

MSC-LIMS™ *Insights*

The source for news and tips of interest to users of MSC-LIMS,
an affordable laboratory information management system for small labs.

Issue No. 29

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Welcome

Welcome to **MSC-LIMS Insights**.

This newsletter will help current MSC-LIMS users get the most out of their software, and will complement the product literature and demo that prospective users can find on our web site at www.msc-lims.com.



Join our mailing list for more information. Sign up at www.msc-lims.com/lims/maillist.html.

This newsletter is for and about MSC-LIMS users. We welcome your comments, and your suggestions for topics you would like to see addressed in upcoming issues. Please send your thoughts to newsletter@msc-lims.com. 

Disabling or Altering High, Low, and BDL Warnings

When reporting analysis results, MSC-LIMS will automatically append the characters "H" or "L" (for high and low) adjacent to the analysis' result value if the value is greater than or less than the analysis' warning limit. The characters "BDL" are reported when the result value is below the analysis' detection limit.

These warning characters can be modified or disabled entirely by adding a setting to the Options tab of the System Configuration screen. Following are the available options:

Option	Value	Data
gbFormatAnalysisResult	0 to disable -1 to enable	Not used
gsFormatAnalysisResultBDL	Not used	The text to insert in place of the result value when the value is below the detection limit (default = "BDL")
gsFormatAnalysisResultHigh	Not used	The text to append to the result value (default = " H")
gsFormatAnalysisResultLow	Not used	The text to append to the result value (default = " L")

Simply add the appropriate option name and value or data to a new record on the Options tab of the System Configuration screen then exit

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From the Developer

Periodically, we receive a copy of a user's LimsData database to use when testing one of their custom Excel templates or for other troubleshooting purposes. After I receive a LimsData file I first compact the database before using it in any testing. A successful compact assures the integrity of the database. I then compare the size of the database before and after compacting. Frequently, there is a substantial reduction in the file's size, which suggests the database has not been compacted in some time. Occasionally, after discussion, I learn the database is rarely if ever compacted.

We recommend compacting your LimsData database weekly if you can or at least monthly. In addition to verifying the integrity of the database, regular compacting will improve MSC-LIMS' performance. Compacting the database creates a new database file from the existing file and in the process rewrites all the database tables in primary key order, recreates all table indexes, and updates database statistics, all of which improve overall database performance.

With upcoming MSC-LIMS version 5.0 and its SQL Server backend database, maintenance tasks will differ. Until then, if you haven't already done so, we encourage you to implement routine LimsData compacting.



Rick Collard is the founder of Mountain States Consulting, LLC and the principal developer of the MSC-LIMS software. You can reach Rick by email at rcollard@msc-lims.com.

MSC-LIMS and SQL Server

As we announced in previous issues of this newsletter we are currently developing MSC-LIMS version 5.0 for SQL Server. MSC-LIMS 5.0 replaces the earlier Access back end database (LimsData) with a SQL Server database for improved reliability, scalability, and security. Below are answers to more questions to help you understand and prepare for the new version.

How will my existing data be preserved?

All data from your current production LimsData database can be migrated to a SQL Server database. Data from archive databases can also be migrated to a separate SQL Server database and that data will remain read-only.

Multiple steps are required to migrate an MSC-LIMS version 4.1 Access database to SQL Server. First, a full copy of Microsoft Access is used to remove security on the database and run a script to prepare the database. Next, Microsoft's SQL Server Migration Assistant for Access converts and copies the data from the Access database to a new SQL Server database. Finally, another script is run within the SQL Server Management Studio to update the new database and add all the components required by the new version of MSC-LIMS. Detailed documentation will be provided to migrate the data. However, we will also provide a

data migration service for those who prefer to have MSC transfer their data.

Can I have multiple SQL Server databases?

Yes. Just like you can in current versions of MSC-LIMS you can maintain multiple LIMS SQL Server databases for distinct departments, locations, or companies. The File menu's Open LIMS Database option will allow you to switch between databases just as you currently can. And the File menu's list of recent databases makes switching databases simple.

Will archiving still be available?

MSC-LIMS Archiving will no longer be available. The main purpose of Archiving was to move older sample data from the production database to an archive database to improve performance of the production database. SQL Server databases do not suffer from performance degradation common with large Access databases so most users will never have a need to archive. However, an entire database is easily copied in SQL Server so some may use this approach to creating their own archives.

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How will database backup and maintenance change?

Database backup and other maintenance tasks will be performed within SQL Server Management Studio. The updated MSC-LIMS User's Guide will have instructions for these tasks.

What is Windows Authentication?

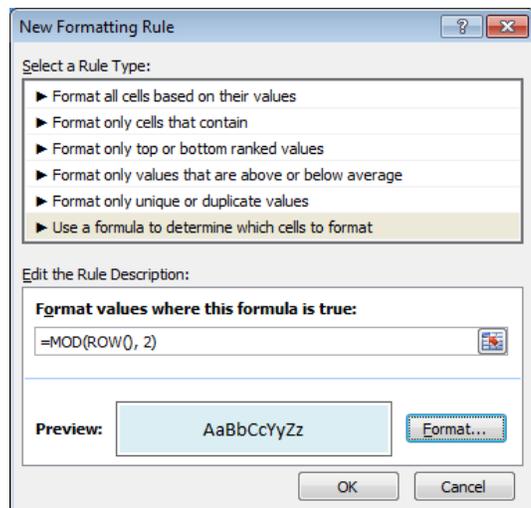
Windows authentication is the default integrated security model in SQL Server and is tightly integrated with Windows. With Windows authentication, specific Windows user accounts are trusted to log in to SQL Server so authorized users can start MSC-LIMS without any additional login. The LIMS administrator(s) will still control who has access to MSC-LIMS, but this is managed by adding existing Windows user accounts to the Users setup screen. 

Use Conditional Formatting in Excel Templates

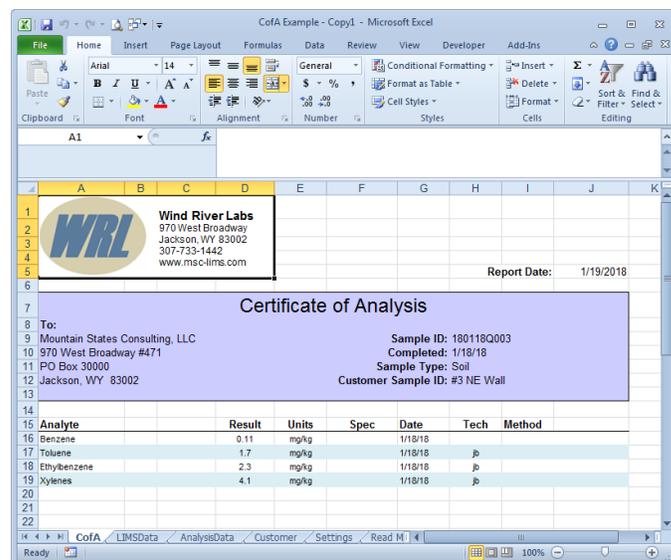
Excel's cell formatting options such as number, currency, decimal places, alignment, and font determine how a cell's value is displayed. Conditional formatting is more flexible allowing specific formatting to apply only under certain conditions. Following are three ways you can employ conditional formatting in your Excel templates.

1. Shade Alternate Rows

Adding shading to alternate rows of long or wide lists of data makes such lists easier to view. To give it a try, first make a copy of the CofA Example export template then open the new copy. Select the OneAnalysisResults named range from the Name box (i.e. the pick list just above the intersection of row and column labels). On the Home tab in the Styles group select Conditional Formatting then click New Rule. Select 'Use a formula to determine which cells to format', enter the formula `=MOD(ROW(), 2)` then click the Format button and add a light fill color.



The template's macro copies the OneAnalysisResults named range once for each analysis exported to the template and the formula in our new conditional formatting rule will be true only on odd numbered rows. Save and close the template then export a Sample Summary report and you will now have alternate shaded rows.



2. Suppress Repeating Values

When a list includes repeating values such as the sample ID in a list of the sample's analyses, we can suppress the repeating values with a conditional format using a white font on a white background. To follow this example, begin by making a copy of the Final Report Example export template then open the new copy.

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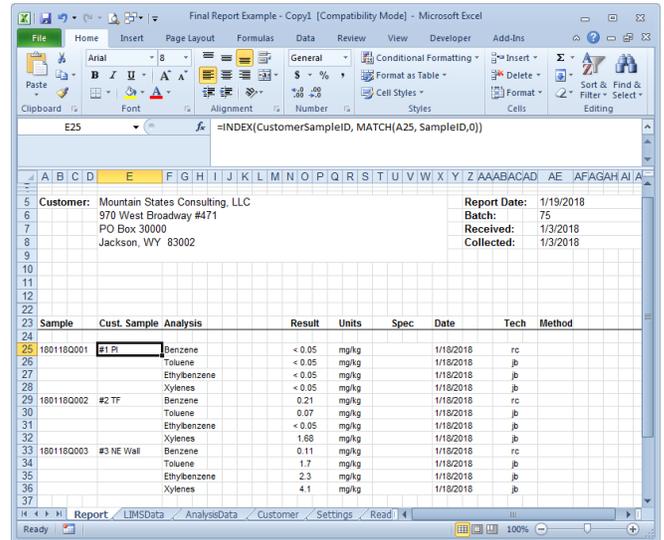
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Increase the width of column E then enter the following formula in cell E25:

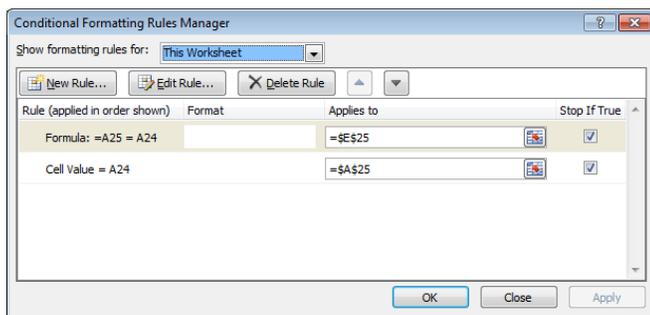
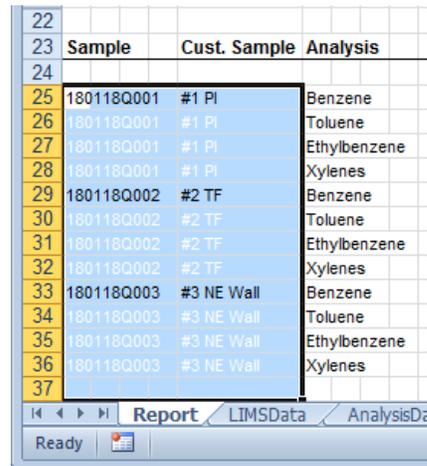
```
=INDEX(CustomerSampleID, MATCH(A25, SampleID,0))
```

The formula above uses the sample ID in column A to look up the sample's CustomerSampleID field value. You can replace CustomerSampleID in the formula with another valid sample characteristic field name such as Location.Name, SampleType.Name, Description, CollectedDate, etc. Note that cell E25 falls within row 25's OneAnalysisResults named range that the template's macro copies for each analysis exported so our new formula will automatically be copied.

With cell E25 still selected, choose Conditional Formatting on the Home tab then click New Rule. Select 'Use a formula to determine which cells to format', enter the formula =A25 = A24 then click the Format button and change the font color from Automatic to white. Click OK to save the new rule. Now select Conditional Formatting on the Home tab again, select Manage Rules then select This Worksheet from the pick list to view all conditional formatting rules in this worksheet. The screen below shows that both the new rule in cell E25 and an existing rule in cell A25 use a white font on a white background to "hide" repeating values. Use this Rules Manager screen to add, edit, and delete conditional formatting rules.



Select all the cells with repeating values and you can see that each cell actually has a value and only formatting makes it appear empty.



Save and close the template then export a multiple-sample Sample Summary report and verify that any repeating values are now suppressed.

3. Highlight Values Out of Range

You can also use conditional formatting to bring attention to values that are out of range or specification. The screen below shows example project analysis specifications. We can use conditional formatting to easily identify any results that are above the specified warning maximum.

Analysis	Units	Result Max	Warn Max	Target	Warn Min	Result Min
Benzene	mg/kg	1E+99	0.12		0	0
Toluene	mg/kg	1E+99	2.9		0	0
Ethylbenzene	mg/kg	1E+99	3.3		0	0
Xylenes	mg/kg	1E+99	3.1		0	0

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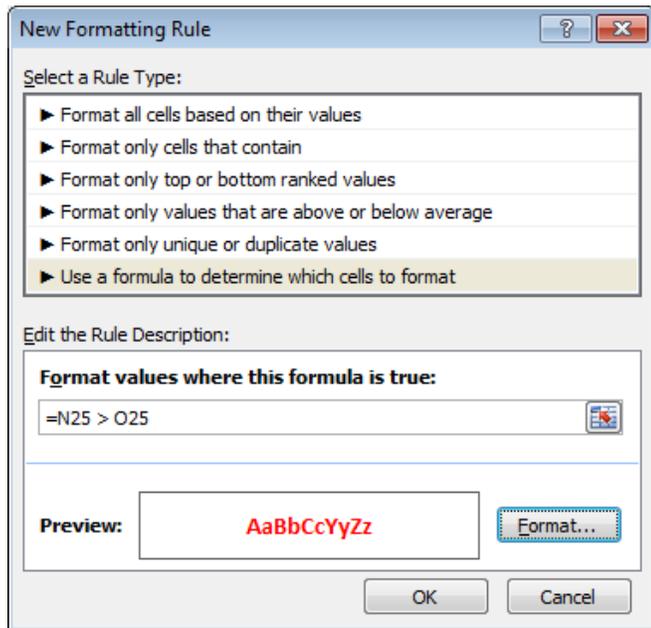
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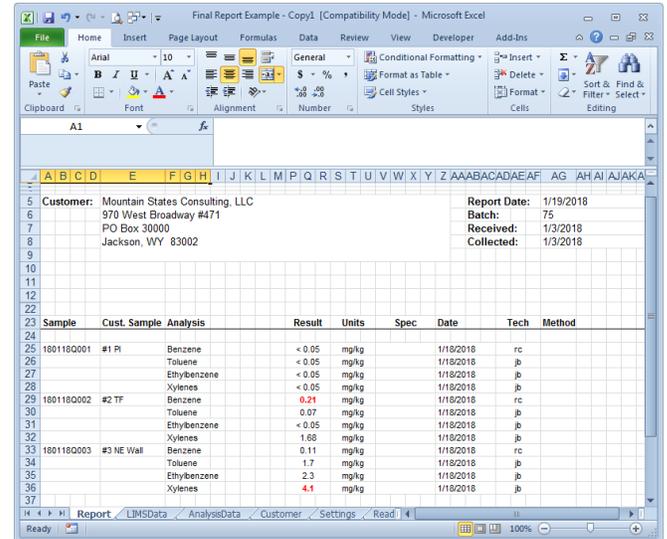
To follow this example, open the same template used in the previous example. At column P insert two new columns then copy the following formula from cell P25 to cells N25 and O25:

```
=IF(ISBLANK(INDEX(AnalysisResultFormatted, ROW() - ROW(OneAnalysisResults) + 1)), "", INDEX(AnalysisResultFormatted, ROW() - ROW(OneAnalysisResults) + 1))
```

In cell N25's formula, change the two occurrences of 'AnalysisResultFormatted' to 'AnalysisResult'. In cell O25's formula, change the two occurrences of 'AnalysisResultFormatted' to 'WarningMax'. Now select cell P25, choose Conditional Formatting on the Home tab then click New Rule. Select 'Use a formula to determine which cells to format', enter the formula =N25 > O25 then click the Format button and change the font to bold with color red. Click OK to save the new rule.



Hide columns N and O, save and close the template then export a multiple-sample Sample Summary report and any result values out of range will appear in red.



Explore Excel's conditional formatting and discover more ways to highlight and visualize data on your reports. 

Notes from Technical Support

Printing More Than 10 Sample Labels

A user recently noted:

We just tried to print 11 labels for a sample but got an error message that only 1-10 labels are allowed.

The label Quantity field on both the Sample Container Labels and Select or Build Label Script screens has a maximum of 10 to prevent inadvertently printing too many labels. To print more than 10 labels you can perform multiple prints to achieve the required quantity. However, you can also use a Label Script to bypass the Quantity field's limit. You can either build and save a label script using the Label Scripts screen on the Setup menu or you can dynamically build the script. If you let the build screen add Quantity=1 to the script you can change the quantity to any number. The label script to print 11 Default style labels is:

Style=Default, Quantity=11 

Invoiced vs. Un-invoiced Samples

A user recently asked:

I am creating an excel file with all un-invoiced samples to import into QuickBooks. The first I did this, I did not allow the LIMS to update the invoice number. I went in manually and put an invoice number in for all of the samples listed on the Excel file. This did not work as the next time I ran the report I got all of the same samples in addition to the new samples that needed to be invoiced. Can you help me out, please?

When you enable either the Invoiced or Uninvoiced options on the Additional tab of the query controls, the LIMS adds a query criterion using the sample's Invoice Date field to find the requested samples. You can see the criterion by clicking the SQL tab of the query controls after clicking the Query button. With Invoiced enabled the LIMS adds an `InvoiceDate IS NOT NULL` criterion and with Uninvoiced enabled an `InvoiceDate IS NULL` criterion is used.

To fix the problem, use the Sample Login screen in edit mode and add an Invoice Date to the samples you already invoiced and they will now be invoiced rather than un-invoiced samples. 

How to Report Re-analysis Data

A user recently submitted this question:

Occasionally, a client asks us to repeat an analysis of analyte for various reasons. We don't want to overwrite the original data. That would be illegal in our industry. Ideally, we'd like to keep the same MSC-LIMS sample ID and report the re-analysis data on the same page as the original data.

First, I added a duplicate LIMS analyte but it was confusing because it wasn't clearly identified as a re-analysis (the only differentiating field was the analysis date because the results between the original and second analysis were similar). I created an analyte named "Copper, reanalysis" which works but I don't want to create a couple hundred analytes that would be rarely used. Do you have any suggestions how to handle this situation?

A simple solution is to flag the duplicate analysis' result as a re-analysis. First, use the Result Types setup screen on the Setup menu and add a new result type with a symbol of your choice to identify a result as a re-analysis. Next, add a description for the symbol to your Excel final report template(s). Now whenever you repeat an analysis, add the duplicate analysis to the sample then select the re-analysis result type when entering the result value for the duplicate analysis. 

Database Size Warning

After seeing a warning at startup, a user asked:

We just had an error flash on the screen when logging in that the database had reached its limit. It appears to still be working and I will compact the database again this evening. Is there an upper limit to the database?

It is unlikely the message was about your LimsData database, which has a 2GB size limit. The message was probably about the size of LimsCode. The LimsCode size warning is a remnant from one of the earliest versions of MSC-LIMS, back when PCs were much slower where an unnecessarily large LimsCode could affect system performance. To eliminate the

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warning, open the Workstation Configuration screen on each LIMS workstation and make sure the "Compact LimsCode at exit" and "Delete temporary records at

exit" options are enabled then increase the compact startup warning threshold to 30 MB. That should suppress the message. 

Disabling or Altering High, Low, and BDL Warnings

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and restart the LIMS for the option to take effect. Note that you can use the Inactivate check box to inactivate an option you want to leave in the screen for

future reference. See file [MSC-LIMS SysCfq Options.doc](#) in the [File Library](#) for more information and a complete list of available options. 

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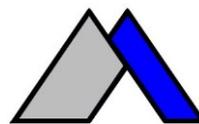
This section of *MSC-LIMS Insights* is devoted to current users of MSC-LIMS. Here we briefly introduce only the most recent additions to MSC-LIMS.com Customers Only pages. Use your login name and password to log on to the Customers Only section of our website.

MSC-LIMS Insights Archive

All past issues of MSC-LIMS Insights are [archived](#) on our web site and accessible to current MSC-LIMS users. You will find valuable tips, techniques, and technical articles to help you get the most out of your MSC-LIMS implementation. Use your browser's search function to locate topics in the article index. 

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