

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. 34

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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. ▲

MSC-LIMS Celebrates 25th Anniversary

This year marks the 25th anniversary of MSC-LIMS. The new milestone highlights our decades-long commitment to delivering quality software and exceptional customer service. We continue to thrive by delivering proven and affordable solutions for labs of all types.

In the Beginning

When a small Wyoming municipal water and wastewater lab approached MSC for a custom software solution for their lab, the foundation for MSC-LIMS was set in place. The software's initial success in 1995 encouraged continued development and MSC-LIMS was soon available commercially for other labs. You can read more about MSC-LIMS' origins in a 1996 Water Online article titled "[A Small Lab Develops a Laboratory Information Management System](#)".

MSC-LIMS Today

Continuous suggestions and feedback from customers helped MSC-LIMS evolve into a viable solution suitable for a wide range of laboratories. Today, MSC-LIMS is central to operations in labs throughout the country and around the world, in water/wastewater, commercial environmental, microbiology, food testing, material testing, petrochemical, process control, and research laboratories. ▲

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MSC-LIMS™ *Insights*

From the Developer

Since we released MSC-LIMS version 5.0 in late 2018, many new and existing users have implemented the system and welcomed its SQL Server back end database. While SQL Server databases are inherently more reliable, scalable, and secure than an Access database, maintenance and backup tasks require more planning and consideration. In this issue of *MSC-LIMS Insights*, we show how to automate your database backups if you are using the free SQL Server Express edition. In future issues we will address other database maintenance tasks.

Earlier this year we marked the 25th anniversary of MSC-LIMS. We could not have reached that milestone and MSC-LIMS would not be the product it is today if not for the many comments and suggestions received from our customers. I remain grateful for your contributions.



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.

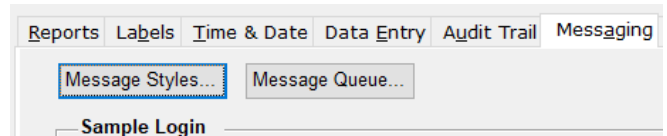
MSC-LIMS Messaging Improvements in Version 5.0

MSC-LIMS Messaging is an MSC-LIMS add-on component used to automatically send an email or fax with sample information when a sample or sample batch is logged or completed.

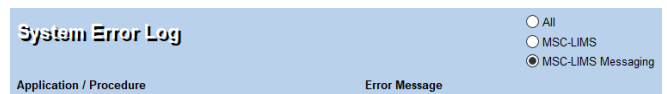
MSC-LIMS workstations add sample and batch login and completion messages to Messaging's queue depending on configuration parameters. Messaging periodically reads the queue to find messages to send. Message styles determine the type of message sent, which may include an attached file in a number of different formats including Excel and PDF. Prior to MSC-LIMS 5.0, Messaging used a separate Microsoft Access database for its message queue, message style definitions, and error log. And screens to view and manage this data were only available within Messaging, which was often running on an unattended workstation.


In MSC-LIMS version 5.0, the message queue, message style definitions, and error log are now

located within MSC-LIMS' SQL Server database making access to the data available within the LIMS.



Use the new Message Queue and Message Styles buttons on the Messaging tab of the System Configuration screen to view and manage Messaging's queue and style definitions. Use the new Messaging option on the Error Log screen on the Admin menu to view Messaging's system error log.

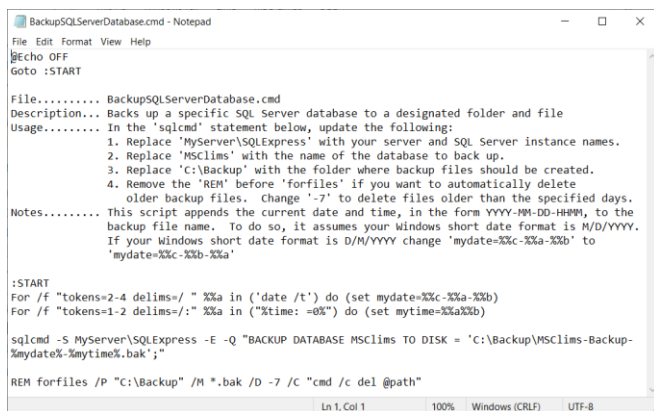


These simple improvements make managing your MSC-LIMS Messaging implementation even easier in MSC-LIMS version 5.0. 

Automated Backups with SQL Server Express

If you are running MSC-LIMS version 5.0 you are probably aware that it uses a SQL Server backend database. If you work for a larger organization, you may have an IT department that manages your SQL Server installation and takes care of all database maintenance and backup operations. Your IT department's database administrators likely use SQL Server Agent, which is included with licensed versions of SQL Server, to automate database backups and other maintenance tasks.

If you are using SQL Server Express, Microsoft's free version of SQL Server, it does not include the SQL Server Agent component of the paid versions. However, you can use a script file with the Windows Task Scheduler to perform automated backups.



```
BackupSQLServerDatabase.cmd - Notepad
File Edit Format View Help
@Echo OFF
Goto :START

File..... BackupSQLServerDatabase.cmd
Description... Backs up a specific SQL Server database to a designated folder and file
Usage..... In the 'sqlcmd' statement below, update the following:
1. Replace 'MyServer\SQLEXPRESS' with your server and SQL Server instance names.
2. Replace 'MSClims' with the name of the database to back up.
3. Replace 'C:\Backup' with the folder where backup files should be created.
4. Remove the 'REM' before 'forfiles' if you want to automatically delete
older backup files. Change '-7' to delete files older than the specified days.
Notes..... This script appends the current date and time, in the form YYYY-MM-DD-HHMM, to the
backup file name. To do so, it assumes your Windows short date format is M/D/YYYY.
If your Windows short date format is D/M/YYYY change 'mydate=%c-%a-%xb' to
'mydate=%c-%xb-%a'

:START
For /f "tokens=2-4 delims=/ " %a in ('date /t') do (set mydate=%c-%a-%xb)
For /f "tokens=1-2 delims=:" %a in ("%time: =0%") do (set mytime=%a%b)

sqlcmd -S MyServer\SQLEXPRESS -E -Q "BACKUP DATABASE MSClims TO DISK = 'C:\Backup\MSClims-Backup-
%mydate%-%mytime%.bak';"

REM forfiles /P "C:\Backup" /M *.bak /D -7 /C "cmd /c del @path"
```

The above image shows a script that will back up a SQL Server database to a designated file and folder. The script uses the `sqlcmd` utility to run a `BACKUP` command. Download the [BackupSQLServerDatabase](#) script from the [File Library](#) and save it to a folder on your SQL Server machine.

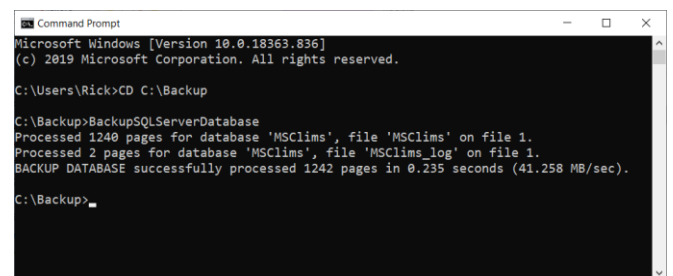
Much of the script contains text describing its usage. Before trying the script, first open the file in Windows' Notepad or another text editor. Locate the `sqlcmd` statement near the bottom of the script. Note that this statement is a single line in the file. The image above shows the statement spanning multiple lines with Notepad's Word Wrap format enabled.

In the `sqlcmd` statement, replace `MyServer\SQLEXPRESS` with the name of your server and the SQL Server instance name. Next, replace the two occurrences of `MSClims` with the name of your database if it is different. Finally, replace

`C:\Backup` with the location and name of the folder where you want your database's backup files created then edit the file name if you like. Note that the `%mydate%` and `%mytime%` variables in the file name are replaced with the current date and time when the script runs. It is preferable to save the backup files to a folder on a different machine. However, if that is not feasible, just make sure the folder where you save the database backups is included in your system's backups.

Since you will likely create one or more database backups each day, your designated backup folder could soon contain many large backup files. If you would like to keep only the most recent backups to save disk space, remove the `REM` at the beginning of the last line in the script then change `C:\Backup` in the `forfiles` command to the name of the folder you entered in the `sqlcmd` statement. This command will delete any backup files with a `bak` extension in the folder that are more than seven days old. If you would like to keep more or fewer files, change the `'-7'` in the command to the number of days to keep.

To test the script on your server machine, open a command prompt, use the `CD` command to switch to the folder containing the script (e.g. `CD C:\Backup`), then enter `BackupSQLServerDatabase` and hit Enter. You should get a message showing the results of the backup similar to the screen capture below.



```
Microsoft Windows [Version 10.0.18363.836]
(c) 2019 Microsoft Corporation. All rights reserved.

C:\Users\Rick>CD C:\Backup

C:\Backup>BackupSQLServerDatabase
Processed 1240 pages for database 'MSClims', file 'MSClims' on file 1.
Processed 2 pages for database 'MSClims', file 'MSClims_log' on file 1.
BACKUP DATABASE successfully processed 1242 pages in 0.235 seconds (41.258 MB/sec).

C:\Backup>
```

If your edited script works, you can add a job to the Windows Task Scheduler to automatically run the backup at a specific time. You can run the backup while the database is in use so you can schedule multiple backups each day if you like.

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To schedule a daily automatic backup, open the Task Scheduler in the Windows Administrative Tools menu on the Start menu, select Create Basic Task, then follow the wizard steps. Begin by giving the task a name and an optional description.

Name: MSC-LIMS Database 11pm Daily Backup
Description: Run script file BackupSQLServerDatabase.cmd each night at 11:00 pm to back up the MSC-LIMS database.

Choose the option to run the task daily then enter the start date and time.

When do you want the task to start?
 Daily
 Weekly
 Monthly
 One time

Start: 7/28/2020 11:00:00 PM
Recur every: 1 days

Select the option to start a program then use the Browse button to select your script.

What action do you want the task to perform?
 Start a program
 Send an e-mail (deprecated)
 Display a message (deprecated)

Program/script:
C:\Backup\BackupSQLServerDatabase.cmd [Browse...]
Add arguments (optional):
Start in (optional):

On the Summary screen, enable the option to open the Properties dialog then click the Finish button.

Name: MSC-LIMS Database 11pm Daily Backup
Description: Run script file BackupSQLServerDatabase.cmd each night at 11:00 pm to back up the MSC-LIMS database.
Trigger: Daily; At 11:00 PM every day
Action: Start a program; C:\Backup\BackupSQLServerDatabase.cmd
 Open the Properties dialog for this task when I click Finish
When you click Finish, the new task will be created and added to your Windows schedule.

Set your backup task's security options to run whether the user is logged on or not and to run with the highest privileges to ensure your backup always runs as scheduled. You will be prompted for the user's password when you exit the Properties screen and save your changes.

Security options
When running the task, use the following user account:
NOTEBOOK-19\Rick [Change User or Group...]
 Run only when user is logged on
 Run whether user is logged on or not
 Do not store password. The task will only have access to local computer resources.
 Run with highest privileges

To test your new backup task, right-click the task in Task Scheduler and choose Run then verify the backup file was created in your specified folder. You can also view the date and time of the last database backup in the LIMS on the DB Info tab of the System Configuration screen.

Database:	MSClims (v5.0.0)
Owner:	NOTEBOOK-19\Rick
Status:	ONLINE
Created:	12/28/2019 3:16:09 PM
Size:	14.38 MB
Server:	Notebook-19\SQLEXPRESS
Driver:	ODBC Driver 13 for SQL Server
Collation:	SQL_Latin1_General_CP1_CI_AS
Compatibility Level:	100
Version:	Microsoft SQL Server 2014 - 12.0.2000.8 (X64)
Recovery Model:	SIMPLE
Last Backup:	7/28/2020 10:42:30 AM
Last Log Backup:	

If you want to back up your MSC-LIMS database more than once a day, simply repeat the steps above and create additional Task Scheduler tasks to back up at other times of the day. ▲


Notes from Technical Support

Sample Schedules

A user recently asked:

I had a question regarding the Notebook: Sample Schedules within the MSC-LIMS. I was wondering how the sample schedule becomes completed or closed so it appears in the Schedule History. I want to get a better understanding of how this function in MSC-LIMS works.


When a sample is logged with a project that exists in a sample schedule, the sample is added to the schedule history so you can later view which samples satisfied a schedule. If the sample satisfied a schedule and the schedule has a reschedule frequency, a new schedule record for the project is added with an updated due date. If there is no reschedule frequency, the project is removed from the schedule.

Samples schedules are a good reminder system for infrequent or recurring sampling events. If you enable the "Check sample schedules at startup" option on the Workstation Configuration screen, the system will display a notice at startup when a sample for the scheduled project is due. Use the schedule's warning days to specify how many days before the due date you want to be warned when a sample for the project is due. 

Excel Template Report Disclaimers

A user submitted this question about Excel export templates:

Where is the best place to put a note on an export template such as 'BDL-Below Detection Limit'?


It depends on the Excel template. If the template's AfterTransferFromLIMS macro inserts new rows before it copies a OneAnalysisResults or OneSampleResults named range then you can put a disclaimer anywhere below these named ranges on the report worksheet. If the template has a SignatureBlock named range on the Settings worksheet then you should put the disclaimer within the SignatureBlock named range making sure the named range encompasses any new rows. When a template has a SignatureBlock named range, its macro does not insert new rows before copying data named ranges on the report sheet. 

Excel Template Folders in Version 5.x

A user who recently upgraded from version 4.1 to version 5.0 asked this question:

Currently our IT has control over user permissions. Since Admin status is the only one who can map the directory of export and import templates locations in the network, is there an alternative so that all users can access the templates in the specified directory without having to change their status to admin and going in to each of their workstations. Currently when we double click the MSC-LIMS icon it logs us in automatically.

MSC-LIMS version 5.0 uses the current Windows user's credentials for system access, eliminating a separate LIMS login. If your Windows login has either Admin or Owner permissions in the LIMS, you can change the Workstation Configuration screen at any LIMS workstation by logging on to Windows with your credentials then starting the LIMS. After exiting the LIMS, remember to log off from Windows.

There is an alternative. When you exit the LIMS, the settings on the Workstation Configuration screen are saved to file LimsCode5.xml in folder C:\MSC-LIMS on the workstation. When you start the LIMS, the settings are loaded from the xml file. If you want all workstations to use the same Workstation Configuration screen settings, you can copy file LimsCode5.xml from the workstation with the correct settings to all other workstations. Just make sure to exit the LIMS at a workstation before copying LimsCode5.xml to the workstation's C:\MSC-LIMS folder. 

Linking a Document to a Sample

A user recently asked:


Is there any way to associate a scanned SDS (or other digital document) with a logged-in sample? I'm hoping we could query based on sample ID and then access the scanned document via a clickable link somehow.

You can use the Document field on either results entry screen (use Show Sample button on results by analyte)

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to link any external file to the sample. Use the Edit Hyperlink button adjacent to the Document field or right-click the field for options. If you need to link more than one document to a sample, just link a container document such as a Word file where you add links to multiple files. A linked document is intended for lab use only so it is not sent or automatically attached to any final report.

You will also find linked Document fields on the Methods, Instruments, and Customers (contact history) setup screens. 

Showing LIMSDData Sheet Data in an Excel Template

While modifying an Excel export template report, a user asked:

In the large black block of space under the test results (merged cells at C35), I would like to drop text in from LIMSDData!S2. Is it as simple as typing =LIMSDData!S2 in the template?


Rather than use the formula =LIMSDData!S2, it is better to use the named ranges the template's macro creates from the LIMS field names on row one of the LIMSDData sheet. That's a better solution since the list of fields and their order could change with a version update. In this case cell S1 will have the LIMS field

For Customers Only

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.

File Library

[BackupSQLServerDatabase.cmd](#)

Use this script to back up your MSC-LIMS 5.x database. See "Automated Backups with SQL Server Express" in this issue for more information. 

name 'Conclusions' so you can use that name in your formula. Note that this applies to any other field name on the LIMSDData sheet's row one that you see when you export to the template. To show the contents of the cell in the first row of the Conclusions named range (i.e. cell S2), the formula is:


```
=INDEX(Conclusions,1)
```

However, the result of the above formula will show a zero if the first Conclusions cell is blank, so this formula will handle that scenario by showing an empty string:

```
=IF(ISBLANK(INDEX(Conclusions,1)), "", INDEX(Conclusions,1))
```

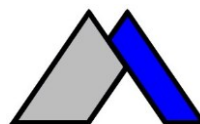
You will see the #NAME? error in the cell in the template because the Conclusions name does not exist since the template's macro only creates the named ranges in workbooks created by exporting to the template. That's not a problem. If you would rather not see the #NAME? error in your template, use this formula:

```
=IF(ISERROR(INDEX(Conclusions,1)), "", IF(ISBLANK(INDEX(Conclusions,1)), "", INDEX(Conclusions,1)))
```

This formula displays an empty string if the result of INDEX(Conclusions,1) is an error. Otherwise, it displays the first Conclusions cell or an empty string if the cell is blank. 

Contact Us

Questions, comments, suggestions?
Reach us at:



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