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Release Notes

Chromeleon 7 Chromatography Data System

Software Version 7.3.1 • March 2022

Document Revision 2.0

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Release History

Revision	Date	Comment
1	December 2021	Initial Product Release
2	March 2022	Added section 3.1.4 Thermo Scientific Vanquish Autosampler – Updated Driver [151555], added Known Limitations 256522 (Bruker Scion GC), 258205 (Waters Acquity H-Class FTN Sample Manager), 261420 (Network data acquisition), and 181345 (Waters 2690/2695 and 2489). Added section 3.16 regarding Discovery updates. Added 274190 as a Resolved Issue.

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Table of Contents

1	Introduction.....	5
2	Other Documentation.....	6
3	What's New in Chromeleon 7.3.1	7
3.1	New and Updated Thermo Scientific Instrument Drivers.....	7
3.2	IQ/OQ/PQ.....	7
3.3	New and Updated Third Party Instrument Drivers.....	8
3.4	Other Instrument Related Enhancements.....	9
3.5	Licensing Updates	10
3.6	Compliance and Auditing Updates	10
3.7	eWorkflow Enhancements [119293, 130800, 142179, 118828].....	14
3.8	Processing Updates	15
3.9	Reporting Updates	16
3.10	Client Updates.....	18
3.11	Data Import/Export Updates.....	20
3.12	Peptide Analysis Enhancements.....	21
3.13	Non-Targeted MS Processing Enhancements.....	23
3.14	Chromeleon 7 Process Analyzer Enhancements.....	28
3.15	Microsoft SQL Server Express 2019	30
3.16	Discovery Service Updates	30
4	Resolved Issues.....	32
5	Limitations and Known Issues.....	51
5.1	Limitations with Thermo Scientific Instruments.....	51
5.2	Limitations with the Waters Driver Pack	56
5.3	Limitations with Agilent ICF.....	58
5.4	Limitations with Agilent Drivers for Chromeleon	61
5.5	Limitations with Other Third-Party Instruments	61
5.6	Limitations With Setup.....	63
5.7	Other Limitations	64
5.8	Obsolete Drivers.....	71
6	Backward/Forward Compatibility Issues.....	72
6.1	Thermo Scientific Vanquish Charged Aerosol Detector [CM6-23499].....	72
6.2	Thermo Scientific Vanquish Autosampler [CM6-23405].....	72
6.3	Thermo Scientific TriPlus RSH.....	72
6.4	Thermo Scientific TriPlus 300 HS.....	72
6.5	Thermo Scientific TriPlus LS-100	72
6.6	TSQ Quantiva and Endura Instrument Method [CM7-18759]	72
6.7	Chromeleon Enterprise Compatibility of different versions of Chromeleon installed on Domain Controller, Clients and Instrument Controllers.....	72

7 Appendix.....	74
7.1 Release Notes.....	74
7.2 Online Help.....	74
7.3 Contributed Content	74

1 Introduction

Chromeleon™ 7.3.1 is the latest version of the Thermo Scientific™ Chromatography Data System (CDS). Chromeleon delivers superior compliance tools, networking capabilities, instrument control, automation, data processing, and much more, providing the fastest path from samples to results. Building upon market-leading innovations of prior Chromeleon software releases – such as dynamic interactive data displays, an integrated database for rapid data retrieval, and spreadsheet-based reporting – Chromeleon features a modern user interface, comprehensive tools for peak detection, and an innovative workflow management framework, all of which speed up learning, simplify operation, and deliver results with greater efficiency than any other chromatography data system.

This release provides updated and new instrument control for instruments from Thermo Fisher Scientific and third-party manufacturers. Improvements and enhancements have been made in several areas including ease of use, compliance, data reporting, and peptide analysis. Please see below for more details on these and other enhancements in this release.

NOTE: In order to use Chromeleon 7.3.1, a Chromeleon 7.3.1 license is required. It is not possible to use Chromeleon 7.3.1 with a license from any earlier version, including 7.3.0.

NOTE regarding Log4j vulnerability

A vulnerability in the logging library Log4j was identified in early December 2021. This library is used for logging error messages in applications which are built using Java.

As this was discovered during the release phase of Chromeleon 7.3.1, Thermo Fisher Scientific has performed an initial risk assessment of Chromeleon to identify any potential impacts of this vulnerability to Chromeleon 7.3.1.

The Chromeleon product is almost entirely developed in C#.net not Java, so is not directly impacted by this issue. However, some of the 3rd party components used in Chromeleon are developed in Java, so are potentially impacted. We are currently undertaking a more detailed investigation of these components.

The risk level for Chromeleon 7.3.1 is no higher than the risk level of currently supported previous Chromeleon versions (7.3, 7.2.10, 7.2 SR5).

2 Other Documentation

Chromeleon is provided with many other documents that will help you to learn more about the software. These documents can also be found in electronic form in the Documents folder of the installation kit.

Please refer to the Chromeleon 7.3.1 installation media for information regarding:

- System Requirements
- Supported Operating Systems and Databases
- Required Third-Party Software
- Compatibility with Previous Versions
- Installing and configuring the Chromeleon software

For Enterprise Chromeleon systems, a full set of Enterprise Documents are available. These describe the process for installation of enterprise systems based on Chromeleon 7.3.1.

3 What's New in Chromeleon 7.3.1

In addition to new and updated control for both Thermo Scientific and third-party instruments, Chromeleon 7.3.1 implements a number of new features and enhancements to existing features, including advanced eWorkflow capabilities, additional Audit Trail Review options, new peptide analysis options, and two new algorithms for data processing. This document can only give a short overview of all features. For more details, refer to the Online Help.

3.1 New and Updated Thermo Scientific Instrument Drivers

This chapter lists new and updated Thermo Scientific drivers added to Chromeleon 7.3.1. For details on supported options, required licenses, installation, and control, refer to the Online Help or the List of Supported Instruments document found on the Chromeleon 7.3.1 installation kit.

3.1.1 Update .NET version [28845]

Several Thermo Scientific drivers have been upgraded to use .NET 4.8 rather than .NET 3.5. A list of those drivers are available in the LOSI, in the new column "Requires .NET 3.5".

3.1.2 Thermo Scientific Easion – New Driver [148079]

This release introduces support for Easion, the newest entry-level ion chromatography system.

3.1.3 Thermo Scientific Vanquish Neo – New System Driver [140372]

This release introduces support for the Vanquish Neo system driver supporting Thermo Scientific™ Vanquish™ Neo UHPLC systems (VN-S01-A) consisting of a Vanquish Binary Pump N (VN-P10-A), a Vanquish Split Sampler NT (VN-A10-A), a Vanquish User Interface (Vanquish System Controller (VSC, 6036.1130) and Vanquish Display (6036.1180), and an optional Vanquish Column Compartment N (VN-C10-A).

Please note that the Vanquish Neo system driver is not included in the Chromeleon 7.3.1 installation media and needs to be downloaded and installed separately. The Vanquish Neo system driver can be downloaded at the Digital Science Support Resource Center (<https://support.thermoinformatics.com/downloads/>) under Chromeleon > Related Drivers.

3.1.4 Thermo Scientific Vanquish Autosampler – Updated Driver [151555]

This release provides an updated Vanquish autosampler driver which extends the injection volume range up to 1000 µL. This functionality was introduced for the Thermo Scientific Vanquish Core HPLC system with Chromeleon 7.3 and is now available for the Thermo Scientific Vanquish Flex and Vanquish Horizon UHPLC systems. The Vanquish autosampler needs to be equipped with a hook groove valve and a suitably-sized loop, and firmware version 2.04 or newer needs to be installed.

3.2 IQ/OQ/PQ

3.2.1 HPLC OQ/PQ

New HPLC OQ/PQ tools are available in Chromeleon CDS. HPLC OQ/PQ version 9.7 addresses the following incidents:

- HPLC PQ: Vanquish Quaternary Pumps: Gradient Step Accuracy test report: Acceptance limit mismatch compared to the documentation [189904]

- HPLC-OQ/PQ: Shared Dual VAS: Displayed the used autosampler unit in the report [201864]
- HPLC-OQ/PQ: VH-P10-A pump: Improve robustness of the gradient accuracy test [201865]

For details, please refer to the document \Documents\HPLC OQ PQ V.9.7 - Release Notes.pdf on the Chromeleon CDS disk.

3.3 New and Updated Third Party Instrument Drivers

This chapter lists new and updated third party instrument drivers added to Chromeleon 7.3.1. For details on supported options, required licenses, installation, and control, refer to the Online Help or the List of Supported Instruments document found on the Chromeleon 7.3.1 installation kit.

3.3.1 Shimadzu LC Driver / GC Driver

Shimadzu LC Driver (Version 3.00) for Chromeleon 7 are available on DVD under folder "Drivers\Shimadzu Driver Pack\DeploymentManager\ShimadzuLC".

Release Notes, Quick Start Guide and ReadMe files are located "Drivers\Shimadzu Driver Pack\DeploymentManager\ShimadzuLC\Documents\ENG\"

Shimadzu GC Driver (Version 2.10) for Chromeleon 7 are available on DVD under folder "Drivers\Shimadzu Driver Pack\DeploymentManager\ShimadzuGC"

Release Notes, Quick Start Guide, LAN Adapter Installation Manual and ReadMe files are located "Drivers\Shimadzu Driver Pack\DeploymentManager\ShimadzuGC\Documents\ENG\"

3.3.2 Waters Driver Package 2019 R1

Chromeleon Setup includes Waters Driver Package 2019 R1 which also supports Windows 2016 Server installations.

3.3.3 Agilent LC/Agilent GC – Updated Driver

This release includes an updated driver, provided by Agilent Technologies, for control of Agilent LC and GC instruments (ADC 2.4). More details are available in the Resolved Issues section, and in the release notes document provided in the \packages\Agilent Chromeleon Drivers\Documentation folder on the Chromeleon DVD.

3.3.4 Markes Thermal Desorber – Updated Driver

The Markes Thermal Desorber driver has been updated to include support for the following additional modules:

- CIA Advantage-HL
- CIA Advantage-T
- CIA Satellite
- Ultra-xr
- Ultra-xr sample recollection module
- Nafion dryer

3.4 Other Instrument Related Enhancements

3.4.1 Instrument Overview Improvements [54018]

Several improvements have been made in the Instrument Overview section of the Chromeleon Console:

- Improve the performance of Instrument Overview on large systems to show the status of all instruments which are visible on screen.
 - To see more instruments in a large system, provide user(s) with the Instrument Control > Show All Instruments privilege.
 - To show more instruments on screen, increase the Maximum Connected Instruments in Overview number in the UI Customizations Global Policy.
- Display the name of the person who added the Sequence to the Queue in the "Queued by..." field.
- Enable authorized users to Start and Resume the Instrument Queue using the right-mouse menu in the Instrument Overview.
- Enable authorized users to Stop the acquiring Sequence using the right-mouse menu in the Instrument Overview.
- Improve the information provided in the Queue Status field in the Instrument Overview when the Queue has been stopped.

3.4.2 Queue Improvements [126484]

Improvements have been made to the handling of acquired sequences when new samples are added to them:

- When a new injection is added to a 'parked' sequence - that is an acquired sequence which has not been automatically uploaded to the Data Vault due to the 'Automatically upload finished remote sequences' option being set to Off in the Queue tab of the instrument properties dialog - the status is now shown as 'Incomplete'.
- When the Resume button is pressed for an Incomplete sequence, the sequence is moved to an 'active' position in the queue and will be acquired once any preceding sequences are complete.
- The up and down arrows in the Queue view can move a parked sequence with unacquired samples into and out of the active part of the queue.

3.4.3 SmartStroke for the Vanquish Horizon Binary Pump [117181]

SmartStroke activates an optimized piston stroke behavior for the Vanquish H Binary Pump (VH-P10), in order to reduce baseline ripples observed in special applications, as for example (but not exclusively) with mobile phases containing trifluoroacetic acid (TFA). The option SmartStroke can be enabled/disabled for an instrument method as well as for the intervals between queue runs.

3.4.4 Vanquish Autosampler: Support for an external sample robot [117183]

This release introduces the option “External Rack Transfer”, which provides support for an external sample robot to transport racks from/to the carousel of a Vanquish Autosampler or Vanquish Dual Split Sampler shared between two instruments. An external software controls the queue run(s) and transports the racks. For a Vanquish Dual Split Sampler shared between two instruments, a sequence start / end on one instrument is possible, irrespective of whether the second instrument is idle or running a sequence.

Note: The option “External Rack Transfer” is not compatible with Chromeleon User Defined Programs (UDP's). [128546]

3.4.5 Troubleshooting Guide for Vanquish instruments [151556]

This release introduces a Troubleshooting Guide for Vanquish instruments with information on how to troubleshoot issues. If a diagnostic test is available, the diagnostic test and its status is displayed. In addition, the Troubleshooting Guide provides information on error codes.

3.5 Licensing Updates

3.5.1 Assign licenses to organizational unit

When a license code (LIC) is added to an Enterprise Chromeleon system which has Organizational Units, the LIC can now be assigned to either the <Global> Organizational Unit or to a specific Organizational Unit.

- Licenses which are assigned to <Global> can be used by any consumer (User, Client or Instrument Controller) from any Organizational Unit.
- Licenses assigned to a specific Organizational Unit can only be used by consumers within that Organizational Unit.

The License Overview section of the Chromeleon Administration Console shows license entitlements summarized at the Global level, and the license entitlements allocated to each Organizational Unit.

3.6 Compliance and Auditing Updates

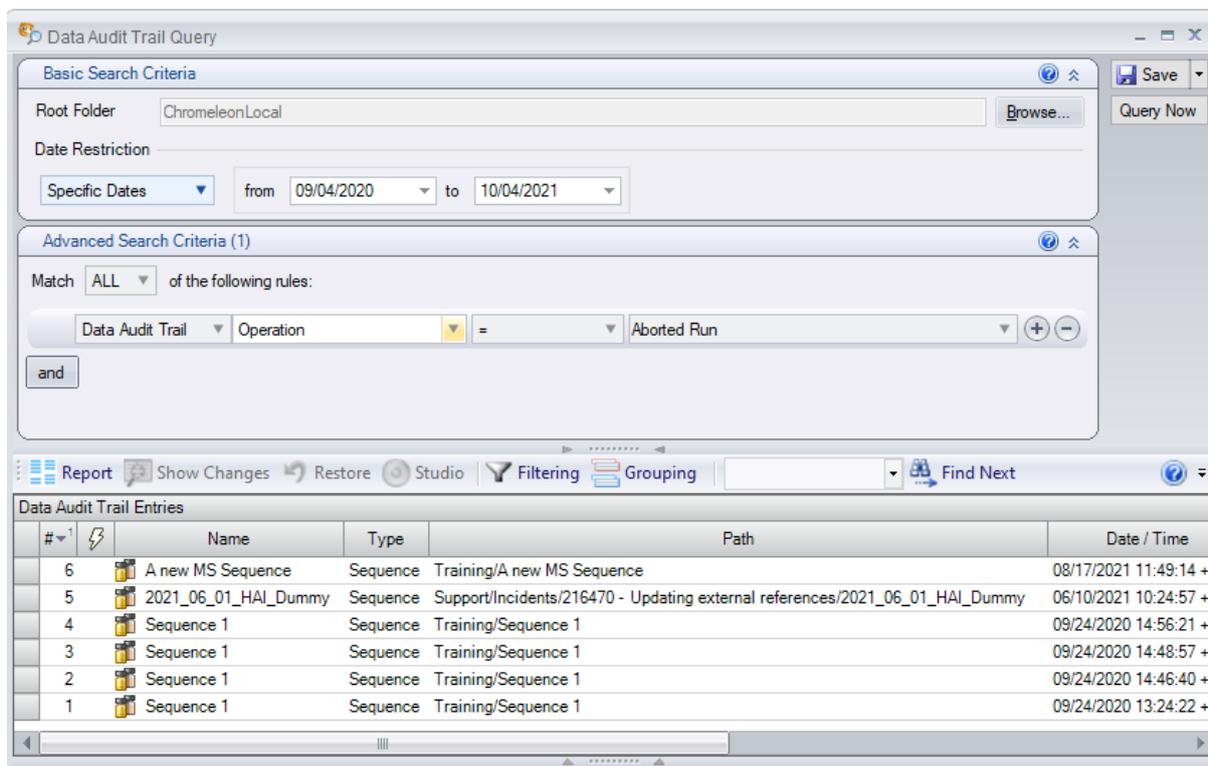
3.6.1 Audit Trail Queries

Chromeleon 7.3.1 introduces 3 new data object types:

- Data Audit Trail Query
- Instrument Audit Trail Query
- Administration Audit Trail Query.

The new data objects are created via the Create -> Query menu command list in the Chromeleon console. The Administration Audit Trail Query can be also created in the Chromeleon Admin Console.

The query windows which appear for the new data objects are very similar among the different query types. The following screen shot shows the window for a new or already existing data audit trail query.



There are sections for **Basic Search Criteria** and **Advanced Search Criteria** which define the search conditions for the query. To the right of these sections there are two command buttons **Save** and **Query Now**. The Save command button includes a dropdown command **Save As** to store the audit trail query data object in its original location or for a new one in any folder of a data vault. The Query Now button executes the Query, displaying the matching audit trail records in the lower result table.

Upon creation of a new audit trail query or after opening an already existing one the result table is always empty. One must always press Query Now to execute the query.

Details of Basic Search Criteria, Advanced Search Criteria and the column layout of the result table differ from query type to query type. The Date Restriction area of the Basic Search Criteria is common for all query types.

3.6.1.1 Data Audit Trail Query [65776]

In the Basic Search Criteria section of the Data Audit Trail Query window you can select a **folder of a data vault** incl. the corresponding root folder and a **date range (fixed or relative)**. The query will look for all audit trail records in the specified folder incl. subfolders with a date/time stamp in the specified date range.

The Advanced Search Criteria sections allows to define multiple rules for specific data audit trail or audit trail event properties which can be combined via AND or OR. For the **data audit trail record** the properties **Type**, **Operation**, **Operator**, **Role** and **Comment** can be used for such an advanced query rule. For an **audit trail event record** linked to a data audit trail record the properties **Name**, **Event Type**, **Operator**, **Role** and **Description** can be used to such query rules.

Note: A similar Data Audit Trail Query window was already available for Chromeleon 7.3. This “7.3 query window” was opened for the data audit trail of a folder in a datavault. This is now “reverted” again. In Chromeleon 7.3.1 the data audit trail window for a folder is now just listing all data audit trail records in this folder. A data audit trail query window can be only created via the Create -> Query -> Data Audit Trails command or by opening an already saved data audit trail query object in the Chromeleon console.

3.6.1.2 Instrument Audit Trail Query [48618]

In the Basic Search Criteria section of the Instrument Audit Trail Query window you can select a **folder of a data vault** incl. the corresponding root folder or any **instrument** in the Chromeleon domain. Having selected a folder all (daily) instrument audit trails in this folder and all subfolders are scanned when the query is executed. Having selected an instrument all (daily) instrument audit trails of this instrument located in the local data vault where the corresponding instrument controller is running are scanned when the query is executed. As for the data audit trail query there is also a **date range (fixed and relative)** which can restrict the number of (daily) instrument audit trails the query is looking for.

The Advanced Search Criteria sections allows to define multiple rules for specific instrument audit trail record properties which can be combined via AND or OR. These are the properties '**Date/Time**', '**Retention Time**', '**Device**', '**Message**' and '**Category**'.

3.6.1.3 Administration Audit Trail Query [48612]

The query is executed on the complete Administration Audit Trail of the Chromeleon domain. In the Basic Search Criteria section of the Administration Audit Trail Query window you can select a **date range (fixed or relative)** and a list of audit trail record categories (**Organizational Unit, Global Policies, User Management, Logon and Signature, Authentication, eWorkflow Tags, Instrument Configuration, Discovery, Data Vault Management and Station**). The query results will only list admin audit trail records in the specified date range and having the selected category property.

The Advanced Search Criteria sections allows to define multiple rules for specific administration audit trail record properties which can be combined via AND or OR. These are the properties '**Operator Name**', '**Object Name**', '**Host Name**', '**Operation**', '**User Comment**', '**Additional Information**', '**Computer Name**', '**Application Name**' and '**Application Version**'.

There is also a slightly modified Administration Audit Trail Viewer in the Chromeleon 7.3.1 AdminConsole. The toolbar is stripped a single row restricting the date range selection via the **More** button only backwards from the current day.



The **Query** button allows to open a new Administration Audit Trail Query window. This still allows to define an arbitrary date range selection in the Admin Console.

3.6.1.4 Configurable Maximum Number of visible Administration Audit Trail Records in a single Window [27813]

When executing an Administration Audit Trail Query or just viewing the Audit Trail in the Chromeleon Admin Console the maximum number of records which can be returned by the query and/or viewed in the Administration Audit Trail Window is set to 10.000 records per default. If case this number is exceeded the resulting list of records is cut to this limit with a corresponding notification window. This maximum number of records (default: 10.000) can now be configured by changing or adding the corresponding key value in the config file **ServiceHost.exe.config** located in the Chromeleon bin-folder on the Chromeleon Domain Controller computer.

Example: the following config setting exceeds the maximum number of Administration Audit Trail Records being visible in a single window to 100.000

```
<appSettings>
  <add key="AuditTrailRecordLimit" value="100000"/>
</appSettings>
```

3.6.1.5 New Privileges

There are 2 new privilege groups in the role editor of the Chromeleon 7.3.1 Admin Console controlling what users with a corresponding logon role can do with the new audit trail query objects.

The privilege group 'Audit Trail Queries' contain privileges both for the Data and Instrument Audit Trail Query, the group 'Administration Audit Trail' the privileges for the Administration Audit Trail.

Beneath the "standard" privileges for creating, deleting, modifying, copying, moving and renaming audit trail query objects the groups contain also dedicated privileges whether a user is allowed to execute such a query or to create any (HTML) report of the corresponding query results.

The privilege group 'Administration Audit Trail' contains also two new privileges '**View Administration Audit Trail**' and '**Show Logon Events of All Users**' controlling whether a user can view admin audit trails in the Admin Console at all and whether he can see the logon events from all users not only his own ones.

3.6.2 Logon Role in the Data Audit Trail Record [49357]

The logon role of the currently logged-in user is recorded in the any data audit trail record this user is committing during the corresponding Chromeleon client session. The role becomes visible as a separate column in the data audit trail window, the corresponding HTML report and the data audit trail report table in the report designer. The new data audit trail query allows also to define search criteria with the role.

3.6.3 Logon Role in the Injection Audit Trail [83164]

The logon user role of the logged-in user is now captured in the injection audit trail in addition to the ID, username and full name of the user.

3.6.4 Reset Date/Time Stamps for Data Objects Created via Save As [145980, 27367]

If a data object (sequence, instrument/processing method, report template, etc.) is created via a Save As operation, up to now (Chromeleon 7.3) the creation and last update date/time stamps and the corresponding users have been copied from the original data object. With Chromeleon 7.3.1 this is changed now. The creation and last update date/time stamps are set to the current date/time, the corresponding user is set to the user who did the Save As operation. The data audit trail record for the Save As operation now also records the version number of the original data object in the Additional Info. field along with the corresponding data object path (see also 3.6.5).

Note: This change is not applied to Save As operations for sequences incl. raw data. In this case the original date/time stamps and the corresponding users are kept.

3.6.5 Record Used Version when Copying Versioned Data Objects into a Sequence [145981, 139186]

If versioned data objects (instrument/processing methods, report templates) are copied into a new or an already existing sequence only the latest version of such objects is copied. The version number in the destination sequence is reset to 1. With Chromeleon 7.3.1 the latest version number of the original data object is now also recorded in the Additional Info. field of corresponding data audit trail record along with the full URL-path of the original data object.

Note: If a versioned data object is copied into an already existing sequence, all data audit trail records of the original data object have been copied with a reset to version number 1 up to Chromeleon 7.3. This misleading behavior is omitted now. With Chromeleon 7.3.1 the original data audit trail records are not copied anymore. The data audit trail of the copied data object in the destination sequence is just initialized with this copy operation along with the original version and the full URL-path of the original data object recorded in the Additional Info. field.

3.6.6 Use Station Audit Trail to log Instrument Audit Trail Failures [178234]

In the past, any failed attempt to write the instrument/injection audit trail to the data vault (ChromeleonLocal, XVault) was recorded in the log-file on the computer where the instrument controller was running. This was regarded as a compliance problem as these records were not within the data system.

Chromeleon now stores these records in the Station Audit Trail. Any failed attempt to write the instrument/injection audit trail to the data vault (ChromeleonLocal, XVault) is recorded in the Station Audit Trail. To allow for easy retrieval of these records by dedicated filtering, the "Operation" field of these records displays the entry "Instrument Audit Trail Failure". The "Additional information" field contains the complete instrument audit trail record, which could not be saved to the instrument audit trail. In addition, upon recovery from the failure to connect to the data vault, the instrument audit trail informs the user that instrument audit trail messages were written to the Station Audit Trail.

Note: With the new Admin Audit Trail Query introduced with this release, it is also possible to query these audit trail entries over a larger time frame.

3.7 eWorkflow Enhancements [119293, 130800, 142179, 118828]

The eWorkflow designer and wizard have been enhanced in three main areas.

3.7.1 Enable Sequence Editing in the eWorkflow Wizard

- Users, with the necessary privilege, can now make edits in the Sequence grid during execution of the wizard, e.g. to provide a *sample name*, *injection volume*, *sample weight*, *internal standard amount*.
- The eWorkflow designer now contains an option to allow/prevent users from editing the Sequence grid during execution of the eWorkflow Wizard.
- A new privilege called 'Modify Sequence Preview' and an associated privileged action are now available in the 'eWorkflows' category to control the ability of individual users to edit the Sequence grid of an editable eWorkflow during execution of the eWorkflow Wizard.
- Edits made by a user in the eWorkflow wizard are included in the audit trail of the created Sequence.
- If the eWorkflow is configured for Appending samples as well as sequence editing, then when the eWorkflow is re-run, the previously created samples are read-only in the Sequence grid of the eWorkflow wizard; only new samples can be edited.

3.7.2 Improvements for Dual Instrument Systems

- eWorkflows can now be configured to create and start sequences on two instruments in one action. For example, the Front and Back flow-paths of a dual-inlet GC, or where two separate instruments are run simultaneously for confirmation purposes.
- The eWorkflow designer now contains an option to *link* together two instruments. When the eWorkflow wizard is run, a new option allows the user to create two sequences, one on each of the linked instruments, or a single sequence on the launched instrument only.
- The eWorkflow wizard contains a new *Instrument Name* column. As additional samples are added, the default methods for each instrument are automatically assigned row by row.

- Vial positions are automatically assigned according to the *Autosampler Tray Sharing* option in the Default Assignments tab.
- If the *Run Sequence after Creation* option is selected, both sequences are created and automatically added to their respective instrument queues.
- If the eWorkflow is configured for Appending samples as well as linked instruments, then when the eWorkflow is run, both sequences are reloaded, and new sample(s) can be added to both.

See *Known Limitation 231883 for Sequence Layout limitations for dual instrument eWorkflows.*

3.7.3 Improvements in Sequence Creation

- The Sequence Name field in the Sequence General tab of the eWorkflow designer now allows Sequence names to be numbered incrementally, starting from the first sequence (<name>1, <name>2, etc.). Previously, Chromeleon would append an underscore and number, starting from the second sequence only (<name>, <name>_1, <name>_2, etc.).

The new *always-increment* numbering model is configured using a new incremental numbering identifier (##) as the last two characters in the Sequence Name formula.

e.g. `{eWorkflow.execution_instrument}{gen.currentTime; "dd/mmm/yyyy"}##` will create sequences numbered 1,2,3, etc. for each instrument, each day.

If the Sequence Name formula does not contain the (##) as the last two characters, the existing *underscore-append* numbering model will be used.

- The Default Assignments tab of the eWorkflow designer now provides options for the range of Associated Items which will be copied from the eWorkflow into the Sequence. Use this option to reduce the number of associated items copied into the Sequence.

3.8 Processing Updates

3.8.1 Atlas Detection Algorithm [136813]

Chromeleon 7.3.1 introduces a new option for peak detection, adding the detection algorithm from Thermo Scientific Atlas™ CDS. This algorithm is built on over 20 years of experience, especially in analyzing GC data in the Petro-chemical industry. With this algorithm Chromeleon now provides access to the full set of Detection (Integration) events previously available in Atlas. This option gives Chromeleon a new way to detect the start, end, area and height of peaks.

General					
Detection					
Peak Table					
Amount Table					
Peak Tracking					
Calibration					
Peak Group Table					
Detection Settings					
Algorithm: Atlas					
#	Ret.Time	Param. Name	Param.Value	Inj. Type	Channel
1	0.000 [min]	Minimum Area	0.0333	Any	A2D Analog
2	1.000 [min]	Suppress	Off	Any	All Channels
3	2.350 [min]	Threshold	0.2000	Any	All Channels
4	3.012 [min]	Suppress	Immediately	Any	A2D Analog
*	Click here to add a new Atlas detection parameter				

This option can be used for new, existing, or imported data. The Atlas option is automatically selected and configured when an Atlas Workbook is imported into Chromeleon 7.3.1.

Full details of the parameters which can be configured as part of the Atlas detection algorithm are provided in the Chromeleon 7.3.1 Functional Specifications document on the Chromeleon 7.3.1 installation kit.

3.8.2 Per-Component Mass Tolerance [33857]

With this release, it is now possible to specify mass tolerance on a per component basis when working with HRAM data. This option is enabled on the "MS Settings" tab of the processing method. When activated, a new column is enabled in the MS component table for defining the mass tolerance.

Per-component mass tolerance applies used applied to composite scoring and XIC Filter Selection. The global mass tolerance value is used when extracting MS channels and when importing components from BioPharma Finder workbooks.

3.9 Reporting Updates

3.9.1 Auto Reporting Improvements [29150]

3.9.1.1 New User Privilege for Auto Reporting Settings

This release introduces a new user privilege called "Modify Auto Reporting Settings". This privilege controls the ability to changes the settings on the "Auto reporting" tab of the Sequence Properties dialog.

3.9.1.2 Concurrent Reporting Tasks

With this release some improvements have been made to manage the performance of the Print Server.

- To improve reliability in case of service or computer issues, all job requests received by the Print Server in a Workstation or Enterprise system are persisted so that they will automatically be restarted when the service or computer restarts.

- The Print Server now only activates one job per instrument. Subsequent jobs for each instrument are queued by the Print Server and become active when the active job has completed.
- A new maximum for the *total* number of active jobs running on a Print Server has been introduced. The default is 50 total active jobs, but may be changed in the Administration Console on the **Global Policies > Auto Reporting Settings** tab. Additional job requests are queued by the Print Server and become active as existing jobs are completed.

3.9.1.3 Logging of Print/Export Jobs

With this release, the auditing of Auto reporting jobs has been enhanced.

For each job executed by the Print Service, a record is now added to the Station Audit Trail of the computer where the job is performed. This record includes details of the actions requested and, on completion, details of whether the action was successful.

- For locally performed auto reporting, this information is recorded in the Station Audit Trail of the Workstation or IPC.
- On enterprise systems, with a dedicated Print Server, this information is recorded in the Station Audit Trail of the Print Server.
- For systems with multiple Print Servers, the information is also collated in the Organizational Unit Summary Audit Trail.

In addition, each Sequence Data Audit Trail now also records details of all auto reporting tasks performed on that Sequence.

3.9.2 New Composite Scoring Report Table [14004]

A new report table object called **Composite Scoring Parameters** is now available in the Report Designer. This table can be used to report the composite scoring settings from the processing method.

3.9.3 Mass Spec Signal-to-Noise [128496, 128497]

When working with HRAM MS data, new options are available to annotate the MS plot with the Noise, Baseline Value and Signal to Noise. These options are found on the 'Label' property page of the MS Plot pane.

In addition, it is now possible to report the mass spec signal to noise using the following new report variables:

Noise	ms.spectrum(...).Noise	For HRAM data, returns the noise of the m/z value for the indicated mass spectrum
Baseline	ms.spectrum(...).Baseline	For HRAM data, returns the baseline value of the m/z value for the indicated mass spectrum
SignalToNoise	ms.spectrum(...).SignalToNoise	For HRAM data, returns the signal-to-noise value of the m/z value for the indicated mass spectrum

3.9.4 Chromatogram Scaling and Labels based on Peak Report Variables [133607]

Report variables in the report categories for peak and component results can now be used for the time and signal scaling of the chromatogram. Plot titles and labels also offer these report categories.

The corresponding report formulas are evaluated in the context of the currently selected peak or component.

In the Chromatogram plot, these new report categories are only available in the Report Designer. In the MS Components plot, these new report categories are available in both the Data Processing and the Report Designer categories.

3.9.5 Peak Ranking Report Variable [138954]

This release introduces a new report variable in the peak results category which returns the rank of a peak in the chromatogram based on a specific numerical peak property with an optional condition limiting the set of peaks for the ranking. The syntax of the formula is

peak.rank (“<RankingFormula>”, “<Condition>”)

with the 2nd parameter being optional. The ranking formula (default: peak.area) must return a numerical value for a peak to be considered in the ranking. The return value of “peak.rank” for the peak with the greatest ranking formula value is 1, for the 2nd greatest 2, and so on. The condition formula is optional and restricts the set of peaks in the chromatogram for the ranking.

For the MS Quantitation channel, the peak set for the ranking covers all quantitation XICs for all components.

3.9.6 Report Variable for Logged-In User Role [84692]

A new report variable (formula: **gen.loggedOnUser.role**) allows to capture the logon role of the currently logged-in user in a report.

3.10 Client Updates

3.10.1 Injection Query Window [48618]

In prior Chromeleon versions injection queries were embedded in the Console window. With Chromeleon 7.3.1 injection queries will be now opened in a separate window. That way multiple injection query windows can be opened in parallel which was not possible so far.

3.10.2 Create Sequence from CSV File [132716]

The existing ‘Create Sequence from Worklist’ feature in the Console has been extended to also support files in CSV format. The format specification is documented in the online help file.

3.10.3 Sequence Wizard Enhancements [176184]

In the Create Sequence wizard, it is now possible to specify several auto-reporting, auto-exporting and MS-Specific options.

3.10.4 Manage Services Within the Chromeleon Services Manager [80988]

The Chromeleon Service Manger now include a new button **Manage Services** from which it is possible to start and stop Chromeleon-specific services.

3.10.5 User Privilege to Manage Saving Manually Channel List Changes [151112]

This release adds a new user privilege in the ‘Sequences’ category called “Manually Create or Delete Channels”. This privilege is a special exception to the existing 'Modify Finished or Interrupted Injections' privilege. See below:

Changes to the Injection Record		
Channels were Created or Deleted	Other Changes Were Made	Privilege Required
Yes	Yes	“Modify Finished or Interrupted Injections”
No	Yes	“Modify Finished or Interrupted Injections”
Yes	No	“Manually Create or Delete Channels” OR “Modify Finished or Interrupted Injections”

3.10.6 Elemental Composition Support [115140]

Note: This functionality is only available for HRAM MS data.

When working with HRAM MS data, it is now possible to view chemical formulas which are compatible with peaks (m/z values) of a mass spectrum.

This feature, called Elemental Composition, is available in two locations:

Directly on the MS Plot

The properties page of the MS Plot pane includes a new tab called **Elemental Composition**. This tab is used to specify the candidate elements and other parameters used in the prediction. Clicking the checkbox on this tab will then annotate each m/z value in the spectrum with the best-fit chemical formula.

In an Ad-hoc Window

The context menu of the MS Plot Pane now includes a new menu item called **Elemental Composition**. Selecting this menu item will display a pop-up window with the current mass spectrum and controls similar to the MS Plot properties tab described above.

Clicking on any m/z value in the plot will display a table of the 10 best-matching chemical formula for that ion.

3.10.7 Show/Hide Quantitation or Confirming Ion Plots [173961]

With this release, the MS Components Plot pane has been extended to allow the Quantitation Ion plot or the Confirming Ion plots to be hidden. A similar option has also been added to the MS Components report object. In both cases, the new option may be found on the ‘Comparison’ tab of the plot properties.

3.10.8 Detection Reference XIC [165007]

Any XIC of a component record can now serve as a detection reference XIC for all other XICs of the component or the corresponding peptide, i.e. for all XICs of all components grouped as one peptide. For the detection reference XIC the peak detection is executed as usual applying the configured peak detection algorithm. If the component is identified in this XIC, then all other XICs referring to the reference XIC no longer use automatic peak detection. Instead the start and stop times of the component peak in the reference XIC are automatically applied one-to-one to the other XICs.

The detection reference XIC can be selected in the MS Components Plot (Context Menu) or in the Peak Properties Pane, on the MS Detection tab. After selecting the corresponding command, a dialog is opened allowing to set the selected XIC as a reference XIC. But not only for the selected component or peptide. The dialog also allows a bulk assignment for all components or peptides.

After that the detection reference XIC rule is stored in every component record or peptide which is selected in this dialog.

Note: The detection reference rule is not applied to manually integrated XICs. These XICs always keep their manually integrated peak list / baseline.

3.10.9 Server-Side Mass Accuracy Calculations [133345]

In previous releases, when Mass Accuracy was part of the criteria for Composite Scoring, the computation of mass accuracy was done on the client, which was a significant performance bottleneck in an Enterprise environment. With this release, the computation is now performed on the Server. Note that this change only applies when On-Demand View Updating is selected.

3.10.10 Composite Scoring Enhancements [113917]

3.10.10.1 Additional Peak Apex Alignment Options

In previous releases, peak apex alignment was based on checking the apex standard deviation of all charge states of a selected isotope. With this release, two additional options are available:

- Checking the apex standard deviation of isotopes within a charge state
- Checking the apex standard deviation of all charge states of a selected isotope AND of all charge states for each isotope

3.10.10.2 Isotope Abundance Threshold

It is now possible to set an intensity threshold value below which an isotope will be excluded from composite scoring calculations. This threshold may be an absolute peak height or on a percentage of the maximum height of the TIC or BPC.

3.10.11 Command Line Parameters overlaying Chromatograms [191071]

The syntax of the command line parameters has been extended allowing to overlay different channels even from injections of different sequences. Example:

Chromeleon.exe /openstudio

"chrom://localhost/ChromeleonLocal/Sequences/TestSequence1.seq/89.smp/Chl_A.channel/Chl_A.chm"

"chrom://localhost/ChromeleonLocal/Sequences/TestSequence2.seq/142.smp/Chl_B.channel/Chl_B.chm"

3.11 Data Import/Export Updates

3.11.1 Atlas Instrument Method Import [107604]

Prior versions of Chromeleon could import and view legacy Atlas Workbooks including Integration Methods, Calibration Methods, acquired data, results and Audit/Change History.

Chromeleon 7.3.1 adds the ability to import and view Instrument Methods for all multi-vendor instrument control in Atlas. Imported Atlas Instrument Methods are stored as part of the Chromeleon Sequence and are displayed in a separate Atlas Instrument Method Viewer in the same format as they were displayed in Atlas. For acquired samples, the *snapshot* method is imported containing, for each sample, the version of the method that was used to acquire the data for that sample.

This feature requires the Thermo Atlas Instrument Method Viewer option to be selected during the installation of Chromeleon 7.3.1 on any client which will be used to import or view Atlas Instrument Methods.

3.11.2 Allotrope Export Enhancement [27971]

This release enhances the Allotrope Export feature of Chromeleon to include all peak processing results in the .adf output file.

3.12 Peptide Analysis Enhancements

3.12.1 Computing Isotopic Distribution from the Chemical Formula [164994]

In previous releases, the isotopic distribution was always computed based on the peptide name. With this release, an option has been added to the MS setting tab of the Processing Method to compute the isotopic distribution based on the chemical formula.

For compatibility purposes, the option is unchecked by default for processing methods created prior to this release. For new processing methods, it is checked by default.

3.12.2 Editing Peptide Names and Chemical Formulas [218741]

For MS components which are peptides, the peptide name and chemical formula are now read-only in the MS Component Table and in the Properties dialog of the Processing Method.

A new context menu item called 'Edit chemical formula...' has been added to the rows of the MS Component table. Selecting the menu item will display a dialog allowing the formula to be edited. When 'Ok' is clicked, the chemical formula will be updated for the master peptide and all charge states of the selected peptide

NOTE: The isotopic distribution will be recomputed if the chemical formula is changed and the Isotopic Distribution method is set to use chemical formula, otherwise the isotopic distribution will only be recomputed if the peptide name is changed. (See 3.12.1)

3.12.3 Updated Intact Protein Deconvolution Engine [151200]

With this release, the algorithm used for intact protein deconvolution has been updated to the same version as is used by BioPharma Finder 4.0. This algorithm now supports deconvolution of Triple Quadrupole (QqQ) data acquired from the Thermo Scientific TSQ LCMS family.

3.12.4 Copying Peptides [136864]

With this release, it is now possible to copy/paste peptide components from one processing method to another. The master peptide as well as all charge states of the component are copied, regardless of which rows are highlighted.

3.12.5 Option to Show/Hide Composite Scoring for Master Peptides [127262]

When working with peptides, it is now possible to toggle the display of the composite scoring results for the master peptide. The option is enabled by right-clicking on the header of the Component List in the Studio Navigation Pane.

3.12.6 Showing/Hiding the Master Peptide or Charge State Components [164990]

When working with peptides in Chromeleon, the different charge states of the same peptide are linked to one another as member of a 'peak group'. In addition, a single composite component called the Master Peptide is created, which consists of all the m/z values of all the charge states. Depending

on the workflow, it may be preferable to view only the composite Master Peptide or only the individual charge states.

This view preference may be set on a per-sequence basis using a new parameter on the 'Features' tab of the 'Sequence Properties' dialog.

The following Studio elements are impacted by this setting:

- Component list in the Navigation Pane
- All Component-related tables in the Processing Method
- Component list in the Peak Properties Pane

3.12.7 Peptide Group Number [165002]

A new column called **Peptide Group** has been added to the MS Component table of the processing method. This parameter may be used to group all modifications of the same peptide. All components having the same Peptide Group number are considered part of the same group.

When importing components from a BioPharma Finder workbook, the **RelativeQuanNumber** of the workbook entries are assigned to the Peptide Group column.

Components may be filtered or grouped in a report template by using any of three new report variables:

procMeth.component(N).PeptideGroup, **Component.PeptideGroup** and **Peptide.PeptideGroup** (Note "(N)" refers to all of the several ways a component may be specified)

3.12.8 New Protein Deconvolution-Related Report Variables [133039]

With this release, the following report variables related to MS data have been added:

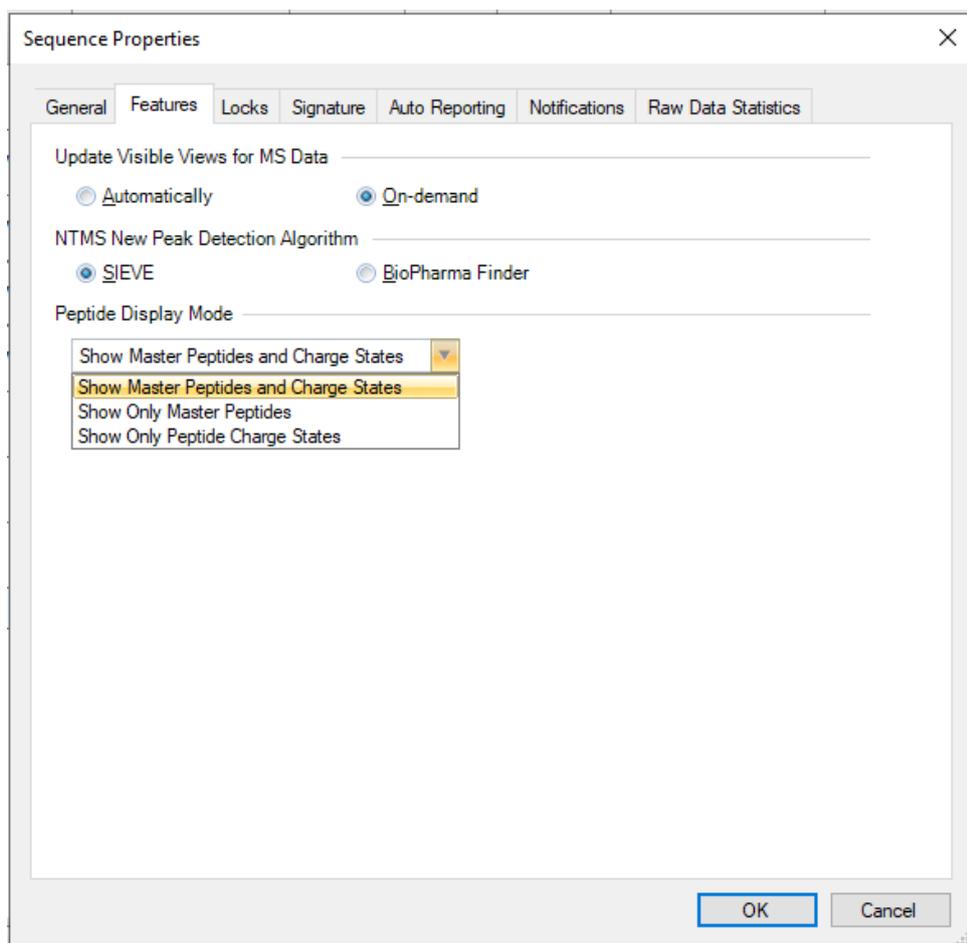
Report Variable	Context	Description
AlgorithmType	intactDeconvolution.reSpect.algorithmType	Returns the IPD Algorithm being used
SpectraSelectionType	intactDeconvolution.slidingWindow.spectraSelectionType	Returns the technique used to extract the source spectra for IPD
OffsetType	intactDeconvolution.slidingWindow.offsetType	When the Sliding Windows technique is used to extract source spectra for IPD, returns how the Spectrum Offset is determined

3.12.9 Peptide Display Mode [164990]

When working with peptides in the Studio, it is now possible to configure a sequence to display peptide components in one of three modes:

- Both master peptide and charge state components (the default)
- Only master peptide components
- Only charge state components

This selection is defined on a per-sequence basis in the Sequence properties dialog.



A similar selection option exists in the New Sequence Wizard as well as the eWorkflow designer. This setting has no effect when working with non-peptide data.

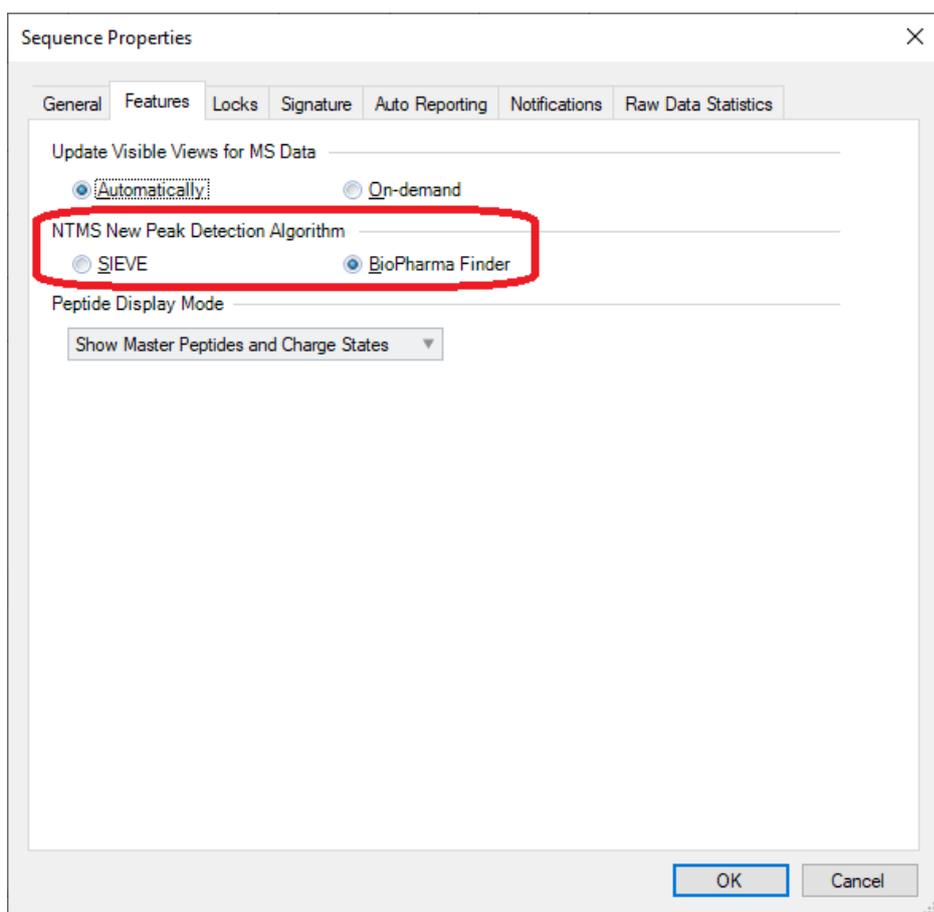
3.13 Non-Targeted MS Processing Enhancements

3.13.1 New Algorithm for NTMS New Peak Detection [133522]

This release introduces a second algorithm for new peak detection when doing Multi Attribute Method (MAM) analysis of peptides.

This algorithm is identical to that used by Thermo Scientific BioPharma Finder software and offers better performance, increased sensitivity and more accurate detection compared to the existing SIEVE algorithm. It also permits the exchange of processing parameters, CQAs and the complimentary analysis of data between the two applications.

The algorithm selection is defined on a per-sequence basis in the Sequence properties dialog.

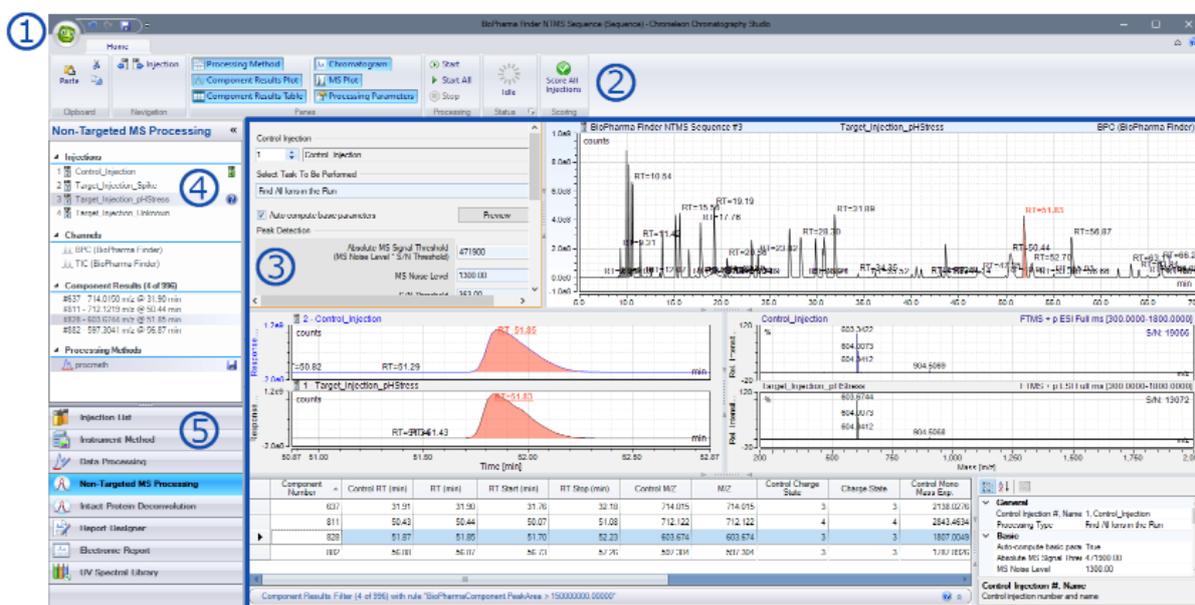


A similar selection option exists in the New Sequence Wizard as well as the eWorkflow designer.

The default for new sequences is to use the BioPharma Finder algorithm. This setting has no effect when working with nonpeptide data.

Studio Category

When a sequence configured to use the BioPharma Finder algorithm is opened in the Studio, the Non-Targeted MS Processing category contains a similar but modified work area as compared to the existing SIEVE algorithm.



Number in image	Area	Description
1	Studio button	<p>Clicking the Studio button opens the Studio Menu. From this menu, you can open, print, or export data, and save any modifications you made in the Studio.</p> <p>Note: Items in the Studio menu categories depend on which pane is currently selected in the work area. For example, the Print category items always offer printing the contents of the currently active pane. To print another pane, it needs to be selected in the work area before clicking the Studio button.</p>
2	Ribbon bar	<p>This bar contains controls for working with data displayed in the work area. The controls are grouped in tabs.</p> <p>The Home tab contains controls for the overall workflow of processing one or more injections of the sequence with the BioPharma Finder NTMS processing algorithm. This tab is available at all times.</p> <p>Additional tabs may be displayed on the ribbon bar when a specific pane is selected in the work area. For example, when the Chromatogram pane is selected, Processing and Layout tabs are also added to the ribbon bar.</p>
3	Work area	<p>The work area can be populated by panes, as defined and operated from the Ribbon bar. Panes include:</p> <ul style="list-style-type: none"> • Processing Method pane • Component Results Plot pane • Component Results Table pane (also contains the Component Results Filter) • Chromatogram pane • MS Plot pane • Processing Parameters pane <p>Selecting a specific pane in the work area by clicking (noted by a golden outline around the pane) can display new tabs in the ribbon bar, in addition to the Home tab. For example, when the Chromatogram pane is selected, Processing and Layout tabs are also added to the ribbon bar.</p> <p>Objects processed or displayed in the work area are navigated from the Navigation Pane. For example, Component Results Plot and MS Plot panes are updated after clicking a component in the Component Results list. Clicking an injection in the Injections list updates all work area panes for the selected injection.</p>
4	Navigation pane	<p>This area contains lists of Injections, Channels, Component Results or Processing Methods and icons indicating their statuses. The lists are used to navigate through the objects related to NTMS processing.</p> <p>Clicking an individual item in a list updates data processed and displayed in the work area for that item. For example, clicking a component in the Component Results list updates the Component Results Plot pane and the MS Plot pane, and also highlights the selected component in the Component Results Table. Clicking an injection in the Injections list updates all work area panes for the selected injection.</p>
5	Category bar	<p>This bar of selectors is used to switch between the major categories in Studio. For NTMS processing, the Non-Targeted MS Processing category must be selected.</p>

For details on the contents, operations and behavior of the work area panes, as well as for more information on non-targeted MS processing in general, please refer to the online help.

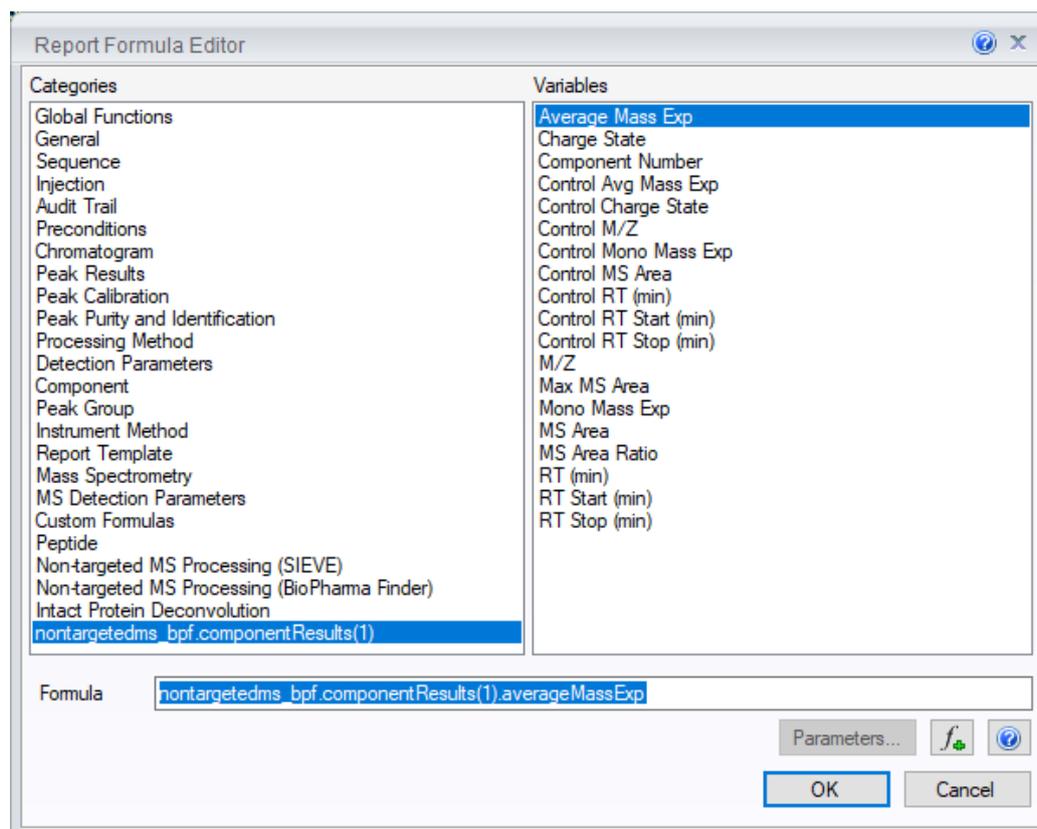
Reporting

To support the reporting of processing parameters and results of new peak detection using the BioPharma finder algorithm, several new report objects and report variables have been created.

New Tables

- BioPharma Finder Processing Parameters Table
- BioPharma Finder Component Results Table

New Report Variables

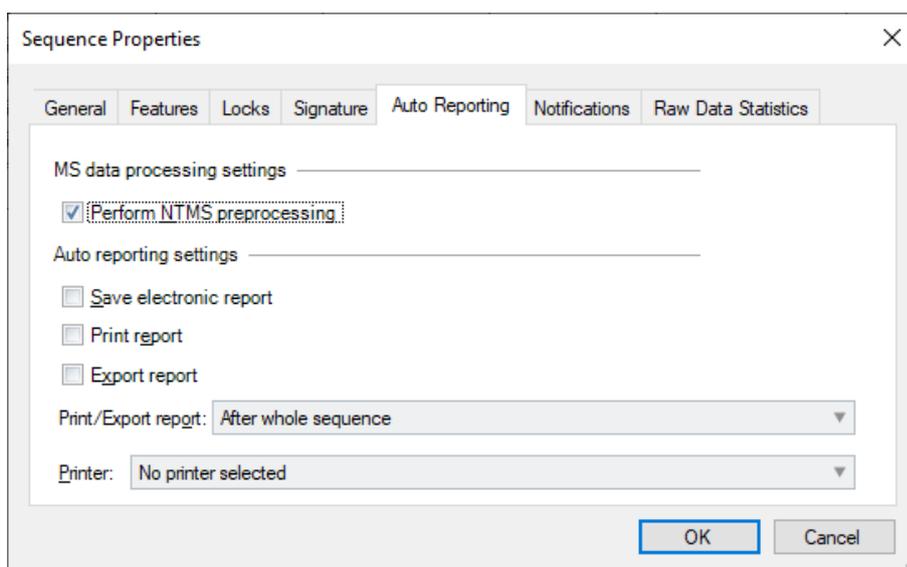


3.13.2 NTMS Autoprocessing and Autoreporting [147970]

In previous releases, reporting processed NTMS data required opening the sequence in the Chromatography Studio and manually processing the data.

With this release, when using the new BioPharma Finder Algorithm (see 3.13.1), it is possible to automatically process and report the results.

This option for preprocessing is enabled on the Auto Reporting tab of the Sequence Properties dialog.



Similar options also exist in the New Sequence Wizard and in the eWorkflow editor.

3.13.3 New NTMS Report Variables [148366, 148378, 148563, 151360]

The following new report variables related to non-targeted Mass Spectral analysis have been added to this release:

Category	Variable	Meaning
Non-targeted MS	PeakThresholdType	The NTMS Threshold Type (fixed or auto-computed)
Non-targeted MS	PeakThresholdPeakType	The Reference Peak Type (TIC, BPC, or N/A if not automatically computed)
Non-targeted MS	PeakThresholdPct	The Reference Peak Pct (N/A if not automatically computed)
Peak	SummedChargeStateConfirmingPeakArea(m, n)	The sum of the areas of all the charge states for each isotope (confirming ion). Note that there will be one value for each isotope (confirming ion)
Peak	SummedConfirmingPeakArea(n)	The sum of the areas of all the isotopes (confirming ions) for each charge state. Note that there will be one value for each charge state component
Peak	compScoring.massAccuracyMass(n)	The actual mass that is derived from the data and used in the Mass Accuracy composite scoring
Peak	confirmationPeak(n).isExcluded	TRUE if the selected confirming peak has been excluded from Composite Scoring due to intensity threshold criteria
Peak	peak.compScoring.peakApexWithinChargeStateStdDev	Returns the standard deviation for all isotopes within the selected charge state

Peak	peak.compScoring.peakApexWithinChargeStateAndIsotopeStdDev(x)	Returns the standard deviation for all isotopes within all charge states
Peptide	isotope(n).SimulatedMass	The simulated mass of the selected isotope of the Theoretical Isotopic Distribution (abundances)
Peptide	isotope(n).SimulatedAbundance	The simulated abundance of the selected isotope of the Theoretical Isotopic Distribution (abundances)
Peptide	isotope(n).isExcluded	TRUE if the selected isotope has been excluded from Composite Scoring due to intensity threshold criteria
Processing Method	compScoring.filterIsotopes	TRUE if an intensity threshold should be applied to exclude low intensity isotopes
Processing Method	compScoring.filterIsotopeReferencePct	If exclusion of low intensity isotopes by % intensity has been enabled, this variable returns the % intensity below which the isotope will be excluded from composite scoring. Otherwise, n/a is returned.
Processing Method	compScoring.filterIsotopeReferenceType	If exclusion of low intensity isotopes by % intensity has been enabled, this variable returns the reference chromatogram type used to compute intensity below which the isotope will be excluded from composite scoring. Otherwise, n/a is returned.
Processing Method	compScoring.filterIsotopeReferenceValue	If exclusion of low intensity isotopes by absolute intensity has been enabled, this variable returns the intensity below which the isotope will be excluded from composite scoring. Otherwise, n/a is returned
Processing Method	compScoring.massAccuracyCalculation	Reports the method used to compute mass accuracy ('Greatest Mass' or 'Nearest Mass')

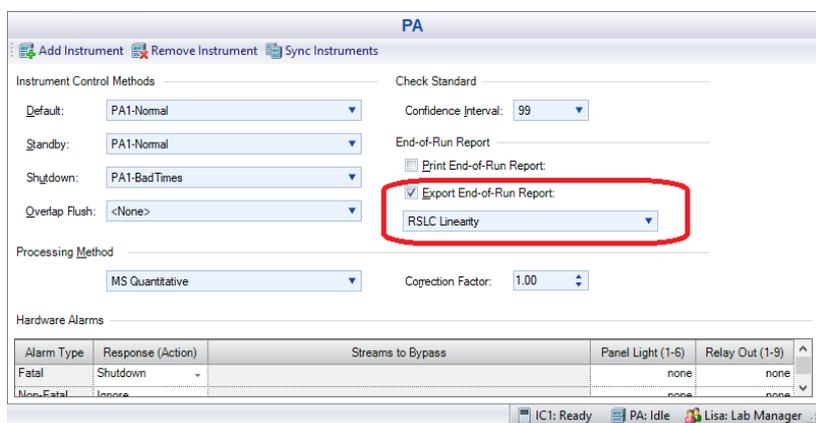
3.14 Chromeleon 7 Process Analyzer Enhancements

3.14.1 Process Analyzer Client Locking [53818]

When a client inactivity timeout is specified in the Admin Console, the Process Analyzer client window is now locked or closed (based on the Admin Console selection).

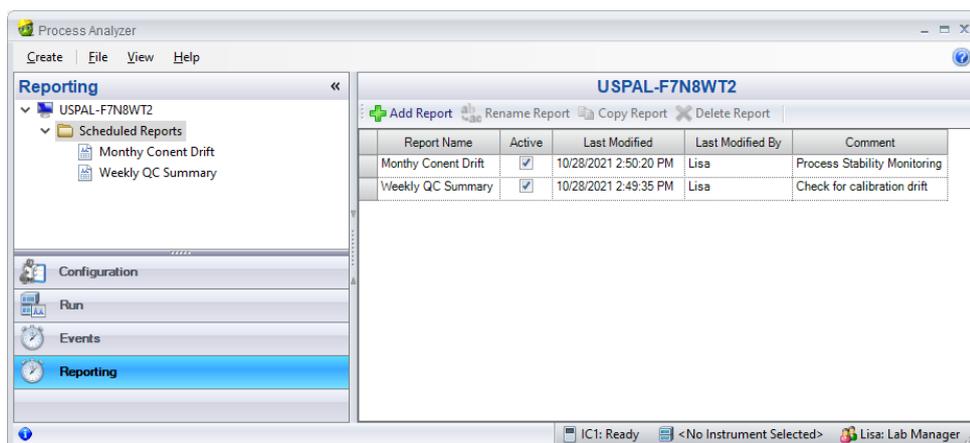
3.14.2 End of Run Export [165009]

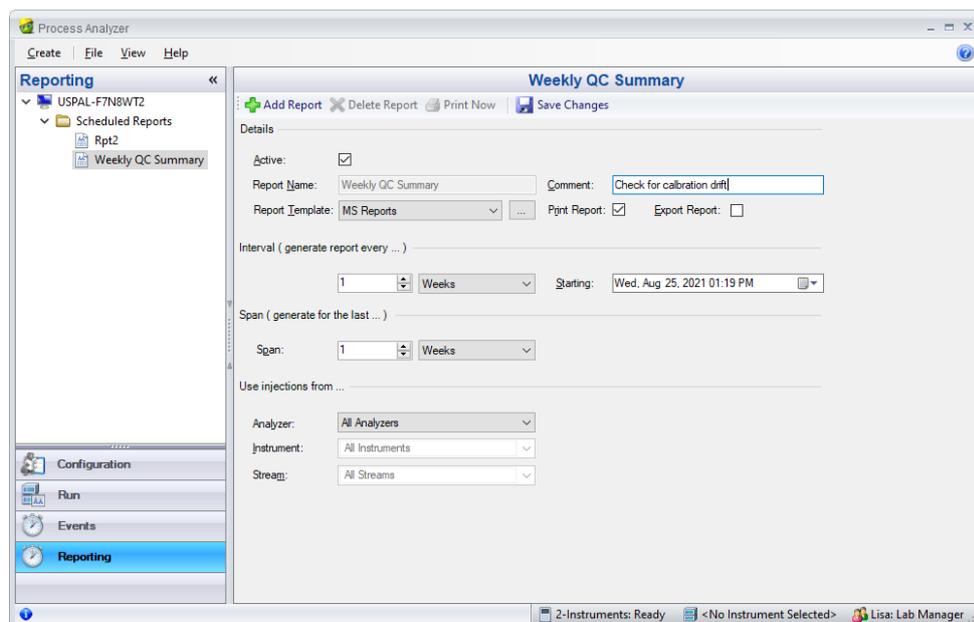
With this release, the CM7 Process Analyzer software extends the support for automatic reporting at the end of a run to also allow results export. When enabled, the export settings stored with the selected report template are used.



3.14.3 Scheduled Reporting [165009]

A new category called Reporting has been added to the CM7 Process Analyzer software. This category supports the creation of scheduled summary reports on a per-analyzer or per-instrument basis. Multiple reporting schedules may be defined, each with its own interval and specifications.





3.15 Microsoft SQL Server Express 2019

The Chromeleon 7.3.1 installation kit contains an installer for SQL Server Express 2019 for local Data Vaults and XVaults.

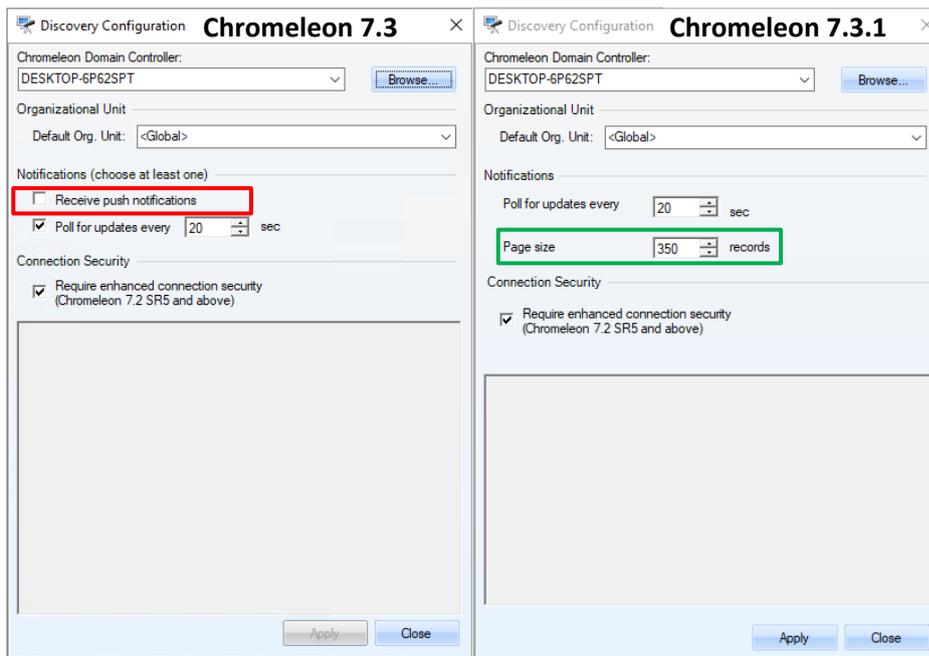
- The Chromeleon 7.3.1 installation kit will only install SQL Server Express 2019 if no previous version of SQL Server Express is already present on the computer.
- If a previous installation of Chromeleon is already installed and is using either SQL Server Express 2014 or SQL Server Express 2017, the Chromeleon 7.3.1 installation kit will not automatically upgrade the SQL Server Express version. In this scenario the SQL Server Express version can be manually updated or updated using the Chromeleon Updater Service.

Note: SQL Server Express version \geq 2017 no longer supports Windows 7 or 32bit OS systems. On those systems, the installation of SQL Server Express version \geq 2017 can be skipped, and local DataVaults or XVaults are not available. To install Chromeleon \geq 7.3.0 on Windows 7 or a 32bit OS, please manually install and configure SQL Server Express 2014 first (see Installation Guide).

3.16 Discovery Service Updates

3.16.1 New 'Page Size' Parameter

Chromeleon 7.3.1 introduces a new and additional discovery communication interface parameter called 'Page Size' that supports improved discovery service in larger enterprise environments with a discovery database $>$ 5 MB. The discovery improvements change the timing behavior of the Chromeleon domain discovery service. As a result, there have been two changes to the user interface as seen below. Receiving of 'Push Notifications' has been removed as an option. The new 'Page Size' parameter has been added, for more information please refer to the online help file.



4 Resolved Issues

This chapter describes the issues that have been resolved with the release of Chromeleon 7.3.

Many trivial and minor issues have been resolved but are not mentioned here. If you require information about the status of an issue observed in a Chromeleon 7 release, but which is not listed here, please contact your local Thermo Fisher Scientific representative for more information.

The numbers in the first column of the table below refer to the Thermo Fisher Scientific tracking IDs.

ID	Description
CM7-21342	Vanquish Variable Wavelength Detector: For acquiring data on a single channel only using the Vanquish VWD it was necessary to use channel UV_VIS_1. This issue is addressed by installing firmware version 2.01 for the Vanquish Variable Wavelength Detector.
CM7-25466	<p>Vanquish Drivers: For a Dual Autosampler in shared mode, where both instrument methods have different temperatures set, the temperature setting of the sequence started first is overwritten by the setting of the sequence started second. This has been fixed. Now a warning or error messages indicates any mismatches in the temperature settings:</p> <p>During a queue run, methods must contain the same temperature settings. An error message indicates to the user if this is not the case.</p> <p>If a queue is to be started on instrument 2 while a queue is already running on instrument 1, all methods of the queue to be started must have the same temperature setting as in instrument 1 (including Smart Startup method). An error message indicates to the user if this is not the case.</p> <p>If the temperature setting is defined in the method(s) of the running queue but not in the method(s) of the queue which is about to be started, a warning is issued.</p>
CM7-25485	The Waters Driver Pack 2017 R2 cannot be installed on a PC running Windows Server 2016. The corresponding option is greyed out and cannot be selected during the Chromeleon setup. This issue has been addressed with Waters Driver Package 2019 R1.
CM7-23504, 27757	Waters Acquity: In rare circumstances when configuring and then removing an Acquity PDA, the module would still be shown in the Acquity Console. If a command was then executed (e.g. lamp on), the module would disappear from the console. This issue has been addressed with Waters Driver Package 2019 R1.
26695	Instrument Controller: The Instrument Controller would crash if one of the initial logon attempts failed because of a user management error. Now the error is logged to the instrument audit trail and to the log file. The failed logon attempt is repeated a) when a user tries to logon to an instrument, b) when the recording of a raw data channel starts, and c) periodically by the diagnostics availability check thread.
27470	Report Designer: With some high-resolution video adapters, if the Report Designer window was sized to collapse some Ribbon Bar groups, then closing Chromeleon and reopening the Studio would result in an exception error when the Report Designer category was selected.
27927	The user documentation now states that multiple Waters Acquity systems can be controlled on one Instrument Controller PC.
27929	The user documentation states that the USB driver for the Corona CAD is automatically installed as part of the USB driver package.
28722	TRACE 1300 GC: For certain combinations of run time and acquisition rate, the Injection Audit Trail would erroneously report "Missing data points detected. Maybe the run was aborted on the GC."

ID	Description
28439	Injection Query: If an injection query identified matches in a data vault folder in which the current user did not have access group permissions, then the following error was generated: "An error occurred during execution of this query. Please rerun this query after the error has been fixed."
49198	LC Drivers: For the Vanquish CAD in an instrument configuration with several detectors, deselecting the CAD in the Instrument Method Editor Wizard did not disable the corresponding detector diagnostic channel(s).
49859	XIC Chromatogram manipulations: when repeatedly modifying the integration (peaks, baseline) of XIC chromatograms, removing these modifications and the corresponding extraction parameters in the processing method again and again the MS component plot of the XIC chromatogram might not fit to the manually modified peak and baseline list anymore.
51913	Instrument Drivers: TRACE 1300 GC: The ePanel label for PTV Temperature would disappear if the temperature went below zero.
52817, 52878	Compliant Tuning: After tuning an MS instrument of the TSQ LC QqQ family, the tune report sometimes did not automatically appear in the list of available tune reports on the ePanel.
52884	Injection Query: When creating a new injection query and using quick search criteria for date/time related record field in the sequence or injection the default value for a corresponding comparison value has been set always to September 2016. With 7.3.1 the default value is changed now to the current date and time.
238875	Instrument Method - Gradient: For an instrument method with an on-line gradient an access violation was logged at a frequency of 100 Hz, thereby filling up the daily instrument audit trail. Now the respective warning is only logged once.
61560	Instrument Method: If a formula was used to set a numeric value for an instrument method (e.g. sampler position) to an out of range value, when the method was executed, the out-of-range value was clipped to fit the range and a warning indicated as much. Now if an out-of-range value is clipped, this results in an abort error and an indication to the user to adjust the formula.
62947	LC Drivers: Method Translation from an instrument method for an instrument with an UltiMate™ VWD-3400RS with the settings WL 1= 850 WL 2= 755, PW = 0,02, DCR = 2Hz to a target instrument with a Vanquish VWD (VC-D40-A) with wavelength settings WL 1= 190 and WL 2 = 750 would result in an error message: "The chosen data collection rate is not accepted for the given acquisition parameters ..."
82913	Drivers: GC: TriPlus 500: If instrument parameters were modified during overlapped sample preparation, these were not correctly recorded in the Injection Audit Trail.
84495	Waters Acquity system driver: A Ready Check for Alliance detectors with blank injections would result in an error even if no acquisition channel was selected.
86381	Data Vault Manager: Renaming a data vault in the Data Vault Manager was not possible anymore.
111913	DDK: As a result of a multi-threading issue with the GenericControlContainer code raising events defined in the IPanelControl interface could result in a deadlock.
112376	DDK V2: GenericControlHost: OnConnectedValue event would not be reliably raised.
113914	Composite Scoring: When working with large molecule sequences, in the Navigation pane, the master peptide had a score based on the scoring of all the components in the isotopic distribution. That scoring has been removed.

ID	Description
117796	MS Processing: When computing the Isotopic Dot Product, a negative value could be reported when a theoretical mass could not be matched to a simulated mass
119056	Extension Packs: In the GCMS Environmental Analysis Extension Pack, the 3 ISTD summary reports did not correctly evaluate pass/fail when more than one ISTD was defined. Due to design limitations, the automatic pass/fail evaluation has been disabled.
119840, 81736	LC Drivers: When running sequences on more than one instrument on an Instrument Controller PC, a communication error on the RefractoMax 520 RID would cause an abort error on all running sequences and the Instrument Controller PC would become unusable. For the RefractoMax 520 RID, the entries in the injection/instrument audit trail did not specify the device name. Now a communication error on one instrument no longer affects other instruments on the same Instrument Controller PC.
120538	Composite Scoring: When scoring mass accuracy, a negative mass accuracy value is always interpreted as 'passed', regardless of magnitude, when in fact the absolute value should be used for comparison. When using this criterion, be sure to confirm results by an independent means such as using a report table to confirm the scoring.
122688	Reporting: The report variable for the NTMS Peak Intensity Threshold returned "n.a." when the parameter was set to 'Auto-compute'
122873	Data Vault: Under some circumstances, after viewing MS data with errors in the Chromatography Studio the Data Vault service would crash, preventing access to all data and requiring a system reboot.
124145	LC Drivers: When upgrading from Chromeleon 7.2 SR5 MUK to Chromeleon 7.3, DDK V1 assemblies were not updated and the IQ report would report errors for all DDK V1 assemblies that were present in Chromeleon 7.2 SR5 MUK.
124146	LC Drivers: When upgrading from Chromeleon 7.2 SR5 MUK to Chromeleon 7.3, DDK V2 assemblies were not updated and the IQ report would report errors for all DDK V2 assemblies that were present in Chromeleon 7.2 SR5 MUK.
124269	Composite Scoring: Peak Apex Alignment would always report a failed result if an isotope was missing for a charge state.
124779	Reporting: When Autorepeat was selected for the MS Components Plot and Grouping was enabled, the repeating of plots did not work properly.
124900	Peak Detection: Chromeleon 6 Algorithm: In very rare cases the peak detection with the Chromeleon 6 algorithm run into an error message "Can't read channel Index was out of range.". This error message has been shown in the chromatogram plot pane of the Chromatography Studio window. No results were reported for such chromatograms.
125373	If the injection list of a running sequence was edited and saved, then it could happen that the Instrument Controller would start an already finished injection for the second time. This led e.g. to a second inject command for this injection and later to a wrong injection status "Interrupted".
125816	Vanquish DAD: The configuration of the Vanquish DAD used to allow changing the signal unit and factor for the 3DField. However, any user-entered signal unit and factor were not applied to the Chromeleon Spectra Plot, when extracting a signal, or in an export of the 3D-File. With Chromeleon 7.3.1 it is no longer possible to change the signal unit and factor for the 3DField in the configuration of the Vanquish DAD.
125883	If a sequence was changed during the run, it might happen that an already finished injection of the sequence was started again.

ID	Description
126052	<p>Peak Grouping: When using an integration or consolidated report table for multiple channels or multiple injections peak results for not identified peaks which were also members of a peak group have been reported even if the not identified peak was not present in one of the channels or injections. Instead of reporting n.a. in this case the report table showed the result of the corresponding peak group or n.r. if the peak was not included in the 'Filter Peaks' options of the report table.</p> <p>This bug was not present in Chromeleon releases up to 7.2.8. It could be only observed in Chromeleon 7.2.9 and later releases.</p>
126142	<p>MS Data Acquisition: If an MS instrument method did not have any scan events at run time 0, it could happen that the MS would repeatedly disconnect and reconnect during a run.</p>
126748	<p>ISQ-EC/EM: It was possible to execute a Manual Tune from the instrument ePanel without the required user privilege ("Execute On demand MS Manual Tune\Calibration").</p>
208328	<p>DDK V2: For the Generic ePanel Host the evaluation of the user in control was not working.</p>
127081	<p>Data Import/Export: When some types of .cdf data was imported into Chromeleon, each channel of data was created as a separate injection, rather than being grouped together under their parent injection.</p>
127954	<p>Updater Service: An unhandled exception in the InstallExeDriver could prevent the target computer (247IC or IPC) from automatically rebooting after an update.</p>
128130, 168709	<p>The PerkinElmer Clarus 590/690 GC comes with a different signal scaling compared to previous Clarus and AutoSystem generations. Chromeleon now also supports this new signal scaling mechanism.</p> <p>We strongly recommend activating the new signal scaling. To do so, activate the checkbox 'Use X90 Signal Scaling' on the 'Components' page.</p> <p>Users who have used the PerkinElmer Clarus 590/690 GC with the original signal scaling and have already validated their methods and have not encountered any problems with signal levels or signal shape can continue working with the original signal scaling and leave the X90-specific signal scaling deactivated.</p> <p>Existing PerkinElmer Clarus 590/690 GC users should switch to the new X90-specific signal scaling if they are experiencing problems with interruptions in the signal steepness, which may even lead to negative signal values, especially for very high signals.</p>
129919	<p>MS Components: When copying/pasting peptides to the processing method component table, if a charged component was not part of a peak group then the following error was generated when attempting to render that information in an Interactive Chart:</p> <p>"Object reference not set to an instance of an object"</p>
130330	<p>Overlay Chromatograms via Command Line Parameters: Starting a Chromeleon 7 client via command line parameters to automatically open a Chromatography Studio window with two or more overlaid chromatograms didn't work. Only the first chromatogram in the parameter list has been shown in the chromatogram pane of the studio window.</p>
130548	<p>Import/Export: eWorkflow import: Importing some eWorkflows created from earlier versions of Chromeleon would fail on some systems with some non-English regional Windows settings. The error message was "An error occurred during import process. 1 is not a supported code page"</p>
131754	<p>Reporting: When using Autorepeat for the MS Components plot, if a custom condition was specified to filter the components then only one component was reported.</p>
131768	<p>Studio: When reviewing a sequence that contained corrupted MS data, switching between injections would sometimes cause an error message "Error in sample changed event handler of object Chromatogram View"</p>

ID	Description
132419	Instrument Activity Log: A column called 'User' existed but was not used by any instrument driver and therefore never contained any information. This column has been removed.
132974	Client: Console: Sequence Properties: Auto-reporting options in the sequence properties dialog of an acquired sequence showed the current enforcement rather than the actual options that were used when the sequence was acquired and auto-reported.
133034	MS Processing: It was possible to save IPD custom raw data (which contains results information) without also saving the processing method that generated the custom raw data, which could result in a lack of results traceability when the sequence was closed and reopened. Now both must be saved at the same time.
133035	MS Processing: It was possible to save NTMS Frame Results without also saving the processing method that generated the Frame Results, which could result in a lack of results traceability when the sequence was closed and reopened. Now both must be saved at the same time.
133039	Reporting: When doing Intact Protein Deconvolution analysis, it was not possible to report the algorithm used, the spectra extraction technique or how the sliding window offset was determined.
133157	Reporting: Auto-reporting: In the sequence audit trail of a sequence for which an electronic report had been generated and printed automatically at the end of acquisition, the 'create' action appeared after the 'print' action instead of before.
133258	Reporting: The IPD source spectrum and IPD deconvoluted spectrum did not use the Mass Precision as defined in the properties dialog
133720	Instrument Method: For the Ultimate DAD/MWD and the Vanquish DAD/MWD if an instrument method did not contain any UV-Vis channels, selecting "Startup/Shutdown" in the Instrument Method Editor or "Smart Startup using Instrument Method" from the navigation pane of the Instruments View would result in an error "Failed to initialize SmartX plug-in with DriverId Dionex.DAD3000. SmartX functionality for this plug-in will not be available". When attempting a version comparison of this instrument method, an error "An error occurred while comparing the items" was shown.
133983	Waters Acquity: The ePanel did not show status information for the TUV detector.
134826	Manual Integration of XICs: If XICs (Extracted Ion Chromatograms) have been manually integrated the first time the corresponding privileged action has not been applied. Although the privilege action has been enabled in the global policy section of the Administration Console the user could save the manually integrated XIC without getting the chance to enter a comment or being forced to enter his valid authentication password.
134932	Client: Console: If an injection was added to a 'parked' remote sequence while another sequence was acquiring on the same instrument, and the running sequence completed before the change to the parked sequence was saved, the status of the parked sequence would change from 'Finished' to 'Pending'. This status change should only have occurred when the parked sequence was saved.
135733	Reporting MS Tune Data: when trying to report the MS Tune Data Set in the Report Designer sometimes the corresponding report table showed an error 'Cannot load data item ...'.
136002	Waters Acquity system driver: The online documentation now states that the Waters 2414 RI detector needs to be configured in RIU mode when configuring the Waters 2414 RI detector with the Waters Acquity system driver.

ID	Description
136803	Data Audit Trail - Comparison Details: If an instrument method is deleted in a sequence the data audit trail window shows this operation via a dedicated record. Looking at the comparison details of such a record run into an error window with the message 'Index out of range'.
137383	Console: Selecting the 'Lock Client' menu item would cause an error if the 'Client Inactivity' lock option in the Administration Console was not enabled.
137866	Console: When MS data was opened In another application via the 'Open with' context menu item, the temporary RAW file name is now named "<SampleName>_<InjectionNumber>"
137938	E-Mail Notification: Links to instruments and sequences in an email notification message would not work if the sequence name or path contained a space.
138188	Client: Console: Saving updates to a "parked network sequence" would incorrectly cause the sequence to be added to the queue.
138596	Vanquish Pump: For a Vanquish Core instrument with a Vanquish Flex pump, when trying to start a sequence, the Ready Check shows a warning "Basic Tightness Test has been aborted". This issue is addressed by installing firmware version 2.03 for the Vanquish pump.
139493	When using high DPI screen resolution (150 and above), multiple areas of the Chromeleon user interface (Console, Studio Admin Console and Process Analyzer) would have display issues.
140151	Virtual Column: In the pane plotting the Resolution and Gradient, it was possible to adjust the splitter between the two plots downward, but not upward.
140152	Electronic Signature: when removing the electronic signature of a sequence the corresponding privilege 'Remove Signature when Submitted', 'Remove Signature when Reviewed' or 'Remove Signature when Approved' is checked depending on the signature state of the sequence. As yet, additionally the privileges 'Modify Sequence' and 'Create Electronic Report' have been checked as well. So if these two privileges were not enabled in the logon role the user couldn't remove the signature of a sequence although the corresponding remove signature privilege was enabled. Now these two privileges ('Modify Sequence' and 'Create Electronic Report') are not checked anymore in this use case.
140413	Peak Signal to Noise Calculation: When using the factor 1 in the formula for the peak report variable 'Signal-to-Noise Ratio', e.g. peak.sn("Current", "XTimes", 1.0, 20.0 * peak.width(50)), the result computation did not work reliably due to rounding problems and often reported n.a. instead of the true S/N ratio value. The online help for this report variable has been improved to describe the noise calculation in a more detailed way including time range selection, possible obstacles, and workarounds.
141108	Process Analyzer: When the Source of a Ready Check error was 'Injection;' the ink in the Ready Check dialog did not provide any information. The link has been removed.

ID	Description
140699	<p>Running Chromeleon while the windows option "Beta: Use Unicode UTF-8 for Worldwide language support" is enabled, the following issues have been made observed:</p> <p>Creating a report template fails with an error message "MBCS environments (>2 byte/character) not supported or opening the Studio, Chromeleon crashes after showing an error message "object reference not set to an instance of an object".</p> <p>Chromeleon does not provide any installation qualification error when this option is enabled., but it is highly recommended to disable this windows option by switching it off under Control panel => Region => Administrative => Change system locale => Beta: Use Unicode UTF-8 for Worldwide language support".</p> <p>With 7.3.1: IQ report issues an error when this option is active. In addition, the Installation Guide describes how to disable this option.</p>
141695	<p>Component Table Online Help: the description in the online help has extended to explain the computation of the peak amount with more details when using the calibration option 'Calibration of other component' and a relative response factor != 1.0.</p>
141862	<p>Licensing: In large enterprise deployments, it could happen that clients would report that the NFP license period had been exceeded and would terminate, even though the client was connected to the license server. The license server log file would report several 'heartbeat'-related error messages.</p>
142001	<p>Reporting: With very large MS sequences, generating reports or PDF files (especially when library searching was included) could result in an "system out of memory" exception error.</p>
142059	<p>Privilege Checks for Lock/Unlock Injections: Using a logon role with a dynamically assigned access group the privilege checks for the commands Lock and UnLock Injection didn't consider that the logged-on user is automatically member of this assigned access group. If a folder has been restricted to such an access group the user could access the folder but when executing the Lock or Unlock Injection command in a sequence a missing privilege message popped up although the corresponding privileges have been granted in the logon role.</p>
142553	<p>Process Analyzer: When selecting 'Show Logon Events' for the Administration Audit Trail, logoff events for the Process Analyzer were not listed.</p>
142755	<p>Worklist Import: When creating a sequence via a Worklist Import the template methods (Instrument/Processing Method, Report Template, ...) have been picked from the data item cache of the running Chromeleon Console. If such a template method has been changed e.g. by a different Chromeleon Console session in the meantime the modified template method was not picked during the Worklist Import if it has been already used in a previous Worklist Import run in the same Chromeleon Console session. Instead the previous version of the template method has been used to create the sequence. Now the Worklist Import is always using the currently saved template method</p>
143344	<p>Administration Console: When renaming a role Chromeleon didn't check whether the new role name already exists in a different OrgUnit. Identical role names are not allowed even across different OrgUnits.</p>
143579	<p>Privilege 'Create Sequence': The description of this privilege and the order in the role editor of the AdminConsole is updated to reflect the difference to other privileges which are also covering workflows to create new sequences.</p>
144006	<p>Agilent 6890 GC: On certain systems, sequence runs could abort with an error "Fatal error in Chromeleon Real Time Kernel: Access violation in module C:\Program Files (x86)\Thermo\Chromeleon\bin\CmDriver.exe"</p>
144119	<p>Administration Console: The Delete User operation wasn't possible although the user logged on to the Administration Console has been granted all user management operations.</p>

ID	Description
144165	In previous Chromeleon versions, it has observed that the PQ settings have not been properly applied during the PQ. The corrected behavior is: Setting the "to be executed" option to "false" will skip the execution of the corresponding test case action. Changing the weight to zero will not prevent the test case execution, but its score will not be considered in the PQ calculation results.
145125	<p>Reporting: Custom filter conditions in an integration or consolidated report table were not applied to not detected components. So, if the option 'Undetected Components' has been enabled result rows for not detected components appeared in the report table although a specific custom filter condition (e.g. looking for a certain value in a custom variable in the component record of the processing method) didn't match.</p> <p>Note: Running 7.3.1 reports with such report tables, i.e. using the filter option 'Undetected Components' and additional custom filter conditions, will show fewer report rows compared to prior Chromeleon versions in this use case. Electronic reports are not affected; they are still showing the same results as before.</p>
145131	User Management: Changing an Injection Custom Variable in a Sequence incorrectly required the user privilege "Data vault basics > Modify list of custom variables".
147732	Agilent ICF: For an instrument method for an Agilent instrument using the ICF-based LC System driver, with a post time equal or greater than 2 minutes, the sequence would abort at 2 minutes post time.
148088	NTMS: When using the peak intensity auto-compute feature, the peak intensity threshold was truncated instead of rounded to the nearest integer.
148153	Station Audit Trail: Under rare circumstances, a single Windows Update event was listed many times in the Station Audit Trail.
148300	<p>PerkinElmer Clarus 590 GC: Autozero would not set the signal to zero, instead the signal stayed at about -2.5mV.</p> <p>The PerkinElmer Clarus 590/690 GC comes with a different signal scaling compared to previous Clarus and AutoSystem generations. Chromeleon now also supports this new signal scaling mechanism.</p> <ul style="list-style-type: none"> • We strongly recommend activating the new signal scaling. To do so, activate the checkbox 'Use X90 Signal Scaling' on the 'Components' page. • Users who have used the PerkinElmer Clarus 590/690 GC with the original signal scaling and have already validated their methods and have not encountered any problems with signal levels or signal shape can continue working with the original signal scaling and leave the X90-specific signal scaling deactivated. • Existing PerkinElmer Clarus 590/690 GC users should switch to the new X90-specific signal scaling if they are experiencing problems with interruptions in the signal steepness, which may even lead to negative signal values, especially for very high signals.
148482	IPD: If the "Output Mass Range" method parameter was too large, a "Could not connect to the Thermo Deconvolution Engine" error would be reported.
148733	Custom Variables: When copying an injection record from one sequence to another or a component record from one processing method to another the content of associated custom variables were not copied along. The default values were used instead.
148992	Process Analyzer: Bypassing all streams after an alarm left the analyzer in a running state.

ID	Description
149682	<p>Chromatogram Plot, MS Quantitation Channel: When selecting the MS Quantitation channel, the chromatogram plot in the report designer didn't show all quantitation XICs for all components. Instead the error messages "Can't read channel MS Quantitation from injection #[number] – [injection name]" and/or "This method or operation is not supported" were shown.</p> <p>This bug was not present in Chromeleon releases up to 7.2.10. It could be only observed in Chromeleon releases 7.2.10 MUa or 7.3.</p>
150922	<p>Admin Console: Package Creation: Under some circumstances, the package creation process would stop at 100% and report that 'An error occurred'. When this happened, the error log did not provide sufficient information to investigate or resolve the problem. Logging has now been improved for this type of issue.</p>
151219	<p>Import: When importing Empower data created as a .cdf file (AnDI format), the import could report an error or could result in no Chromeleon sequence being created.</p>
153197	<p>Sequence: Using copy/paste to duplicate a very large MS sequence would fail with a 'System.OutOfMemoryException' error.</p>
162078	<p>PerkinElmer Clarus 580/590/600 GC: The PerkinElmer Clarus GC 580/590 and all 600 series offer a new feature 'RinseBeforeReady'. With the 'RinseBeforeReady' feature enabled, a missing vial would result in an abort error "missing vial" but would not interrupt the injection. In addition, if 'SampleWash' was also activated in the instrument method, the missing vial error would specify the wrong vial number ("Vial 2" instead of "Vial 1").</p>
162551	<p>Audit Trail: Error messages and error handling for instrument / injection audit trail save errors have been improved: Any instrument audit trail save errors are now logged to the station audit trail instead of to the Windows application event log. The injection audit trail save error message was improved to now read: "The injection audit trail cannot be saved. Therefore, the instrument controller will abort the injection and stop the queue on <instrument name>." The instrument audit trail message that is logged when the home data vault is available again after a period of instrument audit trail save errors was corrected to now read: "The instrument audit trail and injection audit trail could not be saved because the data vault was not accessible. Abort and error messages were written to the station audit trail."</p>
162629	<p>Reporting: Under some circumstances, when generating an Intact Protein Deconvolution report for multiple injections, the results in the IPD Component Results table would always be those of the first injection, regardless of the actual injection number.</p>
162832 196334 197438	<p>It was observed that sequences could not be uploaded to the data vault server anymore because of missing raw data on remote data vault hosted on a Windows 2012R2 / 2016 / 2019 based machine. Due to a change in the SMB protocol of the OS System. Using Chromeleon 7 Data Vault Server on a Windows Server 2012R2 / 2016 / 2019 system requires disabling the SMB Cache 2.0. Chromeleon IQ reports a warning if this cache is still enabled.</p>
162850	<p>Sequences: If a user did not have the 'Modify Sequence' user privilege, then changing the 'Read-only' status of the sequence from the Sequence properties dialog was not possible (A message was displayed indicating that the 'Modify Sequence' user privilege was required)</p>
162902	<p>Vanquish VWD: Turning on the UV or VIS lamp during data acquisition would result in an abort error. This is now rejected with an appropriate error message.</p>
162908	<p>Vanquish VWD: The flyover for the limit and warning limit for the UV Lamp Operation (Wellness properties UVLampOperationTime.Limit and UVLampOperationTime.Warning) indicated a range of [1...40000 hours]. This has been changed to the appropriate range [Off...40000 hours].</p>

ID	Description
162909	Vanquish Core Diagnostics: If a diagnostic test was aborted immediately, the injection name in the diagnostic data would show a default name "Diagnostic Run" instead of the actual name of the diagnostic test (e.g. Intensity Test, Basic Tightness Test).
162910	If an instrument was deleted and another instrument with the same name set up, the new instrument would inherit the sequence queue and fluidic configuration of the previous instrument of the same name. Now the newly created instrument starts out with an empty sequence queue and the fluidic configuration needs to be initially set by the user. In particular, if a Run Smart Shutdown/Standby at the end of a queue and/or an Emergency Instrument Method had been selected for the queue of an instrument would result in these options also being set for the newly created instrument. Now for the newly created instrument the standard settings are used, that is, Run Smart Shutdown/Standby is not set and no Emergency Instrument Method is selected.
163736	IPD: If the selected channel in the Data Processing category of the Studio was not the TIC, then the component scoring and the injection scoring in the IPD category of the Studio would not be consistent.
164808	Processing Method, Save As with Fixed Calibration: Applying or updating a fixed calibration in a processing method a subsequent Save As of this processing method led to an error message. The Save As operation was not possible in this use case.
165158	Licensing: In an Enterprise environment, if there were brief network interruptions it could happen that sequence acquisition could be halted with an error stating "License error: License server unavailable"
165964	If an emergency instrument method stored in a Network Data Vault was changed, the local copy of the emergency instrument method was not updated. Now the remote emergency instrument method is downloaded locally when a sequence queue ready check or a queue start is executed. Please note that the download may take a few seconds. The downloaded emergency instrument method is assigned to the sequence queue once the download has completed and will be used for each queue ready check and sequence start / update.
165965	For instrument methods with very long run times exceeding 35790 minutes (~ 596 hours), setting a new flow ramp would result in repeating abort errors: "Cannot set a flow or flow ramp segment: Command was aborted." The ramp time for the UltiMate 3000 and Vanquish pumps is limited to 35790 minutes as a time step for a ramp. Now the Queue Ready Check for the Vanquish pumps indicates that the run time is limited to 35790 minutes.
166453	Import: If a sequence included injections with an MS RAW file > 2GB in size, then importing a cmbx file of the sequence would fail.
166496	Terminal Server: When clicking on a sequence in the Console, an error message was occasionally displayed about an unhandled exception "Syncfusion.Windows.Forms.Grid.Grouping.GridMaxLengthSummary". After dismissing the error message, the sequence could be loaded as expected.
166930	CM7-PA: The first time CM7-PA was run after restating the PC, a sequence could pause after the first injection due to the software incorrectly trying to consume an extra data client license.
167220	Station Audit Trail: Due to a timing issue, it was possible that the audit trail would incorrectly report that "Integrity Check Failed" if the audit trail was being updated by another process. The message has been clarified.

ID	Description
167694	<p>Injection Audit Trail Report Variables in Graphical Objects: If injection audit trail report variables were used in graphical objects, e.g. to set the scaling limit of the x/y-axis in the chromatogram plot via formulas, the evaluation of these formulas didn't work. The graphical objects were drawn with the settings which have been applied when the corresponding report template has been saved before.</p> <p>Note: This bug is only present in 7.2.10 MUa and subsequent MU-releases for 7.2.10. It is not present in 7.2.10 or 7.3.</p>
167823	<p>Console: If the 'When a user logs on, lock all other client sessions' option in the "Multi-User Logon" section of the Admin Console was enabled and the 'Client Inactivity' lock option in the Administration Console was not enabled, then when a second user logs on a "System.ArgumentOutOfRangeException" error is generated.</p>
167926	<p>Processing Method: When the 'Update' button was used to change values for XICs of a component, values for custom variables and calibration levels would disappear from the UI.</p>
168804	<p>Vanquish Autosampler: During a run in which the next injection has the same position as the current run, if the rack configuration is changed to become invalid (e.g., because the rack was turned around), the system now alerts the user that the position is invalid and the sequence stops.</p>
169150	<p>Administration Audit Trail: If an administration audit trail contained lots of records (> 10.000 and more) for a given time range the retrieval of these records in the Administration Console often run into a timeout. In this case not a single audit trail record was shown. Now with 7.3.1 a notification window appears telling about the large number of audit trail records for the given time range and the fact that not all of them can be loaded at the same time. The time range is adjusted automatically so that all audit trail records of the adjusted time range are now listed completely in the corresponding audit trail window.</p>
169228	<p>Vanquish Autosampler: During a run in which the next injection has the same position as the current run, if the rack configuration is changed to become invalid (e.g., because the rack was turned around), the system now alerts the user that the position is invalid and the sequence stops. Similarly, if the first injection of a sequence to be started has the same position as the one currently set in the driver and the rack configuration for this position is invalid at the time of sequence start, the system alerts the user that the position is invalid and the sequence stops.</p>
169496	<p>Studio: If an MS Channel was extracted and made permanent while a sequence is still acquiring, then right-clicking on an injection acquired after that event afterwards and selecting "Keep as Channel..." would generate the error "[Channel name] already exists for at least one injection of the current sequence. Existing channels cannot be overwritten."</p>
169685	<p>In previous Chromeleon versions, it was observed that duplicate discovery entries of identical resources have been published. Discovery data management of discovery resources has been improved, so that identical information of discovery resources exists only once. In the case that Chromeleon resources have non-identical identifiers, those items will still be treated as separate entries.</p>

ID	Description
170404	<p>Custom Variables in Chromeleon 6 Reports: Chromeleon 6 offers an option to automatically convert UDCs (custom variables) of type string to numeric values in any report formula evaluation. This option is stored in the variable "Convert UDC To Numeric" of the Windows registry key [HKEY_LOCAL_MACHINE\SOFTWARE\WOW6432Node\Dionex\Chromeleon\Report]. When rendering reports for sequences in a Chromeleon 6 data vault using a Chromeleon 7 client or for Chromeleon 6 sequences imported to a Chromeleon 7 data vault result formulas using such UDCs (custom variables) showed either different results or no results compared to the corresponding report created by a Chromeleon 6 client.</p> <p>Note: Chromeleon 7 clients are now using the same registry key as Chromeleon 6 clients to determine whether the automatic conversion from values of type string to numeric is executed or not. This automatic conversion is also performed only for sequences located in a Chromeleon 6 data vault or for Chromeleon 6 sequences which have been imported into a Chromeleon 7 data vault. The registry key above needs to be installed on every computer which is used to create reports for such sequences.</p>
170414	<p>Signature Removal: if the electronic report is missing for a signed sequence, then the removal of the signature was not possible. Trying to do so resulted in the error message 'Value cannot be null'.</p>
171391	<p>Access to Chromeleon 6 Data: If a single folder in a Chromeleon 6 datavault contains hundreds of sequences – in one known case almost 2000 signed sequences – a Chromeleon 7 client couldn't access any sequence in this folder. When selecting the folder Chromeleon didn't respond any more or run into an out-of-memory exception or a generic GDI+ error.</p>
172743	<p>Data Audit Trail Report Table: Having a MS sequence with dedicated XICs in the Processing Method and some of these XICs being manually modified the data audit trail report table shows all XIC modifications for all injections as separate audit trail records (Type 'Chromatogram' and Operation 'Changed'). Yet if the filter 'Current Chromatogram' has been applied and the current injection contains such modifications the report table showed only the text "Data audit trail of chromatogram MS_Quantitation is available, but it is empty...". Now all manual XIC integrations for the current injection are listed in this case.</p>
172755	<p>Vanquish Sampler: The Vanquish sampler would inject a wrong volume if an injection volume exceeding the nominal loop volume (but below the loop volume) was specified.</p>
174584 198405	<p>Sequence: A user without the 'Delete Finished or Interrupted Injections' privilege could delete an injection by modifying the information in the injection row and then pressing "Ctrl+Shift+Delete" or "AltGr+Delete".</p> <p>UV Library: A user without the 'Delete Spectrum' privilege could delete spectra from a User UV Library by pressing "Ctrl+Shift+Delete" or "AltGr+Delete".</p>
175214	<p>Reporting Retention Index for TIC channels: Computing the retention index for a peak using the option 'Use detected retention time of' and specifying a rule for the reference injection, e.g. injection.number=1, didn't work for the TIC channel. The report value showed always n.a.</p>
175221	<p>Vanquish Core Autosampler: If the sampler door was opened during the sequence run or the sequence was aborted and a new sequence started immediately afterwards while a barcode scan was still running, the sequence was interrupted and the sampler kept waiting for module readiness.</p>
175243	<p>For the Vanquish Dual Autosampler (VH-A40-A and VF-A40-A) PrepareThisInjection and PrepareNextInjection were not working. The run was aborted with an error message.</p>
175542	<p>Report Designer: In The MS Components plot, using a relative retention time with a reference injection from another sequence would result in an Error "Operation is not valid due to the current state of the object".</p>

ID	Description
175699	TSQ LCMS: If the Serial Number field was manually edited to a Serial Number beginning with a letter, Chromeleon would not accept the input and instead interpret the input as an access key.
176183	Privileged Actions: The Privileged Actions dialog for modifying a sequence was not displayed if the sequence was modified while it was still acquiring.
176633	Instrument Audi Trail: During a copy/paste operation, Chinese characters were replaced by question marks
177677	Injection Query: When A custom variable is part of the query, multiple entries for some injections were sometimes returned.
177733	PerkinElmer Clarus GC: Using an instrument method created on Chromeleon 6, a sequence run on Chromeleon 7 aborted with an error message "Could not update setting for 'Data_Collection_Rate': Device reports 'OERROR: 92 GC BUSY'". While the Data Collection Rate (DCR) can actually be set, changing the package size results in the abort error. Now, if the package size cannot be set, this results in a warning rather than an abort error. Note that the package size setting improves the responsiveness of the signal online plot but has no effect on the data integrity.
178654	Chromeleon Studio would crash on a terminal server (2016) when attempting to create an instrument method with ICF 2.6 Update 2 installed.
178793	Vanquish Core: A method with an IdleVolume assignment in the initialization part of the method and a PrepareNextInjection command after the Inject command would result in the sampling procedure being executed twice. As a consequence, the actual injection volume was twice the specified one. In some instances, the sequence would stop.
181434	For an instrument method for an Agilent instrument using the ICF-based LC System driver, with a post time equal or greater than 2 minutes, the sequence would abort at 2 minutes post time.
181547	After running a large number of injections (e.g. more than 15,000 injections) the Real Time Kernel might crash with an instrument audit trail error: "Fatal error [Preflight]: bad allocation". The underlying cause of this issue was a memory leak in the Real Time Kernel, which has been fixed.
181727	Vanquish Core Autosampler: For a sequence with a method including PrepareThisInjection, if the IdleVolume was set to a different value than the one specified in the method before starting the sequence, the first injection was aborted with an error message "An error occurred during the injection preparation; run is aborted."
181792	Report Designer: After interactively printing using a report template, a message would appear prompting the user to save the modified print settings (though nothing was modified). Clicking 'ok' would then cause the version number of the report template to be incremented.
183709	Injection Query: In an Enterprise environment, if the results of an Injection Query included injections from a running or recently completed sequence, those injections might not appear when the query results were opened in the Studio or might have an incorrect name. In addition, opening the sequence containing that injection from the query results list would sometimes fail.
183757	Sequence: If a user lacked the "Modify running sequences" privilege, it was still possible to save changes to an instrument method. It was also possible to create new Processing Methods, Report Templates and View Settings.
185498	SmartLink: setting If "Show as a separate component tile in the first position of the view pane or plot" was selected, the reference was not displayed when SmartLink is used if a fixed reference injection from another sequence was specified.

ID	Description
186226	Licensing: User interface elements that previously referred to 'demo' licenses now use the term time-limited' licenses.
188170	Unexpected errors, e.g. "Sequence contains no matching element", were observed when using the "Fill Down" operation for multiple columns of the injection list table in the Chromeleon Console. Fill Down option dialog of the Chromeleon Console supports a single column type at a time. Different value types of multiple columns have to be handled separately. Fill Down operation option is now disabled when selecting multiple columns for a sequence.
188501	Processing Method: When user mode was enabled, updating the fixed calibration standards from an external sequence incorrectly required the "Modify Finished or Interrupted Injections" privilege.
189344	Admin Console: The "Client Inactivity Timeout" feature will now close Chromeleon if the only unsaved changes are View Settings.
189525	MS data acquisition: If the MS did not make contact closure and consequently did not collect data, Chromeleon would allow the injections to proceed without an indication of the problem or any errors reported. Now if the MS does not collect data due to a failure in contact closure, Chromeleon aborts the sequence.
189866	Command Line Parameters / Studio Window: It was not possible to launch the Chromatography Studio with overlaid chromatograms from different sequences via command line parameters. Only the first injection was shown in chromatogram plot.
190081	Admin Console: Licensing: On a non-English localized system, a permanent software license would incorrectly show an expiration date. This was only a UI issue - the license will not really expire.
190233	Atlas Workbook Import: In previous software releases, an error would be generated if an injection volume of 1L or greater was encountered. Now, the large injection volume will be converted to an Injection Custom Variable in the Chromeleon sequence.
190428	Processing Method: When Using a Fixed Chromatogram Subtraction, the "Modify Finished or Interrupted Injections" Privilege Was Required to Enable Fixed Calibration Mode
191115	Station Qualification - OQ: The Chromeleon Operational Qualification Report for the Instrument Controller would show a superfluous truncated GUID in addition to the Chromeleon version and build number. Now the Chromeleon version and build number are shown.
191634	When the Autoreporting service was enabled, many ReportManager[n].log files would accumulate in the C:\ProgramData\Dionex\Chromeleon\Log\ReportManager\ folder, many of which are empty.
191839	It was observed that System Status Report (SSR) generation failed to copy the following cache files "LicenseServiceHost.lsx" and "UserServiceHost.lsx", because those have been used by the Chromeleon Services. As those files are not required as part of the System Status Report, those files are now excluded from the SSR generation.
192717	Agilent LC system driver: Sporadically when changing the IP address of an Agilent LC system and trying to retrieve the configuration of a different system, the ePanel for the Agilent LC system would show an error message in the Chromeleon Console.
192721	Vanquish TCC: In easy mode of the Instrument Method Editor / Wizard, pre-heaters cannot be switched on unless the column chamber temperature control is switched on, too. This relation is visualized now by enabling/disabling the pre-heater controls. In Advanced mode, the pre-heaters settings are independent from the column chamber settings.

ID	Description
192723	Shimadzu CBM-20A: Trying to control a Shimadzu CBM-20A HPLC System with a UV detector and a non-UV detector (e.g. a UV and an RI detector) it would not be possible to connect due to access violations.
192726	Vanquish Autosampler: For a method including a PrepareThisInjection command and a user-entered position as parameter for the inject command, the Ready Check would result in an error message "The PrepareThisInjection command must be placed after all assignments to properties affecting the behavior of UDP commands." even if the instrument method did not contain User-Defined Programs (UDP's). This would also happen for Vanquish Dual Autosamplers (VH-A40-A and VF-A40-A), which are not supporting UDP's.
192899	<p>Electronic Signature: Having manually integrated so-called XICs (Extracted Ion Chromatograms) the verification of such a sequence sometimes failed. The submit and verification process was dependent on how the manually integrated XICs have been viewed in the corresponding studio session before the submit or verification process has been started.</p> <p>Note: In very seldom cases the verification of sequences which have been already submitted with a previous Chromeleon version might still fail. For all sequences which are submitted with Chromeleon 7.3.1 the verification process now makes sure that it is independent from any user activities in a corresponding studio session.</p>
196569	ChemStation Data Import: Importing Agilent ChemStation .D files would sometime fail with the error "Index and count must refer to a location within the buffer. Parameter name: bytes".
196739	Agilent RID G1362A: When the diodes were unbalanced (Agilent RID G1362A not ready), the sequence showed a warning "Module is not ready for run Unbalanced diodes". However, the sequence was not interrupted and remained in running mode. Now the module state is changed to "not ready", the sequence is interrupted, and the batch is stopped. This is the same behavior seen in Chromeleon 6.80.
196921	In prior Chromeleon versions, it was observed that the instrument audit trail archiving location accepted an invalid destination path. It was possible to set non-Chromeleon URIs, which is supported by the archiving operation. The user interface was improved - the input field is now read-only and the object picker (Chromeleon Data Vault browser) needs to be used to set a valid archiving location.
198403	It was observed that the Chromeleon 7 Print Service was unintentionally running (after using the post-installation) even though the Startup Type is Manual. This caused auto-reporting problems as the system could be randomly selected for auto-reporting when not set up to work correctly.
198683	Vanquish: An instrument configuration with a large number of modules (e.g. 10 modules) would result in an error "The content of System.TotalFluidics cannot be parsed".
199342	Chromeleon PA: The OPC Process Analyzer used long alphanumeric and dynamic IDs which would cause re-connection issues with OPC clients. The IDs are now more reader friendly and persist after initial connection.
198817	Report Designer / Interactive Results: Selecting a result column in the report tables 'Test Case', 'Test Case Summary', 'SIEVE Frame Table' or 'IPD Component Table' didn't show the corresponding formula in the status bar of the corresponding Studio window. Instead the computed value of the formula (Interactive Results) or an empty value (Report Designer) was shown.

ID	Description
199874	If 0 is selected in Password History setting under User Database Policies and user tries to provide same password as used previously, Chromeleon will give an error "This Password cannot be used again". This is by design. 0 doesn't mean that you cannot enter the same password again. Instead it doesn't store any recent password, so changing the password the next time the user will be able to enter this again.
199890	It was observed that when accessing a Chromeleon 6 data source following exception was thrown: "This item type cannot be contained in this collection". With that version, unsupported files within the Chromeleon 6 folder structure will be ignored to present the folder structure of the Chromeleon 6 data source in Chromeleon 7 Console.
200802	Import: Chemstation Data Import would fail with a 'System.OutOfMemoryException' error for large datasets.
201309	Login: In an Enterprise with LDAP enabled for the Global Organizational Unit but disabled for a child Organizational Unit, non-LDAP users in the child Organizational Unit were not able to change their password.
202515	Chromeleon SDK: A defect in the SDK ThreadPool was causing the instantiation of an instrumentAccess object to be slow on the first instantiation and even slower on subsequent instantiations.
203575	<p>Fixed Calibration: If there are pending changes for a fixed calibration sequence in the console or studio window selecting or updating this fixed calibration sequence in a processing method did copy the pending but not yet committed changes into the processing method. In version 7.3.1 this is prevented and the user has first to save or discard the pending changes before the fixed calibration sequence can be selected or updated.</p> <p>Note: if you want to set fixed calibration using the same sequence where the processing method is located you have to save processing method with an empty fixed calibration set first before you can select the sequence. Just updating the fixed calibration in this case works as before but with the restriction that there are no other pending changes in the sequence.</p>
205591	Vanquish Core Diagnostics: Rebooting an instrument with a Vanquish Core DAD during a running diagnostic test would result in a continuously running diagnostic test. It would not be possible to start a sequence run, baseline monitoring or another diagnostic test.
205592	IQ/OQ/PQ: Vanquish instruments containing a VH-C10-A or VC-C10-A with a valve installed would result in a ready check error in the gradient test.
205593	Vanquish Charger: After an upgrade of the Vanquish Charger firmware version, the charger ePanel would not provide the option to launch the inventory scan.
205594	Vanquish Autosampler: On the ePanel the value for the Total Loop Volume for the 25 µl sample loop has been changed to the correct value (50 µl).
208326	Audit Trail: For two sequences running sequentially on the same instrument, if the upload of sequence 1 to the data vault was canceled (e.g., user-cancellation after a network outage), an upload error was written into the injection audit trail of the currently running injection of sequence 2. The upload error is now written to the instrument audit trail, but no longer to the injection audit trail of sequence 2.
208513	Shimadzu LC 2010: Trying to control a Shimadzu LC 2010 HPLC System (LC 2010A or LC 2010C) with a UV detector and a non-UV detector (e.g. a UV and an RI detector) would lead to an access violation.

ID	Description
209598	For the PerkinElmer AutoSystem and Clarus GC systems, and for PerkinElmer TurboMatrix Headspace samplers an instable RS232 hardware connection would cause errors reported by the Windows low level RS232 communication driver for the PCI cards or USB <-> RS232 converter. These errors were reported in the audit trail and would include an error code like: "Communication error receiving data [Error: 37]". To avoid confusion, these error messages now clearly indicate that they are not originating from the GC/Headspace driver, but from the communication solution.
209996	TRACE 1300 GC: When running in Gemini mode with Flexible Dual Control enabled, if a sequence is queued (but not running) for the first instrument, then a sequence submitted to the second instrument would not start, due to the GC being stuck in Standby mode.
210282	Chromeleon 6 Import / Network Failure Protection: The CM7 console did not display audit trail messages for the daily audit trail of Chromeleon 6 data or the sample audit trail of an imported Chromeleon 6 sequence. This concerned audit trail messages created during Network Failure Protection (NFP): Under certain circumstances, an incorrect "Write back finished" message would be returned before the data was successfully restored to the central data source. On rare occasions, when restoring files from the mirror after recovery from network failure, the files would contain only zeroes. When attempting to restart a (modified) batch during network failure protection, no warning was presented to the user. In Chromeleon 6 a warning is now presented informing the user that the locally available information may be out of date. In rare circumstances 2D raw files acquired on a network data source would contain a damaged range. Additional checks during the save process have been implemented to detect this and overwrite the files using local NFP copies. If the user aborted a sample while fractionation was running and then restarted the batch, the original sample's program would still be running, and the subsequent sample would be set to interrupted.
210568	Agilent Autosampler G7129C: If the G7129B autosampler reached the correct temperature only after 10 minutes, a sequence would not run although the autosampler was at the correct temperature. The system would show an exception message "Error starting run (IsReadyForInjection timed out)." but would not indicate to the user that the module is not ready and that the sequence was aborted. Now the module state is changed to "not ready", the sequence is interrupted, and an abort message is written to the audit trail.
210719	MS Data Processing: As a side effect of avoiding out-of-memory errors when working with very large MS data sets, users have reported slower MS performance with mid-size data sets. This has been addressed in this release.
211881	In a Chromeleon enterprise environment, it has been observed that the Console session discovery records pile up and caused performance issues within the Chromeleon domain. With this Chromeleon version, the discovery service cleans up console session records older than 3 days once per day and/or on start-up
211886	MS Spectra: When working with MS Filters, the mass precision was always truncated to 2 decimal places. At times, this caused problems such as not being able to extract spectra when working with HRAM data acquired using PRM and other mass-specific acquisition modes.
212400	It was observed that modifications done by using the 'Peptide Name Editor' dialog could not be applied due to a disabled "OK" button. Changes can now be applied.
214797	It was observed that when creating a sequence using the sequence wizard, the user will be prompted to save the sequence; the selected folder is the recycle bin. Also, the save operation was successful, but the sequence will not be visible since the UI presents a filtered view of the recycle bin. If the recycle bin folder is selected the save operation will be blocked. A tooltip presents a hint that the newly created sequence cannot be saved in the recycle bin.

ID	Description
215780	In Chromeleon version 7.3 and Chromeleon 7.2.10 MUa/b/c/d it was observed that sequences of a broken replication have been automatically uploaded, even though the broken replication was already detected. In this Chromeleon version an additional TxpStore folder check will prevent the automatic upload of broken replications. User needs to use the "Manual Move" or the "Manual Upload" operation to remove the sequence from the instrument sequence queue.
219182	User Management: If a new user was created with restricted Admin Console privileges (i.e. only "Manage User Database"), but nothing else was changed in the user management database, then after rebooting the system, the new user would have full Admin Console privileges.
220171	Admin Console: When specifying the date/time for a Maintenance Window Update, selecting 'Today' would sometimes unexpectedly change the date and time.
220480	Admin Console: If an Admin had the "Create Users" privilege but not the "Assign access groups" or "Assign roles" privileges, then attempting to create a new user would result in a "Object reference not set to an instance of an object" error message.
222015	Chromeleon was not able to shut down the advanced MS systems into standby or off state. The MS would not change to Ready (Ready for download) state immediately after acquisition end and would not accept the requested state change.
222486	It has been observed that when executing the sequence creation wizard. the validation of the "Start position" field value did not consider case sensitivity. With this Chromeleon version any lowercase letters entered for position during sequence wizard are automatically replaced by Upper Case letters.
226649	Vanquish Horizon DAD Detector (VH-D10-A): For 3D data the Peak Purity would not be calculated if the acquired wavelength range (e.g. 190-682 nm) was not divisible by the bunch width (e.g. 4 nm). In this example the range extends over 490 nm, which is not divisible by 4. The data for 190 nm, 194 nm, ... 678 nm and 682 nm were written to the data file. However, for 682 nm zeros were written to the data file.
226833	Station Audit Trail: In the Station Audit Trail, if a raw file failed an integrity check, no context (sequence, injection number) was provided. The audit trail record now includes this information.
227441	Atlas Import: If an imported Atlas Workbook contained groups which had ever been renamed in Atlas, the old name was imported, rather than the new one.
227442	Atlas Import: If an imported Atlas Workbook contained a Timed group(s), the start and end times were not correctly imported.
227445	Atlas Import: The 'Include identified peaks' option in Chromeleon was not being set correctly for imported Atlas groups to match the equivalent functionality in Atlas.
227448	Atlas Import: The Group Evaluation Type (calibration / reporting) was not getting set correctly for imported Atlas groups
227452	Atlas Import: The Atlas default Unidentified group was not imported with the correct name or time range
228226	eWorkflow: When running an eWorkflow on an instrument with an autosampler having >100 positions, entering a vial position >100 did not work properly the first time the value was entered.

ID	Description
230605	Overlay of TIC chromatograms: Pinning the TIC channel in the navigation area of a studio window for a MS sequence overlays the TIC chromatogram with the currently selected chromatogram. After saving the corresponding view settings of the sequence and reopening the studio window for the same sequence the TIC chromatogram didn't appear. Instead an error message was shown the TIC channel is not available for the selected injection.
232146	Performing a ready check while the queue was running would require the privilege "Control Instrument While Queue Is Running".
231959	Unnecessary Privilege Check when Resetting Injection Status Back to Idle: When resetting an injection status back to Idle the privilege 'Change Status Of Injections With Raw Data Back To Idle' is required. The privilege 'Delete Instrument Audit Trail' has been required additionally. Now this latter privilege is not necessary anymore.
232823	Atlas Import: Any Groups which were configured as an Internal Standard in Atlas, would appear as a Peak when imported into Chromeleon. As Chromeleon doesn't currently support the use of Groups as Internal Standards, any Atlas groups configured in this way are now imported as a non-internal-standard group, and a warning is displayed in the Atlas Import dialog. The results displayed in Chromeleon are imported directly from Atlas so have been calculated using the internal standard group(s). If the Sequence is reprocessed in Chromeleon, any new results will not use the internal standard group in the calculation.
232950	Data Browser: When a remote data vault was selected in the Console and the browser was then set to local mode, the remote data vault was not visible in the Studio object picker dialog.
234118	MS Processing: If a peak existed in an injection for the calibration standard, it was always included in ion ratio updates. However, if the level for the injection has no amount for the component, then it should have been excluded from the update.
236603	Ultimate 3X00 pump: When acquiring the solvent composition for an Ultimate 3X00 pump during a run with a virtual channel, spikes were observed for the %A solvent.
236604	Running a method with Smart Startup and stopping Smart Startup after the stage "Device Wake-Up" had been reached, Smart Startup would continue to run.
237573	Atlas Import: The RF mode and Curve Type of all components and the unknown group were always imported as "Standards" and "Linear" rather than the value which had been set in Atlas.
238022	Chromeleon Updater: Client: An unhandled exception in the Updater process could cause an update to fail, if the Chromeleon Services Manager was open on the destination computer resulting in the Updater reporting that the installation failed.
245277	PerkinElmer GC Driver: For a PerkinElmer GC in very rare cases it was observed that the first sample in a sequence was interrupted at zero time with an error message "{GC} Error while trying to update method part 'METH10[3]': Device reports 'ERROR: 7 UNKNOWN COMMAND'". In long-term tests of the PerkinElmer GC driver this error message has not been observed.
245282	DDK Drivers: A DDK driver using AddPropertyInfo would result in sequence acquisition failing with an abort error message: "Data read from device is obviously corrupt."
274190	Studio: When a sequence was downloaded to a queue, then if the sequence was manually uploaded from the IPC while it was open in the Studio, saving changes in the Studio would result in a "The transaction commit operation failed" error. (Note that this issue was resolved in version 7.3, but not recorded in Release Notes)

5 Limitations and Known Issues

The following sections list known issues and limitations. The numbers in the first column of the table below refer to the Thermo Fisher Scientific tracking IDs.

5.1 Limitations with Thermo Scientific Instruments

ID	Description
172030	UltiMate 3000 MWD-3000 and DAD-3000: In the Instrument Method Editor for these devices, the script page offers one additional option for the data collection rate (20 Hz) that is not present in the Instrument Method Wizard. This additional option is a valid value for this parameter. Although it is possible to manually type in a value for the data collection rate that is not in the list, these values will be rejected by the Ready Check when a sequence is submitted.
CM7-25370	Vanquish Duo: Instrument Method, Electronic Report: An inverse gradient method created on Chromeleon 7.2.7 (or earlier) can be run on Chromeleon 7.2.8 or later. However, Chromeleon 7.3.1 does not support Smart Startup, Smart Standby or Smart Shutdown settings for inverse (or tandem) gradient methods. Hence in Chromeleon 7.3.1, for an inverse gradient method created on Chromeleon 7.2.7 (or earlier) any Smart Startup, Smart Standby and/or Smart Shutdown settings included in the method are neither executed nor reported with Chromeleon 7.3.1.
CM7-25447	Vanquish Drivers: Vanquish Duo Autosampler: When adjusting the needle height, this is only adjusted for the left-hand sampler unit, and not for both sampling units as would be expected. Use the property <code>Sampler2.SampleHeight</code> to adjust the needle height for the right-hand sampling unit
171977	<p>Shared Devices: When configuring an Ultimate 3000 DGP or a Vanquish Dual Pump, a Vanquish Dual Autosampler, or Vanquish Column Compartment that is shared between two instruments, make sure to use non-identical device names for the instrument devices (e.g., <code>PumpLeft</code> and <code>PumpRight</code>).</p> <p>If an Ultimate 3000 DGP or a Vanquish Dual Pump, a Vanquish Dual Autosampler, or Vanquish Column Compartment are shared between two instruments with identical device names (e.g., "Pump") in both instruments, removing the driver from one instrument and moving it to the other instrument results in a fatal error.</p> <p>Workaround: Rename the instrument devices to non-identical device names (e.g., rename the pump units to <code>PumpLeft</code> and <code>PumpRight</code>). Save the instrument configuration and restart the server. Alternatively, remove the driver, save the configuration, restart the server and re-add the driver again.</p>
172022	Accela Open Autosampler: Sequences cannot be run when the sampler does not include the DLW option. This configuration is not supported and requires a custom script.
172067	Accela Open Autosampler: When using this autosampler, a dot (".") must be used as decimal separator.
172041	ESA Drivers: Coulochem III: Before setting the cell state to ON manually, please ensure that eluent is flowing into the detector. Otherwise the detector can be damaged.
CM6-22760	TRACE 1300 GC: The autozero function does not work correctly for the FID, NPD, ECD and FPD detector types.

CM7-25600	TriPlus RSH / TriPlus 100: When running the TriPlus RSH or TriPlus 100 in Clone mode (Autosampler serves two GCs), if the Virtual Terminal is opened from the ePanel of one of the GCs and a Sequence is started for the other, the Sequence fails with an error; "Sample – Error while validating script. (Trayplate 1: Slot 1:3)". This can be worked-around by closing the Virtual Terminal on GC1 before attempting to start the run on GC2.
CM6-23614	TriPlus RSH: When using the TriPlus RSH in constant double pro headspace mode, starting a sequence that includes a constant double pro method will generate a validation error.
CM6-24043	TriPlus RSH: If firmware version 2.2 is installed on the TriPlus RSH autosampler, then tool changes on the instrument are not immediately recognized in Chromeleon. It is necessary to disconnect and reconnect the instrument after such changes are made; they will then be detected.
57217	TriPlus 500 HS: When acquiring a sequence with overlapping sample preparation, the system may create an audit trail log event regarding a vial/injection that is not the current injection. When this occurs, the event is logged to the current injection rather than the preparing injection to which it relates.
CM7-25760	MS Drivers: When working with MS devices, the raw file must of necessity be created prior to the injection taking place. It is therefore expected that the time stamp in the raw file header differs slightly from the injection time noted in Chromeleon.
CM7-15632	TSQ Quantiva and Endura: When removing the source from a TSQ Quantiva or Endura in mid-acquisition, the sequence does not abort.
CM7-16030	TSQ Quantiva and Endura: With these instruments the standby state reports that the instrument is on, regardless of the real instrument state.
CM7-16154	TSQ Quantiva and Endura: When creating an Instrument Method for the TSQ Endura or TSQ Quantiva, the MS run time is not the same as the Chromeleon run time. The user should enter the correct run time on the MS page of the Wizard.
CM7-17668	TSQ Quantiva and Endura: TSQ Endura and TSQ Quantiva instruments are usually shipped with a PC ("Endura/Quantiva PC") that includes all the necessary instrument data files, such as calibration files, for operating the MS instrument. If you want to control an instrument using a different PC, make sure that the specific instrument data files residing on the Endura or Quantiva PC are backed up and transferred to the new PC. For details on performing this process, please consult with your local MS field service engineer.
CM7-18129	TSQ Quantiva and Endura: After an upgrade of the TSQ Endura/Quantiva instrument driver, an error may occur when opening the Chromeleon Instrument Configuration. To resolve the error, remove the Chromeleon Mass Spectrometer driver from the configuration and then add it again. This will update the configuration information in Chromeleon to match the updated TSQ Endura/Quantiva instrument driver version.
CM7-21967	TSQ Quantiva and Endura: The TSQ Endura and Quantiva mass spectrometer method editor is supported on English operating systems with English/United States regional settings only.
CM7-24445	TSQ Quantiva and Endura: Instrument methods written with an earlier version of the method editor cannot be opened with a newer version thereof.
CM7-23138	MSQ Plus: It is recommended to use only the MS driver provided on the Chromeleon installation medium. Other versions of the MSQ Plus driver may not be compatible with Chromeleon. Please consult your local field service engineer for additional details.

CM7-16557	MSQ Plus and Tune Application: When using the MSQ Plus with Chromeleon the user must wait for the Chromeleon Instrument Controller to be in idle mode before opening the Tune application. Without waiting, the MSQ Plus will not be able to change the operating mode (On, Off, Standby), or it will not be possible to run injections. To recover from this error both the PC and the MSQ Plus would have to be restarted.
CM7-20295	TSQ 8000 and ISQ Series: When a GC-MS instrument method includes a scan event containing multiple SIM ions (e.g. "SIM 115, 152, 188") then data from matching filters collected at different time ranges will not be combined into a single filter in the data for that injection.
CM7-23669	TSQ 8000 Series: If you attempt to abort an acquisition of multiple timed acquisitions while the MS is acquiring data, the MS will not cycle back to a Ready state and the sequence will not end. It is necessary to stop and restart the Instrument Controller to regain access to the instrument.
CM7-22490	Exactive Series: When setting the divert valve parameters for an Exactive Series MS with a 2-position valve, the valve positions are recorded in the MS raw data opposite of how the divert valve parameters were configured.
CM7-17500	Exactive Series: Exactive Series instruments are usually shipped with a PC ("Exactive PC") that includes all the necessary instrument data files, such as calibration files, for operating the instrument. If you want to control an Exactive instrument using a different PC, make sure that the specific instrument data files residing on the Exactive PC are backed up and transferred to the new PC. For details on performing this process, please consult with your local MS field service engineer.
114502	MS Tuning: When one or more MS Tune Reports are deleted from their default folder (/Instrument Data/(Instrument Name)/MS Tune Reports) the list of available Tune Reports on the MS ePanel will not be automatically refreshed to reflect the change. This can occur if the reports are deleted manually as well as if they are deleted automatically (when automatic archiving is enabled) The workaround is to close and reopen the Chromeleon Console.
28276	LC Drivers: A Vanquish instrument with two Column Compartments cannot be configured. The underlying cause for this issue may be insufficient USB bandwidth to fulfill the bandwidth reservations made by the instrument modules. When a second Column Compartment driver instance is configured with the USB address that is already used by the first Column Compartment, an error message indicates that the selected USB address is already in use.
35925	Vanquish Variable Wavelength Detector: If the shutter is opened or closed manually (e.g. via ePanel), no firmware download is possible afterwards. The audit trail message is "Error: Cannot start firmware installation. The module is still busy." Workaround: After opening or closing the shutter manually (e.g. via ePanel), disconnect and reconnect the Vanquish VWD before downloading the firmware.
53052	TSQ MS Tuning/Calibration: If the instrument is disconnected while a tune/calibration operation is in progress, the tune will not automatically fail or abort. It may be an hour or more before the instrument audit trail reports that the MS is disconnected. If the instrument is reconnected, the calibration will automatically resume.
115504	Vanquish Core modules require a minimum firmware version 2.01 or 2.02 for pumps, respectively. Please also use firmware version 2.01 (FW version 2.02 for pumps) for any new modules of the Vanquish Flex and Vanquish Horizon series. Vanquish Core modules can be combined with Vanquish Flex and/or Vanquish Horizon modules in one instrument as long as firmware version 2.01 (FW version 2.02 for pumps) or higher is used for all modules. For existing Vanquish Flex and Horizon modules, firmware version 2.01 (FW version 2.02 for pumps) is compatible with the minimum Chromeleon version required to control the instrument (or a higher version of Chromeleon) as stated in the List of Supported Instruments.

142047	MS driver: TSQ Altis: There is no report variable available for the module serial number.
162479	<p>Vanquish Driver: For the Vanquish DAD and MWD the wellness properties for the UV/VIS lamp operation time limit and warning were transmitted enlarged by a factor of 4 to the instrument. Warnings and limits are now transmitted correctly to the instrument.</p> <p>If you have previously set limits and/or warnings for the Vanquish DAD or MWD lamp operation lifetimes, these will now be read out from the firmware at 4 times the intended value. If you wish to remain with the initial settings, you will need to adapt the values set for the UV/VIS lamp operation time limits and/or warnings in Chromeleon by reducing them to their initial value (25% of new value).</p> <p>Example: With Chromeleon 7.3 (or earlier), 7.2 SR5 MUK (or earlier) or 7.2.10 MUa, a setting of UV/VIS lamp operation time limit of 2,500 hours would be transmitted to the firmware as 10,000 hours. After an upgrade to Chromeleon 7.3.1, the value of 10,000 hours is read out from the firmware and set as the UV/VIS lamp operation time limit in Chromeleon. If the intended limit is 2,500 hours, you will need to adjust the limit in Chromeleon to 2,500 hours.</p>
163499	In very rare cases the injection status of an injection stays on "Running" and subsequent injections are not started. Proceeding to the next injection requires a restart of the Instrument Controller. Upon restart of the Instrument Controller the status of the injection is changed from "Running" to "Interrupted" (although "Finished" would be appropriate).
166994	<p>UltiMate 3000 Autosampler: After changing the rack configuration on the ePanel for an UltiMate 3000 Autosampler it is not possible to write a sequence as the new rack configuration is not available.</p> <p>Workaround: In the instrument configuration manager confirm the configuration without making any changes and save it.</p>
167481	Trying to acquire the pump pressure signal for 24 hrs with a high data rate (100 Hz) results in an instrument crash. This was seen with an UltiMate 3000 pump HPG-3400RS. This is due to the fact that the signal acquired at 100 Hz for 24 hrs results in 8.64 million points. The console memorizes these points and increases the size of the respective PointList, which leads to System.OutOfMemoryExceptions in the console. The only way to fix this is to stop the instrument controller and close down Chromeleon.
172736	Vanquish Drivers: In rare circumstances if a transport error occurs with the Vanquish Autosampler (VH-A40-A or VH-A90-A) with a charger, it's not possible to bring the system into an operational state using the commands "Reset" or "Cleanup". An instrument controller restart is necessary.
172738	<p>Vanquish DAD: Using the command "UV.Shutter Closed" in an instrument method after the Acquisition Off commands, the Method Check does not trigger a warning or error. Using this instrument method in a sequence does not elicit a warning or error in the Queue Ready Check. However, starting the queue fails and Chromeleon reports in the instrument audit trail: "Can't change the 'Shutter' property during data acquisition, or during autozero, calibration and validation procedures."</p> <p>The command "UV.Shutter Closed" can only be inserted after the acquisition off commands using the instrument method script editor by an expert user, who should be aware that the "UV.Shutter Closed" cannot be inserted after the acquisition off commands.</p> <p>Workaround: Use an instrument method without any acquisition or a trigger that waits for the acquisition to end.</p>
172742	IQ/OQ/PQ: For the OQ/PQ for the UltiMate 3000 NCS-3500RS in the warmup and oven test sequence Solvent B shows a wrong value on the specification sheet. Instead of "water + 0.x% acetone" the sheet shows "Caffeine..." as the value for solvent B for gradient (correct reference is line 375 instead of 372).

172746	The Vanquish Charger is only supported with Vanquish Autosamplers with temperature control.
172747	Vanquish Core: Running an instrument method with Method Transfer activated leaves the system in a state with modified GDV. To afterwards run a method without the Method Transfer option, the idle volume of the sampler must be manually reset to its normal value.
172749	The Troubleshooting Guide for the Vanquish Binary Pump VH-P10-A (hardware revision 2) can be found under C:\Program Files (x86)\Thermo\Chromeleon\bin\Troubleshooting Guides English: Man-LC-VQ-PumpH-Operation-DOC4820-4411-EN-1-0 French: Man-LC-VQ-PumpH-Utilisation-DOC4820-4411-FR-1-0 German: Man-LC-VQ-PumpH-Betrieb-DOC4820-4411-DE-1-0
172750	Vanquish Autosampler: When configuring a Vanquish Autosampler with the option "Support for external rack transfer" enabled (on the "Options" tab) and enabling the charger option (on the "General" tab), after switching from the "General" tab to the "Options" tab, it is no longer possible to uncheck the charger option. Workaround: When enabling the charger (on the "General" tab), confirm the charger option with OK before switching to another tab in the instrument configuration dialog.
172751	Vanquish Autosampler: The option "External Rack Transfer" is not compatible with Chromeleon User-Defined Programs (UDP's).
195521	GCMS Single Quadrupole instruments (ISQ and ISQ 7000 families) and GCMS Triple Quadrupole instruments (TSQ 8000/9000 families) provide several options (e.g. timed SRM mode) for which the permission to use the option is stored in the flash RAM of the MS hardware. If you purchase the option at the time of the MS instrument purchase, the flash RAM has the option included. If you purchase the option after the MS instrument purchase, Thermo Fisher ships you a small ini file, which you then upload to the MS flash RAM. If a Chromeleon instrument method requires such a GCMS instrument option, but the permission for the GCMS instrument option is not available in the flash RAM of the MS hardware, the Sequence Ready Check and Instrument Audit Trail show an error message. (For example: „Instrument method cannot be run: Timed mode is not allowed under the current license. To enable timed mode acquisitions, please upgrade your software to include time mode.“) This error message is somewhat misleading, as it is the flash RAM of the MS hardware that needs to be updated with the relevant permission, not Chromeleon itself.
205589	Ultimate 3000 WPS: Changes to the tray configuration on the ePanel are not immediately relayed to the sequence wizard. When changing a tray configuration on the ePanel, the tray configuration in the sequence wizard is only updated after making another change to the tray configuration on the ePanel.
205590	Vanquish Dual Pump (DGP): If a Vanquish Dual pump is configured with the option "shared bottle" selected, it should not be possible to set different eluent monitoring properties (%A/%B/%C_WarningLimit and %A/%B/%C_Level.LowerLimit) for the two pump units. However, it is possible to set the WarningLimit and Level.LowerLimit to different values for both pumps. This results in different RemainTime values for both pumps, which is not possible with a shared bottle. In addition, %A/%B/%C_Level.Value is divided by a factor of 2. That is, the system switches the pump off at half the intended Level.Value. This limitation is not applicable in cases where a Vanquish Solvent Monitor module is part of the instrument. Workaround: Set the same eluent monitoring properties (%A/%B/%C_WarningLimit and %A/%B/%C_Level.LowerLimit) for both pump units.

219518	Vanquish Flex: While executing a pump purge, when executing the needle wash twice on the autosampler, the flow path to the drainage flow is erroneously connected to the column which may lead to damage to the column. Workaround: Do not execute a needle wash while the pump is purging.
238872	Vanquish ISQ Family: If the device name of Vanquish ISQ Family is using Unicode characters (e.g. if it is localized in Japanese) the Ready Check fails.
238873	UltiMate 3000 PCM-3000: For UltiMate Detectors DAD, MWD and VWD with the PCM-3000, the automatic gain adjustment of the PCM-3000 frequently leads to wrong conductivity channel values.
238876	UltiMate 3000 WPS-FC: For an UltiMate 3000 WPS-FC with e.g. RedTray= 40_Vials, GreenTray= 40_Vials and BlueTray= 96_Wells configured, on ePanel for the sampler, SamplesFractionsSplitPoint is initially shown as "RA1". Changing this value to e.g. "BA1", the ePanel shows a different Split Point "RB9". Repeating the entry of "BA1" for the Split Point, the ePanel shows the correct value "BA1". However, once Split Point "BA1" is shown, the value can no longer be changed.

5.2 Limitations with the Waters Driver Pack

ID	Description
CM7-25782	Waters Acquity: During long-running sequences it is possible that the PDA can get into or remain in a running state, thus preventing further injections from starting. A workaround is to add a post run stage with a delay of 90 seconds after the acquisition stop to prevent this error.
CM7-19830, 27636	Waters Acquity: When using the Waters Acquity driver in a Citrix environment, the Acquity console does not update correctly and therefore doesn't show current log file entries. This is due to a problem in the Acquity console, and can be mitigated by using the instrument audit trail on remote clients.
172045	Waters Acquity – Console: When using the Waters Acquity driver, some Chromeleon screens may not appear properly, such that text from the previous screen is still visible. This has been observed with the Sequence Properties and the Chromeleon Log on screen.
171982	Waters Acquity: If the user has two Acquity systems connected to one Instrument Controller, the range for the column temperature in the Waters method editor does not always match the hardware configuration. This is affecting the method editor only, and occurs when opening a method for instrument A while the Acquity console for instrument B is open.
CM-9703, 28296	Waters Driver Pack 2017 R2: When installing Waters Driver Pack 2017 R2 on an operating system operating systems earlier than Windows 10, ensure that Microsoft Windows Universal C Runtime (KB2999226) is installed. This is to avoid failure of Waters Driver Pack 2017 R2's DM.exe application, which depends on the Windows Universal C Runtime that this hotfix provides for older Windows platforms.
172069	Waters 2998 PDA: Localization to a non-English regional setting for the PC (e.g., German) does not function correctly for the timed events table, e.g., using a Waters 2998 PDA detector and setting a timed event in the program file (e.g., wavelength change at 5 minutes). The event is recorded, but without the event time.
CM6-24191	In extremely rare cases the Acquity PDA server stops working, which then causes the running sequence to be interrupted.

172730	Waters Acquity Instrument Method Editor: The Waters Acquity Instrument Method Editor only accepts a comma (,) or a dot (.) as a digit grouping symbol. If the digit grouping symbol in the Windows regional settings is set to any other value, creating an instrument method or opening an existing instrument method (with a pump configured) results in several "Out of Range" error messages and corruption of the instrument method. In particular Windows 10 offers an apostrophe as a digit grouping symbol in the regional settings, which is not accepted by the Waters Acquity Instrument Method Editor.
139353	With Waters Driver Pack installed, the title bar of the Chromeleon Studio window becomes invisible. This is a known issue that has been reported to Waters.
148624	Waters 2690/2695: In very rare cases, a sequence is interrupted with the error message: "Acquisition finished by Chromeleon before first data point could be transferred. Maybe the run time is too short in case of blank run."
163383	Waters ICS driver: Changing the instrument configuration of a Waters ICS driver is not propagated to Chromeleon. Workaround: Reboot the IPC after changing the instrument configuration.
167439	Waters Acquity: With Waters Driver Pack installed on an Operating System with regional settings other than English (US), opening the Chromeleon Instrument Method Editor to edit a method for a Waters Acquity system, the Chromeleon.exe may crash with a .NET Runtime error. Please ensure consistent regional settings for the client and the IPC. Please refer to the documentation for Waters Driver Pack or contact Waters Inc. to confirm if your language pack is supported with Waters Driver Pack. Workaround: Change Operating System to English (US) locale settings.
172051	Waters 2489 PDA: After changing the Instrument Method from single to dual-wavelength mode (without changing Channel A wavelength), the data rate for Channel B is set incorrectly and incomplete data collection occurs.
172068	After removing the Sample Organizer from the Instrument Configuration, the plate setup is not updated correctly. Manually updating the plate settings in the plate setup configuration dialog avoids this issue.
172741	Waters Alliance 2695: It is not possible to control a column selection valve installed in a Waters Alliance 2695.
177703	Waters Acquity: When opening the Waters Acquity Console in a server environment on a client computer, the log view is not up to date. Workaround: In order to see an updated log view, use the Chromeleon audit trail or launch the Acquity Console on the IPC.
177706	Waters Acquity: If the user attempts to open an Instrument method on a PC where the Waters Driver Pack is installed, but then selects "work offline" an error message will be shown. This is a problem of the Waters Driver Pack, the workaround is to ensure that the instrument can be reached, i.e. work online.
177708	Waters Acquity: When using the Waters Acquity Driver Pack 4 and trying either to create a new instrument method, or to open the Acquity console from the ePanel a problem sometimes occurs. A message appears informing the user that launching the application had failed, and maybe the Acquity driver pack is not installed. If this occurs, the user should contact Thermo Fisher Scientific for further advice. \ Workaround: The entries in C:\Windows\Microsoft.NET\Framework\v4.0.30319\Config\machine.config <runtime>... need to be filled manually.

177711	If Waters Driver Pack 4 is installed in a Citrix environment, the installer automatically disables the World Wide Web Publishing Service, such that after restart, the Citrix web application is no longer reachable. The service should be reset to Automatic startup and should be started, after which the application can be reached again. Workaround: Enable "World Wide Web Publishing Service" again.
181345	Waters 2690/2695 and 2489: Very rarely, a sequence interruption with an error message "Acquity System state has changed to error during run." is seen.
187273	Waters Acquity: When configuring the system on an Instrument Controller, the Acquity driver exits with an error: "Configuration plug-in could not read data from Instrument controller. Configuration is not possible. Please check that Instrument controller and the configuration plug-in support the same version (3.0)". The .NET module needs to access a file in C:\Users\ <username>\AppData\Local\Temp. The user account used to configure the system needs permission to access this location. Waters Acquity: It is not possible to create an instrument method for the Acquity system. In the Instrument Method Wizard, the solvent names for pump and sampler are not visible. Clicking on "Finish" in the Instrument Method Wizard results in Chromeleon closing. When installing the Waters Acquity driver using a Windows active directory account, ensure that the Windows regional format is set to English (US). In Windows "Region settings" > "Regional format" > select "English (United States).</username>
258205	Waters Acquity H-Class FTN Sample Manager: Changes to the instrument method (e.g. to the Active Preheater or Alarm Band) are saved to the instrument method. However, when re-opening the instrument method, the default values are displayed rather than the values stored in the instrument method. This is a Known Limitation in Waters Driver Pack 2019 R1. According to Waters this has been addressed in Waters Driver Pack 2019 R2 (INS-10026).

5.3 Limitations with Agilent ICF

For a general overview regarding the Agilent Instrument Control Framework, please refer to the document Chromeleon and Agilent ICF – Quick Start Guide – Chromeleon 7.2 .pdf, found in the \Documents\ folder of the Chromeleon 7.2 CDS DVD. For Agilent drivers, please refer to Agilent documentation.

ID	Description
CM7-19347	Agilent G1312B DAD: When using this device in combination with an old JetDirect card, problems may occur collecting data at 80Hz. Users affected by this issue should contact their local Thermo Fisher Scientific representative for advice on possible solutions.
CM7-20047	Agilent VWD G1314B: When using a G1314B VWD, occasionally the chromatogram is half the expected length.
CM7-21172	Agilent ICF: If the user has the monitor DPI settings on their PC set at greater than 100%, then some parts of the Agilent LC system device ePanel are not visible.
CM7-21427	Agilent ICF with 1100 or 1200 LC DAD: When acquiring data from an Agilent 1100 or 1200 LC DAD, the signal trace may be shifted to the start of the run, and the end time is inconsistent. No data points are lost with a data rate of 10 Hz and slower (≥ 0.025 min 0.5 sec) 20 Hz and a low number of spectra (all other than ALL Spectra) 20 Hz and spectrum range 190- 400 step 2

CM7-22567	Agilent ICF: When using a Diode Array Detector with the Agilent ICF, it is necessary to enable spectra collection initially (this also allows to specify the wavelength range to be used in this run). If no spectra are needed for a specific time window during the run, use the timetable to temporarily set the mode to "None".
CM7-23096	Agilent ICF: If a Fraction Collector with Thermostat is installed, the channel mapping is not correct. This can be resolved by removing the <Channel name="FC: Delay Sensor"> node from DefaultConfiguration.xml before adding the driver. After this, the user can configure the mapping for the two channels manually on the Signals (2D) tab of the configuration dialog.
CM7-19540	Agilent ICF: The Agilent GC System Configuration dialog includes entries to configure the 7697A Headspace, G1888A Headspace, 7890 GC, 6890 GC, 68550 GC, and 7820 GC. Currently, it is only possible to configure the 7697A Headspace sampler. Attempting to configure any of the other modules will result in a message indicating that the modules are not supported.
CM7-25781	Agilent 7697A: The "Sample Bar Code Reader with data tracking" option on the Agilent 7697A sampler is not currently supported in Chromeleon.
CM7-19975, CM7-20451	Agilent 7697A: The Soft Config option, available via the ICF for Agilent LCs, is not supported for the Agilent 7697 HS. It should not be added to any custom ePanel as its use can cause issues by allowing configuration changes to be applied to the sampler during acquisition.
CM7-23242	Agilent 7697A: Running multiple 7697A Headspace autosamplers on a single 247 Instrument Controller can cause Windows "Out Of Memory" errors, requiring a reboot of the 247 to resolve. Thermo Fisher therefore recommends that only one 7697A is connected to any 247 Instrument Controller.
CM6-23980	Agilent 7697A: When starting a sequence while the 7697A Headspace Sampler is in an 'Error', 'Running', or 'Not Connected' state, the ready check does not give an error message. After the sequence starts, the following happens: If the sampler is in error state, the sequence starts without getting interrupted If the sampler is running, the sequence stops with audit trail message "Sequence stopped by user" If the sampler is not connected, the sequence interrupts with audit trail messages "Lost connection to Agilent 7697A Headspace Sampler", and "The instrument is offline. Check power to all modules, cabling between modules and whether the configuration matches the list of modules."
CM6-23992	Agilent 7697A: The 7697 Headspace Sampler has two versions; 111- and 12-vial capacity configurations. The Chromeleon driver is written and tested with the 111 vial capacity version. Though not tested, the driver is expected to work with the 12-vial capacity module. The user should not use vial positions greater than 12 in this case. The rack view always shows 111 vial positions.
CM7-20259	Agilent 7697A: Although the vial position may be assigned in the instrument method script, unless this is done in the Instrument Setup Stage, the sequence table will not be updated. This can result in misleading information in reports and should be avoided.
CM6-24004	Agilent 7697A: Using the instrument front panel, the allowed range for Transfer Line Diameter is 200-600 microns. However, when setting this value in the Chromeleon instrument configuration the limit is 250-530 microns.
CM6-24005	Agilent 7697A: When 7697A headspace instrument method parameters are included in a report, the "fill pressure" parameter is rounded to the nearest integer.

CM6-24007	Agilent 7697A: Some parameters logged to the instrument audit trail are rounded to nearest integer. However, all values are downloaded to the instrument with the proper precision.
CM6-24008	Agilent 7697A: When editing an existing 7697A Headspace instrument method, if the values for Purge Flow, Purge Time or Leak Flow are changed, the Save button is not enabled until the user changes tabs.
CM6-24009	Agilent 7697A: When configuring an Agilent 7697A, there is an option in the user interface to "Upload Config from Instrument". This option does not work. Instead, you will need to manually configure the instrument settings.
165661	Agilent 1290 ELSD: For an Agilent 1290 ELSD controlled by Agilent ICF drivers, the sequence interrupts with an error message: "Error 155: An error occurred during data collection. Data integrity compromised." This issue has been reported to Agilent.
165966	<p>Using an Agilent LC system with a sampler and the Agilent LC-ICF Drivers on a Japanese, Chinese or Brazilian Portuguese O/S, the sequence wizard does not allow creating a sequence.</p> <p>Workaround: This issue is caused by a language satellite DLL provided by Agilent Technologies (Agilent.LCDrivers.Sampler.BusinessObjects.resources.dll). Removing this satellite DLL addresses the issue, while presenting the user interface in English language. For example on a Japanese O/S remove "C:\Program Files (x86)\Agilent Technologies\Instrument Control Framework\ja\Agilent.LCDrivers.Sampler.BusinessObjects.resources.dll". Alternatively, use Agilent Chromeleon Drivers instead of Agilent LC-ICF Drivers to control the instrument.</p>
172059	Agilent 7697A: The 7697 Headspace Autosampler has two options for handling missing vials: Pause and Abort. An issue has been observed when the Abort option has been selected. In either mode, the autosampler overlaps sample preparation, i.e.: sample 2 is prepared while sample 1 is acquiring. If the autosampler finds that the sample 1 vial is missing, it will Abort or Pause the sequence at the point it discovers the vial is missing. However, if the autosampler finds that the sample 2 vial is missing, while sample 1 is already acquiring, and the Abort option has been selected, the entire sequence will be aborted, including the acquiring sample 1.
192715	Agilent LC ICF: Aborting an injection after the start of a sequence but before the injection results in an error, requiring the instrument controller to be restarted.
222538	Agilent ICF driver: When reconfiguring ICF-based LC System, then opening the instruments page in the Console, the ePanel no longer shows the status windows for the individual submodules. Clicking on the ePanel control results in the crash. This is also seen with Agilent Drivers for Chromeleon.

5.4 Limitations with Agilent Drivers for Chromeleon

ID	Description
216488	<p>Agilent LC Autosampler: When using pretreatment method for an Agilent LC Autosampler it is not possible to use a command like "Eject 40.0µL to seat with 200µL/min" via the user interface as this results in an error message. Agilent confirmed that this is known issue, which has been addressed with LC Driver 3.4. However, LC Driver 3.4 is incompatible with ADC driver (version 1.x and 2.x) due to .NET restrictions.</p> <p>Workaround: It is possible to set this parameter from within the method script. However, reviewing the method via the graphical user interface different parameters are displayed.</p>
177731	<p>DDK Drivers: If a DDK driver (e.g., a Shimadzu driver or Agilent Chromeleon Driver) is running in overlapped mode and the processing method is changed, this will trigger a sequence abort of the driver.</p>
245276	<p>DDK Driver: An injection may not terminate when an Abort error happens at AcqOn time for 3D channels.</p>

5.5 Limitations with Other Third-Party Instruments

ID	Description
172044	<p>Agilent 1100 Obsolete Driver: Occasionally, when using a combination of older and newer modules, the raw data was not correctly acquired.</p>
CM7-25343	<p>Agilent 6850: Instrument Configuration Manager does not report mismatches between the hardware and the Chromeleon configuration.</p>
CM7-12366	<p>Agilent 5890 DICE Card: Please note the following when using the 19257 DICE card with the Agilent 5890 GC:</p> <p>Control and acquisition using the DICE card is only supported via the serial interface. The GPIB interface is not supported.</p> <p>Digital data acquisition via the serial interface of the DICE card is only supported for a single channel; dual channel digital acquisition is not supported.</p> <p>Currently, it is possible to select certain illegal combinations in the Configuration Dialog such as:</p> <p>Digital acquisition with the 19254 card. This is not supported.</p> <p>Digital acquisition on one detector and analog acquisition on the other. Acquisition needs to be exclusively digital or exclusively analog.</p> <p>When using the DICE card to acquire data digitally, the 5890 INET mode must be set to "GLOBAL" not "LOCAL". Failure to do so will result in a "No response from GC" message following the AcqOn command in the audit trail.</p> <p>Note that when performing analog acquisition, the 5890 INET mode should still be set to "LOCAL" (as described in the online help).</p>
CM7-9675	<p>Agilent 7890 GC: There is a backward compatibility issue that affects the Agilent 7890 GC Sampler Positions. When using a 7890 GC in combination with a 7693 sampler, certain positions in the sampler could give a misspelled value to a move command. This has now been corrected and could in rare cases lead to Instrument Method files needing to be updated to avoid errors.</p>

CM7-24724, 26224	Agilent 7890B GC: With certain firmware versions, the GC does not properly send abort information to the software, meaning that events such as FID flame out, pressure errors, hardware faults and so on, will not be recognized or reported by Chromeleon. The problem is seen in FW versions B.02.01, B.02.04.2 and B.02.05, but not versions A.01.xx.x. The 7890A GC does not seem to have this problem.
CM7-15400, CM7-15556, CM7-15734, CM7-15736	PerkinElmer LC200 Autosampler: When upgrading from earlier versions of Chromeleon 7 CDS to Chromeleon 7.2 CDS SR3, it is necessary to reload the PerkinElmer LC200 Autosampler driver and configure the loop size within the configuration. The user should then check all instrument methods using this autosampler to ensure that they continue to function correctly.
26219	PerkinElmer Clarus GC: When initially configuring a PerkinElmer Clarus GC, entering an invalid setting on the auxiliary pneumatics page does not allow proceeding to the next page even after the settings have been corrected. Workaround: Correct the pneumatics configuration to one that is supported by the driver. Use the "Back" button to return to the previous page. Use the "Next" button to return to the auxiliary pneumatics page. Confirm the settings on the auxiliary pneumatics page. Use the "Next" button to proceed to the next page.
28062	PerkinElmer Clarus 580 GC: While the detector gas flow can be set with one decimal (e.g. 2.4 ml/min), the flow is only interpreted as an integer. That is a value of 2.4 ml/min set on the ePanel will result in a flow of 2 ml/min, while a value of 2.7 ml/min set on the ePanel will result in a flow of 3 ml/min.
172037	PerkinElmer Clarus 400 GC: Some users must select AutoSystem XL in configuration in order to communicate with the PerkinElmer Clarus 400.
172062	Shimadzu LC-10A, LC-2010: If the user cancels the key lock state of the front panel of the instrument and then, for example, stops a manual acquisition, this is likely to lead to unexpected effects during the next operation such as sudden abort of the sample run.
171991	Shimadzu LCs: The Microsoft Visual C++ 2005 Run Time component is no longer supported by Microsoft. However, this component is required for the Shimadzu LC-2010A and Shimadzu LC-10A/20A/30A drivers and is therefore installed by Chromeleon. If you don't use these drivers, it is possible to uninstall the Visual C++ 2005 Run Time component from the 'Programs and Features' page of the Windows Control Panel. Alternatively, during the installation of Chromeleon, it is possible to suppress the installation of the Visual C++ 2005 Run Time component by using a response file and excluding the "__MicrosoftVisualC2005_SP1__" package. Please refer to the Installation Guide for details. Several of the Shimadzu devices can be controlled by obtaining an updated driver directly from Shimadzu (see the "List of Supported Instruments" for details).
27896	Privileges: The privilege "Control Instrument While Queue is Running" does not apply to ICF controlled instruments.
141735	Shimadzu Prominence-i Series: A sequence was interrupted with the error "Abort Error: Timeout while waiting for the instrument to finish, the current injection will be aborted." Workaround: The Release Notes provided by Shimadzu describe a workaround for LC driver version 2.20 or later: When the system is waiting to start a blank run, the data acquisition may be interrupted in some cases. As a workaround, please set injection volume to 0.0 and change the type to "unknown".
171972	Shimadzu LC: For the Shimadzu LC-10, LC-20 and LC-30 the instrument standby can be activated during a run from the instrument front panel.
172024	Shimadzu LC: Unlike most drivers, some Shimadzu UV detectors require that you select the 'Advanced' filter in the Command (F8) window in order to access the Lamp On/Off command.

217346	Rheodyne MXII: The ePanel for the Rheodyne MXII supports a maximum of two valve instances.
234621	The PerkinElmer Clarus 680 GC accepts up to 10 volume values (10%, 20%, ... 100%) of the nominal syringe capacity) for the 10 µl and 50µl syringe and 5 values (20%, 40% ... 100%) for the 5µl syringe. However, the Chromeleon sequence editor is not aware of this restriction and allows entry of a volume of e.g. 0.2µl for a 5µl syringe, which then fails in the Ready Check.
227295	Markes TD: If an instrument configuration includes a Kori-xr, then methods created in Chromeleon versions prior to 7.3.1 will fail a 'Ready Check' when submitted as part of a sequence. To resolve this issue, open the method in the editor and, on the script page, delete the command(s) that reference the "KoriTrapHeatingRate".
256522	Bruker Scion GC: The drivers for the Bruker Scion 430 GC and Scion 450 GC are provided on the Chromeleon installation media. Installing these drivers causes a number of warnings in the Chromeleon IQ Report stating "The file was not installed by any of the known packages." These warnings can safely be ignored.

5.6 Limitations With Setup

ID	Description
CM7-21780	Setup: NIST MS Search and Demo Library No Longer Automatically Installed: Incompatibilities of the NIST 2008 MS Demo Library installer with Window 10 could cause the main Chromeleon installer to hang or crash. To address this, the NIST Demo library, and the associated AMDIS and MS Search software are no longer automatically installed when you install Chromeleon. If desired, this package may be installed manually using the setup program found in the /Tools/ folder of the Chromeleon DVD. Alternatively, one may install AMDIS and MS Search using the full (licensed) NIST library installer. Note that MS library searching within the Chromatography Studio is not affected by this issue.
CM7-23341	Setup: When Agilent ICF is installed, un-install of either Chromeleon or Agilent ICF fails if the Instrument Controller is running: Failed to execute package Agilent Instrument Control Framework A.02.04. Another application has exclusive access to the file 'C:\ProgramData\Agilent Technologies\Instrument Control Framework\RCDriver.log'. Please shut down all other applications, then click Retry. To avoid this issue, stop the Instrument Controller before uninstalling
219747	It was observed, that the Chromeleon 7 domain discovery information is not fully removed if Chromeleon software gets uninstalled from a Chromeleon domain member machine. Orphan records have to be removed manually using the Administration Console.

226887	As part of the Chromeleon installation, the Microsoft Edge WebView2 Runtime will be installed and its installation package is added to the package cache of the machine so that it can be reused for the repair/modify scenarios of Chromeleon. When uninstallation Chromeleon the corresponding package of the WebView2 Runtime component will be removed from the package cache of that machine. It is actually expected that this package is kept in the package cache as this system component is kept on the system after the uninstallation of the Chromeleon software. Workaround: Select the Microsoft Edge WebView2 Runtime entry of the Add/Remove program dialog of the Windows OS system and click on the repair/uninstall option. Clicking Repair will connect to the Internet. The package cache is NOT recreated, but Microsoft Edge WebView2 Runtime is properly installed afterward. Clicking Uninstall will remove the Microsoft Edge WebView2 Runtime component from the machine.
254867	Depending on the state of the machine GAC the IQ of Chromeleon 7.3.1 may report the following recommendation: "C:\Programme (x86)\Thermo\Chromeleon\bin\System.ValueTuple.dll: The file is a shared library and a different version (System.ValueTuple, Version=4.0.0.0, Culture=neutral, PublicKeyToken=cc7b13ffcd2ddd51) of it is also installed into the global assembly cache including a binding redirect. The redirected library will always be loaded from the shared files location and never this one. Please ensure that this is by intent and does not cause any unwanted side effects." The compatibility of these two different "System.ValueTuple.dll" file versions is very high, it is not expected that it causes any issue in Chromeleon and the recommendation can be ignored.

5.7 Other Limitations

ID	Description
CM7-25151	Scheduler: Copy/Move Sequences: Scheduler jobs copying or moving sequences to a network data vault might run into a state where the jobs cannot be completed anymore. One has to restart the corresponding Chromeleon 7 Scheduler Service to get this kind of deadlock being resolved.
CM7-15588	Discovery: The Discovery service failed to start if the PC name included non-standard characters. Now, the Discovery service will not crash and will log the PC name to help troubleshoot why it is not listed in the Console or Administration Console.
CM7-22111	Discovery: Mixed Installations with Chromeleon 7.2 SR5 Domain Controller: If you have an existing installation of Chromeleon < 7.2 SR1, the following limitations apply during an upgrade: Stations that have Chromeleon 7.2 or below installed will not see any data vaults or instruments that have been created with Chromeleon 7.2 SR5, until after those stations are upgraded to 7.2 SR5. It is not possible for a Chromeleon 7.2 (and below) station to join a Chromeleon 7.2 SR5 domain. Stations that have Chromeleon 7.2 or below will not receive any updates from the Discovery Service after the Chromeleon domain controller has been upgraded to 7.2 SR5, and will only see resources that were already in existence and cached. Please refer to the Enterprise Documentation for guidance on upgrading an older installation of Chromeleon 7 to Chromeleon 7.2 SR5.

229725	<p>User Management and Services Manager: The Chromeleon Services Manager is frequently checking whether the services on the Chromeleon Controller for User Management, Discovery and Licensing are running and can be connected from the computer where the Services Manager is running. If lots of Services Manager instances are running at the same time in a large Chromeleon domain with, e.g. with more than 500 IPCs and the Services Manager running on all these IPCs, the check for the User Management service could lead to a situation where this User Management service cannot be connected anymore.</p> <p>Workaround: After installing Chromeleon on a computer the Services Manager is added to the Windows System Tray. When this computer is started, the Services Manager is automatically started and running. For large Chromeleon domains with lots of IPCs and/or workstations it's highly recommended to remove the Services Manager from the Windows System Tray. The Chromeleon Services Manager can be always started manually if necessary.</p>
236172	<p>Chromeleon 7.2x and Chromeleon 7.3.0x client machines need to disable option "Receive push notifications" in the discovery configuration dialog to be able to join a Chromeleon 7.3.1 domain. Chromeleon 7.2x and Chromeleon 7.3.0x client machines that are already part of a Chromeleon 7.3.1 domain and have "Receive push notifications" enabled will not receive any push notifications as this feature has been removed with Chromeleon 7.3.1.. It is required to enable "Poll for updates every <number> seconds" to receive that lasted discovery information.</p>
CM7-23033	<p>Legacy Upload: With replication framework disabled, when trying to modify a sequence while the automatic upload is already in progress the upload may fail in very rare cases and it is not possible to remove the sequence from the instrument queue by retry of the upload. To recover the sequence a copy of the sequence has to be stored manually. Chromeleon 7.2 SR5 adds an audit trail entry to the manually uploaded sequence that refers to the original sequence so that traceability is ensured.</p> <p>Thermo Fisher Scientific recommends enabling the replication framework with Chromeleon 7.2 SR5 to avoid the problem.</p>
CM7-23051	<p>In a few cases, sequences have been reported to abort with messages in the audit trail that were not conclusive, such as: "The injection audit trail / signal "... cannot be saved. Error detail: The transaction has aborted. The transaction commit operation failed."</p> <p>However, the SQL Server ERRORLOG files of the affected Instrument Controller PCs revealed errors due to slow file operations on the local hard drive. Thus, it is assumed that these failures were caused by poor disk drive performance. Chromeleon 7.2 SR5 introduced additional internal error reporting so that similar errors can be identified more easily in the future.</p>
47809	<p>Console: It might happen that when a sequence is directly started from the Console, the sequence "running icon" (green arrow) is not shown in the tree view of the data vault (in the left pane). This is likely a status reporting issue with the Discovery service and does not interfere with actual acquisition. The proper status is still shown in the instrument queue and in the view of the sequence itself.</p>
CM7-24042	<p>Instrument Configuration Manager: The .NET 4.7 framework is installed by Windows Update. For Windows 7 it is a recommended update, but for Windows 10 it is a mandatory update. This release of Chromeleon has been validated against .NET 4.7. However, under rare circumstances, the installation of .NET 4.7 could lead to malfunctioning or crashes of the instrument configuration manager or configuration plug-ins. If this occurs, please contact your Chromeleon support desk for assistance in correcting the problem.</p>

CM7-20449	User Management: Login "Role" dropdown box becomes empty after upgrading to Chromeleon 7.2 SR4. This is due to the fix for CM7-18178 "Roles were offered in the Logon dialogue, even if they were not specified as Logon roles". To work around this issue, enable the "Logon Role" property in the user database for all logon roles that users need to be able to select.
CM7-11692	Console: Instruments: When monitoring the baseline with an overlay chromatogram added to the signal plot, the overlay may disappear after changing to a different ePanel and back.
172023	Console: Instruments: Online Plot: For the Vanquish CAD, some properties and two channels are recorded where the data is transmitted as aA, and scaled to pA with 6-digits resolution. The online plot displays these numbers for the current signal value with 2-digit precision only.
CM7-25480	Console: Data: If a Data Vault is unavailable, it is not shown as collapsed in the data explorer tree despite its sub-folders and items being inaccessible.
171994	Console: Data: Empty Inject Time and GUID fields have been seen in a few single injections. Raw data have been successfully acquired and stored on the local Instrument PC. The Injection Audit Trail on the Instrument PC contains complete information, including the missing details. Too few instances have been reported to identify the root cause of this problem. Note: If you are affected by this problem, please contact your local Thermo Fisher representative for assistance with recovery of the missing injection details.
150978	Console: Data: Dragging the height of an injection row to make it too small for the text can result in the line being hidden until the console is restarted. This behavior has been seen only intermittently and only on a few PCs.
CM7-21399	Queries: Injection Variables 'Auto Dilution Ratio' and 'Retention Time Standard': Auto Dilution Ratio and Retention Time Standard columns are not available in the custom filter conditions for injection records (e.g., in the IRC editor or summary report).
120335	Queries: When using Oracle as a data vault server, text-based queries (e.g. searching for an injection name) are case sensitive. So, for example searching for "Extract" would not return matches for "EXTRACT" or "extract". This limitation does not apply to SQL Server data vaults, since SQL Server text searches are case insensitive.
234256	Queries: If a user is not a member of an access group assigned to a folder, attempting to create an injection or audit trail query will fail with a misleading error about a missing privilege, even if the user does indeed have the required privilege.
183709	Queries: In an Enterprise environment, if the Injection Query is not saved before running, then query results for a sequence in the same folder as the unsaved query may not be accessible (since the folder contents cannot be refreshed due to the pending change). Therefore, when those injections are opened in the Studio, they might not appear or might have an incorrect name. In addition, opening the sequence containing that injection from the query results list may fail. To prevent this problem, either create the query in a different folder or save it before running it.
232285	Queries, and NTMS Frame/Results Filters: Rules that compare floating point parameters to a fixed value using the "=" condition will not round or truncate values when performing the comparison. This means for example, that the rule "mass = 123.4" will not match a mass of 123.42.
CM7-19836	eWorkflows: The eWorkflows wizard fails with a message "Failed to retrieve the required Data Vault" when there is more than one Data Vault with the same name in the Chromeleon Domain.

CM7-24058	eWorkflows: The new eWorkflow option “Preserve Layout”, introduced in Chromeleon 7.2.6 is not backwards compatible with older versions of Chromeleon. If a client with an earlier version attempts to open an eWorkflow for which this option is enabled, the error message “Cannot load, as the data was created with a newer Chromeleon version.” Is displayed.
231883	eWorkflows: The sequence layout in an eWorkflow for a pair of linked instruments must only contain a Sample Block. If the eWorkflow contains Header, Footer or Bracket blocks, then the eWorkflow can only be run in 'single instrument' mode.
CM7-19336	Import Chromeleon 6: Due to changes in Auditing between Chromeleon 6 and Chromeleon 7, when a Chromeleon 6 Sequence is imported into Chromeleon 7, some of the text displayed in the Instrument Audit trail will not appear exactly as it did in Chromeleon 6. Refer to the topic “Viewing Chromeleon 6 Data” in the online help for further information.
SWFR-248	Waters Empower Import: The following limitations apply to the import of data from Waters Empower: <ol style="list-style-type: none"> 1. Time zone information is not supplied by the Waters toolkit API, so dates and times will be imported as if they were local. 2. Empower allows injections that are not contained in sample sets. These are not visible to the importer and cannot be imported unless added to a sample set. 3. Some peak results fields show incorrect units in Chromeleon since there is currently no mechanism to change the units on ‘core’ fields. They are included correctly in custom fields that by default are hidden.
CM7-25551	Import/Export: If two (or more) users simultaneously attempt to export a Sequence to the same location, a “Cannot export <sequence_name>” error is displayed for all.
CM7-18252	Export: When acquiring MS data, Chromeleon acquires MS data and all other signal data, such as UV, FLD, and pump pressure signals, in separate formats. As a result, when MS data is exported, non-MS data is not exported with the MS raw data file.
36644	Studio: Tentatively Identified Peaks Pane: In Chromeleon 7.2.10, the list of available library hits was increased from 3 to 12. If a hit >3 is selected and the data is opened in a version of Chromeleon prior to 7.2.10, then although the compound name will be available, the SI and RSI will not
CM7-15455	Processing Method: Without data in the first injection, it is not possible to select the 2 nd or 3 rd Detector for Dead/Delay Time.
CM7-17465	Processing Method: On the MS Settings page, It can happen the spectral bunching value for Peak Dependent Correction that is displayed as an annotation on the chromatogram plot does not match the value entered in the processing method on the MS setting page. This is by design, because the method setting defines the maximum number of spectra for averaging. The actual number of spectra used is determined the number of MS spectra which fit the filter used for the chromatogram. This is not correctly documented in the Chromeleon online help.
CM7-21783	Processing Method: Performance When Importing Fixed Calibration Standards for MS Sequences: When working with sequences of MS data, importing injections for use in a fixed calibration can take 1-2 minutes to complete, depending on the data.
CM7-24825	Processing Method: A sample with a processing method created in Chromeleon 7.2.7 when opened in the Chromeleon 7.2.6 in the Studio should show a notification bar indicating that the evaluation results may differ from those using the version which was used to create/save the processing method. This notification bar is not displayed. This issue affects only qualification sequences; regular sequences are not affected.

231464	MS Plot: When viewing profile mode mass spectra, Chromeleon labels peaks with the actual apex m/z of the profile data. In contrast, the FreeStyle and Qual Browser software will label profile mode mass spectra with the centroided m/z. This can result in minor differences in the displayed data between these applications.
26033	eSignatures: For sequences containing manually manipulated XICs saved in a software version older than 7.2.6, if the sequence was signed in a later software version without viewing the manually manipulated XICs, then verification could fail if the XICs were subsequently viewed before the verification. To resolve this situation, remove the signature, view the manipulated XIC, and re-sign the sequence. Then view the manipulated XICs once more before verification.
CM7-20335	Comparison of Old Report Versions Shows Change in CmbxExportParameters: If a report which was created in Chromeleon 7.2 SR2 or earlier, and modified in SR3, has its history compared in SR4, the history will appear to show that the "Cmbx Export Parameters" value has changed from True to False. This is due to a change in the default value of this field and does not represent any user-modification of the report.
CM7-17203	Report Designer: With some date/time formatting settings in the report, the order of month and day changes for some formats automatically. The settings in the Report Template can change based on the Windows regional settings. For example it is not possible to set m.d.yy as format with German regional settings. The Report Template replaces this with d.m.yyyy. The substitution occurs for report variables and non-report variable entries.
CM7-22145	Reporting: Discrepancy in "Last Modified" Time: Owing to differing rounding methods used, it is possible that the value of the "last modified" time for an object in a sequence has a difference of 1 second between the client display and the value shown in a report. For more details, please see the on-line help.
CM7-17841	Report Designer: If using a non-Chinese format as the regional setting in Windows, and Chinese as the setting for Non-Unicode programs, then the header on a Chromeleon report is not correctly displayed for variables. If the format is changed to Chinese, then everything is correctly displayed.
147417	Report Variables: The report variables peak.evaluate, chm.evaluate and injection.evaluate expect a formula in the invariant format (e.g. ',' as list separator, '.' as decimal symbol). The evaluation does not work if other regional settings (e.g. ';' as list separator, ',' as decimal symbol) are used in the formula text.
CM7-21331	Report Variables: The mass spectrum resolution report variable returns an internally used processing value instead of the resolution setting defined in the MS instrument method. It is recommended to not use this report variable. Instead use the "FT_Resolution" report variable.
CM7-23442	Reporting: In order to display the date and time in the Header/Footer of reports one can use the spreadsheet placeholders &D and &T respectively. During report creation these placeholders are replaced by the current date and time and formatted via the regional settings of the currently logged on Windows user account. However, this doesn't work correctly for every regional setting, e.g., 24-hour time formatting. Instead of using &D and &T one can use the Chromeleon report formula gen.currentTime or gen.reportTime together with the necessary format, e.g. {gen.currentTime; "dd.mm.yyy hh:mm"}. Note: the formula gen.currentTime is replaced by the current date/time during the electronic report creation. If you want to display the date/time when the electronic report is really printed or exported you have to use the formula gen.reportTime.

CM7-24972	Reporting: When applying a two level Autorepeat rule with double grouping to a plot object, if the sequence contains a large number of injections and a large number of components, it is possible that software performance will degrade significantly. This has been observed when applying Autorepeat to an MS Components plot for a sequence with 27 injections and 292 components.
CM7-23484	Reporting: In order to display the last updated date and time for a locked injection it is necessary to use the Chromeleon report formula <code>procMeth.version.time</code> .
CM7-25590	Chromatogram Plot: When creating a Virtual Channel, the Power Factor only increments in steps of 0.5, which does not provide sufficient flexibility for controlling the scale of the extracted data.
48906	NTMS: Due to limitations in the Sieve processing engine, it is only possible to perform NTMS processing on system with <code>en_US</code> localization (i.e. non-US localized systems are not supported) (This is also documented in the Sieve Release Notes)
215589	NTMS: When processing NTMS data using the SIEVE algorithm, at time the molecular weights of similar samples may differ, even though the molecular masses are very similar. This is a consequence of how the SIEVE algorithm analyzes the data and is to be expected.
CM7-22986	<p>During stress tests with multiple, very long sequences with more than 1000 injections, the queue was aborted with an unexpected error:</p> <p>“Queue End 24.12.2016 16:27:22 +01:00 Stopped the sequence queue run. Sequence End 24.12.2016 16:27:22 +01:00 End of sequence “Simple Vanquish Test 2016-12-21 19_37”.</p> <p>Abort Error 24.12.2016 16:27:21 +01:00 The injection audit trail cannot be saved. Error detail: Die Transaktion wurde abgebrochen. The transaction commit operation failed. The save operation failed for data item(s) “chrom://c-germoefelein/Xvault/Vanquish-H/6/Simple Vanquish Test 2016-12-21 19_37.seq/277.smp/Audit.audit”. Execution of <code>txp [05f69eb4-c9ed-11e6-9598-005056c00008]</code> failed. Error message: The command ‘UPDATE CJ_VERSION SET VERSION_LAST_SIBLINGS_TXN_NO = @P0 WHERE CJ_VERSION.VERSION_INVALIDATE_TXN_NO > @P1 AND CJ_VERSION.PARENT_ID IN (@P2)’ failed.”</p> <p>As a workaround, it is recommended that automatic upload be disabled when running very large sequences and uploading them manually instead.</p>
187407	In the Studio, when the Component Table was displayed from a processing method which was not assigned to the current injection, clicking 'Show Properties' would sometimes display incorrect properties for the selected component.
231359	Import of CMBX-Files by previous Chromeleon releases or into datavaults with an old database scheme: Chromeleon 7.3.1 is using a new database scheme for datavaults which records the logon role in the data audit trail. If a data object (e.g. sequence) contains data audit trail records with a role, and the data object is exported to a CMBX-File, the import of such a CMBX-File by a previous Chromeleon release is still possible. Yet, the imported data object cannot be modified anymore. Any attempt to modify it runs into a corresponding error message. A similar scenario is also present if you import the CMBX-File by the Chromeleon 7.3.1 into a datavault with an old database scheme.
240632	Interactive Results: Trying to insert a report table without header rows (e.g. MS Instrument Method (XRAW), Instrument Method / Overview) in the Interactive Results pane leads to an error message ‘Invalid cell reference’ in the upper left corner (A1) of the inserted new sheet”. Such report tables can still be successfully inserted in the Report Designer.
CM7-25508	Upload: In very rare cases, an upload may succeed, however the sequence remains locked (redirected to the Xvault).

CM7-25633	Services: In very rare cases if the Oracle database disk is running out of disk space and in addition an IPC cannot be connected properly, it may happen that that a sequence cannot be uploaded automatically. When trying to reboot the IPC a retry of the upload may result in an error message "A transaction package is missing on the hard disk. The order of transaction packages which should be sent to the network data vault can't be accomplished." The sequence can't be removed from queue automatically. It needs to be removed manually.
SWFR-2543	Sampling Devices That Do Not Use uL As Units for Volume: Although most liquid injection devices expect volumes to be entered in uL, there are a few devices (e.g. Thermo AS-HV and PerkinElmer GC Autosampler) which do not use µL as their default volume unit. If one of these devices is configured in the same instrument that also includes an injection device that uses µL, problems may be observed with volume validation in the sequence table as well as units associated with volumes in reports.
CM7-24600	Spectral Library: If a Chromeleon version older than Chromeleon 7.2.7 is used to create and name components from library screening results, then upon selecting the folder reference attempts to close the dialog with OK will result in an exception being thrown.
138190	<p>Opening an instrument method that is assigned to a not available instrument takes up to 40 seconds for the first attempt. Subsequent attempts are faster. The issue is caused by DNS resolution of the host name.</p> <p>Workaround: Create an instrument in simulation mode and assign the method to this instrument. Afterwards the instrument can be deleted. The DNS look-up will be faster as the physical PC is still existing.</p>
250819	CMBX-Files and Peak Group Calibration Levels: if a CBMX-File has been created by a Chromeleon Version 7.2.10 MUa(b,c,d) for a sequence containing a processing method with peak groups, the amount values for the calibration levels of the peak groups were not saved into this CBMX-File. If such a CMBX-File is now restored by any Chromeleon Version being able to read this CMBX-File the amount values for the calibration levels of peak groups are reset to 1.0.
261420	Network data acquisition: In enterprise systems, currently unknown technical abnormalities may cause synchronization issues of the acquired data from the local Xvault to the central Data Vault. If a sequence is affected the data cannot be transferred automatically. The Chromeleon software provides a message in the user interface (while running, or after acquisition end), and adds a message to the data audit trail that the data cannot be synchronized and that it requires a manual action to upload the data. The following tools are offered to aid the user in such a situation: Retry the Upload, Manual Upload, Manual Move. When the user encounters such a situation, the provided tools should be used in this order. Note that if Chromeleon detects that automatic upload is not possible, it will grey the "Retry the Upload" - option in the client but "Manual Upload" and "Manual Move" will both be available.

5.8 Obsolete Drivers

Chromeleon includes a number of obsolete drivers in order to provide backward compatibility of existing installations:

- Agilent/HP 1200 HPLC System
- AI 1310/3000 GC Sampler - 10ul
- AI 1310/3000 GC Sampler - 5ul
- AI 1310/3000 GC Sampler - 5ul - 155 Vials
- AI 1310/3000 GC Sampler - 5ul - 105 Vials
- AI 1310/3000 GC Sampler - 10ul - 155 Vials
- AI 1310/3000 GC Sampler - 10ul - 105 Vials
- PAL Sampler for GC
- PAL Sampler for LC
- TRACE 1300 Series GC (First generation driver that was superseded by TRACE 1300 Series GC II driver)

Please note that issues reported for any of these drivers will no longer be addressed. If you are using one of these drivers Thermo Fisher Scientific recommends migrating to a supported driver as soon as possible.

6 Backward/Forward Compatibility Issues

6.1 Thermo Scientific Vanquish Charged Aerosol Detector [CM6-23499]

Any Instrument Methods created for the Vanquish Charged Aerosol detector with Chromeleon 7.2 SR2 MUa and earlier may need to be updated due to changes in the driver introduced in Chromeleon 7.2 SR2 MUb.

6.2 Thermo Scientific Vanquish Autosampler [CM6-23405]

Any Instrument Methods created for the Vanquish Autosampler with Chromeleon 7.2 SR2 MUb and earlier will need to be updated if they contain the WashSpeed property. The WashSpeed value needs to be divided by 0.06 in order for the Instrument Method to work correctly.

6.3 Thermo Scientific TriPlus RSH

The current driver for this instrument is incompatible with firmware older than version 2.4.

6.4 Thermo Scientific TriPlus 300 HS

The current driver for this instrument is incompatible with firmware older than 2001.9.0.

6.5 Thermo Scientific TriPlus LS-100

The current driver for this instrument is incompatible with firmware older than version 2.4.

6.6 TSQ Quantiva and Endura Instrument Method [CM7-18759]

Instrument methods created with older versions of the TSQ Quantiva and Endura instrument method editor cannot be opened with newer versions of the method editor. If a large number of instrument methods have already been created for regular use, upgrade of the TSQ Quantiva and Endura driver is not recommended. Contact your local Thermo Fisher Scientific representative for additional details.

6.7 Chromeleon Enterprise Compatibility of different versions of Chromeleon installed on Domain Controller, Clients and Instrument Controllers

Whilst, in general, it is possible for a Chromeleon Enterprise with a domain controller running one version of Chromeleon to work with instrument controllers and client PCs running a different version of Chromeleon, we would not recommend this kind of 'mixed' environment for customers with a fully validated Chromeleon system.

However, should you choose to create a mixed Chromeleon environment, the following restrictions apply:

Opening Processing Methods Created on Newer Versions on an Older Client

These processing methods may be opened, edited and saved without losing any parameters specific to the newer version. However, the new parameters will not be applied to data processing, will not be accessible as report variables and will be completely 'invisible' on the older client. For details of processing parameters which will not be available, refer to all the release notes issued for all versions between the oldest and newest versions you are combining.

Enterprise Functionality Specific to Newer Chromeleon Versions

Features such as email notification, automated results export, post-sequence reporting with Chromeleon Client closed, and Chromeleon XPS will not function, even if accessed from a client running a newer version of Chromeleon.

Support for Instrument Control Specific to Newer Chromeleon Versions

In general, it is possible to control these instruments. However, the following restrictions apply:

- The instrument controller PC must be running the newer version of Chromeleon
- Older client PCs will not be able to create, edit or view instrument methods for the new driver
- Older client PCs will not be able to view ePanels related to the new driver
- Some instrument view toolbar items such as 'Consumables' and 'Troubleshooting' may be disabled (or have fewer sub-options) on the older client.
- Older client PCs will not be able to perform manual tuning or do real-time scanning for remote mass spectrometers

Additional restrictions may also apply. If you have any questions or concerns, please contact your local Chromeleon support channel.

7 Appendix

This section contains general Information about Release Notes, Online Help, and Contributed Content.

7.1 Release Notes

The Release Notes list the new features and improvements of the current release.

7.2 Online Help

In general, new features, updates and drivers that are introduced with this release are described in an updated Online Help that is distributed with the release.

7.3 Contributed Content

The Chromeleon 7.3.1 disk contains a folder titled Contributed Content. This folder contains:

- Demonstration Material
- Localized Documents
- Localized ePanels
- Localized Report Templates
- eWorkflow Templates
- User Management Example
- Charlie Mouse Pointer

Note: The files in the Contributed Content folder have not been tested and validated according to Thermo Fisher Scientific Software Development Cycle guidelines modeled after ISO 9001:2008 standards. Thermo Fisher Scientific assumes no responsibility for any errors that may appear in the content provided in the Contributed Content folder.

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