

## WDS Civil War Battles PDT Files Explained

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## Ken Miller's CWB PDT File Explained

This is a primer for those who are interested in modifying the PDT or creating their own scenarios. This was put together by me and contains information I have collected over 15 years of playing the JTS American Civil War Battles games.

It is not an official JTS help file so you should not contact JTS Support about it. If you discover something in this document that is not correct you can contact me at krmiller\_usa at yahoo dot com.

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### Creating and Modifying a PDT File

Before modifying a pdt there are several things you want to keep in mind.

1. **You do not want to modify the existing pdt files.**
2. **You want to make sure your opponent is aware of the changes you make and agrees to them before starting a game.**
3. **It is easier to modify an existing PDT file than creating one from scratch.**

Wait a minute, you just said I shouldn't modify an existing PDT file!

Yes, but what you can do is open an existing PDT file with a text editor, you can use Notepad or WordPad both of which come with most pc's or any other straight text editor.

You do not want to use Word to work on any of these files as the way it saves the file will cause problems when the game engine attempts to use it. This is because of the way Word saves spaces and tabs in its files.

**Once you open the file the first thing you want to do is to save it under a new name.**

Using the Save As function in the File menu you can use the original file name and add a number or letter to it such as Antietam\_1A.pdt if you are just planning to modify the pdt and or a scenario. Or you can give it a name that indicates what game it is for, or what scenario you plan to use it in and your initials such as Antietam\_KM1.pdt. Then when you create a scenario to use the pdt file in you can note the changes in the pdt in the scenario description.

### PDT Values Explained

Below is a table containing the data for the 03-Mississippi.20.pdt file from the new Forgotten Campaigns game. We will go through it line by line explaining what each line does in the program. Just remember the line numbers are for the 03-Mississippi.20.pdt file. They may change when working on other pdt files due to differences in the number of weapon lines in the pdt.

Also some pdt files don't have all the functions in use and some of the values shown will be different for other pdt files. However you should be able to use this page to determine the values from any pdt file by comparing their location and make up.

Line	Data	Function	Comments
1	9	<b>Version Number</b>	<p>Currently may be 1-10. This tells the program what version the pdt is, this affects the use of some values. You will see as we go through that some values require a certain version to work.</p> <p>Some values were changed or added as the games developed. All game engines have or will be updated to use all the values listed, but rather than go back and modify the pdt to use them in the earlier games they were left as they were.</p> <p>You can add any values listed here in a custom pdt as long as the Version number is up to the required level. If you attempt to use a value and the Version Number here is not at least as high as is required it will cause a problem when you attempt to load the scenario and it may not load properly or could even crash the program. Not entering a value that is used in the version you make the PDT can also cause a problem.</p>
2	Passage of Port Hudson 20min March 1863	<b>PDT Title</b>	This is just an identifier, it doesn't really matter but often the name is similar to the scenario file name.
3	0	<b>Side 1</b>	<p><b>0 = Union, 1 = Confederate</b></p> <p>This designates which side is first, this is for purposes of determining Objective Points for Victory, only the Side 1 Player gets points for the Objectives. Some objectives award points to Side 2 but these are just subtracted from Side 1 total. It also determines which side moves last.</p> <p><b>Note:</b> The Side 1 may not get first move, sometimes the scenario starts in the second player's movement phase and even the fire or melee phase. This is set in the Scenario Editor.</p>

4	6 0 18 0 1 20 12 70	<b>Dawn/Dusk, Day/Night, Visibility Settings</b>	<p><b>Dawn hour - 6</b>  <b>Dawn minute - 0</b>  <b>Night hour - 18</b>  <b>Night minute - 00</b>  <b>Hours of twilight - 1</b>  <b>Twilight visibility - 20</b> (if negative, causes poor weather message).  The next two are new settings introduced for the Forgotten Campaigns game, these used to be set in the main program in all previous versions.  <b>Night Visibility - 12</b>  <b>Day Visibility - 70</b>  If PDT is Version 9 these numbers must be provided. If Version is 8 or less you cannot add these numbers. In either case the game will not load properly  <b>NOTE:</b> You can reduce maximum visibility using Weather Lines but you cannot increase it beyond these settings. Prior to Version 9 Max Day Visibility was 70 hexes and Max Night was 1.</p>
5	20 60	<b>Day/Night Turn Length</b>	<p><b>Turn length during day turns - 20</b>  <b>Turn length during night turns - 60</b></p>
6	800 8 20	<b>Hex Limits</b>	<p><b>Maximum stacking in men - 800</b>  <b>Maximum counters per hex - 8</b>  <b>Men per Strength Point - 20</b></p>
7	3 3 6 6 12 12 28 28	<b>Command Range</b>	<p><b>For each side Union, Confederate Brigade command radius (3 3)</b>  <b>Division command radius (6 6)</b>  If version &gt;= 3, for each side  <b>Corps command radius (12 12)</b>  <b>Army command radius (28 28)</b></p>
8	1 1 1 900 5 20	<b>Fatigue Values</b>	<p>The first 3 values are currently not used in the ACW games (1 1 1)  <b>Maximum fatigue - 900</b>  <b>% probability of fatigue recovery day turn - 5</b>  <b>% probability of fatigue recovery night turn - 20</b></p>
9	12 24 12 8	<b>Movement Allowance</b>	<p>Movement allowance for  <b>Infantry - 12</b>  <b>Cavalry - 24</b>  <b>Artillery - 12</b>  <b>Supply wagons -8</b></p>

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	Lines 10-22 cover hex terrain movement costs for the different types of units and are listed by terrain.	<b>Movement Cost for Hex Terrain</b>	For each hex terrain type: Movement Cost for Line infantry Column infantry Cavalry Artillery Supply wagons
10	0 0 0 0 0		<b>Blocked</b>
11	2 2 2 2 2		<b>Clear</b>
12	0 0 0 0 0		<b>Water</b>
13	5 4 6 8 8		<b>Forest</b>
14	3 3 4 6 6		<b>Orchard</b>
15	4 4 8 0 0		<b>Marsh</b>
16	4 1 2 2 2		<b>Town</b>
17	2 2 3 2 2		<b>Field</b>
18	5 5 6 9 9		<b>Rough</b>
19	0 2 2 2 2		<b>Trail</b>
20	0 1 1 1 1		<b>Road</b>
21	0 1 1 1 1		<b>Pike</b>
22	0 2 2 2 2		<b>Rail</b>
	Lines 23-28 cover hexside terrain movement costs for the different types of units and are listed by terrain.	<b>Movement Cost for Hexside Terrain</b>	For each hexside terrain : Movement Cost for Line infantry Column infantry Cavalry Artillery Supply wagons
23	1 1 2 2 2		<b>Stream</b>
24	0 0 0 0 0		<b>Creek</b>
25	1 1 2 2 2		<b>Fence</b>
26	1 1 2 6 6		<b>Stone</b>
27	0 0 0 0 0		<b>Embankment</b>
28	0 0 0 0 0		<b>Cut</b>

29	1 1 2 2 2	<b>Movement Cost moving uphill</b>	Movement Cost uphill per elevation level. Line infantry Column infantry Cavalry Artillery Supply wagons Downhill cost is $\frac{1}{2}$ this value rounded down.
30	2 3 2	<b>Facing Change Cost</b>	Facing Change Movement Cost Infantry 2 Cavalry 3 Artillery 2
31	2 2 2	<b>About Face Cost</b>	About Face Movement Cost Infantry 2 Cavalry 2 Artillery 2
32	4 6 3	<b>Formation Change Cost</b>	Formation Change Movement Cost Infantry 4 Cavalry 6 Artillery 3
33	0	<b>Rearward Move Cost</b>	<b>Movement Cost for Rearward Move</b> in Line.
34	24 1 1	<b>Ammo Loss Values</b>	<b>Ammo Loss Base 24</b> <b>Union Ammo Loss Probability 1</b> <b>Confederate Ammo Loss Probability 1</b> Chance of ammo loss = $\frac{1}{24}$ Artillery only suffers ammo loss if Isolated.
35	3 3	<b>Artillery Ammo Loss in Melee</b>	<b>Artillery Ammo Loss</b> per gun lost. (Destroyed/Captured) Union 3 Confederate 3

		<b>Weapon List</b>	For Each Weapon until \$
Line 36-90 list the various weapons and their Fire Factors at various ranges. I am only listing one here with an explanation but provide a complete list of weapons currently used and their letter assignments at the end of this paper.			
36	A 1 6 2 4 3 2 4 1 -1		A – <b>Weapon Type</b> (Repeating Rifle) 1 6 At 1 hex multiplier is 6 2 4 At 2 hexes multiplier is 4 3 2 At 3 hexes multiplier is 2 4 1 At 4 hexes multiplier is 1 -1 Max Range is previous number. (4) The Multiplier is multiplied by men in unit to get the Fire Factor for Combat Results calculation. (Guns count as 50 men per gun.)
75-91	\$		End of Weapons List, this varies from 75-91 as the list is not standardized in all games so Line numbers will vary from this point on.
Line	50 50 10	<b>Fire Combat Target Modifiers</b>	<b>Fire Combat Target Modifiers</b> in %. <b>Enfilade</b> +50% <b>Mounted Cavalry</b> +50% <b>Gunboats</b> (actually 1/10 [*10%])
Line	0 0 0 -50 -10 0 -40 -10 -30	<b>Hex Terrain Combat Modifiers</b>	In percent. Blocked - 0 Clear - 0 Water - 0 Forest - -50 Orchard - -10 Marsh - 0 Town - -40 Field - -10 Rough - -30
Line	0 0 0 0 -20 -20 -30 -50 -70 50	<b>Hexside Terrain Combat Modifiers</b>	In percent. Trail - 0 Road - 0 Pike - 0 Rail - 0 Stream - -20 Creek - -20 Fence - -30 Stone Wall - -50 Embankment - -70 Cut - +50

Line	-30	<b>Elevation Combat Modifier</b>	This is per level..
Line	100 2 3 3 5 7 2 3 3 3 7	<b>Leader Loss Values</b>	<p><b>Leader loss base (100)</b> Each type of loss is checked against a random number created by dividing the value by the base, 100 always the base.</p> <p><b>USA Leader fire wound chance - 2</b> <b>USA Leader fire kill chance - 1</b> <b>USA Leader melee wound chance - 3</b> <b>USA Leader melee kill chance - 2</b> <b>USA Leader melee capture chance - 2</b> <b>CSA Leader fire wound chance - 2</b> <b>CSA Leader fire kill chance - 1</b> <b>CSA Leader melee wound chance - 3</b> <b>CSA Leader melee kill chance - 2</b> <b>CSA Leader melee capture chance - 2</b></p> <p>The system is not a simple number. 2= Starting Fire Loss base or 2% 3= 2+1 or 1% 3= Starting Melee Loss base or 3% 5= 3+2 or 2% 7= 5+2 or 2%</p>
Line	50 0 0 33 10 0 30 0 10 6	<b>Terrain Height</b>	<p>For each type, it's terrain height, height of a man</p> <p><b>Blocked - 50</b> <b>Clear - 0</b> <b>Water - 0</b> <b>Forest - 33</b> <b>Orchard - 10</b> <b>Marsh - 0</b> <b>Town - 30</b> <b>Field - 0</b> <b>Rough - 10</b> <b>Man - 6</b></p>
Line	50 1 -50	<b>Breastwork Values</b>	<p><b>Probability of construction: 50</b> <b>Breastwork movement cost: -1</b> <b>Breastwork combat modifier (in percentage) -50</b></p>
Line	5	<b>Gunboat Ammo Value</b>	<b>Gunboat ammo value</b>
Line	6 4	<b>Ammo reinforcement values</b>	<p>For each side: Ammo reinforcement values</p> <p><b>Union - 6</b> <b>Confederate - 4</b></p> <p>This is the increase in artillery ammo for gun unit reinforcement.</p>

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Line	0 0 0 2 2 4 3 0 4	<b>Terrain Disruption Flags</b>	For each terrain type: Terrain Disruption Flags 0 = none 1 = line disruption, 2 = mounted cavalry disruption 3 = line & mounted disruption 4 = Disrupt all not using column or road movement <b>Blocked</b> - 0 <b>Clear</b> - 0 <b>Water</b> - 0 <b>Forest</b> - 2 <b>Orchard</b> - 2 <b>Marsh</b> - 4 <b>Town</b> - 3 <b>Field</b> - 0 <b>Rough</b> - 4
Line	2 20	<b>Abatis Values</b>	<b>Abatis movement cost</b> - 2 <b>Abatis fire modifier</b> - +20
Line	5	<b>Skirmisher Cost</b>	Movement cost to enter a skirmisher controlled hex, in addition to normal terrain cost.
Line	8 -60	<b>Trench Effects</b>	If version $\geq$ 2, <b>Trench movement cost</b> - 8 <b>Trench fire modifier:</b> -60
Line	300	<b>Night Attack Penalty</b>	If version $\geq$ 2, Night Attack Penalty, affects attacker that melees only.
Line	200 4	<b>Bridge Values</b>	If version $\geq$ 4 <b>Max bridge value</b> - 200 <b>Bridge repair value</b> - 4 (per 100 men repairing)
Line	50	<b>Night Movement Fatigue</b>	If version $\geq$ 5, Night Movement Fatigue. If Option is used any action that costs MP or involves combat incurs Fatigue.
Line	120	<b>Crew Kill Level</b>	If version $\geq$ 7 Crew Kill Level - refers to the number needed to produce a Crew Killed result. Default Value is 100, higher values mean fewer crew kills. Probability of Crew Kill = Loss/Crew Kill Level
Line	30	<b>Trench Value</b>	If version $\geq$ 8 Trench Value - refers to the number needed to produce a Trench in a hex.

Line	1 1863 03 14 21 00 100 12 100 100 0 0 Artificial illumination from bonfires.	<b>Weather Line</b>
<p>This scenario does not have weather lines but I put this one here to explain them.                  If version &gt;= 5                  1 <b>Weather Line</b>                  1863 <b>Year</b>                  03 <b>Month</b>                  14 <b>Day</b>                  21 <b>Hour</b>                  00 <b>Minute</b>                  100 <b>Probability</b> of this line being used                  12 <b>Visibility</b> in hexes                  100 <b>Movement Cost Modifier</b> - (100 for Clear weather = original MP cost) normal MP is multiplied by Modifier and rounded up.                  100 <b>Artillery Fire Modifier in %</b> - (normal value 100) used in calculating artillery fire casualties.                  0 <b>Attack-Modifier in %</b> - (normal value 0). Used in calculating melee casualties.                  0 <b>Flags Name</b> No flags used, value should be 0.                  Artificial illumination from bonfires. - <b>Tag</b> for weather condition, can be any text, there is a limit of 45 characters, any more than that will be cut off due to the way the engine displays it.</p>		
Line	0	0 indicates the end of the weather entries.
Line	5.0 25.0	<b>Fire_low</b> <b>Fire_high</b> If version >= 10 Fire Values - refers to the numbers the program will use to calculate results from fire combat. User Manual Page 40 & 58
Line	50.0 200.0	<b>Att_low</b> <b>Att_high</b> If version >= 10 Attack Values - refers to the numbers the program will use to calculate results from attack combat. User Manual Page 43
Line	25.0 125.0	<b>Def_low</b> <b>Def_high</b> If version >= 10 Defense Values - refers to the numbers the program will use to calculate results from defense combat. User Manual Page 43
Line	6.0	<b>Fatigue Scale</b> If version >= 10 Fatigue Scale - refers to the number used by the program to determine the amount of fatigue assigned during calculations. User Manual Page 59

### ***Some Notes on Weather Lines***

Note 1 : Once a weather condition is set that weather will remain in effect until a new weather condition probability is met.

Note 2 : You cannot increase the visibility of Dawn or Dusk turns beyond the number of hexes set in line 4. You can however set it below this number.

Note 3: In the same manner you cannot increase visibility beyond 70 for Day or 1 for night unless you use Version 9 in which case you cannot increase them beyond the settings in line 4.

Note 4 : You can set up a weather pdt that will affect only visibility ranges. By setting the Movement and Artillery Modifiers to 100 and the Attack Modifier to 0 and setting the visibility at different ranges at different times it is possible to set up weather lines that will only affect visibility. This can be used to slowly increase visibility after dawn or decrease it before dusk rather than have it go to the setting in line 4 at dawn then jump to maximum an hour later.

Note 5 : You can set several weather lines for the same time with different probabilities provided none of them are 100%. This means you can get different weather for that time in different games.

I set up more than one weather possibility for the same turn and ran a test. By using different probabilities for the same time period you can set up a chance of more than one weather condition. However if the last line for that time period satisfies it's probability that is the weather you will have so watch how you set up your weather lines.

Here is what I did.

I wrote several slightly different weather lines, in this case I used 3 with different probabilities for the 10 AM turn.

1 1864 8 1 10 0 10 20 200 80 -20 0 Heavy rain, strong winds

1 1864 8 1 10 0 60 48 135 90 -10 0 Light rain

1 1864 8 1 10 0 30 20 150 90 -10 0 Heavy mist, very damp

1 1864 8 1 12 0 50 20 150 90 -10 0 Light mist, very damp

1 1864 8 1 14 0 100 20 125 90 -10 0 Light mist

The 10:00 AM line has 3 possibilities.

I made the next change at 12 Noon and made it less than 100% for the test.

Then the last line at 2 PM and made it a 100% probability.

Then I ran this test scenario several times just clicking through the turns and checking the weather and the forecast and here is what I discovered.

- 1) The 10:00 AM 10% line normally fails it's probability check.
- 2) The 10:00 AM 60% line passes it's check.
- 3) The 10:00 AM 30% line is checked. If it fails it's probability check, here is what happens.
- 4) The 60% line, Light Rain is set as the weather for the 10:00 AM turn.  
If you were to look at the Weather Forecast you would see the 30% line weather Heavy mist, very damp listed.
- 5) On the 10:20 AM turn the 30% line would be checked and if it's probability was met it would become the weather.
- 6) If not it would continue to be the forecast and checked until it does meet it's probability or the 12:00 Noon turn arrives.
- 7) On the 12:00 Noon turn if the 30% line was not yet satisfied it would be checked.
- 8) Regardless of that outcome because it is the 12:00 Noon turn that line would be checked and if it was satisfied it would become the current weather.
- 9) If not the 12:00 Noon turn would be checked every turn until the 14:00 turn.
- 10) At the 14:00 Turn that line would automatically become the weather since it has a 100% probability.

It appears the program will test every line that is not satisfied.

If the lowest line for the current time is met things will operate normally. That weather remains in effect until the next lowest line is tested and meets it's probability.

However if it fails it will be checked again on the next turn and all subsequent turns until it's probability is met or another weather line below it has the current or earlier time and is checked and meets it's probability.

I ran this test a dozen times and it did not always work exactly the same way.

Most times I got

Light rain (60% chance)

Heavy mist, very damp (30% chance)

A couple times I got

Heavy mist, very damp (30% chance)

At least once I did get

Heavy rain, strong winds (10% chance)

Light rain (60% chance)

Heavy mist, very damp (30% chance)

So it was possible to get all three weather lines given the right random values. But if it is the first turn in the scenario this does not appear to work correctly as I always got the last weather line regardless of the probabilities I set or how many times I tried it.

## Weapons List

This is the current complete weapons list as of Forgotten Campaigns.

Not all weapons will be found in every PDT as they were added as needed for the various campaigns.

A	"Repeating"	a	"42pdr Rifled"
B	"Breechloading"	b	"12pdr Mountain"
C	"Carbine"	c	"Brooke Rifled"
D	"32pdr Smooth"	d	"13in Mortar"
E	"32pdr Rifled"	e	"24pdr Coehorn"
F	"10in Columbiad"	f	"18pdr Rifled"
G	"24pdr Siege"	g	"8in Howitzer"
H	"12pdr Howitzer"	h	"6pdr Wiard"
,I	"42pdr Smoothbore"	i	"12pdr Wiard"
J	"24pdr Howitzer"	j	"6pdr James"
K	"6pdr Rifled"	k	"Mixed Arms"
L	"6pdr Smoothbore"	l	"Multiple Arms"
M	"Musket"	m	"8in Columbiad"
N	"Napoleon"	n	"24pdr Rifled"
O	"Blakely"	,o	"24pdr Smoothbore"
P	"Pistol"	p	"8in Dahlgren"
Q	"12pdr James"	q	"3.67in Sawyer"
R	"Rifle"	r	"4.5in Rifled"
S	"Shotgun"	s	"6.4in Howitzer"
T	"3in Rifled"	t	"3in Naval Rifle"
U	"20pdr Parrott"	u	"14pdr James"
V	"30pdr Parrott"	v	"10in Mortar"
W	"Whitworth"	w	"2.25in Mtn Rifle"
X	"10pdr Parrott"	x	"200lb Parrott"
Y	"100pdr Parrott"	y	"6.5in Rifled"
Z	"9in Dahlgren"	z	"Spencer Carbine"
		;	11"Dahlgren
		<	15"Dahlgren
		"="	No weapon

Note the weapon names are stored in the main program, you cannot change the name displayed by the game. You can modify the Range and the Multiplier used for each range in the PDT as shown in Line 36 in the above example..