RE4UHD EFF Tool Tutorial

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INTRODUCTION

First off.. congratulations on trying to learn the most interesting of all files to mod in RE4UHD! Some of this may seem very complicated as there are many things to learn, but once you get the hang of things it is possible to add new effects to rooms with a bit of practice & patience. For this tutorial we are going to examine how the EFF files work, how to edit existing effects, and also adding new effects.

While you read this tutorial you may get excited and try to start to edit effects as you read, but it is important to know that there is important information throughout this document that is required to know before editing effects. Please read the entire document (yes, it is long), before you attempt to add/remove/edit any effects.

This tutorial only covers a small portion of what I know, and what a few other dedicated modders know. To put everything we know into one tutorial would be enough to fill a book. The goal of this tutorial is to simply give users a basic understanding of how the files work, along with some working examples to play around with.

EXTRACTING THE EFF FILE

To get started we need to extract the EFF file. First we have to use the UDAS tool using the **UDAS_Extract.bat** file. A folder is created with all the UDAS files inside it. Inside this folder we locate the EFF file example: r113_07.EFF

To extract the file, place the EFF file in a working directory along with the **RE4UHD_EFF_Tool.exe** and the .bat files. Use EFF_Extract.bat file to extract the contents of the EFF file. After extraction is complete we see that a new folder named after our EFF file has been created with a bunch of subfolders:

WHAT'S INSIDE AN EFF FILE?

Here is a list of folders that contain the files for editing an EFF file:

.idx: An inde fo all the files used in the extracted EFF file.
Effect0: Groups of regular effects. These groups of effects are always "ON" on screen.
Effect1: Groups of regular effects. These groups of effects are controlled by EAR files. EAR files contains trigger areas data that make some of these groups of effects to be activated and deactivated depending on the position of the player.

Effect model: 3D models (rocks and walls falling apart, for example)
Effect TPL: Texture indexes for regular effects (one texture or sequence for animation (water or fire, for example) is one tpl file)
Tables: Index tables for Effect Groups and Textures.

(It should be noted that not all EFF files will have these folders, but over the course of extracting various files you will see them in various extracted files).

EXAMPLE OF .IDX.TXT FILE

All extracted EFF files will have an **.idx** file. This file serves as an index for all the directories and some commonly used files in the EFF file.
Table_0 = 1 **(1 means it is used, 0 means it is not. These are the only two valid values for this field)**
Table_1 = 1 **(1 means it is used, 0 means it is not. These are the only two valid values for this field)**
Table_2 = 1 **(1 means it is used, 0 means it is not. These are the only two valid values for this field)**
Table_3 = 0 **(1 means it is used, 0 means it is not. These are the only two valid values for this field)**
Table_4 = 1 **(1 means it is used, 0 means it is not. These are the only two valid values for this field)**
TPLCount = 7 (this needs to be updated to: **TPLCount = 8**) **(actual count)**
TextureData = 1 **(1 means it is used, 0 means it is not. These are the only two valid values for this field)**
Effect0GroupCount = 7 **(actual count)**
Effect1GroupCount = 14 **(actual count)**
ModelCount = 1 **(actual count)**

So it's important that if we want to update our EFF files, like adding or removing effect folders or adding TPLs, or adding Tables, that the changes are reflected in the **.idx** file.

EFFECT GROUP FOLDERS

Inside the '**Effect0**' and '**Effect1**' directories described above there are also **subfolders**. Let's first observe the contents of folders **Effect0** & **Effect1**. Each of these folders contain sets of sequentially numerated Effect Group folders:

Effect Group 0
Effect Group 1
Effect Group 2…
Now let's look inside these **Effect Group** folders. Each of the effects that we can edit are located inside these Effect Group folders and are saved in a file named Data.txt file with an .obj file that accompanies it:

Data.txt
Model.obj

Model.obj file

As described in the '**Universal Concepts**' guide in this distribution, the **.obj** file is used as a reference point for effects. We can use the **Data.txt** file (described below) alone without the help of the .obj file but it is often much easier to use an .obj file for the placement of our effects in a room. All that we need to know for now about this file is that the number of layers in the .obj file need to match the number of entries in the corresponding Data.txt file otherwise the tool is likely to hang or crash.

Data.txt file

Each Effect Group folder contains a **Data.txt** file that serves as an index of how many effects are present within a certain Effect Group folder and an editable data sheet of the effect parameters. In this Data.txt file we can add new effects or remove/edit existing effects. Each effect is contained in what is described as an 'entry'.

As described in the 'Universal Concepts' guide of this distribution, there are certain parameters that are universal such as the EffectCount parameters. If we are to add or remove effects we must edit the EffectCount parameter (in the # Main Effect of the Data.txt file) to reflect the amount of entries in the Data.txt file.

Example: We open the Data.txt file file and see that **EffectCount = 4**. So then if we add a new entry to the **Data.txt** file we simply change this value to read **EffectCount = 5** and save the file. When the EFF is finally repacked the tool will now know there is another effect added.

EXAMPLE OF DATA.TXT FILE

Main Effect

EffectCount = 9
Offset[4..7] = 0x0
Offset[8..11] = 0xFE0000
Offset[12..15] = 0x0
Offset[16..19] = 0x0
Offset[20..23] = 0x0
Offset[24..27] = 0x0
Offset[28..31] = 0x0
Offset[32..35] = 0x0
Offset[36..39] = 0x10
Offset[40..43] = 0x0
Offset[44..47] = 0x0

Effect 0 - Swaying Trees

Id = 0x1
Type = 0x48
Texture = 0xF6
Offset[3] = 0x0
Offset[4..7] = 0xFE000000
Offset[8..9] = 0x8001
Offset[10..11] = 0x30
Position_X = -50722.582031
Position_Y = -18679.701172
Position_Z = 212.115982
Offset[24..27] = 0x0
Offset[28..31] = 0x0
Offset[32..35] = 0x0
Offset[36..39] = 0x0
Offset[40..43] = 0x0
Offset[44..47] = 0x0
Offset[48..51] = 0x3F800000
Offset[52..55] = 0x0

Offset[56..59] = 0x0
Offset[60..63] = 0x0
Offset[64..67] = 0x0
Offset[68..71] = 0x0
Offset[72..75] = 0x0
Offset[76..79] = 0x0
Offset[80..83] = 0x0
Offset[84..87] = 0x0
HorizontalAxis = 0.000000
VerticalAxis = 0.000000
Offset[96..99] = 0x0
Offset[100..103] = 0x0
Offset[104..107] = 0x0
Offset[108..111] = 0x0
Offset[112..115] = 0x0
Offset[116..119] = 0x0
Offset[120..123] = 0x0
Offset[124..127] = 0x0
Offset[128..131] = 0x0
Offset[132..135] = 0x0
HorizontalSize = 12201.343750
VerticalSize = 11857.165039
Offset[144..147] = 0x0
Offset[148..151] = 0x0
Offset[152..155] = 0x3F800000
Color_R = 0x46
Color_G = 0x41
Color_B = 0x37
Color_A = 0xFF
Color_R_Config = 1.000000
Color_G_Config = 1.000000
Color_B_Config = 1.000000
Color_A_Config = 1.000000
Offset[176..179] = 0x0
Offset[180..183] = 0x0
Offset[184..187] = 0x0
Offset[188..191] = 0x0
Intensity = 0x0
BordersEffect = 0x0
WaveConfig[0] = 0x0
WaveConfig[1] = 0x0
WaveConfig[2] = 0x0
WaveConfig[3] = 0x0
WaterHorizontalDistortion = 0x0
WaterVerticalDistortion = 0x0
Offset[212..215] = 0x0
HorizontalFlickering = 0.000000
VerticalFlickering = 0.000000
RotationRadius = 0.000000

ModelHidingThreshold = 0.000000
Offset[232..235] = 0x0
Offset[236..239] = 0x0
Offset[240..243] = 0x3E99999A
Offset[244..247] = 0x3F800000
Offset[248..251] = 0x0

Looking at the example above we see that before the first entry (Entry 0) there is the **# Main Effect.** This Main entry contains the **EffectCount** and is the only value we need to pay attention to in this section of the # Main Effect entry. After this we see the effect of the first entry with a whole bunch of parameters that we can edit. Some EFF entries have varying attributes that can be edited depending on the Type.

EFFECT TYPES

Let's look now at what constitutes an Effect Type. We should know that it is the first three offsets that determine what Type of effect we are dealing with, along with what Texture it will use. These two parameters will determine the behavior of the effect we see in game.

Id = 0x1
Type = 0x48
Texture = 0xF6

If you see later in this tutorial examples in this format: **1_17_28** it simply translates to:

Id = 0x1
Type = 17
Texture = 0x28

So to further understand types we need to know that the “type” parameter determines how the texture of the effect will behave.
Effects use either sprites or textures to create visual effects, and these vary depending on the offsets shown above.
As for types, it can be a floating sprite (fire effects), it can be an image distortion texture (heat effect). There are countless types and every type has its own variables. Basically there are two categories that an effect can fall into:

- effects that have their textures in the room pack files (**44000xxx.pack**) This can be stage effects, or ETM effects
- effects that have their textures in the core.udas pack file (**0700000.pack** file)

So what is the difference between an effect that uses a room pack file and an effect that uses the **0700000.pack** file?

UNIVERSAL EFFECTS VS. LOCAL EFFECTS

To understand the answer to this question we need to understand what makes the 0700000.pack file so special. This file is one of a few pack files that get loaded into memory when we first start the game. It is the most important pack file in the game because it contains all of our button textures and many other important textures

the game uses for effects, like the film grain, the red eyes of the Ganados, the fires that burn, explosions, blood and much more.

The effects that use the **0700000.pack** file are what we might call '**Universal Effects**' because we can use them in any room without having to place dependent textures in the pack file. They are what you might call '***ready to go***' effects which require much less work to port from room to room.

Now we will observe the second category of effects what we will call **'Local effects**' (like the Swaying Trees effect in Example #1) Unlike **Universal Effects, Local effects** require that we assign them a **TPL** and have them packed into the EFF file so that their textures are loaded from the room **pack** file. Another few examples of these kinds of effects are candles, some stationary trees, flies, maggots, water, rain, etc. Some of these effects require numerous textures to be loaded as they play like an animation in a sequence (like a flickering candle effect that uses 16 different candle textures that all vary slightly in position and size).

So now we know that effects fall into two categories:

- **Universal Effects**
- **Local Effects**

When see certain effects in the game (like candles for example), there are often several effects happening simultaneously. In the case of the candles there are usually two effects happening: The flickering flame effect (consisting of 16 different flame textures), and a bloom effect to give a glowing effect around the flame. So what we see in game is often a layering of different effects to get one look. You could be surprised sometimes to see that some effects have dozens of layers to give a realistic look to them. I must say despite so many shortcomings in the development of this game, one thing that the devs did really well is the creation of effects.

We often have several effects all working together, which are often combinations of **Universal** & **Local** Effects. Candle effects are a good example of this; we have the Local effect that is responsible for the flame, and the other Universal effect of the bloom. These two separate effects (with their own **Data.txt** entries), work together to get an overall look & feel for the candle effect. There are many effects we see in game that look like only one effect but are in fact numerous effects happening at once.

DETERMINING IF AN EFFECT IS UNIVERSAL OR LOCAL

How can we tell if an effect that we see in the **Data.txt** file entries are **Universal** or **Local**? The answer to this is explained in the section below about **Tables,** but first let's learn about the TPL files that are used by Local effects.

EFFECT TPL FILES

One important thing to know about editing an effect is that EFF files contain **TPL** (Texture Palette List). TPL files are used by most models in the game, as well as effects and other files. These TPL files point the model or effect to the correct texture package (**.pack file**) that it needs to display the textures in the game correctly.

Below is an example of the ordering system used by the tools to number the TPL files:
0.tpl
1.tpl

2.tpl
3.tpl
4.tpl
5.tpl…

The first thing we need to understand about editing effects is that they are tied to textures. As outlined above, the textures are either in the room pack files or in the **0700000.pack** file. With a few exceptions, 99% of effects use textures, so we will need to understand the relationship between the effects and the EFF TPL files.

If we are to add/or copy **Local Effects** that require textures we are going to need to edit the **TPL** files to point to the correct textures and pack files. Normally when we are dealing with TPL files we are used to associating with a BIN model but in the case of an effect TPL there is usually no model (there are some effects that use physical models, but this will be explained later in the tutorial)

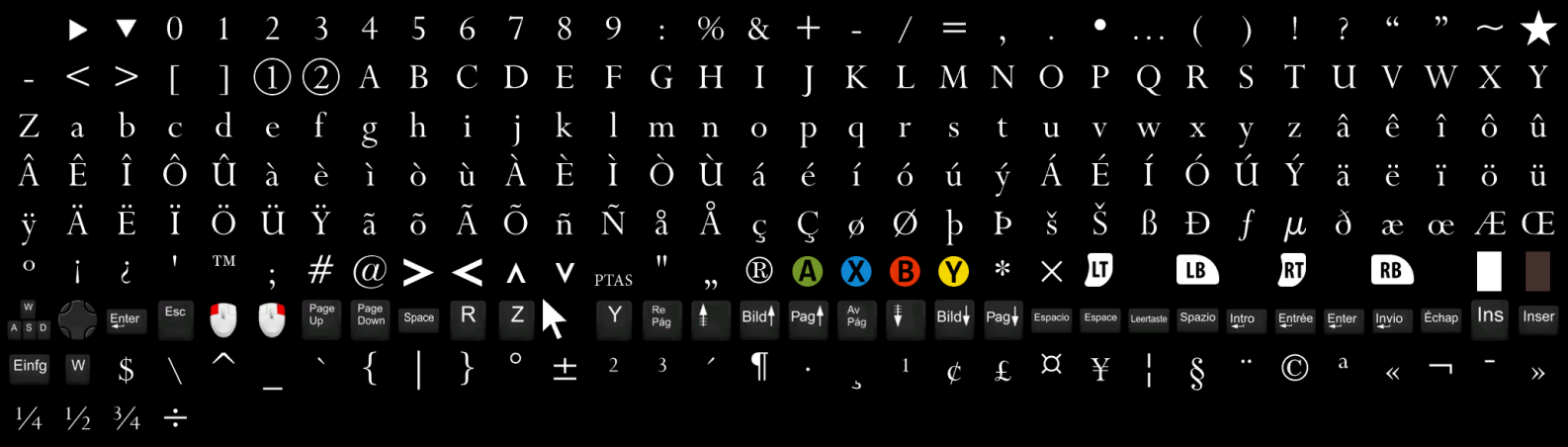
How & Why do we need to edit the TPL?

With the exception of some effects that use BIN models, we only need to edit the effect TPL files when we are dealing with **Local Effects**. If we are simply editing the parameters of an already existing effect and not adding any new textures (or renaming any textures) then we do not have to edit the TPL, but if we are adding a new effect to a room there are usually no textures for that effect present in the room pack file. This then means that the EFF TPL does not have the information to point it to that pack file and will need to be manually edited in a HEX editor.

MISSING TEXTURES

To understand this concept further we can observe this experiment: Simply rename any EFF file and move it into another UDAS directory and repack it. **Example:**

Rename **r113_07.EFF** to **r100_07.EFF** and move the newly renamed file into the UDAS dir for r100 and repack the UDAS file. Once the game is loaded you will see that the original effect is missing its textures and that the texture is replaced with that strange ‘Alphabet Soup’ texture we see whenever a texture is missing:



This happens when an effect TPL file calls on textures that are not loaded into memory. Normally with Local Effects, our textures are placed in the room pack file (so in our example **r113_07.EFF** calls on **44000113.pack** , so if the TPL hasn’t been edited it will still call on **44000113.pack** and since **44000113.pack** isn’t loaded into memory when we load r100 the textures come up missing.

So if we are to edit **Local Effects** that require textures from a room pack file we must edit the TPL as well. In most cases we also have to change the number of the texture file that the effect is using according to what number of files are already in the pack file to be used. The process is simple:

For example:

First we look at the original EFF TPL for one of the **Local Effects** that we wish to copy and see that it is using texture number **0102.dds**. Unless this texture is already present with the same name in our pack file (very unlikely), then we will have to copy and rename the texture file that is to be placed into our working room pack file. This usually means that it will be placed after the last texture in the pack file.

Say for example we want to copy this texture over to **44000101.pack** file. First we observe what the last used texture is in that pack file (in this example it is **0295.dds**) So now we have to name that texture to one integer higher than the last texture in the r101 pack file, so in this scenario the texture would be renamed to **0296.dds**. Now this texture is ready to be used by the **Local Effect** in our new EFF file.

The next step would be to edit the TPL file (via HEX edit) but this will be explained more in detail later in the COPYING A LOCAL EFFECT FROM ROOM TO ROOM section of this tutorial

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EFFECT TABLES

TABLES FOLDER and CONTENTS

So what are Tables? Basically put, **Tables** are indexes of effects & their **Texture IDs** with other information like **Effect Group** folder TriggeZones etc.

In the **Tables** folder we will often see some, or all, of the following tables files present:
Table_0.txt
Table_1.txt
Table_2.txt
Table_3.txt
Table_4.txt
TextureData.txt

TABLE FILES EXPLAINED

Table_0

Simply put, **Table_0** is an index of **Local Effects** that use **TPL** files which are in a list with **Texture IDs**.To avoid confusion let's understand then that textures used by **Local Effects** are assigned a **Texture ID** that is shown in the 3rd offset of the **Data.txt** file and also the **Table_0.txt** file:

Example of **Table_0.txt**

EntryCount = 4
Entry_0 = 0x33
Entry_1 = 0x3B

Entry_2 = 0x8E
Entry_3 = 0xCB

In the example above, we see four entries in **Table_0.txt.** Each of these values are in HEX and what we see on the right are the assigned **Texture IDs** that match the 3rd offset of one or more entries in the **Data.txt** file.
EXAMPLE:

Effect 0

Id = 0x1
Type = 0x48
Texture = 0x33
Offset[3] = 0x0
Offset[4..7] = 0xFE000000
Offset[8..9] = 0x8008
Offset[10..11] = 0x30
Position_X = 21788.185547
Position_Y = -70.903198
Position_Z = ...

The value in the 3rd offset of the **Data.txt** file labeled 'Texture'. This **Texture ID** value is not a correlating number of any texture in the pack file. (For example, **Texture = 0x33 does not mean** the effect is using **0033.dds**) As stated above this 3rd offset ***corresponds*** to one of the entries in **Table_0.txt.**
In this example it is the first entry of **Table_0.txt**, **Entry_0 = 0x33.**

It seems a bit cryptic at first as this number doesn't seem to correspond with anything other than the Table_0.txt. entry but once we learn more about the Tables we will see that the entries in **Table_0.txt** actually point to an effect **TPL** that contains all the information we need to find which texture the effect is using and from which pack file.

Lets look again at our example of **Table_0.txt**:
EntryCount = 4
Entry_0 = 0x33
Entry_1 = 0x3B
Entry_2 = 0x8E
Entry_3 = 0xCB

It is important now to know that these are **Texture ID Entry numbers** are numerically ordered (in this example **0** through **3**) to match the four **TPL** files that are present in the Effect TPL folder of the extracted EFF file:
0.tpl
1.tpl
2.tpl
3.tpl

Lets understand then that these **TPL** files match the entries in **Table_0.txt**.:
0.tpl = **Entry_0**
1.tpl = **Entry_1**
2.tpl = **Entry_2**
3.tpl = **Entry_3**

Since **Table_0.txt** is an index of **Texture IDs** that use TPL files (used only by Local Effects), we must remember that the number of entries in **Table_0.txt**. should always match the amount of TPL files inside the Effect TPL folder.

Table_1

This Table shows us the amount of effect groups inside the **Effect0** folder. There is one ID for every Effect Group. We still don't know how the IDs in **Table_1** are assigned.

Table_2

This Table shows us the amount of Effect Groups inside the **Effect1** folder, and then lets us assign a value of where the effect will be triggered (in conjunction with the **EAR** file). There is one Entry in the **Table_2.txt** file for every Effect Group folder present in the **Effect1** folder. Let's look at an example of a the **Table_2.txt** file:

EntryCount = 3

Entry_0_index = 0x0
Entry_0_unknown = 0xFFFF

Entry_1_index = 0x1
Entry_1_unknown = 0x5

Entry_2_index = 0x2
Entry_2_unknown = 0xFFFF

Entry_0_unknown = 0xFFFF means that the Effects in **Effect Group 0** will be seen **everywhere** in the game
Entry_1_unknown = 0x5 means that the Effects in **Effect Group 1** will be seen only when the player is in the TriggerZone of EAR Events that have the correlating value of **0x5.**

So as we can see, **Table_2** serves as an intermediary of the **EAR** file which will determine which **Effect Groups** are visible to the player in the game. There will be more info on how to use the **Table_2.txt** file and the **EAR** file below.

Table_3

This Table is used for effect PATHS (not used very often in room effects, but is used by various CORE effects. Essentially these are waypoints along a path that determine the path an effect will take through 3d space. Not much is known how to edit these.

Table_4

This Table serves as an index of effects that use BIN models (3d effects), and a list of IDs. Here is an example of the **Table_4.txt** file:

EntryCount = 2

Entry_0_index = 0x3C
Entry_0_unknown = 0x0

Entry_1_index = 0x3D
Entry_1_unknown = 0x0

(More will be explained on how to create effects that use BIN models later on in this tutorial)

TextureData

This Table shows us the amount of textures and basic info used in **Local Effects**. Each entry correlates to one of the **TPL** files in the Effect TPL folder (as well as the **Table_0.txt** file). The entries listed in the **TextureData** file will be in the **SAME ORDER** as the entries in the **Table_0.txt** file, as well as the **SAME ORDER** as the TPL files.

For example, **Entry_2** in the **Table_0.txt** file corresponds to **2.tpl,** which corresponds to the **3rd** entry in the **TextureData** file:

TextureCount = 4

Texture 0 Data

Height = 64
Width = 64
EffectHeight = 0
EffectWidth = 0
EffectTextureCount = 1
Offset[10] = 1
Offset[11] = 1

Texture 1 Data

Height = 64
Width = 64
EffectHeight = 0
EffectWidth = 0
EffectTextureCount = 1
Offset[10] = 1
Offset[11] = 1

 # Texture 2 Data (this entry is linked to 2.tpl, and **Entry_2** in the **Table_0.txt** file)

Height = 256
Width = 512
EffectHeight = 128
EffectWidth = 512
EffectTextureCount = 1
Offset[10] = 1
Offset[11] = 1

Texture 3 Data

Height = 256
Width = 256
EffectHeight = 0
EffectWidth = 0
EffectTextureCount = 16
Offset[10] = 1
Offset[11] = 1

As seen in the examples above and below, sometimes the Effect TPL files only use one texture (**EffectTextureCount = 1**) but in other scenarios the TPL can use many textures that are loaded in a sequence (like the candle animation that uses a sequence of 16 textures).

Texture 3 Data

Height = 256
Width = 256
EffectHeight = 0
EffectWidth = 0
EffectTextureCount = 16
Offset[10] = 1
Offset[11] = 1

If we open up **3.tpl** we will see that there are 16 textures listed:

3.tpl

Offset(h)	00	01	02	03	04	05	06	07	08	09	0A	0B	0C	0D	0E	0F
00000380	01	00	00	00	00	00	00	00	00	00	00	00	05	01	00	44
00000390	B7	00	00	00	05	01	00	44	B8	00	00	00	05	01	00	44
000003A0	B9	00	00	00	05	01	00	44	BA	00	00	00	05	01	00	44
000003B0	BB	00	00	00	05	01	00	44	BC	00	00	00	05	01	00	44
000003C0	BD	00	00	00	05	01	00	44	BE	00	00	00	05	01	00	44
000003D0	BF	00	00	00	05	01	00	44	C0	00	00	00	05	01	00	44
000003E0	C1	00	00	00	05	01	00	44	C2	00	00	00	05	01	00	44
000003F0	C3	00	00	00	05	01	00	44	C4	00	00	00	05	01	00	44
00000400	C5	00	00	00	05	01	00	44	C6	00	00	00	00	00	00	00
00000410	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00

So it should be observed that the **Table_0.txt** **EntryCount** value, the **TextureData** **TextureCount** value, and the number of TPL files present in the **Effect TPL** folder should **ALWAYS BE THE SAME** value. This is simply because all of these tables are referencing the same thing.

Now that we know what each folder contains, and what their contained files do, we are ready for try out copying some effects.

EFFECT MODEL FILES

EFFECTS WITH BIN MODELS

As stated above some effects actually use a 3d **BIN** model that is paired with a **TPL** file. An example of this is an effect where we see the bottles thrown at us when we camp the tower in r101. If we use the BIN tool to extract this BIN model we will see that it is the bottle model. Like the effects described above, these effects that use **BIN** models also have **TPL** files that require editing if we are going to change their textures. EFfects that use BIN models will have their TPL files call on room texture pack files. Feel free to edit the BIN model to see what results you get, but the same principles described above apply to the TPL that accompanies the BIN file.

Now that we know how effects use TPL files it is important to understand how **Local Effects** using **TPL** files are called on. Let's look at the next section of the tutorial, **TABLES.**

CREATING AN EFFECT WITH 3D MODEL (new section added 1-13-2024)

(also see Creating Sliding Gates Tutorial for more advanced use of 3d models that can move)

This section of the tutorial describes the process of adding an effect with a 3d model. The same concepts of effects apply to these, the only difference is that instead of simply using a texture, these effects use 3d Models. How does this work? Simply put, a 3d model is loaded into the game (using a BIN & TPL file). We can place this model at a specific set of coordinates, and then apply effect parameters (like movement, duration of visibility, instancing, etc).

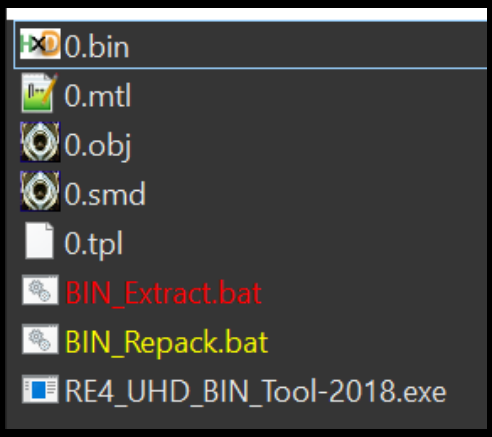
Also, we can use these to create moving objects, like doors sliding open, or chest lids opening etc). In theory, we could make a small room load if we wanted to. You could make a plane flying by in the sky, or even a car driving down the road. The great part about using the EFF file to load models is that we can control their visibility with the **EAR file**.

Let's look at a working example with one 3d model, which is a sliding door. Here are the steps to take when creating an effects with a 3d model:

STEP 1 - Create the BIN and TPL Files

For this step, users will need to understand the concepts described in the RE4UHD BIN TOOL Tutorial 2023. Once we understand how to create BIN & TPL files using the BIN tool, then we can simply create our 3d model. The naming convention of the files is as follows:

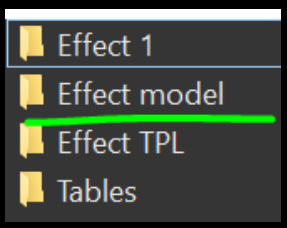
0.BIN
0.TPL



If we wish to use more than one 3d model, we name the secondary set of files to 1.BIN, 1.TPL etc.

Models should only be assigned **bone_0** and saved at 0 0 0 coordinates. This ensures that when we use the coordinates in the effect.txt file, that the model shows up where it should be. It also maintains the center axis of the model so that if we wish to rotate the model, it is spinning from the local object coordinates. All EFF 3d Models should be saved at scale 0.01 (the same scale as ETM models)

Models should be placed in this directory:
rxxx_07\Effect model. Again, if this directory does not exist, simpy create it:



Do not be confused by the 'Effect TPL folder'. This directory is NOT USED to store the TPL files of our 3d models. As stated above, the BIN and TPL files for our 3d model need to be placed in the 'Effect model' directory.

STEP 2 - Add an entry into Table_4

(if the file does not exist we simply create one named ' **Table_4.txt**') Example:

EntryCount = 1

Entry_0_index = **0x54**
Entry_0_unknown = 0x0

(if we were to use a second entry it would look something like this):
Entry_1_index = **0x3D**
Entry_1_unknown = 0x0

In the **Table_4 .txt** file there will be one entry for each 3d model in the 'Effect model' folder.

STEP 3 - Create new Effect Group folder(s)

Each 3d model can be called by an effect in an **Data.txt** file. There can be multiple instances of the effect in the same **Data.txt** file, as well as other instances of the effect in other Effect Group folders. That is to say, we can call this effect from different directories, but it should be known that if we want to exclusively control the visibility of an instance using the EAR file, then the **Data.txt** file (and accompanying .obj file), controlling that should be placed in its own dedicated Effect Group folder.

To create a new Effect Group folder, we will first navigate to the ‘Effect ‘ (local effects) directory. We would then create a folder named Effect Group 0 (we can name it to something else if there are already other folders in this directory). Inside this new folder we will create the **Data.txt** file that will call on the 3d model.

STEP 4 - Create new Data.txt file

In the next step we will create an entry in a new **Data.txt** file. The entry will look something like this:

Effect 0 - Gate

Id = 0x1
Type = 0xFF
Texture = 0x54
Offset[3] = 0x0
Offset[4..7] = 0xFF000000 - screen space/world space flag (most common effects use **0xFE000000**, but 3d Models with use **0xFF000000**)
Offset[8..9] = 0x41 ((a value of 41 ensures that the 3d Model is lit by the room lights)
Offset[10..11] = 0x0
Position_X = 118105.523438
Position_Y = -10977.671875
Position_Z = 3812.458252
Offset[24..27] = 0x0
Offset[28..31] = 0x0
Offset[32..35] = 0x0
Offset[36..39] = 0x0
Offset[40..43] = 0x0
Offset[44..47] = 0x0
Offset[48..51] = 0x3F800000
Offset[52..55] = 0x0
Offset[56..59] = 0x0
Offset[60..63] = 0x0
Offset[64..67] = 0x0
Offset[68..71] = 0x0
Offset[72..75] = 0x0
Offset[76..79] = 0x0
Offset[80..83] = 0x0
Offset[84..87] = 0x0
HorizontalAxis = 0
VerticalAxis = 270
Offset[96..99] = 0x0
Offset[100..103] = 0x0
Offset[104..107] = 0x0
Offset[108..111] = 0x0
Offset[112..115] = 0x0
Offset[116..119] = 0x0
Offset[120..123] = 0x0
Offset[124..127] = 0x0
Offset[128..131] = 0x0
Offset[132..135] = 0x0

HorizontalSize = 200.000000 (this should render the model at 1:1 ratio - All EFF 3d Models should be saved at scale 0.01,. The same scale as ETM models)
VerticalSize = 200.000000
Offset[144..147] = 0x0
Offset[148..151] = 0x0
Offset[152..155] = 0x0
Color_R = 0xFF
Color_G = 0xFF
Color_B = 0xFF
Color_A = 0xFF
Color_R_Config = 1
Color_G_Config = 1
Color_B_Config = 1
Color_A_Config = 1
Offset[176..179] = 0x0
Offset[180..183] = 0x0
Offset[184..187] = 0x0
Offset[188..191] = 0x0
Intensity = 0x0
BordersEffect = 0x0
WaveConfig[0] = 0x0
WaveConfig[1] = 0x0
WaveConfig[2] = 0x0
WaveConfig[3] = 0x0
WaterHorizontalDistortion = 0x0
WaterVerticalDistortion = 0x0
Offset[212..215] = 0x0
HorizontalFlickering = 0.000000
VerticalFlickering = 0.000000
RotationRadius = 0.000000
ModelHidingThreshold = 0.000000
Offset[232..235] = 0x0
Offset[236..239] = 0x0
Offset[240..243] = 0x0
Offset[244..247] = 0x0
Offset[248..251] = 0x0
Offset[252..255] = 0x0
Offset[256..259] = 0x0
Offset[260..263] = 0x0
Offset[264..267] = 0x0
Offset[268..271] = 0x0
Offset[272..275] = 0x0
Offset[276..279] = 0x0
Offset[280..283] = 0x0
Offset[284..287] = 0x0
Offset[288..291] = 0x0
Offset[292..295] = 0x0
Offset[296..299] = 0x0

STEP 5 - Set coordinates of effect(s)

As explained in the Universal Concepts Guide we can set the coordinates of the effect by exporting the **.obj** file from the 3d editor (3dsMax, Blender stc), or set them manually in the **Data.txt** file.

STEP 6 - Add an entry into Table_2

As explained above, all Effect Group X folders require an accompanying entry in the **Table_2.txt** file. This sets the visibility of the effects contained within that Effect Group folder. If set to 0xFFFF the effects in that folder will be visible everywhere in the room. If set to a specific number, (lets say 5 for example) then the effects within that Effect folder will only be visible when the player walks into the EAR TriggerZone that has the linked byte in it (5). Please be sure to read about the Tables below.

STEP 7 - Update the .idx file

As explained above, all extracted EFF files generate an **.idx** file. This file serves as an index for all the directories and some commonly used files in the EFF file.
. Since we are adding a new 3d model to the effect (as well as some tables) we will need to update a few parameters in the **.idx** file. All values in the

he ModelCount in the **.idx** file. The **.idx** file can be found outside of the working directory in the same folder as the tools and can be edited using Notepad or any other text editor. The **.idx** file is created at the time of EFF file extraction. Here is the original **.idx** file for r101:

```
Table_0 = 0
Table_1 = 0
Table_2 = 1
Table_3 = 0
Table_4 = 1
TPLCount = 0
TextureData = 0
Effect0GroupCount = 0
Effect1GroupCount = 1
ModelCount = 1
```

In the workflow we have done above, we have added **Table_2**, **Table_4**, and 1 model. We also added 1 Once the **.idx** file is updated, simply save and exit.

STEP 8 - Repack the EFF file

The final step is to repack the EFF file using the **EFF_Repack.bat** file, and then to place the new EFF file into our working UDAS directory and repack the UDAS file. The very last step is to replace the new UDAS in the Stx folder in the BIO4 directory.

COPYING A LOCAL EFFECT FROM ROOM TO ROOM

Let's say we want to copy a **Local Effect** from one room and move it to another room. For example, say we want to move some candles from r22b to r101. Since r101 has no candle effects by default this means that the r101 pack file (**44000101.pack**) does not contain the candle textures. In order to make this work we need to do several things:

STEP 1 (edit Table_0)

Edit **Table_0.txt** by adding a new entry for texture ID : Entry_X = 0xYY -(copy YY value from original Table_0)

In this example we observe the original r101 **Table_0.txt**:

EntryCount = 7
Entry_0 = 0x29
Entry_1 = 0x33
Entry_2 = 0xCB
Entry_3 = 0xE3
Entry_4 = 0xF1
Entry_5 = 0xF4
Entry_6 = 0xF6

We now must add 1 more new entry for our candles from r20b to the r101**Table_0.txt** . seen above . To find the right entry ID in r20b Table_0.txt. we need to look for the TPL that contains the candle textures. So first we look at the unpacked **4400020b.pack** file and look for the candle textures. We see that they are **0136.tga** to **0151.tga** (16 textures). Now lets convert the value of 136 to hex (because the **TPL** files list their texture numbers in HEX values):

136 in decimal value = 88 in hex. Now we look through the r20b **TPL** files for a texture number of 88 and up… If we look at **1.tpl** in the r20b TPL folder we see:

01 00 00 00 00 00 00 00
00 00 00 00 **0B 02 00 44**
88 00 00 00 **0B 02 00 44**
89 00 00 00 **0B 02 00 44**
8A 00 00 00 **0B 02 00 44**
8B 00…….

This tells us that 1.tpl is the file we need to copy over to r101 EFF folder. We will need to edit this **TPL** & rename it before copying it over but before we do so lets copy the **Table_0.txt** . entry first:

Entry_1 = 0x86 (we copy Entry_1 because it uses 1.tpl) We rename Entry_1 to **Entry_7** and paste it at the end of the r101 **Table_0.txt**, while also remembering to update the **EntryCount** by 1. See below:

EntryCount = 8
Entry_0 = 0x29
Entry_1 = 0x33
Entry_2 = 0xCB
Entry_3 = 0xE3
Entry_4 = 0xF1
Entry_5 = 0xF4
Entry_6 = 0xF6

Entry_7 = 0x86

STEP 2 (copy and edit the TPL)

The next step is to copy, edit and rename the **1.tpl** from the r20b EFF file. So first, copy the **1.tpl** file and rename it to **7.tpl.** Next, open the new **7.tpl.**in a HEX editor:
(I will only paste the data that is relevant to textures as this is the only data we are going to modify):

00 00 00 00 **0B 02 00 44**
88 00 00 00 **0B 02 00 44**
89 00 00 00 **0B 02 00 44**
8A 00 00 00 **0B 02 00 44**
8B 00 00 00 0B 02 00 44
8C 00 00 00 **0B 02 00 44**
8D 00 00 00 **0B 02 00 44**
8E 00 00 00 **0B 02 00 44**
8F 00 00 00 **0B 02 00 44**
90 00 00 00 **0B 02 00 44**
91 00 00 00 **0B 02 00 44**
92 00 00 00 **0B 02 00 44**
93 00 00 00 **0B 02 00 44**
94 00 00 00 **0B 02 00 44**
95 00 00 00 **0B 02 00 44**
96 00 00 00 **0B 02 00 44**
97 00 00 00 00 00 00 00
00 00 00 00 00 00 00 00

The values in **blue** above are texture file numbers and the values in blue are the room pack file number in Little Endian order. We will need to change both the texture numbers and the room pack file number. To do this, let's start by selecting all the values of
0B 02 00 44 and replace them with the number of r101, our destination room:

00 00 00 00 **01 01 00 44**
88 00 00 00 **01 01 00 44**
89 00 00 00 **01 01 00 44**
8A 00 00 00 **01 01 00 44**
8B 00 00 00 01 01 00 44
8C ,,,,,

Now we need to change all the texture numbers. First let's look at the **44000101.pack** file and find the last texture number – we see it is **0294.tga**, so this means that our candle textures will have to be placed after this, starting at **0295.tga** and up for the remainder of the 15 textures. So, we need to copy the candle textures to a working directory and rename them so that they are like below:

DEC value HEX value
0295.tga ----- 127
0296.tga-------128
0297.tga-------129
0298.tga-------12A
0299.tga-------12B

0300.tga-------12C
0301.tga--------12D
0302.tga-------12E
0303.tga-------12F
0304.tga-------130
0305.tga-------131
0306.tga-------132
0307.tga-------133
0308.tga-------134
0309.tga-------135
0310.tga-------136

***Special note about using texture numbers that exceed 255**.
If we have texture numbers that are higher than a value of 255 (or value of FF in HEX), we will need more than 2 bytes to represent the value of the texture number. So in the case of the texture number 322 for example, we use:
2C 02 00 44 42 01 00 00 (322 = 142 in HEX) the order being in Little Endian.

So now we need to place these newly named textures into the 44000101.pack file and repack it with the YZ2 tool, and then finally we update the 7.tpl file to have the proper texture numbers like this:

27 01 00 00 01 01 00 44
28 01 00 00 01 01 00 44
29 01 00 00 01 01 00 44
2A 01 00 00 01 01 00 44
2B 01 00 00 01 01 00 44
2C 01 00 00 01 01 00 44
2D 01 00 00 01 01 00 44
2E 01 00 00 01 01 00 44
2F 01 00 00 01 01 00 44
30 01 00 00 01 01 00 44
31 01 00 00 01 01 00 44
32 01 00 00 01 01 00 44
33 01 00 00 01 01 00 44
34 01 00 00 01 01 00 44
35 01 00 00 01 01 00 44
36 01 00 00 01 01 00 44
00 00 00 00 00 00 00 00

Next we save our newly edited 7.tpl and place it in the Effect TPL folder in r101.

STEP 3 (update the .idx file)

Since we have added a new TPL file to the effect we will need to update the TPL count in the.idx file. The .idx file can be found outside of the working directory in the same folder as the tools and can be edited using Notepad or any other text editor. The .idx file is created at the time of EFF file extraction. Here is the original .idx file for r101:

Table_0 = 1

Table_1 = 1
Table_2 = 1
Table_3 = 0
Table_4 = 1
TPLCount = 7 (this needs to be updated to: **TPLCount = 8**)
TextureData = 1
Effect0GroupCount = 7
Effect1GroupCount = 14
ModelCount = 1

Once the **.idx** file is updated, simply save and exit.

STEP 4 (update the TextureData file)

Our next step is to add a new **TextureData.txt** entry. To do this, we need to:

1 - Update **TextureCount** to a value one more higher than it was. In this case we update this value to **TextureCount = 8**
2 - Copy the original **TextureData.txt** entry from r20b that was used for the candles, paste into the r101 **TextureData.txt file** at the bottom of the file, and change the number to 7:

Texture 0 Data

Height = 96
Width = 96
EffectHeight = 43
EffectWidth = 95
EffectTextureCount = 30
Offset[10] = 0
Offset[11] = 1

Texture 1 Data

Height = 128
Width = 128
EffectHeight = 0
EffectWidth = 0
EffectTextureCount = 1
Offset[10] = 2
Offset[11] = 1

Texture 2 Data

Height = 256
Width = 512
EffectHeight = 128
EffectWidth = 512
EffectTextureCount = 1
Offset[10] = 1
Offset[11] = 1

Texture 3 Data

Height = 64
Width = 64
EffectHeight = 0
EffectWidth = 0
EffectTextureCount = 30
Offset[10] = 10
Offset[11] = 1

Texture 4 Data

Height = 32
Width = 32
EffectHeight = 0
EffectWidth = 0
EffectTextureCount = 1
Offset[10] = 1
Offset[11] = 1

Texture 5 Data

Height = 64
Width = 64
EffectHeight = 0
EffectWidth = 0
EffectTextureCount = 4
Offset[10] = 4
Offset[11] = 1

Texture 6 Data

Height = 256
Width = 256
EffectHeight = 128
EffectWidth = 256
EffectTextureCount = 1
Offset[10] = 1
Offset[11] = 1

 # Texture 7 Data

Height = 64
Width = 128
EffectHeight = 0
EffectWidth = 0
EffectTextureCount = 16
Offset[10] = 16

Offset[11] = 1

After this file is updated simply Save and Exit.

STEP 5 (find & copy effect parameters)

Our next step is to locate and copy the original candle effect entries from the r20b EFF **Data.txt** file. To do so, we will need to search **ALL the files** for the effect that uses the texture ID we saw in **STEP 1** (0x86).

So we search all the **Data.txt** files for this:

Texture = 0x86

This can be a very time consuming effort considering how many Effect Group folders there can be, so a little hack Albert came up with is to simply compress the entire working directory (in this case the **20b_07** folder) with Winrar using the "no compress" method. Once Winrar is done creating the archive we use the FIND option and enter **Texture = 0x86** in the search bar that says '***String to Find'.*** This will search through all the **.txt** files for any matches for **Texture = 0x86**. Once we do this we see that the search result tells us that the entry for the candle effect is located in: **20b_07/Effect1/Effect Group 4\Data.txt:**

```
# Effect 0

Id = 0x1
Type = 0x0
Texture = 0x86
Offset[3] = 0x0
Offset[4..7] = 0xFE000000
Offset[8..9] = 0x0
Offset[10..11] = 0x8
Position_X = 28445.658203
Position_Y = 2598.952637
Position_Z = 6726.530762
Offset[24..27] = 0x0
Offset[28..31] = 0x0
Offset[32..35] = 0x0
Offset[36..39] = 0x0
Offset[40..43] = 0x0
Offset[44..47] = 0x0
Offset[48..51] = 0x3F800000
Offset[52..55] = 0x0
Offset[56..59] = 0x0
Offset[60..63] = 0x0
Offset[64..67] = 0x0
Offset[68..71] = 0x0
Offset[72..75] = 0x0
Offset[76..79] = 0x0
Offset[80..83] = 0x0
Offset[84..87] = 0x0
HorizontalAxis = 0.000000
VerticalAxis = 0.000000
```

Offset[96..99] = 0x0
Offset[100..103] = 0x0
Offset[104..107] = 0x0
Offset[108..111] = 0x0
Offset[112..115] = 0x0
Offset[116..119] = 0x0
Offset[120..123] = 0x0
Offset[124..127] = 0x0
Offset[128..131] = 0x0
Offset[132..135] = 0x0
HorizontalSize = 90.000000
VerticalSize = 150.000000
Offset[144..147] = 0x0
Offset[148..151] = 0x0
Offset[152..155] = 0x3F800000
Color_R = 0xFF
Color_G = 0xFF
Color_B = 0xFF
Color_A = 0xFF
Color_R_Config = 1.000000
Color_G_Config = 1.000000
Color_B_Config = 1.000000
Color_A_Config = 1.000000
Offset[176..179] = 0x0
Offset[180..183] = 0x0
Offset[184..187] = 0x0
Offset[188..191] = 0x0
Intensity = 0x0
BordersEffect = 0x0
WaveConfig[0] = 0x0
WaveConfig[1] = 0x0
WaveConfig[2] = 0x0
WaveConfig[3] = 0x0
WaterHorizontalDistortion = 0x0
WaterVerticalDistortion = 0x0
Offset[212..215] = 0x0
HorizontalFlickering = 0.000000
VerticalFlickering = 0.000000
RotationRadius = 0.000000
ModelHidingThreshold = 0.000000
Offset[232..235] = 0x0
Offset[236..239] = 0x0
Offset[240..243] = 0x0
Offset[244..247] = 0x0
Offset[248..251] = 0x0
Offset[252..255] = 0x0
Offset[256..259] = 0x0
Offset[260..263] = 0x0
Offset[264..267] = 0x0

Offset[268..271] = 0x0
Offset[272..275] = 0x0
Offset[276..279] = 0x0
Offset[280..283] = 0x0
Offset[284..287] = 0x0
Offset[288..291] = 0x0
Offset[292..295] = 0x0
Offset[296..299] = 0x0

The **Data.txt** file entry seen above is an effect for **ONE** candle flame. See step 6 for how to add multiple entries. Our next step is create a new Effect Group:

STEP 6 (create new Effect Group (or clone existing)

The next step is to create a new Effect Group where we will place the effect parameters for our newly ported candle effects. So first thing we do is to go back to the **.idx** file and see how many Effect Groups there are in **EFFECT1** folder:

Table_0 = 1
Table_1 = 1
Table_2 = 1
Table_3 = 0
Table_4 = 1
TPLCount = 8
TextureData = 1
Effect0GroupCount = 7
Effect1GroupCount = 14
ModelCount = 1

So we see that there are **14** Groups. If we navigate to the **EFFECT1** folder of r101 EFF we see that the first group is named **Effect Group 0**, and that the last group is named **Effect Group 13** for a total of **14** Groups**.** The easiest way to add a new **Effect Group** folder is to simply copy an existing one, and then rename it. In this case we would rename it to **Effect Group 14,** while also remembering to update the **Effect1GroupCount** value in the **.idx** file to **15.**

In this case the best method would actually be to copy the **Effect Group** folder from r20b that contains the candle textures. By doing this the actual effect parameters for the candles in the **Data.txt** will be present in our newly copied folder. Remember in the last step we found that **20b_07/Effect1/Effect Group 4\Data.txt** was the file that contained the candle effects. We can simply make a copy of this folder and rename it to **Effect Group 14,** and place it in the **EFFECT1** folder of r101 EFF. We don't have to do things this way, but it sort of speeds things up because all of the effect parameters for the candles will already be in the copied **Data.txt** file.

STEP 7 (effect parameters)

Since we simply cloned the existing Effect Group folder that already contained the effect parameters for the candles, the next part is to ensure that there are no other effects present in the **Data.txt** file that we don't want. To check this, simply open the **Data.txt** file of our newly copied **Effect Group 14,** in a .txt editor. Let's have a look:

Main Effect

EffectCount = 20
Offset[4..7] = 0x0
Offset[8..11] = 0xFE0000
Offset[12..15] = 0x0
Offset[16..19] = 0x0
Offset[20..23] = 0x0
Offset[24..27] = 0x0
Offset[28..31] = 0x0
Offset[32..35] = 0x0
Offset[36..39] = 0x10
Offset[40..43] = 0x0
Offset[44..47] = 0x0

Effect 0 - **Candles**

Id = 0x1
Type = 0x0
Texture = 0x86
Offset[3] = 0x0
Offset[4..7] = 0xFE000000
Offset[8..9] = 0x0
Offset[10..11] = 0x8
Position_X = 28445.658203
Position_Y = 2598.952637
Position_Z = 6726.530762
Offset[24..27] = 0x0
Offset[28..31] = 0x0
Offset[32..35] = 0x0
Offset[36..39] = 0x0
Offset[40..43] = 0x0
Offset[44..47] = 0x0
Offset[48..51] = 0x3F800000
Offset[52..55] = 0x0
Offset[56..59] = 0x0
Offset[60..63] = 0x0
Offset[64..67] = 0x0
Offset[68..71] = 0x0
Offset[72..75] = 0x0
Offset[76..79] = 0x0
Offset[80..83] = 0x0
Offset[84..87] = 0x0
HorizontalAxis = 0.000000
VerticalAxis = 0.000000
Offset[96..99] = 0x0
Offset[100..103] = 0x0
Offset[104..107] = 0x0
Offset[108..111] = 0x0
Offset[112..115] = 0x0

Offset[116..119] = 0x0
Offset[120..123] = 0x0
Offset[124..127] = 0x0
Offset[128..131] = 0x0
Offset[132..135] = 0x0
HorizontalSize = 90.000000
VerticalSize = 150.000000
Offset[144..147] = 0x0
Offset[148..151] = 0x0
Offset[152..155] = 0x3F800000
Color_R = 0xFF
Color_G = 0xFF
Color_B = 0xFF
Color_A = 0xFF
Color_R_Config = 1.000000
Color_G_Config = 1.000000
Color_B_Config = 1.000000
Color_A_Config = 1.000000
Offset[176..179] = 0x0
Offset[180..183] = 0x0
Offset[184..187] = 0x0
Offset[188..191] = 0x0
Intensity = 0x0
BordersEffect = 0x0
WaveConfig[0] = 0x0
WaveConfig[1] = 0x0
WaveConfig[2] = 0x0
WaveConfig[3] = 0x0
WaterHorizontalDistortion = 0x0
WaterVerticalDistortion = 0x0
Offset[212..215] = 0x0
HorizontalFlickering = 0.000000
VerticalFlickering = 0.000000
RotationRadius = 0.000000
ModelHidingThreshold = 0.000000
Offset[232..235] = 0x0
Offset[236..239] = 0x0
Offset[240..243] = 0x0
Offset[244..247] = 0x0
Offset[248..251] = 0x0
Offset[252..255] = 0x0
Offset[256..259] = 0x0
Offset[260..263] = 0x0
Offset[264..267] = 0x0
Offset[268..271] = 0x0
Offset[272..275] = 0x0
Offset[276..279] = 0x0
Offset[280..283] = 0x0
Offset[284..287] = 0x0

Offset[288..291] = 0x0
Offset[292..295] = 0x0
Offset[296..299] = 0x0

Effect 1 - **Candle Bloom**

Id = 0x1
Type = 0xB
Texture = 0x8
Offset[3] = 0x0
Offset[4..7] = 0xFE000000
Offset[8..9] = 0x0
Offset[10..11] = 0x0
Position_X = 28445.658203
Position_Y = 2598.952637
Position_Z = 6726.530762
Offset[24..27] = 0x0
Offset[28..31] = 0x0
Offset[32..35] = 0x0
Offset[36..39] = 0x0
Offset[40..43] = 0x0
Offset[44..47] = 0x0
Offset[48..51] = 0x3F800000
Offset[52..55] = 0x0
Offset[56..59] = 0x0
Offset[60..63] = 0x0
Offset[64..67] = 0x0
Offset[68..71] = 0x0
Offset[72..75] = 0x0
Offset[76..79] = 0x0
Offset[80..83] = 0x0
Offset[84..87] = 0x0
HorizontalAxis = 0.000000
VerticalAxis = 0.000000
Offset[96..99] = 0x0
Offset[100..103] = 0x0
Offset[104..107] = 0x0
Offset[108..111] = 0x0
Offset[112..115] = 0x0
Offset[116..119] = 0x0
Offset[120..123] = 0x0
Offset[124..127] = 0x0
Offset[128..131] = 0x0
Offset[132..135] = 0x0
HorizontalSize = 990.099976
VerticalSize = 990.099976
Offset[144..147] = 0x0
Offset[148..151] = 0x0
Offset[152..155] = 0x3F800000

Color_R = 0xC3
Color_G = 0x7D
Color_B = 0x5D
Color_A = 0x50
Color_R_Config = 1.000000
Color_G_Config = 1.000000
Color_B_Config = 1.000000
Color_A_Config = 1.000000
Offset[176..179] = 0x0
Offset[180..183] = 0x0
Offset[184..187] = 0x0
Offset[188..191] = 0x0
Intensity = 0x10000
BordersEffect = 0x0
WaveConfig[0] = 0x0
WaveConfig[1] = 0x0
WaveConfig[2] = 0x0
WaveConfig[3] = 0x0
WaterHorizontalDistortion = 0x0
WaterVerticalDistortion = 0x0
Offset[212..215] = 0x0
HorizontalFlickering = 0.000000
VerticalFlickering = 0.000000
RotationRadius = 100.000000
ModelHidingThreshold = 0.000000
Offset[232..235] = 0x0
Offset[236..239] = 0x0
Offset[240..243] = 0x0
Offset[244..247] = 0x0
Offset[248..251] = 0x0
Offset[252..255] = 0x0
Offset[256..259] = 0x0
Offset[260..263] = 0x0
Offset[264..267] = 0x0
Offset[268..271] = 0x0
Offset[272..275] = 0x0
Offset[276..279] = 0x0
Offset[280..283] = 0x0
Offset[284..287] = 0x0
Offset[288..291] = 0x0
Offset[292..295] = 0x0
Offset[296..299] = 0x0
—----------

To interrupt here for a moment… These first two effects above are:
1 - Candle flame effect that uses **1_0_86** (this is a shortened version of the ID, Type, and Texture)
2 - Candle bloom effect that uses **1_B_8** (this is a shortened version of the ID, Type, and Texture)

So if we continue down the **Data.txt** file we will see there are numerous entries for both the Candle Flame effect **1_0_86** and the Candle Bloom effect **1_B_8.** We can keep these in the file, but that depends on how many instances of the effects we wish to have.

—---------- let's continue looking at our **Data.txt** file:

Effect 2

Id = 0x1
Type = 0x0
Texture = 0x86
Offset[3] = 0x0
Offset[4..7] = 0xFE000000
Offset[8..9] = 0x0
Offset[10..11] = 0x8
Position_X = 28338.658203
Position_Y = 2350.952637
Position_Z = 6661.530762
Offset[24..27] = 0x0
Offset[28..31] = 0x0
Offset[32..35] = 0x0
Offset[36..39] = 0x0
Offset[40..43] = 0x0
Offset[44..47] = 0x0
Offset[48..51] = 0x3F800000
Offset[52..55] = 0x0
Offset[56..59] = 0x0
Offset[60..63] = 0x0
Offset[64..67] = 0x0
Offset[68..71] = 0x0
Offset[72..75] = 0x0
Offset[76..79] = 0x0
Offset[80..83] = 0x0
Offset[84..87] = 0x0
HorizontalAxis = 0.000000
VerticalAxis = 0.000000
Offset[96..99] = 0x0
Offset[100..103] = 0x0
Offset[104..107] = 0x0
Offset[108..111] = 0x0
Offset[112..115] = 0x0
Offset[116..119] = 0x0
Offset[120..123] = 0x0
Offset[124..127] = 0x0
Offset[128..131] = 0x0
Offset[132..135] = 0x0
HorizontalSize = 90.000000
VerticalSize = 150.000000
Offset[144..147] = 0x0

Offset[148..151] = 0x0
Offset[152..155] = 0x3F800000
Color_R = 0xFF
Color_G = 0xFF
Color_B = 0xFF
Color_A = 0xFF
Color_R_Config = 1.000000
Color_G_Config = 1.000000
Color_B_Config = 1.000000
Color_A_Config = 1.000000
Offset[176..179] = 0x0
Offset[180..183] = 0x0
Offset[184..187] = 0x0
Offset[188..191] = 0x0
Intensity = 0x0
BordersEffect = 0x0
WaveConfig[0] = 0x0
WaveConfig[1] = 0x0
WaveConfig[2] = 0x0
WaveConfig[3] = 0x0
WaterHorizontalDistortion = 0x0
WaterVerticalDistortion = 0x0
Offset[212..215] = 0x0
HorizontalFlickering = 0.000000
VerticalFlickering = 0.000000
RotationRadius = 0.000000
ModelHidingThreshold = 0.000000
Offset[232..235] = 0x0
Offset[236..239] = 0x0
Offset[240..243] = 0x0
Offset[244..247] = 0x0
Offset[248..251] = 0x0
Offset[252..255] = 0x0
Offset[256..259] = 0x0
Offset[260..263] = 0x0
Offset[264..267] = 0x0
Offset[268..271] = 0x0
Offset[272..275] = 0x0
Offset[276..279] = 0x0
Offset[280..283] = 0x0
Offset[284..287] = 0x0
Offset[288..291] = 0x0
Offset[292..295] = 0x0
Offset[296..299] = 0x0

Effect 3

Id = 0x1
Type = 0xB

Texture = 0x8
Offset[3] = 0x0
Offset[4..7] = 0xFE000000
Offset[8..9] = 0x0
Offset[10..11] = 0x0
Position_X = 28338.658203
Position_Y = 2350.952637
Position_Z = 6661.530762
Offset[24..27] = 0x0
Offset[28..31] = 0x0
Offset[32..35] = 0x0
Offset[36..39] = 0x0
Offset[40..43] = 0x0
Offset[44..47] = 0x0
Offset[48..51] = 0x3F800000
Offset[52..55] = 0x0
Offset[56..59] = 0x0
Offset[60..63] = 0x0
Offset[64..67] = 0x0
Offset[68..71] = 0x0
Offset[72..75] = 0x0
Offset[76..79] = 0x0
Offset[80..83] = 0x0
Offset[84..87] = 0x0
HorizontalAxis = 0.000000
VerticalAxis = 0.000000
Offset[96..99] = 0x0
Offset[100..103] = 0x0
Offset[104..107] = 0x0
Offset[108..111] = 0x0
Offset[112..115] = 0x0
Offset[116..119] = 0x0
Offset[120..123] = 0x0
Offset[124..127] = 0x0
Offset[128..131] = 0x0
Offset[132..135] = 0x0
HorizontalSize = 990.099976
VerticalSize = 990.099976
Offset[144..147] = 0x0
Offset[148..151] = 0x0
Offset[152..155] = 0x3F800000
Color_R = 0xC3
Color_G = 0x7D
Color_B = 0x5D
Color_A = 0x50
Color_R_Config = 1.000000
Color_G_Config = 1.000000
Color_B_Config = 1.000000
Color_A_Config = 1.000000

Offset[176..179] = 0x0
Offset[180..183] = 0x0
Offset[184..187] = 0x0
Offset[188..191] = 0x0
Intensity = 0x10000
BordersEffect = 0x0
WaveConfig[0] = 0x0
WaveConfig[1] = 0x0
WaveConfig[2] = 0x0
WaveConfig[3] = 0x0
WaterHorizontalDistortion = 0x0
WaterVerticalDistortion = 0x0
Offset[212..215] = 0x0
HorizontalFlickering = 0.000000
VerticalFlickering = 0.000000
RotationRadius = 100.000000
ModelHidingThreshold = 0.000000
Offset[232..235] = 0x0
Offset[236..239] = 0x0
Offset[240..243] = 0x0
Offset[244..247] = 0x0
Offset[248..251] = 0x0
Offset[252..255] = 0x0
Offset[256..259] = 0x0
Offset[260..263] = 0x0
Offset[264..267] = 0x0
Offset[268..271] = 0x0
Offset[272..275] = 0x0
Offset[276..279] = 0x0
Offset[280..283] = 0x0
Offset[284..287] = 0x0
Offset[288..291] = 0x0
Offset[292..295] = 0x0
Offset[296..299] = 0x0

Effect 4

Id = 0x1
Type = 0x0
Texture = 0x86
Offset[3] = 0x0
Offset[4..7] = 0xFE000000
Offset[8..9] = 0x0
Offset[10..11] = 0x8
Position_X = 28096.658203
Position_Y = 2252.952637
Position_Z = 6726.530762
Offset[24..27] = 0x0
Offset[28..31] = 0x0

Offset[32..35] = 0x0
Offset[36..39] = 0x0
Offset[40..43] = 0x0
Offset[44..47] = 0x0
Offset[48..51] = 0x3F800000
Offset[52..55] = 0x0
Offset[56..59] = 0x0
Offset[60..63] = 0x0
Offset[64..67] = 0x0
Offset[68..71] = 0x0
Offset[72..75] = 0x0
Offset[76..79] = 0x0
Offset[80..83] = 0x0
Offset[84..87] = 0x0
HorizontalAxis = 0.000000
VerticalAxis = 0.000000
Offset[96..99] = 0x0
Offset[100..103] = 0x0
Offset[104..107] = 0x0
Offset[108..111] = 0x0
Offset[112..115] = 0x0
Offset[116..119] = 0x0
Offset[120..123] = 0x0
Offset[124..127] = 0x0
Offset[128..131] = 0x0
Offset[132..135] = 0x0
HorizontalSize = 90.000000
VerticalSize = 150.000000
Offset[144..147] = 0x0
Offset[148..151] = 0x0
Offset[152..155] = 0x3F800000
Color_R = 0xFF
Color_G = 0xFF
Color_B = 0xFF
Color_A = 0xFF
Color_R_Config = 1.000000
Color_G_Config = 1.000000
Color_B_Config = 1.000000
Color_A_Config = 1.000000
Offset[176..179] = 0x0
Offset[180..183] = 0x0
Offset[184..187] = 0x0
Offset[188..191] = 0x0
Intensity = 0x0
BordersEffect = 0x0
WaveConfig[0] = 0x0
WaveConfig[1] = 0x0
WaveConfig[2] = 0x0
WaveConfig[3] = 0x0

WaterHorizontalDistortion = 0x0
WaterVerticalDistortion = 0x0
Offset[212..215] = 0x0
HorizontalFlickering = 0.000000
VerticalFlickering = 0.000000
RotationRadius = 0.000000
ModelHidingThreshold = 0.000000
Offset[232..235] = 0x0
Offset[236..239] = 0x0
Offset[240..243] = 0x0
Offset[244..247] = 0x0
Offset[248..251] = 0x0
Offset[252..255] = 0x0
Offset[256..259] = 0x0
Offset[260..263] = 0x0
Offset[264..267] = 0x0
Offset[268..271] = 0x0
Offset[272..275] = 0x0
Offset[276..279] = 0x0
Offset[280..283] = 0x0
Offset[284..287] = 0x0
Offset[288..291] = 0x0
Offset[292..295] = 0x0
Offset[296..299] = 0x0

Effect 5

Id = 0x1
Type = 0xB
Texture = 0x8
Offset[3] = 0x0
Offset[4..7] = 0xFE000000
Offset[8..9] = 0x0
Offset[10..11] = 0x0
Position_X = 28096.658203
Position_Y = 2252.952637
Position_Z = 6726.530762
Offset[24..27] = 0x0
Offset[28..31] = 0x0
Offset[32..35] = 0x0
Offset[36..39] = 0x0
Offset[40..43] = 0x0
Offset[44..47] = 0x0
Offset[48..51] = 0x3F800000
Offset[52..55] = 0x0
Offset[56..59] = 0x0
Offset[60..63] = 0x0
Offset[64..67] = 0x0
Offset[68..71] = 0x0

Offset[72..75] = 0x0
Offset[76..79] = 0x0
Offset[80..83] = 0x0
Offset[84..87] = 0x0
HorizontalAxis = 0.000000
VerticalAxis = 0.000000
Offset[96..99] = 0x0
Offset[100..103] = 0x0
Offset[104..107] = 0x0
Offset[108..111] = 0x0
Offset[112..115] = 0x0
Offset[116..119] = 0x0
Offset[120..123] = 0x0
Offset[124..127] = 0x0
Offset[128..131] = 0x0
Offset[132..135] = 0x0
HorizontalSize = 990.099976
VerticalSize = 990.099976
Offset[144..147] = 0x0
Offset[148..151] = 0x0
Offset[152..155] = 0x3F800000
Color_R = 0xC3
Color_G = 0x7D
Color_B = 0x5D
Color_A = 0x50
Color_R_Config = 1.000000
Color_G_Config = 1.000000
Color_B_Config = 1.000000
Color_A_Config = 1.000000
Offset[176..179] = 0x0
Offset[180..183] = 0x0
Offset[184..187] = 0x0
Offset[188..191] = 0x0
Intensity = 0x10000
BordersEffect = 0x0
WaveConfig[0] = 0x0
WaveConfig[1] = 0x0
WaveConfig[2] = 0x0
WaveConfig[3] = 0x0
WaterHorizontalDistortion = 0x0
WaterVerticalDistortion = 0x0
Offset[212..215] = 0x0
HorizontalFlickering = 0.000000
VerticalFlickering = 0.000000
RotationRadius = 100.000000
ModelHidingThreshold = 0.000000
Offset[232..235] = 0x0
Offset[236..239] = 0x0
Offset[240..243] = 0x0

Offset[244..247] = 0x0
Offset[248..251] = 0x0
Offset[252..255] = 0x0
Offset[256..259] = 0x0
Offset[260..263] = 0x0
Offset[264..267] = 0x0
Offset[268..271] = 0x0
Offset[272..275] = 0x0
Offset[276..279] = 0x0
Offset[280..283] = 0x0
Offset[284..287] = 0x0
Offset[288..291] = 0x0
Offset[292..295] = 0x0
Offset[296..299] = 0x0

Effect 6

Id = 0x1
Type = 0x0
Texture = 0x86
Offset[3] = 0x0
Offset[4..7] = 0xFE000000
Offset[8..9] = 0x0
Offset[10..11] = 0x8
Position_X = 31167.880859
Position_Y = -12620.588867
Position_Z = 6517.330566
Offset[24..27] = 0x0
Offset[28..31] = 0x0
Offset[32..35] = 0x0
Offset[36..39] = 0x0
Offset[40..43] = 0x0
Offset[44..47] = 0x0
Offset[48..51] = 0x3F800000
Offset[52..55] = 0x0
Offset[56..59] = 0x0
Offset[60..63] = 0x0
Offset[64..67] = 0x0
Offset[68..71] = 0x0
Offset[72..75] = 0x0
Offset[76..79] = 0x0
Offset[80..83] = 0x0
Offset[84..87] = 0x0
HorizontalAxis = 0.000000
VerticalAxis = 0.000000
Offset[96..99] = 0x0
Offset[100..103] = 0x0
Offset[104..107] = 0x0
Offset[108..111] = 0x0

Offset[112..115] = 0x0
Offset[116..119] = 0x0
Offset[120..123] = 0x0
Offset[124..127] = 0x0
Offset[128..131] = 0x0
Offset[132..135] = 0x0
HorizontalSize = 90.000000
VerticalSize = 150.000000
Offset[144..147] = 0x0
Offset[148..151] = 0x0
Offset[152..155] = 0x3F800000
Color_R = 0xFF
Color_G = 0xFF
Color_B = 0xFF
Color_A = 0xFF
Color_R_Config = 1.000000
Color_G_Config = 1.000000
Color_B_Config = 1.000000
Color_A_Config = 1.000000
Offset[176..179] = 0x0
Offset[180..183] = 0x0
Offset[184..187] = 0x0
Offset[188..191] = 0x0
Intensity = 0x0
BordersEffect = 0x0
WaveConfig[0] = 0x0
WaveConfig[1] = 0x0
WaveConfig[2] = 0x0
WaveConfig[3] = 0x0
WaterHorizontalDistortion = 0x0
WaterVerticalDistortion = 0x0
Offset[212..215] = 0x0
HorizontalFlickering = 0.000000
VerticalFlickering = 0.000000
RotationRadius = 0.000000
ModelHidingThreshold = 0.000000
Offset[232..235] = 0x0
Offset[236..239] = 0x0
Offset[240..243] = 0x0
Offset[244..247] = 0x0
Offset[248..251] = 0x0
Offset[252..255] = 0x0
Offset[256..259] = 0x0
Offset[260..263] = 0x0
Offset[264..267] = 0x0
Offset[268..271] = 0x0
Offset[272..275] = 0x0
Offset[276..279] = 0x0
Offset[280..283] = 0x0

Offset[284..287] = 0x0
Offset[288..291] = 0x0
Offset[292..295] = 0x0
Offset[296..299] = 0x0

Effect 7

Id = 0x1
Type = 0xB
Texture = 0x8
Offset[3] = 0x0
Offset[4..7] = 0xFE000000
Offset[8..9] = 0x0
Offset[10..11] = 0x0
Position_X = 31167.880859
Position_Y = -12620.588867
Position_Z = 6517.330566
Offset[24..27] = 0x0
Offset[28..31] = 0x0
Offset[32..35] = 0x0
Offset[36..39] = 0x0
Offset[40..43] = 0x0
Offset[44..47] = 0x0
Offset[48..51] = 0x3F800000
Offset[52..55] = 0x0
Offset[56..59] = 0x0
Offset[60..63] = 0x0
Offset[64..67] = 0x0
Offset[68..71] = 0x0
Offset[72..75] = 0x0
Offset[76..79] = 0x0
Offset[80..83] = 0x0
Offset[84..87] = 0x0
HorizontalAxis = 0.000000
VerticalAxis = 0.000000
Offset[96..99] = 0x0
Offset[100..103] = 0x0
Offset[104..107] = 0x0
Offset[108..111] = 0x0
Offset[112..115] = 0x0
Offset[116..119] = 0x0
Offset[120..123] = 0x0
Offset[124..127] = 0x0
Offset[128..131] = 0x0
Offset[132..135] = 0x0
HorizontalSize = 990.099976
VerticalSize = 990.099976
Offset[144..147] = 0x0
Offset[148..151] = 0x0

Offset[152..155] = 0x3F800000
Color_R = 0xC3
Color_G = 0x7D
Color_B = 0x5D
Color_A = 0x50
Color_R_Config = 1.000000
Color_G_Config = 1.000000
Color_B_Config = 1.000000
Color_A_Config = 1.000000
Offset[176..179] = 0x0
Offset[180..183] = 0x0
Offset[184..187] = 0x0
Offset[188..191] = 0x0
Intensity = 0x10000
BordersEffect = 0x0
WaveConfig[0] = 0x0
WaveConfig[1] = 0x0
WaveConfig[2] = 0x0
WaveConfig[3] = 0x0
WaterHorizontalDistortion = 0x0
WaterVerticalDistortion = 0x0
Offset[212..215] = 0x0
HorizontalFlickering = 0.000000
VerticalFlickering = 0.000000
RotationRadius = 100.000000
ModelHidingThreshold = 0.000000
Offset[232..235] = 0x0
Offset[236..239] = 0x0
Offset[240..243] = 0x0
Offset[244..247] = 0x0
Offset[248..251] = 0x0
Offset[252..255] = 0x0
Offset[256..259] = 0x0
Offset[260..263] = 0x0
Offset[264..267] = 0x0
Offset[268..271] = 0x0
Offset[272..275] = 0x0
Offset[276..279] = 0x0
Offset[280..283] = 0x0
Offset[284..287] = 0x0
Offset[288..291] = 0x0
Offset[292..295] = 0x0
Offset[296..299] = 0x0

Effect 8

Id = 0x1
Type = 0x0
Texture = 0x86

Offset[3] = 0x0
Offset[4..7] = 0xFE000000
Offset[8..9] = 0x0
Offset[10..11] = 0x8
Position_X = 31660.880859
Position_Y = -12620.588867
Position_Z = 6517.330566
Offset[24..27] = 0x0
Offset[28..31] = 0x0
Offset[32..35] = 0x0
Offset[36..39] = 0x0
Offset[40..43] = 0x0
Offset[44..47] = 0x0
Offset[48..51] = 0x3F800000
Offset[52..55] = 0x0
Offset[56..59] = 0x0
Offset[60..63] = 0x0
Offset[64..67] = 0x0
Offset[68..71] = 0x0
Offset[72..75] = 0x0
Offset[76..79] = 0x0
Offset[80..83] = 0x0
Offset[84..87] = 0x0
HorizontalAxis = 0.000000
VerticalAxis = 0.000000
Offset[96..99] = 0x0
Offset[100..103] = 0x0
Offset[104..107] = 0x0
Offset[108..111] = 0x0
Offset[112..115] = 0x0
Offset[116..119] = 0x0
Offset[120..123] = 0x0
Offset[124..127] = 0x0
Offset[128..131] = 0x0
Offset[132..135] = 0x0
HorizontalSize = 90.000000
VerticalSize = 150.000000
Offset[144..147] = 0x0
Offset[148..151] = 0x0
Offset[152..155] = 0x3F800000
Color_R = 0xFF
Color_G = 0xFF
Color_B = 0xFF
Color_A = 0xFF
Color_R_Config = 1.000000
Color_G_Config = 1.000000
Color_B_Config = 1.000000
Color_A_Config = 1.000000
Offset[176..179] = 0x0

Offset[180..183] = 0x0
Offset[184..187] = 0x0
Offset[188..191] = 0x0
Intensity = 0x0
BordersEffect = 0x0
WaveConfig[0] = 0x0
WaveConfig[1] = 0x0
WaveConfig[2] = 0x0
WaveConfig[3] = 0x0
WaterHorizontalDistortion = 0x0
WaterVerticalDistortion = 0x0
Offset[212..215] = 0x0
HorizontalFlickering = 0.000000
VerticalFlickering = 0.000000
RotationRadius = 0.000000
ModelHidingThreshold = 0.000000
Offset[232..235] = 0x0
Offset[236..239] = 0x0
Offset[240..243] = 0x0
Offset[244..247] = 0x0
Offset[248..251] = 0x0
Offset[252..255] = 0x0
Offset[256..259] = 0x0
Offset[260..263] = 0x0
Offset[264..267] = 0x0
Offset[268..271] = 0x0
Offset[272..275] = 0x0
Offset[276..279] = 0x0
Offset[280..283] = 0x0
Offset[284..287] = 0x0
Offset[288..291] = 0x0
Offset[292..295] = 0x0
Offset[296..299] = 0x0

Effect 9

Id = 0x1
Type = 0xB
Texture = 0x8
Offset[3] = 0x0
Offset[4..7] = 0xFE000000
Offset[8..9] = 0x0
Offset[10..11] = 0x0
Position_X = 31660.880859
Position_Y = -12620.588867
Position_Z = 6517.330566
Offset[24..27] = 0x0
Offset[28..31] = 0x0
Offset[32..35] = 0x0

Offset[36..39] = 0x0
Offset[40..43] = 0x0
Offset[44..47] = 0x0
Offset[48..51] = 0x3F800000
Offset[52..55] = 0x0
Offset[56..59] = 0x0
Offset[60..63] = 0x0
Offset[64..67] = 0x0
Offset[68..71] = 0x0
Offset[72..75] = 0x0
Offset[76..79] = 0x0
Offset[80..83] = 0x0
Offset[84..87] = 0x0
HorizontalAxis = 0.000000
VerticalAxis = 0.000000
Offset[96..99] = 0x0
Offset[100..103] = 0x0
Offset[104..107] = 0x0
Offset[108..111] = 0x0
Offset[112..115] = 0x0
Offset[116..119] = 0x0
Offset[120..123] = 0x0
Offset[124..127] = 0x0
Offset[128..131] = 0x0
Offset[132..135] = 0x0
HorizontalSize = 990.099976
VerticalSize = 990.099976
Offset[144..147] = 0x0
Offset[148..151] = 0x0
Offset[152..155] = 0x3F800000
Color_R = 0xC3
Color_G = 0x7D
Color_B = 0x5D
Color_A = 0x50
Color_R_Config = 1.000000
Color_G_Config = 1.000000
Color_B_Config = 1.000000
Color_A_Config = 1.000000
Offset[176..179] = 0x0
Offset[180..183] = 0x0
Offset[184..187] = 0x0
Offset[188..191] = 0x0
Intensity = 0x10000
BordersEffect = 0x0
WaveConfig[0] = 0x0
WaveConfig[1] = 0x0
WaveConfig[2] = 0x0
WaveConfig[3] = 0x0
WaterHorizontalDistortion = 0x0

WaterVerticalDistortion = 0x0
Offset[212..215] = 0x0
HorizontalFlickering = 0.000000
VerticalFlickering = 0.000000
RotationRadius = 100.000000
ModelHidingThreshold = 0.000000
Offset[232..235] = 0x0
Offset[236..239] = 0x0
Offset[240..243] = 0x0
Offset[244..247] = 0x0
Offset[248..251] = 0x0
Offset[252..255] = 0x0
Offset[256..259] = 0x0
Offset[260..263] = 0x0
Offset[264..267] = 0x0
Offset[268..271] = 0x0
Offset[272..275] = 0x0
Offset[276..279] = 0x0
Offset[280..283] = 0x0
Offset[284..287] = 0x0
Offset[288..291] = 0x0
Offset[292..295] = 0x0
Offset[296..299] = 0x0

Effect 10

Id = 0x1
Type = 0x0
Texture = 0x86
Offset[3] = 0x0
Offset[4..7] = 0xFE000000
Offset[8..9] = 0x0
Offset[10..11] = 0x8
Position_X = 31420.880859
Position_Y = -12518.588867
Position_Z = 6449.434570
Offset[24..27] = 0x0
Offset[28..31] = 0x0
Offset[32..35] = 0x0
Offset[36..39] = 0x0
Offset[40..43] = 0x0
Offset[44..47] = 0x0
Offset[48..51] = 0x3F800000
Offset[52..55] = 0x0
Offset[56..59] = 0x0
Offset[60..63] = 0x0
Offset[64..67] = 0x0
Offset[68..71] = 0x0
Offset[72..75] = 0x0

Offset[76..79] = 0x0
Offset[80..83] = 0x0
Offset[84..87] = 0x0
HorizontalAxis = 0.000000
VerticalAxis = 0.000000
Offset[96..99] = 0x0
Offset[100..103] = 0x0
Offset[104..107] = 0x0
Offset[108..111] = 0x0
Offset[112..115] = 0x0
Offset[116..119] = 0x0
Offset[120..123] = 0x0
Offset[124..127] = 0x0
Offset[128..131] = 0x0
Offset[132..135] = 0x0
HorizontalSize = 90.000000
VerticalSize = 150.000000
Offset[144..147] = 0x0
Offset[148..151] = 0x0
Offset[152..155] = 0x3F800000
Color_R = 0xFF
Color_G = 0xFF
Color_B = 0xFF
Color_A = 0xFF
Color_R_Config = 1.000000
Color_G_Config = 1.000000
Color_B_Config = 1.000000
Color_A_Config = 1.000000
Offset[176..179] = 0x0
Offset[180..183] = 0x0
Offset[184..187] = 0x0
Offset[188..191] = 0x0
Intensity = 0x0
BordersEffect = 0x0
WaveConfig[0] = 0x0
WaveConfig[1] = 0x0
WaveConfig[2] = 0x0
WaveConfig[3] = 0x0
WaterHorizontalDistortion = 0x0
WaterVerticalDistortion = 0x0
Offset[212..215] = 0x0
HorizontalFlickering = 0.000000
VerticalFlickering = 0.000000
RotationRadius = 0.000000
ModelHidingThreshold = 0.000000
Offset[232..235] = 0x0
Offset[236..239] = 0x0
Offset[240..243] = 0x0
Offset[244..247] = 0x0

Offset[248..251] = 0x0
Offset[252..255] = 0x0
Offset[256..259] = 0x0
Offset[260..263] = 0x0
Offset[264..267] = 0x0
Offset[268..271] = 0x0
Offset[272..275] = 0x0
Offset[276..279] = 0x0
Offset[280..283] = 0x0
Offset[284..287] = 0x0
Offset[288..291] = 0x0
Offset[292..295] = 0x0
Offset[296..299] = 0x0

Effect 11

Id = 0x1
Type = 0xB
Texture = 0x8
Offset[3] = 0x0
Offset[4..7] = 0xFE000000
Offset[8..9] = 0x0
Offset[10..11] = 0x0
Position_X = 31420.880859
Position_Y = -12518.588867
Position_Z = 6449.434570
Offset[24..27] = 0x0
Offset[28..31] = 0x0
Offset[32..35] = 0x0
Offset[36..39] = 0x0
Offset[40..43] = 0x0
Offset[44..47] = 0x0
Offset[48..51] = 0x3F800000
Offset[52..55] = 0x0
Offset[56..59] = 0x0
Offset[60..63] = 0x0
Offset[64..67] = 0x0
Offset[68..71] = 0x0
Offset[72..75] = 0x0
Offset[76..79] = 0x0
Offset[80..83] = 0x0
Offset[84..87] = 0x0
HorizontalAxis = 0.000000
VerticalAxis = 0.000000
Offset[96..99] = 0x0
Offset[100..103] = 0x0
Offset[104..107] = 0x0
Offset[108..111] = 0x0
Offset[112..115] = 0x0

Offset[116..119] = 0x0
Offset[120..123] = 0x0
Offset[124..127] = 0x0
Offset[128..131] = 0x0
Offset[132..135] = 0x0
HorizontalSize = 990.099976
VerticalSize = 990.099976
Offset[144..147] = 0x0
Offset[148..151] = 0x0
Offset[152..155] = 0x3F800000
Color_R = 0xC3
Color_G = 0x7D
Color_B = 0x5D
Color_A = 0x50
Color_R_Config = 1.000000
Color_G_Config = 1.000000
Color_B_Config = 1.000000
Color_A_Config = 1.000000
Offset[176..179] = 0x0
Offset[180..183] = 0x0
Offset[184..187] = 0x0
Offset[188..191] = 0x0
Intensity = 0x10000
BordersEffect = 0x0
WaveConfig[0] = 0x0
WaveConfig[1] = 0x0
WaveConfig[2] = 0x0
WaveConfig[3] = 0x0
WaterHorizontalDistortion = 0x0
WaterVerticalDistortion = 0x0
Offset[212..215] = 0x0
HorizontalFlickering = 0.000000
VerticalFlickering = 0.000000
RotationRadius = 100.000000
ModelHidingThreshold = 0.000000
Offset[232..235] = 0x0
Offset[236..239] = 0x0
Offset[240..243] = 0x0
Offset[244..247] = 0x0
Offset[248..251] = 0x0
Offset[252..255] = 0x0
Offset[256..259] = 0x0
Offset[260..263] = 0x0
Offset[264..267] = 0x0
Offset[268..271] = 0x0
Offset[272..275] = 0x0
Offset[276..279] = 0x0
Offset[280..283] = 0x0
Offset[284..287] = 0x0

Offset[288..291] = 0x0
Offset[292..295] = 0x0
Offset[296..299] = 0x0

Effect 12

Id = 0x1
Type = 0x0
Texture = 0x86
Offset[3] = 0x0
Offset[4..7] = 0xFE000000
Offset[8..9] = 0x0
Offset[10..11] = 0x8
Position_X = 41989.925781
Position_Y = -1766.419556
Position_Z = 6722.235352
Offset[24..27] = 0x0
Offset[28..31] = 0x0
Offset[32..35] = 0x0
Offset[36..39] = 0x0
Offset[40..43] = 0x0
Offset[44..47] = 0x0
Offset[48..51] = 0x3F800000
Offset[52..55] = 0x0
Offset[56..59] = 0x0
Offset[60..63] = 0x0
Offset[64..67] = 0x0
Offset[68..71] = 0x0
Offset[72..75] = 0x0
Offset[76..79] = 0x0
Offset[80..83] = 0x0
Offset[84..87] = 0x0
HorizontalAxis = 0.000000
VerticalAxis = 0.000000
Offset[96..99] = 0x0
Offset[100..103] = 0x0
Offset[104..107] = 0x0
Offset[108..111] = 0x0
Offset[112..115] = 0x0
Offset[116..119] = 0x0
Offset[120..123] = 0x0
Offset[124..127] = 0x0
Offset[128..131] = 0x0
Offset[132..135] = 0x0
HorizontalSize = 90.000000
VerticalSize = 150.000000
Offset[144..147] = 0x0
Offset[148..151] = 0x0
Offset[152..155] = 0x3F800000

Color_R = 0xFF
Color_G = 0xFF
Color_B = 0xFF
Color_A = 0xFF
Color_R_Config = 1.000000
Color_G_Config = 1.000000
Color_B_Config = 1.000000
Color_A_Config = 1.000000
Offset[176..179] = 0x0
Offset[180..183] = 0x0
Offset[184..187] = 0x0
Offset[188..191] = 0x0
Intensity = 0x0
BordersEffect = 0x0
WaveConfig[0] = 0x0
WaveConfig[1] = 0x0
WaveConfig[2] = 0x0
WaveConfig[3] = 0x0
WaterHorizontalDistortion = 0x0
WaterVerticalDistortion = 0x0
Offset[212..215] = 0x0
HorizontalFlickering = 0.000000
VerticalFlickering = 0.000000
RotationRadius = 0.000000
ModelHidingThreshold = 0.000000
Offset[232..235] = 0x0
Offset[236..239] = 0x0
Offset[240..243] = 0x0
Offset[244..247] = 0x0
Offset[248..251] = 0x0
Offset[252..255] = 0x0
Offset[256..259] = 0x0
Offset[260..263] = 0x0
Offset[264..267] = 0x0
Offset[268..271] = 0x0
Offset[272..275] = 0x0
Offset[276..279] = 0x0
Offset[280..283] = 0x0
Offset[284..287] = 0x0
Offset[288..291] = 0x0
Offset[292..295] = 0x0
Offset[296..299] = 0x0

Effect 13

Id = 0x1
Type = 0xB
Texture = 0x8
Offset[3] = 0x0

Offset[4..7] = 0xFE000000
Offset[8..9] = 0x0
Offset[10..11] = 0x0
Position_X = 41989.925781
Position_Y = -1766.419556
Position_Z = 6722.235352
Offset[24..27] = 0x0
Offset[28..31] = 0x0
Offset[32..35] = 0x0
Offset[36..39] = 0x0
Offset[40..43] = 0x0
Offset[44..47] = 0x0
Offset[48..51] = 0x3F800000
Offset[52..55] = 0x0
Offset[56..59] = 0x0
Offset[60..63] = 0x0
Offset[64..67] = 0x0
Offset[68..71] = 0x0
Offset[72..75] = 0x0
Offset[76..79] = 0x0
Offset[80..83] = 0x0
Offset[84..87] = 0x0
HorizontalAxis = 0.000000
VerticalAxis = 0.000000
Offset[96..99] = 0x0
Offset[100..103] = 0x0
Offset[104..107] = 0x0
Offset[108..111] = 0x0
Offset[112..115] = 0x0
Offset[116..119] = 0x0
Offset[120..123] = 0x0
Offset[124..127] = 0x0
Offset[128..131] = 0x0
Offset[132..135] = 0x0
HorizontalSize = 990.099976
VerticalSize = 990.099976
Offset[144..147] = 0x0
Offset[148..151] = 0x0
Offset[152..155] = 0x3F800000
Color_R = 0xC3
Color_G = 0x7D
Color_B = 0x5D
Color_A = 0x50
Color_R_Config = 1.000000
Color_G_Config = 1.000000
Color_B_Config = 1.000000
Color_A_Config = 1.000000
Offset[176..179] = 0x0
Offset[180..183] = 0x0

Offset[184..187] = 0x0
Offset[188..191] = 0x0
Intensity = 0x10000
BordersEffect = 0x0
WaveConfig[0] = 0x0
WaveConfig[1] = 0x0
WaveConfig[2] = 0x0
WaveConfig[3] = 0x0
WaterHorizontalDistortion = 0x0
WaterVerticalDistortion = 0x0
Offset[212..215] = 0x0
HorizontalFlickering = 0.000000
VerticalFlickering = 0.000000
RotationRadius = 100.000000
ModelHidingThreshold = 0.000000
Offset[232..235] = 0x0
Offset[236..239] = 0x0
Offset[240..243] = 0x0
Offset[244..247] = 0x0
Offset[248..251] = 0x0
Offset[252..255] = 0x0
Offset[256..259] = 0x0
Offset[260..263] = 0x0
Offset[264..267] = 0x0
Offset[268..271] = 0x0
Offset[272..275] = 0x0
Offset[276..279] = 0x0
Offset[280..283] = 0x0
Offset[284..287] = 0x0
Offset[288..291] = 0x0
Offset[292..295] = 0x0
Offset[296..299] = 0x0

Effect 14

Id = 0x1
Type = 0x0
Texture = 0x86
Offset[3] = 0x0
Offset[4..7] = 0xFE000000
Offset[8..9] = 0x0
Offset[10..11] = 0x8
Position_X = 42480.925781
Position_Y = -1766.419556
Position_Z = 6722.235352
Offset[24..27] = 0x0
Offset[28..31] = 0x0
Offset[32..35] = 0x0
Offset[36..39] = 0x0

Offset[40..43] = 0x0
Offset[44..47] = 0x0
Offset[48..51] = 0x3F800000
Offset[52..55] = 0x0
Offset[56..59] = 0x0
Offset[60..63] = 0x0
Offset[64..67] = 0x0
Offset[68..71] = 0x0
Offset[72..75] = 0x0
Offset[76..79] = 0x0
Offset[80..83] = 0x0
Offset[84..87] = 0x0
HorizontalAxis = 0.000000
VerticalAxis = 0.000000
Offset[96..99] = 0x0
Offset[100..103] = 0x0
Offset[104..107] = 0x0
Offset[108..111] = 0x0
Offset[112..115] = 0x0
Offset[116..119] = 0x0
Offset[120..123] = 0x0
Offset[124..127] = 0x0
Offset[128..131] = 0x0
Offset[132..135] = 0x0
HorizontalSize = 90.000000
VerticalSize = 150.000000
Offset[144..147] = 0x0
Offset[148..151] = 0x0
Offset[152..155] = 0x3F800000
Color_R = 0xFF
Color_G = 0xFF
Color_B = 0xFF
Color_A = 0xFF
Color_R_Config = 1.000000
Color_G_Config = 1.000000
Color_B_Config = 1.000000
Color_A_Config = 1.000000
Offset[176..179] = 0x0
Offset[180..183] = 0x0
Offset[184..187] = 0x0
Offset[188..191] = 0x0
Intensity = 0x0
BordersEffect = 0x0
WaveConfig[0] = 0x0
WaveConfig[1] = 0x0
WaveConfig[2] = 0x0
WaveConfig[3] = 0x0
WaterHorizontalDistortion = 0x0
WaterVerticalDistortion = 0x0

Offset[212..215] = 0x0
HorizontalFlickering = 0.000000
VerticalFlickering = 0.000000
RotationRadius = 0.000000
ModelHidingThreshold = 0.000000
Offset[232..235] = 0x0
Offset[236..239] = 0x0
Offset[240..243] = 0x0
Offset[244..247] = 0x0
Offset[248..251] = 0x0
Offset[252..255] = 0x0
Offset[256..259] = 0x0
Offset[260..263] = 0x0
Offset[264..267] = 0x0
Offset[268..271] = 0x0
Offset[272..275] = 0x0
Offset[276..279] = 0x0
Offset[280..283] = 0x0
Offset[284..287] = 0x0
Offset[288..291] = 0x0
Offset[292..295] = 0x0
Offset[296..299] = 0x0

Effect 15

Id = 0x1
Type = 0xB
Texture = 0x8
Offset[3] = 0x0
Offset[4..7] = 0xFE000000
Offset[8..9] = 0x0
Offset[10..11] = 0x0
Position_X = 42480.925781
Position_Y = -1766.419556
Position_Z = 6722.235352
Offset[24..27] = 0x0
Offset[28..31] = 0x0
Offset[32..35] = 0x0
Offset[36..39] = 0x0
Offset[40..43] = 0x0
Offset[44..47] = 0x0
Offset[48..51] = 0x3F800000
Offset[52..55] = 0x0
Offset[56..59] = 0x0
Offset[60..63] = 0x0
Offset[64..67] = 0x0
Offset[68..71] = 0x0
Offset[72..75] = 0x0
Offset[76..79] = 0x0

Offset[80..83] = 0x0
Offset[84..87] = 0x0
HorizontalAxis = 0.000000
VerticalAxis = 0.000000
Offset[96..99] = 0x0
Offset[100..103] = 0x0
Offset[104..107] = 0x0
Offset[108..111] = 0x0
Offset[112..115] = 0x0
Offset[116..119] = 0x0
Offset[120..123] = 0x0
Offset[124..127] = 0x0
Offset[128..131] = 0x0
Offset[132..135] = 0x0
HorizontalSize = 990.099976
VerticalSize = 990.099976
Offset[144..147] = 0x0
Offset[148..151] = 0x0
Offset[152..155] = 0x3F800000
Color_R = 0xC3
Color_G = 0x7D
Color_B = 0x5D
Color_A = 0x50
Color_R_Config = 1.000000
Color_G_Config = 1.000000
Color_B_Config = 1.000000
Color_A_Config = 1.000000
Offset[176..179] = 0x0
Offset[180..183] = 0x0
Offset[184..187] = 0x0
Offset[188..191] = 0x0
Intensity = 0x10000
BordersEffect = 0x0
WaveConfig[0] = 0x0
WaveConfig[1] = 0x0
WaveConfig[2] = 0x0
WaveConfig[3] = 0x0
WaterHorizontalDistortion = 0x0
WaterVerticalDistortion = 0x0
Offset[212..215] = 0x0
HorizontalFlickering = 0.000000
VerticalFlickering = 0.000000
RotationRadius = 100.000000
ModelHidingThreshold = 0.000000
Offset[232..235] = 0x0
Offset[236..239] = 0x0
Offset[240..243] = 0x0
Offset[244..247] = 0x0
Offset[248..251] = 0x0

Offset[252..255] = 0x0
Offset[256..259] = 0x0
Offset[260..263] = 0x0
Offset[264..267] = 0x0
Offset[268..271] = 0x0
Offset[272..275] = 0x0
Offset[276..279] = 0x0
Offset[280..283] = 0x0
Offset[284..287] = 0x0
Offset[288..291] = 0x0
Offset[292..295] = 0x0
Offset[296..299] = 0x0

Effect 16

Id = 0x1
Type = 0x0
Texture = 0x86
Offset[3] = 0x0
Offset[4..7] = 0xFE000000
Offset[8..9] = 0x0
Offset[10..11] = 0x8
Position_X = 42240.925781
Position_Y = -1665.419556
Position_Z = 6662.235352
Offset[24..27] = 0x0
Offset[28..31] = 0x0
Offset[32..35] = 0x0
Offset[36..39] = 0x0
Offset[40..43] = 0x0
Offset[44..47] = 0x0
Offset[48..51] = 0x3F800000
Offset[52..55] = 0x0
Offset[56..59] = 0x0
Offset[60..63] = 0x0
Offset[64..67] = 0x0
Offset[68..71] = 0x0
Offset[72..75] = 0x0
Offset[76..79] = 0x0
Offset[80..83] = 0x0
Offset[84..87] = 0x0
HorizontalAxis = 0.000000
VerticalAxis = 0.000000
Offset[96..99] = 0x0
Offset[100..103] = 0x0
Offset[104..107] = 0x0
Offset[108..111] = 0x0
Offset[112..115] = 0x0
Offset[116..119] = 0x0

Offset[120..123] = 0x0
Offset[124..127] = 0x0
Offset[128..131] = 0x0
Offset[132..135] = 0x0
HorizontalSize = 90.000000
VerticalSize = 150.000000
Offset[144..147] = 0x0
Offset[148..151] = 0x0
Offset[152..155] = 0x3F800000
Color_R = 0xFF
Color_G = 0xFF
Color_B = 0xFF
Color_A = 0xFF
Color_R_Config = 1.000000
Color_G_Config = 1.000000
Color_B_Config = 1.000000
Color_A_Config = 1.000000
Offset[176..179] = 0x0
Offset[180..183] = 0x0
Offset[184..187] = 0x0
Offset[188..191] = 0x0
Intensity = 0x0
BordersEffect = 0x0
WaveConfig[0] = 0x0
WaveConfig[1] = 0x0
WaveConfig[2] = 0x0
WaveConfig[3] = 0x0
WaterHorizontalDistortion = 0x0
WaterVerticalDistortion = 0x0
Offset[212..215] = 0x0
HorizontalFlickering = 0.000000
VerticalFlickering = 0.000000
RotationRadius = 0.000000
ModelHidingThreshold = 0.000000
Offset[232..235] = 0x0
Offset[236..239] = 0x0
Offset[240..243] = 0x0
Offset[244..247] = 0x0
Offset[248..251] = 0x0
Offset[252..255] = 0x0
Offset[256..259] = 0x0
Offset[260..263] = 0x0
Offset[264..267] = 0x0
Offset[268..271] = 0x0
Offset[272..275] = 0x0
Offset[276..279] = 0x0
Offset[280..283] = 0x0
Offset[284..287] = 0x0
Offset[288..291] = 0x0

Offset[292..295] = 0x0
Offset[296..299] = 0x0

Effect 17

Id = 0x1
Type = 0xB
Texture = 0x8
Offset[3] = 0x0
Offset[4..7] = 0xFE000000
Offset[8..9] = 0x0
Offset[10..11] = 0x0
Position_X = 42240.925781
Position_Y = -1665.419556
Position_Z = 6662.235352
Offset[24..27] = 0x0
Offset[28..31] = 0x0
Offset[32..35] = 0x0
Offset[36..39] = 0x0
Offset[40..43] = 0x0
Offset[44..47] = 0x0
Offset[48..51] = 0x3F800000
Offset[52..55] = 0x0
Offset[56..59] = 0x0
Offset[60..63] = 0x0
Offset[64..67] = 0x0
Offset[68..71] = 0x0
Offset[72..75] = 0x0
Offset[76..79] = 0x0
Offset[80..83] = 0x0
Offset[84..87] = 0x0
HorizontalAxis = 0.000000
VerticalAxis = 0.000000
Offset[96..99] = 0x0
Offset[100..103] = 0x0
Offset[104..107] = 0x0
Offset[108..111] = 0x0
Offset[112..115] = 0x0
Offset[116..119] = 0x0
Offset[120..123] = 0x0
Offset[124..127] = 0x0
Offset[128..131] = 0x0
Offset[132..135] = 0x0
HorizontalSize = 990.099976
VerticalSize = 990.099976
Offset[144..147] = 0x0
Offset[148..151] = 0x0
Offset[152..155] = 0x3F800000
Color_R = 0xC3

Color_G = 0x7D
Color_B = 0x5D
Color_A = 0x50
Color_R_Config = 1.000000
Color_G_Config = 1.000000
Color_B_Config = 1.000000
Color_A_Config = 1.000000
Offset[176..179] = 0x0
Offset[180..183] = 0x0
Offset[184..187] = 0x0
Offset[188..191] = 0x0
Intensity = 0x10000
BordersEffect = 0x0
WaveConfig[0] = 0x0
WaveConfig[1] = 0x0
WaveConfig[2] = 0x0
WaveConfig[3] = 0x0
WaterHorizontalDistortion = 0x0
WaterVerticalDistortion = 0x0
Offset[212..215] = 0x0
HorizontalFlickering = 0.000000
VerticalFlickering = 0.000000
RotationRadius = 100.000000
ModelHidingThreshold = 0.000000
Offset[232..235] = 0x0
Offset[236..239] = 0x0
Offset[240..243] = 0x0
Offset[244..247] = 0x0
Offset[248..251] = 0x0
Offset[252..255] = 0x0
Offset[256..259] = 0x0
Offset[260..263] = 0x0
Offset[264..267] = 0x0
Offset[268..271] = 0x0
Offset[272..275] = 0x0
Offset[276..279] = 0x0
Offset[280..283] = 0x0
Offset[284..287] = 0x0
Offset[288..291] = 0x0
Offset[292..295] = 0x0
Offset[296..299] = 0x0

Effect 18

Id = 0x1
Type = 0xB
Texture = 0x8
Offset[3] = 0x0
Offset[4..7] = 0xFE000000

Offset[8..9] = 0x0
Offset[10..11] = 0x0
Position_X = 46246.359375
Position_Y = 3912.430664
Position_Z = 6302.135254
Offset[24..27] = 0x0
Offset[28..31] = 0x0
Offset[32..35] = 0x0
Offset[36..39] = 0x0
Offset[40..43] = 0x0
Offset[44..47] = 0x0
Offset[48..51] = 0x3F800000
Offset[52..55] = 0x0
Offset[56..59] = 0x0
Offset[60..63] = 0x0
Offset[64..67] = 0x0
Offset[68..71] = 0x0
Offset[72..75] = 0x0
Offset[76..79] = 0x0
Offset[80..83] = 0x0
Offset[84..87] = 0x0
HorizontalAxis = 0.000000
VerticalAxis = 0.000000
Offset[96..99] = 0x0
Offset[100..103] = 0x0
Offset[104..107] = 0x0
Offset[108..111] = 0x0
Offset[112..115] = 0x0
Offset[116..119] = 0x0
Offset[120..123] = 0x0
Offset[124..127] = 0x0
Offset[128..131] = 0x0
Offset[132..135] = 0x0
HorizontalSize = 701.000000
VerticalSize = 701.000000
Offset[144..147] = 0x0
Offset[148..151] = 0x0
Offset[152..155] = 0x3F800000
Color_R = 0xEB
Color_G = 0xAE
Color_B = 0x8F
Color_A = 0xFF
Color_R_Config = 1.000000
Color_G_Config = 1.000000
Color_B_Config = 1.000000
Color_A_Config = 1.000000
Offset[176..179] = 0x0
Offset[180..183] = 0x0
Offset[184..187] = 0x0

Offset[188..191] = 0x0
Intensity = 0x10000
BordersEffect = 0x50A0000
WaveConfig[0] = 0x0
WaveConfig[1] = 0x0
WaveConfig[2] = 0x0
WaveConfig[3] = 0x0
WaterHorizontalDistortion = 0x0
WaterVerticalDistortion = 0x0
Offset[212..215] = 0x0
HorizontalFlickering = 4.000000
VerticalFlickering = 4.000000
RotationRadius = 200.000000
ModelHidingThreshold = 0.000000
Offset[232..235] = 0x0
Offset[236..239] = 0x0
Offset[240..243] = 0x0
Offset[244..247] = 0x0
Offset[248..251] = 0x0
Offset[252..255] = 0x0
Offset[256..259] = 0x0
Offset[260..263] = 0x0
Offset[264..267] = 0x0
Offset[268..271] = 0x0
Offset[272..275] = 0x0
Offset[276..279] = 0x0
Offset[280..283] = 0x0
Offset[284..287] = 0x0
Offset[288..291] = 0x0
Offset[292..295] = 0x0
Offset[296..299] = 0x0

Effect 19

Id = 0x1
Type = 0xB
Texture = 0x79
Offset[3] = 0x0
Offset[4..7] = 0xFE000000
Offset[8..9] = 0x0
Offset[10..11] = 0x0
Position_X = 46246.359375
Position_Y = 3912.430664
Position_Z = 6302.135254
Offset[24..27] = 0x0
Offset[28..31] = 0x0
Offset[32..35] = 0x0
Offset[36..39] = 0x0
Offset[40..43] = 0x0

Offset[44..47] = 0x0
Offset[48..51] = 0x3F800000
Offset[52..55] = 0x0
Offset[56..59] = 0x0
Offset[60..63] = 0x0
Offset[64..67] = 0x0
Offset[68..71] = 0x0
Offset[72..75] = 0x0
Offset[76..79] = 0x0
Offset[80..83] = 0x0
Offset[84..87] = 0x0
HorizontalAxis = 0.000000
VerticalAxis = 0.000000
Offset[96..99] = 0x0
Offset[100..103] = 0x0
Offset[104..107] = 0x0
Offset[108..111] = 0x0
Offset[112..115] = 0x0
Offset[116..119] = 0x0
Offset[120..123] = 0x0
Offset[124..127] = 0x0
Offset[128..131] = 0x0
Offset[132..135] = 0x0
HorizontalSize = 2556.677979
VerticalSize = 2556.677979
Offset[144..147] = 0x0
Offset[148..151] = 0x0
Offset[152..155] = 0x3F800000
Color_R = 0xEB
Color_G = 0xAE
Color_B = 0x8F
Color_A = 0x4B
Color_R_Config = 1.000000
Color_G_Config = 1.000000
Color_B_Config = 1.000000
Color_A_Config = 1.000000
Offset[176..179] = 0x0
Offset[180..183] = 0x0
Offset[184..187] = 0x0
Offset[188..191] = 0x0
Intensity = 0x10000
BordersEffect = 0x50A0000
WaveConfig[0] = 0x0
WaveConfig[1] = 0x0
WaveConfig[2] = 0x0
WaveConfig[3] = 0x0
WaterHorizontalDistortion = 0x0
WaterVerticalDistortion = 0x0
Offset[212..215] = 0x0

HorizontalFlickering = 4.000000
VerticalFlickering = 4.000000
RotationRadius = 500.000000
ModelHidingThreshold = 0.000000
Offset[232..235] = 0x0
Offset[236..239] = 0x0
Offset[240..243] = 0x0
Offset[244..247] = 0x0
Offset[248..251] = 0x0
Offset[252..255] = 0x0
Offset[256..259] = 0x0
Offset[260..263] = 0x0
Offset[264..267] = 0x0
Offset[268..271] = 0x0
Offset[272..275] = 0x0
Offset[276..279] = 0x0
Offset[280..283] = 0x0
Offset[284..287] = 0x0
Offset[288..291] = 0x0
Offset[292..295] = 0x0
Offset[296..299] = 0x0

We will notice now that the last two effects in the file do not seem to correlate to any of the flame effects. These seem to be extra blooms, probably used for something else. If we use Notepad ++ we can actually get a 'count' of how many instances of **Texture = 0x86** there are, (which shows as 9). Searching for how many instances of **Texture = 0x8** we get a result of 10 matches, so there are definitely extras with the other one being **Texture = 0x79**.

So to simplify this, let's just say we want only three candle flame effects, and three candle bloom effects to go with them, for a total of 6 effects. So the next step is editing the **Data.txt** file like so:

1 - in the # Main Effect we change **EffectCount = 20** to **EffectCount = 6**
2 - We remove all entries after # Effect 5 (we can actually leave the other entries present if we want to perhaps activate them later, as the file will only read the first 6 entries if the **EffectCount** value is set to **6**
3 - Save the file

The next part is to edit the positions of these candle effects in game

STEP 7 (editing effect positions)

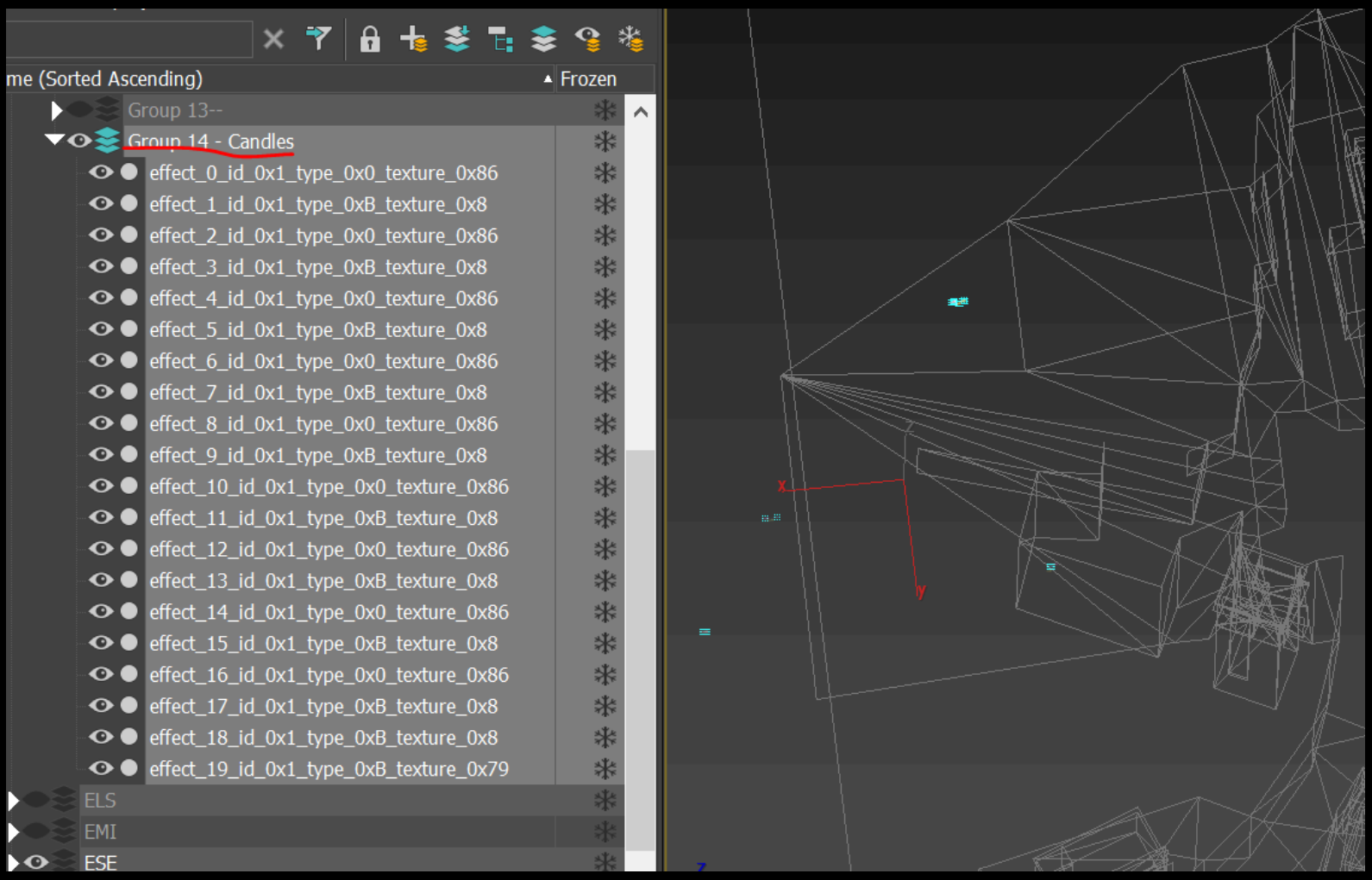
Our next step deals with the 3d Model that is responsible for the coordinates of our candle effects. To place the effect where we need we should first have an extracted 3d Model of the extracted SAT file for r101 opened up in 3DsMax. This gives us a frame of reference for where will be placing our 3d Model for the effect coordinates,

Next we need to import the **Model.obj** file from the directory that we are going to be placing our effect in. In this case it is our working directory r101_07\Effect 1**Effect Group14****Model.obj**

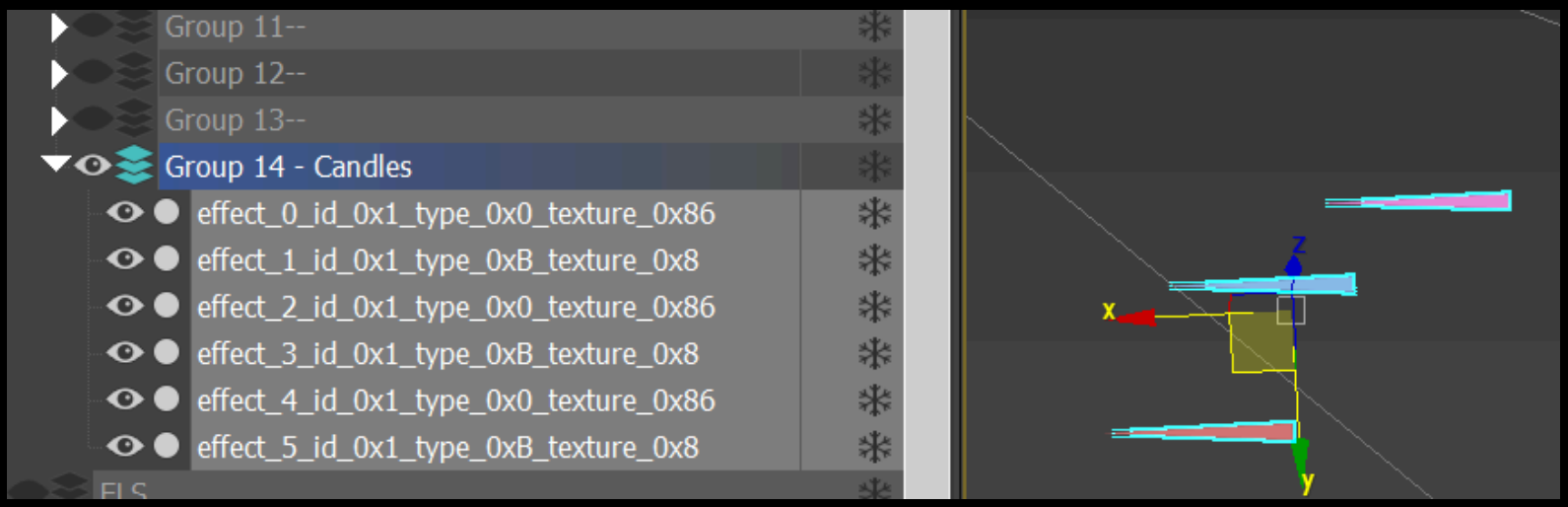
As described in the Universal Concepts Guide, the Son of Persai tools can either use the data from the **Data.txt** file or the **.obj** file to govern where our effects will go. It is very important to know that the amount of entries in

the Data.txt file must match the amount of sub-objects we export from 3dsMax that go into our .obj file or the tool with hang and crash. If we do no wish to use an .obj we still have the option of manually editing the coordinates in the Data.txt file, although this method requires much more work.

Let's now have a look at a scene in 3dsMax where we use single triangles to be used to govern where these candles will go. What we need to do is import the .obj file from the Effect Group14 folder into 3dsMax:



As we can see, there are still 20 effects present in the .obj file, so to make this match with our 6 effects in the Data.txt file we need to remove the extra effects:



What we are left with is three candle flame effect objects, and three candle bloom effect objects (0 and 1 are in the same position, same for 2 & 3, and 4 & 5). Now we can drag these objects to wherever we wish in the room,

then export them to **.obj** file in the **Effect Group14** folder. Remember that the number of layer models in our **.obj** file that is exported from 3dsMax needs to match the value in the **EffectCount** parameter in the **Data.txt** file. If these do not match **the tool will hang or crash when repacking**.

STEP 8 (repacking)

The last step is to repack the EFF file. To repack the EFF file we simply use the **EFF_Repack.bat** file. After the repack is complete, place the new EFF file in our working UDAS directory (replacing the original EFF file) and then repack the UDAS file. Place the newly packed UDAS file in the proper Stx directory in the BIO4 folder. In this case it would place in St1 folder.

Wow! Sounds like a lot of work right? Well yes, there are many steps in this process so it is important to make sure you don't skip any steps and that you do everything right to make sure it works =) Here is a summary and checklist for you to use in the advent of something going wrong:

Copying Local Effect Checklist

STEP 1

Edit **Table_0.txt.**.txt by adding a new entry for texture ID : Entry_X = 0xYY -(copy YY value from original Table_0)

STEP 2

Copy the **TPL** file from the origin room, rename it & change texture number(s) in TPL file to correspond with new pack file & new room #

STEP 3

Update the TPL count in the **.idx** file.

STEP 4

Add texture data entry to the **TextureData.txt** file (Also make sure to add number of files in the entry if there are more than 1 texture used) remember to update the TextureCount value accordingly

STEP 5

Locate and copy the original effect **Data.txt** entries we wish to use.

STEP 6

Create a new Effect Group for our new effects and update the **Effect1GroupCount** value in the **.idx** file.

STEP 7

Copy existing coordinate model (or create new coordinate model) in 3Ds max and rename for all new effect entries. Move coordinate models to desired locations. Export OBJ file from 3dsMax and overwrite the existing **.obj** model in the working directory.

STEP 8

Repack the EFF file, place the new EFF file in our working UDAS directory (replacing the original EFF file) and then repack the UDAS file. Place the newly packed UDAS file in the proper Stx directory in the BIO4 directory.

UNIVERSAL EFFECTS

Using Universal Effects

Now that we have learned about how to use **Local Effects** we can move on to the next part of the tutorial and learn about **Universal Effects** which are much easier to deal with.

Since **Universal Effects** do not require that we edit TPL files or to edit the **Table_0.txt.** file we have much more freedom to move effects around. Let us remember that **Universal Effects** are effects that use the **0700000.pack** file. Since this pack file is always loaded into memory (from when the game starts), this means that the textures for effects are always at our disposal.

To further explain this phenomenon, let's say that we find an effect that starts with **01_0B_13**. We won't find "**13**" in **Table_0.txt** because "**13**" is a typical bloom effect whose texture is located in the **0700000.pack** file. So knowing now that it is one of the **Universal Effects** we can easily copy-paste this effect in the **Data.txt** files without the need of copying additional textures/TPL files or making entries into the **TextureData** files. More examples of Universal Effects are fog, most blood effects, electricity sparks and some fires. All light bloom effects are also **Universal Effects**.

Restrictions on Universal Effects

It should be noted that there are some aspects of the game design that prevent us from using certain effects wherever we want. An example of this is that we are not able to place lightning in just any room. The same goes for some rain effects. For reasons linked to scripts in the game code we are simply not able to use some effects just anywhere we please.

There are also exe-dependent effects that do not even appear in any of the EFF files. An example of this is the water falling over the statues in r20b. The effect for this can not be found anywhere in the EFF file, and if every single file in the udas is ported to another room the effect will not be ported over. Presently we do not know where the data for these effects is stored and we have no knowledge of how to move or edit them. This being said, these effects are rare, and most Universal Effects can be ported from room to room with ease.

Using Universal Effects

Some of the same concepts apply to creating Universal Effects as Loca Effects, but not all. If we are going to use a Universal Effect here are the things we do not need to do:

1 - copy any **TPL** files
2 - use **Table_0**
3 - use **TextureData** entries

Some of the other principles of creating new effects still apply. For example, if we are adding any new Effect Groups, then we will need to update the **.idx** file. We will also need to follow the same guidelines around **.obj** files, and the **Data.txt** entries.

Now that we have had a basic look at some of the folder structure and functions of the files for the EFF file let us understand some other files that interact with the EFF file:

EAR FILE

Understanding the EAR file's role with Effects

One more thing we must understand while editing effects is how the **EAR** file works in tandem with the EFF files. This relationship is very important because the EAR file controls which Effect Group folders get activated. Simply put, some Effect Group folders are linked to an entry in the room's EAR file, which then controls where we will see the effects in game. Imagine that the EAR file acts as a TriggerZone for certain Effect Groups.

The reason for toggling certain Effect Groups was probably designed this way to conserve CPU/GPU usage so that effects are only 'on' when the player is within a certain visible range of the effect. The other reason for this is because there are often times that we only want an effect to be seen in certain areas of a room (like having rain only visible outside of buildings).

If we are creating new (or duplicating) effects we must be sure that we are including them inside an Effect Group folder that will trigger within the desired area (or we can edit the EFF **Table_2** file so that the effects will trigger everywhere). Essentially the EAR file contains TriggerZones for some Effect Groups that can be edited with the SAR_EAR TOOL. With this tool we can edit the area that triggers our effects with a 3d Model **.obj** file. Please refer to the **SAR EAR TOOL tutorial** for more information.

How the EAR & EFF files work together

As described above, there are certain scenarios in which we might want to have an effect that only appears in certain areas of a room. This is where the EAR file comes into play. We can use the EAR TriggerZones to limit certain effects to only activate when we walk through certain areas. To start learning this we need to identify first which **Effect Group** folders are linked to the EAR file TriggerZones.

Before we look at a working example we need to understand that each **Entry** in the **Table_2.txt** file is linked to an **Effect Group** folder in the **Effect1** folder. For example, 'Entry 1' in the **Table_2.txt** file relates to the **Effect Group 1** folder, and 'Entry 2' in the **Table_2.txt** file relates to the **Effect Group 2** folder and so on. If there are 14 **Effect Group** folders present in the **Effect1** folder then there will also be **14** Entries in the **Table_2.txt** file.

To identify the relationship between the EAR file entries and the EFF **Table_2.txt** file let's use a working example.. So we need to do the following:

STEP 1

Extract the r101 EAR and EFF files

STEP 2

Open EFF **Table_2.txt** - This Table contains IDs for every **Effect Group** folder located in the **Effect1** folder.

STEP 3

After extracting the r101 EAR file, open the extracted EAR **r101_12.txt**

STEP 4

We look at both files and look for a match in certain values/offsets to find the TriggerZone ID form the EAR file:

Table_2.txt : (from the extracted EFF file):
...
Entry_9_index = 0xA
Entry_9_unknown = **0x4**

r101_12.txt (from the extracted EAR file):
..
# Event 17
Index = 0x11
Offset[1] = 0x1
Offset[2] = **0x4**

Entry_9 in the **Table_2.txt** file is responsible for the effects in **Effect1\Effect Group 9** folder and has an ID of **4**. We pay strict attention to this number and search the **r101_12.txt** file for a match at **Offset[2].**(we are looking for **Offset[2]** = **0x4**)

If we look at **Offset[2]** in Event 17 we see that the matching value is **Offset[2]** = **0x4**
This match tells us that Event 17 is the event for the TriggerZone that controls where the effects of **Effect1\Effect Group 9** will be activated/deactivated.

This means that **ALL** of the effects in the **Effect1\Effect Group 9** folder will be activated/deactivated when the player enters the TriggerZone of Event 17 of the EAR file.

Now there may be times when we simply want the effects of a certain **Effect Group** folder to be activated all the time no matter where we are in the room. So for example, if we want to activate the effects in **Effect1\Effect Group 9** to be seen everywhere (instead of when we enter an EAR TriggerZone), we can do one of two things:

1 – Edit the **Table_2.txt** entry to read **Entry_9_**unknown = **0xFFFF**. The **FFFF** value allows the effect to be read anywhere instead of using the ID for an EAR Event.

2 – We can edit theTriggerZone **model.obj** file in the EAR file Event 17 in 3DsMax to span the size of the **entire room**. The previous method makes more sense, and takes less work.

While this may seem a bit complicated because there are several files and values to deal with, this setup gives us a tremendous freedom to choose where effects are activated/deactivated.

EFFECTS LIST

While there is no real 'list' of effects that we have at our disposal, there are certain examples of effects I have compiled in a list for reference. The reason there is no list is because each effect is essentially unique and there are literally THOUSANDS of effects in the game. That being said it is handy to have a list for reference to remember what combinations are used for common effects. Here is a list of known effect types that are broken down into parts; **Universal** & **Local Effects:**

Universal Effects

Film Grain Effect (overlay that gives a grainy texture to the screen).
01_ 04_ 72

Fog Effect
1_0_1F
effect_0_id_0x1_type_0x15_texture_0x1E

Bloom Effect a slight lighting effect that is sometimes used in lamps or small lights
The bloom effect can be:
1_B_13
1_E 13
1_B_79
1_E_79

For bloom effects there are others but these are the most common.
The third number set is for the texture used. "13" and "79" are both bloom effects (I mean a simple diffused white circle around a light when I say "bloom") "0b" is what makes the texture to rotate with the camera angle and the "rotation radius" line is used in these "0b" effect

Heat Effect
1_17_28
1_08 _E
1_08 _1E
(heat is always placed at 0.0.0 and then triggered by EAR)

Animated Fire
1_B_2E
1_B_2C

Smoke
1_B_52

Fire Sparks
1_0_13

fake lightning
1_05_32
Offset[268..271] = 0x54 (interval for blinking.. the larger the value = the longer with no light

Local Effects

Animated Fires
1_0_26
1_B_29
1_B_28

Swaying Trees
1_48_D0
1_48_F6

Swaying Leaves
1_48_CB

Candle flames
1_0_85
1_0_86

Rain type A - (when under something looking outside)
1_8_C5

Water effect
1_0_FE

CORAZON'S FINDINGS ON EFFECT PARAMETERS

During the course of the creation of 'World S' I corresponded with master modder Corazon, frequently discussing advanced modding, in particular the EFF file. It is great pleasure that I can share with you his findings on many of the various parameters that we see in the extracted EFF entries. These have tremendously helped me have a better understanding of how effects are built, and how to use these parameters in my own custom effects. Congratulations Corazon on a great mod, and thank you for taking the time to document all of this. Enjoy!

EFFECT PARAMETERS EXPLAINED

(Axis [X, Z, Y] Can be relative to environment or player)

Offset[8..9] = 0x0 (0 no face to player, 2 face to player, 18 upside down random, 96 super bright)
Offset[24..27] = 0x0 ([X] Start position factor per particle) = How much is away from origin
Offset[28..31] = 0x0 ([Z] Start position factor per particle)
Offset[32..35] = 0x0 ([Y] Start position factor per particle)
Offset[36..39] = 0x0 (Constant [X] Velocity per group) = How they tend to go to X
Offset[40..43] = 0x0 (Constant [Z] Velocity per group)
Offset[44..47] = 0x0 (Constant [Y] Velocity per group)
Offset[48..51] = 0x0 (Motion speed? sensitivity of values above?) always 0.95? or 1?
Offset[52..55] = 0x0 (Random [X] Velocity per particle)
Offset[56..59] = 0x0 (Random [Z] Velocity per particle)
Offset[60..63] = 0x0 (Random [Y] Velocity per particle)
Offset[64..67] = 0x0 ([X] Acceleration) = [WIND]
Offset[68..71] = 0x0 ([Z] Acceleration) = [- Gravity]
Offset[72..75] = 0x0 ([Y] Acceleration) = [WIND]
Offset[76..79] = 0x0 ([X] Random Acceleration)
Offset[80..83] = 0x0 ([Z] Random Acceleration)

Offset[84..87] = 0x0 ([Y] Random Acceleration)

Offset[104..107] = 0x0 (Initial rotation randomness) [Z]
Offset[108..111] = 0x0 (Initial rotation randomness) [Y]
Offset[120..123] = 0x0 (Rotation for group)
Offset[132..135] = 0x0 (Rotation per particle)

Offset[144..147] = 0x0 (Random Size Factor per particle?)
Offset[144..147] = 0x0 (Size factor for group?)
Offset[152..155] = 0x0 (Growth speed?)

Offset[268..271] = 0x000 (Quantity of particles)

Conclusion

This concludes the Tutorial for the EFF file. I would like to thank Albert for taking the time over the past several years to share his deep knowledge of effects with me. We owe everything to him for all the time he took to research these files and help Son of Persia develop the tools. Without his friendly attitude & willingness to share his knowledge with the community none of this would be at all possible.

Thank You friend!

Happy Modding!

Mr.Curious
12 - 2018 (edited 2-2023)

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