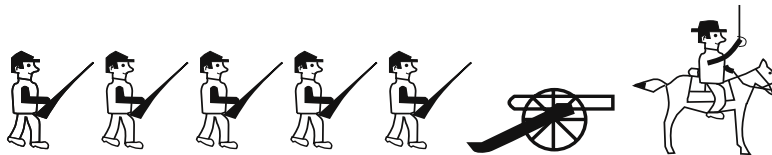# IRON BRIGADE

Version 3

These are the most realistic and easy to play
American Civil War miniature wargame rules that
Mike Willegal has been able to devise

Contents

•ABOUT IRON BRIGADE•

This is the third iteration of the `IRON BRIGADE` miniatures rules system. The first was written a long, long time ago, and bears little resemblance to the current version. Some people did like and use the system However, I was not happy with several aspects of it, especially playability.

The major goal in designing the second version was making play simpler and faster. During the process of development, I decided to closely tie fire combat with morale. The thought was that the morale of troops could be closely related to how severe a fire it was receiving and by ratio of attackers to defenders. I believe that this system has worked remarkably well. However some playtesters felt that the resulting game, although accurate for the most part, was too predicable, and not a lot of fun to play.

The version you are holding contains a few changes to make the simulation more realistic, and lots of changes to make the game more fun. Although at heart, the mechanics have not changed in a significant way. The game is just more fun to play, although perhaps a bit slower to run.   I owe a debt of gratitude to Jim Stuht and friends who pointed out most of these problems and suggested many of the improvements.

I hope that you also will find this rules system worthwhile and provide me with more feedback, so we can further improve the American Civil War gaming experience.

Happy gaming

Mike Willegal   November 1994

I have taken every effort possible to ensure that this product is of the highest quality, but nothing is ever perfect. Should you have ideas that may improve the game or have questions about play. Just write or email.

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I. Sequence of Play

A) General

Unlike many miniature games, `Iron Brigade` does not utilize a simultaneous movement system. Players each move in turn and only participate in the opponent's half of the turn by helping compute combat results and taking any morale or casualty losses.

B) Definitions

Turn: One complete move for both armies in a battle. Each turn in `Iron Brigade` simulates approximately 2.5 minutes of actual time.

Phasing Army: An army is the phasing army when it is currently performing the morale, double quick or the movement and fire phase of its half of the turn.

C) Actual Sequence of Play

Players will alternate making moves. Each move will consist of movement and/or fire along with morale checks. During his portion of the turn, the phasing player performs three procedures.

1) First the **Morale Phase**

i)   Execute morale checks due to contact with enemy units. (Section VI.D.3)

ii)   Attempt rally of units below their maximum morale level. (Section VI.E)

iii) Retreat units with a morale of 1 or 0 (broken or routed). (Section VI.C)

iv) Execute morale checks for units with a combat morale of 2 or more in sight of units retreating in iii above. (Section VI.D.2)

2) Next the **Double Quick Phase**

i)   You may optionally move any units with a combat morale of 5, 6 or 7 up to full movement distance and then throw a die to determine reduction to the units combat morale.(Section VI.D.4)

3) Then the **Movement and Fire Phase**

Option i) Do just **one** of the following, any unit not broken or routed may make this choice.

    A. Move full distance allowed by the movement rules. (Section IV)

    B. Fire. (Section V)

   C. Change formation and/or facing in any manor. (Section III)

Option ii) Do any **two** of the following in any order. Units that are broken or routed, have a base morale of less than 6 (regular), or are in one rank line are prohibited from taking this option. This option is refered to as a **split/move**.

    A. Move half distance allowed by movement tables. (Section IV)

    B. Change facing. (Section III.I)

    C. Fire with a two table down penalty. (Section V)

    D. Change formation. (Section III)

Note that when you select option ii of the movement and fire phase you may move then fire, or, fire then move (at the phasing players option).

Players alternate moves until the game is ended. Either player may start the game depending upon the scenario decided upon.

Example of one game turn: Union player moves first.

UNION MOVE
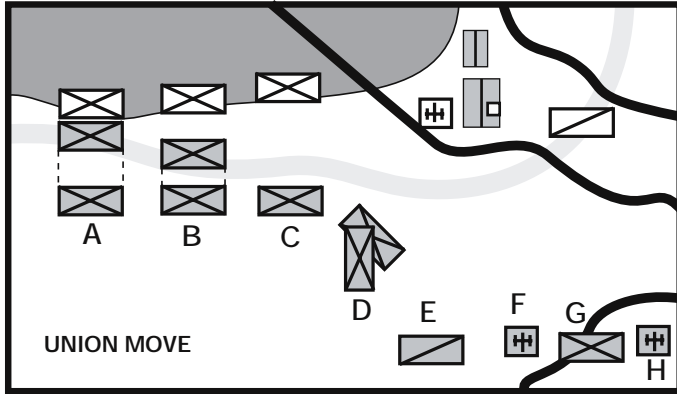
Unit   Description of Move

A. This infantry regiment moved full movement to engage in meleé.

B. This infantry regiment moved half and then fired at a penalty.

C. This infantry regiment did not move, but fired at full effect.

D. This infantry regiment changed formation from column to line and changed facing to protect its flank.

E. This cavalry regiment did not move or fire.

F. This artillery battery only fired.

G. This infantry regiment did not move or fire (it was out of range).

H. This artillery battery only fired.

CONFEDERATE COUNTER-MOVE
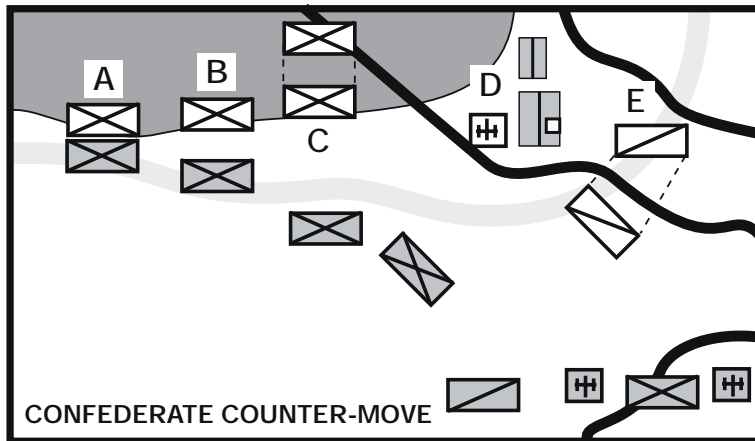
Unit   Description of Move

A. This infantry regiment checked morale for contact and fired.

B. This infantry regiment fired at full effect.

C. This infantry regiment was forced to retreat because of bad morale.

D. This artillery battery fired at full effect.

E. This cavalry regiment changed facing 45° and moved half.

II. Unit Organization

A) General

The organization of an army of the American Civil War could be quite unlike what will be presented here. The flexibility of the organizations at the time were quite remarkable, and quite difficult to simulate. Strengths of units at the same level of the organizational chart could vary by as much as 5 times or more.   Ad hoc organizations were the norm rather than the exception. These rules are designed with this flexibility in mind but the players must also deal with this problem with good judgment. Remember that these armies were led by some of the brightest men around at the time and they could think for themselves.

B) Infantry Organization

One casting (model soldier) is used to simulate about 20 real life soldiers in the game. All game calculations are in castings (not simulated number of men).

Stand **or** 4 or 2 castings

All units are built up using groupings of castings on bases called stands. This is recommended to be 4 castings per base. For each regiment, several stands of 2 castings combined with the standard 4 casting stands will allow for maximum flexibility. The physical size of the stand depends upon the scale of castings used and the number of casting per stand. See section XII.B for recommended size of stands for 15 and 25 mm castings. Single unmounted castings are used for skimishers and sharpshooters.

Regiment 1 to 15 stands

The regiment was the basic tactical unit during the American Civil War. Since this game is a tactical simulation of combat during that war, regiments are the basic units of maneuver, fire and morale. Regiments may vary in size considerably, from 4-80 castings which would simulate from 80 to 1600 real life soldiers. The "normal" combat strength for an infantry regiment would be 12-20 castings.

The advanced rules provide for splitting regiments down into partial regiments during the course of play. These sub-regimental units initially take all of the properties of their parent regiments, but once separated from their parent unit, are considered an independent unit in all respects. Units may also be combined to form new regimental sized organizations. The detailed rules on these reorganizations are in Chapter VII, advanced organizations.

An optional rule described inthe battle manual provides for regimental command loss. To implement this rule, a single officer casting must be mounted as a part of each regiment. This casting retains all of the combat capabilities of an infantry casting of that regiment.

C) Cavalry Organization

One casting is used to simulate about 20 actual men and their mounts in the game. All game calculations are in castings (not actual number of men).
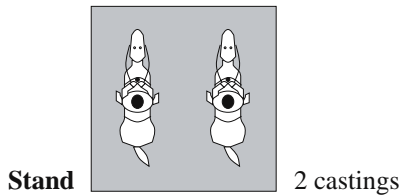
Stand   2 castings

All units are built up using groupings of castings on bases called stands. This is recommended to be 2 castings per base for cavalry. For dismounted cavalry, individual castings of dismounted cavalry should be used. When dismounting, 1/4 of the castings are left as mounted to hold the horses of the other 3/4 who are considered dismounted. This will result in a unit partially (25%) represented by mounted castings and the rest (75%) represented by dismounted castings.

Regiment   2 to 16 stands
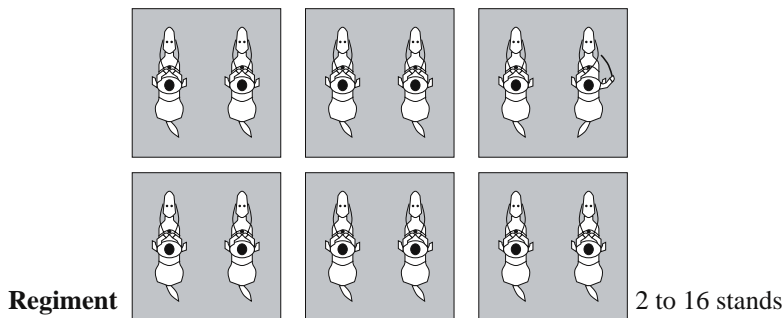
As with infantry, cavalry was grouped into units called regiments which are the basic units of maneuver in the game. Cavalry regiments may vary in size from 4-50 castings which would simulate from 80 to 1000 real life cavalrymen. The "normal" cavalry regiment would be consist of 16 to 20 castings. The advanced rules relating to splitting and combining regiments and regimental command castings apply to cavalry, as well as infantry.
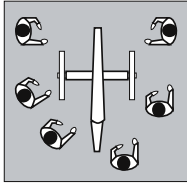
D) Personalities

Stand   **or**   1 casting
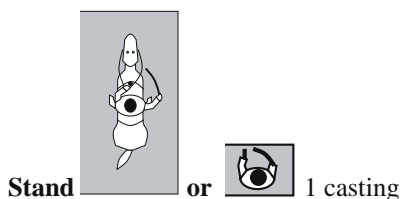
General officers are represented by either a single mounted officer casting when mounted or a single foot officer casting when on foot.

E) Artillery Organization

Artillery is organized in a slightly different manner than infantry or cavalry.

Artillery 6 gun battery

One cannon casting is used to represent an entire battery of from 4-8 real life cannon. Each soldier casting mounted with that cannon casting represents one cannon of that battery. Each time a loss is taken from that battery, it is reduced in strength by one gun by placing a casualty cap on one soldier casting of that battery. In short, an artillery battery is represented by one model cannon and one model soldier for each gun of that battery. Artillery are not organized in brigades or battalions for the purposes of this game.

F) Higher Level Organizations

Brigade 5 Regiments, Artillery, General

The brigade is the basic operational unit in the game. Brigades usually are composed of from 3 to 10 regiments and a general with staff. Sometimes a supporting artillery battery was attached to a brigade. The optimal game occurs when each player takes the role of a brigade commander. The brigade is the smallest unit in the game that rates a general and staff. Both cavalry and infantry were organized in a similar manner at the brigade and higher levels.

Division 2-5 Brigades

Divisions are usually composed of 2 to 5 brigades of infantry **or** cavalry with supporting artillery batteries and a command staff. Sometimes at this and higher levels, the attached artillery batteries are organized into battalions of 4 to 6 batteries.

Corps 2-4 Divisions

Corps are usually composed of 2 to 5 divisions of infantry **or** cavalry with supporting artillery and the command staff. Corps may sometimes act as independent armies. In the context of this game, a corps is about the maximum sized playable side.

Army Dependent upon Army size

Armies are composed of corps of infantry and cavalry along with supporting artillery and commanders. Armies may also include semi-independent provost, supply and engineering units.

III. Formation and Facing

A) General

This section of rules can cause considerable confusion on the gaming table because of problems with units not fitting perfectly within the constraints of terrain. My hearty recommendation is toward stretching the letter of the rule a bit to allow units to fit within these constraints a little more easily.

B) Definitions

Formation: The alignment of the various components of a unit with respect to each other. Examples are line, column, skirmish, square and en masse. In most cases it takes 1/2 move for a unit to change from one formation to another.

Facing: The direction in which a particular casting or group of castings are pointed.

Unit: A partial, complete or combined regiment of infantry or cavalry or battery of artillery acting as single unit. The entire unit must have the same formation and facing.

C) Number of Ranks Deep

Part of the function of a unit's formation is how many ranks deep that unit is in. This is determined by the following procedures.

1) Count the number of figures that are in the unit and all other units behind, but within 8" of the front.

2) Measure the number of inches across the front of the unit. For infantry only, multiply this number by **two**.

3) Divide the count by the frontage and round to the nearest of the following numbers. Values halfway between two numbers should be rounded up.

NUMBER OF RANKS DEEP

3

2

1

1/2

1/3

4) Note that for purposes of hostile fire, the frontage of a unit is the amount of frontage presented to the enemy unit firing. For example, a unit of 20 figures in 10 by 2 line formation might be only **two** ranks deep if fired on from the front, but might be **three** ranks deep if fired on from the flank (enfilade).

5) Artillery units are always **one** rank deep.

Note that this procedure can usually be dispensed with, if a little estimating and common sense is used.

D) Artillery

Artillery can be in one of two different formations. It takes 1/2 move for artillery to change formation (see the sequence of play rules). Limbered artillery will be pointed away from the known enemy lines to differentiate between limbered and unlimbered which will face the target.

1) **Limbered:** May move, but not fire. This is the traveling formation for artillery.

2) **Unlimbered:** May not move, may fire and change facing.

E) Open and Closed Formations

Infantry and cavalry can be either of two types of formations. These are named **open** and **closed** formations.

1) A unit is in **open** formation when its components are arranged such that the unit is considered to be 1/2 rank deep or less.

2) A unit is in **closed** formation when it is not in open formation.

F) Unit Integrity

A unit must have all of its figures facing in the same direction and the unit must have a consistent number of ranks deep across its front.

A unit must split up into **two** or more separate units in order to face more than one direction at a time or to have different components of the unit move independently. The act of splitting up units can get out of hand, so it is discussed in the advanced rules. If you are not using the advanced rules, this is not allowed.

G) Recognized Formations

The following tables are provided for reference purposes, showing the effect of various organizations of regiments. The pictures show how the stands of a regiment are positioned to reflect each formation.

Line

The line formation imparts no special abilities or handicaps to the unit. It is the base formation upon which the rules are modeled. Units in line are usually arranged 2 ranks deep. Lines that are only 1 rank deep may not perform split/moves.
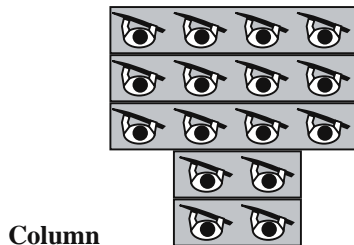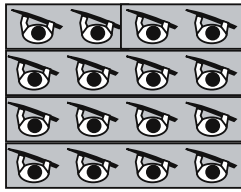

Column

Movement +1". Fire only 1 rank in any direction.

Stands of a unit in column formation are placed in a single line. This formation is primarily intended for rapid movement of the unit.

Skirmish

Movement +2"

Units in skirmish formation are governed by all rules of the line formation except for the bonus in movement. Skirmish formation is really nothing more than a very thin line formation.

Company Column

Fire 1 rank in any direction: Complete formation/facing change only takes 1/2 turn: Movement +1". May not perform split/move.

A series of columns parallel to each other. Used for rapid movement over difficult terrain.
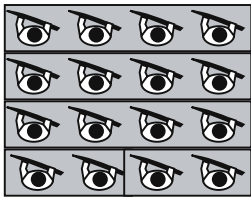
En masse

Fire 1 rank in any direction: Does not take 1/2 move to change into this formation, no matter what the previous formation. Phasing player may move units into this formation at any time with no cost. Once in this formation, there is no penalty for making facing changes. When checking morale, check on the next highest results table.

En masse refers to the confused state that existed in many units after a few minutes of battle. Note that since the organization of company column and en masse look the same on a wargaming table, the commander of such troops must make it clear which formation his troops are in at all times.

Note: Fire one rank in any direction means that the total number of castings in the lead rank (to the front) is the total number of castings that may fire from that unit and they may fire in any direction or combination of directions.

H) Cavalry

Cavalry must take a formation change to mount or dismount. Also 1/4 of the castings must remain behind to hold horses or the unit must remain dismounted for the remainder of the game. Dismounted cavalry fight exactly like infantry. Mounted cavalry may only fire if in contact   with the enemy.

I) Facing

Facing of a unit may only be changed in accordance with the following rules.

i) Rules not in this section.

    A. Sequence of Play.
    B. Road Movement.

ii) Infantry units may change facing 180 degrees at no penalty during the units movement and fire phase of the sequence of play.

J) Laying Down

Commanders may have their units lay down simply by declaring the fact at the **beginning** of the movement and fire phase. Units laying down may not move. Units laying down, fire at a two table down penalty (see fire combat, chapter V). Units that are laying down, may get beneficial modifiers when being fired upon. In order to get these modifiers, the troops must have been laying down for the last friendly movement and fire phase.

IV. Movement

A) General

Each inch on the wargame table represents 25 yards of "real-world" distance. Each complete turn represents 2 and $^1/_2$ minutes of "real-world" time. These were the basic parameters used to define the movement distances for each kind of unit in `Iron Brigade`. For more information refer to battle manual.

B) Definitions

Infantry: Any unit moving on foot and only carrying small arms and personal necessities.

Cavalry: Any unit moving by horseback and not burdened with wagons, caissons, or other kinds of vehicles.

Mounted Artillery: Artillery whose primary mode of operation is by foot. Note that in special cases mounted artillery could move at a rapid pace for short distances by mounting all of the gunners on cassions and limbers.

Horse Artillery: An artillery unit who has its entire complement mounted on horses.

Heavy Equipment: Wagons, siege artillery and other awkward, slow moving vehicles. Also items hand carried that normally would not be. ie; ammunition boxes.

C) Exceptional Movement Cases

1) Units moving over several terrain types in one turn must accumulate all modifiers to the base movement no matter how little distance is spent in each type of terrain.

2) Units that are only partially in an unfavorable type of terrain must move at the speed of the slowest part of the unit.

3) Units may only move in the direction they are facing.

4) Units in **open** formation may freely move through other units with no penalty.

5) Units in **closed** formation that move though any other formation may not perform a split move and must lose **one** level of morale.

6) Formed units that do not move, but have other units move through their ranks lose **one** level of morale.

D) Crossing Streams and Rivers

Fording; use the movement rules when fording rivers. Below is a chart of maximum stream depths that may be forded by the various types of troops. If the game is being run by a non-partial referee, the depth of the river may be unknown to the attacker at the beginning of the game. When the scenario is set up, the referee must keep a chart of the depths at each point on the river. A unit may spent one turn sounding the depth of a possible ford. After that turn, the referee will reveal the depth of the water. If a unit attempts to cross a river deeper than allowed, one casualty is taken, one morale level lost and the crossing is aborted.

Fording Chart

Unit Type	Current		Watertight
	Strong	Weak or None	Ammo Boxes
Infantry	39"	51"	-
Cavalry	51"	51"	-
Artillery	27.5"	27.5"	40"

By pontoon boat; Infantry may cross bodies of water in pontoon boats. When on wagons, pontoon boats move like heavy equipment. They take four turns to unload from wagons. Each pontoon boat may carry four figures. Pontoon boats move at a rate of 2" per turn on water.

E) Movement of Personalities

Mounted personality figures move at the speed of open formation cavalry. Un-mounted personality figures move at the speed of open formation infantry.

F) Movement Chart

This chart defines movement distances for each type of unit. It also defines how movement is modified by various types of terrain and formations.

UNIT TYPE	INFANTRY	CAVALRY	ARTILLERY	HEAVY EQUIP	
MOVEMENT	**7** (3 back)	**14**	**12**(14horse)	**10**	
TERRAIN EFFECTS					**VISIBILITY**
WALL	-1	-8	*	*	
FENCE	-1	-4	-5	-5	
STEEP HILL	-2	-6	-9	*	
ROUGH	-2	-7	-8	*	
WOODS	-3	-10	-9	*	4
DENSE WOODS**	-4	-11	*	*	2
SWAMP**	-4	-9	*	*	
ROADS***	+2	+4	+4	+3	
FORDS**	-4	-8	-7	-6	
OPEN ORDER	+2	+2	*	*	
COLUMN	+1	+2	*	*	
EN MASS	+1	+1	*	*	
CO. COLUMN	+1	+1	*	*	
CLOSE ORDER-MOVING THROUGH OTHER UNITS****	-2	-4	*	*	

*   Not allowed

**   Unit may not perform split/move.

*** Unit may not perform split/move. Also while following a road, facing changes are allowed with no penalty to movement.

**** Unit may not perform split/move. Unit loses 1 morale level. (except when on roads, breechloader equipped troops may always perform split moves)

V. Fire Combat

A) General

The fire combat system is designed to be easily learned and quickly played. However, it is closely tied in with the morale system, because a morale check is required everytime a unit fires. An understanding of the morale rules is essential in understanding the fire combat rules and visa versa.

B) Procedure

1) Figure the results of fire combat by following this procedure.

i) Find the weapon base effectiveness by consulting the appropriate weapon table.   There are three or four numbers in each row in the weapon's table. Each column represents a particular range for that weapon.   The topmost number is the minimum distance for that range. The number in the middle row is the maximum distance for that range. Distances are measured in inches. The number on the bottom, below the line, is the base weapons effectiveness for that distance. Measure the average distance from firing unit to target unit. Round that number down to the nearest range of the weapon table to find the base weapons effectiveness.

ii) Calculate the modified weapons effectiveness by modifying the base effectiveness according to the chart on the page 22. Going "up 2" means that you add 2 to the weapons effectiveness. Going "down 1" means that you subtract 1 from the weapons effectiveness. Sum all appropriate modifiers and add to the base weapon effectiveness found in i above.

iii) Find the result table referred to by the modified weapon effectiveness. Effectiveness translates directly into the results table used. Higher than 19 is equal to 19. Lower than 0 is table 0. For normal fire purposes use the normal results tables. In the exceptional cases described in section G, the red results tables should be used

iv)   Pick the horizontal row that corresponds to the number of castings in the unit firing as listed in the left hand column (rounding down the actual number to a corresponding row). Follow that horizontal row across to the casualty column (which is the next one to the right), to determine target casualties in castings. There will be two numbers present in the form (a>b).

a=number of casualties lost

b=number the attacker must roll above to cause another casualty

The attacker should roll a six sided die and the defender mark or remove the casualties.

v) Find the column that corresponds to the number of target castings (before taking casualties in iv above), rounded down. Follow it down until it meets the row chosen in iv. There will be two numbers present in the form (a>b).

a=number of morale levels lost

b=number the defender must roll above to save another level from being lost.

The defender should roll a six sided die. Mark the morale loss off of the targets morale track.

Remember for fire combat, die rolls need to beat the number shown for the person rolling the die to get the benefit/advantage.

```
                                     Number of Defenders (8)
   TABLE   8
    att   cas   1     2     4    ( 8 )  13    21
     1    0>5   0>1   –     –     –     –     –
     2    0>4   0>5   0>1   –     –     –     –
     4    0>3   2>2   0>5   0>1   –     –     –
     6    0>2   6>2   3>5   2>1   0>5   0>3   0>1
     8    0>1   6>5   4>3   2>3   1>1   0>3   0>1
  ( 11 ) (1>4)  R     5>1   2>5  (1>2)  0>4   0>2
    14    1>3   R     6>4   4>2   2>2   1>2   0>4
    17    1>1   R     R     4>3   2>3   1>3   0>4
    21    2>4   R     R     5>1   2>5   1>4   0>5
    26    2>1   R     R     5>5   3>4   2>2   1>2
                                     1 Defender Morale Step Lost
                                        (+ 1 if defender rolls <= 2)

                          1 Defender Casting Lost
                        (+ 1 if attacker rolls > 4)

        Number of Attackers (11)
```

Example: 11 castings firing at 8 castings on results table 8. The result for casualties is 1>4 castings lost   If the attacker rolls 5 or 6, 2 castings are lost, otherwise 1 casting is lost. The result for morale lost is 1>2. If the defender rolls a 1 or2, 2 morale levels are lost, otherwise 1 is lost. Actually 11 to 13 castings firing and 8 to 12 target castings would yield the same result.

CLASS	DETAILED DESCRIPTION	MODIFICATION
TARGET PROTECTION		
Entrenchments (90% protection)		4 DOWN
Hasty Works, High Wall (75% protection)		3 DOWN
Target Laying Down (50% protection)		2 DOWN
Woods, Wood Fence (25% protection)		1 DOWN
TARGET FORMATION		
3 Ranks Deep		1 UP
2 Ranks Deep		No Shift
1 Rank Deep		1 DOWN
1/2 Rank Deep		2 DOWN
1/3 Rank Deep		3 DOWN
FIRING UNIT MORALE		
Level 7 (elite unit)		1 UP
Level 5 or Level 6		No Shift
Level 4		1 DOWN
Level 3		2 DOWN
Level 2		3 DOWN
Less Than 2		No Fire Allowed
FIRING UNIT MOVEMENT/FORMATION		
Split Movement		2 DOWN
Laying Down (muzzle-loaders only)		2 DOWN
ARTILLERY SPECIAL		
Artillery Acquired Fire		1 UP

C) Who Can Fire

1) The fire zone for each unit extends 45 degrees to either side of straight   ahead of the center of the unit.

2) Units may only fire over or through other units in the following cases.

   i) Units may fire through enemy lines that are 1/3 ranks deep.

   ii) Units may fire over the top of another unit if at least one of the units involved is on a different elevation and the following condition is met. The unit to be fired over must be 1/3 the distance from the unit on the higher elevation to the lower or less. If the unit to be fired on is in a depression between two units the two units on the higher elevation may fire at each other. Use your common sense.

3) Units may only fire at units they can see. Woods restrict visibility of units looking into or through them. Units looking through dense woods may only see 2 inches. Units in other kinds of woods may see 4 inches. Units behind walls, fences, in buildings, in trenches or other kind of total cover may not be seen unless they are shooting.

4) Units may fire 2 ranks deep (see formation rules for exceptions).

D) Artillery Acquired Fire

1) Artillery units firing at the same point on the battlefield, on consecutive turns, receive the acquired fire bonus on second and subsequent turns.

E) Determining Ranges

1) When measuring ranges, always measure from the center of the front of the stand of the unit firing to the nearest portion of the stand of the target unit. Ranges arealways rounded **up** to the next inch.

2) Ranges for small arms are divided into three zones, short, medium and long.

3) Ranges for artillery weapons are divided in four zones, point blank, short, medium and long.

F) Splitting and Combining Fire

Different units may combine their fire. However, the combined fire must be taken on the lowest table of any of the units involved. If the number of casting involved is greater that 28, the excess may be applied to the table a second time.

A single unit may also split its castings to fire at several target units in any manner desired by the firing unit's commander.

G) The Red Results Tables

Fire is usually conducted using the normal results tables. However in cases where the attacker has the defender at a significant tactical disadvantage, the red results tables should be used instead. The red results tables have a significantly increased morale effect and a 25 precent increase in casualties.

1)   Flank, rear and suprise attacks.

2)   First fire against troops never exposed to enemy fire.

3)   First fire against troops never exposed to fire from repeaters.

4)   Target is attemting to cross difficult terrain or obstacles such as a ford, bridge or abatis.

5)   Other situations where an attacker has a major tactical advantage over the target.

Through an umpire or general agreement of the players, other situations may be declared to be red table situations, but use of the red tables should always be an exceptional case.

H) Hitting Personalities

During any turn in which a unit takes casualties with an personality present, the personality may become a casualty. If the personality is unmounted, a die roll of **six** will cause the personality to become a casualty. If mounted, a roll of **five** or **six** causes the same result. Wounded personalities are removed immediately from the battlefield. They may not return to fight again in the same days fighting. Any unit with the personality when he is hit, gets a deduction to the unit's rally die roll in the next rally phase.

VI. Morale

A) General

Morale is the heart of the `Iron Brigade` system. In the play of the game, the "morale" level really reflects more than just the state of mind of the individual soldiers of the unit. This level really reflects both unit integrity and unit morale. Morale checks result from movement and fire of units on the playing surface. Units maintain morale on an 8 point track. 7 is the highest morale and 0 the lowest. These morale levels can be maintained very easily on a pegboard with the unit's identity written alongside its track. Different colored pegs may be used for the different grades of morale.

B) Morale Classes

1) Units may have the characteristics of one of the following **base** morale classes.

   i) Elite units are battle hardened veterans of outstanding quality. Elite units will rarely break, and when they do, will quickly recover. Elite units have a base morale value of 7.

   ii) Regular units are good quality units with some combat experience. Regular units make up the bulk of the field armies by the middle of the war. Regular units have a base morale value of 6.

   iii) Poor units will usually have one or two of the following defects. Inexperience, poor training, exhaustion, or bad leadership. Should they have three or more defects, they would an even poorer class of unit. The majority of units at the beginning of the war should be considered in this class because of inexperience. Many units at the end of the war could also be considered in this class because of battle fatigue. Poor units have a base morale value of 5.

   iv) Garrison units have little motivation, but plenty ot training. They can be useful for defensive purposes, but only rarely will they attack sucessully. Note that some garrison troops evolved into fine fighting units after being transfered to a field army. Garrison and other simular quality units have a base morale value of 4.

   v) Militia are units with short enlistments, little or no training and inexperienced leaders. Militia have some motivation, but little capability to put up a good fight. Note that some troops with short enlistments fought very well despite the lack of experience and training and would not be considered to be in this class. Militia and other simular quality units have a base morale value of 3.

   vi) Rable are badly led units with almost no will to fight. They will not advance against a known enemy. When an enemy advances against them they will usually run for cover the moment the first casualties are taken, if not before. Rable are subject to the pinned rule when they are not broken or routed. Rable have a base morale value of 2.

2) A unit's **base** morale is not affected by combat.

3) A unit does have a **combat** morale that is an indicator of the units current effectiveness. **Combat** morale of every unit in a battle must be maintained on a peg board.

4) Units may not attain a higher combat morale than their base morale. Units may not attain a lower combat morale than **zero**.

5) In these rules, the word morale refers to combat morale unless prefaced by the word **base**.

C) Effects of Reduced Morale

1) Units retreating due to loss of morale must retreat in a direction away from the units that caused the loss of morale. They may avoid retreating directly through unbroken friendly infantry or cavalry in their retreat path if the alternate path does not cause the retreating unit to end the move at a closer range to the enemy. Units retreating toward artillery units may not alter their path to avoid passing through the artillery. Broken units retreat at the normal movement distance for the formation the unit is in. Routed units always move as if in open formation.

2) Units with no path of retreat must surrender. For the purposes of this game no guards are required. The captured castings may be moved by the capturing player. The captured troops may be freed only if they come into contact with a friendly unit.

3) Units within 1 inch of enemy castings when they rout, suffer 50 percent loss of castings as captured.

4) Units within 1 inch of enemy castings when they break, suffer 25 percent loss of castings as captured.

5) Artillery retreat rules are exactly the same as infantry or cavalry. Note that pinned artillery may not fire.

6) Units in open with a combat morale of 2 (pinned) must go prone or retreat to cover, if the enemy is in sight. These pinned units may not advance and may not move in the same turn they rally to morale level 3.

D) How a Unit's Morale Decreases.

1) A unit may lose morale levels each time it suffers hostile fire. Consult the fire combat rules to determine the number of morale levels lost.

2) When a unit's morale level gets reduced below **two**, then all friendly units within sight must check morale during their next morale phase if the unit with low morale does not rally first (see the sequence of play rules). Friendly units need only check morale during the first morale phase for each broken and routing units in sight; i.e. if unit A breaks and spends two turns retreating past unit B, unit B is only required to check morale once (during the first morale phase after unit A broke).

    i) If a unit in question has a morale of 0 or 1 it is exempt from this rule.

    ii) If the retreating unit has a morale of **one** then every unit in sight must use the number **seven** results table.

    iii) If the retreating unit has a morale of **zero** then every unit in sight must use the number **eight** results table.

    iv) Chose the horizontal row that corresponds to the number of castings retreating as listed in the left hand **ATT** column (rounding down) on the selected results table.

    v) All units except artillery, find the column that corresponds to the number of castings in the unit checking morale (rounding down). Artillery making this check should multiply the number of it's castings by 3 and find that column (rounded down). Cross index the selected row and column. There will be two numbers present in the form (a>b).

      a=number of morale levels lost

      b=number the unit checking must roll above to save another level from being lost.

    A six side die should be rolled for the unit checking. Mark the morale loss off of the units morale track.

3) Morale levels may be lost when enemy units are in contact with a friendly unit during the morale phase of the sequence of play.

    i) Consult result table **seven** and modify according to the following procedure.

    ii) Chose the horizontal row that corresponds to the number of enemy castings touching your castings plus the number of figures in a continuous line behind the figures in contact. In the diagram below, only the Union figures within the dark black outline are actually counted for these purposes. The selected row would be the row with the 11 in the **ATT** column (12 rounded down).
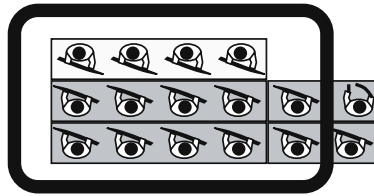
    iii) Find the column that corresponds to the number of castings in the unit checking morale (rounding down). Cross index the selected row and column. There will be two numbers present in the form (a>b).

      a=number of morale levels lost

      b=number the unit checking must roll above to save another level from being lost.

    A six side die should be rolled for the unit checking. Mark the morale loss off of the units morale track.

4) A unit may lose up to 2 morale levels whenever a unit moves during the double-quick part of the sequence of play. Roll a six sided die and consult the following chart.

Unit Base Morale

die roll	5	6	7
1	3 levels	2 levels	2 levels
2	2 levels	2 levels	1 levels
3	2 levels	1 levels	1 levels
4	1 levels	1 levels	-
5	1 levels	-	-
6	-	-	-

E) How a Unit Regains Morale Levels

A unit may only regain morale levels during the rally phase of the sequence of play. At that time any unit with a combat morale lower than its base morale level may attempt to rally.

i) The player attempting to rally a unit rolls a die and adds modifiers based on:

a) The unit's base morale rally/double modifier. See the chart at end of this chapter for the rally/double modifier associated with each base morale level.

b) The modifier for any personality with the unit. If multiple personalities are with a unit, only the better personality can affect rally of that unit. Personality bonuses are **NOT** cumulative. A personality hit while with the unit in the most recent fire phase will cause a deduction instead of addition to the die roll. This deduction is only in effect for the one turn following the turn when the personality was hit.

PERSONALITY	MODIFIER
HERO	+6
GOOD	+4
NORMAL	+2
POOR	+1
BAD roll-> 1-2=(-2) : 3-4=NO EFFECT : 5-6=(+2)	

ii) The modified die roll is compared to the following table and the unit's morale track adjusted accordingly.

MODIFIED ROLL	MORALE CHANGE
(-3) or less	-2
(-1) or (-2)	-1
0 to 4	-
5 to 6	+1
7 to 8	+2
9 to 10	+3
11 or more	+4

iii) Units with a morale of **two** may not move in the same turn it rallies to a higher morale level. It may move if it attempts to rally and fails to gain any morale levels.

iv) Units may never have a combat morale higher than thier base morale.

F) Morale Effects Charts

UNIT TYPE	BASE MORALE	RALLY/DOUBLE	SPLIT/MOVE OK
ELITE	7	+1	yes
REGULAR	6	0	yes
POOR	5	-1	no
GARRISON	4	-2	no
MILITIA	3	-3	no
RABLE	2	-4	no

COMBAT MORALE	FIRE EFFECTS	MOVEMENT EFFECTS	DOUBLE TIME
7	1 TABLE UP	*	ALLOWED
6	*	*	ALLOWED
5	*	*	ALLOWED
4	1 TABLE DOWN	*	NOT ALLOWED
3	2 TABLES DOWN	*	NOT ALLOWED
2	3 TABLES DOWN	NO ADVANCE***	NOT ALLOWED
1	NOT ALLOWED	MUST RETREAT(7)	NOT ALLOWED
0	NOT ALLOWED	MUST RETREAT(8)**	NOT ALLOWED

Notes:

* No effect or not allowed.

** Unit must retreat in an open formation.

*** Units in open must lay down or retreat to cover, if in sight of the enemy.

VII. Advanced Organization

A) General

These rules, like all of the advanced rules, are intended to provide the game master with ways to add variety to the game. Note that I usually play the basic game and add a couple of the advanced rules only for variety. Special care should especially be taken with these advanced organization rules as too many different units scattered across the gaming table can lead to confusion or slow game.

B) Definitions

Sub-Unit: A portion of a regiment that has detached from the main portion. A sub-unit is treated in these rules as if it were an independent regiment.

C) Reorganizations

A unit must split up into **two** or more separate units in order to have different components of the unit move independently.

1) A unit may split into several sub-units at no cost during a formation change. A sub-unit assumes its parent unit's current morale when it splits off.

2) Any unit or sub-unit may combine with other units or sub-units during a formation change. Sub-units may combine with sub-units of different parent units and form composite units. When the units recombine, the newly formed unit assumes the lowest morale of all units recombining.

3) Each sub-unit then can and must act independantly and will do so until it reforms with the parent or other unit. A sub-unit is considered an independent unit in all respects including morale. A separate morale track must be maintained for each sub-unit in play.

4) Units with different portions under different morale conditions may be split apart when checking morale. An example of this would be an infantry regiment on a long skirmish line. If only one half of this unit comes under fire, then the unit could be broken into two parts, one with a reduced morale due to the hostile fire.

D) New Formations

Players are allowed to create their own formations if the game has a referee. Otherwise players should stick to using these recommended formations as described in chapter III, facing and formations.

E) Skirmishers

Skirmishers are independent units that are split off from parent units. However as they gain open order, the stands should be replaced by single castings. They may recombine again and the single casting be replaced by stands as in reforming, which is described above.

F) Legions

Legions are units that usually combine a battalion (two or more companies) of infantry, a section of artillery and a company of cavalry. As long as all sections of the legion remain in contact with each other they maintain one morale level. However, using the reorganization rule above, each portion of the unit may split off and act independently.

VIII. Advanced Movement

A) General

These rules are definitely optional. Players must decide before the start of play which rules in this section, if any, are to be used for that game.

B) Mounted and Horse Artillery Differences

Unlike mounted artillery (term used for foot artillery during the time of the Civil War), horse artillery have all of their crews mounted on horses. Therefore, horse artillery get the movement bonus mentioned in the movement tables.

Mounted artillery would mount their crews on the limbers and caissons in an emergency for rapid movement. Therefore, mounted artillery may not move in the double quick phase unless the unit does a formation change to put the crews on limbers and caissons. It is not necessary to undo this formation change when the battery unlimbers.

C) Movement Differences for Different Cannon

Table of movement effects based on weight of cannon (see battle manual for more information).

Cannon Movement Differences

Mountain	normal movement - takes whole turn to unlimber
Light	+1" to base movement capabilities.
Medium	no changes.
Heavy	-1" to base movement capabilities.

D) Abatis

Only infantry units may move through abattis. They may move at 1/2 rough terrain speed. Paths may be cleared through the abattis. 1 casting may clear a path 1/2" wide in 2 turns.

E) Moats

Only infantry units may cross moats or ditches. They take 1 complete turn to cross unless they are filled in. Filling in a ditch takes 2 turns for 1 figure per 1/2" of front provided the materials are available.

F) Hidden Movement

This rule is not to be used without a referee. Units not in sight of the enemy may be kept off of the gaming table until they are spotted. Hills and woods block the line of sight of enemy units. Use your common sense. Units on the edge of woods are not spotted until the enemy closes within 4 inches or the units in the woods move or fire. Units stationary in woods may sometimes be located by enemy artillery firing blind towards the woods. The referee computes the fire and discloses losses only to the defender. The defenders, if present, are discovered only if the defender losses at least 1 step in morale. Units may also hide behind high walls and railroad embankments as long as they remain stationary.

H) Simultaneous Movement

Experienced gamers may experiment with simultaneous movement systems. Examples for this type of play can be found in most of the rule books listed in the bibliography.

IX. Charts and Tables

Sequence of Play

1) First the **Morale Phase**

i)   Execute morale checks due to contact with enemy units. (Section VI.D.3)

ii)   Attempt rally of units below their maximum morale level. (Section VI.E)

iii)   Retreat units with a morale of 1 or 0 (broken or routed). (Section VI.C)

iv)   Execute morale checks for units with a combat morale of 2 or more in sight of units retreating in iii above. (Section VI.D.2)

2) Next the **Double Quick Phase**

i)   You may optionally move any units with a combat morale of 5, 6 or 7 up to full movement distance and then throw a die to determine reduction to the units combat morale.(Section VI.D.4)

3) Then the **Movement and Fire Phase**

Option i) Do just **one** of the following, any unit not broken or routed may make this choice.

   A. Move full distance allowed by the movement rules. (Section IV)

   B. Fire. (Section V)

   C. Change formation and/or facing in any manor. (Section III)

Option ii) Do any **two** of the following in any order. Units that are broken or routed, have a base morale of less than 6 (regular), or are in one rank line are prohibited from taking this option. This option is refered to as a **split/move**.

   A. Move half distance allowed by movement tables. (Section IV)

   B. Change facing. (Section III.I)

   C. Fire with a two table down penalty. (Section V)

   D. Change formation. (Section III)

Note that when you select option ii of the movement and fire phase you may move then fire, or, fire then move (at the phasing players option)

Formation Effects

Formation	Movement	Formation/Facing	Fire Effects	Split Move
Limbered artillery	Normal	Normal	Not Allowed	Allowed
Unlimbered artillery	Not Allowed	Normal	Within 45 degrees of front	Allowed
Mounted cavalry	Normal	Normal	Only when in contact	Allowed
Open fomation/skirmish	+2	Normal	Within 45 degrees of front	Allowed
One rank line	Normal	Normal	Within 45 degrees of front	Not Allowed
Two or more rank line	Normal	Normal	Within 45 degrees of front	Allowed
Column	+1	Free facing change on road	One rank any direction	Allowed
Company Column	+1	Formation/facing in 1/2 turn	One rank any direction	Allowed
En masse	+1	Change to in 1/2 turn	One rank any direction	Allowed

Movement Chart

uNIT TYPE	INFANTRY	CAVALRY	ARTILLERY	HEAVY EQUIP	
MOVEMENT	**7** (3 back)	**14**	**12**(14horse)	**10**	
TERRAIN EFFECTS					**VISIBILITY**
WALL	-1	-8	*	*	
FENCE	-1	-4	-5	-5	
STEEP HILL	-2	-6	-9	*	
ROUGH	-2	-7	-8	*	
WOODS	-3	-10	-9	*	4
DENSE WOODS**	-4	-11	*	*	2
SWAMP**	-4	-9	*	*	
ROADS***	+2	+4	+4	+3	
FORDS**	-4	-8	-7	-6	
OPEN ORDER	+2	+2	*	*	
COLUMN	+1	+2	*	*	
EN MASS	+1	+1	*	*	
CO. COLUMN	+1	+1	*	*	
CLOSE ORDER-					
MOVING THROUGH					
OTHER UNITS****	-2	-4	*	*	

*   Not allowed

**   Unit may not perform split/move.

***   Unit may not perform split/move. Also while following a road, facing changes are allowed with no penalty to movement.

**** Unit may not perform split/move. Unit loses 1 morale level. (except when on roads, breechloader equipped troops may always perform split moves)

Movement Differences for Different Cannon

Mountain	normal movement - takes whole turn to unlimber
Light	+1" to base movement capabilities.
Medium	no changes.
Heavy	-1" to base movement capabilities.

Morale Effects on Fire and Movement

COMBAT MORALE	FIRE EFFECTS	MOVEMENT EFFECTS	DOUBLE TIME
7	1 TABLE UP	*	ALLOWED
6	*	*	ALLOWED
5	*	*	ALLOWED
4	1 TABLE DOWN	*	NOT ALLOWED
3	2 TABLES DOWN	*	NOT ALLOWED
2	3 TABLES DOWN	NO ADVANCE***	NOT ALLOWED
1	NOT ALLOWED	MUST RETREAT(7)	NOT ALLOWED
0	NOT ALLOWED	MUST RETREAT(8)**	NOT ALLOWED

Notes:

* No effect or not allowed.

** Unit must retreat in an open formation.

*** Units in open must lay down or retreat to cover, if in sight of the enemy .

Morale Effects Chart

UNIT TYPE	BASE MORALE	RALLY/DOUBLE	SPLIT/MOVE OK
ELITE	7	+1	yes
REGULAR	6	0	yes
POOR	5	-1	no
GARRISON	4	-2	no
MILITIA	3	-3	no
RABLE	2	-4	no

Personality Rally Modifier

PERSONALITY	MODIFIER
HERO	+6
GOOD	+4
NORMAL	+2
POOR	+1
BAD	roll-> 1-2=(-2) : 3-4=NO EFFECT : 5-6=(+2)

Rally Result

MODIFIED ROLL	MORALE CHANGE
(-3) or less	-2
(-1) or (-2)	-1
0 to 4	-
5 to 6	+1
7 to 8	+2
9 to 10	+3
11 or more	+4

Fire Modifiers

CLASS DETAILED DESCRIPTION	MODIFICATION
TARGET PROTECTION	
Entrenchments (90% protection)	4 DOWN
Hasty Works, High Wall (75% protection)	3 DOWN
Target Laying Down (50% protection)	2 DOWN
Woods, Wood Fence (25% protection)	1 DOWN
TARGET FORMATION	
3 Ranks Deep	1 UP
2 Ranks Deep	No Shift
1 Rank Deep	1 DOWN
1/2 Rank Deep	2 DOWN
1/3 Rank Deep	3 DOWN
FIRING UNIT MORALE	
Level 7 (elite unit)	1 UP
Level 5 or Level 6	No Shift
Level 4	1 DOWN
Level 3	2 DOWN
Level 2	3 DOWN
Less Than 2	No Fire Allowed
FIRING UNIT MOVEMENT/FORMATION	
Split Movement	2 DOWN
Laying Down (muzzle-loaders only)	2 DOWN
ARTILLERY SPECIAL	
Artillery Acquired Fire	1 UP

Double Time Effect

Unit Base Morale

die roll	5	6	7
1	3 levels	2 levels	2 levels
2	2 levels	2 levels	1 levels
3	2 levels	1 levels	1 levels
4	1 levels	1 levels	-
5	1 levels	-	-
6	-	-	-

Results Table to Use for Special Morale Checks

Event	Table to Use
Unit in Sight of Friendly Routed Unit	8
Unit is Sight of Friendly Broken Unit	7
Enemy Unit in Contact	7

Weapons Effects Charts

Smoothbore Musket

```
0   2   4
1   3   5
9   8   7
```

Obsolete Rifle Musket

```
0   2   6
1   5  12
9   8   7
```

Rifled Muskets

```
 0   2   7
 1   6  12
10   9   8
```

Breechloading Rifle

```
 0   2   7
 1   6  12
12  11  10
```

Repeating Rifle

```
 0   2   6
 1   5  12
13  12  11
```

Muzzle-Loading Carbine

```
 0   2   5
 1   4  10
10   9   7
```

Obsolete B-L Carbine

```
 0   2   5
 1   4  10
11  10   9
```

Breech-Loading Carbine

```
 0   2   5
 1   4  10
12  11  10
```

Repeating Carbine

```
 0   2   5
 1   4  10
13  12  11
```

Pistols or Shotguns

```
 0   2   4
 1   3   5
11  10   8
```

Mountain Rifle

```
0   2  17  49
1  16  48  72
8   9   8   7
```

6 pdr Gun

```
0   2  17  41
1  16  40  48
9  11   8   7
```

12 pdr Mountain How.

```
0   2  11  33
1  10  32  40
8  11   8   7
```

Light Rifle

```
0   2  17  49
1  16  48  72
9  10   9   8
```

12 pdr Gun

```
0   2  17  41
1  16  40  48
9  13   9   8
```

12 pdr Howitzer

```
0   2  15  33
1  14  32  40
9  12   9   8
```

Medium Rifle

```
0   2  17  49
1  16  48  72
9  11  10   9
```

24 pdr Howitzer

```
0   2  17  39
1  16  38  46
9  13  10   9
```

Heavy Rifle

```
0   2  19  53
1  18  52  84
9  12  11  10
```

32 pdr Howitzer

```
0   2  17  41
1  16  40  48
9  13  11   9
```

Regular Results Tables

<div style="display:flex">

TABLE   0

att	cas	1	2	4	8	13	21
1	-	-	-	-	-	-	-
2	-	-	-	-	-	-	-
4	0>5	0>3	-	-	-	-	-
6	0>5	1>5	-	-	-	-	-
8	0>5	3>2	0>3	-	-	-	-
11	0>5	5>3	1>3	-	-	-	-
14	0>5	R	2>3	0>1	-	-	-
17	0>5	R	3>4	0>4	-	-	-
21	0>5	R	5>1	1>2	-	-	-
25	0>5	R	6>3	2>1	-	-	-

TABLE   1

att	cas	1	2	4	8	13	21
1	-	-	-	-	-	-	-
2	0>5	-	-	-	-	-	-
4	0>5	0>4	-	-	-	-	-
6	0>5	2>1	-	-	-	-	-
8	0>5	3>3	0>4	-	-	-	-
11	0>5	5>4	1>4	-	-	-	-
14	0>5	R	2>5	0>2	-	-	-
17	0>5	R	3>5	0>5	-	-	-
21	0>4	R	5>2	1>3	-	-	-
25	0>4	R	6>4	2>2	0>1	-	-

TABLE   2

att	cas	1	2	4	8	13	21
1	-	-	-	-	-	-	-
2	0>5	-	-	-	-	-	-
4	0>5	0>5	-	-	-	-	-
6	0>5	2>2	0>1	-	-	-	-
8	0>5	3>4	0>5	-	-	-	-
11	0>5	5>5	1>5	0>1	-	-	-
14	0>4	R	3>1	0>3	-	-	-
17	0>4	R	4>1	1>1	-	-	-
21	0>4	R	5>3	1>4	-	-	-
25	0>4	R	R	2>3	0>2	-	-

TABLE   3

att	cas	1	2	4	8	13	21
1	0>5	-	-	-	-	-	-
2	0>5	-	-	-	-	-	-
4	0>5	1>1	-	-	-	-	-
6	0>5	2>3	0>3	-	-	-	-
8	0>5	4>1	1>1	-	-	-	-
11	0>4	6>1	2>2	0>2	-	-	-
14	0>4	R	3>2	0>4	-	-	-
17	0>4	R	4>2	1>2	-	-	-
21	0>3	R	5>4	2>1	0>1	-	-
25	0>3	R	R	3>4	1>2	0>2	-

TABLE   4

att	cas	1	2	4	8	13	21
1	0>5	-	-	-	-	-	-
2	0>5	-	-	-	-	-	-
4	0>5	1>2	-	-	-	-	-
6	0>5	2>5	0>4	-	-	-	-
8	0>4	4>2	1>2	-	-	-	-
11	0>4	6>2	2>3	0>3	-	-	-
14	0>3	R	3>3	1>1	-	-	-
17	0>3	R	5>4	2>5	0>5	0>1	-
21	0>2	R	6>4	3>2	1>2	0>2	-
25	0>2	R	R	3>5	1>3	0>3	-

TABLE   5

att	cas	1	2	4	8	13	21
1	0>5	-	-	-	-	-	-
2	0>5	0>1	-	-	-	-	-
4	0>5	1>4	0>1	-	-	-	-
6	0>4	3>1	0>5	-	-	-	-
8	0>4	4>3	1>4	0>1	-	-	-
11	0>3	6>4	2>4	0>4	-	-	-
14	0>3	R	5>1	2>4	0>5	0>1	-
17	0>2	R	5>5	3>1	1>1	0>2	-
21	0>1	R	6>5	3>4	1>3	0>3	-
25	1>5	R	R	4>1	1>4	0>4	-

TABLE   6

att	cas	1	2	4	8	13	21
1	0>5	-	-	-	-	-	-
2	0>5	0>2	-	-	-	-	-
4	0>4	1>5	0>2	-	-	-	-
6	0>4	3>2	1>1	0>1	-	-	-
8	0>3	4>4	1>5	0>2	-	-	-
11	0>2	R	4>4	2>3	0>5	0>1	-
14	0>1	R	5>3	2>5	1>1	0>2	-
17	0>1	R	6>1	3>2	1>2	0>3	-
21	1>4	R	R	3>5	1>4	0>4	0>1
25	1>3	R	R	4>3	1>5	0>5	0>2

TABLE   7

att	cas	1	2	4	8	13	21
1	0>5	-	-	-	-	-	-
2	0>5	0>4	-	-	-	-	-
4	0>4	2>1	0>4	-	-	-	-
6	0>3	3>3	1>2	0>2	-	-	-
8	0>2	6>4	4>2	2>2	0>5	0>2	-
11	0>1	R	4>5	2>4	1>1	0>3	-
14	1>5	R	5>4	3>1	1>2	0>3	0>1
17	1>4	R	6>2	3>3	1>3	0>4	0>1
21	1>2	R	R	4>5	2>3	1>3	0>4
25	2>5	R	R	5>2	2>5	1>4	0>4

TABLE   8

att	cas	1	2	4	8	13	21
1	0>5	0>1	-	-	-	-	-
2	0>4	0>5	0>1	-	-	-	-
4	0>3	2>2	0>5	0>1	-	-	-
6	0>2	6>2	3>5	2>1	0>5	0>3	0>1
8	0>1	6>5	4>3	2>3	1>1	0>3	0>1
11	1>4	R	5>1	2>5	1>2	0>4	0>2
14	1>3	R	6>4	4>2	2>2	1>2	0>4
17	1>1	R	R	4>3	2>3	1>3	0>4
21	2>4	R	R	5>1	2>5	1>4	0>5
25	2>1	R	R	5>5	3>4	2>2	1>2

TABLE   9

att	cas	1	2	4	8	13	21
1	0>5	0>2	0>1	-	-	-	-
2	0>4	1>1	0>2	0>1	-	-	-
4	0>2	5>4	3>4	2>1	1>1	0>3	0>2
6	0>1	6>3	4>2	2>2	1>1	0>4	0>2
8	1>4	R	4>4	2>4	1>2	0>4	0>2
11	1>2	R	6>2	4>1	2>2	1>3	0>5
14	2>4	R	6>5	4>3	2>3	1>3	0>5
17	2>2	R	R	5>3	3>2	2>1	1>2
21	3>4	R	R	5>5	3>3	2>2	1>3
25	3>1	R	R	6>3	4>2	2>5	1>5

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att	cas	1	2	4	8	13	21
1	0>4	0>4	0>2	0>1	–	–	–
2	0>3	1>2	0>4	0>2	0>1	0>1	–
4	0>1	5>5	3>5	2>2	1>2	0>4	0>3
6	1>4	6>4	4>3	2>4	1>3	0>5	0>3
8	1>2	R	5>5	3>5	2>2	1>3	0>5
11	2>3	R	6>3	4>2	2>3	1>4	1>1
14	3>5	R	R	5>2	3>2	2>2	1>3
17	3>2	R	R	6>1	4>1	2>5	1>5
21	4>2	R	R	6>4	4>4	3>2	2>2
25	5>3	R	R	R	5>1	3>4	2>4

TABLE	11						
att	cas	1	2	4	8	13	21
1	0>4	0>5	0>3	0>2	0>2	0>1	0>1
2	0>2	5>3	3>4	2>2	1>2	0>5	0>4
4	1>4	6>2	4>1	2>3	1>3	1>1	0>4
6	1>1	R	5>5	3>5	2>3	1>4	1>1
8	2>3	R	6>2	4>1	2>3	1>4	1>1
11	3>3	R	R	5>2	3>2	2>2	1>4
14	4>4	R	R	6>1	4>1	2>5	2>1
17	5>4	R	R	6>4	4>4	3>2	2>2
21	6>3	R	R	R	5>3	4>1	3>1
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2	0>1	5>4	3>5	2>3	1>3	1>1	0>5
4	1>2	R	5>4	3>5	2>3	1>4	1>2
6	2>2	R	6>5	4>5	3>2	2>2	1>4
8	3>3	R	R	5>1	3>3	2>3	1>4
11	4>1	R	R	6>3	4>3	3>2	2>3
14	6>5	R	R	6>5	5>1	3>5	2>5
17	7>3	R	R	R	5>3	4>2	3>1
21	9>5	R	R	R	6>1	4>5	3>4
25	10>1	R	R	R	6>4	5>2	4>1

TABLE	13						
att	cas	1	2	4	8	13	21
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2	1>4	5>5	4>1	2>4	1>4	1>2	1>1
4	2>3	R	5>5	4>1	2>4	2>1	1>3
6	3>2	R	R	5>4	4>1	3>1	2>2
8	4>1	R	R	6>3	4>4	3>3	2>4
11	6>2	R	R	R	5>3	4>2	3>2
14	8>3	R	R	R	6>1	4>5	3>4
17	10>4	R	R	R	6>3	5>1	3>5
21	12>1	R	R	R	R	5>5	4>4
25	15>4	R	R	R	R	6>2	4>5

TABLE	14						
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4	3>3	R	R	5>2	3>4	2>4	2>1
6	5>5	R	R	6>3	4>4	3>4	2>4
8	6>1	R	R	R	5>3	4>2	3>2
11	9>3	R	R	R	6>2	5>1	3>5
14	11>1	R	R	R	6>5	5>4	4>3
17	14>3	R	R	R	R	6>2	5>1
21	17>1	R	R	R	R	6>4	5>3
25	21>4	R	R	R	R	R	5>5

TABLE	15						
att	cas	1	2	4	8	13	21
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2	2>4	R	6>1	4>3	3>1	2>3	1>5
4	4>2	R	R	6>3	4>5	3>5	2>5
6	7>5	R	R	R	5>4	4>3	3>3
8	9>3	R	R	R	6>3	5>2	4>2
11	13>5	R	R	R	R	6>1	4>5
14	16>2	R	R	R	R	6>4	5>3
17	20>4	R	R	R	R	R	5>5
21	25>5	R	R	R	R	R	6>3
25	29>1	R	R	R	R	R	6>5

TABLE	16						
att	cas	1	2	4	8	13	21
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2	3>4	R	R	5>3	3>5	3>1	2>3
4	6>2	R	R	R	5>5	4>4	3>4
6	10>5	R	R	R	6>4	5>3	4>3
8	13>3	R	R	R	R	6>1	5>1
11	18>3	R	R	R	R	6>5	5>5
14	23>3	R	R	R	R	R	6>3
17	28>3	R	R	R	R	R	6>5
21	35>4	R	R	R	R	R	R
25	41>1	R	R	R	R	R	R

TABLE	17						
att	cas	1	2	4	8	13	21
1	2>4	R	6>2	4>4	3>3	2>5	2>2
2	4>2	R	R	6>5	5>2	4>2	3>2
4	9>4	R	R	R	6>4	5>3	4>3
6	14>5	R	R	R	R	6>3	5>2
8	18>2	R	R	R	R	R	6>1
11	25>1	R	R	R	R	R	6>5
14	32>1	R	R	R	R	R	R
17	39>1	R	R	R	R	R	R
21	49>4	R	R	R	R	R	R
25	58>2	R	R	R	R	R	R

TABLE	18						
att	cas	1	2	4	8	13	21
1	3>4	R	R	5>5	4>2	3>3	2>5
2	6>3	R	R	R	6>2	5>1	4>1
4	13>5	R	R	R	R	6>3	5>3
6	19>2	R	R	R	R	R	6>3
8	26>4	R	R	R	R	R	R
11	36>5	R	R	R	R	R	R
14	46>5	R	R	R	R	R	R
17	55>1	R	R	R	R	R	R
21	69>5	R	R	R	R	R	R
25	82>4	R	R	R	R	R	R

TABLE	19						
att	cas	1	2	4	8	13	21
1	4>2	R	R	R	5>4	4>4	3>5
2	9>4	R	R	R	R	5>5	4>5
4	18>3	R	R	R	R	R	6>2
6	27>2	R	R	R	R	R	R
8	36>1	R	R	R	R	R	R
11	50>2	R	R	R	R	R	R
14	64>3	R	R	R	R	R	R
17	78>4	R	R	R	R	R	R
21	96>2	R	R	R	R	R	R
25	115>5	R	R	R	R	R	R

Red Results Tables

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<tr><td>17</td><td>2>3</td><td>R</td><td>R</td><td>6>3</td><td>4>2</td><td>3>2</td><td>2>4</td><td>17</td><td>3>4</td><td>R</td><td>R</td><td>R</td><td>5>1</td><td>4>1</td><td>3>2</td></tr>
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TABLE 10

att	cas	1	2	4	8	13	21
1	0>4	2>3	2>1	1>5	1>5	1>5	1>4
2	0>3	R	5>2	3>5	2>5	2>3	2>2
4	1>5	R	5>5	4>2	3>1	2>4	2>2
6	1>2	R	R	5>3	4>1	3>2	2>4
8	2>4	R	R	5>5	4>2	3>2	2>5
11	3>5	R	R	6>5	5>1	4>1	3>2
14	3>1	R	R	R	5>4	4>3	3>4
17	4>2	R	R	R	6>2	5>1	4>1
21	5>1	R	R	R	6>5	5>3	4>2
25	6>1	R	R	R	R	5>5	4>4

TABLE 11

att	cas	1	2	4	8	13	21
1	0>4	2>4	2>2	2>1	2>1	2>1	2>1
2	0>2	R	5>3	4>1	3>1	2>4	2>3
4	1>3	R	R	5>3	4>1	3>3	2>5
6	2>4	R	R	5>5	4>2	3>3	2>5
8	3>5	R	R	6>5	5>1	4>1	3>3
11	4>4	R	R	R	5>4	4>4	3>5
14	5>3	R	R	R	6>2	5>1	4>1
17	6>2	R	R	R	R	5>5	4>4
21	8>5	R	R	R	R	6>2	5>1
25	9>2	R	R	R	R	6>5	5>3

TABLE 12

att	cas	1	2	4	8	13	21
1	0>3	R	5>3	4>2	3>2	2>5	2>4
2	1>5	R	5>5	4>2	3>3	2>5	2>4
4	2>5	R	R	5>5	4>2	3>4	3>1
6	3>4	R	R	6>5	5>1	4>2	3>3
8	4>4	R	R	R	5>5	4>4	3>5
11	6>5	R	R	R	6>4	5>3	4>3
14	7>2	R	R	R	R	6>2	5>1
17	9>4	R	R	R	R	6>4	5>3
21	11>3	R	R	R	R	R	5>5
25	13>2	R	R	R	R	R	6>3

TABLE 13

att	cas	1	2	4	8	13	21
1	0>2	R	5>5	4>3	3>3	3>1	2>5
2	1>3	R	R	5>5	4>3	3>5	3>2
4	3>5	R	R	6>5	5>2	4>2	3>4
6	4>3	R	R	R	6>2	5>2	4>3
8	6>5	R	R	R	6>5	5>4	4>4
11	8>3	R	R	R	R	6>2	5>2
14	10>2	R	R	R	R	R	5>5
17	12>1	R	R	R	R	R	6>2
21	16>5	R	R	R	R	R	6>5
25	19>5	R	R	R	R	R	R

TABLE 14

att	cas	1	2	4	8	13	21
1	1>5	R	6>1	4>4	3>5	3>3	3>1
2	2>5	R	R	6>1	4>4	4>1	3>3
4	4>4	R	R	R	6>1	5>1	4>2
6	6>3	R	R	R	R	5>5	4>5
8	8>3	R	R	R	R	6>4	5>4
11	11>2	R	R	R	R	R	6>2
14	14>1	R	R	R	R	R	6>5
17	18>5	R	R	R	R	R	R
21	22>3	R	R	R	R	R	R
25	26>2	R	R	R	R	R	R

TABLE 15

att	cas	1	2	4	8	13	21
1	1>3	R	6>2	4>5	4>1	3>4	3>2
2	2>1	R	R	R	5>4	4>4	4>1
4	5>1	R	R	R	R	6>1	5>1
6	8>1	R	R	R	R	6>5	5>5
8	11>1	R	R	R	R	R	6>3
11	16>3	R	R	R	R	R	R
14	20>1	R	R	R	R	R	R
17	25>3	R	R	R	R	R	R
21	31>3	R	R	R	R	R	R
25	37>3	R	R	R	R	R	R

TABLE 16

att	cas	1	2	4	8	13	21
1	2>5	R	R	6>2	5>1	4>3	4>1
2	4>5	R	R	R	6>2	5>3	4>4
4	8>4	R	R	R	R	6>5	5>5
6	12>3	R	R	R	R	R	6>5
8	16>2	R	R	R	R	R	R
11	23>5	R	R	R	R	R	R
14	29>4	R	R	R	R	R	R
17	35>2	R	R	R	R	R	R
21	44>5	R	R	R	R	R	R
25	52>3	R	R	R	R	R	R

TABLE 17

att	cas	1	2	4	8	13	21
1	2>1	R	R	R	6>1	5>1	4>3
2	5>1	R	R	R	R	6>3	5>3
4	11>2	R	R	R	R	R	6>5
6	17>2	R	R	R	R	R	R
8	23>3	R	R	R	R	R	R
11	32>4	R	R	R	R	R	R
14	41>5	R	R	R	R	R	R
17	49>1	R	R	R	R	R	R
21	61>2	R	R	R	R	R	R
25	73>4	R	R	R	R	R	R

TABLE 18

att	cas	1	2	4	8	13	21
1	4>5	R	R	R	6>4	5>5	5>1
2	8>4	R	R	R	R	R	6>2
4	16>3	R	R	R	R	R	R
6	24>2	R	R	R	R	R	R
8	32>1	R	R	R	R	R	R
11	45>4	R	R	R	R	R	R
14	57>3	R	R	R	R	R	R
17	69>1	R	R	R	R	R	R
21	86>4	R	R	R	R	R	R
25	102>2	R	R	R	R	R	R

TABLE 19

att	cas	1	2	4	8	13	21
1	5>2	R	R	R	R	6>5	5>5
2	11>3	R	R	R	R	R	R
4	23>5	R	R	R	R	R	R
6	34>3	R	R	R	R	R	R
8	46>5	R	R	R	R	R	R
11	63>4	R	R	R	R	R	R
14	80>3	R	R	R	R	R	R
17	97>1	R	R	R	R	R	R
21	120>1	R	R	R	R	R	R
25	143>1	R	R	R	R	R	R

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Notes: