Creating and customizing appraisers

Operations with optimization algorithms require correct appraiser according to manufacture needs.

This document describes structure and options of appraiser, allows creating and customizing appraiser for any types of cuttings.

1 Content

2 Load appraiser to program

Appraisers are located in **Price list** folder for Helium Rough and Pacor Client or **System** folder for Oxygen programs. By default the name of appraiser file is *__Appraiser.txt__*. But it is possible to create any txt-file with another name.

To make appraiser`s txt-file accessible in the program Helium Rough, Pacor Client, Oxygen and other:

1. Open **ini** file located in root folder of the program

   - *HeliumBat.ini* (Helium Rough)

   - *PacorBat.ini* (Pacor Client)

   - *Winoxygen.bat* (Oxygen Microscope Server, Oxygen Inclusion and Helium Speed):

2. Add following string in **ini** file:

```
LoadParsAppraiser "Price list\<the name of file with appraiser>.txt"
(Helium Rough, Pacor Client)
```

   or

```
LoadParsAppraiser "System\<the name of file with appraiser>.txt" (Oxygen
Microscope Server, Oxygen Inclusion and Helium Speed).
```

By default **ini** file contains string

```
LoadParsAppraiser  "Price  list\Appraiser.txt"  (Helium  Rough,  Pacor
Client)
```

   or

```
LoadParsAppraiser  "System\Appraiser.txt"  (Oxygen  Microscope  Server,
Oxygen Inclusion and Helium Speed).
```

3   Appraiser structure

Appraser txt-file contains one or more appraisers. Every appraiser has the following structure:

1. Begin and End appraiser tags

2. General appraiser information: Version, Title and Serial Number

3. Section [other]

4. Section [fixedcut]

5. Section [cut]

3.1 Begin and End appraiser tags

Every appraiser starts from tag **[Appraiser]** and ends by tag **[end]**. All information about one appraiser is between these two tags:

```
[Appraiser]

….

[end]
```

To insert comment in txt file insert sign **";"** before string:

```
; Test appraiser created by Octonus on 20.03.2008
```

For example, if txt file contains several appraisers insert comment string before every tag **[Appraiser]**

```
; Test appraiser created by Octonus on 20.03.2008

[Appraiser]

…

[end]
```

*Note. This documentation is accompanied with sample of appraiser – Appraiser.txt which contains one appraiser for one external dll cutting – **EmeraldP32C24.dll**. To make it available in the list if cuttings in software download file **EmeraldP32C24.dll** and copy it into the folder **Cuttings** in the root folder of program.*

3.2 General appraiser information

General information about appraiser follows after tag **[Appraiser]**. There are name of appraiser as it will appear in the software, version of appraiser and serial number.

```
Version:  3
Title:  "Example Appraiser_Emerald"
SerialNumber:   1
```

Use Version 3 for normal appraiser, Version 4 for Points appraiser and Version 5 for Symmetry appraiser.

Txt-file can contain several appraisers. In this case they should have different names, different serial numbers.

It is possible to switch between appraisers. To make appraiser default add **MainAppraiser** after serial number:

```
Version:  3
Title:  "Example Appraiser_Emerald"
SerialNumber:   1


MainAppraiser
```

Default appraiser will appear in program by default.

3.3 Section [quality]

Section quality defines possible cut quality groups:

```
[quality]
        EX        10     RGB 0 255 0
        VG        15     RGB 255 0 255
        GD        25     RGB 255 255 0
        FR        30     RGB 255 0 0
[end]
```

There are name of groups in the first column; value of discount for every group for the price-list price in the second column; color in RGB coordinates of every group in the third column.

For example, first string defines:

- Appraise has **EX** group

- 10% discount from price-list for **EX** group

- Parameters, diamonds and etc with **EX** group are marked by green color:

3.4 Section [other]

Section [other] determines parameters by *word description*. Many cut grade systems use description for grade **Thin**, **Medium**, **Thick** for Girdle height. For this parameter be able to set range of digital values for every word term like **Thin   1.0 1.5**. After this determination it is possible to use terms in section **[cut]** (see below). This is example of section **[other]**:

```
[other]
  StringValue:    GirdleHeight_GIA (%)     \
                        "Extremely thin" 0. 0.4 \
                        "Very thin"     0.4 1.0 \
                        Thin            1.0 1.5 \
                        "Slightly thin" 1.5 1.7 \
                        Medium          1.7 3.0 \
                        "Slightly Thick" 3.0 4.5 \
                        Thick           4.5 5.5 \
                        "Very Thick"    5.5 7.0 \
                        "Extremely Thick" 7.0 100
       StringValue:         Culet_mm (.)      \
                        Pointed         0.000 0.010 \
                        "Very small"    0.010 0.020 \
                        Small           0.020 0.030 \
                        Medium          0.030 0.090 \
                        "Slightly large" 0.090 0.220 \
```

```
                                        Large              0.220 0.400 \
                                        "Very large"       0.400 0.800 \
                                        "Extremely large" 0.800  10
        [end]
```

3.5 Section [cut]

Section [cut] is the main section of appraiser. It defines cut for apprasing and optimization. Section contains values of parameters for cut grade groups and optimization parameters. One appraiser can contains one or several section [cut].

Structure of section [cut] is following:

- Name
- Quality
- Parameters
- Optimize
- Mass

3.5.1 Name

Name of cutting:

```
        Name:        "Emerald.P32C24"
```

3.5.2 Quality

Cut grade groups for this cutting:

```
        Quality:   EX VG GD FR
```

3.5.3 Parameters

Subsection **Parameters** contains appraised parameters.

```
            Parameters: DC_UserparameterAngle4 (°) \
                    DC_UserparameterAngle5 (°) \
                    DC_UserparameterAngle6 (°) \
                    DC_UserparameterAngle7 (°) \
                        DC_userParameterPercent6 (%) \
                    GirdleRatio (.) \
                        DC_userParameterPercent2 (%) \
                    DownHeight_GIA_giFix (%) \
                    UpHeight_GIA (%) \
```

```
                         Table (%) \
                         GirdleHeight_GIA (%) \
                             DC_UserparameterAngle (°) \
                         DC_UserparameterAngle1 (°) \
                         DC_UserparameterAngle2 (°) \
                         DC_UserparameterAngle3 (°) \
                         DC_userParameterPercent (%) \
                         DC_userParameterPercent1 (%) \
                             DC_userParameterPercent3 (%) \
                         DC_userParameterPercent4 (%) \
                         DC_userParameterPercent5 (%)
```

Symbol **« \ »** is used for joining of next string with previous one, i.e. actually there is one string but for convenience of perception one string is consisted of some strings which are separated by **« \ »**.

Parameters could have symbol **« * »** after name of parameter. For example:

```
    Table *(%) \
```

If symbol « * » presents it means parameter is estimated separately but not accounting in total estimation of cut quality. For example, parameters with * could have values not in the EX groups if optimization runs with EX cut quality groups of diamonds. The cut quality of parameters with « * » shows in Diamond panel.

3.5.4 Optimize

3.5.4.1 Structure of Subsection Optimize

Subsection **Optimize** contains parameters are used during optimization. Structure of this subsection is following - three parameters on three places in every string:

```
Optimize:    Table Table Table \
     UpAngle DC_UserParameterAngle DC_UserParameterAngle \
     GirdleHeight GirdleHeight_GIA GirdleHeight_GIA \
     UpAngleLevel0 DC_UserParameterAngle1 DC_UserParameterAngle1 \
     …
     …
```

- **First place** in every string is for one of 16 default parameters (see Table 1)
- **Second place** is for parameter which will be appraised

- **Third place** is for changing of parameter on another one which will describe behavior of second one

Table 1. 16 default parameters must be used in first place in string

1. Table	9. Culet
2. UpAngle	10. CuletOffsetX
3. GirdleHeight	11. OP_1
4. UpAngleLevel0	12. OP_2
5. DownAngleLevel0	13. OP_3
6. DownAngle	14. OP_4
7. DownAngleLevel1	15. OP_5
8. GirdleRatio	16. OP_6

3.5.4.2 Optimization methods

Method 1 To optimize any of 16 default parameters use the follow string:

```
Table Table Table \
```

or don't write any string for this parameter at all.

Method 2 To optimize another parameter, different from 16 defaults, write this parameter in second and third places in string.

> *For example, to optimize parameter **DC_UserParameterPercent3**:*
>
> *1. Check that this parameter is not present in the list of 16 default parameters*
>
> *2. Take any of parameters from 16 defaults is not used in optimization process. For example **OP_1**.*
>
> *3. Redefine **OP_1** parameter as **DC_UserParameterPercent3** by string*

```
OP_1 DC_UserParameterPercent3 DC_UserParameterPercent3 \
```

> *It means that program will optimize **DC_UserParameterPercent3** instead of **OP_1***

Method 3 Second and third places of string are mostly occupied by the same parameter but sometimes they are different. If two dependent parameters are used in optimization the behavior of parameter on second place should be describes via parameter on third place.

For example, the parameter UpAngle (Crown Angle) for round brilliant can be changed by UpHeight (Crown Height) or by Table (Table). To determine method of changing of UpAngle by changing Table use string:

```
UpAngle  UpAngle  UpAngle_uHFix \
```

*It means that optimization of **UpAngle** will be result of **Table** changing but not **Crown Height** changing. **Crown Height** is fixed during optimization.*

3.5.4.3 Fill out section Optimize

To fill out section Optimize follow way:

1. Select parameters for optimization

   *Warning. For optimization use only parameters from the list of parameters defined in section **Parameters** and not any other. Program couldn't optimize parameter that is not appraised.*

2. Select from them those which have the same name as default parameters (see Table 1)

3. Write strings of optimization for these default parameters

```
Table Table Table \
```

4. Redefine other default parameters as other selected parameters for optimization

5. Write strings of optimization for redefined parameters

```
OP_1 DC_UserParameterPercent3 DC_UserParameterPercent3 \
```

6. If there are dependent parameters on each other put on third place some parameter that describes behavior of dependent parameter placed on second place

```
UpAngle  UpAngle  UpAngle_uHFix \
```

This is example of section **Optimize** for our appraiser:

```
Optimize:    Table Table Table \
             UpAngle DC_UserParameterAngle DC_UserParameterAngle \
             GirdleHeight GirdleHeight_GIA GirdleHeight_GIA \
```

```
                UpAngleLevel0 DC_UserParameterAngle1 DC_UserParameterAngle1
\
                DownAngleLevel0                    DC_UserParameterAngle5
DC_UserParameterAngle5 \
                DownAngle DC_UserParameterAngle4 DC_UserParameterAngle4 \
                DownAngleLevel1                    DC_UserParameterAngle6
DC_UserParameterAngle6 \
                GirdleRatio GirdleRatio GirdleRatio \
                Culet DC_UserParameterPercent DC_UserParameterPercent \
                CuletOffsetX                    DC_UserParameterPercent1
DC_UserParameterPercent1 \
                OP_1 DC_UserParameterPercent3 DC_UserParameterPercent3 \
                OP_2 DC_UserParameterPercent4 DC_UserParameterPercent4 \
                OP_3 DC_UserParameterPercent5 DC_UserParameterPercent5 \
                OP_4 DC_UserParameterAngle3 DC_UserParameterAngle3 \
                OP_5 DC_UserParameterAngle7 DC_UserParameterAngle7 \
                OP_6 DC_UserParameterPercent2 DC_UserParameterPercent2 \
```

Note! *For optimization use only parameters from parameters list defined in section* *Parameters* *and not any other (see section* *Parameters* *above). Because program could not optimize parameters are not defined in section* *Parameters* *for appraising.*

3.5.5 Mass

Section mass contains ranges of weights and ranges of parameters values for every range of weight for every cut grade group. Every string corresponds to quality grade group and should have symbol «\» in the end.

```
Mass: 0.00  0.99 \
     33 35  41 41.5  0.7 2.0  58 62  0.98 1.02  10 25 \
     30 35  40 42.0  0.7 3.0  55 65  0.98 1.02  10 25 \
     30 38  40 42.0  0.7 3.0  54 66  0.98 1.02  10 25 \
     30 40  39 43.0  0.7 3.5  53 68  0.98 1.02  10 25
Mass: 1.00  100000 \
     33 35  41 41.5  0.7 2.0  58 62  0.98 1.02  10 25 \
     32 36  40 42.0  0.7 2.0  55 65  0.98 1.02  10 25 \
     31 37  40 42.0  0.7 3.0  54 66  0.98 1.02  10 25 \
     30 40  39 43.0  0.7 3.5  53 68  0.98 1.02  10 25
```

Every pair of values is belonged to one parameter. First pair is belonged to first parameter, second – to second and so on. For example:

```
Mass: 0.00  100000 \
      53 58.5 40 44 35 38 28.5 33 64 67.8 1.300 1.400 37.0 44 47.0 52.5 12.5
      14.5 58 63.5 2.0 3.5 40.00 48.00 28.00 37.00 20.00 27.00 40 50 28 32
      20.00 24.00 24.00 28.00 38.50 40.00 80.00 85.00 \


      52 59.5 39 45 34 39 27.0 34 62 69.0 1.260 1.440 34.0 46 45.0 54.5 11.5
      15.5 57 65.5 1.8 4.5 37.99 50.00 27.99 37.01 19.99 27.01 40 50 27 33
      19.50 24.50 23.50 28.50 38.00 40.50 79.00 86.00 \


      51 62.0 38 46 33 40 24.0 35 60 71.5 1.230 1.460 32.0 48 43.0 56.5 10.5
      16.5 56 68.0 1.5 5.8 36.00 52.00 27.98 37.01 19.98 27.02 40 50 26 34
      19.00 25.00 23.00 29.50 37.00 42.00 75.00 87.00 \


      50 63.0 37 47 31 41 21.0 36 58 73.5 1.200 1.470 30.0 50 41.0 58.5 10.0
      17.5 55 69.8 1.3 7.0 34.00 54.00 27.97 37.02 19.97 27.03 40 50 25 35
      18.00 26.00 22.00 31.00 36.00 44.00 70.00 90.00
```

For group EX there is range 53-58.5 degrees for parameter DC_UserparameterAngle4, 40-44 degrees for parameter DC_UserparameterAngle5, 35-38 degrees for DC_UserparameterAngle6 and so on until symbol "\".

In the new string for group VG there is range 52-59.5 for DC_UserparameterAngle4, 39-45 degrees for DC_UserparameterAngle5, 34-39 degrees for DC_UserparameterAngle6.

Note. Worse cut grade group has to be wider for every parameter than better one. For example, for parameter DC_UserparameterAngle4 we have following ranges:

```
EX: 53-58.5
VG: 52-59.5
GD: 51-62.0
FR: 50-63.0
```

Worse FR range contains GD (50<51 and 63>52), GD range contains VG (51<52 and 62>59.5), VG range contains EX (52<53 and 59.5>58.5).

3.6 Section [fixedcut]

Section **[fixedcut]** contains specific sets of parameters values which are used on different stages of work.

There are different types of sets: **Start**, **Value**, **Optimization**, **OptimizationSet1** and **OptimizationSet2**. Optimization uses sets for search best solution running algorithms of **Swimming** beginning from every of these sets.

Section **[fixedcut]** contains name of cutting in the beginning, list of parameters and sets of parameters values.

Set of parameters values should be inside best grade group. Otherwise it could be possible that program during optimization will be not able to find diamond in best grade group.

Example of section **[fixedcut]**:

```
[fixedcut]
        Name:  "Emerald.P32C24"

        Parameters: DC_UserparameterAngle4 (°)  DC_UserparameterAngle5
(°) DC_UserparameterAngle6 (°) DC_UserparameterAngle7 (°) GirdleRatio
(.)    UpHeight_GIA    (%)    Table    (%)    DC_UserparameterAngle   (°)
GirdleHeight_GIA (%) DC_UserparameterAngle2 (°) DC_userParameterPercent
(%)    DC_userParameterPercent1    (%)    DC_userParameterPercent2    (%)
DC_userParameterPercent3      (%)      DC_userParameterPercent4      (%)
DC_userParameterPercent5 (%)

        Start: [cutname] 54.0      44.0      37    32    1.300    13
     58    47.99 3    21.5  30    21.5  38    27    40    83

[end]
```

In this example the program starts optimization of cutting with name *Emerald.P32C24* with following initial values of parameters:

- DC_UserparameterAngle4 (°) - 54.0
- DC_UserparameterAngle5 (°) – 44.0
- DC_UserparameterAngle6 (°) - 37
- DC_UserparameterAngle7 (°) - 32
- GirdleRatio (.) – 1.300
- ….
- DC_userParameterPercent5 (%) - 83

4 Checking and correcting section [cut]

4.1 Get information about appraiser parameters

To get information about appraiser parameters defined in the section [cut]:

- Right click button 🗒
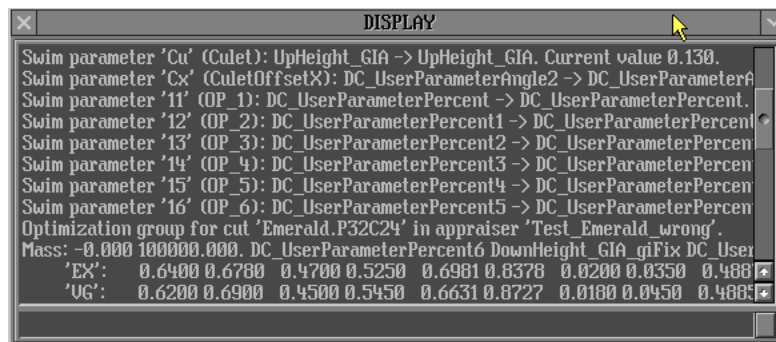- Select command **PANEL Full** from list
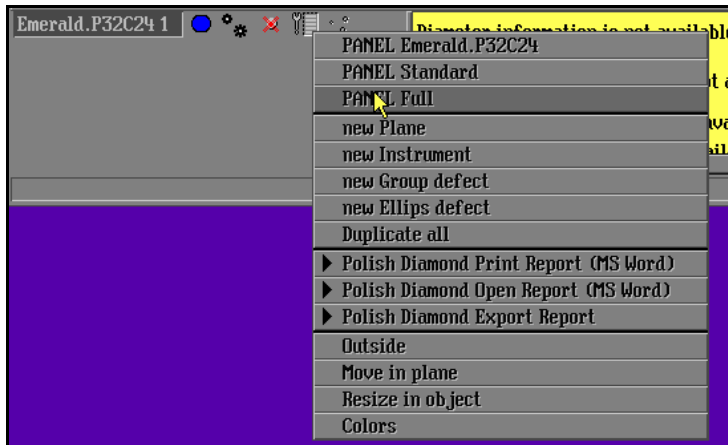
- Panel **Emerald.P24C32 1: Full** appears

- Press button ⊠ in the panel **Emerald.P24C32 1: Full**

- Run command **Diamond Appraiser parameters**

- Panel **DISPLAY** appears

4.2 Analyzing information in DISPLAY and correcting problems

Panel **DISPLAY** contains information about appraiser parameters in the section [cut].

Case 1. No problems

All parameters are assigned in appraiser.

```
Swim parameter 't' (Table): Table -> Table. Current value 0.602.
Swim parameter 'h' (GirdleHeight): GirdleHeight_GIA -> GirdleHeight_GIA. Current value 0.030.
Swim parameter 'b' (UpAngle): DC_UserParameterAngle -> DC_UserParameterAngle. Current value 0.838.
```

Swim parameter 'a' (DownAngle): DC_UserParameterAngle4 -> DC_UserParameterAngle4. Current value 0.942.
Swim parameter 'Rt' (GirdleRatio): GirdleRatio -> GirdleRatio. Current value 1.300.
Swim parameter 'B0' (UpAngleLevel0): DC_UserParameterAngle1 -> DC_UserParameterAngle1. Current value 0.501.
Swim parameter 'A0' (DownAngleLevel0): DC_UserParameterAngle5 -> DC_UserParameterAngle5. Current value 0.768.
Swim parameter 'A1' (DownAngleLevel1): DC_UserParameterAngle6 -> DC_UserParameterAngle6. Current value 0.646.
Swim parameter 'Cu' (Culet): DC_UserParameterPercent -> DC_UserParameterPercent. Current value 0.300.
Swim parameter 'Cx' (CuletOffsetX): DC_UserParameterPercent1 -> DC_UserParameterPercent1. Current value 0.215.
Swim parameter '11' (OP_1): DC_UserParameterPercent3 -> DC_UserParameterPercent3. Current value 0.270.
Swim parameter '12' (OP_2): DC_UserParameterPercent4 -> DC_UserParameterPercent4. Current value 0.400.
Swim parameter '13' (OP_3): DC_UserParameterPercent5 -> DC_UserParameterPercent5. Current value 0.830.
Swim parameter '14' (OP_4): DC_UserParameterAngle3 -> DC_UserParameterAngle3. Current value 0.785.
Swim parameter '15' (OP_5): DC_UserParameterAngle7 -> DC_UserParameterAngle7. Current value 0.559.
Swim parameter '16' (OP_6): DC_UserParameterPercent2 -> DC_UserParameterPercent2. Current value 0.380.

Case 2 Parameter is not defined

Strings contain "*is not defined*". For example:

Get parameter UpAngle is not defined in Appraiser (for 'b' (UpAngle) optimization).

Check string with parameter **UpAngle** in the section Optimize in appraiser's file:

- If string with parameter **UpAngle** is absent add it (see section **3.6.4.2 Optimization methods / Method 1**)

- If string with parameter **UpAngle** is wrong redefine it (see section **3.6.4.2 Optimization methods / Method 2**)

Case 3 Incorrect range of parameter

Panel **DISPLAY** also contains information about appraiser parameters ranges

Mass: -0.000 100000.000. DC_UserParameterPercent6 DownHeight_GIA_giFix DC_UserParameterAngle
GirdleHeight_GIA DC_UserParameterAngle1 UpHeight_GIA DC_UserParameterAngle2 Table
DC_UserParameterAngle3 DC_UserParameterAngle4 DC_UserParameterAngle5 DC_UserParameterAngle6
GirdleRatio DC_UserParameterPercent DC_UserParameterAngle7 DC_UserParameterPercent1
DC_UserParameterPercent2 DC_UserParameterPercent3 DC_UserParameterPercent4
DC_UserParameterPercent5
   'EX':   0.6400 0.6780 0.4700 0.5250 0.6981 0.8378 0.0200 0.0350 0.4887 0.6458 0.1250 0.1450
0.3491 0.4712 0.5800 0.6350 0.6981 0.8727 0.9250 1.0210 0.6981 0.7679 0.6109 0.6632 1.3000 1.4000
0.2800 0.3200 0.4974 0.5760 0.2000 0.2400 0.3700 0.4400 0.2400 0.2800 0.3850 0.4000 0.8000 0.8500
   'VG':   0.6200 0.6900 0.4500 0.5450 0.6631 0.8727 0.0180 0.0450 0.4885 0.6459 0.1150 0.1550
0.3489 0.4714 0.5700 0.6550 0.6981 0.8727 0.9076 1.0385 0.6807 0.7854 0.5934 0.6807 1.2600 1.4400
0.2700 0.3300 0.4712 0.5934 0.1950 0.2450 0.3400 0.4600 0.2350 0.2850 0.3800 0.4050 0.7900 0.8600
   'GD':   0.6000 0.7150 0.4300 0.5650 0.6283 0.9076 0.0150 0.0580 0.4883 0.6459 0.1050 0.1650
0.3487 0.4716 0.5600 0.6800 0.6981 0.8727 0.8901 1.0821 0.6632 0.8029 0.5760 0.6981 1.2300 1.4600
0.2600 0.3400 0.4189 0.6109 0.1900 0.2500 0.3200 0.4800 0.2300 0.2950 0.3700 0.4200 0.7500 0.8700

```
'FR':    0.5800 0.7350   0.4100 0.5850   0.5934 0.9425   0.0130 0.0700   0.4882 0.6461   0.1000 0.1750
0.3485 0.4718   0.5500 0.6980   0.6981 0.8727   0.8727 1.0996   0.6458 0.8203   0.5411 0.7156   1.2000 1.4700
0.2500 0.3500   0.3665 0.6283   0.1800 0.2600   0.3000 0.5000   0.2200 0.3100   0.3600 0.4400   0.7000 0.9000
```

If some range of parameter is not correct the red string is displayed:

Conflict with previous group for parameter 'DC_UserParameterAngle4'. Interval (0.9338 1.0385) does not contain (0.9250 1.0210).

To fix this problem open appraiser's file and correct range for corresponding parameter (see section 3.6.5 Mass)

Case 4 Problem with cutting

If displayed the follow red strings

FullHeight fixed parameter does not exist.
UpHeight parameter does not changed. Problem for Set algorithms.

contact to developers on our web-site http://www.octonus.com/oct/support/SubmitTicket.phtml These red string means that current cutting doesn't call standard parameters **Full height** and **UpHeight**. It could result in some problems for optimization.
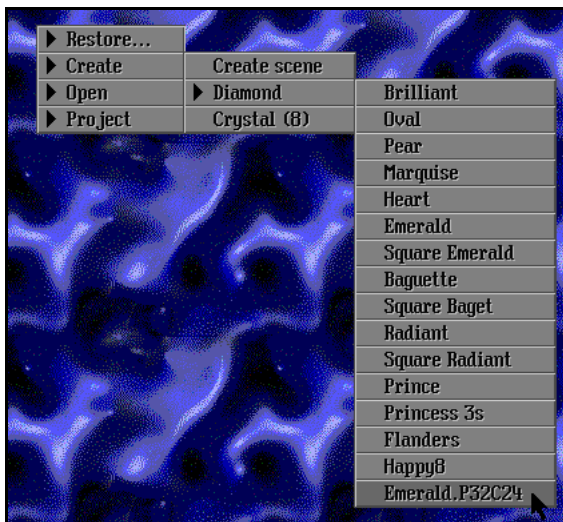
5 Checking and correcting section [fixedcut]

Section [fixedcut] defines parameters and cut grade group of new created cut in program.

5.1 Checking cut grade group of cutting

To create new cutting in program and check its grade group:

- Run program
- Right click on blue ornament (background of program)
- Select **Create/Diamond/Emerald.P32C24**

- Cutting is created. This object in Scene is a diamond determined in the section **[fixedcut]**.
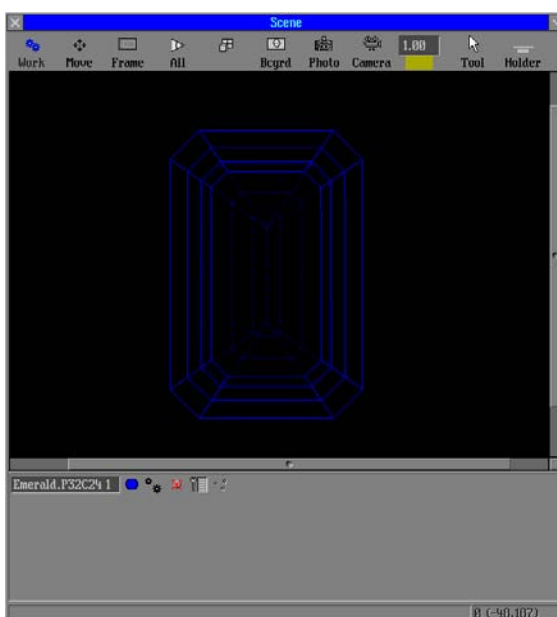
- Right click on button and select **PANEL Full**

- Panel **Emerald.P24C32 1: Full** appears

- Field **Quality** contains current cut grade for cutting.

The cut grade group should be best group of appraiser. Over vise it should be corrected.

5.2 *Correcting cut grade group of cutting*

To correct cut grade group:

1. Find parameter is not in best quality group in the panel **Emerald.P24C32 1: Full**. This parameter has another color than best one.

*Note. The colors of parameters quality groups defined in section [quality].*

2. Add this parameter and it's value to section [fixedcut] in appraiser or modify value of existent parameter in section [fixedcut]. Value should belong to best group.

3. Restart program and create cutting once again – make sure range of parameters values just has added to section [fixedcut] are in best group (has color of best group). Check total grade group. If it is not best then repeat procedure with other parameters.

4. Step by step add parameters until you will have best grade group for default cutting.

Note! Names of parameters in program and names of parameters in appraiser are different. To understand what name of parameter for appraiser correspondent name in the panel Full in program see section below.

5.3 Set up a correspondence of parameters names in program and parameters names in appraiser file

To see list of correspondence parameters:

- Press button ☒ in panel **Emerald.P24C32 1: Full**

- Select **Diamond parameter list**

- The full list of correspondence parameters will be shown in the panel **Display**:
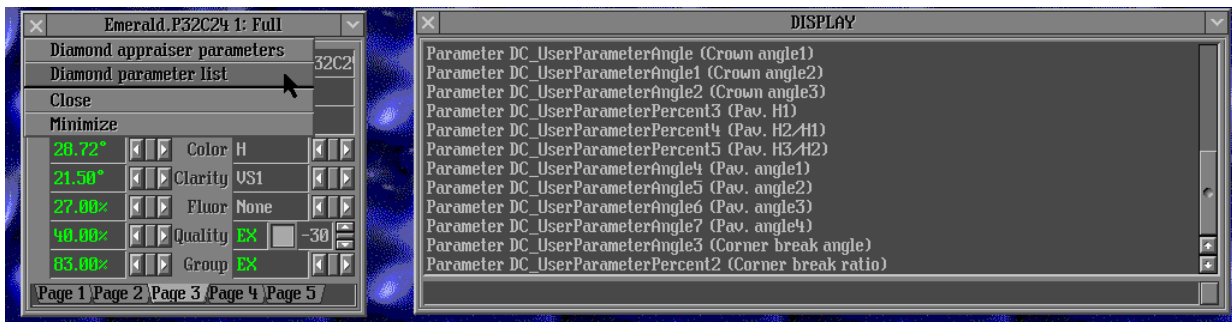
The name of parameter in program is shown in status line of Scene if you move cursor to field with value of any parameter.
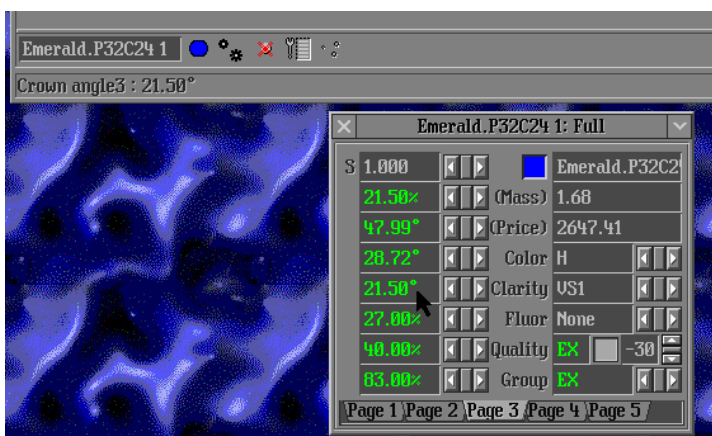
On the picture it is shown that cursor points to field with value *21.500* and there is information about this parameter in status line of Scene - **Crown angle3**: *21.500*.

In the panel **Display** find string with parameter **Crown angle3** in brackets in the end of strings. There is name of the same parameter for appraiser in the beginning of this string:

Parameter DC_UserParameterAngle2 (Crown angle3)

So, the name of parameter with value *21.500* in program is **DC_UserParameterAngle2** in appraiser.

6 Example. Correcting wrong created appraiser for Emerald.P32C24

This example illustrates the process of appraiser correction for cutting **Emerald.P32C24**

Process outline

Step 1. Making appraiser accessible in the program

Step 2. Creating cutting Emerald.P32C24 for appraising

Step 3. Checking section [fixedcut]

Step 4. Checking section [optimize]

Step 5. Correcting section [optimize]

Step 6. Final appraiser file

Step 1. Making appraiser accessible in the program

- Download example with wrong appraiser:
  Test_appraiser_EmeraldP32C24_wrong.txt

- Make this appraiser accessible in the program:

  - Open **ini** file located in root folder of the program

    - *HeliumBat.ini* (Helium Rough)

    - *PacorBat.ini* (Pacor Client)

    - *Winoxygen.bat* (Oxygen Microscope Server, Oxygen Inclusion and Helium Speed):

  - Add following string in **ini** file:

    ```
    LoadParsAppraiser "Price list\Test_appraiser_EmeraldP32C24_wrong.txt"
    (Helium Rough, Pacor Client)

    or

    LoadParsAppraiser    "System\Test_appraiser_EmeraldP32C24_wrong.txt"
    (Oxygen Microscope Server, Oxygen Inclusion and Helium Speed).
    ```

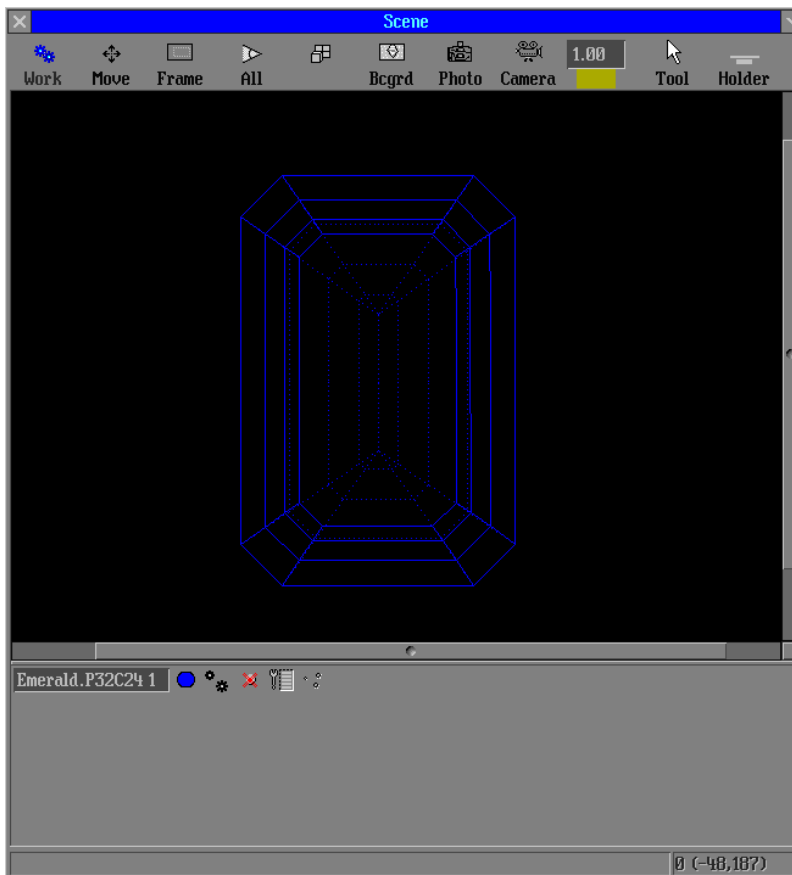## *Step 2. Creating cutting Emerald.P32C24 for appraising*

- Download EmeraldP32C24.dll

- Put it in the folder Cuttings of program.

- Run program.

- Create cutting Emerald.P32C24:

- Right click on blue ornament (background of program)
- Select **Create/Diamond/Emerald.P32C24**
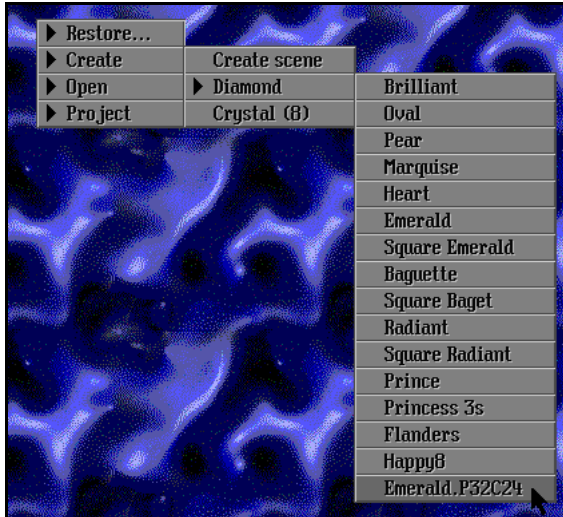
- Cut Emerald.P32C24 is created

Step 3. Checking section [fixedcut]

- Check start cutting Emerald.P32C24. It should be **EX** quality (see section **5.1 Checking cut grade group of cutting**).

- In our example cutting has **EX** quality. It means section **[fixedcut]** is Ok.

Step 4. Checking section [optimize]

- Call **Diamond Appraiser parameters** (see section **4.1 Get information about appraiser parameters**)

- The following information is displayed in Display panel:

Swim parameter 't' (Table): Table -> Table. Current value 0.602.
Swim parameter 'h' (GirdleHeight): GirdleHeight_GIA -> GirdleHeight_GIA. Current value 0.030.
Get parameter UpAngle is not defined in Appraiser (for 'b' (UpAngle) optimization).
Get parameter DownAngle is not defined in Appraiser (for 'a' (DownAngle) optimization).
Swim parameter 'Rt' (GirdleRatio): GirdleRatio -> GirdleRatio. Current value 1.300.
Get parameter UpAngleLevel0 is not defined in Appraiser (for 'B0' (UpAngleLevel0) optimization).
Get parameter DownAngleLevel0 is not defined in Appraiser (for 'A0' (DownAngleLevel0) optimization).
Get parameter DownAngleLevel1 is not defined in Appraiser (for 'A1' (DownAngleLevel1) optimization).
Swim parameter 'Cu' (Culet): UpHeight_GIA -> UpHeight_GIA. Current value 0.130.
Swim parameter 'Cx' (CuletOffsetX): DC_UserParameterAngle2 -> DC_UserParameterAngle2. Current value 0.375.
Swim parameter '11' (OP_1): DC_UserParameterPercent -> DC_UserParameterPercent. Current value 0.300.
Swim parameter '12' (OP_2): DC_UserParameterPercent1 -> DC_UserParameterPercent1. Current value 0.215.
Swim parameter '13' (OP_3): DC_UserParameterPercent2 -> DC_UserParameterPercent2. Current value 0.380.
Swim parameter '14' (OP_4): DC_UserParameterPercent3 -> DC_UserParameterPercent3. Current value 0.270.
Swim parameter '15' (OP_5): DC_UserParameterPercent4 -> DC_UserParameterPercent4. Current value 0.400.
Swim parameter '16' (OP_6): DC_UserParameterPercent5 -> DC_UserParameterPercent5. Current value 0.830.

There are green strings displayed. Parameters **UpAngle**, **DownAngle**, **UpAngleLevel0**, **DownAngleLevel0**, **DownAngleLevel1** are not defined. It means section [optimize] should be corrected

Step 5. Correcting section [optimize]

- Open txt file with current appraiser *Test_appraiser_EmeraldP32C24_wrong.txt*

- See section**[optimize]**

```
Optimize:   Table Table Table \
  GirdleHeight GirdleHeight_GIA GirdleHeight_GIA \
  Culet UpHeight_GIA UpHeight_GIA \
  DC_UserparameterAngle1 DC_UserparameterAngle4 DC_UserparameterAngle4 \
  DC_UserparameterAngle4 DC_UserparameterAngle5 DC_UserparameterAngle5 \
  DC_UserparameterAngle4 DC_UserparameterAngle6 DC_UserparameterAngle6 \
  DC_UserparameterAngle4 DC_UserparameterAngle7 DC_UserparameterAngle7 \
  DC_UserparameterAngle4 DC_UserparameterAngle1 DC_UserparameterAngle1 \
```

```
CuletOffsetX DC_UserparameterAngle2 DC_UserparameterAngle2 \
GirdleRatio GirdleRatio GirdleRatio \
OP_1 DC_UserparameterPercent DC_UserparameterPercent \
OP_2 DC_UserparameterPercent1 DC_UserparameterPercent1 \
OP_3 DC_UserparameterPercent2 DC_UserparameterPercent2 \
OP_4 DC_UserparameterPercent3 DC_UserparameterPercent3 \
OP_5 DC_UserparameterPercent4 DC_UserparameterPercent4 \
OP_6 DC_UserparameterPercent5 DC_UserparameterPercent5 \
```

- There are some strings with wrong parameter on first place:

```
DC_UserparameterAngle1 DC_UserparameterAngle4 DC_UserparameterAngle4 \
DC_UserparameterAngle4 DC_UserparameterAngle5 DC_UserparameterAngle5 \
DC_UserparameterAngle4 DC_UserparameterAngle6 DC_UserparameterAngle6 \
DC_UserparameterAngle4 DC_UserparameterAngle7 DC_UserparameterAngle7 \
DC_UserparameterAngle4 DC_UserparameterAngle1 DC_UserparameterAngle1 \
```

- Define parameters **DownAngle**, **UpAngleLevel0**, **DownAngleLevel0**, **DownAngleLevel1** instead of **DC_UserparameterAngle4:**

```
DownAngle DC_UserParameterAngle4 DC_UserParameterAngle4 \
UpAngleLevel0 DC_UserParameterAngle1 DC_UserParameterAngle1
DownAngleLevel0 DC_UserParameterAngle5 DC_UserParameterAngle5 \
DownAngleLevel1 DC_UserParameterAngle6 DC_UserParameterAngle6 \
```

- Define parameter **UpAngle:**

```
UpAngle DC_UserParameterAngle DC_UserParameterAngle
```

- Section [optimize] is corrected. Now it contains correct default parameters on first place in every string:

```
Optimize:    Table Table Table \
UpAngle DC_UserParameterAngle DC_UserParameterAngle \
GirdleHeight GirdleHeight_GIA GirdleHeight_GIA \
UpAngleLevel0 DC_UserParameterAngle1 DC_UserParameterAngle1 \
DownAngleLevel0 DC_UserParameterAngle5 DC_UserParameterAngle5 \
DownAngle DC_UserParameterAngle4 DC_UserParameterAngle4 \
DownAngleLevel1 DC_UserParameterAngle6 DC_UserParameterAngle6 \
GirdleRatio GirdleRatio GirdleRatio \
Culet DC_UserParameterPercent DC_UserParameterPercent \
CuletOffsetX DC_UserParameterPercent1 DC_UserParameterPercent1 \
OP_1 DC_UserParameterPercent3 DC_UserParameterPercent3 \
OP_2 DC_UserParameterPercent4 DC_UserParameterPercent4 \
```

```
OP_3 DC_UserParameterPercent5 DC_UserParameterPercent5 \
OP_4 DC_UserParameterAngle3 DC_UserParameterAngle3 \
OP_5 DC_UserParameterAngle7 DC_UserParameterAngle7 \
OP_6 DC_UserParameterPercent2 DC_UserParameterPercent2 \
```

Step 6. Final appraiser file

- Call **Diamond Appraiser parameters** again.

- The following information is displayed in Display panel:

Swim parameter 't' (Table): Table -> Table. Current value 0.602.
Swim parameter 'h' (GirdleHeight): GirdleHeight_GIA -> GirdleHeight_GIA. Current value 0.030.
Swim parameter 'b' (UpAngle): DC_UserParameterAngle -> DC_UserParameterAngle. Current value 0.838.
Swim parameter 'a' (DownAngle): DC_UserParameterAngle4 -> DC_UserParameterAngle4. Current value 0.942.
Swim parameter 'Rt' (GirdleRatio): GirdleRatio -> GirdleRatio. Current value 1.300.
Swim parameter 'B0' (UpAngleLevel0): DC_UserParameterAngle1 -> DC_UserParameterAngle1. Current value 0.501.
Swim parameter 'A0' (DownAngleLevel0): DC_UserParameterAngle5 -> DC_UserParameterAngle5. Current value 0.768.
Swim parameter 'A1' (DownAngleLevel1): DC_UserParameterAngle6 -> DC_UserParameterAngle6. Current value 0.646.
Swim parameter 'Cu' (Culet): DC_UserParameterPercent -> DC_UserParameterPercent. Current value 0.300.
Swim parameter 'Cx' (CuletOffsetX): DC_UserParameterPercent1 -> DC_UserParameterPercent1. Current value 0.215.
Swim parameter '11' (OP_1): DC_UserParameterPercent3 -> DC_UserParameterPercent3. Current value 0.270.
Swim parameter '12' (OP_2): DC_UserParameterPercent4 -> DC_UserParameterPercent4. Current value 0.400.
Swim parameter '13' (OP_3): DC_UserParameterPercent5 -> DC_UserParameterPercent5. Current value 0.830.
Swim parameter '14' (OP_4): DC_UserParameterAngle3 -> DC_UserParameterAngle3. Current value 0.785.
Swim parameter '15' (OP_5): DC_UserParameterAngle7 -> DC_UserParameterAngle7. Current value 0.559.
Swim parameter '16' (OP_6): DC_UserParameterPercent2 -> DC_UserParameterPercent2. Current value 0.380.

- Now all 16 parameters are defined for optimization.

- See final appraiser file: ***Test_appraiser_EmeraldP32C24_correct.txt***

7   Example. Creating appraiser for cutting Oval_wBT.P24C32

This example illustrates creating of appraiser for cutting **Oval_wBT.P24C32** from *OvalWBT_P24C32.dll*

Step 1.   Getting started

- Create some base file for appraiser (see section **3. Appraiser structure**)

- Make it accessible in program (see section **2. Load appraiser to program**)

- Run program

- Create cutting Oval_wBT.P24C32 (see section **6 Example. Correcting wrong created appraiser for Emerald.P32C24 / Step 2**)

- Call Diamond Parameter List (see section **5.3. Set up a correspondence of parameters names in program and parameters names in appraiser file**). The following information will be displayed

```
Parameter p_1 (D)
Parameter DC_UserParameterMetric (Sec. diameter)
Parameter GirdleRatio (Rt)
Parameter DC_UserParameterMetric1 (Total Height mm)
Parameter DC_UserParameterPercent3 (Total Height %)
Parameter DC_UserParameterMetric2 (TotalHeightFix %)
Parameter DC_UserParameterPercent4 (TotalHeightFix mm)
Parameter UpHeight_GIA (hc)
Parameter UpAngle_uHFix (b)
Parameter DownHeight_GIA_giFix (hp)
Parameter DownAngle (a)
Parameter Table (t)
Parameter GirdleHeight_GIA (gi)
Parameter DC_UserParameterPercent2 (Square deviation)
Parameter DC_UserParameterPercent (Lower facets depth)
Parameter DC_UserParameterPercent5 (Star facets)
Parameter DC_UserParameterPercent1 (Square table)
Parameter DC_CuletX (Cx)
Parameter DC_CuletY (Cy)
```

Step 2.   Remove parameters witch can not be optimized

Analyze the Diamond parameter list:

```
Parameter p_1 (D)
```
Diameter is not parameter. Remove it.

```
Parameter DC_UserParameterMetric (Sec. diameter)
```
Parameter DC_UserParameterMetric is Sec. Diameter. Remove it. This is only information. Parameter **Ratio (Rt)** is used for optimization instead of Sec. Diameter.

Parameter DC_UserParameterMetric1 (Total Height mm)

Parameter DC_UserParameterMetric1 is Total Height mm. Remove it. This is only information. Parameter **Total height %** is used for optimization instead of Total Height mm.

Next two parameters are two ways for change Total Height.

Parameter DC_UserParameterMetric2 (TotalHeightFix %)
Parameter DC_UserParameterPercent4 (TotalHeightFix mm)

Suppose we have following ranges of values for following parameters.

```
GirdleRatio (Rt)                               1.320  1.400

DC_UserParameterPercent3 (Total Height %)       58.0   64.5

UpHeight_GIA (hc)                                  8     15

UpAngle_uHFix (b)                                 32   35.5

DownAngle (a)                                  39.96  41.87

Table (t)                                       54.5   63.5

GirdleHeight_GIA (gi)                            1.5    4.5

DC_UserParameterPercent2 (Square deviation)       -5     -3

DC_UserParameterPercent (Lower facets depth)      80     82

DC_UserParameterPercent5 (Star facets)            58     65
```

These parameters will be used in the section [cut] for appraiser.

The other parameters will not be used in [cut] section because we haven't information about their range of values:

DC_UserParameterPercent1 (Square table)
DownHeight_GIA_giFix (hp)
DC_CuletX (Cx)
DC_CuletY (Cy)

Step 3. Creating section [cut]

Create section **[cut]** for cutting without section **[optimize]** and section **[fixedcut]**:

```
[cut]

Name:       Oval_wBT

Quality:    EX

Parameters:  GirdleRatio (.) \

     DC_UserParameterPercent3 (%) \

     UpHeight_GIA (%) \

     UpAngle_uHFix (°) \

     DownAngle (°) \

     Table (%) \
```

```
        GirdleHeight_GIA (%) \

        DC_UserParameterPercent2 (%) \

        DC_UserParameterPercent (%)  \

        DC_UserParameterPercent5 (%) \

    Optimize:


    Mass: 0.00  100000 \
    1.320 1.400 58.0  64.5  8     15     32 35.5    39.96 41.87 54.5  63.5
          1.5   4.5   -5    -3    80     82   58     65


    [end]
```

Note! *Starting procedure of creation of appraiser is not described here – name of appraiser, serial number and so on - find it* in the section **3. Appraiser structure.**

Step 4. Creating section [fixedcut]

Run program. Create cutting **Oval_wBT.P24C32** and check **Full panel of parameters** for this oval. Starting diamond is not in parameter group – quality is out of range - sign "-" is in the field **Quality** that is why we have to add in **[fixedcut]** section of appraiser out of range parameters shown in Full panel step by step:

```
[fixedcut]
Name:  Oval_wBT
Parameters: GirdleRatio (.)   UpHeight_GIA (%)   UpAngle_uHFix (°)
DC_UserParameterPercent2 (%)  DC_UserParameterPercent5 (%)
Start: [cutname] 1.32  13    33    -4    60
[end]
```

Add parameters until getting **EX** quality for cutting. (For details see section 5. Checking and correcting section [fixedcut])

   Note. Restart program every time after changing appraiser.

Step 5. Creating subsection [optimize] of section [cut]

1. Call **Diamond Appraiser parameters** (see section **4.1 Get information about appraiser parameters**)

Swim parameter 't' (Table): Table -> Table. Current value 0.600.
Get parameter GirdleHeight is not defined in Appraiser (for 'h' (GirdleHeight) optimization).
Get parameter UpAngle is not defined in Appraiser (for 'b' (UpAngle) optimization).
Swim parameter 'a' (DownAngle): DownAngle -> DownAngle. Current value 0.698.
Swim parameter 'Rt' (GirdleRatio): GirdleRatio -> GirdleRatio. Current value 1.320.
Get parameter UpAngleLevel0 is not defined in Appraiser (for 'B0' (UpAngleLevel0) optimization).
Get parameter DownAngleLevel0 is not defined in Appraiser (for 'A0' (DownAngleLevel0) optimization).
Get parameter DownAngleLevel1 is not defined in Appraiser (for 'A1' (DownAngleLevel1) optimization).

Get parameter Culet is not defined in Appraiser (for 'Cu' (Culet) optimization).
Get parameter CuletOffsetX is not defined in Appraiser (for 'Cx' (CuletOffsetX) optimization).
Get parameter OP_1 is not defined in Appraiser (for '11' (OP_1) optimization).
Get parameter OP_2 is not defined in Appraiser (for '12' (OP_2) optimization).
Get parameter OP_3 is not defined in Appraiser (for '13' (OP_3) optimization).
Get parameter OP_4 is not defined in Appraiser (for '14' (OP_4) optimization).
Get parameter OP_5 is not defined in Appraiser (for '15' (OP_5) optimization).
Get parameter OP_6 is not defined in Appraiser (for '16' (OP_6) optimization).

2. By default there are 3 working parameters from 10 parameters assigned in appraiser. Redefine in **optimize** section:

```
GirdleHeight to GirdleHeight_GIA

UpAngle to UpAngle_uHFix

UpAngleLevel0 to UpHeight_GIA

OP_1 to DC_UserParameterPercent2

OP_2 to DC_UserParameterPercent

OP_3 to DC_UserParameterPercent5

OP_4 to DC_UserParameterPercent3


Optimize: \
GirdleHeight GirdleHeight_GIA GirdleHeight_GIA \
UpAngle  UpAngle_uHFix UpAngle_uHFix \
UpAngleLevel0 UpHeight_GIA UpHeight_GIA \
OP_1 DC_UserParameterPercent2 DC_UserParameterPercent2 \
OP_2 DC_UserParameterPercent  DC_UserParameterPercent  \
OP_3 DC_UserParameterPercent5 DC_UserParameterPercent5 \
OP_4 DC_UserParameterPercent3 DC_UserParameterPercent3 \
```

3. Restart program, call **Diamond Appraiser parameters** and check that all 9 parameters are available for optimization.

Step 6. The final appraiser:

```
[cut]
Name:       Oval_wBT
Quality:    EX
Parameters: GirdleRatio (.) \
DC_UserParameterPercent3 (%) \
UpHeight_GIA (%) \
UpAngle_uHFix (°) \
DownAngle (°) \
Table (%) \
GirdleHeight_GIA (%) \
```

```
DC_UserParameterPercent2 (%) \
DC_UserParameterPercent (%)  \
DC_UserParameterPercent5 (%) \


Optimize: \
GirdleHeight GirdleHeight_GIA GirdleHeight_GIA \
UpAngle  UpAngle_uHFix UpAngle_uHFix \
UpAngleLevel0 UpHeight_GIA UpHeight_GIA \
OP_1 DC_UserParameterPercent2 DC_UserParameterPercent2 \
OP_2 DC_UserParameterPercent  DC_UserParameterPercent  \
OP_3 DC_UserParameterPercent5 DC_UserParameterPercent5 \
OP_4 DC_UserParameterPercent3 DC_UserParameterPercent3 \


Mass: 0.00  100000 \
1.320 1.400 58.0  64.5  8     15    32    35.5  39.96 41.87 54.5  63.5
      1.5   4.5   -5    -3    80    82    58    65


[end]


[fixedcut]
Name:  Oval_wBT
Parameters:  GirdleRatio  (.)    UpHeight_GIA  (%)    UpAngle_uHFix  (°)
DC_UserParameterPercent2 (%)  DC_UserParameterPercent5 (%)
Start: [cutname] 1.32   13    33    -4     60
[end]
```