Diablo EZReporter 4.0

Results Database Module

Copyright 2020, Diablo Analytical, Inc.
DIABLO ANALYTICAL, INC. SOFTWARE LICENSE AGREEMENT AND LIMITED WARRANTY

LICENSE AGREEMENT

IMPORTANT: Please carefully read the License Agreement below before installing the software. The right to use this software product is sold only on the condition that the customer agrees to the following license. INSTALLING THE SOFTWARE INDICATES YOUR ACCEPTANCE OF THESE TERMS AND CONDITIONS.

In return for payment of the one-time license fee for this software product, Customer receives from Diablo Analytical, Inc. (Diablo) a license to use the product subject to the following terms and conditions:

Use: The product may be used one computer or workstation. A separate license agreement and fee is required for each additional computer or workstation on which the product is used. Customer may not reverse assemble, decompile, or modify the software.

Copies: The software product may not be duplicated or copied except for archive purposes, program error verification, or to replace defective media, and all copies made must bear the copyright notices contained in the original.

Ownership: Purchase of this license does not transfer any right, title or interest in the software product to Customer except as specifically set forth in this License Agreement. Customer is on notice that the software product is protected under copyright laws.

Transfer of Rights: This license and the software product may be transferred to a third party, with prior written consent from Diablo, provided the third party agrees to all the terms of this License Agreement and the Customer does not retain any copies of the software product.

Sublicensing and Distribution: Customer may not sublicense the software or distribute copies of the software to the public in physical media or by telecommunication without the prior written consent of Diablo.

Termination: Diablo reserves the right to terminate this license upon breach. In event of termination, Customer will either return all copies of the product to Diablo, or with Diablo's prior consent, provide Diablo with a certificate of destruction of all copies.

Updates and Upgrades: Customer agrees that the software does not include updates and upgrades which may be available from Diablo in a separate support agreement.

Export Restrictions: Customer agrees not to export or re-export the software or any copy in violation of the U.S. Export Administration regulations or other applicable regulation.

LIMITED WARRANTY

Limited Warranty: Diablo warrants that the original disks are free from defects for 90 days from the date of delivery of the software.

No Other Warranties: To the maximum extent permitted by applicable law, Diablo expressly disclaims any warranty for the software product. The software product and any related documentation is provided "as is" without warranty of any kind, either express or implied, including, without limitation, the implied warranties or merchantability of fitness for a particular purpose. The entire risk arising out of use or performance of the software product remains with the customer.

Limitation of Liability and Customer Remedies: Diablo's entire liability and the customer's exclusive remedy under this license agreement shall be, at Diablo's option, either (a) return of the price paid for the software or (b) replacement of the software that does not meet Diablo's Limited Warranty and which is returned to Diablo with a copy of the customer's receipt. Any replacement software will be warranted for the remainder of the original warranty period, or 30 days, whichever is longer. These remedies are not available outside the United States of America.
No Liability for Consequential Damages: To the maximum extent permitted by applicable law, in no event shall Diablo be liable for any damages whatsoever (including, without limitation, damages for loss of business profit, business interruption, loss of business information, or any other pecuniary loss) arising out of the use or inability to use the product, even if Diablo has been advised of the possibility of such damages. Because some states/jurisdictions do not allow the exclusion or limitation of liability for consequential or incidental damages, the above limitation may not apply to you.
Contents

Introduction

Results Database Module Overview ................................................. 1
Results Database Features .......................................................... 2
Results Database File .................................................................... 2
Software Licensing and Activation .................................................. 2
Licensing ....................................................................................... 4
Technical Support ......................................................................... 4

Configuring the Results Database .................................................. 5

Configuration Editor Overview ........................................................ 5
Results Database Status .................................................................. 6
Results Database Processing .......................................................... 6
Results Database Import Options .................................................... 9

The Results Database ................................................................... 15

The Results Database Window ........................................................ 15
Sample Results Summary Table ...................................................... 16
Selected Sample Detail Tables ......................................................... 16
Using the Results Database .............................................................. 17
Finding Results in the Database ....................................................... 18
Selecting and Deselecting Results ................................................... 19
Generating a Report for a Selected Result ........................................ 19
Batch Processing Multiple Results .................................................. 20
Deleting Results from the Database ............................................... 21
Adding Results to the Database ...................................................... 21
Comparing Results ....................................................................... 22
Exporting Results from the Database .............................................. 22
Importing Results into the Database ............................................... 23
Upgrading the Results Database Format ......................................... 24
Results Database Tables ................................................................. 26
Sample Results Table .................................................................... 26
Sample Information Table ............................................................... 27
Calculated Results Table ............................................................... 27
Component Results Table ............................................................. 27
NGA Results Table ....................................................................... 29
Extended Fractions Table ............................................................... 31

Index ......................................................................................... 33
Introduction

Results Database Module Overview

The Results Database is an optional add-on module for the Diablo EZReporter software that allows you to capture results and save them in a local SQLite database.
Results Database Features
A few of the features of the Results Database are listed below.

- Sample results including sample information, individual component results, and calculated natural gas analysis (NGA) and Natural Gas Liquids (NGL) results can be added to a local results database.
- Sample results in the database can be searched and batch reprocessed (for printing reports, creating history plots, or exporting results).
- Statistics including average, standard deviation, %RSD, maximum, and minimum are calculated and displayed when performing sample name searches.
- A results comparison window can be used to compare the component normalized mole% values between two samples using either the GPA 2261 repeatability or reproducibility limits (or any other limits entered by the user).
- Each result in the database has a “Status” field that can be set to “None”, “Accept”, or “Reject” status. The status field can then be used in searches or batch reprocessing to filter which results are selected.
- You can enable a result confirmation screen that displays the current monitored parameters and their alarms and allows you to “Accept”, “Reject” or “Cancel” the result before it is added to the database. In addition, you can enter a result comment from a pre-filled list of comment strings.

Results Database File
The results database is saved to the file,

   C:\Users\Public\Documents\Diablo EZReporter\Results.db

This filename is fixed and cannot be changed. If you move the file from this location, a new, blank results database will be created.

Software Licensing and Activation
When you run EZReporter 4.0 for the first time, you will have a trial license that allows you to use and evaluate all of the program modules, including the Results Database, for up to 30 days. The program is fully-functional during the trial period. In order to continue using the software after the 30-day trial period, you must purchase a license for the desired program modules, and then activate the software.

Important: Once the software has been activated, only the modules that were included in the license you purchased will be available.

To activate your license, click the “Activate License” button on the License Status window that is displayed when you start the software or when you click the menu option, “Help > License Status…” Enter your Serial Activation Code (not serial number), and click “Apply”. If your computer is connected to the Internet, your license will be activated automatically.
Refer to the EZReporter Software License Guide for more information about licensing and activation.

Note: An Internet connection is only required when applying an activation code or deactivating the software. No Internet connection is required during normal operation of the software.
The License Status window for an activated EZReporter Results Database Edition License.

**Licensing**

The following tables list the different “Editions” of EZReporter 4.0 that can be licensed, and the modules that will be available for each of those editions. New in EZReporter 4.0 is a Data Analysis Edition. The Natural Gas Liquids (NGL) functionality is located in a separate module than the Natural Gas Analysis module and requires a separate license. The Natural Gas Liquids edition includes both the NGA and NGL module licenses.

<table>
<thead>
<tr>
<th>Software Edition</th>
<th>Modules</th>
<th></th>
<th></th>
<th>Processing</th>
<th>Instruments*</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Standard</td>
<td>NGA</td>
<td>NGL</td>
<td>RDB</td>
<td></td>
</tr>
<tr>
<td>Data Analysis</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td>0</td>
</tr>
<tr>
<td>Standard</td>
<td>X</td>
<td></td>
<td></td>
<td>X</td>
<td>1</td>
</tr>
<tr>
<td>Results Database (RDB)</td>
<td>X</td>
<td>X</td>
<td></td>
<td>X</td>
<td>1</td>
</tr>
<tr>
<td>Natural Gas Analysis (NGA)</td>
<td>X</td>
<td>X</td>
<td></td>
<td>X</td>
<td>1</td>
</tr>
<tr>
<td>Natural Gas Liquids (NGL)</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>1</td>
</tr>
<tr>
<td>NGA RDB</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>1</td>
</tr>
<tr>
<td>NGL RDB</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>1</td>
</tr>
</tbody>
</table>

*Contact Diablo Analytical for information on multi-instrument licenses.

**Technical Support**

EZReporter 4.0 is developed and supported by Diablo Analytical, Inc.

*Diablo Analytical, Inc.*

5141 Lone Tree Way
Antioch, CA 94531
Phone: (925) 755-1005
Fax: (925) 755-1007

**Electronic Mail**

Use our dedicated support address for e-mail based technical support:
support@diabloanalytical.com

**World Wide Web**

Access online support resources on our web site:
http://www.diabloanalytical.com/support.htm
Configuring the Results Database

Configuration Editor Overview

All of the settings that are used to define the calculations, customize the report format, and determine what actions are performed when processing results are defined within the configuration file. The configuration editor is used to modify those settings. The configuration editor can be opened either by clicking the “Edit Configuration” toolbar button or the “Tools > Edit Configuration…” menu option.

Important: Only the settings that pertain to Results Database module are documented in this section. Please refer to the EZReporter 4.0 Reference Manual for information on the other program functions and settings.
Results Database Status

The Results Database Status panel is used to perform database maintenance and provides information about the current status of the database.

**Database Status**

- **Results Database Status**: Displays the license status for the results database.
- **Database Version**: Displays the current version of the database.
- **Schema Version**: an internal version resource that is incremented whenever the database schema is modified.
- **Number of results in current database**: The number of results that are currently present in the results database.
- **Database file size**: The physical size in KB of the ‘Results.db’ database file on disk.

**Database Maintenance**

The buttons in the “Database Maintenance” section of the Results Database configuration window are used to perform the maintenance activities listed below.

- **Cleanup**: Compresses and re-indexes the database file. This is most often used to reclaim space (and reduce the database file size) taken up by deleted database result records.
- **Backup**: Backs up the current results database. The format of the backup file is “Results-YYYYMMDD-HHMMSS.db”, where “YYYYMMDD” is the current date, and “HHMMSS” is the current time. Backup files are saved in the EZReporter backup folder:
  
  C:\Users\Public\Documents\Diablo EZReporter\Backup

- **Check Integrity**: Performs a check of the integrity of the database. It looks for out-of-order records, missing pages, malformed records, and corrupt indices.

**Results Database Processing**

The Results Database Processing panels allows you to configure EZReporter to save results to the database automatically when processing.
Save automatically processed results

If you check the “Save automatically processed results…” check box, then results that are processed from one of the supported data systems will be added automatically to the results database.

Automatic Processing Control

These settings define how results will be saved to the Results Database when processing results automatically.

Save all results: All results will be exported according to the export control settings and export template. If you check the option, “Set Accept/Reject status to alarm status”, then if there are one or more failed alarms in the Monitored Parameter table, the result status will be set to “Reject”. Otherwise the result status will be set to “Accept”.

Save only results with no failed alarms: If alarms are enabled for any of the parameters in the Monitored Parameters table, then only results with no failed alarms will be exported.

Display confirmation window before saving result: A confirmation window will be displayed allowing you to review the monitored parameters and alarms. Clicking the “Accept” or “Reject” buttons will cause the result to be added to the database with the corresponding result status. Clicking “Cancel” will cancel adding the result to the database. Any text that is entered into the Result Comments box will be saved in the “ResultComments” database field for that result, and will also be available in the [ResultComment] variable.

Check the option, “Display only if there are failed alarms” and the confirmation window will only be displayed if there are one or more failed parameter alarms. Check the option, “Require result comment if there are failed alarms”,...
and the user must enter a result comment in order to accept the result.

Note: You can have a set of pre-defined result comments loaded automatically into the Result Comments list box by adding those comments to a file named,

C:\Users\Public\Documents\Diablo EZReporter\ResultComments.dat.

If this file is found, each line of text present in the file will be added as a separate item in the list box.

**Add components with raw amount of 0 to the database**

If this option is checked, then the results for components with a raw amount of 0 will always be added to the results database. If this option is unchecked, then these component results will not be added, which reduces the size of the database file, especially for configurations with a large number of components that aren’t always detected in every sample (natural gas liquids extended fractions, for example).

**Important:** The functions used to calculate the history statistics (average, standard deviation, max, min, etc.) do not include null values in their calculations. So, if you disable this function, then component results with a raw amount of 0 will not be included in the calculation of the statistics.

**Display Sample History**

Check “Display Sample History” if you would like to display the sample history in the Sample Results Summary Table when automatically processing results. The history is retrieved from the Results Database based on the Sample Name of the result. You can limit the number of results that are displayed in the sample history, select results from the last ‘n’ days, weeks, months, or years from now, and you can filter the results further based on the results status.
Results Database Import Options

The Results Database Import Options allow you to specify a text file that contains data to be imported into the Results Database along with an Import Template that instructs EZReporter on how to map the data in the text file to EZReporter results.

See “Importing Results into the Database” on page 23 for information on how to use the import text file and import template described below to import results into the database.

Import Text File

You can specify a default import text file by clicking the file browse button.

Import Template

The Results Database Import Template defines how the fields/columns in the comma- or tab-delimited import text file are mapped into the results database.

The Import Template file is a simple text file in which “import variables” (special character strings enclosed in curly braces) are used to define how to handle the data in the import text file.

You must first define whether the import text file is tab or comma delimited by placing the following tag in the template file:

{delimiter,comma} or {delimiter,tab}

If you don’t include the delimiter tag, then the import routine assumes a comma-delimited file.

Importing Results into the Database

You can use the import text file and import template to add new results to the database. To use the import text file and import template:

1. Open the Results Database Import Options page.
2. Specify a default import text file by clicking the file browse button.
3. Define how the fields/columns in the import text file are mapped into the results database by creating an import template.
4. Use the import routine to import the results into the database.

See the documentation for more information on how to use the import text file and import template.
Next, you add a `StartColumns` tag to the template file. Each row after the `StartColumns` tag corresponds to a sequential column in the import file.

The subsequent field/column tag strings correspond exactly to the database field names listed below. For fields in the “ComponentResults” Table, use the field name followed by the component name separated by a comma.

As a simple example, consider the following small data set:

<table>
<thead>
<tr>
<th></th>
<th>Sample Name</th>
<th>Gross Heating Value</th>
<th>Methane%</th>
<th>Ethane%</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>CAL001</td>
<td>1086.2</td>
<td>89.415</td>
<td>4.233</td>
</tr>
<tr>
<td>2</td>
<td>CAL002</td>
<td>1087.1</td>
<td>89.891</td>
<td>4.562</td>
</tr>
<tr>
<td>3</td>
<td>CAL003</td>
<td>1082.3</td>
<td>88.753</td>
<td>4.102</td>
</tr>
</tbody>
</table>

The import text file for this data set would look like the following using commas as the delimiter:

```
CAL001, 1086.2, 89.415, 4.233
CAL002, 1087.1, 89.891, 4.562
CAL003, 1082.3, 88.753, 4.102
```

The corresponding Import Template would be:

```
{delimiter,comma}
{StartColumns}
{SampleName}
{GrossHeatingValueRealDry}
{CompNormAmount, Methane}
{CompNormAmount, Ethane}
```

**Important:** Make sure that the component names you use in the import template are consistent with the component names you use with your configuration files.

If you want to skip a column in the import text file for some reason, simply insert a line in the template file at that location that contains no tag. For example, if you don’t want to import the Gross Heating Value, then the Import Template File would be:

```
{delimiter,comma}
{StartColumns}
{SampleName}
{CompNormAmount, Methane}
{CompNormAmount, Ethane}
```

**Comment Text**

The import routine ignores any text not contained within the curly braces. This means you can add comments to the Import Template to help you keep track of things. For example it is useful to label the column to which each row corresponds (sometimes columns are identified by numbers and sometimes by letters, so it is convenient to include both – 1/A corresponds to the first column, etc.)

```
{delimiter,comma}
{StartColumns}
1/A {SampleName}
```

10 • Configuring the Results Database Diablo EZReporter 4.0 Results Database Module
2/B
3/C {CompNormAmount, Methane}
4/D {CompNormAmount, Ethane}
5/E
6/F

etc.

In this example, columns 2, 5, and 6 would be skipped during import.

**SkipLines**

If the import text file contains “header lines” that don’t contain data at the beginning of the file then you can use the {SkipLines, N} tag to skip over those lines before starting to import data. For example, if the import text file looks like this:

```
Sample Name,Gross Heating Value,Methane%,Ethane%
CAL001, 1086.2, 89.415, 4.233
CAL002, 1087.1, 89.891, 4.562
CAL003, 1082.3, 88.753, 4.102
```

You would add a SkipLines tag that skips 1 line somewhere above {StartColumns} tag:

```
{SkipLines,1}
{delimiter,comma}
{StartColumns}
1/A {SampleName}
2/B {GrossHeatingValueRealDry}
3/C {CompNormAmount, Methane}
4/D {CompNormAmount, Ethane}
```

**Inserting Import Variables**

To insert an import variable into the template, place the cursor in the location where you want the variable to be inserted, right click, and then select, “Insert Import Variable…”
The “Insert Variable” window allows you to choose from lists of import variables. For component variables, you can also select the desired component from a list (based on the currently loaded configuration file).
**Loading and Saving Import Templates**

The import template is saved as part of the current configuration file. However, if you want to save your template to a stand-alone file for purposes of sharing or backup, you can click the “Save As” button. Import template filenames have a file extension of “.BTI”. Similarly, if you want to load a saved import template into your configuration, click the “Load” button.

**Important**: If you load an import template from disk, any existing template will be replaced.
The Results Database

The Results Database Window

If the Results Database has been licensed or is still in trial mode, then the Results Database tab will be visible on the main software window. The Results Database window is divided into two main sections: the “Sample Results Summary” table and the “Selected Sample Detail” table.

When you click on a result in the Sample Results Summary table, the detailed results for that sample are displayed in the “Selected Sample Detail” tables below.
Sample Results Summary Table

The Sample Results Summary Table displays the results that have been selected using the “Find results” dialog or when the sample history is displayed during processing. The summary table takes one of two forms. When results from multiple samples with different sample names are displayed, then only summary sample information is displayed in the table. When results with a single sample name are displayed, then the summary table displays summary statistics (average, standard deviation, %RSD, maximum, minimum, and range) for a number of component and NGA results to allow you to evaluate the result history for that particular sample.

Multiple Sample Summary

When results from multiple samples with different sample names are displayed, then only summary sample information is displayed in the table.

<table>
<thead>
<tr>
<th>Sample Results Summary (1757 Results Displayed):</th>
</tr>
</thead>
<tbody>
<tr>
<td>Select</td>
</tr>
<tr>
<td>--------</td>
</tr>
<tr>
<td>[ ]</td>
</tr>
<tr>
<td>[ ]</td>
</tr>
<tr>
<td>[ ]</td>
</tr>
<tr>
<td>[ ]</td>
</tr>
</tbody>
</table>

Single Sample Summary

When results with a single sample name are displayed, then the summary table displays summary statistics (average, standard deviation, %RSD, maximum, minimum, and range) for a number of component and NGA results to allow you to evaluate the result history for that particular sample.

<table>
<thead>
<tr>
<th>Sample Results Summary (30 Results Displayed):</th>
</tr>
</thead>
<tbody>
<tr>
<td>Select</td>
</tr>
<tr>
<td>--------</td>
</tr>
<tr>
<td>[ ]</td>
</tr>
<tr>
<td>[ ]</td>
</tr>
<tr>
<td>[ ]</td>
</tr>
<tr>
<td>[ ]</td>
</tr>
<tr>
<td>[ ]</td>
</tr>
<tr>
<td>[ ]</td>
</tr>
<tr>
<td>[ ]</td>
</tr>
<tr>
<td>[ ]</td>
</tr>
</tbody>
</table>

Selected Sample Detail Tables

When you click on a result in the Sample Summary table, detailed results for that sample are displayed in the three Selected Sample Detail tables.

Sample Information Detail

This table contains the sample information fields for the selected sample.
Component Results Detail

This table contains the component results for the selected sample.

NGA Results Detail

This table contains the natural gas analysis (NGA) and natural gas liquids (NGL) results for the selected sample. This table is only displayed when the software is in trial mode or if you have licensed the NGA or NGA module after you activate the software.

Using the Results Database

From the main Results Database window you can find results in the database, reprocess and report results from the database, batch process multiple results, delete results, compare results, and import results from a text file.
Finding Results in the Database

Click the “Find Results” button to select the results to display in the Sample Summary table.

Retrieve All Results

This option will retrieve all results from the database and display them in the Sample Results Summary table. The number of results currently in the database is displayed in parenthesis. You can limit the number of results displayed in the sample history by entering a value > 0 in the “Limit sample history” field.

Find by Sample Name

The Sample Name list box is pre-filled with all of the sample names that are present in the current database. You can either select a sample name from the list, or type a sample name into the list box.

A sample name search returns all samples in the database that have the specified sample name. The Sample Results Summary table will be configured to compare the results of these samples by calculating and displaying summary statistics.

You can limit the number of results displayed in the sample history by entering a value > 0 in the “Limit sample history” field.

Results ID

Enter the database results ID for the specific result you want to find.
Filters
A number of filters can be enabled to refine your search. Each of the following filters acts on the results retrieved using the options above.

Results Status Filter
You can filter the results that are returned from the search based on setting of the results status field for each result (“None”, “Accept”, or “Reject”).

Export Status Filter
You can filter the results that are returned from the search based on setting of the Export Status field for each result. The export status field is changed from 0 (result not exported) to 1 (result exported) when the result has been saved to an export file using the batch export feature of the results database.

Date Filter
You can filter the results that are returned from the search based on either the injection date or the report date (which is usually the date the result was added to the results database). You can specify both a starting and ending date range. You can also set a date range of the last/previous number of days, weeks, months, or years from now by entering the number and selecting the period. Click “Apply”, and the start and end dates will be calculated for you.

Selecting and Deselecting Results
Important: The database menus and dialogs differentiate between “selecting” a result and “highlighting” a result. “Selecting” a result means that you have checked the “Select” checkbox in the first column of the line containing the result. “Highlighting” a result means that you have clicked on a particular line in the result table, causing it to be highlighted.

Generating a Report for a Selected Result
To generate a report for a result in the database, simply highlight it by clicking on the row containing the result in the Sample Results Summary table, and then click the “Report” button at the bottom of the Window. The Report Options window will be displayed.
You can choose to report either the currently highlighted sample, or report the average results of all the samples you have checked. The non-numeric sample information is taken from the first checked result, while the numeric results are the average of all selected results. If the results are average results, a warning is added to the errors & warnings table of the report, listing the results IDs of the results included in the average.

**Important**: The database functions that calculate the average values do not include null values in the calculation. Null results are empty fields in the database and are different than results with values of 0, which are included in the calculation of the averages. Null values can be used to save space in the database – see “Add components with raw amount of 0 to the database” on page 8. However, be aware of this behavior when evaluating averages.

If the “Recalculate Results” checkbox is left unchecked, then the results will be displayed as they were calculated for the original report. If you check “Recalculate Results”, you will then have the option of using the currently loaded configuration file settings, or the original configuration file settings (if available) for the calculations.

The selected results are then transferred to the main “Sample Results” window, and you can treat the report just as if had been loaded from disk or processed from a chromatography data system.

**Batch Processing Multiple Results**

Multiple results can be batch processed by first selecting the desired results in the Sample Results Summary table (the check box in the first column must be checked). Next click the “Batch” button to display the Batch Process Results dialog box.
Batch Process Selected results

You can choose to batch print, batch export, and/or plot the selected results by checking the appropriate checkbox. During batch processing each selected result is transferred back to the main Sample Results window and then printed, exported, and/or plotted in the parameter history window.

Processing Options

The current configuration settings, including the export settings and parameter history settings will be used to process the results unless you check the “Load original configuration if available” checkbox. If you enable this option, the original configuration file used to generate each result will be loaded and used if it is available.

If you check the “Reprocess results” check box, then all of the natural gas analysis results will be recalculated using the specified configuration file. If this box is left unchecked, then the results will be printed/exported as originally reported. You would enable this option if you wanted to reprocess results after making changes to physical property values, etc.

If you have selected the “Export selected results” action, then you can choose to enable the “Use export file name from first result for all” option. This option is useful if your export file name is based on the current data and time, but you want all the results exported to the same file. If this option is unchecked, then results may be exported to different files as the current date and time changes during the batch export.

Deleting Results from the Database

Select the result(s) that you want to delete by checking the “Select” checkbox for each result and then press the “Delete” button. In order to reduce the size of the database file after deleting records, you must also click the “Cleanup” button in the database maintenance options of the configuration editor. See “Database Maintenance” on page 6.

Adding Results to the Database

There are three ways to add results to the Results Database:

1. Enable the option to add automatically processed results from the chromatography data system to the database. See “Save automatically processed results” on page 7.

2. With the desired result displayed in the main EZReporter Sample Results window, select the “Save to Results Database” option of the main “File” menu.
3. Import results from a comma- or tab-delimited text file or another results database file. See “Importing Results into the Database” on page 23.

### Comparing Results

**Important**: this functionality requires a license for the Results Database Module (to compare two samples) and either the NGA or NGL Module.

EZReporter supports GPA 2261 repeatability and reproducibility calculations to compare either two results with each other, or to compare a result with a check standard or reference sample.

The GPA 2261 standard is designed for standard natural gas analysis and only defines repeatability and reproducibility criteria for a limited number of components. According to GPA 2261, “Repeatability is the expected precision within a laboratory using the same equipment and same analyst. Repeatability is the difference in analyzed values between two sequential runs. Reproducibility is the expected precision when the same method is used by different laboratories using different equipment and different analysts. Reproducibility is the difference between two analyzed values.”

Please refer to the NGA and NGL Module reference manual for more information on comparing results.

### Exporting Results from the Database

You can export results from your database to another results database file allowing you to transfer your results to another database.

First, you must find and select (check) the results you want to export in the Results Database Sample Results Summary table. Once you have checked the results you want to export, right-click the Sample Results Summary table and choose "Export Selected Results to DB" from the pop-up menu. You will be prompted for a database file name.
Importing Results into the Database

You can import results from a comma- or tab-delimited text file or another results database file using the “Import Results” option.

**Import from Text File**

The source text file must contain one result per line with each value separated by a comma or tab. An Import Template is used to specify the order of the columns/fields in the import text file and how those fields/columns map into the database. See “Results Database Import Options” on page 9 for information on setting up an Import Template.

**Import from Results Database File**

To import from another database file, you must click the file type list box at the lower right of the select import file window and choose the "Database Files (*.db)". The database to be imported must be the same version as the current database. If it is an older version, an upgrade will be attempted before importing.
**Importing Results**

When you click the “Import” button, the following window is displayed. You can select the import text or database file by clicking the browse button.

![Import To Results Database](image)

**Import Options**

You can choose to append the imported results to the current database, or replace all of the current results with the imported results. You can also choose to set the Export Status for each result to “Already Exported” if you don’t want the imported results to be re-exported.

**Importing**

When you click the import button, the import progress is displayed in the progress bar at the bottom of the window. Press the “Cancel” button to cancel the import.

**Important**: Canceling an Import does not delete results that have already been added to the database. If you want to delete those records that have already been added, you must use the “Delete” option.

---

**Upgrading the Results Database Format**

As new features and capabilities are added to the Results Database in future versions of the software, the database format (schema) may change. Fortunately, the software has been designed to detect when you are using an older version of the database format and will allow you to upgrade the database to the latest format automatically without affecting your data.

After installing a new version of the software, the following message will be displayed when the software is started if it detects that you are using an older version of the database format.
**Note:** the current version of the Results Database you are using is displayed in the “Results Database Status” table in the Results Database tab of the configuration Editor. See “Database Status” on page 6.

After clicking the “OK” button, the following “Upgrade Results Database” window will be displayed. Press the “Upgrade” button to upgrade your existing database to the latest version. Note that your current database will be backed up automatically so that it can be restored if any errors are detected during the upgrade process.

You can also choose to “Cancel” the database upgrade. However, the results database will be disabled if you choose to do so. You will be prompted to upgrade the database each time you start EZReporter until the database has been upgraded successfully.

The progress of the upgrade is logged to the window. Note that some of the upgrade steps may take several seconds to complete, particularly if your existing database is very large.
At the end of the upgrade process a message will be displayed indicating whether or not the upgrade was successful. The upgrade log is saved automatically to the file:

C:\Users\Public\Documents\Diablo EZReporter\results_database_upgrade_log.txt

If the database was not upgraded successfully, then the results database will be disabled until the problem can be found and fixed. Please contact Diablo Analytical support in this case to assist you in determining the problem. You will be asked to send your results database file and the upgrade log file to support.

Results Database Tables

The following tables and fields are present in the Results Database. These are the fields in version 4.02.00 of the database.

Sample Results Table

CREATE TABLE SampleResults {
    ResultsID integer NOT NULL,
    SampleName text COLLATE NOCASE,
    InjectionDate text_datetime,
    ReportDate text_datetime,
    SampleComments text COLLATE NOCASE,
    OperatorName text COLLATE NOCASE,
   MethodName text COLLATE NOCASE,
    BTUDataFile text COLLATE NOCASE,
    SourceDataFile text COLLATE NOCASE,
    InstrumentName text COLLATE NOCASE,
    ConfigurationFile text COLLATE NOCASE,
}
ResultStatus integer DEFAULT 0,
TotalRawAmount float(50),
ExportStatus integer DEFAULT 0,
TotalNormAmount float(50),
ResultComment text COLLATE NOCASE,
EZReporterVersion text,
NGADataSourceName text,
TotalPPMVolume float(50),
/* Keys */
PRIMARY KEY (ResultsID)
);

CREATE INDEX SampleResults_Index01
ON SampleResults
(SampleName COLLATE NOCASE);

Sample Information Table
CREATE TABLE SampleInformation (  
  ResultsID integer NOT NULL,  
  SampleInfoField integer NOT NULL,  
  SampleInfoCaption text COLLATE NOCASE,  
  SampleInfoValue text COLLATE NOCASE,  
  /* Keys */  
  PRIMARY KEY (ResultsID, SampleInfoField)
);

Calculated Results Table
CREATE TABLE CalculatedResults (  
  ResultsID integer NOT NULL,  
  FieldNumber integer NOT NULL,  
  CalculatedResultCaption text COLLATE NOCASE,  
  CalculatedResultValue float(50),  
  /* Keys */  
  PRIMARY KEY (ResultsID, FieldNumber)
);

Component Results Table
CREATE TABLE ComponentResults (  
  ResultsID integer NOT NULL,  
  ComponentName text NOT NULL COLLATE NOCASE,  
  ComponentNumber integer,  
  PeakRT float(50),  
  PeakArea float(50),  
  RawAmount float(50),  
  NormAmount float(50),  
  HeatingValue float(50),  
  HeatingValueSat float(50),  
  HeatingValueWet float(50),  
  RelativeDensity float(50),  
  RelativeDensitySat float(50),  
  RelativeDensityWet float(50),  
  Compressibility float(50),  
  CompressibilitySat float(50),  
  CompressibilityWet float(50),
GPM float(50),
GPMSat float(50),
GPMWet float(50),
MolecularWeightDry float(50),
MolecularWeightSat float(50),
MolecularWeightWet float(50),
NormMolePctDry float(50),
NormMolePctSat float(50),
NormMolePctWet float(50),
NormWeightPctDry float(50),
NormWeightPctSat float(50),
NormWeightPctWet float(50),
NetHeatingValueDry float(50),
NetHeatingValueSat float(50),
NetHeatingValueWet float(50),
GrossHeatingValueLBMDry float(50),
GrossHeatingValueLBMSat float(50),
GrossHeatingValueLBMWet float(50),
GrossHeatingValueLBMliq float(50),
NetHeatingValueLBMDry float(50),
NetHeatingValueLBMSat float(50),
NetHeatingValueLBMWet float(50),
NetHeatingValueLBMliq float(50),
GrossDensityIdealDry float(50),
GrossDensityIdealSat float(50),
GrossDensityIdealWet float(50),
GrossDensityIdealDry float(50),
GrossDensityIdealSat float(50),
GrossDensityIdealWet float(50),
NormVolumePctDry float(50),
GrossHeatingValueGalDry float(50),
GrossHeatingValueGalDry2 float(50),
GrossHeatingValueGalliq float(50),
VaporPressureDry float(50),
RelativeLiquidDensityDry float(50),
AbsoluteLiquidDensityDry float(50),
GrossHeatingValueMolDry float(50),
GrossHeatingValueMolSat float(50),
GrossHeatingValueMolWet float(50),
NetHeatingValueMolDry float(50),
NetHeatingValueMolSat float(50),
NetHeatingValueMolWet float(50),
NetHeatingValueGalDry float(50),
NetHeatingValueGalSat float(50),
NetHeatingValueGalWet float(50),
D2598VaporPressure float(50),
D2598RelativeDensity float(50),
ISO8973VaporPressure1 float(50),
ISO8973VaporPressure2 float(50),
ISO8973VaporPressure3 float(50),
ISO8973VaporPressure4 float(50),
NormPctExt float(50),
WeightPctExt float(50),
VolumePctExt float(50),
GrossHeatingValueExt float(50),
GrossHeatingValueLBMExt float(50),
GrossHeatingValueGalExt float(50),
MolWeightExt float(50),
VaporPressureExt float(50),
RelLiquidDensityExt float(50),
AbsLiquidDensityExt float(50),
Diablo EZReporter 4.0 Results Database Module

The Results Database

```sql
CREATE TABLE ResultsDatabase
(
    VolumeCuFtGal float(50),
    NormMolePctFlow float(50),
    NormWeightPctFlow float(50),
    HeatingValueFlow float(50),
    NetHeatingValueFlow float(50),
    GrossHeatingValueLBMFlow float(50),
    NetHeatingValueLBMFlow float(50),
    RelativeDensityFlow float(50),
    GasDensityIdealFlow float(50),
    CompressibilityFlow float(50),
    GPMFlow float(50),
    MolecularWeightFlow float(50),
    PPMVolume float(50),
    PPMWeight float(50),
    Channel text COLLATE NOCASE,
    ResponseFactor float(50),
    UserTag text COLLATE NOCASE,
    UserConstant float(50),
    /* Keys */
    PRIMARY KEY (ResultsID, ComponentName)
);
```

**NGA Results Table**

```sql
CREATE TABLE NGAResults
(
    ResultsID integer NOT NULL PRIMARY KEY,
    MeterNumber varchar(50),
    PressureBase float(50),
    SumHeatingValue float(50),
    SumRelativeDensity float(50),
    SumRelativeDensitySat float(50),
    SumRelativeDensityWet float(50),
    SumCompressibility float(50),
    SumCompressibilitySat float(50),
    SumCompressibilityWet float(50),
    SumGPM float(50),
    TotalGPMSat float(50),
    TotalGPMWet float(50),
    WaterMoleFractionSat float(50),
    WaterMoleFractionWet float(50),
    GrossHeatingValueIdealDry float(50),
    GrossHeatingValueIdealSat float(50),
    GrossHeatingValueIdealWet float(50),
    GrossHeatingValueRealDry float(50),
    GrossHeatingValueRealSat float(50),
    GrossHeatingValueRealWet float(50),
    RealRelativeDensityDry float(50),
    RealRelativeDensitySat float(50),
    RealRelativeDensityWet float(50),
    GasCompressibilityDry float(50),
    GasCompressibilitySat float(50),
    GasCompressibilityWet float(50),
    FlowingTemperature float(50),
    FlowingPressure float(50),
    WobbeIndexDry float(50),
    WobbeIndexSat float(50),
    WobbeIndexWet float(50),
);```
TotalMolecularWeightDry float(50),
TotalMolecularWeightSat float(50),
TotalMolecularWeightWet float(50),
TotalRawMolePctDry float(50),
TotalNormMolePctDry float(50),
TotalNormMolePctSat float(50),
TotalNormMolePctWet float(50),
TotalNormWeightPctDry float(50),
TotalNormWeightPctSat float(50),
TotalNormWeightPctWet float(50),
NetHeatingValueIdealDry float(50),
NetHeatingValueIdealSat float(50),
NetHeatingValueIdealWet float(50),
NetHeatingValueRealDry float(50),
NetHeatingValueRealSat float(50),
NetHeatingValueRealWet float(50),
GrossHeatingValueLBMDry float(50),
GrossHeatingValueLBMSat float(50),
GrossHeatingValueLBMWet float(50),
GrossHeatingValueLBMLiq float(50),
NetHeatingValueLBMDry float(50),
NetHeatingValueLBMSat float(50),
NetHeatingValueLBMWet float(50),
NetHeatingValueLBMLiq float(50),
GasDensityIdealDry float(50),
GasDensityIdealSat float(50),
GasDensityIdealWet float(50),
GasDensityRealDry float(50),
GasDensityRealSat float(50),
GasDensityRealWet float(50),
TotalNormVolumePctDry float(50),
GrossHeatingValueGalDry float(50),
GrossHeatingValueGalDry2 float(50),
GrossHeatingValueGalLiq float(50),
TotalVaporPressureDry float(50),
TotalVaporPressureGaugeDry float(50),
TotalRelativeLiquidDensityDry float(50),
TotalAbsoluteLiquidDensityDry float(50),
TotalAbsoluteLiquidDensityDry2 float(50),
TotalAbsoluteLiquidDensityBBL float(50),
TotalAbsoluteLiquidDensityBBL2 float(50),
TotalVolumeCuFtGal float(50),
APIGravity float(50),
TemperatureBase float(50),
GrossHeatingValueMolDry float(50),
GrossHeatingValueMolSat float(50),
GrossHeatingValueMolWet float(50),
NetHeatingValueMolDry float(50),
NetHeatingValueMolSat float(50),
NetHeatingValueMolWet float(50),
NetHeatingValueGalDry float(50),
NetHeatingValueGalLiq float(50),
D2598VaporPressure float(50),
D2598VaporPressurePSIA float(50),
D2598RelativeDensity float(50),
ISO8973VaporPressure1Absolute float(50),
ISO8973VaporPressure2Absolute float(50),
### Extended Fractions Table

```sql
CREATE TABLE ExtendedFractions (  
ResultsID integer NOT NULL,  
FractionNumber integer NOT NULL,  
FractionName text NOT NULL COLLATE NOCASE,  
TotalMolePctExt float(50),  
TotalWeightPctExt float(50),  
TotalVolumePctExt float(50),

);```

ISO8973VaporPressure3Absolute float(50),
ISO8973VaporPressure4Absolute float(50),
ISO8973VaporPressure1Gauge float(50),
ISO8973VaporPressure2Gauge float(50),
ISO8973VaporPressure3Gauge float(50),
ISO8973VaporPressure4Gauge float(50),
ISO8973Density float(50),
TotalRawAmountExt float(50),
TotalVaporPressureExt float(50),
TotalVaporPressureGaugeExt float(50),
TotalRelLiquidDensityExt float(50),
TotalAbsLiquidDensityExt float(50),
TotalAbsLiquidDensityExt2 float(50),
TotalAbsLiquidDensityBBLExt float(50),
TotalAbsLiquidDensityBBLExt2 float(50),
TotalVolumeCuFtGalExt float(50),
APIGravityExt float(50),
TotalRelGasDensityIdealExt float(50),
TotalAbsGasDensityIdealExt float(50),
TotalMolecularWeightExt float(50),
GrossHeatingValueExt float(50),
GrossHeatingValueLBMExt float(50),
GrossHeatingValueGalExt float(50),
BridgeFactor float(50),
TotalMolePctExt float(50),
TotalWeightPctExt float(50),
TotalVolumePctExt float(50),
TotalNormMolePctFlow float(50),
TotalNormWeightPctFlow float(50),
SumCompressibilityFlow float(50),
WaterMoleFractionFlow float(50),
GrossHeatingValueIdealFlow float(50),
GrossHeatingValueRealFlow float(50),
GrossHeatingValueLBMFlow float(50),
NetHeatingValueIdealFlow float(50),
NetHeatingValueRealFlow float(50),
NetHeatingValueLBMFlow float(50),
SumRelativeDensityFlow float(50),
RealRelativeDensityFlow float(50),
GasDensityIdealFlow float(50),
GasDensityRealFlow float(50),
GasCompressibilityFlow float(50),
TotalGPMFlow float(50),
WobbeIndexFlow float(50),
TotalMolecularWeightFlow float(50),
TotalPPMWeight float(50),
TotalVolumeCuFtGalExt float(50),
APIGravityExt float(50),
TotalRelGasDensityIdealExt float(50),
TotalAbsGasDensityIdealExt float(50),
TotalMolecularWeightExt float(50),
GrossHeatingValueExt float(50),
GrossHeatingValueLBMExt float(50),
GrossHeatingValueGalExt float(50),
BridgeFactor float(50),
TotalMolePctExt float(50),
TotalWeightPctExt float(50),
TotalVolumePctExt float(50),
TotalNormMolePctFlow float(50),
TotalNormWeightPctFlow float(50),
SumCompressibilityFlow float(50),
WaterMoleFractionFlow float(50),
GrossHeatingValueIdealFlow float(50),
GrossHeatingValueRealFlow float(50),
GrossHeatingValueLBMFlow float(50),
NetHeatingValueIdealFlow float(50),
NetHeatingValueRealFlow float(50),
NetHeatingValueLBMFlow float(50),
SumRelativeDensityFlow float(50),
RealRelativeDensityFlow float(50),
GasDensityIdealFlow float(50),
GasDensityRealFlow float(50),
GasCompressibilityFlow float(50),
TotalGPMFlow float(50),
WobbeIndexFlow float(50),
TotalMolecularWeightFlow float(50),
TotalPPMWeight float(50),
```sql
TOTALMOLECULARWEIGHTEXT float(50),
TOTALABSLIQUIDDENSITYEXT float(50),
TOTALABSLIQUIDDENSITYBBLEXT float(50),
TOTALRELLIQUIDDENSITYEXT float(50),
TOTALRELGASDENSITYEXT float(50),
GROSSHEATINGVALUEEXT float(50),
GROSSHEATINGVALUEGALLEXT float(50),
GROSSHEATINGVALUELBMEEXT float(50),
TOTALVAPORPRESSUREEXT float(50),
TOTALVAPORPRESSUREGAUGEXT float(50),
TOTALVOLUMECUFTGALLEXT float(50),
APIGRAVITYEXT float(50),
/* Keys */
PRIMARY KEY (RESULTSID, FRACTIONNUMBER)
```

Index

A
Add components with raw amount of 0 to the database 8
Adding Results to the Database 21
Automatic Processing Control 7

B
Batch Process Selected results 21
Batch Processing Multiple Results 20

C
Calculated Results Table 27
Comment Text 10
Comparing Results 22
Component Results Detail 17
Component Results Table 27
Configuration Editor Overview 5
Configuring the Results Database 5

D
Database Maintenance 6
Database Status 6
Date Filter 19
Deleting Results from the Database 21
Display Sample History 8

E
Export Status Filter 19
Exporting Results from the Database 22
Extended Fractions Table 31

F
Filters 19
Find by Sample Name 18
Finding Results in the Database 18

G
Generating a Report for a Selected Result 19

I
Import from Results Database File 23
Import from Text File 23
Import Options 24
Import Template 9
Import Text File 9
Importing 24
Importing Results 24
Importing Results into the Database 23
Inserting Import Variables 11
Introduction 1

L
Licensing 4
Loading and Saving Import Templates 13

M
Multiple Sample Summary 16

N
NGA Results Detail 17
NGA Results Table 29

P
Processing Options 21

R
Results Database Features 2
Results Database File 2
Results Database Import Options 9
Results Database Module Overview 1
Results Database Processing 6
Results Database Status 6
Results Database Tables 26
Results ID 18
Results Status Filter 19
Retrieve All Results 18

S
Sample Information Detail 16
Sample Information Table 27
Sample Results Summary Table 16
Sample Results Table 26
Save automatically processed results 7
Selected Sample Detail Tables 16
Selecting and Deselecting Results 19
Single Sample Summary 16
SkipLines 11
Software Licensing and Activation 2

T
Technical Support 4
The Results Database 15
The Results Database Window 15

U
Upgrading the Results Database Format 24
Using the Results Database 17