Designer Notes: The Seven Years War

When I was first offered the opportunity to develop the Seven Years War for John Tiller Software, I had to take a step back and really think about the nature of the era of Late Linear Warfare. Most gamers are more familiar with Napoleonic warfare. In fact, because of this, we've prepared a document (included with the game) for people who have played the JTS Napoleonic games, to help them adjust. However, what marked the warfare of this era?

I find it helpful to consider the development of the "state of warfare" as it existed in 1756. In many ways, two developments set the stage for the warfare of this era, and both of them are subtle enough that they are very easily overlooked, yet as the armies worked through the implications of these developments they shaped the warfare of this era (and beyond).

The first of them is what seemed a rather minor development at first glance, in the late 17th Century: the socket bayonet. Bayonets are rather odd, they were very rarely used in melee, but they had an enormous impact on the development of tactics in the 18th Century. Up to that point, musketeers were not especially effective in melee, requiring units with more traditional melee weapons (generally pikes) to support them against enemy attack, especially those launched by enemy cavalry. Formations tended to be denser, deeper, and had some method of mixing pike and shot (thus the name of the engine, Musket and Pike.) With the socket bayonet, every musketeer effectively had a pike when he needed it, which allowed units to dispense with pikes. In time, units tended to look to maximize firepower by thinning the lines (generally 3-rank line in this era, as opposed to the deeper formations of the 1680s).

The second was the development (or re-development really) of the use of cadenced marching. Modern soldiers may gripe about close order drill, but for this era, it was a true game changer. A unit which marched in cadence was able to go faster and maneuver more sharply. This led to a far greater ability for units to deploy into formation, and indeed, made for a much more efficient process to shake an army into battle array.

By the time of the Seven Years War, the armies had developed a very formal approach to deployment and battle, using the "clockwork" maneuvers that had developed from these developments. The deployments of this era tended to be rather rigid and inflexible, especially in comparison with the developments of the next 50 years.

The War of the Austrian Succession showed that the Prussians had taken a great leap ahead of other nations in the quality of their infantry. Not only had they been the ones to introduce cadenced marching, they also were the best drilled army in Europe, and had also introduced the iron ramrod, which allowed them to fire their muskets more quickly than others.

As one would expect, the years leading up to the Seven Years War saw the various nations attempting to play catch-up with the Prussians. They generally were able to close the gap to a greater or lesser extent, but in 1756 the Prussians were still man for man the premier army in Europe.

Even while the infantry was developing, there were parallel developments in the training and usage of Cavalry. In the War of the Spanish Succession, cavalry would often stop to fire their guns before charging home, but that would tend to disrupt the attacking formation, as well as breaking the momentum of their movement. The British (and Swedes in the concurrent Great Northern War) had already adopted the tactic of simply charging home with cold steel. That tendency would continue into the Late Linear Era.

At the Battle of Mollwitz in the War of the Austrian Succession, Frederick's cavalry was decisively defeated by the Austrians, with the battle being won only by the quality of the Prussian infantry. After that, he took the time to institute major reforms, which made his cavalry the equal of his infantry: the best drilled and most effective in Europe. He wanted all his cavalry to be effective on the field of battle, which meant that even his lighter Hussars and Dragoons could be very effective in the charge. However, this did mean that those forces would be less effective in the "small war" of scouting and raiding.

So, how do we model all of that in JTS Seven Years War?

Infantry:
Starting with infantry, there are a few key points to understand in how things have been modeled. First, we looked at the whole nature of the formations in the game. The most important thing was not how we would model line, but instead column. The "Napoleonic" Column of Attack simply did not exist in this era. Armies were not trained in it, nor did they have it in their drillbook. The French had already started some theoretical steps in that direction (most notably in the writings of Chevalier Folard), but they would not bear fruit until the writings of Guilbert in the years after the war.

Thus, it was decided to treat the column formation in game as a "Column of March" instead of a "Column of Attack." This was a longer, thinner formation normally used by an army on the move. It was not intended to be used in close contact with the enemy. To that end, the use in combat of the column has been gutted. It has almost no firepower, and the column melee modifier in the game is a severe penalty. What makes things worse is that in the M&P engine, a unit in D status cannot change formation, so a D status infantry unit in column is both vulnerable and somewhat worthless.

Then, we looked at the firepower of the units. One of the decisions we needed to make was how to handle the 3 pound battalion artillery. In the end, we decided to factor those cannon into the individual firepower of the parent infantry unit, instead of having many small artillery units everywhere.

The Prussians and British are given a slight advantage in firepower (thus giving them "improved musket" as weapon.) This is not a reflection of a technological difference, but instead on the nature of the drill of those armies compared to the others. They put more focus on effectively firing their muskets.

Firepower in this game can be fairly painful. These are well trained armies, and a full volley from a fresh unit can hurt pretty badly.

The Musket and Pike engine also gives the ability to give a melee specific bonus to units, and normally grenadier units are given a +1 to their melee, to reflect their usage as the shock troops of the era.

People may be a bit surprised to see that infantry units are restricted from forming square. The classic square formation of the Napoleonic Era was very rarely used. Generally, infantry units under attack would turn the 3rd rank of the line to deal with a rear attack. As a rule, armies kept their formations tight enough that cavalry could not pass between units in the front line.

However, not having square does not leave infantry helpless against cavalry because:

Cavalry:
The first thing that people will notice about cavalry here is that it's less powerful. The Cavalry charge bonuses are typically one step lower than they are in the JTS Napoleonic games. While Frederick's reforms certainly pointed to the power of cavalry in years to come, that had not yet fully borne fruit.

This makes cavalry more situational, as charging headlong into good order infantry is generally not a viable tactic. You'll need to be more careful to pick your spots. You'll need to wait for the enemy to become disrupted, or attack from the flank or rear.

Prussian cavalry does typically get a bit more of a melee bonus than other nations, to reflect their status as the best in Europe at this time.

Stacking limits

Stacking limits are very tight in this game.   That's because it would be extremely rare for troops to be piled "deeply" into a hex. So, the limit is set at half of what is in the Napoleonic games. It forces you to be more careful with your troops.   It can be difficult to get good melee odds, especially against good order troops. It's to your advantage to use firepower to break down the enemy before pushing forward.

Melee with detached troops:
New to this game is a change that units cannot start a melee with detached troops. This is intended to slow down the mass attacks a bit, and force players to focus on keeping their command arrangements tight.

Melee:
What is melee in game turns? People see the term, and their mind goes to the point of the bayonet, but that's not really accurate in most cases. In the open field, infantry very rarely came to that type of direct combat during this era (in towns or other obstructed terrain, things could be very different.) Instead, it is worthwhile to consider a "typical" melee attack of the era.

When a unit was ordered to advance, they would start moving forward in formation, possibly (depending on the army and situation) stopping to fire along the way. As they advanced, the defenders would be firing away, causing a constant stream of losses to the attackers. Eventually, the "moment of decision" would arrive, where one or the other units would "recoil". Either the losses of the attackers would grow to the point that the troops would start to pull back, or the inexorable advance of the enemy would unnerve the defenders to the point that they would withdraw.

What this points out is that melee in this era was actually a gigantic exercise in applied psychology. The issue would generally turn on "whose morale broke first?" This same effect is actually what would make the Napoleonic Column such a powerful formation, because seeing that mass of humanity coming at you was severely unnerving, even if many of those troops were unable to participate because they were buried deep inside the formation.

So, most losses on both sides in a melee would actually be from firepower and not from bayonet or clubbed musket.

Of course, all of the above is speaking of infantry melee. Cavalry melee against infantry was much more likely to go to swordpoint.

Leaders and unit organization:
The higher level unit organization of this era tended to be much less formal than what would become common in the Napoleonic Wars. The Corps structure favored by Napoleon was still in the future, and even Brigading tended to be on an ad hoc basis. Because of that, some of the unit structures in this game can be downright "kludgy". There are units of mixed infantry and cavalry, some units that really have too many troops for one leader to control, and the like. Other times, I've been forced to add levels of organization to the armies simply to make them work within the game engine.

Information is scarce on a great number of these mid level leaders. In fact, the game had a depressingly high number of "GM Phantom" in the game. To give a bit more flavor and make it easier for players to keep track of things, the decision was made to give most of those leaders generic national names. Any leader whose name ends in * is one of these "unknown" leaders.

Notes on the armies:
The armies of the Seven Years War were trained on roughly parallel lines, but there were some differences which are reflected in the way they are modeled in game.

The morale of units is based on this conceptual scale:
- **A:** Elite troops: Generally only the best of the best get this. Prussian Grenadiers would be an example of this.
- **B**: Superior troops: This is generally reserved for Prussian Line troops, as well as many other grenadiers.
- **C:** Good troops. These are troops who are generally well trained and drilled. Prussian garrison battalions are here (as well as some late war Prussian line troops.) This is also where you find most Austrians, British and North German troops.
- **D:** Poor troops. These are troops whose morale and drill doesn't match up to the other armies. The French are the most common D troops.
- **E:** Very poor troops: This is the realm of militia, as well as some of the lesser Imperial units.

Prussia:
While the other nations had closed the gap since the War of the Austrian Succession, man for man, the Prussian Army was still the best in Europe at this time. As noted above, the infantry and cavalry were both trained to a fine edge (though this would fray somewhat as the war went on.)

As such, Prussians are typically given high morale, the bonus of "improved musket" mentioned before, as well as various command advantages. They also tend to move a bit faster, as a reflection of their superior marching drill.

The Prussian Alliance forces in the west are often displayed as British (red) armies. The term "Army of Observation" is really only proper for the forces led by Cumberland at Hastenbeck. Because the forces of King George the II in his dual role as the King of Great Britain and Elector of Hanover made up the backbone of the force, I chose to use the British display colors for the later battles.

Austria:
The Austrians had made great strides in the years since the War of the Austrian Succession. While they were still a step behind the Prussians, they were good, solid troops all around. As such, they're typically given a morale of C.

One advantage the Austrians did have was the "Grenzer" units. These were units raised among Croats who lived along the border with the Ottomans in the south. They were the premier Light Infantry in Europe. They had proved their worth in the War of the Austrian Succession, and would continue to do so in the Seven Years War. They are some of the very few light infantry in the game, and have the best morale.

Russia:
The Seven Years War was Russians debut into the affairs of Central Europe, and they honestly surprised the Prussians with their quality. That said, they were a bit of an odd army to model. They were tactically less flexible, and were much stronger in the defense than the attack.
To this end, they are often given D morale, but are also given fanatic status (+2 morale check). This makes them hard to rout, but they don't get the other benefits of B morale.

Their cavalry hadn't caught up with their infantry. This was especially true early in the war, as they were in the process of reorganizing their horse into more western lines, and were only half through. The Cossacks tended to be of very limited value both on and off the battlefield.

They also had a variety of rather odd artillery units, most notably the "Shuvalov Howitzer" which was quickly retired after the war (when the inventor was moved out of his job as the head of Russian artillery)

They are typically the slowest moving of the armies, often moving one hex less than most other armies.

France:
This is not one of the better eras for the French Army. The short form is that the entire army was caught up in one of those periods of indolence and lack of focus that come up from time to time (in some ways, it reminds me of the French army in 1870.) Their commanders tended to bicker with one another, and the army never quite achieved the results you would expect.

As such, the French army is normally rated as D morale.

Great Britain:
Ever since the days of Marlborough, the British army had been known for its firepower, and that reputation would be carried though the War of the Austrian Succession, the Napoleonic Wars, and even to Mons in World War One. This war was no exception. The small, professional, British Army is given a bonus in firepower, but otherwise is considered to be good, but not exceptional troops (C morale).

Imperial:
The "Imperial" army is largely made up of the armies of the South German states which were called by the Holy Roman Emperor in his defense. This army tended to be a hodgepodge, where you had some units which were well trained and compared well with the troops of Austria, but many others were ill trained and did not do well at all. Generally, these are some of the worst units in the game. The morale of these units will vary from C (for instance, Würzburg) to E.

North German States:
When the British entered the war, they enlisted the aid of several states in North Germany. First of all was Hanover, as King George II was also the Elector of Hanover. Then they also brought in Hesse-Kassel and Braunschweig (Brunswick). Along with the British, these troops formed the backbone for the western front where Prince Ferdinand of Brunswick fought with the French for most of the war. These tended to be good, solid, well trained troops, and are rated as such.

Gary McClellan, Aug, 2018

<div align="center">Bibliography</div>

There are a number of outstanding sources on the Seven Years War and the armies and tactics of the era. This is not the entire list of works consulted, but these are the key works, well worth looking up if you want to read further on the war.

Abel, Jonathan: *Guilbert: Father of Napoleon's Grande Armee.*

Gunter Dorn & Joachim Engelmann: *Die Schlachten Friedriches des Grossen:*

Duffy, Christopher:
The Austrian Army in the Seven Years War
  Volume 1:*Instrument of War*
  Volume 2:*By Force of Arms*
The Army of Frederick the Great.
The Military Experience in the Age of Reason
The Military Life of Frederick the Great
Prussia's Glory: Rossbach and Leuthen 1757
Russia's Military Way to the West: Origins and Nature of Russia's Military Power 1700-1800

Kennett, Lee: *The French Armies in the Seven Years War*

Mackesy, Piers: *The Coward of Minden: The Affair of Lord George Sackville*

Nosworthy, Brent: *The Anatomy of Victory: Battle Tactics from 1689-1783*

Reid, Stuart: *The Battle of Minden 1759: The Impossible Victory of the Seven Years War*

Savory, Sir Reginald: *His Britannic Majesty's Army in the Seven Years War*

Showalter, Dennis: *The Wars of Frederick the Great*

Smith: Digby: *Armies of the Seven Years War: Commanders, Equipment, Uniforms and Strategies of the 'First World War'*

Szabo, Frank A.J. *The Seven Years War in Europe*

Weigley, Russell F: *The Age of Battles*

The following Osprey Volumes:
Marston, Daniel: *Essential Histories: The Seven Years War*
Miller, Simon: *Kolin 1757: Frederick the Great's first defeat.*
Miller, Simon: *Rossbach and Leuthen 1757: Prussia's Eagle resurgent.*
Miller, Simon: *Zorndorf 1758: Frederick faces Holy Mother Russia*

The is an **outstanding** website filled with a great deal of good information on the entire Seven Years War at: http://www.kronoskaf.com/syw/index.php?title=Main_Page

Guide to the Order of Battle files in the Musket & Pike Engine*

It is recommended that you use Notepad to build an order of battle file. Any text editor that will not include special characters is ok as well. I am partial to UltraEdit.

The structure of the order of battle file is important. It is similar to C code in that there is a series of open and close statements many of which are embedded within other open and close statements.

The following guide will help you create an order of battle file.

Order of Battle file codes:

Line one is the version number - currently this value is 1

The next line is for the first army (side A, choose from list below) followed by a formation designation which is always A.

Austria (Side A)
France (Side A)
Reichsarmee (Side A)
Russia (Side A)

Prussia (Side B)
Army_of_Observation (Side B)
Britain (Side B)

Note: Each OOB file is limited to 5 armies at once, so 2 on 3 or 4 on 1, etc.

The formation designations are:

A - Army
W - Wing
C - Corps
D - Division
B - Brigade

Each designation follows the above hierarchy thus Brigades must be contained within any formation type above them on the above list. A Division would not be put under a Brigade nor a Wing under a Corps. Several Divisions may be under a Corps, Wing or Army.

This letter is followed by the **Formation Name (FN)** of each formation.

This is followed by a series of open and close formation statements:

Begin - signifies that what follows will be contained in the preceding **FN**.

End - terminates the current open **FN**.

In order to properly terminate all formations an End statement must appear.

Formations are encapsulated within their own **Begin** and **End** statements. Thus an Army has a **Begin** statement which begins that army and will not have an **End** statement until after all formations contained within its organization have been terminated with **End** statements.

After a **Begin** statement you may insert a leader (**L**) followed by any units (**U**) in the formation. Once all leaders and units have been inserted an **End** statement is needed to terminate the formation.

Example:

> **B Royal Guards**
> > **Begin**
> > **L** 4 5 3 24 King James IV
> > **U** 50 -7 G P 0 0 4 3 10 15 1 Royal Guardsmen
> > **U** 775 -6 R P 0 0 4 2 10 14 3 Royal Pike
> > **End**

In the above example the **Royal Guards** formation has one leader and two units in its formation. A **Begin** and **End** statement both opens and ends the formation. This brigade is contained within a Division.

Supply wagons may be placed after any End statement but before the last End statement for each army. In other words if you want to have a Supply Wagon for an entire Division you would place it after the last Brigade End statement but before the Division End statement.

Example:

> B Argyll
> > **Begin**
> > L 3 4 21 24 Earl of Argyll
> > U 325 3 M H 3 3 0 0 14 9 0 Highlanders
> > U 350 3 V Y 3 3 0 0 18 9 0 Highlanders
> > U 325 -5 M H 3 3 0 2 14 11 0 Highlanders
> > U 275 4 V S 3 3 0 1 18 10 0 Highlanders
> > U 300 -4 M H 3 3 0 1 14 11 0 Highlanders
> > U 275 3 V S 3 3 0 1 18 9 0 Highlanders
> > U 225 3 M T 3 3 0 0 16 10 0 Highlanders
> > U 225 3 V Y 3 3 0 0 18 9 0 Highlanders
> > U 200 2 M Y 3 3 0 0 16 8 0 Highlanders
> > **End**
> **S 6 16 12 10 Scottish Supply**

End

End - terminates the Division formation.

The unit types:

Leader:

Sample leader:
L 3 4 21 24 Earl of Argyll

L - Leader type
3 - Command value (important for Disorder recovery)
4 - Leadership value (important for Rallying units)
21 - Icon number
24 – Movement point allowance
Earl of Argyll - leader's name

Command and Leadership values are as follows:
A - 6
B - 5
C - 4
D - 3
E - 2
F - 1

In the above example Argyll has a Command rating of D and a Leadership rating of C.

See the User.hlp file for more information on how these values affect the game. The higher the better.

Artillery:

Sample artillery unit:
U 8 7 A B 23 0 0 0 8 44 0 Cannons
U - Unit (not a leader or formation)

8 - size in guns

7 - morale

A = movement class
    A = Heavy (typically anything like a 12lb gun/24lb how. or above)
    B = Light (typically 9/8lb gun/howitzer and below)
    C = Horse

B = Weapon Type
varies by PDT file but here are the usual ones:
    A = French 12lb
    B = French 8lb

C = French 6lb
After that it depends on the nationality

23 - 2d icon found in the Units.bmp file

0 - 3d icon found in the 3DUnits100a.bmp, 3DUnits50a.bmp (unlimbered icon) and 3DUnits100d.bmp, 3DUnits50d.bmp files (limbered icons).

0 – armored value

0 – melee bonus value

8 – movement point allowance

44 – victory point allowance

0 – flag for square (included for uniformity sake in the OOB, always 0 for non-infantry units)

Cannons - unit name

Cavalry:

Sample cavalry unit:
U 165 8 L S 12 0 4 2 12 6 0 1 Sq/Chas. à Chev.

U - Unit (not a leader or formation)

165 - size in men

8 - morale (from 0-9, 9 is best)

L = troop type
>   L = Light
>   H = Heavy
>   K = Cossack
>   D = Dragoon

S = Weapon type
>   L = Lance
>   S = Saber

12 - 2d icon found in the Units.bmp file

0 - 3d icon found in the 3DUnits100b.bmp, 3DUnits50b.bmp (squadrons) files

4 – armored value

2 – melee bonus value

12 – movement point allowance

6 – victory point allowance

0 – flag for square set to 4 => Half assault value when assaulting into trenches or out of abates hexes. (This is the only valid setting for non-infantry units in this field).

1 Sq/Chas. à Chev. - unit name

Infantry:

Sample infantry unit:
U 784 4 R P 0 0 4 2 12 6 3 Pike

U - Unit (not a leader or formation)

784 - size in men

4 - morale (from 0-9, 9 is best) (place a – before the number to give a fanatical rating (value defined in PDT file, normally +2)

R = Infantry type, the available types are:

> I - three rank line infantry - can detach one company of skirmishers
> M - three rank irregulars - cannot detach skirmishers
> **V** - three rank light infantry - can fully breakdown into skirmishers
> **G** - three rank Guard infantry - can fully breakdown into skirmishers
>
> T - two rank line infantry - can detach one company of skirmishers
> R - two rank irregulars - cannot detach skirmishers
> **U** - two rank light infantry - can fully breakdown into skirmishers
> **F** - two rank Guard infantry - can fully breakdown into skirmishers
>
> Y - four rank line infantry - can detach one company of skirmishers
> Z - four rank irregulars - cannot detach skirmishers
> **X** - four rank light infantry - can fully breakdown into skirmishers
> **E** - four rank Guard infantry - can fully breakdown into skirmishers
>
> **S** – skirmisher
> **P** – Pioneer
> Notes:
> **V**,**G**,**U**,**F**,**X**,**E**,**S** skirmishers rally independently
> The rest must be within 5 hexes of their parent unit

P = weapon type
> M = musket
> P = pike
> R = rifle
> (other codes as needed and available)

0 - 2d icon found in the Units.bmp file

0 - 3d icon found in the 3DUnits100c.bmp, 3DUnits50c.bmp (battalions) and 3DUnits100e.bmp, 3DUnits50e.bmp (skirmishers) files.

4 – armored value

2 – melee bonus value

12 – movement point allowance

6 – victory point allowance

3 – flag for square/block – this is a binary value and handled as following for REN:
        The "block" value is a binary bit value with these values:
        1 => Can form Pike Block formation
        2 => Cannot form Line formation
        So 3 for pikes and 1 for halberds.
        4 => Half assault value when assaulting into trenches or out of abates hexes.

Pike - unit name
Supply Wagons:

These can be inserted after **End** statements for formations but like all units must be list before the final **End** statement for their army. Thus a Supply Wagon listed after a Division's (which is part of a Corps) **End** statement will be a Corps wagon.

sample supply wagon:
S 280 32 12 10 Supply Wagon

S - supply wagon unit type
280 - number of ammo rounds - each point can resupply 10 men thus this wagon can resupply 2800 men

32 - 2d icon found in the Units.bmp file

12 – Movement point allowance

10 – Victory point allowance

Supply Wagon - unit name

The final lines of an order of battle will have a supply wagon listed for each army in army order. Thus if the order of armies is French, Prussian, Russian than a supply wagon of each will be listed at the end as follows:

France S 280 32 12 10 Supply Wagon
Swiss S 300 92 12 10 Supply Wagon

Italian_States S 300 82 12 10 Supply Wagon

* The Musket & Pike (M&P) engine is similar to the Napoleonic engine, so that base document was used for this. Thanks to Bill Peters for the original work in putting the OOB document together. I have just altered it to fit the new format for this engine. Rich Hamilton – 08/09/2018

Musket & Pike PDT File Info

Line 1: Version number (2).

Line 2: Title.

Line 3: First side.

Line 4: Dawn hour, dawn minute, dusk hour, dusk minute, hours of twilight, twilight visibility.

Line 5: Turn length during day turns, turn length during night turns.

Line 6: Maximum stacking, stacking factor for artillery, stacking factor for cavalry, maximum counters per hex, counter factor for artillery, counter factor for cavalry, number of men per SP.

Line 7: Fractional strength for skirmishers, fractional strength for squadrons, men for extended line for 3-rank units, men for extended line of 2-rank units, men for extended line for 4-rank units, number for extended line for artillery.

Line 8: For each nation, brigade command radius, for each nation, division command radius.

Line 9: If (version >= 2) For each nation, corps, wing, and army command radius.

Line 10: Maximum fatigue (in hundreds), percent probability of fatigue recovery during day, percent probability of fatigue recovery during night.

Lines: For each terrain type: (currently 11) Move cost for line infantry, move cost for column infantry, move cost for cavalry, move cost for artillery, move cost for supply wagons.

Lines: For each terrain hexside: (currently 12) Move cost for line infantry, move cost for column infantry, move cost for cavalry, move cost for artillery, move cost for supply wagons.

Line: Move cost for line infantry uphill, move cost for column infantry uphill, move cost for cavalry uphill, move cost for artillery up hill, move cost for supply wagons uphill.

Line: Infantry change facing cost, cavalry change facing cost, artillery change facing cost.

Line: Infantry about face cost, cavalry about face cost, artillery about face cost.

Line: Line formation rear movement penalty.

Line: Ammo loss base, for each nation, probability of ammo loss.

Line: For each nation, artillery ammo loss.

Lines: For each weapon until $, fire effectiveness values.
Use Upper Case letter for "Soft target" fire values, use lower case for "hard target" values.
To flag a weapon as having "no bayonets" place "-" at the end of the weapon character, this will reduce the melee strength of that weapon to 1/3 normal value.
To give artillery indirect fire capability, put a '+' after the weapon character.
To flag a weapon as being "single use" place "*" at the end of the weapon character.
To flag a weapon as needing "setup" place "!" at the end of the weapon character.
To flag a weapon as "no defensive fire" place "@" at the end of the weapon character,

Line: Enfilade modifier (in percentage), cavalry modifier (in percentage)

Line: For each terrain type, fire modifier (in percentage).

Line: For each terrain hexside, fire modifier (in percentage).

Line: Elevation modifier (in percentage).

Line: Leader loss base, for each nation, leader wound chance, leader kill chance, leader melee wound chance, leader melee kill chance, leader melee capture chance.

Line: For each terrain type, terrain height, height of man.

Line: Probability of breastwork construction, breastwork movement cost, breastwork combat modifier (in percentage), guts (fanaticism) value.

Line: artillery reinforcement ammo value, for each nation.

Line: fire factor for infantry in column, for each nation. I.E. 5 = 1/5, 4 = 1/4.

Line: artillery-melee and artillery-fire strengths.

Line: for each nation, line disruption value.

Line: bridge damage value. Entering a non-zero value here results in random bridge damage.

Line: weather values starting with a 1, 2 lines to effect change, each with following info: Routine, year, month, date, hour, minute, percentage, visibility effect, movement cost, artillery modifier, attack modifier, flag changes, condition name. (flags are: 1 = No cavalry charge)

Line: 0 (zero) - to end weather entries.

Line: Cavalry charge value (factor), default 3.

Line: Cavalry charge continuation (multiple), default 4.

Line: Disordered defender melee value, default 2 3 (for 2/3).

Line: abatis move, abatis fire.

Line: trench move, trench fire.

Line: if (version >= 2) For each nation, melee modifier.

PDT Notes:

Weather entries display like this in the PDT file:

1 1757 11 22 9 00 100 6 100 100 0 0 Light Fog
1 1757 11 22 9 45 100 18 100 100 0 0 Clear

Weather entries display like this in the in-game PDT view:

Weather
   Light Fog (100% at 09:00 11/22/1757)   Visibility: 6   Move Cost: 100%
   Attack Mod: 0%   Artillery Mod: 100%   Flags: None
   Clear (100% at 09:45 11/22/1757)   Visibility: 18   Move Cost: 100%
     Attack Mod: 0%   Artillery Mod: 100%   Flags: None

Current PDT version number = 2

Weapons can have multiple flags within the PDT file.

Weather entries should be limited to a short period, a few days or a couple of weeks at most. Keep the number of PDT files used for the game low, but don't use a single one for the entire game, which will cause extensive weather entries and as a result slow load (or not at all) times on some computers.