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Close Combat 2 "A Bridge Too Far"

Establishing new Tanks & Countries in CC2

(PC- & Mac-version of CC2)

What it is

"Close Combat - A Bridge Too Far" (abbreviated CC2, ABTF, CC2-ABTF) was the second game of the CloseCombat-series created by Atomic and presented by Microsoft to the Mac-community. It was also the last game of this series for the MacOS. The series was then continued by SSI (later by UbiSoft, now owned by Destineer and continued by MatrixGames) for PCs only (up to day CC3, CC4, CC5, CCM, RtB, CCMRAFRgt, CoI, CCMT, CC:WaR). The game was released in 1997 on a hybrid-CD, running on PCs and under the MacOS 7.5 up to 9.2.2 / MacOS X 10.2.8 / 10.3 / 10.4 (in Classic environment) as well. Later (localized) releases of CC2 were for PCs only. A trial demo of CC2 was also released in 1997.

Many thanks to ...

First of all many thanks to Riccardo Mariani who helped and encouraged me (in 2001) to enter the world of Base-file- and Gadget#-file-changing. He also provided me with the necessary informations about Italian troops, rank badges and tanks. Without his help the project could never be started. Second to mention is Ken Scott, who made in late 2003 further investigations about the limit of entries in the file TEAMS. And third to mention is Francisco Arias "Nembo" for discovering how to implement captured teams and other details in 2005/2006.

Many thanks to Cpl Filth for his great work. Without his tools the easy modding of CC files is nearly impossible and the following work could never be done by myself (although I have now several CC tools of my own published). Look at his homepage for further development on CC2-CC3-CC4-CC5-tools: <http://www.student.oulu.fi/%7Epsaastam/> . Also many thanks to Tin Tin for his great Texture Maker tools for CC2 (TM v2) and CC3 (TM v3) and for his CC3-tank-editing tools ZFX.EXE and NNT.EXE. You can download his tools from his site at <http://www.organicbit.com/closecombat/> or at Sulla's CSO-site <http://www.closecombat.org/>. Thanks must also go to Andrew "Zombie" Bruce for providing me with the CC2-tools made by Escobar, and of course to Escobar himself. And I must not forget NL_Atila (aka Han Bos) for his Tank-Editing online-guide at CSO. And a lot of thanks to Mick (xe5) Conmy, Cappy-R, Naked Foot and all the other guys not mentioned here who provided me with informations about the structure of CC2. Last but not least I wish to thank François Simenel (<http://perso.club-internet.fr/fsimenel/> or <http://fsimenel.free.fr/Index.htm>) and his team for making the CC3-Afrika-Mod and for giving me the permission to use parts of their work for the development of the CC2-Afrika-Mod. I also have to thank Kyle Scott "Fish" for giving me the (<http://www.wargamer.com/Hosted/CloseCombatKreta/index.html>) permission to use parts of his "Kreta for CC2"-mod. Thank you all for your great work and support.

What you need for modding

- First of all you need the **original CD** "Close Combat : A Bridge Too Far" (hybrid PC /Mac) and the last available update from the internet.
- For extracting and repacking the CC2 vehicle graphics (Txtr### files) I recommend to use my tool "**CC2Tools / CC2Tools.exe**" (for Mac and PC).
- For patching the sprites in the vehicle-shadow files "Vehs###" and "Vehb###" you must extract the sprites first from the file using CPL FILTH's "SprTool.exe" or my tool "**CC2Sprinter / CC2Sprinter.exe**" (for Mac and PC, my tools can be found at <http://www.ftf.claranet.de/>). The extracted 16-bit uncompressed Targa-graphics can be changed using any graphic program. The compressing to create a new vehicle shadow file will also be done by the same program(s).
- You also may need TIN TIN's ZFX-tool and NNT-tool to extract the tank-pictures from the CC3-file "Tanks.zfx" of the CC3-Afrika-Mod (<http://perso.club-internet.fr/fsimene/Tanks.zip>). The source for this tools is TIN TIN's homepage: <http://www.organicbit.com/closecombat/>
- You can also use my tool "CC2Sprinter" to extract ZFX-files and my tool "CC2Tools / CC2Tools.exe" to extract the graphics from NNT-files.
- At CSO you can find a very good description on how to extract pictures from the Tanks.zfx-file made by NL_ATTILA: <http://www.closecombat.org/CCVehicles.htm>
- At the site of MICK (XE5) CONMY (<http://users.intrepid.net/~mconmy/>) you can find the CC2-Editing-FAQ: <http://users.intrepid.net/~mconmy/cc2eFAQ.zip>
- A description of the CC3-Base-files from the CC3-WesternFront-site of Andrew "Zombie" Bruce (<http://www.militarygameronline.net/CloseCombatWF/index.htm>) is available at <ftp://militarygameronline.net/pub/CloseCombatWF/CC3WF9.0headers.zip>

Understanding the Base-file "Teams" and its relating files

In the original version ABTF manages the troops of 3 Allies (British, US, Polish) and one Axis slot (Germans), fitting to the historical situation during the operation "Market Garden". The German troops are divided into three groups ("Army", "Airborne", "SS"), with "Infantry" and "Support" for all three of them. The British troops are divided into two groups ("Army", "Airborne"), with "Infantry" and "Support" for both of them. Only this British "Army" group (representing British XXX. Corps) and the German "Army" and "SS" groups are having tanks in their "Support". The US troops are divided into two groups ("Army", "Airborne"), too, with "Infantry" and "Support" for both of them. The third Allie are the Polish troops, having only "Airborne" troops with "Infantry" and "Support". All groups are having AT-guns and special troops in the "Support" (flamethrower, mortar). The folder "Data\Base" contains the files where the names for the soldiers are stored: "USnames", "BRnames", "PONames" and "GNames". The folder "Graphics" contains the graphical environment of ABTF. The VictoryLocation-flags are stored in the "Terrain"-file for British, US, Polish and German victory locations (see my CC2Guide-Terrain-file-v2.pdf). In the files "Gadget0" and "Gadget1" the flags are stored for the four countries of the "Debriefing-Screen". They contain also the ranking badges for British, US and Polish troops. For the German troops these files contain rank badges for Wehrmacht, Luftwaffe and SS. Many modifications made by several authors introduce new countries to ABTF: one of the famous mods is the 1940-mod, replacing the US troops by French troops.



Picture: new flags of the "1940"-Mod in the "Debriefing-Detail"-screen of CC2.

FRANTZ 'FRITZ' PERGOLINI made the first CC2-Mod, called "1940". This could be found at THEWIZARD/VONB's site (<http://www.btinternet.com/~thewizard/cc/>). He did not include a "Terrain"-file. As you can see in the picture above, this mod does not contain the correct rank badges for French troops. The US rank badges and the US medals are not changed. But the names of the soldiers are completely converted to French ones, still using the original filename "USnames". And all troops and their weapons are converted from US to French, still carrying the "Nationality" "US" in the Base-files "Teams", "TeamDesc", "Soldiers", "Vehicles" and "Weapons". A similiar way uses the PacificFront-Mod by Taki, replacing the Germans by Japanese troops (formerly at <http://member.nifty.ne.jp/takixxx/>, now with his permission at my site at <http://members.fortunecity.de/closecombat2/>).

Another big mod is the Kreta-mod by KYLE SCOTT 'FISH', which can be found at his site (<http://www.wargamer.com/Hosted/CloseCombatKreta/index.html>). This mod changes the sides between Axis and Allies completely. This mod contains only one Allie slot (British/New Zealand/Greek), but three Axis slots, with Germans and Italians.

As you can see, it is possible to replace one country by another using the original slot and the original filenames (... and the internal country abbreviation), without disturbing the internal logic of ABTF. Going this way, you will loose the original informations. But what will happen if you introduce a fifth country to ABTF without erasing the original country informations?

The column "Nationality" in the Base-file "Teams" - Adding Italian troops

There exist a way to add a country to ABTF without replacing another. Of course it is not a complete implementation possible, because ABTF is made only for the internal logic of 4 countries. For the planned Afrika-mod of RICCARDO and me it became necessary to implement Italian troops. RICCARDO selected for his mod the way to build it up like the Kreta-mod (in April 2001). In May 2001 I made the attempt to fill the "SS" slot with Italian troops. In the first step I simply changed the names of this troops to Italian descriptions provided by RICCARDO. Later on I changed slightly the equipment of these new Italian troops, still using German weapons (for example removing the flamethrower and/or increasing the number of soldiers in the teams). The files changed were "Teams" and "TeamDesc" in the folder "Data\Base":

Changes in "Teams"

1) replacing "SS" by Italian troops - changing the names, not the equipment

Line 36 Team-Class 32	SS Reserve	Btgn. Ascari	Colonial Volunteers Inf.	Battaglione Fanteria Coloniale
Line 113 Team-Class 109	SS Scharfschutze	Cecchino (mauser)	Sniper	Cecchino (Scoped Mauser)
Line 114	SS Aufklärer	Parà Folgore	Paratroop Infantry	Brigata

Team-Class 110				Paracadutisti Folgore
Line 115 Team-Class 111	SS 7.5cm PAK	Can. Anticarro 47mm	Light AT Gun	Cannone Anticarro 47mm
Line 116 Team-Class 112	SS Sturmgnadiere	Bersaglieri	Heavy Infantry	88° reggimento Bersaglieri
Line 117 Team-Class 113	SS Granatwerfer	Mortaio 80mm	Medium Mortar	Squadra Mortaio (8cm mortar)
Line 118 Team-Class 114	SS Panzerschreck	Squadra Anticarro	AT Infantry	Squadra Fucile anticarro
Line 119 Team-Class 115	SS Schutzen	Fanteria	Light Infantry	Fanteria
Line 120 Team-Class 116	SS MG 42	Alpini	Mountain Infantry	Divione Alpina "Julia"
Line 121 Team-Class 117	SS Schweres MG	Mitragliatrice Fiat-Revelli	Heavy Machine Gun	Fiat-Revelli Mod.1935
Line 123 Team-Class 119	SS Flammenwerfer	Milizia Coloniale	Light colonial infantry	MVSN - Milizia Coloniale

2) changing the equipment
for all Italians: Style = 6 must remain

in Line 114: Type = 5 (from 3); Value = 10 (from 5); style = 6; SAI Unit = 1 (from 2); Soldier list 0 = 11 (from 11) 1..2 = 3 (from 29) 3..6 = 3 (from -1); Soldier type 0 = 1 (from 1) 1..2 = 0 (from 0) 3..6 = 0 (from -1)

in Line 120: Type = 4 (from 10); Value = 10 (from 11); style = 6; SAI Unit = 1 (from 6); Soldier list 0 = 11 (from 11) 1..2 = 5 (from 6, 9) 3..6 = 5 (from -1); Soldier type 0 = 1 (from 1) 1..2 = 0 (from 2) 3..6 = 0 (from -1)

in Line 123: Type = 4 (from 7); Value = 3 (from 24); Quality = 2 (from 4); style = 6; Req Type = 0 (from 1); SAI Unit = 1 (from 5); Soldier list 0 = 11 (from 11) 1..2 = 5 (from 6, 9) 3..4 = 5 (from -1); Soldier type 0 = 1 (from 1) 1..2 = 0 (from 2) 3..4 = 0 (from -1)

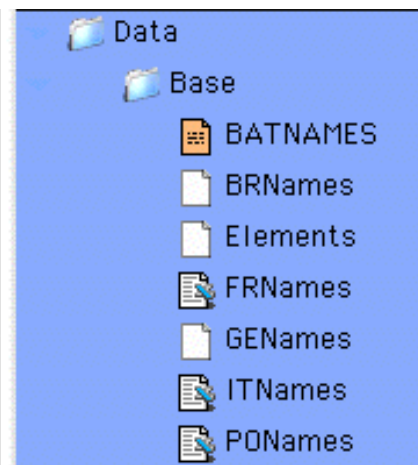
3) Forces Françaises Libres (FFL, Free French) replacing the Polish troops, using the same equipment:
Team name changed from "AB ..." to "FFL ..." for the Teams 92 – 100 (an example for replacing a country by another).

Changes in "TeamDesc"

Team 32 -> Btgn. Ascari	-- Team 92 - 100 -> AB / Polish AB changed into Free French
Team 109 -> Cecchino (mauser)	-- Team 110 -> Parà Folgore
Team 111 -> Can. Anticarro 47mm	-- Team 112 -> Bersaglieri
Team 113 -> Mortaio 80mm	-- Team 114 -> Squadra Anticarro
Team 115 -> Fanteria	-- Team 116 -> Alpini
Team 117 -> Fiat-Revelli	-- Team 119 -> Milizia Coloniale

I also added a file "ITnames" containing Italian names for soldiers. Then I changed the value in the coloumn "Nationality" of the Italian troops from "GE" to "IT" in the file "Teams".

111	Sniper	Sniper	Sniper (Scope BR	107
112	Ad Hoc Rifle	Light Infantry	Half Team (Le BR	108
113	Cecchino (ma	Sniper	Cecchino (Sco IT	109
114	Parà Folgore	Paratroop Inf	Brigata Parac IT	110
115	Can. Anticarr	Light AT Gun	Cannone Antic IT	111
116	Bersaglieri	Heavy Infantr	88° reggimen IT	112
117	Mortaio 80mm	Medium Morta	Squadra Mort. IT	113
118	Squadra Antic	AT Infantry	Squadra Fucile IT	114
119	Fanteria	Light Infantry	Fanteria IT	115
120	Alpini	Mountain Infar	Divisione Alpina IT	116
121	Mitragliatrice	Heavy Machin	Fiat-Revelli M IT	117
122	Schweres MG	Heavy Machin	Schweres MG GE	118
123	Milizia Colonia	Light colonial	MVSN - Milizi IT	119
124	Flammenwerf	Flamethrower	Flammenwerf GE	120
125	FJ Scharfschu	Sniper	Scharfschutze GE	121



Picture: some of the changes in the file "Teams" to create Italian troops.

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157FE0: 09 F1 C0 09 F1 C0 2B 09 F1 C0 04 2E 49 50 50 01 .....+.....IPP.
157FF0: 55 53 01 22 52 55 01 22 42 52 01 22 46 52 01 22 US."RU."BR."FR."
158000: 50 4F 01 22 47 45 01 22 49 54 01 22 4A 41 01 22 PO."GE."IT."JA."
158010: 41 6C 81 03 0C 41 78 00 00 00 14 00 00 28 00 00 AL...Ax.....(..
158020: 50 00 00 A0 00 01 40 00 02 80 32 00 23 17 00 0F P.....@...2.#...
158030: 0A 00 00 00 00 05 00 00 07 03 22 3F D0 09 20 47 ....."?... G
158040: 06 01 25 64 09 25 64 09 25 64 09 25 64 09 25 64 ..%d.%d.%d.%d.%d
158050: 09 2F 2F 20 4F 4F 42 20 55 73 65 64 2C 20 42 61 .// 00B Used, Ba
158060: 74 74 6C 65 2C 20 42 72 69 64 67 65 20 42 6C 6F ttle, Bridge Blo
158070: 77 6E 2C 20 43 61 70 74 75 72 65 64 2C 20 52 65 wn, Captured, Re

```

Picture: object code of the file "A Bridge Too Far" showing the country table at 157FF0h (Mac-version 2.0b).

Starting ABTF using maps where "SS" troops will be used by ABTF in the original version (relief maps of Arnhem), now there are the Italians present. ABTF works even with an additional country abbreviation. And ABTF is looking for a Base-file (containing the soldier names) corresponding to the abbreviation used in the file "Teams" ("IT" -> "ITnames"). Take a short look at the object code in the executable file "A Bridge Too Far" (Mac version 2.0b): at offset 157FF0h there is a short table (4 bytes for each entry) with 8 countries: US, RU, BR, FR, PO, GE, IT and JA. But these Italian troops will have no rank badges (because there is no more room left for a fifth country in the "Gadget#" -files). These Italians are recognized as Axis troops by ABTF if they are implemented in the "AxOOB"-file¹ of the corresponding map (folder ABTF/Data/Battles/....) (and not as a result of the team class in the file "Teams" (column "Class") nor as a result of the team style = 6 = SS smock (column "Style")). After the battle is fought, the correct message "the Allies / Axis have won ..." will appear. But their medals will be taken from the US-gadgets, again because there is no room for medals of a 5th country in the "Gadget#" -files (but it shows that the default value for "Nationality" is "US" for additional countries). And of course these Italian troops are not mentioned in the "Debriefing - Details"-screen (... guess why: there are only four slots available). As you can see, this way of adding a fifth country to ABTF cannot not make up a complete implementation. But it shows, that the internal structure of ABTF on runtime checks the "Team"-file columns

- "Nationality" for determining in which slot the team must be placed ("British", "US", "Polish", "German") and for retrieving the soldier names. If "Nationality" is not "BR", "US", "PO" or "GE", the default side will be Allies ("US") without rank badges, but soldier names will be taken from an additional ##names-file;
- "Class" for getting the correct graphics (Txtr###, VehB###, VehS###, SoldierSprites, Gadget#) and team description (TeamDesc);
- "Style" to determine which "uniform" the soldiers will wear, but also in which group ("Army", "Airborne", "SS") they will appear when forces must be selected;
- "ReqType" to determine in which group ("Infantry", "Support") they will appear when forces must be selected.

¹ You can implement Allies troops as Axis (for example German Sherman tanks) in the „AxOOB“-file, but they will be not shown in the „Debriefing“-screen.

Replacing the “Nationality” “IT” by “GE” for these troops in the file “Teams”, they will act with German names and the “SS” rank badges. The way to implement Italian troops as mentioned above is best recommended if you won’t change the “Gadget#”-files. If the Italians will become “GERmans”, it is necessary to change the rank badges of the “SS” to Italian ones. But the Italians will then have German names and will achieve German medals. You can solve this problem by replacing the medals in the “Gadget#”-files. And you can mix Italian and German names together in a new file “GNames”.



Picture: Italian troops in action, using German weapons, Italian names (from a new created file “ITnames”), without rank badges and with the old original gadgets (troops, weapons).

Another example for using the “Nationality” column is the removing of US tanks from the British support by changing their “BR” into “US” (or “PO” or even “GE”), so the US troops will have their own Shermans and other tanks (“Class” 6, 17, 18, 21, 30, 31, 38, 60, 64, 65) in the support group. And even the Axis can have Shermans, too:



Picture: "German SS Sherman" team by changing the values in the Base-file "Teams": for the team with "Class" 6 the value in column "Nationality" must be set to "GE", the value for "Style" to 6 and "ReqType" can remain 1.

The column "Class" in the Base-file "Teams"

The Base-file "Teams" contains originally 133 team definitions². Each team has its individual number, stored in the column "Class" (counted from 0 to 132). ABTF uses this "Class"-number to retrieve the team descriptions from the Base-file "TeamDesc" and to get the correct graphics for this team (side-view from the files "Gadget0" and "Gadget1", top-view from the files "Soldier" and "SoldierB" (= Soldier Big = zoomed view) or the texture-files (if it is a vehicle team)):

Team Name	Natio nality	Class	Style	Req Type	Team/Vehicle Graphics	Vehicle Shadows	has Turret	Gadget-No
Schutzen	GE	0	1	0	Soldier/SoldierB			
MG 42	GE	1	1	0	Soldier/SoldierB			
BAR	US	2	0	0	Soldier/SoldierB			
Rifle	US	3	0	0	Soldier/SoldierB			
60mm mortar	US	4	0	1	Soldier/SoldierB			
.30 cal MG	US	5	0	1	Soldier/SoldierB			
Sherman	BR	6	2	1	Txtr000-txtr003	VehS006/VehB006	yes	
Panzerschreck	GE	7	1	1	Soldier/SoldierB			
Mark IV	GE	8	1	1	Txtr004-txtr007	VehS008/VehB008	yes	G0-029-0575
Bazooka	US	9	0	0	Soldier/SoldierB			
StuG IIIG	GE	10	1	1	Txtr008-txtr009	VehS010/VehB010	no	
81mm mortar	US	11	0	1	Soldier/SoldierB			
8.8cm FlaK	GE	12	4	1	Txtr010-txtr013	VehS012/VehB012	yes	
Granatwerfer	GE	13	1	1	Soldier/SoldierB			
Mark III	GE	14	1	1	Txtr014-txtr017	VehS014/VehB014	yes	
Marder III	GE	15	1	1	Txtr018-txtr019	VehS015/VehB015	no	

² Expanding is possible up to 149 teams, see below.

Team Name	Natio nality	Class	Style	Req Type	Team/Vehicle Graphics	Vehicle Shadows	has Turret	Gadget-No
7.5cm IG	GE	16	1	1	Txtr020-txtr021	VehS016/VehB016	no	
Sherman 76	BR	17	2	1	Txtr022-txtr025	VehS017/VehB017	yes	
Stuart M5	BR	18	2	1	Txtr026-txtr029	VehS018/VehB018	yes	
Panther	GE	19	1	1	Txtr030-txtr033	VehS019/VehB019	yes	
Tiger	GE	20	1	1	Txtr034-txtr037	VehS020/VehB020	yes	
Sherman 105	BR	21	2	1	Txtr038-txtr041	VehS021/VehB021	yes	
7.5cm PaK 40	GE	22	1	1	Txtr042-txtr043	VehS022/VehB022	no	
5cm PaK 35/36	GE	23	1	1	Txtr044-txtr045	VehS023/VehB023	no	
57mm AT gun ³	US	24	0	1	Txtr046-txtr047	VehS024/VehB024	no	
Sturmgnadiere	GE	25	1	0	Soldier/SoldierB			
6pdr AT Gun ⁴	BR	26	2	1	Txtr048-txtr049	VehS026/VehB026	no	
.50 cal MG	US	27	0	1	Soldier/SoldierB			
AB Assault	US	28	3	0	Soldier/SoldierB			
StuH 42	GE	29	1	1	Txtr050-txtr051	VehS029/VehB029	no	
Achilles	BR	30	2	1	Txtr052-txtr055	VehS030/VehB030	yes	
Achilles II	BR	31	2	1	Txtr056-txtr059	VehS031/VehB031	yes	
SS Reserve	GE	32	6	0	Soldier/SoldierB			
SDKfz 232	GE	33	1	1	Txtr060-txtr063	VehS033/VehB033	yes	
SS Jagdpanther	GE	34	6	1	Txtr064-txtr065	VehS034/VehB034	no	G0-029-0601
SDKfz 250/1	GE	35	1	1	Txtr066-txtr067	VehS035/VehB035	no	
FJ Reserve	GE	36	4	0	Soldier/SoldierB			
SS Panther	GE	37	6	1	Txtr068-txtr071	VehS037/VehB037	yes	G0-029-0604
M3 HT	BR	38	2	1	Txtr072-txtr073	VehS038/VehB038	no	
Sniper	US	39	0	0	Soldier/SoldierB			
Scharfschutze	GE	40	1	0	Soldier/SoldierB			
Aufklärer	GE	41	1	0	Soldier/SoldierB			
Recon	US	42	0	0	Soldier/SoldierB			
Assault	US	43	0	0	Soldier/SoldierB			
Reserve	GE	44	1	0	Soldier/SoldierB			
Ad Hoc Rifle	US	45	0	0	Soldier/SoldierB			
AB Rifle	US	46	3	0	Soldier/SoldierB			
AB .30 cal MG	US	47	3	1	Soldier/SoldierB			
AB 60mm mortar	US	48	3	1	Soldier/SoldierB			
AB BAR	US	49	3	0	Soldier/SoldierB			
AB Bazooka	US	50	3	0	Soldier/SoldierB			
AB 81mm mortar	US	51	3	1	Soldier/SoldierB			
AB Recon	US	52	3	0	Soldier/SoldierB			
AB Sniper	US	53	3	0	Soldier/SoldierB			
AB Ad Hoc Rifle	US	54	3	0	Soldier/SoldierB			
AB AT gun ⁵	US	55	3	1	Txtr074-txtr075	VehS055/VehB055	no	
17pdr AT Gun	BR	56	2	1	Txtr076-txtr077	VehS056/VehB056	no	
SDKfz 250/1 HMG	GE	57	1	1	Txtr078-txtr079	VehS057/VehB057	no	G0-029-0624
SDKfz 250/8	GE	58	1	1	Txtr080-txtr081	VehS058/VehB058	no	G0-029-0625
SDKfz 250/7	GE	59	1	1	Txtr082-txtr083	VehS059/VehB059	no	G0-029-0626
FireFly	BR	60	2	1	Txtr084-txtr087	VehS060/VehB060	yes	G0-029-0627
FJ Flammenwerfer	GE	61	4	1	Soldier/SoldierB			
Cromwell	BR	62	2	1	Txtr088-txtr091	VehS062/VehB062	yes	
Daimler IV	BR	63	2	1	Txtr092-txtr095	VehS063/VehB063	yes	
M3 HT HMG	BR	64	2	1	Txtr096-txtr097	VehS064/VehB064	no	

³ Txtr048-txtr049 is wrong⁴ Txtr074-txtr075 is wrong⁵ Txtr142-txtr143 is wrong

Team Name	Natio nality	Class	Style	Req Type	Team/Vehicle Graphics	Vehicle Shadows	has Turret	Gadget-No
M3 HT Mortar	BR	65	2	1	Txtr098-txtr099	VehS065/VehB065	no	
Churchill AVRE	BR	66	2	1	Txtr100-txtr103	VehS066/VehB066	yes	G0-029-0633
Crocodile	BR	67	2	1	Txtr104-txtr107	VehS067/VehB067	yes	G0-029-0634
SDKfz 250/10	GE	68	1	1	Txtr108-txtr109	VehS068/VehB068	no	G0-029-0635
SDKfz 251/1 HMG	GE	69	1	1	Txtr110-txtr111	VehS069/VehB069	no	G0-029-0634
SDKfz 251/9	GE	70	1	1	Txtr112-txtr113	VehS070/VehB070	no	G0-029-0637
SDKfz 251/2	GE	71	1	1	Txtr114-txtr115	VehS071/VehB071	no	G0-029-0638
SDKfz 251/16	GE	72	1	1	Txtr116-txtr117	VehS072/VehB072	no	
Konigstiger	GE	73	1	1	Txtr118-txtr121	VehS073/VehB073	yes	G0-029-0640
SS Jagdtiger	GE	74	6	1	Txtr122-txtr123	VehS074/VehB074	no	G0-029-0641
Jagdpanzer IV	GE	75	1	1	Txtr124-txtr125	VehS075/VehB075	no	G0-029-0642
Hetzer	GE	76	1	1	Txtr126-txtr127	VehS076/VehB076	no	G0-029-0643
Hetzer Flammpanzer	GE	77	1	1	Txtr128-txtr129	VehS077/VehB077	no	G0-029-0644
8.8cm PaK 43	GE	78	1	1	Txtr130-txtr131	VehS078/VehB078	no	
SDKfz 251/10	GE	79	1	1	Txtr132-txtr133	VehS079/VehB079	no	G0-029-0646
SDKfz 234/1	GE	80	1	1	Txtr134-txtr137	VehS080/VehB080	yes	G0-029-0647
Puma	GE	81	1	1	Txtr138-txtr141	VehS081/VehB081	yes	G0-029-0648
AB Rifle	BR	82	5	0	Soldier/SoldierB			
AB Vickers	BR	83	5	1	Soldier/SoldierB			
AB Bren	BR	84	5	0	Soldier/SoldierB			
AB PIAT	BR	85	5	0	Soldier/SoldierB			
AB 3in Mortar	BR	86	5	1	Soldier/SoldierB			
AB Recon	BR	87	5	0	Soldier/SoldierB			
AB Sniper	BR	88	5	0	Soldier/SoldierB			
AB Ad Hoc Rifle	BR	89	5	0	Soldier/SoldierB			
AB 6pdr ⁶	BR	90	5	1	Txtr142-txtr143	VehS090/VehB090	no	G0-029-0657
AB 17pdr	BR	91	5	1	Txtr144-txtr145	VehS091/VehB091	no	G0-029-0658
AB Rifle	PO	92	5	0	Soldier/SoldierB			
AB Vickers	PO	93	5	1	Soldier/SoldierB			
AB Bren	PO	94	5	0	Soldier/SoldierB			
AB PIAT	PO	95	5	0	Soldier/SoldierB			
AB 3in mortar	PO	96	5	1	Soldier/SoldierB			
AB Recon	PO	97	5	0	Soldier/SoldierB			
AB Sniper	PO	98	5	0	Soldier/SoldierB			
AB Ad Hoc Rifle	PO	99	5	0	Soldier/SoldierB			
AB 6pdr gun PO ⁷	PO	100	5	1	Txtr146-txtr147	VehS100/VehB100	no	
Rifle	BR	101	2	0	Soldier/SoldierB			
Vickers	BR	102	2	1	Soldier/SoldierB			
Bren	BR	103	2	0	Soldier/SoldierB			
PIAT	BR	104	2	0	Soldier/SoldierB			
3in Mortar	BR	105	2	1	Soldier/SoldierB			
Recon	BR	106	2	0	Soldier/SoldierB			
Sniper	BR	107	2	0	Soldier/SoldierB			
Ad Hoc Rifle	BR	108	2	0	Soldier/SoldierB			
SS Scharfschutze	GE	109	6	0	Soldier/SoldierB			
SS Aufklärer	GE	110	6	0	Soldier/SoldierB			
SS 7.5cm PaK 40 ⁸	GE	111	6	1	Txtr148-txtr149	VehS111/VehB111	no	
SS Sturmgranatwerfer	GE	112	6	0	Soldier/SoldierB			
SS Granatwerfer	GE	113	6	1	Soldier/SoldierB			

⁶ Txtr146-txtr147 is wrong⁷ Txtr148-txtr149 is wrong.⁸ Txtr046-txtr047 is wrong

Team Name	Natio nality	Class	Style	Req Type	Team/Vehicle Graphics	Vehicle Shadows	has Turret	Gadget-No
SS Panzerschreck	GE	114	6	1	Soldier/SoldierB			
SS Schutzen	GE	115	6	0	Soldier/SoldierB			
SS MG 42	GE	116	6	0	Soldier/SoldierB			
SS Schweres MG	GE	117	6	1	Soldier/SoldierB			
Schweres MG	GE	118	1	1	Soldier/SoldierB			
SS Flammenwerfer	GE	119	6	1	Soldier/SoldierB			
Flammenwerfer	GE	120	1	1	Soldier/SoldierB			
FJ Scharfschutze	GE	121	4	0	Soldier/SoldierB			
FJ Aufklärer	GE	122	4	0	Soldier/SoldierB			
FJ Sturmgnadr	GE	123	4	0	Soldier/SoldierB			
FJ Granatwerfer	GE	124	4	1	Soldier/SoldierB			
FJ Panzerschreck	GE	125	4	1	Soldier/SoldierB			
FJ Schutzen	GE	126	4	0	Soldier/SoldierB			
FJ MG 42	GE	127	4	0	Soldier/SoldierB			
FJ Schweres MG	GE	128	4	1	Soldier/SoldierB			
Flamethrower	BR	129	2	1	Soldier/SoldierB			
AB Flamethrower	BR	130	5	1	Soldier/SoldierB			
AB Flamethrower	US	131	3	1	Soldier/SoldierB			
SS Mark IV	GE	132	6	1	Txtr150-txtr153	VehS132/VehB132	yes	G0-029-0699
#								
		US Inf = 0	Inf = 0		Txtr154-Txtr173 for Flame animations			
		Ge Wehr = 1	Support = 1					
		Br Inf = 2			Cave: the AT-guns Txtr###-sequence by Mick (xe5) looks strange			
		US Para = 3						
		Ge Para = 4						
		Br Para = 5						
		SS Smock = 6						

The column "Style" in the Base-file "Teams"

As stated in the Base-file "Teams" the values in this column

- US Infantry = 0
- German Wehrmacht = 1
- British Infantry = 2
- US Paratroops = 3
- German Paratroops = 4
- British Paratroops = 5
- SS Smock = 6

are used to group the teams into "Army", "Airborne" and "SS". The values determine also the colour of the uniform of the teams's soldiers. You see that there are no values for the third "Polish" slot and no values to put US or British troops into a "SS" group. Polish airborne troops during Operation "Market Garden" were wearing British paratroops uniforms. So their "Style" is 5 = British Paratroops. But you can put every team in every group by changing the value in the "Style" column:

- teams from any "country-slot" ("BR", "US", "PO", "GE") with "Style" values 0, 1 or 2 will be placed always in the group "Army" (for example the Polish can wear US uniforms);
- teams from any "country-slot" with "Style" values 3, 4 or 5 will be placed always in the group "Airborne" (for example the Polish can altered from their original "Airborne" group to "Army" simply by changing the "Style" value from 5 into 2).

- teams from any “country-slot” with “Style” value 6 will be placed always in the group “SS” (for example you can alter German teams into “SS” teams by changing the “Style” value into 6; and you can make up an additional Allied group by doing the same with Allied teams).

If you combine the “Style” values 0, 2, 3 or 5 with the “Nationality” value “GE”, the German troops will wear Allied uniforms, but will have no rank badges anymore. It is recommended to combine Allied “Style” values only with Allied “Nationality” values.

Newly discovered in 2006: if you give an Allied team the "Style" value 2, this team will be only available on the "Requisition screen" during operation play if XXX Corps has reached the battle (for all Allies: US, BR, PO).

The column "ReqType" in the Base-file "Teams"

As stated in the Base-file “Teams” itself the values in this column

- Infantry = 0
- Support = 1

define another grouping of the teams. If you use combinations of the values of the columns “ReqType” and “Style” you will have 6 different groups for every country slot.

Making the new CC2-Afrika-Mod

The data-structure of ABTF does not fit completely to the situation of the North African theatre in WW II. For the early battles there were Italian vs. British battles, after the arrival of the German Afrika-Korps Italian/German vs. British/Commonwealth (together with troops from Poland (at Tobrouk), Forces Françaises Libres (Bir Hacheim, El Alamein), Greece (El Alamein)). After the operation “Torch” US troops became active in Northern Africa. To cover the whole North African Campaign it will be useful to keep the US troops. So the three Allied slots in ABTF will be kept. I decided to replace the Polish troops by FFL troops (honoring the efforts of the team around François Simenel making the CC3-Afrika-Mod). The Axis troops will consist of Deutsches Afrika Korps (DAK, in the former "SS"-slot), German AB troops (Fallschirmjäger in Tunisia) and Italian troops (using the "German Army"-slot).

The goal will be the complete replacing of the “SS”-troops in CC2 by Italian troops to fit the North African theatre. Teams are defined in the Base-file "Teams", for the SS there are the following teams predefined: infantry teams 32, 109 - 117 and 119 (see above), tank teams 34, 37, 74 and 132. To take them off from the deployment list just give them a new nationality, for example "IT" instead of "GE". But the teams will be available if they are selected in the Order-Of-Battle-files "AxOOB". But we will have them on the deployment list, so their “Nationality” will be “GE”, too.

Making a new Italian tank

Graphics for a new Italian tank

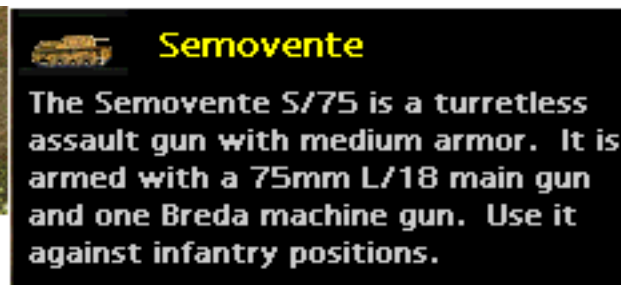
The first tank team replacement will be described here: the replacing of the German team with Class 34 (“SS Jagdpanther”) by an Italian team. It is necessary to replace the team-slot 34 by an Italian tank without turret, because the Jagdpanther was turretless, and the internal structure of CC2 does not allow to expand the number of teams and the sequence of the Txxx###-files (see table above). But you can expand the lists in the other Base-files “Vehicles” and “Weapons”, so it is not absolutely necessary to replace the Vehicle-Class 8 (“Jagdpanther”) by the definitions of the new Italian tank in the file

“Vehicle”! But there can be a limit. But in the following text I will describe a complete replacement in the files “Weapons”, “Vehicles”, “Teams” and “TeamDesc”.

Before I will invent the wheel a second time, let's look at the mods from other authors:

Italian tanks in the Kreta-Mod by Kyle Scott 'Fish':

- | | | |
|----------------------------|----------------|--------------------|
| - Team-Class 17: M13/40 | Medium Tank | Carro Armato 13/40 |
| - Team-Class 72: CV33 | Tankette | CV33 |
| - Team-Class 75: S/47 | Tank Destroyer | Semovente S/47 |
| - Team-Class 77: Semovente | Assault Gun | Semovente 75/18 |



Picture: Semovente-Tank from the Kreta-Mod by Kyle Scott "Fish".

Italian trucks & tanks in the CC3-Afrika-Mod by the team around François Simenel:

- | | | |
|---------------------------------|---------------------|--------------------------|
| - Team-# 15: Milmart naval gun | Truck | Fiat 102/35 mm |
| - Team-# 17: Artiglieria celere | Truck | Lancia 75/27 Field gun |
| - Team-# 19: Fiat-Breda 20mm | Truck | Breda 20mm Fiat 626 |
| | | no graphics implemented! |
| - Team-# 32: Lancia 90mm AA | Truck | Lancia 90mm AA |
| - Team-# 33: Lancia 65/17 | Truck | Lancia 65/17 mm |
| - Team-# 36: L3/35 Flame | Light Tank Flame | Carro Veloce FT |
| | | graphics of M13/40 tank! |
| - Team-# 37: L3/35 Command | Light Command Tank | Carro Commando |
| - Team-# 38: Semo M13/40 75 | Assault Gun | Semovente M40 75/18 |
| - Team-# 39: Semo M13/40 47 | Assault Gun | Semovente L3 47/32 |
| - Team-# 69: L 6/40 | Light Tank | Carro Leggero |
| - Team 115: Autoblinda 41 C. | Italian Command Car | Italian Command Car |
| - Team 116: Autoblinda 41 | Italian Armored Car | Italian Armored Car |

Best fitting is the assault gun "Semovente M40 75/18". This is vehicle-slot 88 in the CC3-Afrika-mod. It is turretless. The "Tanks.zfx"-code is "gstg3c". Francois Simenel (<http://perso.club-internet.fr/fsimenel/>) gave me the permission to use parts of his Afrika-mod for CC3 for a conversion to CC2.

Now we need TIN TIN's ZFX-tool and NNT-tool to extract the tank-pictures from the CC3-file "Tanks.zfx" of the CC3-Afrika-Mod (<http://perso.club-internet.fr/fsimenel/Tanks.zip>). The source for this tools is TIN TIN's homepage: <http://www.organicbit.com/closecombat/>

At CSO you can find a very good description on how to extract pictures from the "Tanks.zfx"-file made by NL_ATTILA: <http://www.closecombat.org/CCVehicles.htm>

Take the CC3-Afrika-Mod file "Tanks.zfx" and place it in a separate folder. Place also the program "ZFX.EXE" in this folder. Switch to DOS-command-line-mode and run TIN TIN's program using the DOS-command

"zfx -e tanks.zfx"

TIN TIN's ZFX-tool will create a new folder called "Tanks" and paste more than 500 tank-archives in it. The "Semovente M40 75/18"-files are "gstg3c.znh" (zoomed view normal hull), "gstg3c.zsh" (zoomed view snow hull), "gstg3c.nnh" (normal view normal hull) and "gstg3c.nsh" (normal view snow hull). The archives with the "snow" hull are identical to those with the "normal" hull (of course Francois Simenel implemented now snow for Afrika). Make a new folder and place the files "gstg3c.nnh" and "gstg3c.znh" together with the program "NNT.EXE" there. Switch to DOS-command-line-mode and run this program using the DOS-command

"nnt -e gstg3c.nnh" and then "nnt -e gstg3c.znh"

Tin Tin's NNT-tool will create the folders "gstg3c_nnh" and "gstg3c_znh". Each folder contain 17 TARGA-pictures with the tank. In the Afrika-Mod all these TARGAs are identical. So it will be sufficient to take the picture from the first TARGA in the folders: "00_9_17_9_17.tga" (nnh) and "00_18_34_18_34.tga" (znh). Now we have our first Italian tank picture (normal and zoomed). Open them with your favorite graphic-editor, flip them vertically and save them as 16-bit TARGAs.



Picture: CC2-graphics of the Jagdpanther and CC3-Afrika-Mod graphics of the Semovente M40 75/18 and their combination in a new graphic to create new files "Txtr064" and "Txtr065".

Hotpoint coordinates are 12 / 40 (Txtr065) and 25 / 79 (Txtr064). This hotpoint will be the rotation center when the rotated vehicle graphic is pasted over the shadow graphic at runtime. See page 28 of this manual.

The last step is to remove the remaining graphics of the Jagdpanther and then save them as 16-bit TARGAs. Place these TARGAs in a separate folder together with the other version of the CC2-TextureMaker v2 by Tin Tin "TGACC.EXE" there to reconvert them to CC2-TXTF-format
<http://members.nbci.com/closecombat/tm.zip>
 Switch to DOS-command-line-mode and run this program using the DOS-command

Next step: replacing the CC2-textures of the "Jagdpanther" by the new pictures. At the site of MICK (XE5) CONMY (<http://users.intrepid.net/~mcconmy/>) you can find the CC2-Editing-FAQ

<http://users.intrepid.net/~mcconmy/cc2eFAQ.zip>
 This is the best description of the CC2-Texture files ever published. MICK (XE5) stated there that the graphic-files for the "Jagdpanther" (Vehicle-slot 8) are "Txtr064" (zoomed) and "Txtr065" (normal) (only two files, because it is turretless). The numbering of the texture-files do not correspond to Team- or Vehicle-slot numbers. The shadows are organized in separate files, their names are numbered according to the Team-slot numbers. The corresponding shadow-files are "VehS034" (normal) and "VehB034" (zoomed). So we must create new files "Txtr064" and "Txtr065". But it is necessary to place the tank picture in the same picture dimensions as the CC2-originals were made to get the tank body in the same position as the CC2-original. The next problem is, that the gun of the Jagdpanther is much longer than the one of the Semovente. To solve this problems, we must extract the CC2 graphics from the original files "Txtr064" and "Txtr065". Place them in a separate folder together with the CC2-TextureMaker v2 by Tin Tin "CCTGA.EXE" there

<http://members.nbci.com/closecombat/tm.zip>
 Switch to DOS-command-line-mode and run this program using the DOS-command
 tgacc Txtr064 JP064.tga -texture
 and
 tgacc Txtr065 JP065.tga -texture

We must take the TARGAs created above and will paste the flipped images of the Semovente over the Jagdpanther graphics in the way, that the main part of the body of the Semovente will cover the hull of the Jagdpanther. The gun of the Semovente must be placed in the same line as the Jagdpanther gun is situated. The front parts of the two tanks must be placed exactly over another. Flipping of the graphics is only necessary when using the old tools!

tgacc 00_18_34_18_34.tga Txtr064 -texture
and
tgacc 00_9_17_9_17.tga Txtr065 -texture

Since 2003 you can use my tool "CC2Tools.exe" to repack the TARGA graphics to Txtr### files. In this case you must not flip the graphics!

In 2006 I located the hotpoint table inside the executable application. The values there can be patched if you want to use vehicle graphics which does not fit properly to the original ones. See page 28.

It is possible to open existing shadow files and to create new ones by using Cpl Filth's SpriteTool (www.student.oulu.fi/%7Epsaastam/) or my tool "CC2Spritex.exe". But the size and assault-gun-type of the Semovente is similar to the German StuG IIIG. So we can take the original shadows of this assault gun: "VehS010" (normal) and "VehB010" (zoomed). Double these files and rename the resulting files to "VehS034" (normal) and "VehB034" (zoomed).⁹



Picture: new graphics, but old (wrong) Base-files.

And now we have the graphical images of the "Semovente M40 75/18" ready for action on our maps.

Base-file correction for a new Italian tank

Next step is the correction of the Base-files "Teams", "TeamDesc", "Weapons" and "Vehicles". To understand the meanings of the columns of the Excel-like Base-files of the CC3-Afrika-Mod, you can download a description of the CC3-Base-files from the CC3-WesternFront-site of Andrew "Zombie" Bruce (<http://www.militarygameronline.net/CloseCombatWF/index.htm>):
<ftp://militarygameronline.net/pub/CloseCombatWF/CC3WF9.0headers.zip>

Our Semovente will have its "own" new Italian gun, a Breda MG 35, 4 smoke grenades and a crew of 4. As stated above, it will replace the Jagdpanther. Jagdpanther and Königstiger (Pz VIB) uses in CC2 the same gun, 8.8cm L/71, and saw never action in the North African theatre. So the first step will be to replace this German 8.8cm L/71-gun by the Italian gun 75mm L/18 (Weapon-Class 13 in CC3-Afrika-Mod) in the file "Weapons" (Weapon-Class 21 in CC2).

- file "Weapons" (replacing the German 8.8cm L/71, Weapon-Class 21):

Name := 75mm L/18; Nation := IT (or GE); Class := 21; Type := 9 = Large Gun; Primary
Target := 1 = Vehicle; Valid Targets := 7 = Inf,Veh&Ter;¹⁰ Reload Time Chamber := 60;
Reload Time Clip := 60; Time to Fire 1/10 secs := 1; Setup Time 1/10 sec := 200;
Rounds Per Clip := 1; Rounds in One Burst := 1; Weapon Weight := 0; Clip
Weight := 5; Cool Rate := 5; Heat Rate := 5; No Jam or Break Quality
:= 450; Assault Fire := 0; Can Use Bayonette := 0; Back Blast := 0;
White Phosphor := 0; Rifle Grenades := 0; Demo Charge := 0; Cannister := 0;
Blast Size AP := 0; Blast Size HE := 1; Blast Size Heat := -1; Blast Size Smoke := 1;
Blast Size Spec := -1;

⁹ Vehicle-Shadow-files for vehicles with turrets contains 64 different shadow sprites, the first 32 for the hull and the next 32 for the gun/turret. Vehicle-Shadow-files for turretless vehicles contains 32 different shadow sprites.

¹⁰ "Valid Targets" := "6" = "Veh&Ter" will give the Semovente Assault gun a better AT-capability.

Blast Radius AP := 2; Blast Radius HE := 8; Blast Radius Heat := 0; Blast
 Radius Smoke := 0; Blast Radius Spec := 2;
 Min Range AP := 6; Min Range HE := 8; Min Range Heat := 0; Min Range Smoke
 := 8; Min Range Spec := 0;
 Fire Direction AP := 0; Fire Direction HE := 0; Fire Direction Heat := -1; Fire
 Direction Smoke := 0; Fire Direction Spec := -1;
 Base Accuracy AP := 400; Base Accuracy HE := 400; Base Accuracy Heat := 0;
 Base Accuracy Smoke := 400; Base Accuracy Spec := 0;
 Range PB AP := 40; Range PB HE := 40; Range PB Heat := -1; Range PB Smoke
 := 40; Range PB Spec := -1; Range Close AP := 100; Range Close HE := 100;
 Range Close Heat := -1; Range Close Smoke := 100; Range Close Spec := -1;
 Range Med AP := 200; Range Med HE := 200; Range Med Heat := -1;
 Range Med Smoke := 200; Range Med Spec := -1; Range Long AP := 1500;
 Range Long HE := 1500; Range Long Heat := -1; Range Long Smoke :=
 1500; Range Long Spec := -1;
 Kill Rating PB AP := 190; Kill Rating PB HE := 23; Kill Rating PB Heat := -1; Kill
 Rating PB Smoke := 0; Kill Rating PB Spec := -1; Kill Rating Close AP := 180; Kill
 Rating Close HE := 25; Kill Rating Close Heat := -1; Kill Rating Close Smoke := 0;
 Kill Rating Close Spec := -1; Kill Rating Med AP := 140; Kill Rating Med HE := 23;
 Kill Rating Med Heat := -1; Kill Rating Med Smoke := 0; Kill Rating Med Spec := -
 1; Kill Rating Long AP := 70; Kill Rating Long HE := 21; Kill Rating Long Heat := -
 1; Kill Rating Long Smoke := 0; Kill Rating Long Spec := -1;
 Blast Rating PB AP := 1; Blast Rating PB HE := 6; Blast Rating PB Heat := -1;
 Blast Rating PB Smoke := 0; Blast Rating PB Spec := -1; Blast Rating Close AP :=
 1; Blast Rating Close HE := 4; Blast Rating Close Heat := -1; Blast Rating Close
 Smoke := 0; Blast Rating Close Spec := -1; Blast Rating Med AP := 1;
 Blast Rating Med HE := 3; Blast Rating Med Heat := -1; Blast Rating Med Smoke
 := 0; Blast Rating Med Spec := -1; Blast Rating Long AP := 1; Blast Rating Long
 HE := 1; Blast Rating Long Heat := -1; Blast Rating Long Smoke := 0; Blast
 Rating Long Spec := -1;
 Weapon Sound := 22 := 75mm; How Mounted := 0;

- file "Vehicles" (replacing the Jagdpanther, Vehicle-Class 8)

Name := Semovente 75/18; Nationality := GE (or IT); Class := 8; Type := 1 (AFV);
 Hull Guns Type 1st := 45 = Coax MG.34; 2nd := 36 = Nahvtdgnwf (any other value will
 cause trouble); 3rd := -1 := none; Hull Guns Exposed to fire 1st := 0; 2nd := 0; 3rd := 0;
 Hull Guns Fire Angle 1st := 1; 2nd := 255; 3rd := 0; Hull Guns Ammo 1st AP := 2; for the
 rest := 0; Hull Guns Ammo 2nd HE & Smoke := 4; for the rest := 0; (same values as
 Jagdpanther); Hull Guns Ammo 3rd := 0 for all; Hull Armor Frontal Low, Med, High := 30
 (Kreta := 89); Hull Armor Frontal Side Low, Med, High := 30 (Kreta := 90); Hull Armor
 Side Low, Med, High := 15 (Kreta := 30); Hull Armor Side Rear Low, Med, High := 18
 (CC3-Afrika := 15, Kreta := 72); Hull Armor Rear Low, Med, High := 16 (CC3-Afrika :=
 15, Kreta := 51); Hull Armor Top Low, Med, High := 8 (CC3-Afrika := 6, Kreta := 16);
 Hull Armor Bottom Low, Med, High := 9 (CC3-Afrika := 6, Kreta := 17); Crew Cover
 Front := 431; Front Side := 431; Side := 431; Side Rear := 476; Rear := 476; Top := 431;
 Bottom := 476; Hull Rotation Rate := 23; Hull Mount Type := 2 (Rotate);
 Turret Guns 1st := 21 := "our new" 75mm L/18 (Weapon-Class from file "Weapons"); 2nd
 := -1 = none, the Breda MG 35 is defined as hull gun, simulated by a Coax MG.34; 3rd := -
 1 = none; Tur Gun 1 Exposed to Fire := 0; Tur Gun 2 Exposed to Fire := 0; Tur
 Gun 3 Exposed to Fire := 0; Tur Gun 1 Fire Angle := 1; Tur Gun 2 Fire Angle := 0;
 Tur Gun 3 Fire Angle := 0; Tur Gun 1 Ammo AP := 16; Tur Gun 1 Ammo HE :=
 16; Tur Gun 1 Ammo Heat := 0; Tur Gun 1 Ammo Smoke := 4; Tur Gun 1 Ammo
 Spec := 0; Tur Gun 2 Ammo AP := 0; Tur Gun 2 Ammo HE := 0; Tur Gun 2 Ammo
 Heat := 0; Tur Gun 2 Ammo Smoke := 0; Tur Gun 2 Ammo Spec := 0; Tur Gun 3
 Ammo AP := 0; Tur Gun 3 Ammo HE := 0; Tur Gun 3 Ammo Heat := 0; Tur Gun 3
 Ammo Smoke := 0; Tur Gun 3 Ammo Spec := 0; Turret Armor Front Low := 30;
 Turret Armor Front Med := 30; Turret Armor Front High := 30; Turret
 Armor Front Side Low := 30; Turret Armor Front Side Med := 30; Turret Armor Front
 Side High := 30; Turret Armor Side Low := 25; Turret Armor Side Med := 25;
 Turret Armor Side High := 25; Turret Armor Side Rear Low := 25; Turret

Armor Side Rear Med := 25; Turret Armor Side Rear High := 25; Turret Armor Rear Low := 25; Turret Armor Rear Med := 25; Turret Armor Rear High := 25;
 Turret Armor Top Low := 15; Turret Armor Top Med := 15; Turret Armor Top High := 15; Turret Armor Bottom Low := 6; Turret Armor Bottom Med := 6; Turret Armor Bottom High := 6; Turret Crew Cover Front := 398; Turret Crew Cover Front Side := 398; Turret Crew Cover Side := 350; Turret Crew Cover Side Rear := 350; Turret Crew Cover Rear := 350; Turret Crew Cover Top := 350;
 Turret Crew Cover Bottom := 476; Turret Rotation Rate := 0; Turret Mount Type := 1 := Fixed; Chance to Hit Hull := 83; Chance to Hit Turret := 45; Turret Type Mount := 2;
 Acceleration := 20; Max Speed := 200; Move Type := 4; Vehicular Size := 13; Element Radius := 2; Integrity := 100; Number of Crew := 3;
 Passengers Max := 10 (like German StuG); Passengers Cover for all := 50; Passengers Protection Front := 10; Passengers Protection FrontSide := 10; all other Passengers Protection := 0;
 Best Kill := 96; Best Mount := 1; Best Gun := 0; Has Gyro := 0; Has Schurzen := 0; Gun Rotates on Base := 0; Ground Pressure := 3 = Normal;

- file "Teams" (replacing the team SS-Jagdpanther, Team-Class 34):

Team Name := Semovente 75/18; Type Name := Assault Gun; Full Name := Semovente M40 75/18; Nationality := GE (or IT); Class := 34; Type := 26 = Veh, Md AGun; Value := 25; Quality := 3 := Experienced; Style := 6 = SS Smock; ReqType := 1 = Support; SAI Unit := 12 = (Medium) Tank; Soldier List 0 := 28 := Veh Crew GE; 1 := 28; 2 := 28; 3 := -1 = none (Crew of 3); 4 := -1; 5 := 1; 6 := -1; Soldier Type 0 := 2 = Crew; 1 := 2; 2 := 2; 3 := -1 = none (Crew of 3); 4 := -1; 5 := -1; 6 := -1; Vehicle Class := 8 (Class number from file "Vehicles").

- file "TeamDesc":

second column := "This Italian assault gun carries a low-velocity 75 mm gun and a machinegun. Use it against enemy fortifications, infantry and other soft targets. Tanks should only be ambushed or be completely avoided by this tank." (from CC3-Afrika-Mod)

After this correction (less armour, modified gun, less speed and more, correct team name) the result is an Italian tank with wrong images from the "Gadget#" -files. So the next correction must be done there:



Changing the Gadget#-files

Looking into the “Gadget-Catalogue” by Cappy-R you can see that there are three 'Gadgets' for each team, showing the artist's impression from the side of the team. One greater image from the file “Gadget0” (size 44x25 pixels) and one greater and one smaller one (size 32x16 pixels) from the file “Gadget1”. Splitting off the files “Gadget0” and “Gadget1” using Escobar's tool “GadgetX.exe” (or my new developed tool “CC2Tools” for MacOS / Win), you will have more than 1600 TGA-images in your folder. The positions for our Semovente assault gun vehicle are:

Gadget-No from Cappy R's Catalogue	Filename used by Escobar's tools
Element-No 602 from Gadget0	Gadget0-029-0601
Element-No 708 from Gadget1	Gadget1-029-0707
Element-No 841 from Gadget1	Gadget1-01C-0840

In addition, it is possible to change the 'Gadgets' for the gun (two images in the file "Gadget1": one for the weapon image and one for the weapon text).

As found in CAPPY-R's CC2-Gadget-Catalogue: the weapons' gadgets are stored in the file Gadget1. CAPPY-R counts the gadgets from 1 to 939 in this file. The weapons' gadgets are in the slots 89 - 168, the weapons' titles in the slots 169 - 248. That means that there are only 80 weapons possible in CC2. This corresponds with the Base-file "Weapons", where 80 weapons are defined too. And in the same sequence as in the file "Gadget1". In fact, if you define in the file "Weapons" an additional weapon in slot "80" or above, the weapon-gadgets of weapon "79" (Gammon Bomb BR) will be displayed. An error message will not occur.

If you want to implement a new weapon, you can do it only by replacing an existing weapon in both files "Weapons" and "Gadget1". For the logical function of CC2 the definitions in the file "Weapons" are essential. It is useful to replace a weapon which is only used by a single vehicle/soldier type/team or to replace a weapon which is not used by anyone like the 90mm L/50 gun (US, weapon-class: 28) in the original ABTF.

Cross-reference-list weapons/vehicles of original ABTF (depending on the file "Weapons"):

Weapon-Name	Nation	Weapon-Class	used as a hull gun in the Vehicle-Classes:	used as a turret gun in the Vehicle-Classes:
Melee	Any	0		
Grenade	Any	1		
Big Explosion	Any	2		
Mauser	GE	3		
Garand	US	4		
Thompson	US	5		
Carbine	US	6		
MP40	GE	7		
BAR	US	8		
MG.42	GE	9		
.30 cal MG	US	10		
Bazooka	US	11		
Schreck	GE	12		
Panzerfaust	GE	13		
60mm Mortar	US	14		
7.5cm L/48	GE	15	14	1, 3, 21, 50
75mm L/40	US	16		0, 41
.50 cal MG	US	17		
8.8cm Flak	GE	18	4	
81mm Mortar	US	19		
8cm Mortar	GE	20		31, 45
8.8cm L/71	GE	21	52	8, 47
5cm L/60	GE	22	15	20, 55
37mm L/50	US	23		11
2cm L/55	GE	24		7, 42, 54
7.5cm L/70	GE	25		22, 49
8.8cm L/56	GE	26		23
76mm L/53	US	27		2
90mm L/50	US	28		not used by any vehicle nor soldier
MG.34	GE	29		
Springfield	US	30		
Scpd Mauser	GE	31		
57mm L/50	US	32	16	
105mm L/28	US	33		24
7.5cm L/12	GE	34	25	30, 44
Aslt MG.42	GE	35		
Nahvtdgnwf	GE	36	8, 22, 23, 47	

Smk Mortar	US	37	0, 2, 9, 10, 24, 32, 34, 40, 41	
Smk Dschgr	GE	38	1, 3, 12, 20	23, 34, 35, 40, 41, 47
3 Inch Gun	US	39	26	9
10.5cm L/28	GE	40		12
Explosives	Any	41		
Gewehr 43	GE	42		
Walther P.38	GE	43		
Bow MG.34	GE	44	1, 8, 20, 21, 22, 23, 47, 48, 49	
Coax MG.34	GE	45		1, 3, 7, 12, 20, 22, 23, 29, 30, 31, 42, 43, 44, 45, 46, 47, 50, 51, 53, 54, 55
AA MG.34	GE	46		6, 13, 29, 31, 43, 45
Bow .30 cal MG	US	47	0, 2, 11, 24, 32	
Coax .30 cal MG	US	48		0, 2, 11, 24, 32
AA .50 cal MG	US	49		0, 2, 5, 9, 10, 17, 24, 32, 38
AA .30 cal MG	US	50		11, 38, 39
Colt 45	US	51		
PIAT	BR	52		36
Vickers .303	BR	53		33
Bren	BR	54		36, 37
Lee Enfield No. 4	BR	55		
Sten Mk. 5	BR	56		
Scpd L E No. 4	BR	57		
6pdr	BR	58	27	34, 35
17pdr	BR	59	28	10, 32
3in. Mortar	BR	60		37, 39
Webley	BR	61		
Bow Vickers .303	BR	62	34, 40	
Coax Vickers.303	BR	63		34, 40, 41
Heavy MG.42	GE	64		
12.8cm L/55	GE	65		48
StG 44	GE	66		
FG 42	GE	67		
.30 cal Light	US	68		
Grease Gun	US	69		
Grease Gun	BR	70		
Big FT	GE	71		51
Small FT	GE	72		
Big FT	BR	73	41	
Small FT	BR	74		
Small FT	US	75		
280 DB	BR	76		40
3.7cm Pak36	GE	77		53
Medium FT	GE	78		46
Gammon Bomb	BR	79		

Because of the limitation of the number of weapons it is usefull to start CC2-mod-making by defining the weapons first. You have to include weapons for infantry teams, for vehicles, for "explosions" (smoke grenades, grenades ...), for melee (knife, fist) and most suitable weapons which will be used by infantry and vehicle teams as well.

The next step is to setup a soldier definition list, which contains for every nation every kind of (single) soldier. These definitions are stored in the base file "Soldiers". The original file contains 59 definitions. You can expand this list, there are no limits discovered yet. In the coloumn "Nationality" you can use any abbreviation you like. The soldier definitions are counted from 0 on and their reference number is stored in the coloumn "Class". Use the "Class"-reference number to select the soldiers you need for your teams you are defining in the base file "Teams" as shown above.

The next definition list you will need (and which seems to have no limitation, too) is the vehicle list. This list is stored in the base file "Vehicles". The original list contains 56 entries, with vehicles defined used only by CC1 and not used by original CC2. The essential vehicle reference number is again stored in the coloumn "Class". See above.

Now we come to the main limitation. Putting it all together in the file "Teams". In this file the teams are defined which you and the AI can command during play (you cannot command a single soldier out of a team). The original file contains 133 teams (counted from 0 to 132 in the cloumn "Class"). MICK (xe5) CONMY stated earlier in his "CC2 Editing FAQ.doc" that more definitions are not possible. In late 2003 Ken Scott and me made investigations about this limit. Ken managed to shrink down the number of teams to 1 Allied and 1 Axis team without any problems. The expanding of the number of teams will always result in a program crash, because ABTF is then looking for more side-view gadgets in the files "Gadget0" and "Gadget1". Expanding these files is the key. And you must add additional entries in the relating base file "TeamDesc". The absolute limit of teams is 149. Having more teams defined (even when you add more gadgets) will result in the error message "too many teams defined" (tested under MacOS).

Adding entries in the files "Team" and "TeamDesc" is simple, just use any text editor or MS-Excel to do this. These files (like all other base files are text based: plain ASCII, TAB-seperated columns, saved MacOS-like with only a CR-delimiter at the end of each entry. For both versions: PC and Mac!).

And you **must** expand the number of gadget images for the additional teams in the graphics file "Gadget0" by adding new side-view-pictures at the end (use my new tool "CC2Tools"). Same to do with the file "Gadget1". And you **MUST** insert in the file "Gadget1" smaller gadgets for this teams in the middle of the file at entry 806! This is the starting point of the larger gadgets inside "Gadget1". In the executable (ABTF on Mac / CC2.exe on PC) you must patch this starting point 806 in the object code. The ending point of reading the smaller gadgets calculates CC2 from the number of teams in the file "Teams". The offsets in the object code where you have to patch is:

version	Mac Value = 0326hex = 806	PC Value = 2603hex = 806
demo	Offset = 03F8F6hex	Offset = 0602B7hex
first version after install from CD	Offset = 03FD16hex	Offset = 0609BAhex
last update from the MS-Net (Microsoft Support Center)	Offset = 03FD02hex	Offset = 060967hex

To do the patching you can use my tool "CC2Tools" (for MacOS and Win).

The absolute limit of teams is 149 as told above (team classes 0 .. 148 are possible), more entries in the base file "Teams" will result in an error message and program abort. The team selection in the "Requisition" screen is limited to 79 teams per side (GE, BR, US, PO added). If you have more teams definded, you can still use them in the "Scenario" files, but you cannot select them when using the "Battlemaker" functionality. In the "Battlemaker"- "Requisition" screen all Allied teams are added up

together, so you will reach easily this limit when expanding the "Teams" file. Using the "Requisition" screen during operation/campaign play, the teams available are limited by the entries in the following files (OOB = Order Of Battle, Req = Requisition):

Sort of gameplay:	Files limiting the teams available:
Grand Campaign / Sector Campaign	Data/Campaign/XXXOOB Data/Campaign/XXXReq
Operation	Data/Ops/###/AlOOB Data/Ops/###/AlReq Data/Ops/###/AxOOB Data/Ops/###/AxReq
Single Battle	no Requisition Screen shown, but available teams are defined in: Data/Battles/####/AlOOB Data/Battles/####/AxOOB
"Battlemaker" setup	Data/Base/Teams

Because the number of teams in the campaign/operation's OOB-files is mostly limited to only one single (Allied) nation, you can select the added teams there which are not visible in the "Battlemaker"- "Requisition" screen.

Adding a 56th vehicle team

Original CC2 defines 55 vehicle teams. If you want to have more vehicle teams, you will encounter that there exists no patching possibility (up to now). Any (all) additional vehicle team will use the same graphics of the first vehicle team (Sherman). Looks like a non-intended wrap-around / modulo function in CC2 (which is different from the limit of additional weapons). The consequence is that all additional vehicle teams must be turreted vehicles.



Picture: additional vehicle team in slot 133, using always the Sherman-graphics of the first defined vehicle team. Situation before expanding the smaller gadgets in the file "Gadget1".



Picture: additional vehicle team in slot 133, using always the Sherman-graphics of the first defined vehicle team.

Situation after expanding the smaller gadgets in the file "Gadget1". Now the smaller gadgets are correct. The shadow is still wrong because the new vehicle is turretless.

For my CC2-Afrika-Mod I selected the Matilda-II tank (BR) to be the first defined vehicle. Expanding the number of vehicle teams the mod will now have an additional (captured) Matilda-II tank for the GE-side. More additional vehicles don't make any sense (but will be possible, more and more Matilda teams with perhaps different number or different kind of crew members).

To make this additional vehicle work you **must** add separate shadow files! These shadow files should have the same (identical) graphical contents like the shadow graphics of the first defined vehicle. The name of the shadow files must be "VehS####" and "VehB####" (where #### stands for the three digits of the **team** class number). These files must be stored in the "Graphics" folder.

The relation between the vehicle team definitions in the base file "Teams" and the corresponding graphics stored in the texture files "Txxr####" is not investigated yet (only described, see above).

Having armed vehicle crew members

In the base-file "Soldiers" original ABTF defines vehicle and gun crew members for each nation. These soldiers carry rifles or pistols as primary weapons.¹¹ Only the US crew definitions have a secondary weapon defined. No grenade weapon is added to them by original ABTF. All definitions of a vehicle or gun team in the base-file "Teams" of original ABTF contain two or more soldiers of the same kind with the "Soldier Type" = "2" = "Crew Member". During gameplay the AI will give the first defined soldier in this list the rank of a leader, followed by driver, gunner, assistant and so on. If a vehicle or gun has been hit and has to be abandoned, the vehicle / gun crew members will try to flee from the battle. You cannot command them any more. And you will see them running away without any weapon.

You can avoid to have them fleeing from the battlefield by setting the game's difficulty in the "Main Screen" to "Custom" with "Soldiers always obey orders" and "Soldiers are fearless". Then **you can command your vehicle/gun teams after their vehicle/gun has been hit like an infantry team**. But they will have no weapons except for "Melee". The reason why is: ABTF removes all primary

¹¹ A difference between vehicle crew and gun crew is: vehicle crew members have no helmets = "Armor Head" = "0".

weapons from the soldiers of your vehicle team (only those who have survived the hit, of course) after the vehicle or gun has been hit. But secondary and grenade weapon will not be removed!

Conclusion: if you want to have armed soldiers in a vehicle team who will carry rifles or larger weapons after bailing out of the burning vehicle to command them as an infantry team, you must define these soldiers with a suitable weapon (rifle ...) as "Secondary Weapon" in the file "Soldiers". And you can command them only if you customize the game's difficulty as told above.

Example: Opel Blitz

For my Afrika-mod v1.6 I added to the base-file "Soldiers" soldier definitions for each nation called "Armed Veh Crew", wearing helmets, having pistols as primary weapons, rifles as secondary weapons and two hand grenades as grenade weapons.

Weapon			Armor	Crewed	Primary	Secondary	Grenade			Crew
Name	Nat.	Class	Head	Weapon	Weapon	Weapon	Weapon	AP	HE	Bonus
...										
Veh Crew	GE	28	0	-1	43=Walther	-1=None		1	0	0
...										
Armed Veh Crew	US	84	3	-1	51=Colt	4=Garand		1	0	2
Armed Veh Crew	BR	85	3	-1	61=Webley	55=LeeEnfie		1	0	2
Armed Veh Crew	PO	86	3	-1	61=Webley	55=LeeEnfie		1	0	2
Armed Veh Crew	GE	87	3	-1	7=MP40	3=Mauser		1	0	2
Armed Veh Crew	IT	88	3	-1	77=Beretta	71=Carcano		1	0	2

"Armor Head" = "3" is ABTF's standard value for "wearing helmets". As you can see, no "Crewed Weapon" is defined. "Grenade Weapon" = "1" stands for ABTF's standard hand grenade. Of course more such definitions can be added to have armed vehicle crew members with different soldiers in one team.

In the base-file "Vehicles" the "Opel Blitz" (German standard transportation truck in WWII) is defined without any armour and 1 crew member (the driver I think as a minimum) and 4 passengers. Of course in reality this truck could carry more people, perhaps up to three in the driver's cabin and more people on the platform. But this will have no effect to the team definition:

In the base-file "Teams" I implemented a new team "Opel Blitz" having 2 crew members as regular "Veh Crew" = "28" (with their "Soldier Type" = "2" = "Crew") and 5 soldiers as "Armed Veh Crew" = "87". The first one out of these I defined as "Leader" = "1", the 4 others as "Basic" = "0":

47			Soldier List							Soldier Type							Vehicle
Team Name	Nationality	Class	0	1	2	3	4	5	6	0	1	2	3	4	5	6	Class
...																	
Opel Blitz	GE	71	28	28	87	87	87	87	87	2	2	1	0	0	0	0	11=Opel Blitz
...																	



The result can be seen in the picture on the left: the vehicle is burning, and the surviving soldiers of the vehicle crew are sneaking toward the victory location "Eastern Ridge". The "Veh Crew" members are indicated as "Leader" and "Assistant", one of them incapac., the other one dead. They have both no weapons anymore. The surviving "Armed Veh Crew" soldiers are carrying their Mauser rifles, which were defined as secondary weapons, replacing the primary weapons after the vehicle has been hit. And there is a second "Leader" defined. This definition is not generated by the AI but taken from the "Soldier Type" definition in the file "Teams".

As you can see in the screenshot above, "Morale" of the team is very low. And remember: you can command such vehicle teams only if you have set the difficulty in the appropriate way. In later versions of the "Close Combat"-series you have better ways to command vehicle teams leaving their burning vehicles.

Additions in 2006: "Captured Teams"

In 2005 NEMBO discovered that it is possible to have opposing teams in your order of battle list. This can be done for both sides (Axis and Allies) and for single battle play, operation play, multiplayer play and will be handled even by the AI the same way.

To have a team (including the vehicle, the soldiers and their weapons) of the opposing side in your list, you must give this team a defined deployment position. Teams without such a defined deployment position will cause CC2 to crash with the error message: "cant deploy properly". The deployment position must be entered in the file "AIOOB" (for Allied) or "AxOOB" (for Axis) for this individual battle. If you want to have the "captured team" on succeeding maps when playing an operation, you must ensure that this deployment position is a deployable area on all subsequent maps of this operation (and even on all preceding maps), otherwise the game will crash during operation play. If you cannot guarantee this, it is necessary to limit the use of this "captured team" by entering the battle number for this team in the "AIOOB"/"AxOOB" file of this battle.

Example: US M3 Halftrack team as "captured team" on Axis side on the "Sidi Bou Zid" map of the CC2-Afrika-Mod v2.0 (Battle number 310). The following datas must be entered in the file "AxOOB" inside the folder "A Bridge Too Far/Data/Battles/1310" and inside the folder "A Bridge Too Far/Data/Battles/310":

```

41                                     // Version
43  2    14  4                       // Date of reinforcements
Team                               Forced Setup
Class Rank Mega-X  Mega-Y  Direction  Map
&
112 5    -1  -1  -1  -1
110 4    -1  -1  -1  -1
110 3    -1  -1  -1  -1
123 4    -1  -1  -1  -1
126 3    -1  -1  -1  -1
127 6    -1  -1  -1  -1
8   6    -1  -1  -1  -1
8   5    -1  -1  -1  -1
74  4    -1  -1  -1  -1
33  3    -1  -1  -1  -1
113 4    -1  -1  -1  -1
64  3    3   3   -1  -1  // M3 HT is replacing 57 "SdKfz 250/1"
@

```

The line with the definition of the "captured team" means: team number "64" = US M3 HT, Rank=3, Mega-X=3 and Mega-Y=3 is the deployment tile position of the team, Direction=-1 means free deploying inside this tile, Map=-1 means that the team will move on to succeeding map during operation play if it is not eliminate.

The following picture will show this team in action when playing as the Germans. The AI is targeting the "captured team" correctly: the US Stuart tank (commanded by AI) has targeting the GE M3 HT and has it hit. The vehicle team is bailing out, showing that they are wearing US uniforms and carrying US weapons.



In late April 2006 I found a way to implement "captured" teams available for Axis side in custom user battles. For each "captured" team you must reserve a free victory location to place it there. In case of the custom user battles this can be provided by modifying the deployment tile setup manually. Usually the values "0 = neutral", "1 = Allied" and "2 = Axis" are used to indicate where the human player and the AI can deploy their teams. If you enter the value "3", this deployment tile can be used by both sides (only in custom user battles!) The AI will deploy first, then the human player can make his deployment. If you define 9 deployment tiles "3" around a victory location, then there will be enough room available to place a captured unit here (please keep in mind that the AI is making its decision first including a suggestion for the human player). Place the 9 deployment tiles like a square around the victory location. If you want to have more than one "captured" team, then you must have enough victory locations marked "3". I think at least one victory location and 15 deployment tiles should be left reserved for each side (marked "1" or "2"). So I managed to have 4 captured British trucks for the Axis troops in a custom user battle for my "DesertCamp" map.

If you mark the entire map with "3", then all Axis troops will be placed in the upper left corner of the map. For deploying the Axis troops correctly, you need reserved (marked "2") deployment tiles for them in custom user battle files.

Sorry to say that "captured" teams for the Allied side are not possible in custom user battles. You will always get the error message "Unable to deploy properly".

Limits when modifying the files "Vehicles" and "Weapons"

In 2006 NEMBO and me independently discovered that it is not possible to have more than one gun rotating on its base properly. Even if you made all definitions correctly, you will see that such guns like the original 8.8 FlaK will not turn their gun during battle. A gun which should rotate on a base graphic must be always located in vehicle class slot "4"!

Other vehicles stored on the vehicle class slot "4" will move like a crab across the battlefield, because their hull is rotating and not their turret. For CC2-mods containing the 8.8 FlaK I recommend not to change its location in the base file "Vehicles"! The graphics behavior of this special gun is hard coded inside the executable (you can call it a bug).

In 2006 at the CSO forum there was a report, that some weapons should not change their weapons class slot when modifying CC5. The following text was posted there:

...the .exe requires a few weapons to be in the Weapons.adb as specific Classes. These are:

- # 4 - 120mm Mortar
- #12 - Naval Arty Explosion
- #13 - Smoke grenade
- #14 - Hand grenade
- #15 - Indirect Fire Support
- #22 - 81mm Mortar
- #55 - Melee
- #57 - Grenade
- #58 - Arty Explosion

I was just told to not muck with those as indexed Class numbers or to alter the sound file number. The game engine uses those for various effects and programming shortcuts were taken all through out the code by Atomic, so it wants those in just those slots and have just those sound file numbers.

The data and how they do what and how it sounds with a .wav file with the same number is all edit-able, though. You could make a hand grenade into a tactical nuke and the Arty Explosion into a mild fart by changing the data (not that that would make any sense to do), but they need to stay in the file order that they are. Every other Index or Class is fair game for any type of change.

It is not known if such limits will be there in CC2, but it might be.

Hotpoints for "Txtr####" Files

In 2006 I located the hotpoints table inside the CC2.exe / ABTF application. To place the vehicle / gun graphics (of the texture files "Txtr####") correct over the shadow graphics coming from the "VehS####" / "VehB####" files CC2 must know where the center of these graphics is. The same to say for the relation between hull and turret: the turret will rotate around its center and this turret-center will be placed at the hull's center. The shadow graphics are stored inside sprite files. These sprite files contain not only the shadow graphics but also the x/y-coordinate of the graphic's center (where 0,0 is the upper left corner).

The shadow sprites contain usually 32 graphics (one graphic for the 32 possible directions) for the hull and if needed 32 graphics for the turret's gun. The shadow graphics of the 8.8-FlaK are showing how CC2 is really respecting the entries in these shadow sprites: CC2 defines the 8.8-gun's base as fixed, therefore it is only one single shadow graphics implemented, and it's animation sequence contains 32 times the reference number to this single graphic (in this case: number 0). For the barrel of the gun there are 32 different graphics implemented. All other shadow sprite files are organized as described before (32 hull + 32 turret's gun graphics).

In CC3 or newer the TXTF-files contain hotpoint-coordinates, too. But in CC2 the hotpoints are hard coded inside the executable application (ABTF for Mac / CC2.exe for PC). These are the offsets of the table containing the hotpoints:

version	Mac	PC
demo	Offset = 150EBAhex	Offset = 147A90hex
first version after install from CD	Offset = 155A7Bhex	Offset = 147F40hex
last update from the MS-Net (Microsoft Support Center)	Offset = 15663Bhex	Offset = 148950hex
Format of the table	174 entries 3 bytes per entry each value 1 Byte seperating zero byte after each entry (exceptions below!) Hot-X followed by Hot-Y	174 entries 4 bytes per entry each value ShortInt (2 bytes) byte format LITTLE ENDIAN Hot-X followed by Hot-Y
Table's size	522 bytes	696 bytes

The format of the table of the PC version is simple: for every "Txtr###" file there are two Short-Int (2 bytes) values (Hot-X and Hot-Y) stored. The format of the Mac version is compressed and therefore much more complicated: each entry is three bytes long. The first byte contains the Hot-X value (exception: first entry: here you must subtract 26 from the Hot-X value to get the correct value). The second byte contains the Hot-Y value (exception: last entry, here you must take the third byte to get the Hot-Y value). The third byte is zero (exception: last entry, here the third byte contains the Hot-Y value).

For all versions and for all executables the table is followed by the string sequence "Txtr%" which helped me to identify the structure.

The original datas of this table:

File	Hot-X	Hot-Y	
Txtr000	19	44	
Txtr001	14	44	
Txtr002	10	22	
Txtr003	7	22	
Txtr004	22	41	
Txtr005	14	54	
Txtr006	10	21	
Txtr007	7	27	
Txtr008	22	55	
Txtr009	11	28	
Txtr010	38	37	
Txtr011	18	54	
Txtr012	19	19	
Txtr013	9	27	
Txtr014	22	36	
Txtr015	13	49	
Txtr016	11	18	
Txtr017	7	25	
Txtr018	16	45	
Txtr019	8	23	
Txtr020	20	12	
Txtr021	10	6	
Txtr022	20	41	
Txtr023	16	60	
Txtr024	10	21	
Txtr025	8	30	
Txtr026	18	31	
Txtr027	11	28	
Txtr028	9	16	
Txtr029	6	14	
Txtr030	25	51	
Txtr031	19	78	
Txtr032	12	26	
Txtr033	9	40	
Txtr034	23	41	
Txtr035	15	79	
Txtr036	12	21	
Txtr037	8	40	
Txtr038	20	41	
Txtr039	16	52	
Txtr040	10	21	
Txtr041	8	26	
Txtr042	29	49	
Txtr043	15	25	
Txtr044	21	36	
Txtr045	11	18	
Txtr046	29	49	
Txtr047	15	25	
Txtr048	22	37	
Txtr049	11	19	
Txtr050	22	40	
Txtr051	11	20	

File	Hot-X	Hot-Y	
Txtr052	23	44	
Txtr053	17	58	
Txtr054	12	22	
Txtr055	9	29	
Txtr056	23	44	
Txtr057	17	72	
Txtr058	12	22	
Txtr059	9	36	
Txtr060	15	28	
Txtr061	12	26	
Txtr062	8	14	
Txtr063	6	12	
Txtr064	25	79	
Txtr065	12	40	
Txtr066	16	34	
Txtr067	8	17	
Txtr068	25	51	
Txtr069	19	78	
Txtr070	12	26	
Txtr071	9	40	
Txtr072	16	39	
Txtr073	8	20	
Txtr074	29	49	
Txtr075	15	25	
Txtr076	27	63	
Txtr077	14	32	
Txtr078	16	34	
Txtr079	8	17	
Txtr080	15	34	
Txtr081	8	17	
Txtr082	16	34	
Txtr083	8	17	
Txtr084	20	41	
Txtr085	16	69	
Txtr086	10	21	
Txtr087	8	35	
Txtr088	21	43	
Txtr089	16	52	
Txtr090	11	22	
Txtr091	8	26	
Txtr092	16	27	
Txtr093	11	28	
Txtr094	8	14	
Txtr095	6	14	
Txtr096	18	39	
Txtr097	9	20	
Txtr098	16	39	
Txtr099	8	20	
Txtr100	26	49	
Txtr101	15	27	
Txtr102	13	25	
Txtr103	8	14	

File	Hot-X	Hot-Y	
Txtr104	26	49	
Txtr105	16	41	
Txtr106	13	25	
Txtr107	8	21	
Txtr108	15	34	
Txtr109	8	17	
Txtr110	15	44	
Txtr111	8	22	
Txtr112	16	44	
Txtr113	8	22	
Txtr114	16	44	
Txtr115	8	22	
Txtr116	21	44	
Txtr117	11	22	
Txtr118	26	50	
Txtr119	18	92	
Txtr120	13	25	
Txtr121	9	46	
Txtr122	29	94	
Txtr123	15	47	
Txtr124	23	78	
Txtr125	12	39	
Txtr126	20	60	
Txtr127	9	30	
Txtr128	17	45	
Txtr129	9	23	
Txtr130	29	61	
Txtr131	15	31	
Txtr132	15	44	
Txtr133	8	22	

File	Hot-X	Hot-Y	
Txtr134	17	34	
Txtr135	12	25	
Txtr136	7	17	
Txtr137	6	12	
Txtr138	17	34	
Txtr139	14	49	
Txtr140	8	17	
Txtr141	7	25	
Txtr142	22	37	
Txtr143	11	19	
Txtr144	27	63	
Txtr145	14	32	
Txtr146	22	37	
Txtr147	11	19	
Txtr148	29	49	
Txtr149	15	25	
Txtr150	22	41	
Txtr151	14	54	
Txtr152	10	21	
Txtr153	7	27	
Txtr154 – Txtr173	15	131	Flamethrower animation

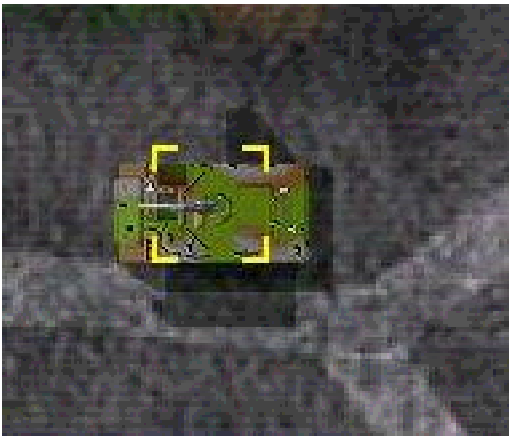
Vehicle shadow problem 2009

In 2009 NEMBO located a vehicle shadow modding related problem and it's solution. He gave me the permission to describe it here together with his screenshots:

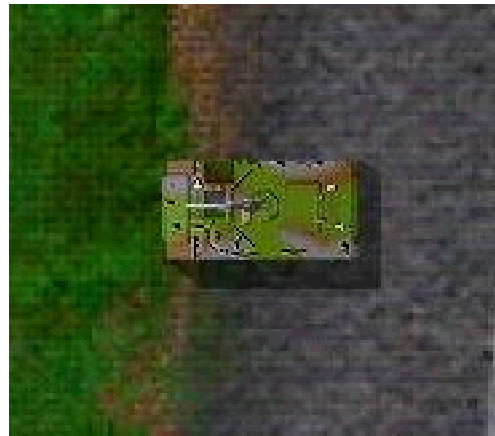
Problem: turreted vehicle, the vehicle has both a turret and a hull shadow defined in it's VehB### and VehS### files. Under certain circumstances you will see this vehicle with turret to use the hull-shadow for both the turret and the hull.

Reason: the teams-slot is not prepared for storing a turreted vehicle.

Solution: Nembo found that the vehicle must be turned into a turreted vehicle by modding the base file "Vehicles" this way: the turret weapon type was set to fixed and the rotation value to 0. Changing these values fixed the problem.



Error: doubled hull shadow



Solved: turret has own shadow.

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<http://www.mappa.claranet.de/>

<http://www.geocities.com/cc2revival/>