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## Close Combat 2 "A Bridge Too Far"

# Patching the stri-Resource of ABTF (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 is now continued by SSI for PCs only (up to day CC3, CC4, CC5). The game was released in 1997 on a hybrid-CD, running on PCs and under the MacOS 7.5 up to 9.1 as well.

### What do you need

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 patching the resources of the files "A Bridge Too Far" you need Apple's "ResEdit 2.1.3".

## Using of text-based resources in CC2

On PCs the game takes its necessary text-based resources (strings like "The Allies have won" ...) from the file "**CC2src.dll**" (size 102 KB). Under MacOS this text strings reside in the resource-fork of the main program "A Bridge Too Far" itself. The strings relating to messages displayed during the battles you will fight are stored in one **stri-resource**, not editable with regular string-resource templates of ResEdit, but only with the universal hex-template. Strings for dialogs interacting with the user in separate dialog boxes are stored Mac-like in **DITL-resources**, easily editable with regular templates of ResEdit (see separate file "CC2Guide-DlogBoxs\_(MacOnly).pdf"). Due to the lack of a separate textual resource file under the MacOS-version of CC2, modifications have to be done directly in the resource-fork of the Mac-version of the main program, a "mission impossible" for Windows-user (because they have no access to resource-forks of MacOS-files).

### The resource fork of the program "A Bridge Too Far"

Using Apple's "ResEdit 2.1.3", you can easily view the contents of the resource fork of the program "A Bridge Too Far". There exist 32 different groups of resources:

- ABTF: owner resource,
- actb: color alert boxes,
- ALRT: b/w alert boxes,
- BNDL: bundle resource (works together with the owner resource ABTF and FREF),
- cctb: color tables (?),

- CDEF: color definition grayscale,
- cfrg: (?),
- cicn: one color icon for alert boxes,
- clut: color look-up table,
- CNTL: window definitions for dialog boxes (titles are interesting),
- crsr: cursor definitions,
- dctb: color dialog boxes definitions,
- DITL: dialog boxes (texts are interesting),
- DLOG: dialog boxes,
- FOND: the fonts “Espy Sans” and “Espy Sans Bold”,
- FREF: file reference resource,
- icl4: color icons large4,
- icl8: color icons large8 (all interesting),
- ICN#: b/w icons large,
- ics#: b/w icons small,
- ics4: color icons small4,
- ics8: color icons small8,
- ictb: (?),
- MENU: definition of the pull-down menus,
- NFNT: bitmap fonts,
- PICT: 4 pictures: “the paratrooper logo”, quick-help text and 2 separation bars,
- SIZE: size-resource,
- STR: serial-number string,
- STR#: string-list with error strings,
- stri: one resource containing zero-delimited strings (“The Allies have won” etc.).
- TEXT: one resource containing the text “80”,
- vers: version resources.

Some differences between the first version of CC2-ABTF and the last update (Mac version only):

	First version	Last update available
Version number as stated in the version resource with ID=2	1.0.0	2.0.2 (2.0b)
Can be found at	on your harddisk after installation from the original CD	<a href="ftp://ftp.microsoft.com/desktops/games/public/closecombat/cc2-20b.Bin">ftp://ftp.microsoft.com/desktops/games/public/closecombat/cc2-20b.Bin</a>
Size of stri-resource with ID=1000 (CC Strings)	<b>25975 bytes</b>	<b>25981 bytes</b>
Offset addresses in the stri-resource with ID=1000 (CC Strings)	<b>924 (039Ch)</b>	<b>925 (039Dh)</b>

## The stri-resource

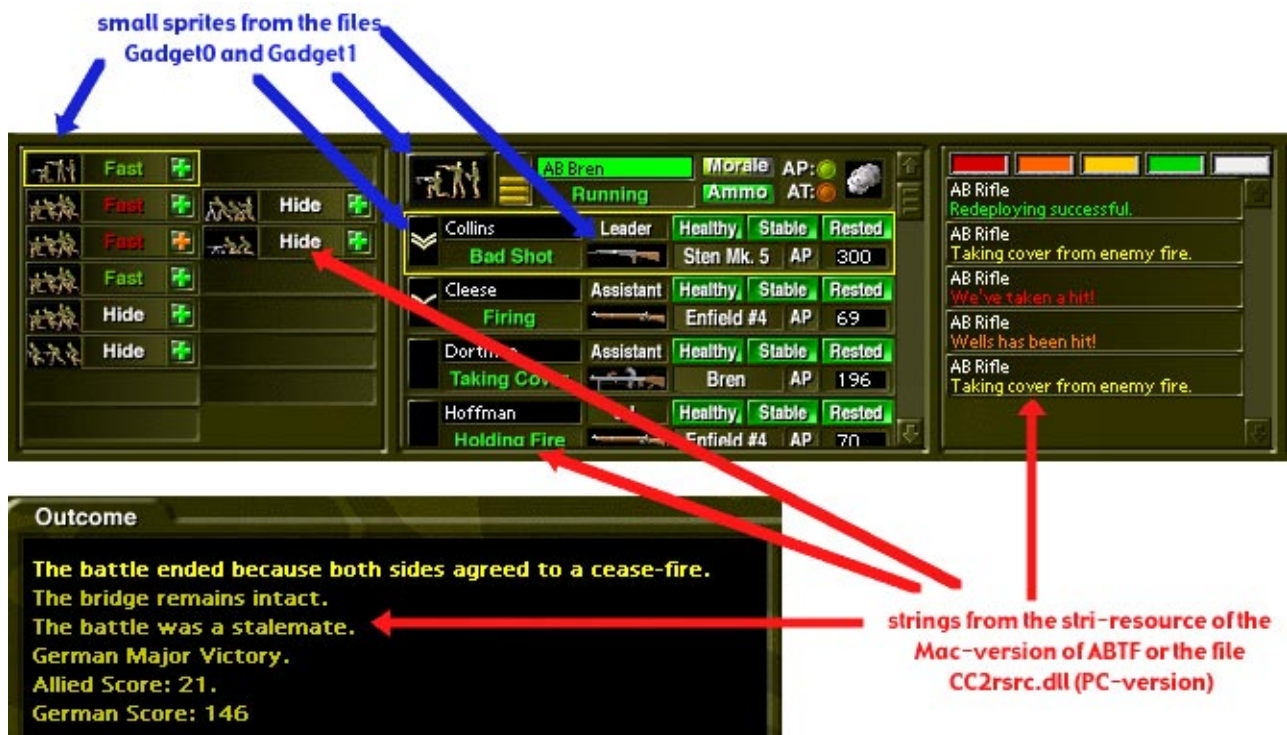
This resource group contains one single big resource:

- stri-Resource-ID 1000 “CC Strings”, size 25981 bytes --> table of zero-delimited strings.

The stri-resource-type is not mentioned in “Inside Macintosh”. As stated in the Apple-book “Inside Macintosh - Text”, page 5-9: *Working With String Resources: Since many of the strings in your Macintosh applications are specified in resource files, you need access to those strings. Strings are defined by two different resource types: the string ('STR ') resource and the string list ('STR#') resource. To work with the string resource, you use the GetString function, and to work with a string list resource, you use the GetIndString procedure. The GetString function reads a string resource into memory and returns the handle to the string resource as its result. GetString does not copy the string,*

so you must create your own copy if you are going to modify the string in your application. If the resource has already been read into memory, GetString simply returns a handle to the string. If you use a number of strings in your application, it is more efficient to specify them in a string list resource rather than as individual resources. This is because the system software that reads in the resources can operate more efficiently when reading a collection of strings from a file than when reading and storing each individually. To work with an element in a string list, use the GetIndString procedure. It reads the resource, locates the string, and copies the string into a Pascal string variable you supply. You can then use the NewString function to create a copy of the string in the heap, if you wish, you can see that the stri-resource-type is not supported by Apple's MacOS and therefore not supported by Apple's ResEdit.

So this string-table is not editable with a predefined template of ResEdit but only with the universal hex-template. But here are the same strings located that the PC-version stores in the file "CC2rsrc.dll": the message strings used during the battle ("We have taken a hit") or after the battle ("The game was a stalemate"):



Picture: Strings from the stri-resource (Mac) or the file CC2rsrc.dll (PC) in action.

Most of the strings might become subject of patching when creating a new story line, as the whole bunch of modified CC2rsrc.dll-files from the PC-world shows. If we want to do the same thing to the stri-resource of ABTF we first have to analyse the resource. It is not a typical Mac-alike resource. The easy way is to overwrite the strings using the universal hex-template of ResEdit without changing the length of each string (and therefore without changing the size of the resource!).

### Analyzing the stri-resource of the last available update (version 2.0.2)

1. first 4 bytes containing the text "stri",
2. the next 4 bytes containing the number of strings in the resource, 925 (in version 2.0.2),
3. the next 3700 bytes containing a offset table with the addresses of the 925 zero-delimited strings in the stri-resource, the first pointer points to the address 0000:0E74h, that means, that the first 8 bytes of the stri-resource will be ignored by the program on calculating the addresses after importing them into memory. To find the start of a string in the resource just add 8 to the address: 0000:0E74h + 8h = 0000:0E7Ch. The last pointer points to the address 0000:6553h
4. beginning with the 3709th byte (= 0000:0E7Ch, if the first byte is 0000:0000h) the table with the zero-delimited strings begins. The end of each string is marked with a "null" byte (00h), as it is commonly in the programming-language C. The first string beginning at the address 0E7Ch is "Move"00h. The last string beginning at the address 655Bh is "Map %d, elem %d already occupied."00h.

To patch the stri-resource properly it is necessary to create a separate “stri-resource-editor”, which is capable to recalculate all the 925 offsets and building up a new stri-resource after changing the length of even one single string. It seems to be impossible to do it manually.

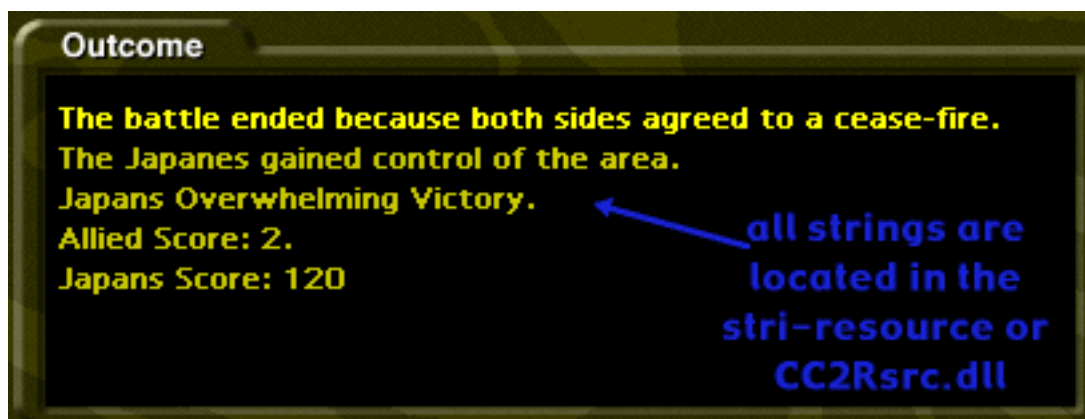
**Be careful!** there are differences in the stri-resources between the first released version 1.0.0 (contains 924 offset addresses) and the last available update 2.0.2 (contains 925 offset addresses)!!!!

Unfortunately, the PC-pendant to the stri-resource, the file CC2rsrc.dll, is completely different in size and structure and contains also datas which are stored in the Mac-version in the DITL-resources. It is not possible to paste simply in the datas from modified CC2rsrc.dll's.



Picture: Modeless and Modal Dialog Boxes used by the Mac-version of “A Bridge Too Far”, using strings stored in the DITL-resources of the Mac-version of ABTF or in the file CC2rsrc.dll of the PC-version of ABTF.

## What can be done for the PacificFront-Mod



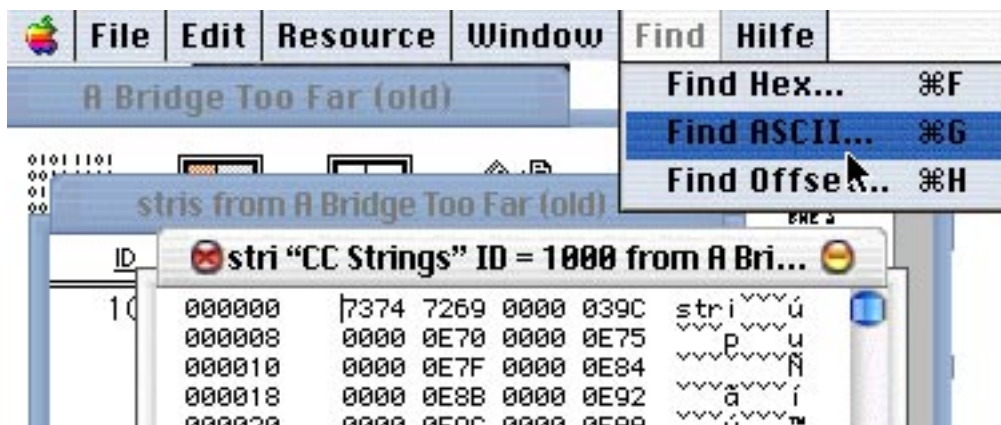
Picture: Strings from the stri-resource (Mac) or the file CC2rsrc.dll (PC) after a battle from the PacificFront-Mod by Taki.





Picture: Strings from the stri-resource (Mac) or the file CC2rsrc.dll (PC) in the Debriefing-Screen from the PacificFront-Mod by Taki.

To get on a Mac the same result like the PC-version using TAKI's CC2Rsrc.dll you have to patch the stri-resource as follows. Take ResEdit, open ABTF, select the one and only stri-resource with ID=1000 and edit it using the universal hex-template of ResEdit. Select from the Menu "Find" the option "Find ASCII" and you will enter a dialog box to search/exchange strings in the stri-resource. Change all the words "Germans" into "Japanes" (the correct writing "Japanese" is not possible unless the offset-table on the beginning of the stri-resource is modified), "GERMANS" into "JAPANES" and "German" into "Japans" by clicking the button "change all" in the dialog box. That's all. Looks very simple and it will work fine if you do not change the lengths of the zero-delimited strings!



Picture: using ResEdit: select the stri-resource ID=1000, open it, select "Find" from the menu and open the search/exchange dialog with "Find ASCII".



Picture: Strings from the stri-resource (Mac) or the file CC2rsrc.dll (PC) during battle from the PacificFront-Mod by Taki.

## And what can be done for the Kreta-Mod

Changes which have to be done to the resource-fork of "A Bridge Too Far" to fit the Kreta-Mod by Kyle Scott (<http://members.nbci.com/Kretaforcc2/>) are much more complicated, because Kyle Scott "Fish" changed the sides between Allies and Axis, so the Germans can make the invasion and the Allies have to hold the position. For this reason messages like "The Allies have won" have to be changed to "The Germans have won" and so on.

Editing the stri-resource ID=1000 "CC Strings" with ResEdit's universal hex-template requests also to conserve the original string-lengths. The replacing can be done as follows:

- "Axis" doesn't exists,
- "Germans" changed into "#####",
- "German" changed into "\$\$\$\$\$\$",
- "Allied" changed into "&&&&&&",
- "Allies" changed into "%%%%%%%%%",
- "Americans" changed into "!!!!!!!!", (only one occurrence)
- "American" changed into "???????",
- "British" changed into "bbbbbbb", (only one occurrence)
- "Polish" changed into "pppppp", (only one occurrence)
- "pppppp soldiers" changed into "Italian troops ", (one occurrence)
- "bbbbbbb soldiers" changed into "Gebirgsjäger ", (one occurrence)
- "??????? soldiers" changed into "Fallschirmjäger ", (one occurrence)
- "\$\$\$\$\$\$ soldiers" changed into "Allied soldiers", (one occurrence)
- "???????" changed into "GermanFJ",
- "!!!!!!!! %s" changed into "German-FJ %s", (one occurrence)
- "The %%%%%%%%% have won" changed into "The Germans 've won",
- "%%%%%%%%% were routed" changed into "Germans 're routed",
- "The %%%%%%%%% gained" changed into "The Germans gaind",
- "The %%%%%%%%% must wait for XXX Corps" changed into "The Germans must wait for 5. GebDv",
- the other strings "XXX Corps" changed into "5. GebDiv",
- the remaining strings "%%%%%%%%%" changed into "Axis' ", (3 occurrences)
- "&&&&&&" changed into "German",
- "\$\$\$\$\$\$" changed into "Allied",
- "#####" changed into "Allies ",
- "ALLIES" changed into "GERMAN", (2 occurrences)
- "GERMANS" changed into "ALLIES ", (2 occurrences)

### Changes to other resources in the resource-fork of ABTF:

CNTL-resource ID=2003 "Allied Strength", Title changed from "Allied Strength:" into "German Strength:"

CNTL-resource ID=2004 "German Strength", Title changed from "German Strength:" into "Allied Strength:"

DITL-resource ID=1004 the words "Allied" changed into "German" and vice versa

DITL-resource ID=1010 the words "American" changed to "German" and "German" changed into "British"

DITL-resource ID=1100 the word "Allied:" changed into "Axis:" and vice versa

DITL-resource ID=2001 the word "Close Combat" changed into "CC2 : Kreta"

DITL-resource ID=2002 changed the picture size for PICT-resource-128-embedding

DITL-resource ID=2003 changed the picture size for PICT-resource-128-embedding

PICT-resource ID=128 "the paratrooper logo" replaced by the "Kreta text logo"

icl8-resource ID=128 and the the other icons slightly changed with the word "Kreta"

vers-resource ID=1 Version Number changed from "1.0.0" into "1.0.1" (to work better with ResCompare)

## How to use ResCompare to create self-patching utilities

ResCompare is a programmer's utility that compares resource files and their data forks. It can also update the resources that have changed, show detailed differences between two resources, and generate a self-applying patch application that will convert one or more old versions of a file into a target version. This software is FREE. ResCompare is Copyright © 1989–96 by Michael Hecht. All Rights Reserved. You may copy and distribute it freely, so long as you don't make any money off of it. Download is possible via <http://www.versiontracker.com/>.

Preserve an unchanged version of ABTF on your harddisk and the new, modified version of ABTF in a separate file. Give the new file a different name (and change the vers-resource ID=1) to identify the files correctly. Follow the ReadMe of ResCompare to create a patching-utility. Once the utility is build, you can use again ResEdit to modify the dialog text of the patching-utility.

This gives you the opportunity to create a small file containing only the changes you have done, which can be easily used later.

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