IBISMATCHPOINT+ v 2.3

USER GUIDE

FORENSIC
TECHNOLOGY

IBIS MATCHPOINT+

Version 2.3
User Guide

Forensic Technology

Trademarks

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Part I

Introducing IBIS MATCHPOINT+

This section covers the following topics:

Welcome to IBIS MATCHPOINT+

This section covers the following topics:

What Is IBIS MATCHPOINT+?

IBIS® MATCHPOINT+™ is a software system, installed on a desktop computer, that includes powerful image analysis tools that enable firearm examiners to analyze images that have been acquired by **IBIS®** BRASSTRAX-3D™, **IBIS®** BULLETTRAX-3D™, and **IBIS®** Heritage™ (BulletProof™ and BrassCatcher™), and correlation results on-site or from a remote location. These tools are designed to help firearm examiners select potential matches that are suggested by the correlation scores and perform comparisons of likely candidates.

Features

MATCHPOINT+ allows firearm examiners to:

- Create manual correlation requests
- View correlation scores
- Compare and analyze bullet evidence in both 2D and 3D

Note: Only images that have been acquired by BULLETTRAX-3D are available in 3D.

- Compare and analyze cartridge case evidence in both 2D and 3D

Note: Full headstamp and 3D primer images are only available from BRASSTRAX-3D.

- Compare multiple bullet or cartridge case exhibits simultaneously using the MultiViewer
- Compare two exhibits in the Side-by-Side Viewer
- Use dynamic bullet visualization tools to view details of high-resolution images at high magnification levels, overlap images and adjust image transparency to create composite images, adjust image brightness and contrast, and stretch or shrink images vertically.

  When analyzing 3D images, you can manipulate the texture of 3D images to bring out surface details by adjusting the 2D/3D rendering, 3D elevation, and lighting.

- Use dynamic cartridge case visualization tools to move, rotate, and overlap images, view details of high-resolution images at high magnification levels, and adjust image brightness and contrast.

  When analyzing 3D primer images that have been acquired using the Depth from focus method (DFF), you can make additional adjustments to the lighting and 2D/3D rendering.

- Compare cross-sectional topographical profiles of a bullet's surface
- Calculate and view consecutive matching striae (CMS)
- Capture and export screen images
- Record hits
- Create reports
- Export site data
- Print details about cases, exhibits, correlation requests and results, and hits

User Roles

To maintain security and control in MATCHPOINT+, users are assigned a role which allows them access to certain features. Users can have one of the following core roles:

- Acquisition Technician
- Expert Acquisition Technician
- Firearm Examiner

Note: User accounts are managed by IBIS Administrators. For more information, see the *IBIS Products Administration Guide*.

Acquisition Technician

Acquisition Technicians have permission to analyze exhibits in the MultiViewer and Side-by-Side Viewer. The reference and test exhibits must be selected from the Navigation tree. Acquisition Technicians cannot view correlation results and hits or create reports.

Expert Acquisition Technician

In addition to being able to perform the above tasks, Expert Acquisition Technicians can also:

- Create manual correlation requests
- View correlation requests and results
- Change the status of correlation requests
- Delete correlation requests
- Create and modify hits
- Delete unconfirmed hits

Firearm Examiner

In MATCHPOINT+, Firearm Examiners can perform the same tasks as Expert Acquisition Technicians.

Specialty User Roles

In addition to core user roles, there are specialty roles that provide access to restricted features. Depending on the structure of your facility, users may have one or more specialty role. The specialty roles are:

- Report
- Administrator

Report

The Report role provides access to create, view and print reports.

Administrator

The Administrator role provides access to preferred settings to force defaults for the system. When a default is forced, the setting overrides user preferences.

System Connectivity

MATCHPOINT+ can be connected to two different types of nodes:

• An **IBIS®** Data Concentrator
• An **IBIS®** Correlation Server
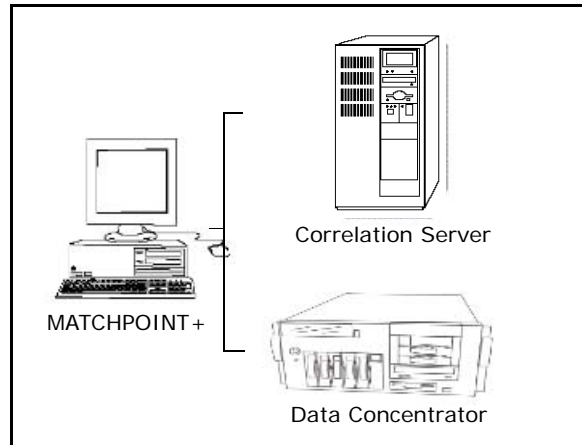
Node Descriptions

The following table describes the nodes.

Component	Description
Data Concentrator	The server that stores in a database all the bullet information and images that are received from the BULLETTRAX-3D Acquisition Station, and all the cartridge case information and images that are received from the BRASSTRAX-3D Acquisition Station.
Correlation Server	Stores compressed images, image signatures, and information about cases and exhibits. After an exhibit's signature has been extracted, this signature is copied to the Correlation Server. When a correlation is performed, the database stored on the server is accessed, and the signatures of the acquired images are compared.

Workflow

The following diagram shows the users, their tasks, and the components that are used to perform the tasks.

IMAGING

ANALYSIS

Users: Acquisition Technician,
Expert Acquisition Technician,
Firearm Examiner

Users: Expert Acquisition
Technician,
Firearm Examiner

BULLETTRAX-3D
Acquisition Station

BRASSTRAX-3D
Acquisition Station

MATCHPOINT+
Analysis Station

STORAGE

DATA PROCESSING

User: IBIS Administrator

Data Concentrator

Correlation Server
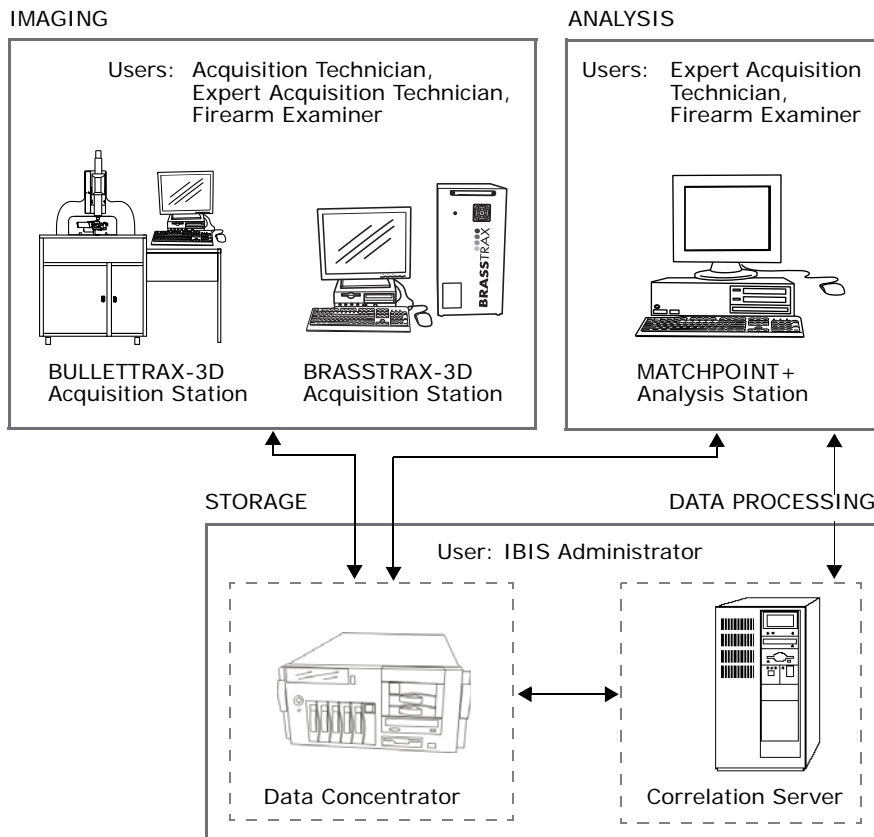
Note: The physical networking configuration of MATCHPOINT+ can be adjusted according to specific needs.

Getting Started

This section covers the following topics:

Logging On to Windows

Before logging on to MATCHPOINT+, you must log on to the Microsoft®
Windows® operating system using the user name and password assigned to
you by your IBIS Administrator.

To log on to Windows:

1. Enter your user name and password.

    Note: If your IBIS Administrator has reset your password, or if it
    is the first time you are logging on, the system will prompt you to
    replace the current password with a new one.

2. Click **OK**.

    If your user name and password are accepted, you obtain access to your
    computer desktop.

Related Topics

Changing the Language

If multiple languages are installed, you can change the language used in MATCHPOINT+ windows, dialog boxes, and menus. You must choose a language the first time you start the MATCHPOINT+ application.

To change the language:

1. From the Windows **Start** menu, select **Programs** > **Forensic Technology** > **IBIS MATCHPOINT+** > **Language Selector**.

   The **Language Selection** window opens.

2. Select a language.

3. Click **OK**.

   When you start the application, all text in MATCHPOINT+ windows, dialog boxes, and menus is displayed in the selected language.

Related Topics

Logging On to IBIS MATCHPOINT+

After you have logged on to Windows, you can start the MATCHPOINT+ application from the Windows **Start** menu. Use the user name and password assigned to you by your IBIS Administrator. For more information on creating accounts, refer to the *IBIS Products Administration Guide*.

To log on to MATCHPOINT+**:**

1. Start MATCHPOINT+ in one of the following ways:

    • Double-click the MATCHPOINT+ icon that is on the desktop.

    • From the Windows **Start** menu, select **Programs** > **Forensic Technology > IBIS MATCHPOINT+**.

    A series of built-in tests are run to test if the CPU, operating system, and screen resolution meet the system requirements, and if the system has booted in safe mode. If a test fails, you are prompted to specify if you want to continue using the application. If the computer boots in safe mode due to a problem, do not use the application. Contact your IBIS Administrator.

    When startup is complete, the **MATCHPOINT+ Logon** window opens.

2. Enter your user name and password.

> **Tip:** To change the display of the characters that you type, right-click in the Password field and select **Visual Feedback**.

3. Click **OK**.

> **Note:** The first time you log on, the Software License Agreement appears. You must click "I Agree" to be able to work with MATCHPOINT+.

If your user name and password are accepted, the Home Page opens and you can start working with MATCHPOINT+. Your user name displays on the Status bar.

The right-hand side of the window provides basic information about the MATCHPOINT+ application. The Navigation tree provides access to the different sites, and the cases and exhibits that are contained within these sites.

Note: If you have not logged on for a certain number of days, as configured by your IBIS Administrator, you will be denied access to the system. If this happens, contact your IBIS Administrator.

Related Topics

Changing Your Password (page 31)

Using Windows-Based Features (page 40)

Exiting IBIS MATCHPOINT+ (page 64)

Changing Your Password

For security reasons, you should change your password on a regular basis. Follow your facility's guidelines, if any.

Your IBIS Administrator may set a period of time after which your password will expire. You will then be asked to enter a new password. Your IBIS Administrator can tell you the minimum and maximum allowable number of characters in your password.

> **Note:** If domain accounts are implemented in your system, then there is only one user account (on the MATCHPOINT+ domain account computer). If local accounts are used, each user has two accounts, one on the MATCHPOINT+ computer and one on the Data Concentrator. However, these accounts are not the same account and the passwords can be different.

To change your password:

1. Press CTRL+ALT+DELETE.

   The Windows **Security view** opens.

2. Click **Change Password**.

   The **Change Password** window opens.

3. Enter your current password in the **Old password** field.

4. Enter your new password in the **New password** field.

5. Confirm your new password by re-typing it in the **Confirm password** field.

6. Click **OK** to record your new password into the system.

Related Topics

Logging On to Windows (page 27)

Exiting IBIS MATCHPOINT+ (page 64)

Exploring Areas of the Application

The MATCHPOINT+ graphical user interface (GUI) consists of the following areas:

Title bar

Menu bar

Toolbar

Navigation tree

Status bar

Summary view   Column header   Information view
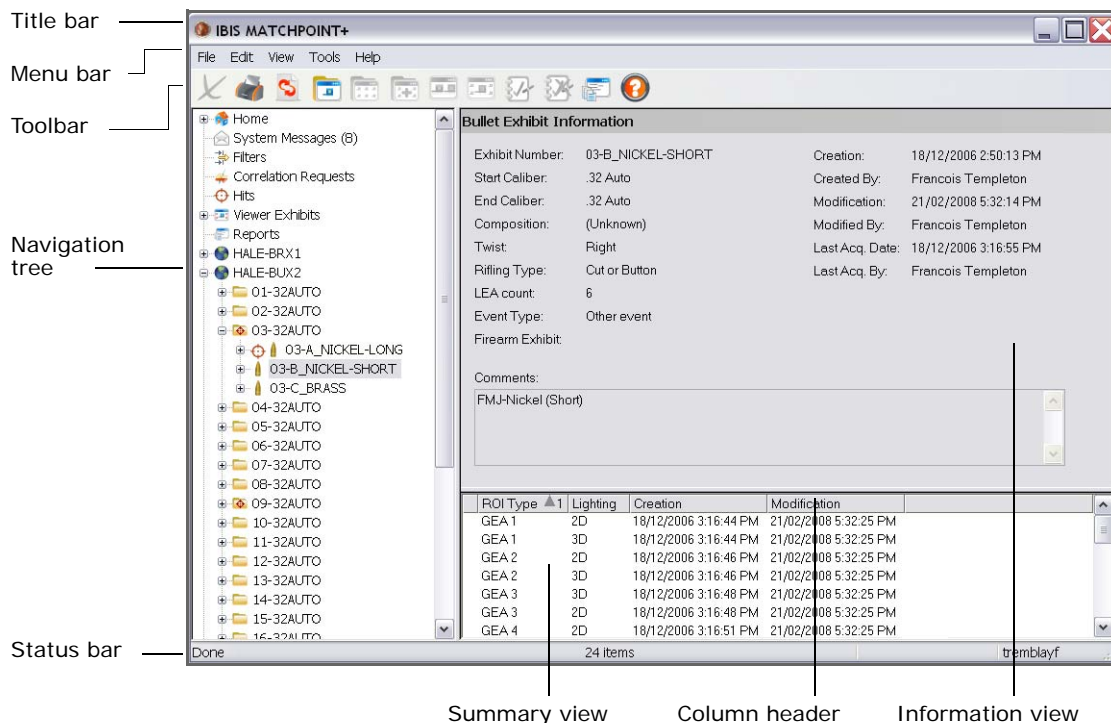
Interface Elements

The following table describes each area in more detail:

Interface Element	Description
Title bar	Displays the name of the application.
Menu bar	Displays the menus from which MATCHPOINT+ tasks are carried out.
Toolbar	Displays buttons that provide an alternative method of performing the most common tasks in MATCHPOINT+.

Interface Element	Description
Navigation tree	Displays sites, the cases at each site, and the bullet and cartridge case exhibits that are associated with each case. For more information, see Navigation Tree (page 34).
Status bar	Displays messages, and other information like the description of tasks, and the user name of the user currently logged on.
Summary view	When an exhibit is selected, displays a list of the images that have been acquired, as well as some basic information about each image, such as the most recent modification date and the status of the exhibit.
	When a case is selected, displays its associated exhibits and some basic information about each exhibit, such as caliber, make, and event type.
	When a correlation request is selected, displays the correlation results.
Column header	Area in which right-clicking activates a context menu of display features to Group and Show'Hide columns.
Information view	Displays detailed information about the selected case or exhibit. This is also where correlation requests, hits, and reports are listed.

Navigation Tree

The Navigation tree displays sites, the cases at each site, and the bullet, cartridge case, and firearm exhibits that are associated with each case. Clicking an object in the tree displays information about the selected object in the **Information** view and **Summary** view which appear to the right of the Navigation tree.

Item	Description
Site	HALE-BUX2
Case folders	01-32AUTO, 02-32AUTO, 03-32AUTO, 04-32AUTO
Bullet exhibit (hit)	04-A_NICKEL-LONG
	04-B_NICKEL-SHORT
Bullet exhibit	04-C_BRASS_DAMAGED
Acquired images	LEA 1 - 2D, LEA 1 - 3D, LEA 2 - 2D, LEA 2 - 3D, GEA 2 - 2D, GEA 2 - 3D, LEA 3 - 2D

Legend

- Remote site
- Local site
- Case folder (no hits)
- Case folder (at least one exhibit is involved in a hit)
- The case has been imported
- Cartridge case exhibit
- Bullet exhibit
- Firearm exhibit
- Cartridge case test fire exhibit
- Bullet test fire exhibit
- Cartridge case image
- Bullet image
- * The case or exhibit is new or has been modified

The following icons appear at the top of the Navigation tree:
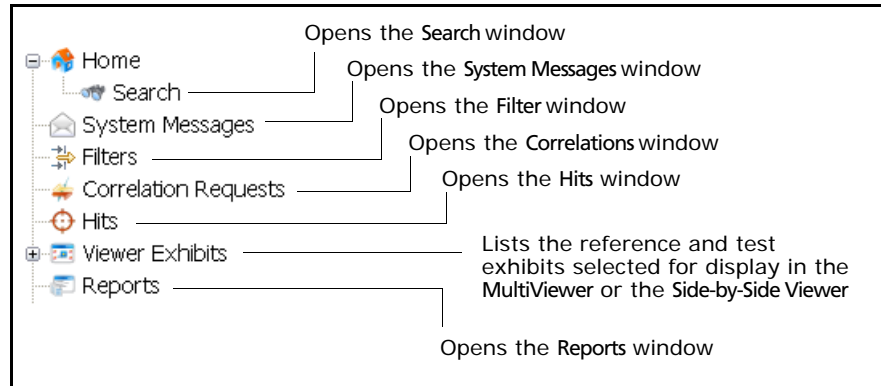
About Sites Managed by Jurisdiction

A jurisdiction is a functional perspective that allows users to recognize the sites that are configured for their analysis network. There may be one or more sites configured to be in your jurisdiction. The sites that display in the Navigation tree with a colored site icon are in your jurisdiction. Sites with a gray icon are not in your jurisdiction.

The availability of some features in MATCHPOINT+ depends on your jurisdiction configuration. For example, to create a hit, at least one of the exhibits must be in your jurisdiction, and to view a Correlation Request, the reference exhibit must be in your jurisdiction.

If you have the required privileges, there are no feature limitations or access restrictions to the sites in your jurisdiction. For some developed IBIS solutions, customized networks may be configured to enable connectivity and data sharing between jurisdictions.

Menu Bar

The following table describes the menus that are available from the menu bar:

Menu	Item	Action
File	New	Displays the following options:
		• **Manual Correlation Request** opens the Correlation Request dialog box (page 277) for a selected exhibit, in which you specify filter criteria.
		• **Report** opens the New Report dialog box (page 390) in which you select the template you want to use to generate the report.
	Print	Opens the Print dialog box.
	Refresh	Refreshes the displayed information by reloading data from the database.
	Exit	Closes the application.
Edit	Modify	If a hit is selected in the **Hit** list, opens the Modify Hit dialog box (page 381).
		For data that has been migrated from IBIS Heritage, the case or exhibit information can be modified.
	Modify All Images	This item is disabled in MATCHPOINT+.
	Delete	Deletes the selected correlation request, hit, or report.
		For data that has been migrated from IBIS Heritage, the case or exhibit can be deleted.
	Restore	This item is disabled in MATCHPOINT+.
	Search	Replaces the contents of the **Information** window with a group of fields that allows you to specify criteria for finding a particular case or exhibit.
View	Toolbar	Shows or hides the toolbar, depending on the current state.
	Status Bar	Shows or hides the status bar, depending on the current state.
	New Filter	Opens the appropriate Filter dialog box in which you can specify filter options to limit the scope of the display.

Menu	Item	Action
Tools	Synchronize	This option is disabled in MATCHPOINT+.
	Preferences	Opens the Preferences dialog box (page 263) in which users can define their default preferences.
	Quick Search	Opens the Quick Search dialog box (page 271) to find items in a list.
	Preferred Lists	Opens the Preferred Lists dialog box (page 273) in which data lists can be defined.
	Side-by-Side Viewer	Opens the Cartridge Case Side-by-Side Viewer (page 347) or the Bullet Side-by-Side Viewer (page 355). This item is enabled when a reference exhibit and a test exhibit have been selected.
	MultiViewer	Opens the Cartridge Case MultiViewer (page 331) or the Bullet MultiViewer (page 339). This item is enabled when a reference exhibit and a test exhibit have been selected.
	Data Export	Opens the Data Export dialog box (page 326).
Help	Help	Opens IBIS MATCHPOINT+ help.
	About IBIS MATCHPOINT+	Opens a window that displays basic information about the MATCHPOINT+ application.

Toolbar

You can use the buttons on the toolbar to access common commands. The following buttons are available on the toolbar of the main window:

Click	To
	Delete correlation requests in the Correlations window (page 285). Delete hits in the Hits window (page 383). Delete reports in the Reports window (page 387).
	Open the Print dialog box.
	Refresh the displayed information by reloading data from the database.
	Set the selected exhibit as the reference exhibit. This button is enabled when an exhibit is selected from the Navigation tree.
	Set the selected exhibit as the test exhibit. The previous test exhibit list is cleared.
	Set the selected exhibit as an additional test exhibit; adding to the test exhibit list.
	Open the Cartridge Case Side-by-Side Viewer (page 347) or the Bullet Side-by-Side Viewer (page 355). This button is enabled when a reference exhibit and a test exhibit, or a correlation request have been selected.
	Open the Cartridge Case MultiViewer (page 331) or the Bullet MultiViewer (page 339). This button is enabled when a reference exhibit or a correlation request has been selected.
	Change the status of a correlation request from Correlation Done to Previously Viewed after a Firearm Examiner has analyzed the correlation results. This can be done in the Correlations window (page 285) only.
	Change the status of a correlation request from Previously Viewed to Correlation Done in the Correlations window (page 285).

Click	To
	Open the New Report dialog box (page 390) so that you can create a new report from a template or create a new custom report template.
	Open Help.

Using Windows-Based Features

MATCHPOINT+ runs on the Microsoft Windows operating system and follows many of the Windows standard conventions. The functionality that is specific to MATCHPOINT+, as well as some standard Windows functionality are described in the following sections:

- Cursor Modes (page 40)
- Using List Boxes (page 41)
- Using the Calendar (page 41)

Cursor Modes

The following cursor modes are available in the MATCHPOINT+ Viewers:

Cursor	Mode	Action
⊕	Translate	Click and drag an image in the **Side-by-Side Viewer** to move the image. **Note:** This cursor is blue when it is positioned over the end point of a ruler in the **Bullet Side-by-Side Viewer** and is used to move the ruler.
↻	Rotate	Click and drag to rotate a cartridge case image clockwise or counterclockwise in the **Side-by-Side Viewer** and **MultiViewer**.
↔	Horizontal move	Click and drag to reposition the hairline in the **Side-by-Side Viewer**.
↕	Vertical move	Click and drag to move a mosaic vertically in the **Bullet Side-by-Side Viewer** and **Bullet MultiViewer**.

Using List Boxes

List boxes contain a list of pre-defined options.
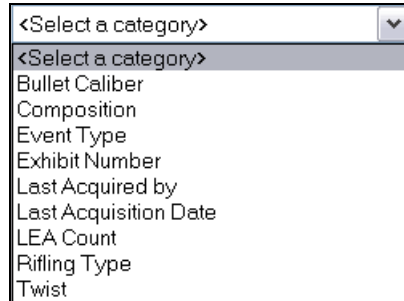
To select information in a list box:

1. Click the arrow to the right of a field to display the list.

2. Click an item in the list to select it.

> **Tip:** Enter the first letter(s) or number(s) to go to the item in the list that starts with this (these) letter(s) or number(s).

Using the Calendar

You can open a calendar to simplify the task of entering dates into date fields.

To open the calendar:

- Click the arrow to the right of a date field to display the calendar.

The **Calendar** dialog box opens.

Reverse and forward

Click to change the year

Date
selection

Today's date
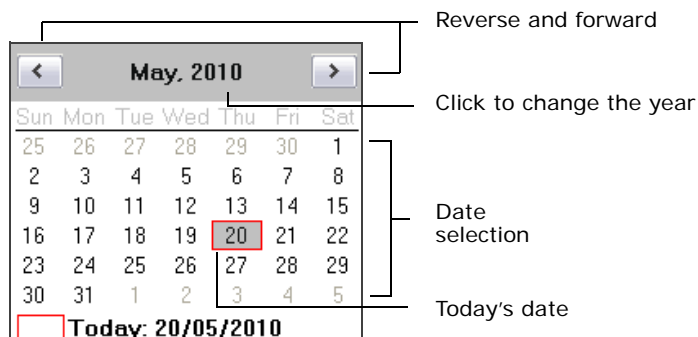
To specify a date using the calendar:

1. Use the arrows to select the month:

Click	To
	Go back one month.
	Go forward one month.

2. Click a date on the calendar.

Tip: You can also specify the date without opening the calendar by clicking that part of the date that you want to change and typing over it.

The calendar closes and the date field displays the selected date.

In some fields, there is a check box that must be selected to certify that the date is chosen, as shown below.

Speeding Up the Way You Work

You can speed up the way you work in MATCHPOINT+ by:

- Using keyboard shortcuts and function keys (page 43)
- Using context menus (page 44)
- Using search (page 46)

Using Keyboard Shortcuts and Function Keys

You can use the following keyboard shortcuts and function keys to carry out a command directly from the keyboard without having to use your mouse:

Press	To
F1	Open the IBIS MATCHPOINT+ Help.
F3	Display the search fields in the **Information** view. For more information, see Using Search (page 46).
F5	Reload case, correlation request, hit information, or reports from the database.
CTRL+C	Copy a selection from an input field.
CTRL+M	Create a manual correlation request.
CTRL+P	Print.
CTRL+Q	Filter the cases that are displayed in the Navigation tree.
CTRL+T	Create a new report.
CTRL+V	Paste your cut or copied selection into an input field.
CTRL+X	Cut a selection from an input field.

Using Context Menus

When you right-click on specific items in the Navigation tree or Information view, a context menu opens with commands. The commands that appear depend on where you click in the interface. Many of these commands are also found in the menu bar. The context menu provides a faster way of achieving the same result.

Select	To
These items appear when a site is selected:	
Filter	Filter the cases that are displayed in the Navigation tree by specifying a set of filter criteria.
Search	Search for cases or exhibits belonging to the selected site.
Unapply Filter	Unapply a case filter, if one is applied.
These items appear when a case is selected:	
Submit	This item is disabled in MATCHPOINT+.
Modify	This item is disabled in MATCHPOINT+.
Delete	This item is disabled in MATCHPOINT+.
Restore	This item is disabled in MATCHPOINT+.
Print	Open the Print dialog box.
These items appear when an exhibit is selected:	
Set as Reference Exhibit	Make the selected exhibit the reference exhibit.
Set as Test Exhibit	Make the selected exhibit the test exhibit so that it can be viewed in the MultiViewer (page 329) or the Side-by-Side Viewer (page 345) along with the current reference exhibit.
Add to Test Exhibits	Add the selected exhibit to the existing selection of test exhibits.
Manual Correlation Request	Create a manual correlation request.
Reimport Exhibit	Reimport an exhibit to ensure the information is up-to-date.
Export Exhibit	Export an exhibit to another site.

Select	To
Modify All Images	This item is disabled in MATCHPOINT+.
Restore Archived Images	This item is disabled in MATCHPOINT+.
Modify	This item is disabled in MATCHPOINT+.
Delete	This item is disabled in MATCHPOINT+.
Print	Open the Print dialog box.

These items appear when a correlation request is selected:

Select	To
Side-by-Side Viewer	View the correlation results of the selected correlation request in the Side-by-Side Viewer (page 345). The sort order in the correlation results list determines the display order of the exhibits in the viewer.
MultiViewer	View the correlation results of the selected correlation request in the MultiViewer (page 329).
Correlation Results Filtering	Open Correlation Results Filtering (page 119).
Status	Change the status of the selected correlation request to Viewed or Not Viewed.
Delete	Delete the selected correlation request.
Correlation Request Information	Open the Correlation Request Information dialog box (page 291), which displays detailed information about the selected correlation request.
Reference Exhibit Information	Open the Reference Exhibit Information dialog box.
Print Correlation Results	Open the Print Correlation Results dialog box (page 297).

These items appear when a correlation result is selected:

Select	To
Compare Exhibits	Open the Side-by-Side Viewer (page 345). The reference exhibit that is selected in the Correlation Requests view (page 287) and the test exhibit that is selected in the Correlation Results view (page 287) are displayed.
Import Exhibit	Import an exhibit that is stored on a remote server.

Select	To
Reimport Exhibit	Reimport an exhibit that is stored on a remote server.
Test Exhibit Information	Display the test exhibit details.

Using Search

You can search for cases and exhibits using different criteria. The available criteria change according to the type of search. Types of searches include case, cartridge case exhibit, bullet exhibit and firearm exhibit. A maximum of 2000 search results can be returned.

The search feature is intended for simple queries, for example, finding a certain case using the case number or the date that it was created.

A search cannot be saved or edited. For more on information management, see Working with Filters (page 49).

To perform a search:

1. From the **Edit** menu, select **Search**.

   The Search window is displayed in the Information view.

2. Select a search type from the **Type** list.

   The criteria for the search type are displayed in the **Fields** panel.

3. From the **Fields** panel, select a criterion and click the right arrow.

   The dialog box for that criterion opens.

4. Define the parameter(s) and click **OK**. If you selected a data criterion, see Date dialog box (page 267) for more information.

   The criterion is added to the **Criteria** panel on the right.

5. Define the details of the search as required:

   • To add another criterion to the search, repeat step 3. An "And" statement will be added to the search.

   • To add the same criterion with a different definition, repeat step 3. An "Or" statement will be added to the definition. For example, Law Agency: Anytown or Anycity.

   • To modify a criterion in the **Criteria** panel, double-click it and revise the definition in the dialog box.

- To remove a criterion from the **Criteria** panel, select it and click the left arrow.

Tip: To activate a pop-up window of the search definition, hold your mouse over any of the fields in the **Criteria** panel. To close the pop-up window, click anywhere.

6. Click **Search** to activate the search.

    Results are displayed in the Summary window.

    The **Search** button becomes the **Stop** button for the duration of the search. You can click the **Stop** button at any time to stop the search.

Related Topics

Reading System Messages

System messages are sent to individual MATCHPOINT+ workstations to provide more information about system events and errors. If an error occurs, for example, when exporting an exhibit, a descriptive message is sent to the System Messages folder. A system message can help users understand, or perhaps resolve, an issue.

Messages can be opened by any user who has access to the workstation. If a message is not read during the expiration period, it is automatically removed.

> **Note:** The expiration period for system messages is configurable. The default is 180 days.

To open a system message:

1. From the Navigation tree, click **System Messages** to open the folder.

    The current messages are displayed.

2. Double-click the message you want to read.

    The message opens.

To delete a system message:

1. From the Navigation tree, click **System Messages** to open the folder.

    The current messages are displayed.

2. Right-click the message you want to delete.

3. Select **Delete** from the context menu.

    The message is deleted.

Working with Filters

Use filters to customize the information you want to display. You can create filters for cases that display in the Navigation tree, and for correlation requests that display in the Information view.

The criteria that you can include in a filter depend on the type of filter you create. When a filter is applied, only the information that meets your criteria is displayed.

Note: You do not have to reapply a filter each time you log on. The filters that you apply remain until you remove or modify them.

A filter can have many criteria defined, but only one filter type can be applied at a time. The filters that you create are for your use only; they cannot be shared with other users.

To create a filter:

1. From the **View** menu, select **New Filter**.

2. Select the type of filter you want to create:

    *   Cases
    *   Correlation Requests

    The Filter dialog box (page 265) opens. The available fields depend on the type of filter.

Tip: Use the shortcut from the Navigation tree by right-clicking the item you want to filter and selecting **Filter**.

3. From the **Fields** panel, select a criterion and click the right arrow.

    The dialog box for that criterion opens.

4. Define the parameter(s) and click **OK**. If you selected a date criterion, see Date dialog box (page 267) for more information.

    The criterion is added to the **Filter** panel on the right.

5. Define the details of the filter as required:

- To add another criterion to the filter, repeat step 3. An "And" statement will be added to the filter.
- To add the same criterion with a different definition, repeat step 3. An "Or" statement will be added to the definition. For example, Law Agency: Anytown or Anycity.
- To modify a criterion in the **Filter** panel, double-click it and revise the definition in the dialog box.
- To remove a criterion from the **Filter** panel, select it and click the left arrow.

> **Tip:** To activate a pop-up window of the filter definition, hold your mouse over any of the fields in the **Filter** panel. To close the pop-up window, click anywhere.

6. When you are finished, type a name for the filter in the **Name** field.

7. Type a brief description in the **Description** field.

   The name and description appear in the Filters list to help you manage the filters you create.

8. Click **Save** or **Save & Apply**.

   The new filter is added to the Filters list.

To apply a filter:

1. From the Navigation tree, click **Filters**.

   The Filters list is displayed.

2. Double-click the filter that you want to apply.

   The filter is applied and indicators are set as follows:

   - In the Filters list, a green check mark appears beside a filter that is applied.
   - For an applied case filter, a message is displayed at the top of the Navigation tree: Case filter: [filter name].
   - For an applied list filter, a message is displayed at the top of the Information view: Filter Type {Filter: [filter name]}.

To modify a filter:

1. From the Navigation tree, click **Filters**.

    The Filters list is displayed.

2. Right-click the filter that you want to modify and select **Modify**.

    The Filter dialog box (page 265) opens. The available fields depend on the type of filter.

3. From the **Fields** panel, select the criteria that you want to modify.

    Modify the criteria and parameters as required.

4. Click **Save**.

To unapply a filter:

1. From the Navigation tree, click **Filters**.

    The Filters list is displayed.

2. Right-click the filter that you want to undo and select **Unapply.**

    The filter and the green check mark are removed.

> **Tip:** Use the shortcut from the Navigation tree by right-clicking the item and selecting **Unapply Filter**.

To delete a filter:

1. From the Navigation tree, click **Filters**.

    The Filters list is displayed.

2. Right-click the filter that you want to delete and select **Delete**.

3. Click **Yes**.

    The filter is deleted from the list.

Defined Filters

The defined filters that are provided with MATCHPOINT+ are displayed in the Filters list. These filters are available for all users and cannot be modified. Defined filters are described in the following table.

Name	Type	Description
Load Case On Demand	Case	When you apply this filter, all the cases in the Navigation tree are hidden. You can then use Search (F3) and select criteria to identify the cases you want to load.
		Select the case(s) from the search results, and then right-click to load the ones you want to display in the Navigation tree.
Confirmed Hits	Hit	When you apply this filter, only the confirmed hits display in the Hits list.
Unconfirmed Hits	Hit	When you apply this filter, only the unconfirmed hits display in the Hits list.

Related Topics

Grouping List Information

Use groups to customize the information that you want to display in a list. You can select up to four items to group and control which columns you want to show in the Information view. For example, a list may be more meaningful if the event type is grouped and the site name column is hidden. A group cannot be saved.

> **Tip:** To manage large amounts of information, you can group a list that has been filtered, see Work with filters (page 49). The resulting list can be further enhanced by sorting the columns.

To group a list:

1. Display the list information that you want to group. For example, select Correlation Requests from the Navigation tree.

2. Right-click the column header bar in the Information view and select **Group**.

    The Group By dialog box (page 269) opens.

3. From the drop-down list, select the first item that you want to group.

4. Click **Ascending** or **Descending** for the sort order.

5. By default, the column of a grouped item is hidden. If you want to display the column, select the **Show Column** check box.

> **Note:** You can right-click the column header and select **Show/ Hide Columns** to control which columns show. The display order of columns cannot be modified.

6. If you want to group another item, repeat step 3.

    A maximum of four items can be defined for one group.

7. Click **OK**.

    The list displays according to the defined groups. Click the plus sign (+) or minus sign (-) to expand or collapse grouped information.

If you sort a column when a list is grouped, the column header will display the next sort number. For example, if there are two grouped items, the sorted column displays the number three.

Third item sorted

First grouped item

Second grouped item
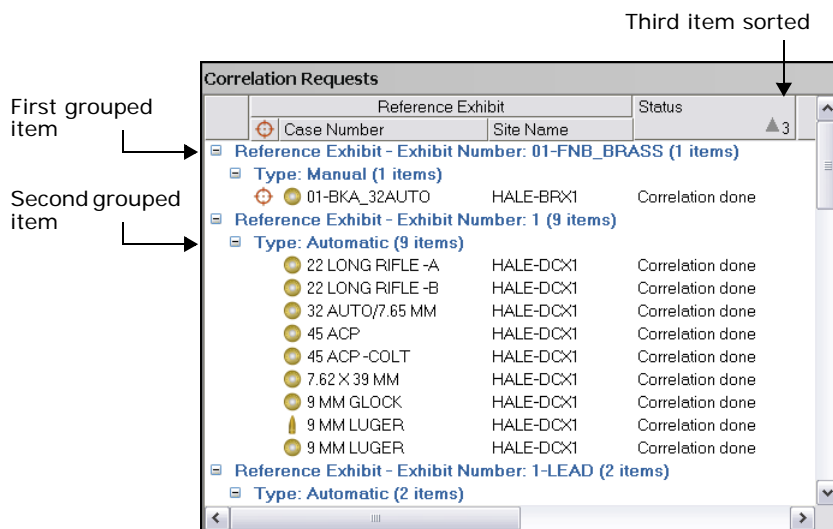
To modify or ungroup information:

1. Display the grouped information. For example, select Correlation Requests from the Navigation tree.

2. Right-click the column header bar in the Information view and select **Group**.

    The Group By dialog box (page 269) opens.

3. Modify the group as required, or click **Clear All** to remove all the groups.

4. Click **OK**.

Using Tools

The Tools menu provides you with the following commands:

- Setting Your Preferences
- Using Quick Search
- Defining Preferred Lists
- Side-by-Side Viewer (enabled when a reference exhibit has been selected)
- MultiViewer (enabled when a reference exhibit has been selected)

Setting Your Preferences

You can eliminate redundant tasks and set your preferences based on how you want to work. Your preferences are associated with your user account, so when you log on, your settings are applied.

There are more than 100 preferred default settings you can save for the **MultiViewer**, the **Side-by-Side Viewer,** display options, manual correlations, printing and CMS calculation.

Note: This feature is not available if a workstation is configured to force the same preferences for all users.

The Preferences dialog box (page 263) displays the **Current Values** for the preferences that you can edit. The system **Default Values** are also provided for your reference if you want to reset.

You can also save your preferences when you use a feature, for example, display options in the MultiViewer or chart type in Correlations Results Filtering.

To set your preferences:

1. From the menu bar, select **Tools > Preferences**.

   The Preferences dialog box (page 263) opens with all the groups of preferences.

2. Click the plus sign (+) next to the group you want to open.

3. In the **Current Value** column, select or enter the value you want for a specific preference.

The values you change display in red text.

Note: Click **Undo Changes** to cancel the changes but keep the dialog box open. Click **Cancel** to close without saving.

4.   Click **Save**.

Your changes are now displayed in black text.

5.   Click **Close**.

Resetting Preference Values

Use the context menu to reset preference values. You can reset a single preference value, or all the values. There are two kinds of defaults, one that is set for your system, and one that is standard for all MATCHPOINT+ applications.

Note: You cannot reset a default if the Administrator has forced a preference value for your workstation.

To reset a preference:

1.   Click the plus sign (+) next to a group and select the preference you want to reset.

2.   Right-click and select **Reset to Default Value**, or **Reset to Factory Value.**

The value is displayed in red text to indicate the change.

3.   Click **Save**.

The value is displayed in black text.

4.   Click **Close** to the window.

To reset all preferences:

1.   Right-click any preference group and select **Reset All to Default Values,** or **Reset All to Factory Values**.

All the preferences for all the groups are reset. Any values that change are displayed in red text.

2.   Click **Save**.

The value is displayed in black text.

3.   Click **Close** to the window.

Using Quick Search

Quick Search helps you locate items in lists displayed from the Navigation tree. Simply type a few characters or a whole word and Quick Search opens and focuses on the first matching item (if there is one) in the column used to sort the list.

Advanced mode gives you the flexibility to match the case or the whole word—and find the characters anywhere in the column. For example, you can find, *pin* and *alpine*. By default, Quick Search looks in the column used to sort the list, but you can select a different column to search. As well, you can select which direction you want to search.

> **Note:** A gray triangle in the column header indicates which column is used to sort a list. Click the column header to select a different column to sort.

Quick Search stays on top of the window until you close it, change the view, or press ESC. Quick Search is activated automatically from the keyboard, but you can also open it from the Tools menu.

To find an item in a list:

1.   Display any list available from the Navigation tree.

2.   Enter the text you want to find.

The Quick Search dialog box (page 271) opens and searches in the column used to sort the list. The first matching item is selected, if there is one.

3.   Select **Advanced mode** to extend the search options:

- To match the case or whole word.
- To search in another column.
- To find the next or previous occurrence.

Defining Preferred Lists

Some data lists can be very long, such as those for calibers and law enforcement agencies. To make these lists easier to use, frequently referenced items can be defined as preferred data. When a list is first displayed, only the preferred list items are shown.

Note: Only users with the Administrator role can define or edit preferred lists.

To synchronize the data lists throughout your **IBIS®** TRAX-3D™ network, preferred lists should be defined on a MATCHPOINT+ Analysis Station that is connected to a centralized Data Concentrator. Acquisition Stations that are part of the network receive updated preferred lists from the Data Concentrator after a synchronization is performed.

Unique lists can also be maintained and not overwritten; for example, if there is one Acquisition Station in your network for which a different list of calibers is appropriate. Contact technical support for more information.

To define a preferred list:

1. Click **Tools** > **Preferred Lists**.

    The Preferred Lists dialog box (page 273) opens.

2. From the List Names drop-down list, select the list that you want to define.

3. From the complete list on the left, select the item(s) you want to include in the preferred list and then click the right arrow.

    To remove item(s) from a preferred list, select the item(s) and then click the left arrow.

4. Click **Save**.

    The changes you made are applied to the selected list.

5. Select another list to define, if required.

6. Click **Close** when you are finished.

    The dialog box closes.

Getting Help

There are several ways in which you can get information about MATCHPOINT+:

- Using Help (page 59)
- Consulting the documentation (page 62)
- Contacting technical support (page 63)

Using Help

MATCHPOINT+ Help contains procedures and reference information. Procedures provide step-by-step instructions about how to complete a task. Reference topics describe MATCHPOINT+ windows and dialog boxes. MATCHPOINT+ Help is divided into three major sections:

- **Introducing IBIS MATCHPOINT+** provides an overview of the product, and describes the MATCHPOINT+ interface and its features.
- **Working with IBIS MATCHPOINT+** contains procedures that provide step-by-step instructions on how to request manual correlations and analyze images using the **MultiViewer** and the **Side-by-Side Viewer**.
- **IBIS MATCHPOINT+ Reference** describes the windows and dialog boxes in MATCHPOINT+.

MATCHPOINT+ Help is a compiled Microsoft HTML Help system and follows the standard Microsoft HTML Help conventions. The following sections describe some of the Help functionality which you may find useful.

Help Overview

The MATCHPOINT+ Help interface displays the Help Viewer in the left pane and a Help topic in the right pane. The Help Viewer provides an integrated Table of Contents, Index, and full-text Search capability to help you find information easily. You can view the Contents, Index, or Search results while you are viewing a Help topic. You can also bookmark topics for easy retrieval from the Favorites page.

Opening MATCHPOINT+ Help

To open Help within MATCHPOINT+, do one of the following:

- From the menu bar, click **Help** > **Help**.
- Press F1.
- Click the **Help** button in a dialog box to open the relevant help topic.

To open Help from outside the MATCHPOINT+ application:

- From the Windows **Start** menu, select **Programs > Forensic Technology > IBIS MATCHPOINT+ > Help**.

Navigating Through Topics

On the Contents page, you can click the plus (+) and minus (-) signs to open and close each book and view the topics and subtopics. When you click a book icon or topic title, the corresponding topic is displayed.

The Help topics also provide numerous ways for you to either browse sequentially through topics or select the type of information that you want to view. The following table lists some of the conventions that are used to help you navigate through the topics:

Item	Location	Description
	Top and bottom corners of the topic view	Click to move to the previous or next topic page.
	Top and bottom corners of the topic view	Click to return to the last page viewed.

Item	Location	Description
⇦ Back	Help toolbar	Click to return to the topic that you were viewing previously.
Sort images	Blue, underlined words within any topic	Click to jump to a related topic.
Related Topics	End of procedural topic	Click to display a list of related procedural topics.
How Do I...?	At the beginning of reference topic	Click to jump to the "How Do I…?" links for the window or dialog box that you can select to view related procedural topics.

Printing a Topic

With MATCHPOINT+ Help, you can print either the selected topic or all topics in the selected heading.

To print a topic alone or with subtopics:

1. From the Contents tab, select the topic.

2. On the toolbar, click **Print**.

   The **Print Topics** dialog box opens.

3. Select whether you want to print just the selected topic or all topics in the selected heading, and then click **OK**.

   The **Windows Print** dialog box opens.

4. Define your printing options, and then click **Print**.

   The topic is sent to the selected printer.

Note: If you select the topic from the **Index**, **Search**, or **Favorites** tab (rather than from the **Contents** tab), MATCHPOINT+ goes directly to the **Windows Print** dialog box.

Bookmarking a Topic

When you find a topic that you are likely to refer to again, you can bookmark it for quick retrieval.

To bookmark the current Help topic:

1. Click the **Favorites** tab.

2. Click the **Add** button.

    The topic is added to the list of favorites.

> **Tip:** To remove a bookmark from the **Favorites** list, select the bookmark, and then click **Remove**.

To view a bookmarked topic:

1. Click the **Favorites** tab.

2. Double-click the topic that you want to view.

Consulting the Documentation

MATCHPOINT+ includes a comprehensive set of learning materials. Consult the following documentation to familiarize yourself with the application.

- *IBIS MATCHPOINT+ Help* contains comprehensive online information that describes how to perform the basic and advanced tasks that are related to working with the MATCHPOINT+ application.
- *IBIS MATCHPOINT+ User Guide* is a PDF file that contains the same information as the online help in a printable format.
- *IBIS Products Administration Guide* describes how to configure and troubleshoot the IBIS TRAX-3D system.

Contacting Technical Support

For information about the minimum system requirements necessary to run MATCHPOINT+, or for technical support, contact MATCHPOINT+ Support. You can contact us by phone, fax, or email.

	Europe, Africa, and Western Asia	**Americas, Oceania, and Asia (other than western)**
Toll-free number	800 4247 4247	866 984 4247
Direct number	+353 1 690 9199	+1 727 826 7236
Fax	+353 1 457 1822	+1 727 826 7242
Email	fti.support@contactft.com	fti.support@contactft.com

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Send your comments to: documentation@contactft.com

Exiting IBIS MATCHPOINT+

After completing your work, you must exit the application properly.

To exit MATCHPOINT+:

1. From the **File** menu, select **Exit**.

   A confirmation window is displayed.

2. Click **Yes**.

   The MATCHPOINT+ application closes.

Related Topics

Logging On to Windows (page 27)

Changing Your Password (page 31)

Part II

Working with IBIS MATCHPOINT+

This section covers the following topics:

About Correlations

This section covers the following topics:

Overview

Images that are acquired by BULLETTRAX-3D, BRASSTRAX-3D, BrassCatcher or BulletProof are stored in databases and are correlated (digitally compared) against one another. A correlation identifies similarities between images, and ranks likely candidates for initial analysis. There are two types of correlation requests: automatic and manual.

Automatic Correlation Requests

After a cartridge case or bullet exhibit is submitted and synchronized, the IBIS TRAX-3D system automatically generates a correlation request, using default settings, for the acquired exhibit. Correlation requests are processed by a Correlation Server, a large-capacity processor and storage unit that serves a geographical region.

Manual Correlation Requests

Using MATCHPOINT+, you can also submit correlation requests manually if the default settings are not applicable. For example, you may need to correlate a particular exhibit against exhibits in other geographical regions or using correlation criteria that are different from the defaults.

Reference Exhibits and Test Exhibits

During a correlation, a digital representation of the exhibit image, called a signature, is copied to the Correlation Server and is compared against all other exhibit signatures on the server. The exhibit that is compared with the exhibits in the database is the reference exhibit. The exhibits in the database with which the reference exhibit is compared are test exhibits.

A reference exhibit can be correlated against test exhibits in either a local or an external jurisdiction. The amount of time it takes to perform the correlation, as well as the volume of correlation results, depends on the scope of the request and the size of the database consulted.

Correlation Scores

A correlation score is calculated for each pair of exhibits (reference and test1, reference and test2, etc.) and reflects how similar the region of interest (ROI) of a test exhibit is to that of the reference exhibit. Correlation scores provide an indication of which exhibit pairs are potential matches. The actual scores are used to rank samples based on the degree of similarity between the signatures, and have minimal intrinsic value outside of their specific correlation request.

Image Analysis

High-ranking exhibit pairs are compared in MATCHPOINT+ to identify potential matches. When one is found, a hit is recorded to link the two exhibits to the same firearm. A firearm examiner can then analyze the physical evidence using a comparison microscope to confirm the hit in MATCHPOINT+.

International Data Sharing

For network configurations that allow international data sharing, the process for a manual correlation differs in the following ways:

- The correlation site selection includes sites that are from other countries. The international sites available in you configuration appear in the site selection list.
- The results from an international correlation request include:
  - Only 2D compressed images or images from IBIS Heritage acquisitions.
  - If configured, case and exhibit information that is considered sensitive is sanitized to protect it. Sanitized information is masked from view in the database and the user interface. MATCHPOINT+ users will see asterisks in the fields that have been sanitized.
- If a hit is identified, Forensic Technology recommends that a protocol established between the countries be used to confirm the hit.
- International correlation requests usually take longer to process.

Note: Cases that have restricted status are never replicated outside the country where they were created.

How Automatic Correlations Are Processed

When an automatic correlation request is processed, the Correlation Server compares the reference exhibit to test exhibits that are already in the database, using pre-determined settings. To perform a correlation that overrides these settings, see Create a Manual Correlation Request (page 110).

The following table describes the settings used for automatic correlations.

Setting	Description
Server	The server used to perform the correlation is the workstation's default or parent server.
Class characteristics	Only test exhibits with the same class characteristics as the reference exhibit are included in a correlation. This ensures that a reference exhibit is correlated against possible matches only. For example, a bullet with five land engraved areas (LEAs) and a right twist will be correlated against test exhibits with similar features.
	Class characteristics for a cartridge case exhibit include caliber and firing pin shape. Class characteristics for a bullet exhibit include caliber, direction of twist, and number of LEAs.
	Note: Some types of ammunition match others in diameter and length, but have different names. To correlate similar ammunition correctly, calibers are grouped into families. For more information, see Caliber Families (page 74).
Event type	Exhibits are excluded from correlation depending on event type. For example, exhibits with the Demonstration, Test and QA event type are not included in automatic correlations. For more information, see Event Types (page 72).
Date of occurrence	The date of occurrence is the date specified in the exhibit's parent case. For more information, see Event Types (page 72).

Event Types

Exhibits are correlated against each other depending on their event type. The following table describes which event types are included in automatic correlations. The Assault with a Deadly Weapon (ADW), Homicide (HOM), Other (OTH), and Unknown (UNK) event types are considered "crime" exhibits and are grouped together. The occurrence date specified in the exhibit's parent case is the one used in the correlation.

Reference Exhibit Event Type	Test Exhibit Event Type
ADW, HOM, OTH, UNK	• ADW, HOM, OTH, UNK • TF (occurrence date after reference) • TFR
TF (Test Fire)	• ADW, HOM, OTH, UNK (occurrence date before reference)
TFR (Test Fire Returned)	• ADW, HOM, OTH, UNK

Exhibits are excluded from a correlation depending on event type. Exhibits with the following event types are not included in automatic correlations:

- Demonstration, Test and QA
- Police and Military Firearm (PMF)
- Private Security Firearm (PSF)
- Virtual Serial Number (VSN)

A manual correlation can be used to correlate a reference exhibit against test exhibits with event types that are not included in requests that are generated automatically. For more information, see Create a Manual Correlation Request (page 110).

Test Fires

Correlations of test fires are restricted by date as it is assumed that the weapon is in police custody and can no longer be used in a crime. However, to account for possible clerical delays, the date used in the correlation is later than the actual occurrence date. For example, if the actual occurrence date is May 1, the date used in the correlation would be May 30, if the date overlap is set to 30 days.

Note: The date overlap is configured when the system is installed. Contact your IBIS Administrator for more information.

Caliber Families

Some types of ammunition match others in diameter and length, but have different names. These name discrepancies may be caused by differences in their manufacturers, purposes, compositions, or regions of manufacture. To avoid confusion caused by multiple names, as well as to correlate similar ammunition correctly, calibers are grouped into families.

Each caliber family contains the calibers that could be fired from one firearm. For example, .38 Special ammunition can be fired from a .357 Magnum revolver, so .38 Special and .357 Magnum ammunition are in the same family.

Correlation Status

The status of a correlation request changes as it moves through various stages, as described in the following table:

Request Status	Description
New request	A correlation request has just been created.
Ready to correlate	The set of test exhibits (the correlation sample), has been created and is standing by, ready to be correlated.
Call support	The correlation request cannot be processed. Call Forensic Technology Technical Support for assistance.
Halted	The correlation request has been put on hold by Forensic Technology Technical Support.
Processing	The reference exhibit is being correlated against the correlation sample. The percentage value shows the current rate of completion.
Processing 2nd/3rd	A second or third attempt is being made to process the request. If the third attempt fails, the status changes to Call Technical Support.
Completed	The correlation request has been completed, but the results have not yet been transferred to the database.
Correlation done	The correlation request has been completed and the results are available from the database.
Previously viewed	An operator has viewed the correlation results.
Waiting for results	The correlation request is waiting for results to arrive from external sites.
To be authorized	The correlation request will not be submitted until authorization is received.
Request authorized	The correlation request has been authorized and can proceed.
Request rejected	The correlation request has been rejected and will not proceed.

Correlation Scores

Correlation scores quantify the degree of similarity between the region of interest (ROI) of a reference exhibit and the ROI of test exhibits.

A pair of exhibits with high-ranking correlation scores are more likely to match than exhibits with low-ranking correlation scores. The scores are only used to establish a ranking between pairs of reference and test exhibits and have no intrinsic value.

Rankings are reliable because they are relative, not absolute. Even if the firearm or type of ammunition used for a reference exhibit yields bad marks and therefore has consistently low scores, the rankings will show the test exhibits that are most similar to it.

Use the comprehensive tools in Correlation Results Filtering (page 119) to interpret correlation scores. From there, you can also view exhibits in the **MultiViewer** or the **Side-by-Side Viewer** to examine all the likely candidates.

Note: The policy of your laboratory will dictate how many exhibits in each list should be compared.

If you immediately re-correlate a reference exhibit, there may be additional exhibits in the Correlation Results view (page 287) because new cases and exhibits are continuously being added to the database.

Cartridge case scores differ from bullet scores. For more information, see:

- Understanding Cartridge Case Correlation Scores (page 77)
- Understanding Bullet Correlation Scores (page 80)

Understanding Cartridge Case Correlation Scores

Different cartridge case scores are calculated depending on the type of exhibit:

- Centerfire Exhibits (page 77)
- Rimfire Exhibits (page 79)

Centerfire Exhibits

Centerfire cartridge cases have three independent correlation scores that are based on comparisons between breech face, firing pin, and ejector mark images.

Scores		
Breech Face	Firing Pin	Ejector Mark ▼
36	98	384
31	14	122
15	2	88

Comparing Centerfire Cartridge Case Scores

When comparing centerfire cartridge cases, each independent score is important. However, different types of firearms can produce marks of varying reliability for each type of ROI. For example, ejector marks are sometimes missing from cartridge cases that are fired from pistols, but can be the most important marks available for cartridge cases that were fired from semi-automatic rifles. For this reason, the top-ranking exhibits for each type of score should be checked for possible matches.

The following tables represent two examples of centerfire cartridge case correlation scores. The first table contains scores that are sorted by breech face while the second contains scores that are sorted by firing pin.

Scores Sorted by Breech Face

Exhibit	Breech Face	Firing Pin	Ejector Mark
A	**97**	106	122
B	**80**	111	85

Exhibit	Breech Face	Firing Pin	Ejector Mark
C	**79**	90	144
D	**74**	108	100
E	**70**	182	195
F	**65**	101	111
G	**60**	96	72
H	**52**	110	35

Scores Sorted by Firing Pin

Exhibit	Breech Face	Firing Pin	Ejector Mark
E	70	**182**	195
B	80	**111**	85
H	52	**110**	35
D	74	**108**	100
A	97	**106**	122
F	65	**101**	111
G	60	**96**	72
C	79	**90**	144

When sorted by breech face, Exhibit A is in the top position. When sorted by firing pin, Exhibit E is in the top position.

In general, the top 20 scores in any category are potential matches and should be compared, although the exact number is determined by your laboratory's policy.

Rimfire Exhibits

Rimfire exhibits can have one of two firing pin shapes: circular or rectangular. For circular rimfire exhibits there is one image. For rectangular rimfire exhibits there are two images. The correlation scores for rimfire exhibits are displayed in the **Firing Pin** column.

Scores
Firing Pin ▼
122
31
2
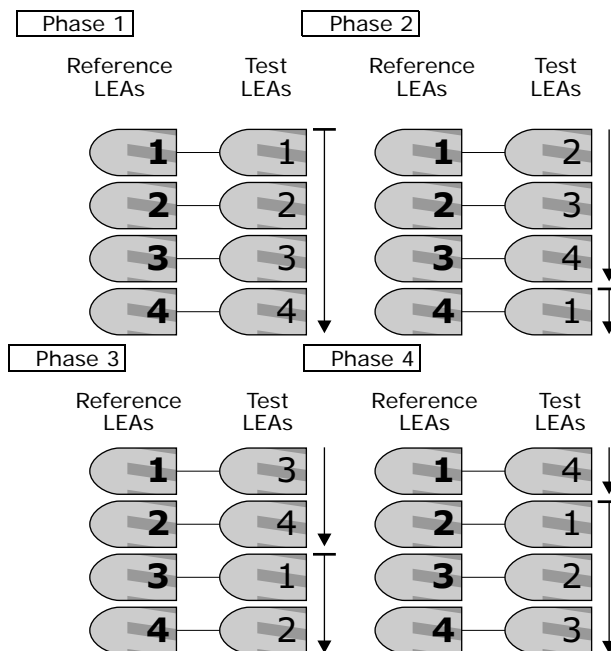
Bullet scores are displayed in the **Correlation Results** view of the Correlations window (page 285).

2D Scores			3D Scores	
Max LEA	Peak Phase	Max Phase	Max LEA	Max Phase
117	117	292	36	N/A
146	86	392	31	N/A
140	140	385	32	N/A
140	139	626	45	N/A
77	77	77	30	N/A
96	96	255	32	N/A

Note: If a bullet is damaged, one or more of its LEAs might not have been acquired. However, these missing LEAs are still counted when the test exhibits are chosen. For example, a bullet which only had two of its four LEAs acquired is still correlated against bullets with four LEAs.

Analyzing Bullet Scores

When interpreting bullet scores, first sort the results by the Max Phase score and make sure to scroll to the top of the result list. Test exhibits with high scores have more similarities with the reference exhibit than those with lower scores. Always analyze at least the 20 highest scoring exhibits in each ROI category, and pay attention to Max LEA scores. If the reference and/or test exhibit is a fragment, the scores will be reduced, but a good matching LEA will generate a high Max LEA score. Therefore, it is important to analyze bullet results based on both the Max Phase score and the Max LEA score.

Terminology

The following table describes the specific terms that are used to describe bullet scores.

Term	Definition
LEA score	A score that is generated according to the degree of similarity between two correlated LEAs.
Max LEA score	The highest LEA score within all of the individual LEA scores for a bullet correlation. This score is available only for 3D images that have been acquired with BULLETTRAX-3D.
Phase	One way that a pair of bullets, the reference and a test, can align with each other. For example, two bullets with four LEAs each can be aligned in four different ways. Therefore, the correlation has four phases.
Phase score	The sum of all LEA scores within a phase.
Max Phase score	The highest phase score within a bullet correlation. This score is available only for 3D images that have been acquired with BULLETTRAX-3D.
Peak Phase score	The highest LEA score within the phase that produced the Max Phase score.

Examining 2D Bullet Scores

The following table shows how scores can be examined for a correlation between two bullets with four LEAs each:

Phase 1		Phase 2		Phase 3		Phase 4	
Ref: Test	**LEA score**	**Ref: Test**	**LEA score**	**Ref: Test**	**LEA score**	**Ref: Test**	**LEA score**
1:1	47	1:2	34	1:3	61	1:4	**78**
2:2	0	2:3	55	2:4	25	2:1	67
3:3	60	3:4	**82**	3:1	14	3:2	59
4:4	23	4:1	0	4:2	37	4:3	75
Phase score	130	Phase score	171	Phase score	137	Phase score	**279**

In this example, the Max LEA score is 82, the Max Phase score is 279, and the Peak Phase score is 78.

Each score represents the degree of similarity between two LEAs within a sample. Therefore, the higher the LEA scores within a sample, the more likely it is that a test bullet was fired from the same firearm as the reference bullet.

Max Phase Score

Consistently high scores throughout a phase are the best indicator of a match. The best reflection of these consistently high scores is the Max Phase score.

Max LEA Score

In the case of damaged bullets or bullet fragments, missing LEAs may lead to incorrectly low Phase scores. In these cases, the Max LEA score can be more valuable than the Max Phase or Peak Phase scores.

For example, with a **Correlation Results** list of over 100 exhibits, a single-LEA bullet fragment has a high score. When sorted by the Max Phase score, the bullet fragment will appear in a low-ranked position. If sorted by Max LEA, the fragment could rise to the top of the list.

Peak Phase Score

In most instances, the Max LEA score will be the same as the Peak Phase score, but occasionally, due to the randomness of matching striae, the Max LEA score may be in a different phase. In this case, you should first analyze the phase containing the Max LEA score. This is referred to as Breaking the Phase.

> **Note:** If there is more than a 10-percent variation in LEA width, a score of 0 is displayed to indicate that it is unlikely that the test exhibit matches the reference.

Examining 3D Bullet Scores

Bullets that were acquired by BULLETTRAX-3D include 2D and 3D data. Therefore, 2D scores are available. However, you will focus primarily on the Max LEA 3D score.

3D Scores	
Max LEA	Max Phase
36	N/A
31	N/A
32	N/A
45	N/A
30	N/A
32	N/A

The Max LEA 3D score is the highest LEA score within all of the individual LEA scores for a bullet correlation. The Max Phase 3D score tells you the phase in which the Max LEA 3D score occurred.

Correlation Analysis Process

After a correlation request has been automatically or manually generated and processed by the Correlation Server, the results are available in MATCHPOINT+. Inspection and analysis of correlation results normally includes the following steps:

1. Analyze the correlation scores that are returned in the **Correlation Results** view in the Correlations window (page 285).

   For more information, see:

   - Correlation Scores (page 76)
   - View Correlation Requests and Results (page 113)
   - Analyze Cartridge Case Scores (page 115)
   - Analyze Bullet Scores (page 117)
   - Correlation Results Filtering (page 119)

2. Perform an initial analysis on the high-ranking exhibits.

   For more information, see Analyzing Images with the MultiViewer (page 127).

3. Select certain test exhibits for closer analysis.

   For more information, see Analyzing Images in the Side-by-Side Viewer (page 155).

4. Notify a firearm examiner of potential hits.

   A firearm examiner analyzes the physical evidence using a comparison microscope.

5. Record the hits in MATCHPOINT+.

   For more information, see Add a Hit (page 222).

Working with Cases and Exhibits

This section covers the following topics:

Overview

A case in MATCHPOINT+ corresponds to a law enforcement case. Each case is represented by a folder in the Navigation tree. A case folder stores the bullet, cartridge case, and firearm information and images that are related to a specific case.

An exhibit is an object that was retrieved from a crime scene that can be shown and identified in court as evidence in a case. An exhibit becomes evidence if it can establish that a crime was committed, if it can provide a link between a crime and its victim, or if it can provide a link between a crime and its perpetrator.

In MATCHPOINT+, there are three types of exhibits: bullet exhibits, cartridge case exhibits, and firearm exhibits. Each exhibit belongs to a case, and the different types of exhibits can belong to the same case. Cartridge case exhibits contain images of different regions of interest, such as the firing pin and breech face. Bullet exhibits contain images of individual land engraved areas (LEAs) and groove engraved areas (GEAs).

Firearm exhibits are a complement to cartridge case and bullet exhibits. Firearms that are entered as firearm exhibits are often the firearms that are used to produce test fire cartridge cases and bullets.

You can only view cases and exhibits in MATCHPOINT+. You cannot add, modify, or delete them.

Submission Status and Synchronization

During synchronization, case information, exhibit information, and image data are copied from the Acquisition Station to the Data Concentrator. Although configurable, data is typically scheduled to synchronize once a day for every Acquisition Station.

In addition to creating a backup copy of the data on the Data Concentrator, synchronization allows MATCHPOINT+ users to preview cases, exhibits, and any acquired images before they are submitted for the first time.

A case must be submitted before its data can be used for correlation. New exhibits will be correlated automatically depending on the event type (see Event Types (page 72). Modified exhibits will be correlated depending on the type of data that was modified, for example, changes to event type, caliber, firing pin shape, or images for cartridge case exhibits, and changes to event type, caliber, twist, LEA count, or images for bullet exhibits.

Use Summary view to track the synchronization of cases and exhibits.

The statuses for cases and exhibits are described in the following tables. For some statuses, an indicator also appears beside the item in the Navigation tree.

Case Status	Indicator	Description
Underway	∗ (Asterisk)	The case is new and not submitted.
Submitted	None	The case has been submitted.
Imported	(Arrow on case folder)	The case has been imported from another Data Concentrator or a Correlation Server. The status of an imported case will not change.

Exhibit Status	Indicator	Description
Underway	∗ (Asterisk)	The exhibit is new, or a change has been made to the data.

Exhibit Status	Indicator	Description
Submitted	None	The exhibit has been submitted.
Completed	None	The exhibit has been submitted and a signature has been extracted.

Filter Test Exhibits

You can specify the types of test exhibits you want to display before you open the **MultiViewer** or the **Side-by-Side Viewer**. You can select filter criteria for cartridge case exhibits or for bullet exhibits.

To filter test exhibits:

1. From the Navigation tree (page 34), click the plus sign (+) next to **Viewer Exhibits** to expand it.

2. Click **Test Exhibits** to select it.

3. Right-click and select **Remove All Exhibits**.

   Previously selected test exhibits are cleared.

4. From the Navigation tree, click the plus sign (+) next to the case folder that contains the exhibit that you want to use as the reference.

   The case expands and displays the associated exhibits.

5. Click the reference exhibit to select it.

6. Right-click and select **Set as Reference Exhibit**.

7. Click **MultiViewer** or **Side-by-Side Viewer** on the toolbar.

   Depending on the type of reference exhibit you selected, the Test Exhibits Filtering dialog box (page 301) opens.

   Note: If the **MultiViewer** or **Side-by-Side Viewer** opens instead of the dialog box, previously selected test exhibits have not been removed. Follow steps 1 to 3 to remove them.

8. Specify any or all of the following filter criteria:

   • **Event Type**
   • **Occurrence Date Range**
   • **Caliber Range**
   • **Firing Pin Shape** (cartridge case exhibits only)
   • **Twist** and **LEA Count** (bullet exhibits only)

9. Click **MultiViewer** or **Side-by-Side Viewer**.

    The Viewer you selected opens to display the reference exhibit on the left
    side and the test exhibits on the right side.

Print Cases and Exhibits

You can print case information, exhibit information, and images. For record keeping, printouts also include the page count, the current date, and the name of the user who made the print request.

> **Tip:** To control the display of the page numbers at the bottom of the page, see Setting Your Preferences (page 55).

To print a case or an exhibit:

1. From the Navigation tree, click to select a case or exhibit.

2. Select **File** > **Print** from the menu bar.

   The Print dialog box appears for you to specify a printer and the properties.

> **Tip:** To confirm the content before you print, click **Print Preview**.

3. Click **Print**.

   The case or exhibit information is sent to the printer you selected.

Related Topics
Using search (page 46)
Set preferences (page 55)
Work with filters (page 49)

Export an Exhibit

Use the export feature to provide specific exhibits to colleagues at other locations. For example, you may want to get a second opinion about a potential match.

If an exhibit has been imported from another site, it cannot be exported.

To export an exhibit:

1. From the Navigation tree, select the exhibit that you want to export.

2. Right-click and select Export Exhibit.

3. From the list of destination sites, select a target destination.

> **Note:** Depending on your IBIS network, the destination could be another Data Concentrator, Correlation Server, or an IBIS Heritage component. Exhibits that are normally replicated to the destination site will not be exported.

4. Click Export.

    The case folder and exhibit will be copied to the destination site. The MATCHPOINT+ workstations that are connected to the site can then access the exhibit from the Navigation tree.

Related Topics

View an Image

You can view a specific LEA, GEA, or cartridge case region of interest without opening the **MultiViewer** or **Side-by-Side Viewer**.

After the image is displayed in the Image Information window, you can do the following:

Action	Image Types
Change the magnification level (page 97)	All
Adjust the brightness (page 97)	All
Adjust the contrast (page 98)	All
Adjust the sharpness (page 99)	All
Adjust the 2D/3D rendering (page 98)	3D bullet composite images, primer 3D composite images
Adjust the 3D elevation (page 98)	3D bullet composite images, primer 3D composite images
Adjust the lighting (page 99)	3D bullet composite images, primer 3D composite images
Move an image (page 100)	All
Rotate an image (page 100)	Cartridge cases
View text annotations in the Image Information view (page 101)	Breech face ring light images, full headstamp images

Any action that you perform affects the displayed image only, not the saved image.

To view an image:

1. In the Navigation tree (page 34), click the plus sign (+) next to the case folder that contains the image you want to view.

    The case is expanded and its associated exhibits are displayed.

2. Click the plus sign (+) next to the exhibit.

    The images that are associated with the exhibit are displayed.

3. Click the image that you want to view.

    The Image Information view (page 304) replaces the **Summary** window.

Note: If you make any changes in this window, you can click **Reset** to reset all settings to the defaults.

Change the Magnification Level

You can zoom in on or zoom out from the displayed image.

To change the magnification level:

•   On the toolbar, do one of the following:

Click	To
	Increase the magnification level (zoom in).
	Decrease the magnification level (zoom out).

Adjust the Brightness

The default brightness setting is 50. You can set the image brightness to a value between 0 and 100.

To adjust the brightness:

1. To increase the brightness of the image, set the **Brightness Control** to a value that is greater than 50.

    For more information about using these controls, see Using the Image Manipulation Controls (page 171).

2. To decrease the brightness of an image, set the **Brightness Control** to a value that is less than 50.

Adjust the Contrast

The default contrast setting is 50. You can set the image contrast to a value between 0 and 100.

To adjust the contrast:

1. To increase the contrast, set the **Contrast Control** to a value that is greater than 50.

    For more information about using these controls, see Using the Image Manipulation Controls (page 171).

2. To decrease the contrast, set the **Contrast Control** to a value that is less than 50.

Adjust the 2D/3D Rendering

You can adjust the rendering for 3D bullet and primer 3D composite images only.

For more information about the 2D/3D rendering feature, see Adjust the Rendering of 3D Images (page 195).

To adjust the rendering:

1. To display an image with the maximum level of 3D, set the value to 100.

    For more information about using these controls, see Using the Image Manipulation Controls (page 171).

2. To display an image as 2D only, set the value to 0.

3. To display an image as a mixture of 2D and 3D, set the value between 1 and 99.

Adjust the 3D Elevation

You can adjust the 3D elevation for composite 3D bullet and primer 3D composite images only.

For more information about the 3D elevation feature, see Adjust the 3D Elevation of 3D Images (page 197).

To adjust the 3D elevation:

1. To increase the elevation of image peaks, set the **3D elevation** field to a value that is greater than 25.

    For more information about using these controls, see Using the Image Manipulation Controls (page 171).

2. To decrease the elevation of image peaks, set the **3D elevation** field to a value that is less than 25.

Adjust the Sharpness

The default sharpness setting is 0. You can set the image sharpness to a value between 0 and 10.

To adjust the sharpness:

1. To increase the sharpness of the image, set the **Sharpness Control** to a value that is greater than 10.

    For more information about using these controls, see Using the Image Manipulation Controls (page 171).

2. To decrease the sharpness of an image, set the **Sharpness Control** to a value that is less than 10.

Adjust the Lighting

You can adjust the lighting for composite 3D bullet and primer 3D composite images only.

For more information, see Adjust the Lighting for 3D Images (page 193).

To adjust the lighting:

1. To turn on the center light, click the center of the inner circle of the **Light Control**.

2. To turn on the side light, click the outer circle of the **Light Control**.

    A blue "light beam" appears where you clicked, indicating the direction of the light.

3. To change the direction of the side light, drag the light beam around the outer circle.

The current light inclination is displayed in the **I** field and the direction is displayed in the **D** field. You can also enter values directly into these fields. The valid range is 0° to 359° for direction and 45° to 90° for inclination.

Move and Rotate Images

You can move bullet and cartridge case images.

You can rotate cartridge case images only. If the displayed cartridge case is a primer 3D DFF image, you can rotate it three-dimensionally around the x-, y-, and z-axes. Different colors are used to distinguish the topside from the underside of the DFF image. The top of the image is gray, whereas the underside is blue.

To move an image:

1. Place the cursor over the image.

   The Move cursor is displayed.

2. Click and drag the image to the desired location.

To rotate a cartridge case image:

1. Place the cursor over the image.

   The Move cursor is displayed.

2. Right-click to switch to Rotate mode.

   The Rotate cursor is displayed.

3. To rotate a 2D image, click the image and drag it to the left (or up) to rotate it in a counterclockwise direction, or to the right (or down) to rotate it in a clockwise direction.

Note: The acquisition marker, a red line on one side, indicates the original position of the image.

4. To rotate a primer 3D DFF image, click the image and drag it to rotate it freely.

If you press the left and right mouse buttons simultaneously, the image rotates around an axis that is perpendicular to the screen.

View Text Annotations

Text annotations may have been added to certain breech face ring light images or full headstamp images in BRASSTRAX-3D. In MATCHPOINT+, you can only view text annotations. You cannot add, modify, or delete them.

If there are any text annotations associated with the displayed image, you will see one or more icons on the image. A triangle indicates an ejector mark, a square indicates an extractor mark, and a circle indicates a generic mark.

To view text annotations:

• Place the cursor over a text annotation icon.

A message box opens, displaying the associated annotation.
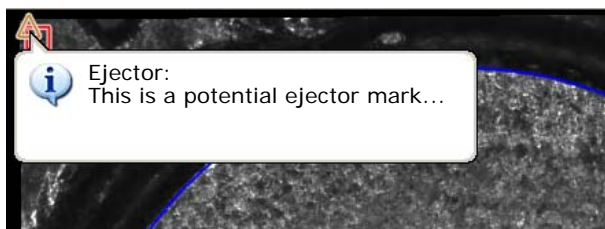
View Detailed Image Information

You can view more detailed information about a particular image, such as its dimensions.

To view advanced image information:

1. In the Navigation tree (page 34), click the plus sign (+) next to the case folder that contains the image.

    The case is expanded and its associated exhibits are displayed.

2. Click the plus sign (+) next to the exhibit.

    The images that are associated with the exhibit are displayed.

3. Click an image to select it.

    The image is displayed to the right of the Navigation tree.

4. Click **Info**.

    The Detailed Image Information dialog box (page 308) opens.

5. Click **OK** to close the dialog box after you have finished viewing the information.

Modify or Delete Migrated Data

When an IBIS Heritage Acquisition Station is decommissioned, such as when it is replaced by IBIS TRAX-3D systems, the existing data is migrated to a Data Concentrator to maintain its availability.

You can modify or delete migrated data to correct mistakes that affect correlation. This capability includes the modification of case and exhibit information, and the deletion of cases and exhibits. You can only modify or delete migrated data belonging to a child site of the Data Concentrator.

If an image itself needs to be changed, it must be reacquired on the new IBIS TRAX-3D system. After data has been modified, it will be replicated to the Correlation Server and correlated again.

To modify migrated data:

1. Select the case or exhibit to modify from the Navigation tree.

2. From the **Edit** menu, select **Modify**.

    The Modify Bullet Exhibit Dialog Box (page 317), Modify Cartridge Case Exhibit Dialog Box (page 313), Modify Firearm Exhibit Dialog Box (page 320) or Modify Case Dialog Box (page 324) opens.

3. Modify the fields as required.

4. Click **OK**.

    The case or exhibit is updated and the dialog box closes.

To delete migrated data:

1. Select the case or exhibit to delete from the Navigation tree.

2. From the **Edit** menu, select **Delete** and confirm.

    The data is deleted.

Export Site Data

The data stored on the local sites in your configuration can be exported and saved in a format that can be integrated into external applications to generate a wide range of reports and statistics.

You can define the data export using the options for site selection, date range, image content, and the name you give the exported file.

For example, your data export could target sites ABC and DEF; include all the cases created between January 1, 2000 and January 1, 2010; include the images as JPEG file types; and save the file as First Decade.

It can take a long time to generate an export file if you select many sites, include a large date range, and include all the images. The export process runs in the background, so you can continue to work with MATCHPOINT+ or close your session without interrupting the process.

To export site data:

1. From the menu bar, select **Tools** > **Data Export**.

    The Data Export dialog box (page 326) opens.

2. In the Sites section, select the site(s) to export, or click **Select All** to export all the sites.

3. In the Date Range section, select the type of date that is associated with the case:

    • Select a start date, and then an end date from the calendar.

4. From the **Image Export** drop-down list, select an image export option.

> **Note:** When you include the images, the export file can take a long time to generate.

5. From the **File Type** drop-down list, select a graphic file type.

6. In the **Name** field, enter a name for the file.

7. Click **Create**.

> **Tip:** To view the status of a pending export that you created, click
> the **Pending Data Export** tab.

A confirmation message is displayed when the export file is complete.

To cancel a data export:

1. From the menu, select **Tools** > **Data Export**.

   The Data Export dialog box (page 326) opens.

2. Click the **Pending Data Export** tab.

3. Click **Cancel**.

   The data export is canceled and no files are saved, regardless of how close
   it was to completion.

Related Topics

Export an Exhibit (page 95)

Export Cartridge Case Images (page 213)

Working with Correlation Requests and Results

This section covers the following topics:

Overview

After a cartridge case or bullet exhibit is submitted and synchronized, the IBIS TRAX-3D system automatically generates a correlation request for that exhibit. Automatic correlations use default settings for class characteristics (caliber family, firing pin shape for cartridge cases, number of LEAs and LEA twist for bullets, event type, and date of occurrence) and a default region that is based on crime patterns, highways, freeways, or regional borders. MATCHPOINT+ allows you to create manual correlation requests to override the default settings.

You must use a manual correlation request to:

• Correlate a reference exhibit against exhibits at sites that are not included in the default region. You choose the particular sites that you want to include in the correlation.

• Correlate against test exhibits with class characteristics that are different from those of the reference exhibit. For example, you can correlate an exhibit with members that are outside its caliber family.

• Bypass the restriction that does not include exhibits with the Demonstration, Test and QA event type in automatic correlations.

For more information, see Event Types (page 72).

The length of time that it takes to perform the correlation, as well as the volume of the correlation results, depends upon the scope of the request and the size of the database that is consulted.

After a request has been processed, the correlation results can be viewed in the Correlations window (page 285).

Note: To view or create a Correlation Request, the reference exhibit must be from an acquisition site in your jurisdiction.

Create a Manual Correlation Request

When you submit a correlation request manually, you specify how test exhibits are correlated against the reference exhibit, overriding the default settings that are used for an automatic correlation. Use a manual correlation request to correlate a reference exhibit against test exhibits that have different class characteristics, have the Demonstration, Test and QA event type, or are at sites that are not included in the automatic correlation configuration.

You can specify the following criteria when performing a manual correlation request:

- Event type
- Occurrence date
- Caliber
- Firing pin shape (for cartridge cases)
- Twist (for bullets)
- LEA Count (for bullets)
- Site selection
- Number of results returned

To create a manual correlation request:

1. In the Navigation tree (page 34), click the plus sign (+) next to the case containing the exhibit you want to use as the reference.

   The exhibits belonging to the case are displayed.

2. Click to select the exhibit that will serve as the reference.

3. Right-click and select **Manual Correlation Request**.

   The Correlation Request dialog box (page 277) opens.

4. Specify any or all of the following filter criteria:

   - **Event type**
   - **Occurrence date range**
   - **Caliber range**
   - **Firing pin shape** (cartridge case exhibits only)
   - **Twist** and **LEA Count** (bullet exhibits only)

5. If you want to include exhibits that belong to the reference case, select the **Include Exhibits from the Same Case** check box.

6. If you want to select the sites to correlate against, select the **Correlation Sites Selection** check box.

Note: If you generate multiple manual correlation requests to external sites, the local response time for standard requests at those sites may slow down.

7. Specify the following criteria to manage the results that are returned:

   • Percent of best score results
   • Minimum number of results

8. Click **Generate**.

   • If you selected the **Correlation Sites Selection** check box, the Correlation Sites dialog box (page 281) opens. Go to step 9.
   • If you did not select the **Correlation Sites Selection** check box, the new request appears in the Correlation Requests view (page 287) with a status of New Request. After the request has been processed, the correlation status changes to Correlation Done. Go to step 12.

9. Click the plus sign (**+**) to expand the **Correlation Sites**.

   The hierarchy of sites configured for your system is displayed.

Tip: To change the display of correlation sites, click **Options**.

10. Select the check boxes for the sites you want to include in the correlation.

Note: You can only select sites that are from the same branch of the hierarchy. To correlate against sites from another branch, you must generate another correlation request.

If your configuration includes a National or State level, you cannot select sites individually when these levels are selected.

11. Click **OK**.

The new request appears in the Correlation Requests view (page 287) with a status of New Request. After the request has been processed, the correlation status changes to Correlation Done.

12. Analyze the correlation results using Correlation Results filter (page 119).

Related Topics

View Correlation Requests and Results (page 113)

Delete Correlation Requests (page 125)

Correlation Request Dialog Box (page 277)

Correlation Sites Options Dialog Box (page 283)

Correlations Window (page 285)

View Correlation Requests and Results

You can view a list of correlation requests and their associated results. The **Status** column in the **Correlation Requests** view indicates if a correlation has been completed. A status of Correlation Done indicates that the results are ready to be viewed.

To view correlation requests and results:

1. From the Navigation tree (page 34), click **Correlation Results**.

   The Correlations window (page 285) opens.

2. From the **Correlation Requests** view, select a reference exhibit.

   A list appears in the **Correlation Results** view showing the correlation results of all test exhibits that were compared against the selected reference exhibit. Correlation results are represented by numeric scores.

   Note: You can view additional correlation request details, such as information about the request filter, reference case, and reference exhibit. For more information, see View Correlation Request Details (page 126).

3. Examine the scores:

   - If you are examining cartridge case scores, see Analyze Cartridge Case Scores (page 115).
   - If you are examining bullet scores, see Analyze Bullet Scores (page 117).

   Tip: To create a filter to customize the list display, see Working with Filters (page 49).

   You can also right-click the column header and select **Show/Hide Columns** to control which columns show. The display order of columns cannot be modified.

Related Topics

Analyze Cartridge Case Scores (page 115)

Analyze Cartridge Case Scores

For centerfire exhibits, there are three different correlation scores. The highest scores in each category should be identified and further analyzed in the **MultiViewer**. Analyze the scores in the following order:

- Breech face
- Firing pin
- Ejector mark

For rimfire exhibits, the firing pin score is the only correlation score.

Note: As a general guideline, you should examine the top 20 scores. However, the specific scores you examine and the exact number of exhibits that you compare depends on the policy at your facility.

For more information about scores, see Understanding Cartridge Case Correlation Scores (page 77).

To analyze cartridge case scores:

1. Open the Correlations window (page 285) to see a list of correlation requests and results. For more information, see View Correlation Requests and Results (page 113).

    By default, centerfire results are sorted by breech face scores, with the highest scores displayed at the top of the **Correlation Results** list. To change the default sort order, see Setting Your Preferences (page 55).

    The column that is used to sort the scores is indicated by an arrow in the column header. Scores are always displayed in a descending sort order.

    | Firing Pin | Ejector Mark ▼ | ──── Arrow indicates sort column

    Tip: For centerfire exhibits, click the column header to select the score you want to sort.

2. Use any of the following options to examine the results:

- Use graphic tools to analyze the results. Right-click the **Correlation Request** and select Correlation Results Filtering (page 119).
- Open the **MultiViewer** or the **Side-by-Side Viewer** to view the list of exhibits. Click the icon on the toolbar.
- Print the correlation score results. Right-click the **Correlation Request** and select Print correlation results (page 122).

Note: When you specify a score to sort by in the Correlations window (page 285), the order is respected when you open a Viewer or the **Correlation Results Filtering**.

Related Topics

Correlation Scores (page 76)

Correlation Results Filtering (page 119)

Analyzing Images with the MultiViewer (page 127)

Analyzing Images in the Side-by-Side Viewer (page 155)

Correlations Window (page 285)

Analyze Bullet Scores

There can be up to four scores displayed for a correlation result. The 2D scores are Max LEA, Peak Phase, and Max Phase. The only 3D score is Peak 3D.

Note: As a general guideline, you should examine the top 20 scores. However, the specific scores you examine and the exact number of exhibits that you compare depends on the policy at your facility.

For a more information about scores, see Understanding Bullet Correlation Scores (page 80).

Analyzing Scores

First examine the Max Phase scores, looking for the highest scores. Consistently high scores throughout a phase are the best indicator of a match.

After you have examined the Max Phase scores, examine the Max LEA scores. If the reference or test exhibit is damaged or is a bullet fragment, missing LEAs may lead to incorrectly low Max Phase scores. In these cases, the Max LEA scores will be a better indicator of a potential match.

Next you can examine the Peak 3D score to identify exhibits that warrant further analysis.

Note: If there is more than a 10-percent variation in LEA width, a score of 0 is displayed to indicate that it is unlikely that the test exhibit matches the reference.

To analyze bullet scores:

1. Open the Correlations window (page 285) to see a list of correlation requests and results. For more information, see View Correlation Requests and Results (page 113).

    By default, scores are sorted by the **Max LEA** column, with the highest scores displayed at the top of the **Correlation Results** list. To change the default sort order, see Setting Your Preferences (page 55).

The column that is used to sort the scores is indicated by an arrow in the column header. Scores are always displayed in a descending sort order.

Arrow indicates sort column

| Max LEA | ▼ | Peak Phase |
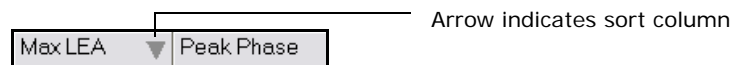
Tip: To select the score you want to sort, click the column header.

2. Note scores that are indicative of badly damaged bullets and bullet fragments. Look for Max LEA scores that are:

   • Significantly higher than the other Max LEA scores.

   • High but in a different phase than that of the Max Phase score.

     If the Max LEA score is not in the same phase as the Max Phase score, analyze the phase containing the Max LEA score.

3. Use any of the following options to examine the results:

   • Print the correlation score results. Right-click the **Correlation Request** and select Print correlation results (page 122).

   • Open the **MultiViewer** or the **Side-by-Side Viewer** to view the list of exhibits. Click the icon on the toolbar.

   • Use graphic tools to analyze the results. Right-click the **Correlation Request** and select Correlation Results Filtering (page 119).

Note: When you specify a score to sort by in the Correlations window (page 285), the order is respected when you open a Viewer or the **Correlation Results Filtering**.

Related Topics

Correlation Scores (page 76)

Correlation Results Filtering (page 119)

Analyzing Images with the MultiViewer (page 127)

Analyzing Images in the Side-by-Side Viewer (page 155)

Correlations Window (page 285)

Correlation Results Filtering

The Correlation Results filter is a flexible graphic tool designed to help you analyze the scores of the correlation results.

The scores are normalized to a scale of 100 and charted at the top of the window. The list of exhibits and scores is displayed in a data table at the bottom of the window.

You can view the images by selecting exhibits to open in the **MultiViewer** or the **Side-by-Side Viewer**. You can also set the chart and list options you want and then print your analysis of the scores of the correlation results.

The display is updated immediately if you change the sort order for bullet scores from Max Phase to Max LEA, or change the number of exhibits and show the ranking.
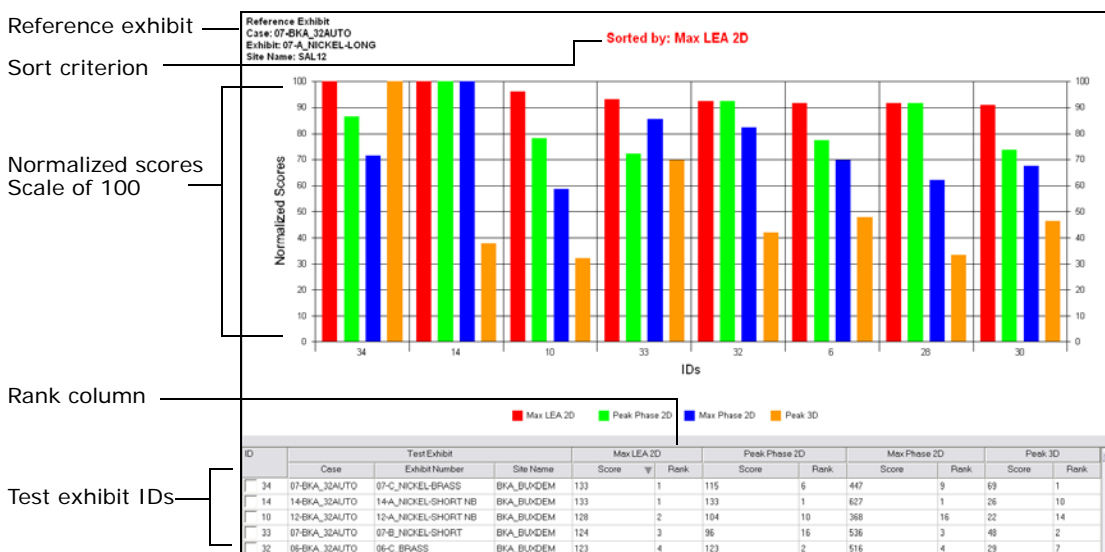
Tip: If you click the graphic element (bar or line) in the chart, the corresponding exhibit row is highlighted in the data table.

Filtering Options

Use the column headers to control the sort priority of the score you want to focus on. The score used for the sort is also displayed in the title of the chart. For more information on sorting column headers, see Analyze Cartridge Case Scores (page 115).

Use the Chart Options (page 294) and List Options (page 295) to control how the scores are displayed and listed. Click **Reset** on the toolbar to return to the original setting.

- **Chart Options** control how the scores are graphically displayed. You can choose a bar or line chart style, the number of exhibits, and the lines you want to show.

- **List Options** control how the scores are listed. You can show the original scores, or the scores based on a scale of 100. You can also include the rank to see the relative position of the score.

  The **Select All** and **Clear All** buttons control the exhibit **ID** check boxes. To open an exhibit in a Viewer, you must first select the **ID**. For more information, see View Selected Images (page 121).

📌 **Tip:** To save your filtering options as a preference, click Save Settings. For more information, see Setting Your Preferences (page 55).

To filter the correlation results:

1. Open the Correlations window (page 285) to see a list of correlation requests and results.

2. Right-click the correlation request you want, and select **Correlation Results Filtering** from the menu.

   The scores are displayed in a table and chart.

3. Use the display and filtering options:

   - Set the score sort order by clicking column headings.
   - Set the **Chart Options** to control the graphic display.
   - Set the **List Options** to control the list display.

View Selected Images

For further image analysis, you can open the **MultiViewer** or the **Side-by-Side Viewer** from **Correlation Results Filtering**.

To open a Viewer:

1. Select the exhibit **ID** check boxes for the test exhibits you want to view. If you want all the exhibits, click **Select All** in List Options.

    When an **ID** is selected, it also displays in brackets on the X axis of the chart.

2. Click **MultiViewer** or **Side-by-Side Viewer** on the toolbar.

    The Viewer opens with the exhibits you selected.

3. Close the Viewer to return to **Correlation Results Filtering**.

Related Topics

Setting Your Preferences (page 55)

Print the Correlation Results (page 122)

Print the Correlation Results

After you review, sort and chart correlation scores, you may want to print the results. You can choose the format and the filtering display options you want. You can print:

- Correlation results
- Correlation results that have been evaluated using Correlation Results Filtering

To print correlation results:

1. From the **Correlation Requests** view in the Correlations window (page 285), select a correlation request.

    For more information about how to open the **Correlations** window, see View Correlation Requests and Results (page 113).

2. In the **Correlation Results** view, set the sort order you want to print.

3. Right-click the correlation request and select **Print Correlation Results**.

    The Print Correlation Results dialog box (page 297) opens.

4. Select the range you want if other than the default.

    Tip: To activate **Up to Selection**, select a result in the Correlation Results view.

5. Select **Include Firearms** to include the make and model of the firearm exhibits that are linked to bullet or cartridge case exhibits.

    The printed results will include a separate page for firearms and the number of times it occurs.

6. Click **Print**.

    The Print dialog box opens, where you can select a printer and specify the number of copies.

7. Click **Print**.

To print correlation results filtering:

1. From the **Correlation Requests** view in the Correlations window (page 285), select a correlation request.

   For more information about how to open the **Correlations** window, see View Correlation Requests and Results (page 113).

2. Right-click the correlation request and select **Correlation Results Filtering**.

3. Set the sort order and display options you want to print.

   Tip: You can print chart and list options that are different from those that are displayed on your screen. Click the down arrow beside **Print** and select **Configure**. You can also save the print setting as your preferences.

4. Click **Print**.

   The Print dialog box opens, where you can select a printer and specify the number of copies.

5. Click **OK**.

Related Topics

View Correlation Requests and Results (page 113)

Correlation Results Filtering (page 119)

Correlations Window (page 285)

Correlation Results Filtering window (page 294)

Change the Status of Correlation Requests

If you have the appropriate permissions, you can change the status of a correlation request to Previously Viewed. This serves as a flag for deleting correlation requests. Your system may be configured to automatically delete correlation requests that have a status of Previously Viewed after a certain number of days. You can also manually delete correlation requests (page 125).

To be able to change the status of a correlation request, its status must be Correlation Done.

To change the status of a correlation request:

1. From the **Correlation Requests** view in the Correlations window (page 285), select a correlation request. Use the CTRL or SHIFT keys if you want to select multiple items.

    For more information about how to display the **Correlations** window, see View Correlation Requests and Results (page 113).

2. On the toolbar, click **Viewed**.

    The status of the selected correlation request(s) is set to Previously Viewed.

📌 **Tip:** You can change the status of a correlation request from Previously Viewed to Correlation Done by clicking **Viewed/Not Viewed** on the toolbar.

Related Topics

View Correlation Requests and Results (page 113)

Delete Correlation Requests (page 125)

Correlations Window (page 285)

Delete Correlation Requests

Correlation requests that are kept on a server take up a substantial amount of storage space, and may eventually slow the system down. Therefore, it is recommended that you delete correlation requests that have already been viewed. You must have the appropriate permissions to delete correlation requests.

Note: Your system may be configured to automatically delete correlation requests that have a status of Previously Viewed. For more information, see Change the Status of Correlation Requests (page 124).

To delete a correlation request:

1. From the **Correlation Requests** view in the Correlations window (page 285), select the request that you want to delete. Use the CTRL or SHIFT keys if you want to select multiple items.

   For more information about how to open the **Correlations** window, see View Correlation Requests and Results (page 113).

2. Right-click and select **Delete**, or click **Delete** on the toolbar.

   A message appears asking you to confirm the deletion.

3. Click **Yes** to delete the correlation request(s).

   The correlation request is deleted from the database and the dialog box closes.

Related Topics

View Correlation Requests and Results (page 113)

Change the Status of Correlation Requests (page 124)

Correlations Window (page 285)

View Correlation Request Details

You can view detailed information about the selected correlation request and the associated reference case and exhibit.

To view correlation request details:

1. From the **Correlation Requests** view in the Correlations window (page 285), select a correlation request.

    For more information about how to open the **Correlations** window, see View Correlation Requests and Results (page 113).

2. Right-click and select **Correlation Request Information**.

    The Correlation Request Information dialog box (page 291) opens.

Tip: To view details about the reference exhibit, select Reference Exhibit Information from the right-click menu.

---

3. Click **OK** when you have finished viewing the information.

    The dialog box closes.

Related Topics

View Correlation Requests and Results (page 113)

Print the Correlation Results (page 122)

Correlations Window (page 285)

Correlation Request Information Dialog Box (page 291)

Analyzing Images with the MultiViewer

This section covers the following topics:

Overview

The MultiViewer (page 329) allows you to analyze multiple exhibits simultaneously. The reference exhibit is always displayed on the left side of the viewer. The test exhibits are displayed to the right of the reference exhibit.

If you find a potential match, you can open the **Side-by-Side Viewer** directly from the **MultiViewer** to perform a closer analysis of the reference exhibit and a particular test exhibit.

When viewing exhibits in the **MultiViewer**, you can do the following:

- Display guides in the MultiViewer (page 134)
- Sort exhibits (page 139)
- Display one or all cartridge case image types (page 143)
- Setting image positions (page 147)
- Hide exhibits (page 149)
- Move and rotate images (page 150)
- Rotate cartridge case images (page 150)
- Adjust the lighting and rendering of 3D images (page 151)
- Open the Side-by-Side Viewer (page 152)

What Is a Mosaic?

Bullet exhibits are displayed as mosaics in the **MultiViewer** and **Side-by-Side Viewer**. A mosaic is a fully acquired bullet image. Exhibits that were acquired with BULLETTRAX-3D include images of each LEA and GEA. These separate images are stitched together, creating a 3D mosaic in which the LEAs and GEAs are displayed vertically in one continuous image. If a LEA or GEA was too damaged and, therefore, not acquired, a black band is displayed in its place.

Exhibits that were acquired with BulletProof include LEA images only. This is also true of images of bullets that have been fired through a polygonal rifled barrel. The image on the left shows a mosaic that includes LEAs and GEAs. The image on the right shows a mosaic that has only LEAs. The LEAs are separated by narrow black bands.
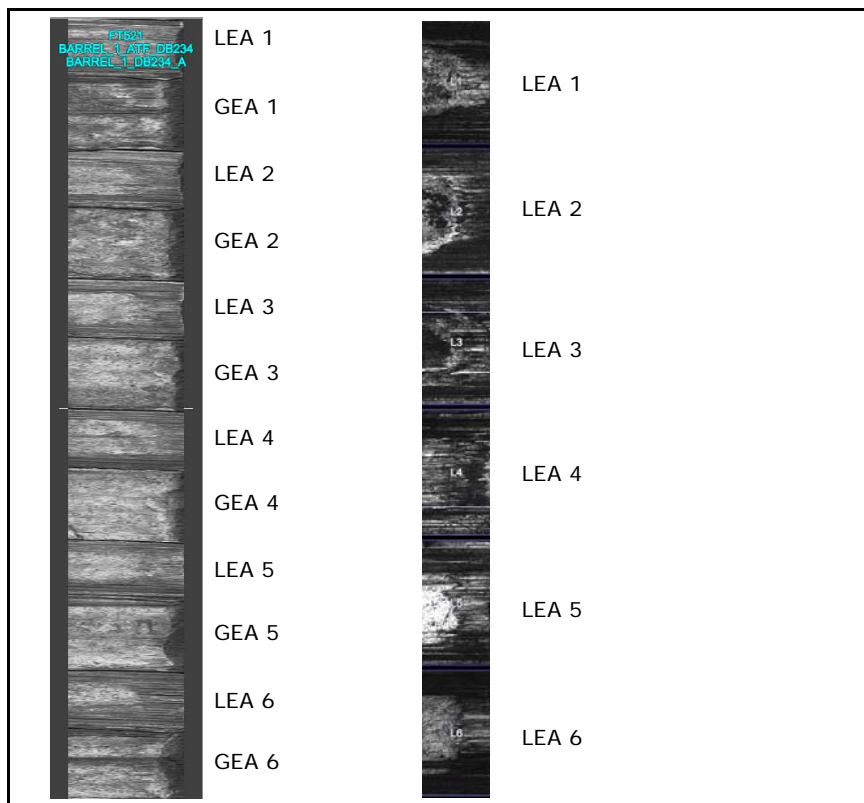
If the selected reference exhibit is a 2D image, all of the test exhibits are displayed in 2D and only LEAs are displayed. If the selected reference exhibit is a BULLETTRAX-3D image, exhibits that have been acquired by BulletProof are displayed in 2D and exhibits that have been acquired by BULLETTRAX-3D are displayed in 3D.

Note: 3D bullet images are only available if the feature is activated for your system.

Select Exhibits to View

There are a number of different ways to select the exhibits you want to view. Regardless which method you use, the reference exhibit and test exhibits are automatically recorded in **Viewer Exhibits** in the Navigation tree. You can view the selected exhibits in either the **MultiViewer** or the **Side-by-Side Viewer**.

Open the MultiViewer

To select the exhibits you want to view in the **MultiViewer**, you can do one of the following:

- Select exhibits based on their correlation scores, see View Correlation Requests and Results (page 113).
- Select exhibits based on analysis in correlation results filtering, see Correlation Results Filtering (page 119).

Note: When you select correlated exhibits, you can display images in their best match position and view the correlation scores.

- Define filter criteria to select the test exhibits based on their class characteristics, see Filter Test Exhibits (page 92).
- Manually select exhibits you want to view from the Navigation tree.

Note: To view exhibits that are stored at other sites, you must create a manual correlation request (page 110) that includes the correlation sites.

To manually select test exhibits:

1. From the Navigation tree (page 34), click the plus sign (+) next to the case folder that contains the exhibit that you want to use as the reference.

   The case expands and displays the associated exhibits.

2. Select the exhibit that you want to use as the reference.

3. Right-click and select **Set as Reference Exhibit**.

> **Tip:** You can also use the toolbar buttons to select exhibits.

4. Select the exhibits that you want to use as test exhibits.

   After clicking one exhibit to select it, you can select additional exhibits by using CTRL+Click.

5. Right-click and select **Set as Test Exhibit**.

6. Select additional exhibits as required, and select **Add to Test Exhibits** from the right-click menu.

7. Click **MultiViewer** on the toolbar.

   Depending on the type of reference exhibit that was selected, the Cartridge Case MultiViewer (page 331) or the Bullet MultiViewer (page 339) opens. The reference exhibit appears on the left side of the viewer and the test exhibits appear on the right side.

> **Note:** The Exhibit Details are displayed at the bottom of the screen. If the text is too long to display, an ellipsis (…) is displayed to indicated that the information has been truncated. To display the complete text, hold your mouse over the ellipsis.

Related Topics

Create a Manual Correlation Request (page 110)

Display Guides in the MultiViewer (page 134)

Import Exhibits from Remote Sites (page 136)

Test Exhibits Filtering Dialog Box (page 301)

Cartridge Case MultiViewer (page 331)

Bullet MultiViewer (page 339)

133

Display Guides in the MultiViewer

When viewing exhibits in the **MultiViewer**, you can control the types of guides you want to display. You can select one or more guides to display, and then click **Display Guides** on the toolbar to turn them on or off.

For example, if you work with bullet exhibits you may want to set the anchor lines, LEA labels and exhibit details so that you can show and hide them easily.

You can change the display settings for individual guides as required when you work. To set your preferences, see Setting Your Preferences (page 55).

The display guides for bullet and cartridge case exhibits are listed below.

Bullet Display Guides
- Anchor Lines
- LEA/GEA Labels
- LEA/GEA Widths
- Sorting Criterion
- Exhibit Details

Cartridge Case Display Guides
- Outlines
- Outline Diameters
- Acquisition Markers
- Annotations
- Outer Regions
- Breech Face Class Characteristics
- Sorting Criterion
- Exhibit Details

> **Tip:** To display text **Annotations**, hold your cursor over the icon to activate a pop-up window.

To set display guides:

1. On the toolbar, click the down arrow beside **Display Guides**.

    The information controlled by **Display Guides** is displayed.

2. Select the information you want to display.

    A check mark appears beside your selection to indicate the guides that will be displayed when you click **Display Guides**.

> **Tip:** To turn the display on or off, click **Display Guides**.

Exhibit Information

When you select **Exhibit Details** on the **Display Guides** it creates an activation area that you can use to trigger the Exhibit Information window to open.

The Exhibit Information window includes the correlation result scores and an option to print the exhibit.

The activation area is at the top of an exhibit (reference or test) on the label where the name of the site, case and exhibit are displayed.

> **Note:** If you select a single cartridge case image type to view, the activation area is at the top of each image.

To display exhibit information:

1. Hold your cursor over the exhibit label.

    The exhibit information for the exhibit is displayed.

2. To close the window, move your cursor away or click the **X**.

Related Topics

Open the MultiViewer (page 132)

Filter Breech Face Images (page 145)

Display Guides in the Side-by-Side Viewer (page 168)

Cartridge Case MultiViewer (page 331)

Bullet MultiViewer (page 339)

Import Exhibits from Remote Sites

If you selected test exhibits based on their correlation scores, some of those exhibits may be stored on remote servers. According to your connection, the Data Concentrator or the Correlation Server will automatically import a set number of the best exhibits (those that are the most likely matches).

For example, if your system is set to import ten exhibits, it means that up to ten of the best exhibits in each score category will be imported automatically. After the top ten have been imported for each score category, you must import the exhibits manually if you want to view them.

> **Note:** Imported exhibits may have hidden field information; whereby the original content is replaced with five asterisks (*****). This indicates that the data has been sanitized as part of the secure process for international data sharing.

You can import exhibits individually when you want them, or import all the exhibits that are stored on remote sites at once. If you decide to import all the remotely stored exhibits, the process may take a long time.

Reimport an Exhibit

After an exhibit is imported to your local Data Concentrator or the Correlation Server, it can still be changed at its origin; for example, images can be reacquired, new information can be added, or the exhibit can be deleted. To ensure that the exhibit on the Data Concentrator or the Correlation Server is up-to-date, you can reimport the exhibit. To do so, right-click the exhibit and then select **Reimport Exhibit**.

> **Tip:** To reimport an exhibit in the MultiViewer, open the Exhibit Information pop-up window and click **Reimport Exhibit**.

To import individual remote exhibits:

1. Open the MultiViewer (page 132) with exhibits that have correlation scores.

If any of the exhibits are not stored locally, an **Import** button is displayed in place of the exhibit image.
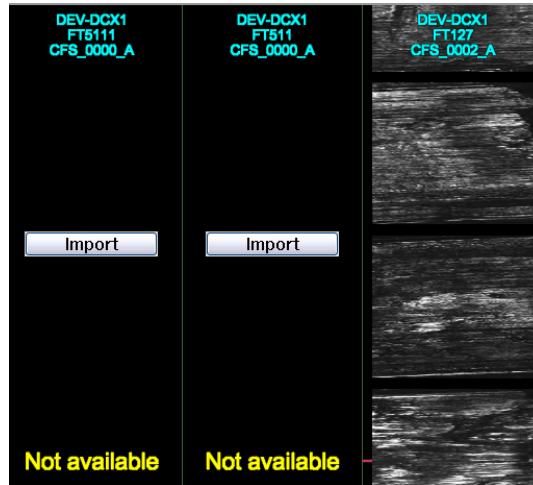
2. Click the **Import** button in the Bullet MultiViewer (page 339) or Cartridge Case MultiViewer (page 331).

    While the exhibit is being imported, you can continue working.

To import all remote exhibits:

1. Open the MultiViewer (page 132) with exhibits that have correlation scores.

2. Click **Import** on the toolbar.

Note: If all the exhibits are stored locally, **Import** is not available.

    The Import Exhibits dialog box (page 311) opens.

3. Select **All**, or select **Highest Scores** and enter a number.

4. Click **Import**.

    The importing process is started and may take some time. The exhibits display when the import is complete.

Related Topics

Open the MultiViewer (page 132)

Cartridge Case MultiViewer (page 331)

Bullet MultiViewer (page 339)

Sort Exhibits

If you open the MultiViewer from the Correlations window (page 285), test exhibits are sorted according to correlation scores. The highest ranking exhibit appears as the first test exhibit. Bullets exhibits are sorted by the Max LEA score. Cartridge case exhibits are sorted according to the Breech Face score. Otherwise, they are sorted in the order in which you selected them.

After you have opened the **MultiViewer**, you can change the sort order and sort exhibits using any of the following criteria:

Cartridge Case Exhibits	Bullet Exhibits
Firing Pin Score*	Max LEA 2D Score*
Breech Face Score*	Peak Phase 2D Score*
Ejector Mark Score*	Max Phase 2D Score*
User Selection**	Max LEA 3D Score*
Event Type	Max Phase 3D Score*
Caliber	User Selection**
Law Agency	Event Type
	Caliber
	Law Agency
	Average LEA Width
	Maximum LEA Width
	Minimum LEA Width

* These options are displayed only if the **MultiViewer** was opened from the Correlations window.

** **User Selection** is available if the exhibits were selected from the Navigation tree.

To sort exhibits:

- Click the arrow on the **Sort by** list and select the criterion that you want to use to sort the images.

  The MultiViewer (page 329) is refreshed to display the test exhibits in the new sort order.

Related Topics

Open the MultiViewer (page 132)

Cartridge Case MultiViewer (page 331)

Bullet MultiViewer (page 339)

Image Layout

You can control the image size of the exhibits in the **MultiViewer** by choosing the number of test exhibit images to display.

The smaller layout format provides a way to eliminate mismatches quickly during an initial review. The larger layout format can be used to see more image detail. The image quality and proportion is maintained regardless of the layout.

The default image layout is 8 images for bullets, and 8 x 5 images for cartridge cases. To change the default, see Setting Your Preferences (page 55).

Bullet Images

You can choose the number of test exhibit images you want to display, from eight to two. The two-image layout displays the largest images.

Only the 8-image layout displays the complete bullet mosaic. All the other layouts increase the bullet image size so that a portion of the mosaic does not display. An orange bar at the bottom of the image indicates the relative portion of the mosaic in view. Scroll vertically to see more of the mosaic.
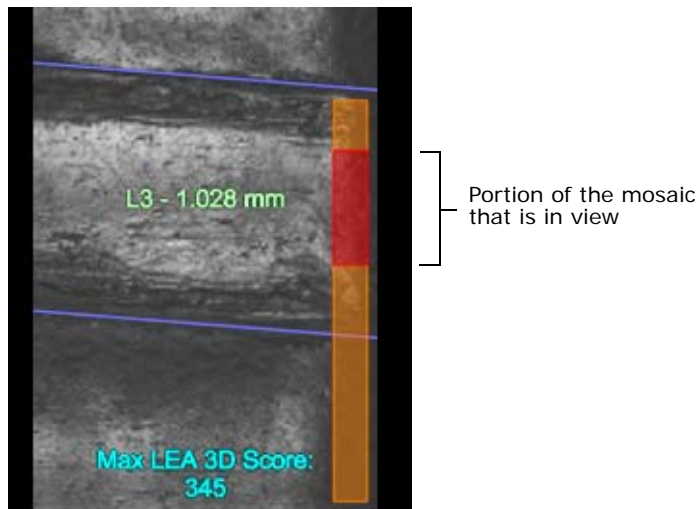
Tip: Show the LEA and GEA labels to help with orientation in the mosaic.

Cartridge Case Images

You can choose the number of test exhibit images you want to display, from 8 x 5 to 2 x 2. The 2 x 2 image layout displays the largest images.

To change the layout:

• Click the image down arrow on the toolbar and select the number of images you want to display.

The MultiViewer (page 329) is refreshed to display the test exhibits in the selected layout.

You can use the navigation buttons on the toolbar to navigate the list of test exhibits.

Related Topics

Setting Your Preferences (page 55)

Navigate Exhibits and Regions of Interest (page 170)

Set Bullet Images at Best Match Position (page 173)

Adjust Bullet Images (page 174)

Display One or All Cartridge Case Image Types

When viewing cartridge cases in the **MultiViewer**, up to seven of the following image types can be displayed for each exhibit.

- Breech face - ring light
- Breech face - 6 o'clock side light
- Firing pin - ring light
- Ejector mark - 6 o'clock side light
- Ejector mark - 3 o'clock side light
- Full headstamp - ring light
- Primer 3D DFF

Note: The primer all-in-focus image does not display in the **MultiViewer** or **Side-by-Side Viewer**. It is used for rendering the primer 3D composite.

You can view all of the associated image types together or you can filter the display so that only one type of image is displayed at a time. If, for example, you want to compare only breech face marks, you can filter out the other image types.

Note: Large caliber full headstamp images acquired with BRASSTRAX-3D version 2.2 SP3 and later may be smaller than full headstamp images that were acquired with earlier versions.

To display one cartridge case image type:

- In the reference exhibit image group in the Cartridge Case MultiViewer (page 331), double-click the image type that you want to display.

  For example, to display only firing pin images, double-click the firing pin image in the reference exhibit image group.

  For the test exhibits, only the images of the selected type are displayed.

To display all cartridge case image types:

- On the toolbar, click **All Test Exhibits Images**.

Related Topics

Filter Breech Face Images

The class characteristics that best describe breech face marks can be identified when an exhibit is acquired in BRASSTRAX-3D, for example, parallel or arch. When no breech face marks are identified or eliminated, the default class characteristic is **Unknown**.

In MATCHPOINT+, you can use this information to filter images and focus on the class characteristics that suit your analysis. Breech face class characteristics are part of the exhibit information.

This feature helps optimize the analysis by eliminating inappropriate exhibits based on the breech face class characteristics.

📌 **Tip:** You can specify breech face class characteristics in search criteria. For more information, see Using Search (page 46).

To filter breech face class characteristics:

1. Click the down arrow beside **Display Guides** and select **Breech Face Class Characteristics**.

   The Breech face class characteristics fillter dialog box (page 337) opens.

2. Select the **Filter** check box to activate the option.

3. Select the check boxes for the class characteristics you want to include.

   An example displays if you hold your cursor over a class characteristic.
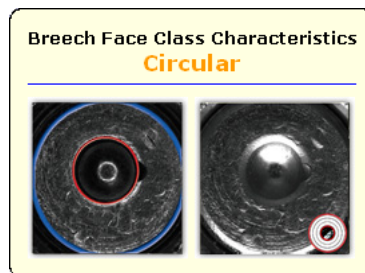
4. Select **Exclude Unknown** to limit the filter to only the exhibits with known class characteristics.

5. Click **OK**.

Only the filtered image types display.

Related Topics

Using Search (page 46)

Open the MultiViewer (page 132)

Sort Exhibits (page 139)

Display One or All Cartridge Case Image Types (page 143)

Set Images at Best Match Position

If you selected the exhibits from the **Correlations** window, they are automatically aligned in their best match position when you open **MultiViewer**. If you move or rotate the images, you can return them to their best match position using this feature.

The best match position is not available if you selected the exhibits from the Navigation tree; they can only be displayed in their acquisition position.

Best Match Position

When cartridge case exhibits are displayed in the best match position, MATCHPOINT+ determines the optimal rotation for aligning markings on the displayed exhibits.

When bullet images are displayed in the best match position, LEAs are aligned according to the phase that produced the best score.

For more information about phases, see Understanding Bullet Correlation Scores (page 80).

To display cartridge case images in the best match position:

1. In the **Navigator** view of the Cartridge Case MultiViewer (page 331), rotate a reference image to the position on which the alignment will be based.

    Note: This feature is not available for ejector mark, full headstamp and rimfire firing pin images.

2. On the toolbar, click the down arrow beside **Set Position** and select **Set at Best Match Position**.

    The images are aligned according to the rotation of the reference image.

3. To align the best match for another reference position, repeat steps 1 and 2.

To display bullet images in the best match position:

1. In the **Navigator** view of the Bullet MultiViewer (page 339), position the reference LEA you want to align in the center of the Navigator view.

2. On the toolbar, click the down arrow beside **Set Position** and select **Set at Best Match Position**.

    The images are aligned according to the centered reference LEA.

3. To align the best match for another LEA, repeat steps 1 and 2.

Related Topics

Open the MultiViewer (page 132)

Adjust Bullet Images (page 174)

Cartridge Case MultiViewer (page 331)

Bullet MultiViewer (page 339)

Hide Exhibits

If you determine that certain test exhibits are definitely not matches, you can hide them to reduce the number of displayed images.

To hide test exhibits:

1. In the MultiViewer (page 329), right-click the exhibit that you want to hide.

   An X appears over the image.

   Note: To unmark an image, right-click the image again.

2. On the toolbar, click **Marked Exhibits**.

   The marked images are hidden.

   Note: To display hidden images, click **Marked Exhibits** again.

Related Topics

Open the MultiViewer (page 132)

Cartridge Case MultiViewer (page 331)

Bullet MultiViewer (page 339)

Move and Rotate Images

You can move bullet exhibits vertically. When you do so, the image wraps around. This means that if, for example, you move the image up, the top LEA or GEA will appear at the bottom of the exhibit and the bottom LEA or GEA will appear at the top. This simulates the action of turning a bullet in the holder of a comparison microscope.

You can rotate all cartridge case exhibit types. Primer 3D DFF images can be rotated in three-dimensions.

To move a bullet mosaic:

- In the Bullet MultiViewer (page 339), click a bullet exhibit and drag it up or down.

  The image wraps around as you move it.

To rotate a cartridge case image:

1. In the Cartridge Case MultiViewer (page 331), place the cursor over the image that you want to rotate.

   The Rotation cursor appears.

2. To rotate a 2D image, click the image and drag to the left (or up) to rotate it in a counterclockwise direction, or to the right (or down) to rotate it in a clockwise direction.

3. To rotate a primer 3D DFF image, click the image and drag it to rotate it freely.

   If you press the left and right mouse buttons simultaneously, the image rotates around an axis that is perpendicular to the screen.

Related Topics

Adjust the Lighting and Rendering of 3D Images

If you are comparing 3D bullet images or primer 3D DFF images, you can manipulate the images in the following ways:

- Adjust the lighting for 3D images (page 193)
- Adjust the rendering of 3D images (page 195)

Open the Side-by-Side Viewer from the MultiViewer

After you have identified potential matches using the **MultiViewer**, open the **Side-by-Side Viewer** to perform in-depth analyses of individual exhibits.

The same list of test exhibits available in the **MultiViewer** can display in the **Side-by-Side Viewer**. Only the test exhibits that were "hidden" do not display. The exhibit counter on the toolbar indicates the order number when there are multiple exhibits.

To open the Side-by-Side Viewer from the MultiViewer:

> **Tip:** To select the test exhibit you want to view in the first position in the Side-by-Side Viewer, double-click it. A blue outline appears around the exhibit you clicked.
>
> If you want to view two test exhibits, double-click to select the first one and CTRL+double-click to select the second test exhibit.

- On the toolbar, click **Side-by-Side Viewer**.

  The Side-by-Side Viewer (page 345) opens. The reference exhibit appears on the left side of the **Comparison** view and the test exhibits appear on the right side.

  For more information, see:

  - Comparing Bullet Images in the Side-by-Side Viewer (page 158).
  - Comparing Cartridge Case Images in the Side-by-Side Viewer (page 160).

Related Topics

Open the MultiViewer (page 132)
Comparing Bullet Images in the Side-by-Side Viewer (page 158)
Comparing Cartridge Case Images in the Side-by-Side Viewer (page 160)
Cartridge Case MultiViewer (page 331)
Bullet MultiViewer (page 339)

Save MultiViewer Settings

You can save the settings that you have changed, such as lighting, layout, and display. When you save your settings they become your default preference. The next time you open the **MultiViewer**, your preferences will be applied.

> **Tip:** To set your preferences, see Setting Your Preferences (page 55).

To reset values:

- On the MultiViewer (page 329) toolbar, click **Save Settings**.

  All the settings that you have changed are saved as your preference.

Related Topics

Setting Your Preferences (page 55)

Open the MultiViewer (page 132)

Cartridge Case MultiViewer (page 331)

Bullet MultiViewer (page 339)

Analyzing Images in the Side-by-Side Viewer

This section covers the following topics:

Comparing Bullet Images in the Side-by-Side Viewer

If you identify a potential match between bullet exhibits in the **MultiViewer**, you can perform a more in-depth analysis of the reference exhibit and a particular test exhibit in the **Side-by-Side Viewer**.

Mosaics

Bullet exhibits are displayed in the Bullet Side-by-Side Viewer (page 355) as mosaics. A mosaic represents a fully acquired bullet image, with LEAs and, in the case of 3D mosaics, GEAs, that are displayed vertically in one continuous image. For more information, see What Is a Mosaic? (page 130).

> **Note:** Bullets that have been fired through a polygonal rifled barrel do not have GEAs.

The following table describes the types of mosaics that are displayed in the **Side-by-Side Viewer** depending on the types of exhibits selected:

If	Then
Both of the selected exhibits are 2D (acquired by BulletProof)	Both mosaics are 2D. Only LEAs are displayed.
One of the selected exhibits is 2D (acquired by BulletProof) and one is 3D (acquired by BULLETTRAX-3D)	One mosaic is 2D and the other is 3D. However, only LEAs are displayed. GEAs are suppressed.
Both of the selected exhibits are 3D	Both mosaics are 3D. LEAs and GEAs are displayed.

Available Features

In the Side-by-Side Viewer's **Navigator** view, you can compare the full mosaics to look for marks that may be potential matches. In the **Comparison** view, you can closely examine the LEAs that appear to have similar marks.

When analyzing bullet images in the **Side-by-Side Viewer**, you can do the following:

- Reposition the two images:
  - Set images at the best match position (page 173)
  - Adjust bullet images (page 174)

- Move bullet mosaics (page 177)
- Overlap images (page 181)

- Display:
  - Display guides (page 168)
  - Correlation scores (page 185)

- Manipulate the images:
  - Change the magnification level (page 186)
  - Adjust image brightness (page 187)
  - Adjust image contrast (page 188)
  - Display negative image
  - Adjust image midtones (page 190)
  - Adjust image sharpness (page 192)
  - Adjust the lighting for 3D images (page 193)
  - Stretch bullet images (page 199)

- Manipulate the surface texture:
  - Adjust the rendering of 3D images (page 195)
  - Adjust the 3D elevation of 3D images (page 197)

- If the two LEAs appear to be a potential match, you can perform the following detailed analyses:
  - Calculate the number of consecutive matching striae (page 205) for a particular LEA pair.
  - Generate bullet profiles (page 201) to see a graphical representation of the reference and test bullets' surface features.

- You can also:
  - Save a screenshot of the Comparison View (page 211)
  - Reset values (page 216)
  - Print images (page 215)

If a manual comparison of two exhibits reveals a match, record the hit (page 222) in MATCHPOINT+.

Comparing Cartridge Case Images in the Side-by-Side Viewer

If you identify a potential match between cartridge case exhibits in the **MultiViewer**, you can perform a more in-depth analysis of the reference exhibit and a particular test exhibit in the **Side-by-Side Viewer**.

Image Types

When analyzing centerfire cartridge case images, compare the different types of images for similarities in the following order:

- Breech face images
- Firing pin images
- Ejector mark images
- Primer images

Analyzing Cartridge Case Images

The following procedure describes a general approach that can be used to analyze cartridge case images. See Available Features (page 161) for a complete list of functions that are available in the **Side-by-Side Viewer**.

To analyze cartridge case images:

1. Open the Side-by-Side Viewer (page 163).

    - If you are comparing centerfire acquisitions, by default, the breech face ring light images are displayed in the **Comparison** view. Go to step 2 to continue.
    - If you are comparing rimfire acquisitions, you only need to analyze firing pin images. Go to step 4 to continue.

2. Set images at best match position (page 176).

    MATCHPOINT+ uses the optimal rotation for image comparison.

    This feature is disabled if the exhibits were not selected from the **Correlations** window.

3. Overlap the images (page 181) to determine if there is a visual match.

4. Display the firing pin images in the **Comparison** view and repeat steps 2 and 3.

5. Display the ejector mark images in the **Comparison** view and repeat steps 2 and 3.

> **Note:** You can reset values to their default settings. For more information, .

6. Continue to examine different exhibits in the **Side-by-Side Viewer**, by repeating steps 1 to 5, until you are satisfied that you have examined all the likely candidates.

   If a manual comparison of two exhibits reveals a match, in MATCHPOINT+.

Available Features

When analyzing cartridge case images in the **Side-by-Side Viewer** you can do the following:

- Position images:
  -
    This feature is disabled if exhibits were not selected from the **Correlations** window, or **Correlation Results Filtering**.
  -
  -
- Display:
  -
  -
  -
    This feature is disabled if exhibits were not selected from the **Correlations** window, or **Correlation Results Filtering**.
- Manipulate images:
  -
  -
  -

- Display negative images
- Adjust image midtones (page 190)
- Adjust image sharpness (page 192)
- Adjust the lighting for 3D images (page 193)
- Adjust the rendering of 3D images (page 195)
- Adjust the 3D elevation of 3D images (page 197)
- You can also:
  - Save a screenshot of the Comparison View (page 211)
  - Export cartridge case images (page 213)
  - Print images (page 215)
  - Reset values (page 216)

Related Topics

Open the Side-by-Side Viewer (page 163)

Cartridge Case Side-by-Side Viewer (page 347)

Select Exhibits to View

There are a number of different ways to select the exhibits you want to view. Regardless which method you use, the reference exhibit and test exhibits are automatically recorded in **Viewer Exhibits** in the Navigation tree. You can view the selected exhibits in either the **MultiViewer** or the **Side-by-Side Viewer**.

Open the Side-by-Side Viewer

To select the exhibits you want to view in the **Side-by-Side Viewer**, you can do one of the following:

- Select exhibits based on their correlation scores, see Open from the Correlation Window (page 163).
- Select exhibits based on analysis in correlation results filtering, see Correlation Results Filtering (page 119).

Note: When you select correlated exhibits, you can display images in their best match position and view the correlation scores.

- Define filter criteria to select the test exhibits based on their class characteristics, see Filter Test Exhibits (page 92).
- Manually select exhibits you want to compare, see Open from the Navigation tree (page 164).
- Open directly from the **MultiViewer**, see Open from the MultiViewer (page 165).

Note: Only users with Expert Acquisition Technician or Firearm Examiner permissions can view the **Correlations** window.

To open the Side-by-Side Viewer from the Correlations window:

1. Open the Correlation List window (page 113).

2. In the **Correlation Requests** view, click to select a correlation request.

   All of the results that are associated with the selected correlation request are displayed in the **Correlation Results** view.

Note: If you specify a score to sort by in the Correlations window (page 285), the order is respected when you open the **Side-by-Side Viewer.**

3. Click **Side-by-Side Viewer** on the toolbar.

   The Side-by-Side Viewer (page 345) opens with the sort order you set. The exhibit counter indicates the number of test exhibits in the list.

Tip: To display **Exhibit Details**, hold your cursor over the upper left or right image area in the Comparison view.

To open the Side-by-Side Viewer from Correlation Results Filtering:

1. Open Correlation Results Filtering (page 119).

2. Select the individual **ID** check boxes for the exhibits you want to view, or **Select All**.

3. On the toolbar, click the **Side-by-Side Viewer**.

   The Side-by-Side Viewer (page 345) opens. The reference exhibit and the selected test exhibits are displayed.

To open the Side-by-Side Viewer from the Navigation tree:

1. From the Navigation tree (page 34), click the plus sign (+) next to the case folder that contains the exhibit that you want to use as the reference.

   The case expands and displays the associated exhibits.

2. Select the exhibit that you want to use as the reference.

3. Right-click and select **Set as Reference Exhibit**.

Tip: You can also use the toolbar buttons to select exhibits.

4. Select the exhibit that you want to use as the test exhibit.

5. Right-click and select **Set as Test Exhibit**.

6. If required, select additional exhibits to create a list of test exhibits.

7. Right-click and select **Add to Test Exhibits**.

The additional selection is added to the list of test exhibits.

8. Click **Side-by-Side Viewer** on the toolbar.

The Side-by-Side Viewer (page 345) opens with the test exhibits sorted in the order they were selected. You are ready to begin analyzing the exhibits.

To open the Side-by-Side Viewer from the MultiViewer:

1. Open the MultiViewer (page 132).

2. Select the **Sort by** order to display the exhibit list.

> **Tip:** To select an exhibit to view first in the list, double-click it. A blue outline appears around the exhibit.
>
> When you open the **Side-by-Side Viewer** the exhibit counter displays the order of the list, for example, 3/39 to indicate the third exhibit in a list of 39.

3. Click the **Side-by-Side Viewer** on the toolbar.

The Side-by-Side Viewer (page 345) opens. The reference exhibit and the test exhibits are displayed.

> **Note:** The exhibit counter on the toolbar indicates the number of test exhibits in the list.

Related Topics

Cartridge Case Side-by-Side Viewer (page 347)

Bullet Side-by-Side Viewer (page 355)

Import Exhibits from Remote Sites

If you selected test exhibits based on their correlation scores, some of those exhibits may be stored on remote servers. According to your connection, the Data Concentrator or the Correlation Server, will automatically import a set number of the best exhibits (those that are the most likely matches).

For example, if your system is set to import ten exhibits, it means that up to ten of the best exhibits in each score category will be imported automatically. After the top ten have been imported for each score category, you must import the exhibits manually if you want to view them.

> **Note:** Imported exhibits may have hidden field information; whereby the original content is replaced with five (*****). This indicates that the data has been sanitized as part of the secure process for international data sharing.

You can import individual exhibits when you want them, or import all of the exhibits that are stored on remote sites at once. If you decide to import all the remotely stored exhibits, the process may take a long time.

Reimport an Exhibit

After an exhibit is imported to your local Data Concentrator or the Correlation Server, it can still be changed at its origin; for example, images can be reacquired, new information can be added, or the exhibit can be deleted. To ensure that the exhibit on the Data Concentrator or the Correlation Server is up-to-date, you can reimport the exhibit. To do so, right-click the exhibit and then select **Reimport Exhibit**.

> **Tip:** To reimport an exhibit in the Side-by-Side Viewer, open the Exhibit Information pop-up window and click **Reimport Exhibit**.

To import individual remote exhibits:

1. Open the Side-by-Side Viewer with exhibits that have correlation scores.

   If any of the exhibits are not stored locally, an **Import** button is displayed in place of the exhibit image.

2. Click the **Import** button in the Bullet Side-by-Side Viewer (page 355) or Cartridge Case Side-by-Side Viewer (page 347).

   While the exhibit is being imported, you can continue working.

To import all remote exhibits:

1. Open the Side-by-Side Viewer (page 163) with exhibits that have correlation scores.

2. Click **Import** on the toolbar.

   Note: If all the exhibits are stored locally, **Import** is not available.

   The Import Exhibits dialog box (page 311) opens.

3. Select **All**, or select **Highest Scores** and enter a number.

4. Click **Import**.

   The importing process is started and may take some time. The exhibits display when the import is complete.

Related Topics

Open the Side-by-Side Viewer (page 163)

Cartridge Case Side-by-Side Viewer (page 347)

Bullet Side-by-Side Viewer (page 355)

Display Guides in the Side-by-Side Viewer

When viewing exhibits in the **Side-by-Side Viewer**, you can control the types of guides you want to display. You can select one or more guides to display, and then click **Display Guides** on the toolbar to turn them on or off.

You can change the display settings for individual guides as required when you work. To set your preferences, see Setting Your Preferences (page 55).

The display guides for bullet and cartridge case exhibits are listed below.

Bullet Display Guides
- Anchor Lines
- LEA/GEA Labels Numbers (**Navigator** view only)
- LEA/GEA Widths (**Navigator** view only)

Cartridge Case Display Guides (Comparison view only)
- Outlines
- Outline Diameters
- Acquisition Markers
- Annotations
- Outer Regions

Note: To display text **Annotations**, hold your cursor over the icon to activate a pop-up window.

To set display guides:

1. On the toolbar, click the down arrow beside **Display Guides**.

   The information controlled by **Display Guides** is displayed.

2. Select the information you want to display.

   A check mark appears beside your selection. These are the guides that display when you click **Display Guides**.

Note: To turn the display on or off, click **Display Guides**.

Exhibit Information

The Display Guides listed for the **Side-by-Side Viewer** do not include Exhibit Details. However, there are two small activation areas that you can use to trigger the **Exhibit Information** window to open. These activation areas are always available.

To display exhibit information:

1. In the **Comparison** view, hold your cursor at the top left corner of the reference exhibit.

    The exhibit information for the reference exhibit is displayed.

2. In the **Comparison** view, hold your cursor at the top right corner of the test exhibit.

    The exhibit information for the test exhibit is displayed.

3. To close the window, move your cursor away or click the **X**.

Related Topics

Navigate Exhibits and Regions of Interest

Use the navigation buttons in the **Side-by-Side Viewer** to cycle through a list of test exhibits or regions of interest. The navigation feature provides an easy way to rapidly view full-size images, or quickly locate key regions of interest.

Note: The exhibit navigation buttons are not available if there is only one test exhibit.

If you change the position, zoom or rotation of an image, the setting is maintained if you navigate to another exhibit or another ROI and return.

The ROI navigation for bullets can be used forward or backward (**Next** or **Previous**) continuously. The ROI will loop around again if you continue to navigate.

The ROI navigation for cartridge cases displays an image pair in the **Comparison** view and outlines the ROI in the **Navigator** view. You can also click an image pair in the **Navigator** view to select the ROI you want to display.

To navigate exhibits:

1.

2. Use the **Next Exhibit** and **Previous Exhibit** arrows to move forward or backward through a series of exhibits.

Tip: Use the keyboard shortcuts, PAGE UP and PAGE DOWN, to navigate exhibits.

To navigate ROIs:

1.

2. Use the **Next ROI** and **Previous ROI** arrows to move forward or backward through the available ROIs of the exhibit.

Tip: Use the keyboard shortcuts, CTRL+RIGHT ARROW and CTRL+LEFT ARROW, to navigate ROIs.

Using the Image Manipulation Controls

The **Side-by-Side Viewer** provides controls that enable you to manipulate the following image characteristics: brightness, contrast, 2D/3D rendering, 3D elevation, stretch, and shrink.

Entering a Value

These controls work in the same way and accept input in a variety of ways, as shown in the following illustration.
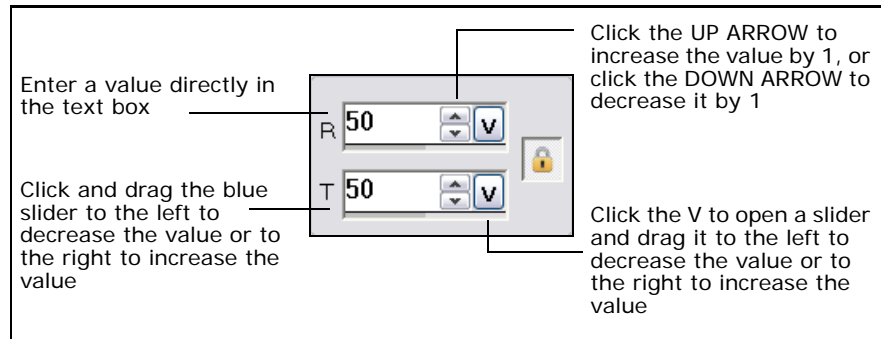
If you enter a value that is outside the valid range, the value is displayed on a red background. If the entered value is less than the minimum valid value, MATCHPOINT+ will use the minimum valid value for its calculations. If the entered value is greater than the maximum valid value, MATCHPOINT+ will use the maximum valid value.

Locking Controls

You have the option of locking most of the controls in the **Side-by-Side Viewer**. When you lock a control, the adjustments that you make are applied to the reference image and the test image simultaneously. When a control is unlocked, you can make adjustments to each image independently.

The locking controls are indicated by the following icons:

171

All of the controls, except the **Stretch** control in the Bullet Side-by-Side Viewer, have a lock.

Related Topics

Open the Side-by-Side Viewer (page 163)

Cartridge Case Side-by-Side Viewer (page 347)

Bullet Side-by-Side Viewer (page 355)

Set Bullet Images at Best Match Position

If you selected the exhibits from the **Correlations** window, they are automatically aligned according to their best match position; the phase that produced the best score. If you move the images, you can return them to their best match position using this feature.

The best match position is not available if you selected the exhibits from the Navigation tree; they can only be displayed in their acquisition position.

To display images in best match position:

1. In the **Navigator** view of the Bullet Side-by-Side Viewer (page 355), move the exhibit so that the reference LEA you want to use to calculate the best phase alignment is positioned within the Navigator Box.

2. On the toolbar, click **Set Position**.

   The reference exhibit and test exhibit are aligned according to the best match position in the **Comparison** view.

   Tip: To set the action of the button to either Best Match Position or Acquisition Position, click the down arrow beside **Set Position**.

3. To recalculate the best match position using a different reference LEA, repeat steps 1 and 2.

Related Topics

Open the Side-by-Side Viewer (page 163)

Adjust Bullet Images (page 174)

Bullet Side-by-Side Viewer (page 355)

Adjust Bullet Images

You can adjust images to make the comparison of angled striae and different image formats easier to see. The adjustment options available in the **Side-by-Side Viewer** are Redress Only and Normalize.

- **Redress Only**: Adjusts the striae angle to a flat plane. The twist of a barrel's rifling creates striae on a bullet that are not horizontal. This adjustment can help make a comparison.

- **Normalize**: Adjusts the comparison when the reference and the test images were not acquired by the same system, that is, one was acquired using BULLETTRAX-3D and one was acquired using IBIS Heritage. Both images are redressed and the height of the BULLETTRAX-3D image is adjusted to match the format of the IBIS Heritage image.

  Normalize is not available when the images have been acquired by the same system.

> **Tip:** After an option is set, you can click **Adjust** to turn it on or turn it off.

To redress the images:

1. Open the Side-by-Side Viewer (page 163).

2. Use the controls in the Bullet Side-by-Side Viewer (page 355), to set the images.

3. On the toolbar, click the down arrow beside **Adjust**.

4. Select **Redress Only**.

   The reference and test images are redressed.

To normalize the images:

1. Open the Side-by-Side Viewer (page 163).

2. Use the controls in the Bullet Side-by-Side Viewer (page 355), to set the images.

3. On the toolbar, click the down arrow beside **Adjust**.

4. Select **Normalize**.

    The images are redressed and normalized.

Related Topics

Open the Side-by-Side Viewer (page 163)

Set Bullet Images at Best Match Position (page 173)

Bullet Side-by-Side Viewer (page 355)

Set Cartridge Case Images at Best Match Position

If you selected the exhibits from the **Correlations** window, they are automatically aligned in their best match position when you open the **Side-by-Side Viewer**. If you move or rotate the images, you can return them to their best match position using this feature.

The best match position is not available if you selected the exhibits from the Navigation tree; they can only be displayed in their acquisition position.

> **Note:** This feature is not available for ejector mark, full headstamp and rimfire firing pin images.

To display images in best match position:

- On the Cartridge Case Side-by-Side Viewer (page 347) toolbar, click **Set Position**.

  MATCHPOINT+ aligns the images in the **Comparison** view according to their optimal rotation.

> **Tip:** To set the action of the button to either Best Match Position or Acquisition Position, click the down arrow beside **Set Position**.

Related Topics

Open the Side-by-Side Viewer (page 163)

Adjust Bullet Images (page 174)

Cartridge Case Side-by-Side Viewer (page 347)

Move Bullet Mosaics

In the **Navigator** view, bullet mosaics can be moved vertically. In the **Comparison** view, they can be moved vertically and horizontally.

Moving Mosaics Vertically

The **Navigator** view displays entire bullet mosaics, whereas the **Comparison** view displays a section of each mosaic in a magnified view. To display a different section of mosaic in the **Comparison** view, you must move the mosaic vertically until the section is within the Navigator Box of the **Navigator** view. Any vertical movement in the **Comparison** view is reflected in the **Navigator** view.

When you move a mosaic vertically, the image wraps around. This means that if, for example, you move the mosaic up, the top LEA or GEA will appear at the bottom of the mosaic and the bottom LEA or GEA will appear at the top. This simulates the action of turning a bullet in the holder of a comparison microscope.

Moving Mosaics Horizontally

In the **Comparison** view, you can also move mosaics horizontally to overlap the two images or to separate them.

For more information, see Overlap Images (page 181).

To move a mosaic:

1. If you want to move the reference exhibit and the test exhibit together, click the **Lock** button that is to the right of the **Navigator** view.

    For more information about the viewer, see Bullet Side-by-Side Viewer (page 355).

    Note: You can also move mosaics in the Bullet MultiViewer (page 339).

2. To move a bullet mosaic horizontally, click the image in the **Comparison** view and drag it to the left or right.

3. To move a bullet mosaic vertically, click the mosaic and drag it up or down.

    The mosaic wraps around.

Related Topics

Open the Side-by-Side Viewer (page 163)

Overlap Images (page 181)

Bullet Side-by-Side Viewer (page 355)

Move and Rotate Cartridge Case Images

You can move and rotate the cartridge case images that are displayed in the **Comparison** view to align them. Primer 3D DFF images can be rotated three-dimensionally.

Two cursor modes are available in the **Cartridge Case Side-by-Side Viewer**.

Button	Mode	Description
✥	Translation	Enables translation mode. You can move images horizontally and vertically.
⟳	Rotation	Enables rotation mode. You can rotate 2D images in a clockwise or counterclockwise direction. You can rotate 3D images in any direction.

Note: You can also automatically align the images using the best match position (page 176), as determined by MATCHPOINT+.

To move an image:

1. If the cursor is not in Translation mode, either click **Translation Mode** on the Cartridge Case Side-by-Side Viewer (page 347) toolbar, or right-click the image.

2. To move a cartridge case image horizontally, click the image and drag it to the left or right.

3. To move a cartridge case image vertically, click the image and drag it up or down.

To rotate a cartridge case image:

1. If the cursor is not in Rotation mode, either click **Rotation Mode** on the toolbar, or right-click the image.

2. To rotate a 2D image, click the image and drag it to the left (or up) to rotate it in a counterclockwise direction, or to the right (or down) to rotate it in a clockwise direction.

3. To rotate a primer 3D DFF image, click the image and drag it to rotate it freely.

   If you press the left and right mouse buttons simultaneously, the image rotates around an axis that is perpendicular to the screen.

> **Tip:** The acquisition marker, a red line, indicates the original position of the image. Use **Display Guides** to show or hide the acquisition markers.

Related Topics

Open the Side-by-Side Viewer (page 163)

Set Bullet Images at Best Match Position (page 173)

Cartridge Case Side-by-Side Viewer (page 347)

Overlap Images

When similarities are found between two exhibits, you can overlap them in the **Comparison** view to identify marks which coincide.

Overlapping Bullet Images

When overlapping bullet images, you can turn transparency on or off. When it is off, both exhibits are fully opaque. When it is on, as shown below, both exhibits are transparent, which allows the reference image to show through the test image.
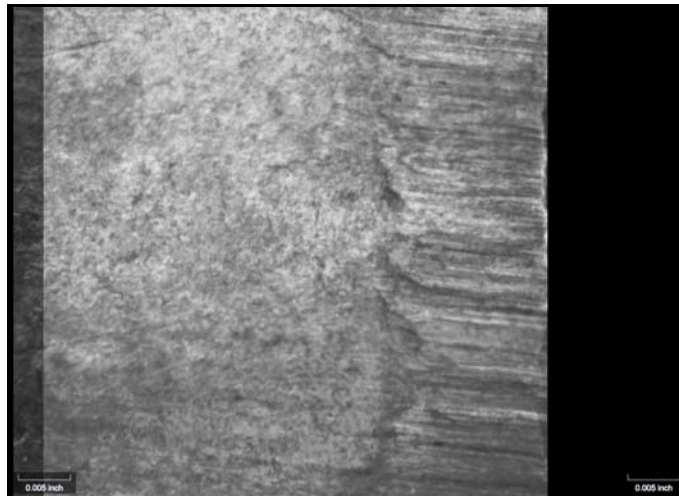
To turn on Transparency mode:

- On the Bullet Side-by-Side Viewer (page 355) toolbar, click **Transparency Mode**.

   The hairline separator disappears. The exhibits become transparent.

Note: To turn transparency off, click **Transparency Mode** again.

To overlap bullet images:

- Click an image in the **Comparison** view and drag it horizontally towards the other image.

As you do so, you will be able to see the features of the reference exhibit showing through the test exhibit.

For more information, see Move Bullet Mosaics (page 177).

Overlapping Cartridge Case Images

There is no Transparency mode in the Cartridge Case Side-by-Side Viewer (page 347). When overlapping cartridge case images, you instead attempt to create a single composite image out of the two separate images.

To overlap cartridge case images:

1. Click an image in the **Comparison** view of the Cartridge Case Side-by-Side Viewer (page 347) and drag it horizontally towards the other image.

    For more information about moving exhibits, see Move and Rotate Cartridge Case Images (page 179).

2. To enlarge one of the image areas, click the hairline and drag it to the left to enlarge the test image area or to the right to enlarge the reference image area.

Related Topics

Open the Side-by-Side Viewer (page 163)

Move Bullet Mosaics (page 177)

Cartridge Case Side-by-Side Viewer (page 347)

Bullet Side-by-Side Viewer (page 355)

Place Rulers on a Bullet Image

To measure distances, you can place up to five rulers on each image in the **Comparison** view. A ruler appears as a red line with a red circle at each end point, as shown below.
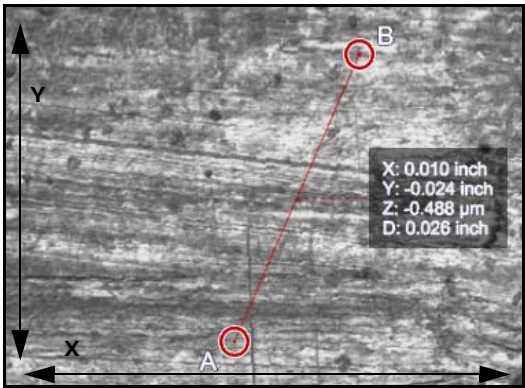
Values

For each ruler, the following values are displayed:

Value	Description
X	The difference between the X coordinates of the two end points.
Y	The difference between the Y coordinates of the two end points. This value is not displayed if the ruler spans two or more regions.
Z	The difference between the Z coordinates of the two end points.
D	The distance between the two end points. This value is not displayed if the ruler spans two or more regions.

Note: X, Y, D, and Z are accurate if both end points are on the same LEA or GEA. X, Y, and D are accurate if both end points are on the same region. If, however, the two end points are on different regions, none of the values are accurate.

And if horizontal alignment is used, X, Y, D, and Z are only displayed if both points are on the same LEA or GEA.

The X, Y, and D values are displayed in inches or millimeters, depending on the system settings. The Z value is always displayed in micro meters. To set your preferences, see Setting Your Preferences (page 55).

> **Note:** Anchor lines that were placed in BULLETTRAX-3D are independent, so their angles can vary. To ensure that LEA width measurements are consistent for all images, a standardized method is used to calculate an average for the direction of anchor lines.

To use rulers:

1. To add a ruler, right-click an image in the **Comparison** view and select Add ruler.

2. To move a ruler, click an end point and drag it.

3. To delete a ruler, right-click an end point and select **Delete ruler**.

> **Tip:** If you have placed multiple rulers and want to delete all of them, select **Delete all rulers**.

Related Topics

View Correlation Scores

You can view the correlation scores of the exhibits that are displayed in the **Comparison** view.

Note: This feature is enabled only if the exhibits were correlated.

To view correlation scores:

1. On the Bullet Side-by-Side Viewer (page 355) or the Cartridge Case Side-by-Side Viewer (page 347) toolbar, click **Correlation Scores**.

    The Correlation Scores dialog box (bullets) (page 377) or the Correlation Scores dialog box (cartridge cases) (page 375) opens and displays the correlation scores for the reference exhibit and the test exhibit.

2. Click **Close** to close the dialog box.

Related Topics

Open the Side-by-Side Viewer (page 163)

Cartridge Case Side-by-Side Viewer (page 347)

Bullet Side-by-Side Viewer (page 355)

Change the Magnification Level

In the **Comparison** view of the **Side-by-Side Viewer**, you can change the magnification level of the displayed images.

To change the magnification level for exhibits:

- On the toolbar of the Bullet Side-by-Side Viewer (page 355) or Cartridge Case Side-by-Side Viewer (page 347), click the desired magnification level:

Click	To
	Decrease the magnification level of the **Comparison** view.
	Increase the magnification level of the **Comparison** view.

Related Topics

Open the Side-by-Side Viewer (page 163)

Cartridge Case Side-by-Side Viewer (page 347)

Bullet Side-by-Side Viewer (page 355)

Adjust Image Brightness

If you are comparing two bullet images that were acquired by BULLETTRAX-3D, or two cartridge case images that were acquired by BRASSTRAX-3D, the brightness should be similar for both images. However, if you are comparing an image that was acquired by BULLETTRAX-3D to an image that was acquired by BulletProof, or an image that was acquired by BRASSTRAX-3D to an image that was acquired by BrassCatcher, one of the images may be darker than the other. In this case, you can make the brightness uniform by adjusting the brightness setting of either the reference image or the test image.

To adjust the brightness:

1. If you want to adjust the brightness for both images simultaneously, click the **Lock** button in the **Brightness Control**.

    For more information about the viewer and the location of these controls, see Bullet Side-by-Side Viewer (page 355) or Cartridge Case Side-by-Side Viewer (page 347).

2. To increase the brightness of an image, set the **Brightness Control** to a value that is greater than 50.

    The range is 0 to 100. The default is 50.

    You can enter a value directly, or you can use the up and down arrows or one of the sliders to set a value. For more information about using these controls, see Using the Image Manipulation Controls (page 171).

3. To decrease the brightness of an image, set the **Brightness Control** to a value that is less than 50.

Related Topics

Open the Side-by-Side Viewer (page 163)

Using the Image Manipulation Controls (page 171)

Cartridge Case Side-by-Side Viewer (page 347)

Bullet Side-by-Side Viewer (page 355)

Adjust Image Contrast

If you are comparing two bullet images that were acquired by BULLETTRAX-3D or two cartridge case images that were acquired by BRASSTRAX-3D, the contrast should be similar for both images. However, if you are comparing an image that was acquired by BULLETTRAX-3D to an image that was acquired by BulletProof, or an image that was acquired by BRASSTRAX-3D to an image that was acquired by BrassCatcher, the contrast will likely be different for the two images. In this case, you can make the contrast uniform by adjusting the contrast setting of either the reference image or the test image.

The range is 0 to 100 and the default value is 50. Setting the contrast to a value that is greater than 50 increases the contrast and, therefore, exaggerates the difference between highlights and shadows. Setting the contrast to a value less that is than 50 decreases the contrast and, therefore, lessens the difference between highlights and shadows.

The following graphic shows an example of the effect of different contrast settings on the same bullet exhibit.

Contrast = 35 (Decreased contrast) Contrast = 50 (Average contrast) Contrast = 65 (Increased contrast)
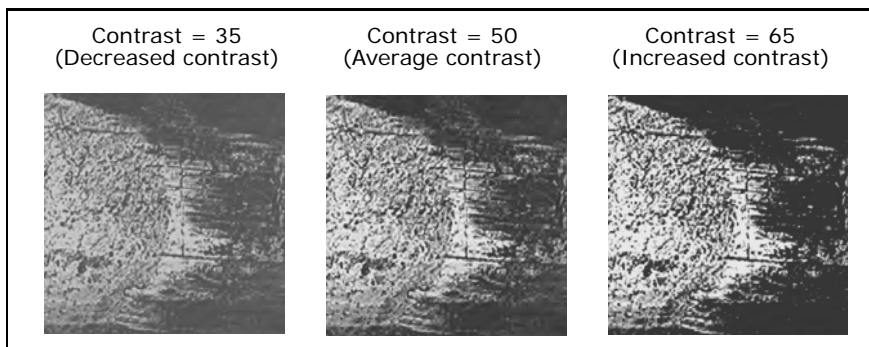
To adjust the contrast:

1. If you want to adjust the contrast for both images simultaneously, click the **Lock** button in the **Contrast Control**.

    For more information about the viewer and the location of these controls, see Bullet Side-by-Side Viewer (page 355) or Cartridge Case Side-by-Side Viewer (page 347).

2. To increase the contrast, set the **Contrast Control** to a value that is greater than 50.

   You can enter a value directly, or you can use the up and down arrows or one of the sliders to set a value. For more information about using these controls, see Using the Image Manipulation Controls (page 171).

3. To decrease the contrast, set the **Contrast Control** to a value that is less than 50.

Note: After adjusting the contrast, you may want to adjust the brightness (page 187) to correct for changes in exposure.

To display the negative image:

• Select the **Negative Image** check box located below the Sharpness control.

   The contrast is inverted; the light areas become dark, and the dark areas become light.

Related Topics

Open the Side-by-Side Viewer (page 163)

Using the Image Manipulation Controls (page 171)

Adjust Image Brightness (page 187)

Cartridge Case Side-by-Side Viewer (page 347)

Bullet Side-by-Side Viewer (page 355)

Midtones Dialog Box (page 367)

Adjust Image Midtones

When you use the main Contrast control, the adjustments affect the image globally. If you want to make more subtle adjustments, you can adjust the contrast and brightness of only the midtones.

When you adjust the midtone contrast it changes the middle portion of the light scale. Decreasing the value will reduce the differences between the mid gray levels, thus increasing the differences in the lighter and darker portions of the image. Increasing the values creates the opposite effect.

Midtone Viewer

The midtone viewer provides a graphic representation of the adjustments on a standard scale of 0-255, where black is zero and white is 255. The bottom left corner of the scale represents black (0), the top left and bottom right are white (255).

If you want to adjust the images independently, open the lock beside the control. The reference exhibit appears as a red line and the test exhibit as a green line.

Because of the way the human eye sees grayscale, compressing the midtones can make it easier to see subtle details, especially in the darker zones. Usually, when doing this, the shift will need to be increased to restore the overall average intensity.

Therefore, the most beneficial adjustment is to decrease the contrast value (compress the midtones). In the midtone viewer, the line will move above the default start position. If the shift value is modified, the adjustment is rotational.

To adjust the midtone contrast:

1. Inside the Contrast control section, click the ellipsis (…) button.

    The Midtones dialog box (page 367) opens.

2. To decrease the midtone contrast, set the Midtone control to a value that is less than 50.

    You can enter a value directly, or you can use the up and down arrows or one of the sliders to set a value. For more information about using these controls, see Using the Image Manipulation Controls (page 171).

3. To increase the midtone contrast, set the Midtone control to a value that is greater than 50.

Note: If you click **Reset** on the toolbar, all the control values on the Side-by-Side Viewer are reset.

To adjust the shift:

1. Inside the Contrast control section, click the ellipsis (...) button.

   The Midtones dialog box (page 367) opens.

2. To shift the adjustment to the right, set the Shift control to a value that is greater than 0.

3. To shift the adjustment to the left, set the Shift control to a value that is less than 0.

Related Topics

Open the Side-by-Side Viewer (page 163)

Using the Image Manipulation Controls (page 171)

Adjust Image Contrast (page 188)

Adjust Image Sharpness

If you are comparing two images that have slightly different clarity, you can sharpen either the reference image or the test image by increasing the contrast of adjacent pixels.

Note: For IBIS Heritage images, adjusting the sharpness can improve the comparison.

To adjust the sharpness:

1. If you want to adjust the sharpness for both images simultaneously, click the **Lock** button in the **Sharpness Control**.

    For more information about the viewer and the location of these controls, see Bullet Side-by-Side Viewer (page 355) or Cartridge Case Side-by-Side Viewer (page 347).

2. To increase the sharpness of an image, set the **Sharpness Control** to a value that is greater than 10.

    The range is 0 to 10. The default is 0.

    You can enter a value directly, or you can use the up and down arrows or one of the sliders to set a value. For more information about using these controls, see Using the Image Manipulation Controls (page 171).

Related Topics

Open the Side-by-Side Viewer (page 163)

Using the Image Manipulation Controls (page 171)

Adjust the Lighting for 3D Images

Note: You can adjust the lighting for 3D images only. This can be done in the **Side-by-Side Viewer** and the **MultiViewer**. When you compare 2D images, the **Light Control** is disabled.

You can adjust the lighting to better visualize the striae on 3D bullet images or the marks on primer 3D composite images. The default light is the top side light at a 45-degree inclination. You can switch between a center light and a side light. Changes that you make to the lighting affect the displayed image only, not the acquired image.

The center light spreads the light evenly over the surface, causing few shadows and a relatively flat image. The side light casts shadows, which emphasize surface texture and add to the three-dimensional effect. You can change the direction and inclination of the side light. When the light originates from the top or bottom, markings are more pronounced than when it originates from the left or right side.

To adjust the lighting:

1. If you want to adjust the lighting for both exhibits simultaneously, click the **Lock** button on the **Light Control**.

    For more information about the **Light Control**, see Bullet Side-by-Side Viewer (page 355) or Cartridge Case Side-by-Side Viewer (page 347).

2. To turn on the center light, click the center of the inner circle of the **Light Control**.

3. To turn on the side light, click the outer circle of the **Light Control**.

    A blue "light beam" appears where you clicked, indicating the direction of the light.

4. To change the direction of the side light, drag the light beam around the outer circle.

    The current light inclination is displayed in the **I** field and the direction is displayed in the **D** field. You can also enter values directly into these fields. The valid range is 0° to 359° for direction and 45° to 90° for inclination.

Related Topics

Adjust the Rendering of 3D Images

Note: You can adjust the rendering for 3D images only. This can be done in the **Side-by-Side Viewer** and the **MultiViewer**.

The 2D/3D rendering value determines how the data representing an exhibit is depicted visually: as a 2D image, a 3D image, or a combination of 2D and 3D.

For bullet exhibits and primer 3D DFF images, the default 2D/3D rendering value is 30.

Note: In the Image Information View (page 304), the 2D/3D rendering value is 0 for all images, except for 3D LEAs or GEAs and primer 3D DFF images which have a default value of 100.

Setting the 2D/3D rendering to 100 makes the topology of the image surfaces more evident due to the rendering of depth. In addition, visual noise, such as shadows or primer residue, is removed when images are rendered as 3D. To further enhance the relief, you can amplify the 3D Elevation (page 197).

In the example below, the effect of changing the rendering value is shown using a primer 3D DFF reference and test exhibit.

2D/3D rendering = 0   2D/3D rendering = 100
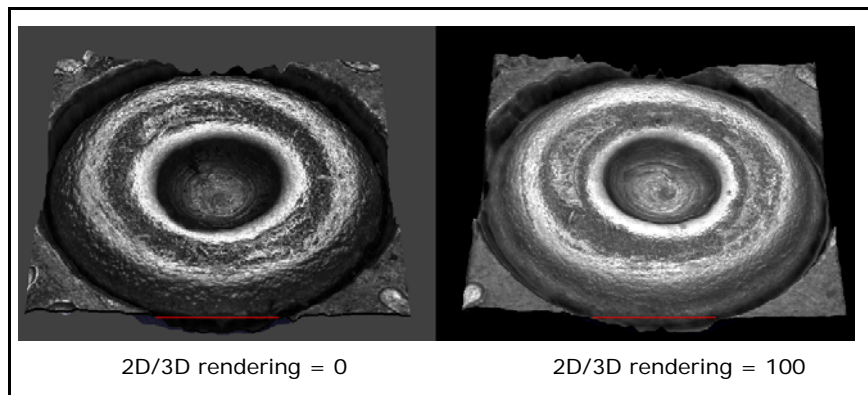
To adjust the rendering:

1. If you want to adjust the rendering for both images simultaneously, click the **Lock** button in the **2D/3D Rendering Control**.

   For more information about the viewer and the location of these controls, see Bullet Side-by-Side Viewer (page 355) or Cartridge Case Side-by-Side Viewer (page 347).

2. To display an image with the maximum level of 3D, set the value to 100.

   You can enter a value directly, or you can use the up and down arrows or one of the sliders to set a value. For more information about using these controls, see Using the Image Manipulation Controls (page 171).

3. To display an image as 2D only, set the value to 0.

4. To display an image as a mixture of 2D and 3D, set the value between 1 and 99.

Related Topics

Open the Side-by-Side Viewer (page 163)

Using the Image Manipulation Controls (page 171)

Adjust the 3D Elevation of 3D Images (page 197)

Cartridge Case Side-by-Side Viewer (page 347)

Bullet Side-by-Side Viewer (page 355)

Adjust the 3D Elevation of 3D Images

Note: You can adjust the 3D elevation for 3D images only.

3D elevation is a measure of the differences in height along the z-axis. Increasing the 3D elevation increases the appearance of the elevation of the peaks on the image surface, thus exaggerating the difference between the peaks and valleys. The result is a more pronounced surface topology.

Tip: Set the 2D/3D Rendering (page 195) value to 100 before increasing the 3D elevation. The texture of the exhibit surface is enhanced and visual noise is removed from the image. This technique is especially useful in the case of lead bullets, which tend to melt or become deformed when fired.
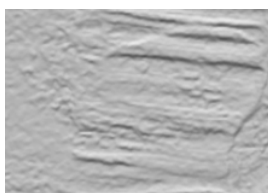
2D/3D rendering = 100   2D/3D rendering = 100
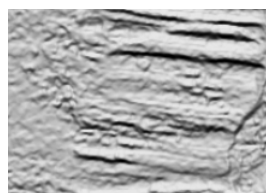
3D elevation = 25   3D elevation = 75

To adjust the 3D elevation:

1. If you want to adjust the 3D elevation for both images simultaneously, click the **Lock** button in the **3D Elevation Control**.

    For more information about the viewer and the location of these controls, see Bullet Side-by-Side Viewer (page 355) or Cartridge Case Side-by-Side Viewer (page 347).

2. To increase the elevation of image peaks in the Bullet Side-by-Side Viewer (page 355) or Cartridge Case Side-by-Side Viewer (page 347), set the **3D elevation** field to a value that is greater than 25 (the default).

    You can enter a value directly, or you can use the up and down arrows or one of the sliders to set a value. For more information about using these controls, see Using the Image Manipulation Controls (page 171).

3. To decrease the elevation of image peaks, set the **3D elevation** field to a value that is less than 25.

Related Topics

Open the Side-by-Side Viewer (page 163)

Using the Image Manipulation Controls (page 171)

Adjust the Rendering of 3D Images (page 195)

Cartridge Case Side-by-Side Viewer (page 347)

Bullet Side-by-Side Viewer (page 355)

Stretch or Shrink Bullet Images

You can vertically stretch or shrink one or both of the mosaics in the **Comparison** view. This feature is useful when:

- Analyzing deformed bullets.
- One of the LEAs that is being analyzed is wider than the other.

  This may be the case if one of the images is of poorer quality than the other, resulting in a more compressed image.
- Comparing IBIS Heritage images to IBIS TRAX-3D images.

The goal of stretching or shrinking a mosaic is to make the width of the two LEAs being examined equal so that you can determine if the stria patterns coincide. When using the stretch feature, you may need to enhance the images by adjusting the light and contrast.

You can stretch or shrink an image by 20 percent. The default is 0 for the reference image and test image, which means no change is applied. In the following example, the stretch factor of the test exhibit has been set to 5.

Before	After
Ref Stretch = 0 Test Stretch = 0	Ref Stretch = 0 Test Stretch = 5
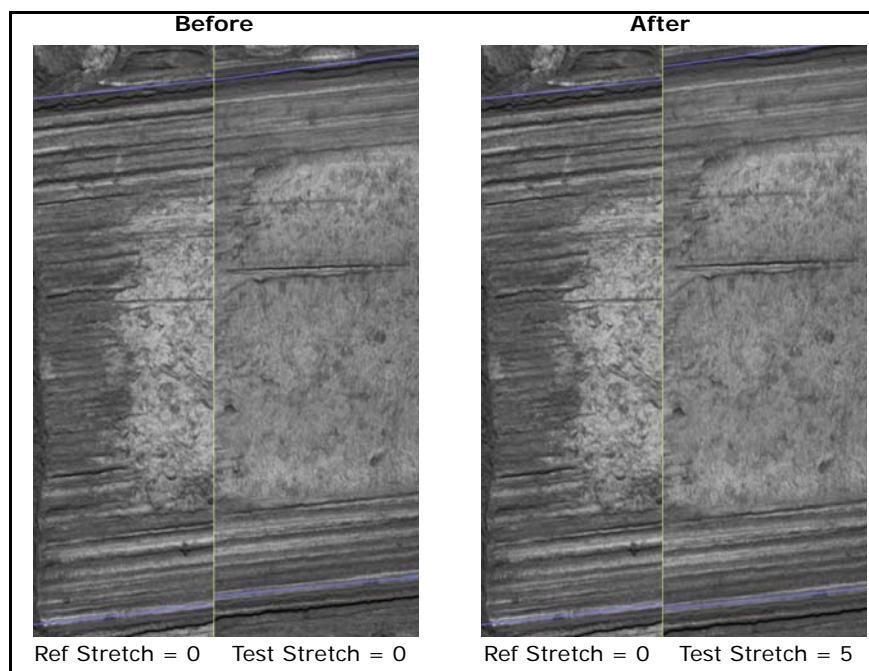
To stretch or shrink a bullet mosaic:

- In the Bullet Side-by-Side Viewer (page 355), set the change factor to a value between -20 and 20.

  You can enter a value directly, or you can use the up and down arrows or one of the sliders to set a value. For more information about using these controls, see Using the Image Manipulation Controls (page 171).

  You may need to move one of the mosaics to align the striae. For more information, see Move Bullet Mosaics (page 177).

Related Topics

Open the Side-by-Side Viewer (page 163)

Using the Image Manipulation Controls (page 171)

Bullet Side-by-Side Viewer (page 355)

Visualize Bullet Profiles

Bullet profiling is a tool that you can use to analyze the surfaces of the two bullets that are displayed in the **Side-by-Side Viewer**.

What Is a Bullet Profile?

If you were to cut a bullet in half and look at the resulting cross-section, you would be able to distinguish the elevated groove engraved areas (GEAs) and the indented land engraved areas (LEAS). For the profile analysis, the data has been flattened, where the larger height difference between LEAs and GEAs is reduced to provide better focus on the details of the surface texture.
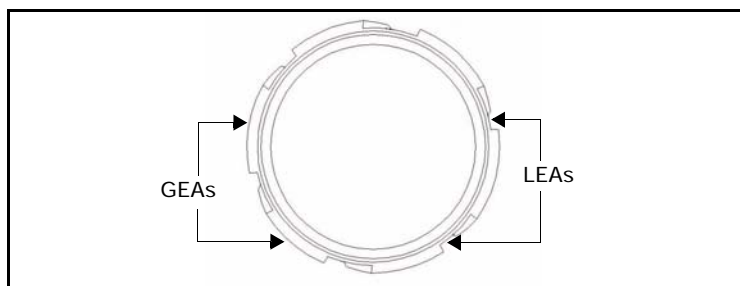
A bullet profile is a two-dimensional graph that represents the contour of such a cross-section of a bullet's surface. However, the profile shows much more detail than is revealed to the eye. The points on the graph represent the height measurements of the bullet's surface features. Peaks correspond to elevated regions on a bullet's surface and valleys correspond to deeper surface areas.
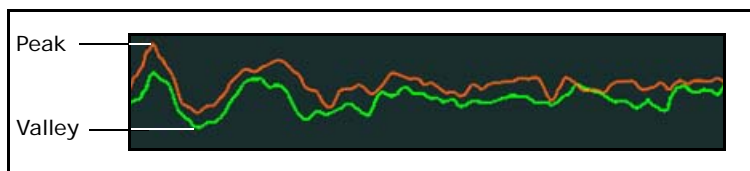
Two profiles are displayed in the **Profile** view, which is located below the **Comparison** view. The orange profile represents the surface of the test exhibit and the green profile represents the surface of the reference exhibit. The more similar the two profiles are, the more likely it is that the two exhibits match.

Profile Modes

There are two profile modes: Hairline Profiling and Profile Lines. When Hairline Profiling is selected, the hairline that separates the reference exhibit from the test exhibit is used to generate the bullet profiles and compute the CMS. When Profile Lines is selected, two separate lines appear, one on the reference exhibit and one on the test exhibit. The position of the hairline or profile lines determines which area is profiled and are also used to compute the CMS.

Relationship Between the Comparison View and the Profile View

To analyze bullet profiles, you must understand the relationship between what you see in the **Comparison** view and what you see in the **Profile** view.

Both the **Comparison** view and the **Profile** view show the bullet's surface. However, it is represented differently in each view. The **Comparison** view shows you a 2D or 3D representation of the bullet's surface and its markings, as you would see using a comparison microscope. The two graphs in the **Profile** view plot the height measurements of the points along the hairline or the two profile lines that are in the **Comparison** view.

The position of the hairline or profile lines determines which data slice in the **Comparison** view is represented in the **Profile** view. In other words, the line represents the place at which you cut the bullet in half to reveal a cross-section. If you were to cut the bullet in different places, a different cross-section would result each time. Similarly, as you move the hairline or profile lines, the selected data slice changes, and the profiles change correspondingly.
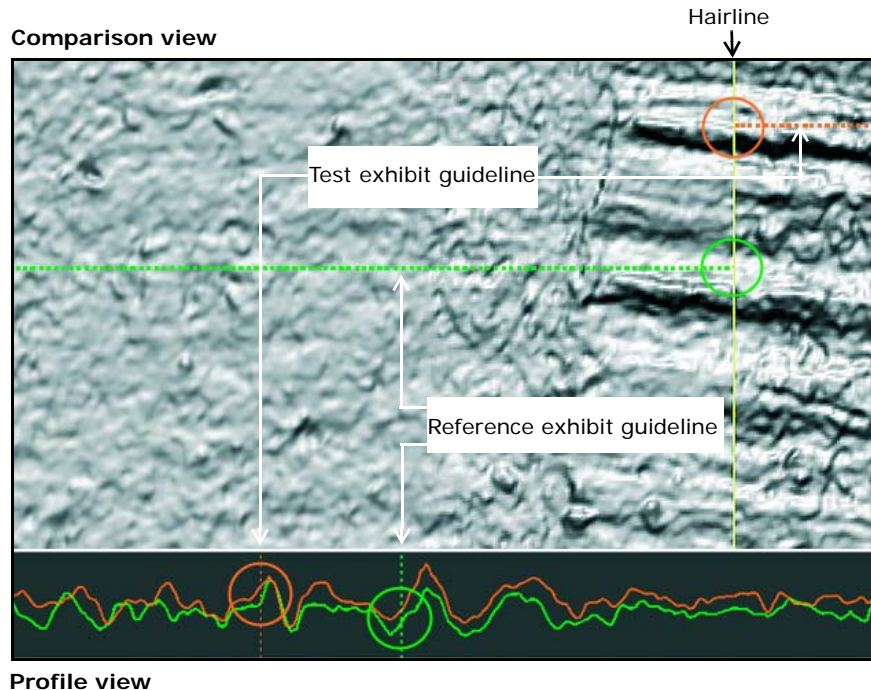
In the above example, the area circled in orange in the **Profile** view corresponds to the area circled in orange in the **Comparison** view. The horizontal guidelines in the **Comparison** view are used to help you visually locate a particular point of interest in the Profile view. When you move a guideline in the Comparison view, the corresponding (vertical) guideline moves in the Profile view. For example, if there is a particular peak in the **Comparison** view that you want to locate in the profile, position the horizontal guideline at that point in the **Comparison** view. The corresponding vertical guideline in the **Profile** view moves to indicate where that point is located along the graph.

To analyze bullet profiles:

1. On the Bullet Side-by-Side Viewer (page 355) toolbar, do one of the following:

    *   Click **Hairline Profiling** to base the bullet profiles on the position of the hairline.

    Note: To use hairline profiling, the images must have some overlap. For more information, see Overlap Images (page 181).

    *   Click **Profile Lines** to base the bullet profiles on the vertical profile lines that can be positioned independently on each bullet exhibit. This is the default.

    Tip: To set your profile preferences, see Setting Your Preferences (page 55).

2. In the **Comparison** view, do one of the following:

    *   If you clicked **Hairline Profiling** in the previous step, click the hairline and drag it into position.
    *   If you clicked **Profile Lines** in the previous step, click the blue **Move Handle** at the end of a vertical profile line and drag the line to the position on which you want the bullet profiles based.

    A move handle is located at the end of each profile line and guideline

3. In the **Comparison** view, click the blue **Move Handle** at the end of a horizontal guideline and drag it to the area of interest so that you can locate that area in the **Profile** view.

    As you move the guideline, the corresponding guideline in the **Profile** view moves.

Related Topics

Open the Side-by-Side Viewer (page 163)

Calculate the Number of Consecutive Matching Striae (page 205)

Bullet Side-by-Side Viewer (page 355)

Calculate the Number of Consecutive Matching Striae

Note: This feature applies to bullet exhibits only.

Consecutive matching striae (CMS) is a pattern-matching technique that compares a given reference LEA and test LEA to determine if there are matches between clusters of consecutive striae. If your visual analysis of two LEAs identifies potentially matching striae patterns, you can corroborate your analysis by assessing that area for consecutive matching striae.

Note: The CMS tool is still under development. A unique and complete set of the topography analysis parameters that reproduces the published CMS method's results is not yet available. Therefore, you can change certain parameters in the Configure CMS dialog box to yield results that you judge to be satisfactory.

CMS Scores

When you calculate the CMS, matching groups of consecutive striae (CMS groups) and individual striae are highlighted in the **Comparison** view. CMS scores are displayed in the **Consecutive Matching Striae** view.
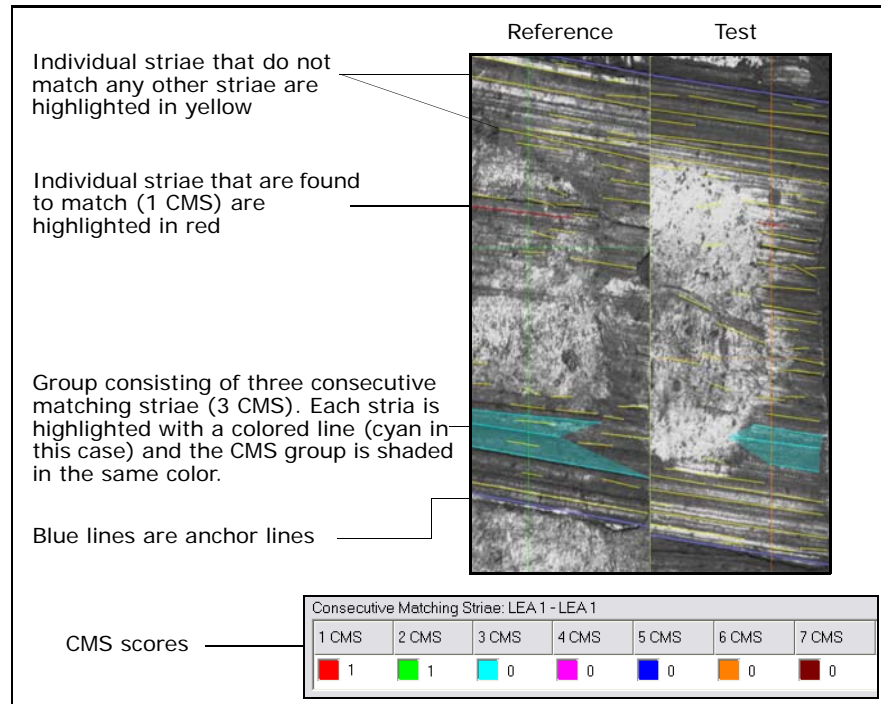
The CMS is calculated either along the hairline that separates the reference exhibit from the test exhibit, or along the two profile lines that can be positioned separately for the reference exhibit and the test exhibit. These are the same lines that are used to generate bullet profiles. For more information, see Visualize Bullet Profiles (page 201).

Note: The CMS scores in the grid are color-coded to match the striae color in the **Comparison** view.

Twelve scores, labeled 1 CMS to 12 CMS, are generated. 1 CMS indicates that there is a single stria in the reference LEA that matches a stria in the test LEA. 2 CMS indicates that two consecutive striae in the reference LEA match two consecutive striae in the test LEA, and so on, up to 12 consecutive striae. The score indicates how many CMS groups with a particular number of consecutive matching striae were found. For example, a score of 1 in the 3 CMS column indicates that MATCHPOINT+ found one CMS group consisting of three consecutive matching striae.

The resulting CMS scores indicate how likely it is that the striae on the two exhibits were created by the same firearm.

Note: The CMS score is sensitive to the CMS options. For more information, see Configure CMS Options (page 209).

To calculate the CMS:

1. On the Bullet Side-by-Side Viewer (page 355) toolbar, select the vertical line that will be used to calculate the CMS:

   • Click the **Hairline Profiling** button to calculate the CMS on the position of the hairline.

   Note: The images must have some overlap. For more information, see Overlap Images (page 181).

   • Click the **Profile Lines** button to calculate the CMS on the vertical profile lines that can be positioned independently on each bullet exhibit. This is the default.

2. In the **Navigator** view of the Bullet Side-by-Side Viewer (page 355), move the bullet exhibits until the reference LEA and the test LEA that you want to compare are visible in the **Comparison** view. The entire LEA does not have to be in view.

   You can perform a CMS calculation on a pair of LEAs only if 3D data is available.

Note: The area that is used in the CMS computation depends on the location of the hairline or profile lines. Adjust the position as required. For more information, see Visualize Bullet Profiles (page 201).

3. On the toolbar, click **Calculate CMS**.

    In the **Comparison** view, matching striae are highlighted in color. The CMS scores are displayed in the **Consecutive Matching Striae** view.

4. To show or hide CMS highlighting, click the arrow next to the **Show/Hide the CMS** button on the toolbar and select one of the following:

    - To highlight CMS groups only, select **CMS Only**.
    - To highlight striae without showing the CMS groups, select **Striae Only**.
    - To highlight CMS groups and individual striae, select **CMS and Striae**.
    - To hide all CMS highlighting, click **Show/Hide the CMS** on the toolbar.

5. To calculate the CMS on a different pair of LEAs, repeat steps 2 and 3.

Related Topics

Open the Side-by-Side Viewer (page 163)

Visualize Bullet Profiles (page 201)

Bullet Side-by-Side Viewer (page 355)

Configure CMS Options

Note: This feature applies to bullet exhibits only.

The CMS configuration options define the criteria that are used to identify individual striae and CMS groups. You can:

- Configure MATCHPOINT+ to look for a succession of peaks or a succession of valleys to calculate the CMS.
- Define which markings will be considered valid striae and which will be ignored. There are two criteria:
  - The Relative Height Difference specifies how high peaks must be in relation to the mean level of all surface features in the selected LEA. If CMS is calculated using valleys, this option determines how deep valleys must be relative to the mean level.
  - The Minimum Length is used to exclude markings that are not significant (too short).
- Define the Match Tolerance
  When consecutive striae are created on different bullets by the same firearm, the amount of vertical space between two adjacent striae can differ somewhat from exhibit to exhibit. The Matching Stria Tolerance specifies how much of a difference, in pixels, is acceptable and, therefore, considered insignificant.

To configure the CMS criteria:

1. On the Bullet Side-by-Side Viewer (page 355) toolbar, click the arrow next to the **Calculate CMS** button.

2. Select **Configure**.

   The Configure CMS dialog box (page 365) opens.

3. In the **Find Striae Using** section, do one of the following:

   - If you want MATCHPOINT+ to look for a succession of peaks, select **Peaks**.
   - If you want MATCHPOINT+ to look for a succession of valleys, select **Valleys**.

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4. In the **Relative Height Difference** field, enter the tolerated height difference, in percent.

    In Peak mode, a given peak will be included if its height, relative to the mean level of surface features in the LEA, is greater than or equal to this value. In Valley mode, a given valley will be included if its depth, relative to the mean level, is greater than or equal to this value.

5. In the **Minimum Length** field, do the following:

    • Select the unit of measure (mm or inch).

    • In the text box, enter the minimum stria length. Striae that are shorter than the specified length will be ignored.

6. In the **Match Tolerance** field, enter the difference in vertical spacing (in pixels) that will be tolerated between two sets of consecutive striae that are being compared.

    If the difference is less than or equal to this value, the two sets of consecutive striae will be considered a match.

7. Click **OK**.

Note: If you have already performed the CMS calculation, you must recalculate the CMS for the new settings to take effect.

Save a Screenshot of the Comparison View

The images that are displayed in the **Comparison** view can be saved as a bitmap file or copied to the Windows clipboard for pasting into another application. You can choose to save just the image, or the image and its related information, such as the contrast and brightness settings.

The following is an example of an image that was saved with exhibit information.
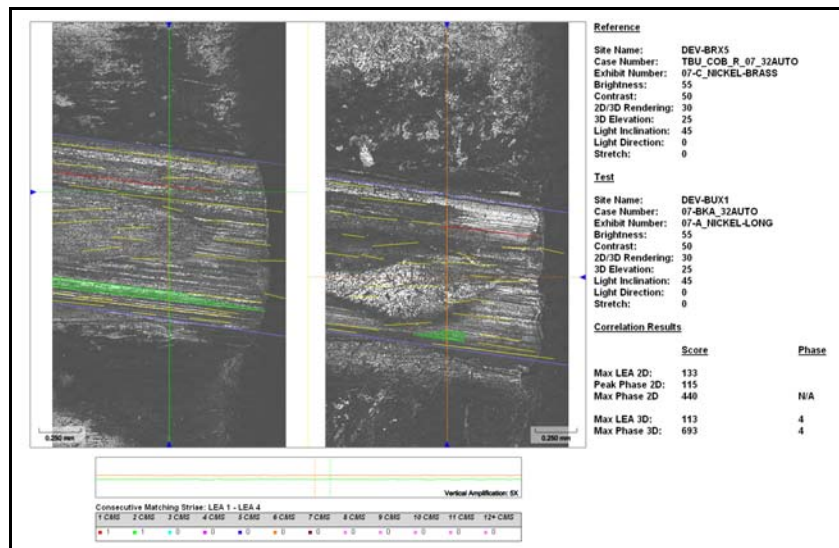
To save a screenshot of the Comparison view as a bitmap file:

1. On the Cartridge Case Side-by-Side Viewer (page 347) or the Bullet Side-by-Side Viewer (page 355) toolbar, click **Screenshot**.

   The Screenshot dialog box (page 369) opens.

2. Select **Save to file**, if not already selected.

3. Click the ellipsis (...) next to the **Save to file** field.

   The **Save as screenshot** dialog box opens.

4. Select the folder in which you want to save the file, enter a file name in the **File name** field, and click **Save**.

   The **Save as screenshot** dialog box closes.

5. If you want to save exhibit information along with the image, select the **Add text information** check box.

6. Click **OK**.

    A screenshot of the **Comparison** view is saved as a bitmap file to the specified folder.

To copy a screenshot of the Comparison view image to the clipboard:

1. On the Cartridge Case Side-by-Side Viewer (page 347) or the Bullet Side-by-Side Viewer (page 355) toolbar, click **Screenshot**.

    The Screenshot dialog box (page 369) opens.

2. Select **Copy to clipboard**.

3. If you want to save exhibit information along with the image, select the **Add text information** check box.

4. Click **OK**.

    A screenshot of the **Comparison** view is copied to the clipboard. You can now paste the image into another application.

Related Topics

Open the Side-by-Side Viewer (page 163)

Cartridge Case Side-by-Side Viewer (page 347)

Bullet Side-by-Side Viewer (page 355)

Export Cartridge Case Images

You can export any of the individual images that are associated with the reference exhibit and the test exhibit that are currently displayed.

Unlike saving a screenshot of the **Comparison** view, the export feature allows you to specify the individual images you want to export. Each selected image is saved as a graphic file. You can choose from among several formats such as jpg and png. An example is shown below:
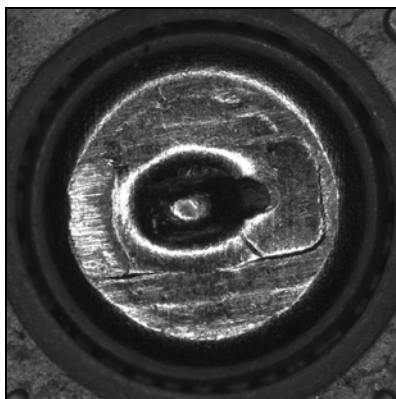
Note: Of the two primer images, you can only export the primer all-in-focus image. The image is listed by name in the Export dialog box.

To export images:

1. From the **Reference Exhibit** list in the Export Images dialog box (page 373), select the check boxes for the images that you want to export.

2. From the **Test Exhibit** list, select the check boxes for the images that you want to export.

3. Change the root file names, if necessary.

   Suffixes are applied to the root file name to indicate the image type. For example, if the root file name is EX-CC-9MM, the resulting name of a firing pin ring light image is:

   EX-CC-9MM - Firing Pin- Ring Light

4. Select the graphic file type. Your options are:

    • PNG - Portable Network Graphic
    • JP2 - JPEG 2000
    • RAW

    Note: The JP2 and RAW file formats are not recognized by default programs on your computer. To view these files, you need to use a program that supports the file format.

5. In the **Export Path** field, specify the folder where the files should be saved.

    Tip: You can click the ellipsis (...) to browse to the folder.

6. Click **Export**.

    Each selected reference and test image is exported as a file of the specified type and is saved to the specified folder.

    If a file name already exists, an overwrite confirmation message is displayed.

Related Topics

Print Images

You can print the reference and test images that are displayed in the **Comparison** view. You can also preview a print job before sending it to the printer.

To preview and print images:

1. On the Bullet Side-by-Side Viewer (page 355) or the Cartridge Case Side-by-Side Viewer (page 347) toolbar, click **Print.**

   The Print dialog box opens.

2. Click **Print Preview.**

   The Print Preview window (page 371) opens.

3. If there are multiple pages, you can navigate through them using the **Next Page** and **Prev Page** buttons.

4. To change the magnification level, click **Zoom In** or **Zoom Out**.

5. To print the images:

   - Click **Print**.

     The Windows **Print** dialog box opens in which you can select a printer and specify print properties before printing.

   - Click **OK**.

     The images are printed and the dialog box closes.

6. To close the dialog box, click **Close**.

To print images without previewing them:

1. On the Bullet Side-by-Side Viewer (page 355) or the Cartridge Case Side-by-Side Viewer (page 347) toolbar, click **Print.**

   The Windows **Print** dialog box opens in which you can select a printer and specify print properties before printing.

2. Click **OK**.

   The images are printed and the dialog box closes.

Reset Values

You can reset the settings that you have changed, such as lighting, contrast, and 3D elevation, to their default values.

To reset values:

• On the Bullet Side-by-Side Viewer (page 355) or the Cartridge Case Side-by-Side Viewer (page 347) toolbar, click **Reset**.

All the settings that you have changed are reset to their default values.

Related Topics

Open the Side-by-Side Viewer (page 163)

Cartridge Case Side-by-Side Viewer (page 347)

Bullet Side-by-Side Viewer (page 355)

Save Side-by-Side Viewer Settings

You can save the settings that you have changed, such as lighting, contrast, and 3D elevation. When you save your settings they become your default preferences. The next time you open the **Side-by-Side Viewer**, your preferences will be applied.

> **Tip:** To set your preferences, see Setting Your Preferences (page 55).

To reset values:

- On the Side-by-Side Viewer (page 345) toolbar, click **Save Settings**.

  All the settings that you have changed are saved as your preference.

Related Topics

Setting Your Preferences (page 55)

Open the Side-by-Side Viewer (page 163)

Cartridge Case Side-by-Side Viewer (page 347)

Bullet Side-by-Side Viewer (page 355)

Working with Hits

This section covers the following topics:

Overview

Hits must be recorded in MATCHPOINT+ for reference and statistical purposes. You can record both confirmed and unconfirmed hits. A confirmed hit is one that has been verified by a firearm examiner using a conventional comparison microscope. You can modify hits after they have been added, by adding comments or changing their status from unconfirmed to confirmed. Only unconfirmed hits can be deleted.

Note: You must have Firearm Examiner or Expert Acquisition Technician privileges to create, modify, and delete hits.

Closing the Loop

When an operator enters a hit in the MATCHPOINT+ database, the hit is copied to the Correlation Server. If a hit is made between two different sites, it must be recorded manually at each site. This is referred to as closing the loop.

For example, a hit is confirmed in Tampa, Florida from a matching exhibit that was acquired in Orlando, Florida. The firearm examiner in Tampa must enter the hit in the database at the Tampa site, then contact the Orlando site and have them record the hit in their database as well. Only the agency initiating and confirming the microscopic comparison of the hit will be credited for the hit.

After the hit is recorded, an orange bull's-eye appears on the case folder to indicate that a hit has been made.

Folder Icon	Description
	None of the exhibits contained in the case have been implicated in a hit.
	At least one of the exhibits contained in the case has been implicated in a hit.

Add a Hit

Hits should be recorded in MATCHPOINT+ for reference purposes. You can add confirmed and unconfirmed hits to MATCHPOINT+.

You cannot add a hit if:

- Both exhibits belong to the same case.
- Both exhibits have a Test Fire event type.
- Both exhibits belong to sites that are outside of your jurisdiction.
- One exhibit has an event type of Demonstration, Test and QA and the other exhibit has an event type other than Demonstration, Test and QA. You can create a hit, however, between two Demonstration, Test and QA exhibits.
- The LEA count, twist direction, and/or caliber family of one bullet exhibit differs from that of the other bullet exhibit.
- The firing pin shape or caliber family of one cartridge case exhibit differs from that of the other cartridge case exhibit.
- Your system is connected to a Correlation Server at the regional level.

Note: For facilities that have connections to both a Data Concentrator and a Correlation Server, hits should always be created on the MATCHPOINT+ system that is connected to the Data Concentrator. This allows the replication process to ensure that the hit information is available to all systems.

To add a hit:

1. On the Side-by-Side Viewer (page 345) toolbar, click **Hit**.

   The Add Hit dialog box (page 381) opens with all mandatory fields already filled in.

   For information about how to open the **Side-by-Side Viewer**, see Open the Side-by-Side Viewer (page 163).

2. Enter additional information in the **Comments** field, if required.

3. If the hit has been confirmed, select the **Confirmed** check box.

   - Click the down arrow to open the calendar and then select the date that the hit was confirmed.

Note: A date is recorded for a confirmed hit. The default date is the day that the hit is confirmed.

4. Click **OK**.

The hit is created. To see the hit, open the Hits window (page 224).

Tip: To print the details, hold your cursor over the **Hit Count** area and select **Print** from the **Hit Information** display.

Related Topics

Open the Side-by-Side Viewer (page 163)

Modify a Hit (page 225)

Cartridge Case Side-by-Side Viewer (page 347)

Bullet Side-by-Side Viewer (page 355)

View a Hit

You can view a list of all the hits that have been entered at your MATCHPOINT+ workstation. The details of an individual hit can also be displayed in the **Side-by-Side Viewer**.

In the Hits window (page 383), a colored site icon appears beside hits that have at least one exhibit in your jurisdiction.

To display a list of hits:

- From the Navigation tree (page 34), click **Hits**.

  The Hits window (page 383) opens to the right of the Navigation tree.

  Hits are sorted by the Creation Date column by default.

  Tip: To create a filter to customize the list display, see Working with Filters (page 49).

To display hit information:

- From the Side-by-Side Viewer (page 345), move your cursor over the **Hit Count** area.

  The **Hit Information** window displays the hit details. You can modify or print from this window.

  Note: The Hit Information is displayed only if a hit is indicated in the count area.

Related Topics
Add a Hit (page 222)
Modify a Hit (page 225)
Delete an Unconfirmed Hit (page 226)
Hits Window (page 383)

Modify a Hit

You can modify the comments or mark an unconfirmed hit as confirmed. You cannot modify a hit that is outside your jurisdiction.

Note: Hits can be confirmed only once. After a hit is confirmed it cannot be deleted.

To modify a hit:

1. In the **Hits** list, double-click the hit that you want to modify.

    The Modify Hit dialog box (page 381) opens.

    For more information on how to open the **Hit** list, see View a Hit (page 224).

2. In the **Comments** field, modify or add additional comments.

3. If the hit had not been confirmed when the hit was recorded in MATCHPOINT+, but has now been confirmed, select the **Confirmed** check box.

    *   Click the down arrow to open the calendar and then select the date that the hit was confirmed.

    After a hit has been confirmed, you cannot change its status to unconfirmed.

4. Click **OK**.

    The **Modify Hits** dialog box closes.

Related Topics

View a Hit (page 224)

Delete an Unconfirmed Hit (page 226)

Hits Window (page 383)

Delete an Unconfirmed Hit

An unconfirmed hit that turns out to be false should be deleted. You cannot delete a hit that has been confirmed or a hit that is outside your jurisdiction.

To delete an unconfirmed hit:

1. In the Hits list, select the unconfirmed hit that you want to delete.

    For more information on how to open the Hits list, see View a Hit (page 224).

2. On the toolbar, click **Delete**.

    A message appears, asking you to confirm the deletion.

3. Click **Yes**.

    The hit is deleted.

Related Topics
View a Hit (page 224)
Hits Window (page 383)

Print a Hit

You can print the detailed information about hits that are displayed in the hits list. All printouts include the page count and current date for record keeping.

To print a hit:

1. In the Hits list, select the hit you want to print.

2. From the menu bar, select **File** > **Print**, or right-click and select **Print** from the context menu.

    The Print dialog box appears for you to specify a printer and the properties.

    Tip: To confirm the content before you print, select **Print Preview**.

3. Click **Print**.

    The hit information is sent to the printer you selected.

Related Topics

View a Hit (page 224)

Hits Window (page 383)

Creating Reports

This section covers the following topics:

Overview

MATCHPOINT+ allows users who have the **Report** role to create, list, view, and print reports. Reports can be generated for the following types of information:

- Cases
- Exhibits
- Hits
- Correlation Requests

Typically, a report consists of one or more charts and data that is arranged in columns.

Creating Reports from Templates

Reports are created from templates. You can either use a standard template or create a custom template.

- Standard templates

  MATCHPOINT+ comes with a set of default templates. These templates cannot be modified.

- Custom templates

  If none of the standard templates meet your needs, you can create a custom template. Using the New Custom Report wizard, you select the type of report you want to create, the fields you want to include, the order in which they are displayed, how data is sorted, and the type of chart to include.

Standard Report Templates

The following table describes the standard MATCHPOINT+ report templates that are available. When you create a report based on a template, you must specify a date range.

Report Template	Description
Acquisitions By Site	A report showing the total number of acquisitions for a location (site) during a specific period. The report is organized by site name and includes site information concerning the acquisition date, type (cartridge case or bullet), law agency, case ID, exhibit ID, event type, and GRC (General Rifling Characteristics).
Cases By Law Agency	The resulting report is based on cases grouped by law agency, case event type and the case creation date. This template includes a bar chart. The date range is based on the case creation date.
Cases By Occurrence Date	The resulting report is based on cases grouped by the occurrence year, month and the event type. This template includes a bar chart. The date range is based on the case occurrence date.
Correlation Requests By Site	A report showing the total number of correlation requests for a location (site) during a specific period. The report is organized by site name and includes correlation request information concerning the creation date, correlation type, status, user name, case ID, exhibit ID, exhibit type, and exhibit event type.
Exhibits Acquired By User	The resulting report is based on exhibits grouped by the users who acquired them, the year the exhibit was acquired and the month. This template includes a bar chart. The date range is based on the exhibit acquisition date.
Exhibits By Caliber	The resulting report is based on exhibits grouped by the acquisition site, the exhibit type and the caliber. This template includes a bar chart and a cross-tabulation table. The date range is based on the exhibit acquisition date.

Report Template	Description
Exhibits By Event Type	The resulting report is based on exhibits grouped by the exhibit type, the event type, such as Homicide or Assault with a Deadly Weapon, and the acquisition month. This template includes a pie chart, a bar chart, and a cross-tabulation table. The date range is based on the exhibit acquisition date.
Exhibits By Evidence Type	The resulting report includes a pie chart and a bar chart that indicate the ratio of bullets versus cartridge cases. The date range is based on the exhibit acquisition date.
Exhibits By GRC	The resulting report is based on exhibits grouped by the exhibit type, the caliber type and the general rifling characteristics. This template includes a bar chart. The date range is based on the exhibit acquisition date.
Exhibits Linked To Firearms	The resulting report is organized by the firearm. The report lists the test fire exhibits that are associated with the description of the firearm. Firearm exhibits that do not have an associated cartridge case or bullet exhibit are not represented.
Firearms By Make	A report listing all firearms according to the firearm make. The report is organized by make, model, caliber, firearm type, site, case and exhibit ID, and creation date.
Firearms Linked To Exhibits	The resulting report is organized by the test fire cartridge case or bullet exhibit. The report lists the details of firearms that are associated with the description of the test fire exhibit. Test fire exhibits that do not have an associated firearm are not represented.
Hits By Cases	The resulting report is based on hits according to the cases to which they belong. This template includes a bar chart. If the report is based on unconfirmed or all hits, the date range is based on the hit creation date. Otherwise, the date range is based on the hit confirmation date
Hits By Creation Date	A report listing all hits during a specific period. The report provides hit information concerning the creation and confirmation date, exhibit type, caliber, site, case and exhibit ID.

Report Template	Description
Hits By Exhibits	The resulting report is based on hits according to the exhibits to which they belong. This template includes a bar chart. If the report is based on unconfirmed or all hits, the date range is based on the hit creation date. Otherwise, the date range is based on the hit confirmation date
RBI Exhibits By Law Agencies	The resulting report is based on Rapid Brass Identification (RBI) exhibits grouped by law agency, the acquisition site and exhibit creation date. This template includes a bar chart. The date range is based on the exhibit creation date.

Create a Report

Reports are created from templates. The standard templates that are supplied with Report Manager must be used as is. They cannot be modified. For more information, see Standard Report Templates (page 232). If the standard templates do not meet your needs, you can create and use a custom template instead.

After you select the template you want to use to create the report, you will be prompted to enter the report parameters. The parameters include a date range and a selection of available sites for the report content.

To create a report:

1. From the **File** menu, select **New > Report** or click **New Report** on the toolbar.

   The New Report dialog box (page 390) opens.

2. Select the template you want to use to create the report by doing one of the following:

   - To use a standard template, click **Standard Templates** and select a template from the list.

   - To use a custom template that has already been created, click **Custom Templates** and select a template from the list.

   Note: To create and use a new custom template, see Create a Custom Template (page 247).

3. Enter information in the **Comments** field.

   This information will appear in the Comments column in the Reports window (page 387). This field is mandatory.

4. Click **Generate**.

   The Report Parameters dialog box (page 392) opens. For more information, see Specify the Report Parameters (page 241).

> **Note:** If you use a standard template, MATCHPOINT+ automatically assigns a name to the report based on the selected template. If you regenerate the same report several times, a suffix (2, 3, 4, etc.) is attached to the name to distinguish it from previously generated versions.

5. Click **Next**.

    The **Report Format** dialog box opens.

6. Select the report formats that you want to generate.

7. Click **Finish**.

Related Topics

View a Report (page 238)

Specify the Report Parameters (page 241)

Create a Custom Template (page 247)

Display a List of Reports

Display the **Reports** window to view all of the reports that you have created. From this window, you can select a report to view, print, or delete it. You can also create a new report.

To display a list of reports:

- From the Navigation tree (page 34), click **Reports**.

  The Reports window (page 387) opens to the right of the Navigation tree. Existing reports are sorted by name.

Related Topics

Create a Report (page 235)

View a Report (page 238)

Delete a Report (page 246)

View a Report

Reports that you have created in the default PDF format can be opened in Adobe® Reader®. If you created other report types and have the appropriate programs installed on your system, you can also open HTML, RTF and Excel formats.

Note: To view a report, the report's status must be Done.

To view a report:

1. Display a list of reports (page 237), if not already open.

2. Right-click the report and select **Open**.

3. Select a report format.

   Only the formats that have been created can be opened, see Select a Report Format (page 244).

Related Topics

Create a Report (page 235)

Delete a Report (page 246)

Print a Report

To print a report, you must first open it using the appropriate program, for example a PDF report format will open in Adobe Reader. To open other report formats, you must have the required program installed on your computer.

To print a report:

1. Display a list of reports (page 237), if not already open.

2. In the **Reports** list, right-click and select **Open**.

3. Select a report format.

   The report opens in the appropriate program.

4. On the toolbar, click **Print**.

Related Topics

Copy a Report

After you create a report in any report format, you can copy it to a folder on your computer or to an external drive.

To copy a report:

1. Display a list of reports (page 237), if not already open.

2. In the **Reports** list, right-click and select **Copy**.

3. Select the report format.

   Only the formats that have been created can be copied, see Select a Report Format (page 244).

4. Browse and select a location to copy the report, or create a new folder.

5. Click **OK**.

Related Topics

View a Report (page 238)

Print a Report (page 239)

Specify the Report Parameters

The report parameters that you can select include the date range and the sites for the report content. The date range limits the data that appears in the report to the time period indicated by the specified start and end date. The available sites are listed for you to filter the data content of a report.

If you are using a custom template, the date on which the range is based depends on what you selected in the **Report Title and Options** dialog box. For example, if the report type is Exhibits and you selected Date Occurred as the date element, exhibits with events that occurred within the specified date range will be retrieved and displayed in the report.

To set the report parameters:

1. Use one of the following procedures to create a report:

    - Create a report (page 235) using an existing template.
    - Create a custom report template (page 247).

      The Report Parameters dialog box (page 392) opens.

2. Specify a start date.

    - To use a preset date, click the down arrow in the first start date field and select one of the following options:
        - Today
        - Six months ago
        - One year ago
        - 01 January (of the current year)
    - To enter a specific date, do the following:
        - Click the down arrow in the second start date field.

The Calendar opens.
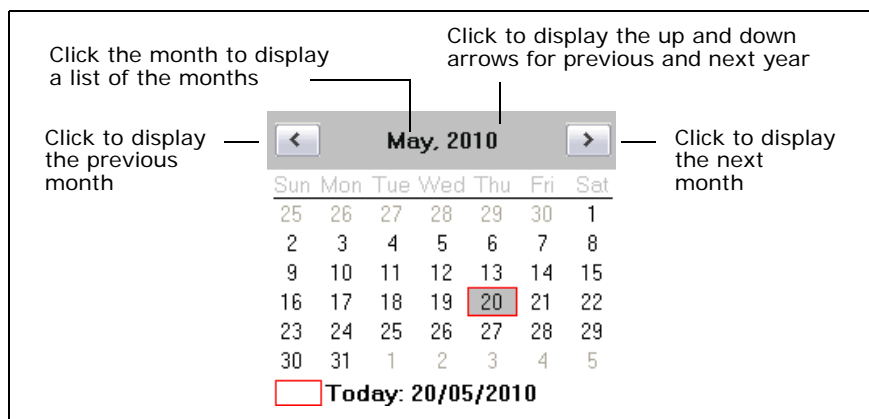
- Click the day on the calendar.

  The Calendar closes and the selected date is displayed in the date field.

3. Specify an end date by clicking the down arrow in the **Select an end date** field and selecting one of the following options:

   • Select your own date

     See step 2 for more information.

   • Today

   • Six months ago

   • One year ago

   • 01 January (of the current year)

📌 **Tip:** To limit the report data to a specific date, enter the same date in this field as in the **Select a start date** field.

4. For reports that are based on hits, you can choose to include confirmed, unconfirmed, or all hits. Select a Hits Option from the list.

5. For certain reports you can select **Show Subtotals Only**.

6. From the **Available Sites** list, select the sites for data content of the report.

7. Click **Next**.

   The Report Format dialog box (page 395) opens.

Related Topics

View a Report (page 238)

Delete a Report (page 246)

Select a Report Format

The default format for reports that you create is PDF. You can also create reports in HTML, RTF, and Excel formats. After a report is created, you can print it, or copy it to another folder on your computer or to an external drive.

When the report status is Done, the report is available in all the formats you selected.

To select a report format:

1. In the Report Format dialog box (page 395), select the formats you want for the report.

2. Click **Finish**.

   The report is generated. To view the report, see View a Report (page 238).

Related Topics

View a Report (page 238)

Print a Report (page 239)

Copy a Report (page 240)

Delete a Report Request

After you select a template and enter a date range, it takes some time to generate the report. During this time, the report status is Waiting. If you change your mind and do not want to continue with report creation, you can select the report and delete it to cancel the report request.

To delete a report request:

1. Display a list of reports (page 237).

2. Right-click the report and select **Delete**.

   A confirmation message opens.

3. Click **Yes** to delete the report request.

Related Topics

Delete a Report (page 246)

Delete a Custom Template (page 257)

Delete a Report

You can delete any report that you have created. If there are other users of the same MATCHPOINT+ system, you cannot delete the reports they created.

When you delete a report, all the formats that have been generated for the report are deleted at the same time.

To delete a report:

1. From the Navigation tree, click **Reports**.

    The Reports window (page 387) opens.

2. Select the report you want to delete.

3. Right-click and select **Delete** from the menu, or press DELETE.

    A warning message opens, prompting you to confirm if you want to delete the report.

4. Click **Yes**.

    The report is deleted.

Related Topics

Delete a Report Request (page 245)

Delete a Custom Template (page 257)

Create a Custom Template

You cannot modify any of the standard templates that come with MATCHPOINT+. If you are an Expert Acquisition Technician or a Firearm Examiner, you can create custom report templates.

A template is a document that defines the content and layout of a report so that you do not have to recreate it each time that you want to generate a report. It defines elements such as the fields that are included, how they are grouped and sorted, and the type of chart.

To create a custom template, you must do the following:

- Start the New Custom User Report wizard (page 248)
- Select the report data source (page 249)
- Select the report fields (page 250)
- Select the grouping fields (page 251)
- Select the display order (page 252)
- Specify the sort order (page 253)
- Add a chart (page 254)
- Specify page layout options and save the template (page 255)
- Select the report parameters (page 241)

Start the New Custom Report Wizard

The New Custom Report wizard guides you through the creation of a customized report template. After you have created the template, you can save it so that you can reuse it to generate additional reports.

Note: Some steps are mandatory and others are optional. If a step is mandatory, the **Next** button will remain disabled until you have made a selection in the wizard dialog box.

To start the wizard:

1. From the **File** menu, select **New** > **Report** or click **Reports** on the toolbar.

    The New Report dialog box (page 390) opens.

2. Enter information in the **Comments** field.

    This information will appear in the Comments column in the Reports window (page 387). This field is mandatory.

3. Click **New**.

    The New Custom Report wizard starts. The Report Data Source dialog box (page 397) is displayed.

What's Next?

Select the report data source (page 249).

Select the Report Data Source

The data source that you select determines the type of report that is created. For each of the report types described in the following table, you can select which fields to include, how to group and sort them, the type of chart you want to include, and the element upon which the date range is created, such as the creation date or the modification date.

Data Source	Description
Confirmed Hits by Exhibits	The resulting report is based on confirmed hits according to the exhibits to which they belong. The **Report Fields** dialog box contains a list of graphs supported by the report.
Cases	The resulting report is based on cases. It can include information such as the event type, case supervisor, date created, law agency, and occurrence date.
Bullet Exhibits	The resulting report is based on bullet exhibits. It can include information such as the creation date, caliber, composition, event type, law agency, and occurrence date.
Cartridge Case Exhibits	The resulting report is based on cartridge case exhibits. It can include information such as the creation date, caliber, composition, firing pin shape, event type, law agency, and occurrence date.
Firearm Exhibits	The resulting report is based on firearm exhibits. It can include information such as the barrel length, caliber, event type, make, country of origin, officer and possessor information, and recovery date.
Hits for Bullet Exhibits	The resulting report is based on hits between bullet exhibits. It can include information such as the caliber, twist, number of LEAs, and hit creation date.
Hits for Cartridge Case Exhibits	The resulting report is based on hits between cartridge case exhibits. It can include information such as the caliber, composition, firing pin shape, and hit creation date.
Correlation Requests	The resulting report is based on correlation requests. It can include information such as the correlation type, creation date, event type, and occurrence date.

Data Source	Description
Cartridge Case and Bullet Exhibits	The resulting report is based on cartridge case and bullet exhibits. It can include information such as the creation date, caliber, composition, firing pin shape, event type, law agency, LEA count, twist, and occurrence date.
Hits for Cartridge Case and Bullet Exhibits	The resulting report is based on hits between cartridge case and bullet exhibits. It can include information such as the caliber, twist, number of LEAs, and hit creation date.
Users	The resulting report is based on information about user accounts created for IBIS Heritage or IBIS TRAX-3D users. It can include information such as the creation date, full name, last logon date, site name, and user lock date.

To specify the report type:

1.   From the **Data Source** list, select the type of report you want to create.

2.   Click **Next**.

     A data source must be selected for the **Next** button to be enabled.

     The Report Fields dialog box (page 399) opens.

Select the Report Fields

You must specify the fields to include in the report. The list of fields that are available for inclusion in the report varies depending on the data type you selected in the Report Data Source dialog box (page 397).

If you selected Confirmed Hits by Exhibits as the data source, you are presented with a list of graphs instead of fields. For example, Caliber type bar graph, Evidence pie graph, Questionable hits pie graph, and Cross event (a cross-tabulation table).

To select the fields:

1.   In the Report Fields dialog box (page 399), add the fields you want to include in the report to the **Selected fields** list.

To	Do the following
Include all available fields in the report	Click `»` All of the available fields are moved to the **Selected fields** list.
Include specific available fields in the report	Select an available field and click `›` The field is moved to the **Selected fields** list.
Remove a field from the Selected fields list	Select a field in the Selected fields list and click `‹` The selected field is moved to the **Available fields** list.
Remove all fields from the Selected fields list	Click `«` All fields are moved from the **Selected fields** list to the **Available fields** list.

2. Click **Next**.

    At least one field must be in the **Selected fields** list for the **Next** button to be enabled.

    The Grouping dialog box (page 401) opens.

    What's Next?

    Specify how you want to group fields in the report (page 251).

Select Grouping Fields

You can use groups to organize the report data into sections. You can use any of the selected fields as a grouping field. However, when choosing grouping fields, it is recommended that you select general fields such as Month and Law Agency.

You can select up to three grouping fields. The first field you select is placed at the top of the hierarchy. If you choose a second and third field, they are treated as subgroups within the main group. If, for example, you want to group exhibits by caliber within the submitting law agency, you would first select Law agency and then Caliber Start.

You do not have to select any fields for grouping. However, if you do, you must leave at least one field in the **Available fields** list. These fields can be used to control the display order or the sorting.

To group report data:

1. In the Grouping dialog box (page 401), specify the first grouping field by selecting a field from the **Available fields** list and clicking ⟨ › ⟩ .

    The field is moved to the **Grouping fields** list.

2. Select a second and third grouping field, as required.

> **Note:** To remove a field from the **Grouping fields** list, select the field and click ⟨ ‹ ⟩ . If there are any fields below the selected field, they are also removed from the list.

3. To include a total for each group, select the **Add total to each group** check box.

    For example, you can create a report that indicates the caseload for each firearm examiner by selecting Case Supervisor as the grouping field and selecting this check box.

4. Click **Next**.

    The Display Order dialog box (page 403) opens.

What's Next?

Specify the order in which fields are displayed (page 252).

Specify the Display Order

The fields you selected appear as column headers in the report. In the **Display Order** dialog box, specify the order in which you want the columns to be displayed.

The first field in the **Order** list will appear as the first column in the report and the last field in the list will appear as the last column in the report.

This procedure is optional.

To specify the display order:

1. In the Display Order dialog box (page 403), arrange the fields in the
    Order list to indicate the order in which you want the fields to appear in
    the report.

To	Do the following
Move a field up one position in the list	Select a field and click ⬆
Move a field down one position in the list	Select a field and click ⬇

2. Click **Next**.

    The Sorting dialog box (page 405) opens.

What's Next?

Specify the sort order (page 253).

Specify the Sort Order

The sort order determines which fields are used to sort the report data and
whether the data is sorted in ascending or descending order.

You can specify up to three sort fields. The **Sort 1** field has priority over the
Sort 2 field. The **Sort 2** field has priority over the **Sort 3** field. For example, to
sort the data by law agency and, within law agencies, by case supervisor, you
would select Law Agency in the **Sort 1** field and Case Supervisor in the **Sort 2**
field.

You do not have to specify the sort order. This procedure is optional.

To specify the sort order:

1. In the Sorting dialog box (page 405), click the down arrow next to the
    Sort 1 field and select a field from the list.

2. Specify the sort order for the field.

Click	To
⬇ A-Z	Sort the report data in ascending order.
⬇ Z-A	Sort the report data in descending order.

3. To sort the report by multiple fields, repeat steps 1 and 2 for the **Sort 2** and **Sort 3** fields.

4. Click **Next**.

    The Charts dialog box (page 407) opens.

What's Next?

Add a chart to the report (page 254).

Add a Chart

Adding a graph to your report can help you visualize and analyze the data. If you include a graph in your report, you can choose to display the data in either a pie chart or a bar chart.

You do not have to add a chart. This procedure is optional.

To add a chart to the report:

1. In the Charts dialog box (page 407), select the **Add a chart to the report** check box.

2. Select one of the following graph types:

    - Bar Chart
    - Pie Chart

3. In the **Based on** field, click the down arrow and select the field on which you want to base the chart.

4. Click **Next**.

    The Report Title and Options dialog box (page 409) opens.

What's Next?

Specify page layout options and save the template (page 255).

Specify Report Options and Save the Report Template

In the final wizard dialog box, you specify the information you want displayed on the report pages, such as a report title, page numbers, and report date. By default, the template will be saved when you click **Next**.

To specify report options:

1. In the **Report Title** field in the Report Title and Options dialog box (page 409), enter the title that you want to appear.

2. In the **Element to be used as date range** field, click the down arrow and select an option from the list.

   The available options depend on the type of report you are creating.

   After you finish the wizard, you will be prompted to enter the date range for the report. The selection you make in this field determines which date this range is based on.

3. To include page numbers in the headers, select the **Show page number in header** check box.

4. To include the date on which the report is created in the headers, select the **Show date in header** check box.

5. To save the template, do the following:

   • Make sure that the **Save template as** check box is selected.
   • Enter the template name in the **Save template as** text box.
     If the name already exists, MATCHPOINT+ prompts you to enter a different name.
     This name is used as the report name that appears in the **Custom Templates** list in the New Report dialog box (page 390) and must be unique.

6. Click **Finish**.

   The Report Parameters dialog box (page 392) opens.

What's Next?
Select the report parameters (page 241) for the report.

Modify a Custom Template

You can modify any of the custom templates that you created. Custom templates are displayed in the New Report dialog box.

To modify a custom template:

1. In the Navigation tree, click **Reports**.

   The New Report dialog box (page 390) opens.

2. In the Custom Templates field, select the template that you want to modify and then click **Modify**.

   The Custom Report wizard starts. The Report Data Source dialog box (page 397) is displayed.

3. Follow the steps of the wizard and modify the field selections, grouping or other report parameters, as required.

4. Specify page layout options and save the template (page 255).

Related Topics

Create a Report (page 235)

Print a Report (page 239)

Delete a Custom Template

You can delete only the templates that you have created. You cannot delete standard templates.

To delete a custom template:

1. From the **File** menu, select **New > Report** or click **Reports** on the toolbar.

   The New Report dialog box (page 390) opens.

2. Click **Custom Templates** and then select the template that you want to delete from the list.

3. Click **Delete**.

   A confirmation message is displayed.

4. Click **Yes**.

   The template is deleted.

Part III

IBIS MATCHPOINT+ Reference

This section covers the following topics:

Tools and Options Reference

This section covers the following topics:

Preferences Dialog Box

This dialog box opens when you select **Tools** > **Preferences** from the menu bar. Use this dialog box to optimize workflow and set default controls for display settings. In the Preferences dialog box, individual preferences are grouped by feature. To display the settings for the features in a group, open the group.
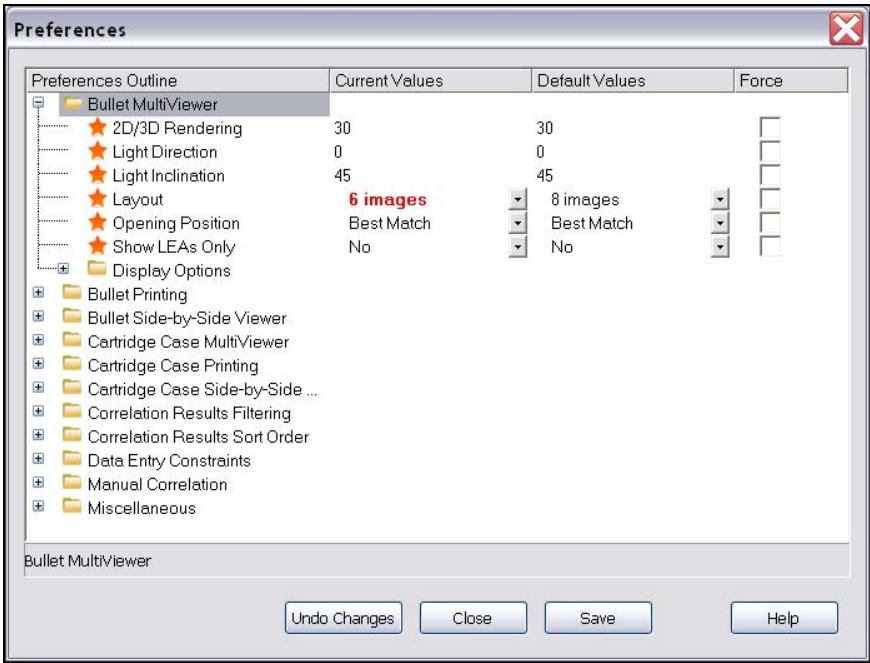
Preferences

Column	Description
Preferences Outline	The preference items grouped by feature. Click the plus sign (+) next to the group you want to open.
Current Values	The current value for each preference.

Column	Description
Default Values	The default value for each preference for your system.
Force	The check box used to force a value for all users of the system. This feature is available only to users who have the Administrator role.

Context Menu and Buttons

Right-click and select	To
Reset to Default Value	Reset the selected preference to the system default value. A system value may be set for your facility.
Reset to Factory Value	Reset the selected preference to the factory default value. The factory value is the generic setting for all MATCHPOINT+ installations. This feature is available only to users who have the Administrator role.
Reset All to Default Values	Reset all the preferences to the system default values. A system value may be set for your facility.
Reset All to Factory Values	Reset all the preferences to the factory default values. The factory value is the generic setting for all MATCHPOINT+ installations.

Undo Changes	Cancels all changed values and displays the last saved settings.
Close	Closes the window. If there are any unsaved changes, a confirmation message is displayed.
Save	Saves the changes and displays the update.
Help	Opens the Help topic that describes the dialog box.

How Do I...?
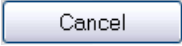
Filter Dialog Box

This dialog box opens when you select **View** > **New Filter** from the menu bar and select a filter type: cases or correlation requests. The list of fields is different for each of the filter types.

Use this dialog box to customize the display of cases in the Navigation tree and the list view of correlation requests in the Information view.
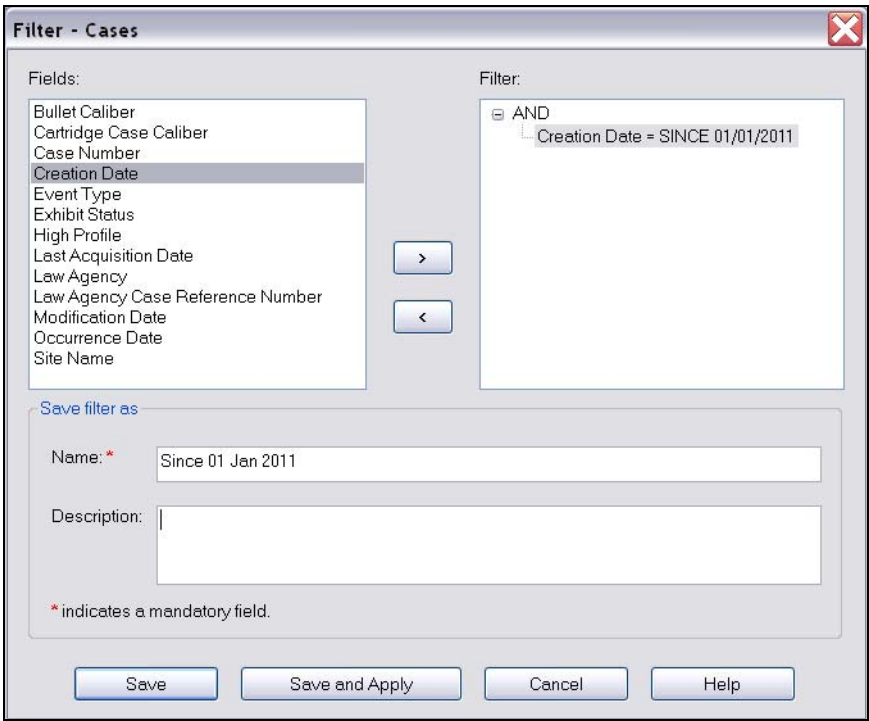
Options and Buttons

Options and Buttons	Description
Fields	Lists the fields that can be used to define a type of filter.
Filter	Lists the fields that are defined for a filter. Definitions are arranged into AND and OR statements.

Options and Buttons	Description
Name	The name that you create for the filter. It appears in the Filters list to help you manage the filters you create.
Description	The description that you enter for the filter. It appears in the Filters list to help you manage the filters you create.
⟩	Adds the selected field to the filter definition.
⟨	Removes the selected field from the filter definition.
Save	Saves the filter definition to the Filters list.
Save & Apply	Saves the filter definition and applies it at the same time.
Cancel	Closes the dialog box without filtering the cases.
Help	Opens the Help topic that describes the dialog box.

How Do I...?

Date Dialog Box

This dialog box opens when you select a date criterion to define a search or to define a filter, for example, Occurrence Date or Creation Date.

To obtain the desired results, make sure that you select the correct option. The time of day is a factor when you select Previous or Since, although it does not appear in the dialog box.

Options and Buttons

Options and Buttons	Description
During the previous	To select a period that is relative to the present date and time. For example, if it is 10:00 a.m. when you define "Previous 2 Months" as the period, the actual period will cover from 10:00 a.m. 60 days ago until 10:00 a.m. today.
Since	To select a period that includes the entire calendar date to the present time. For example, if it is 3:00 p.m. when you select yesterday's date, the period will include all of yesterday until 3:00 p.m. today.
Between ... And	To select a period that includes the entire calendar date range.
OK	Adds the date criterion to the definition.
Cancel	Closes the dialog box without defining a date.

How Do I...?
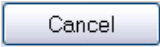
Group By Dialog Box

This dialog box opens when you right-click the column header bar in the Information view and select **Group**.
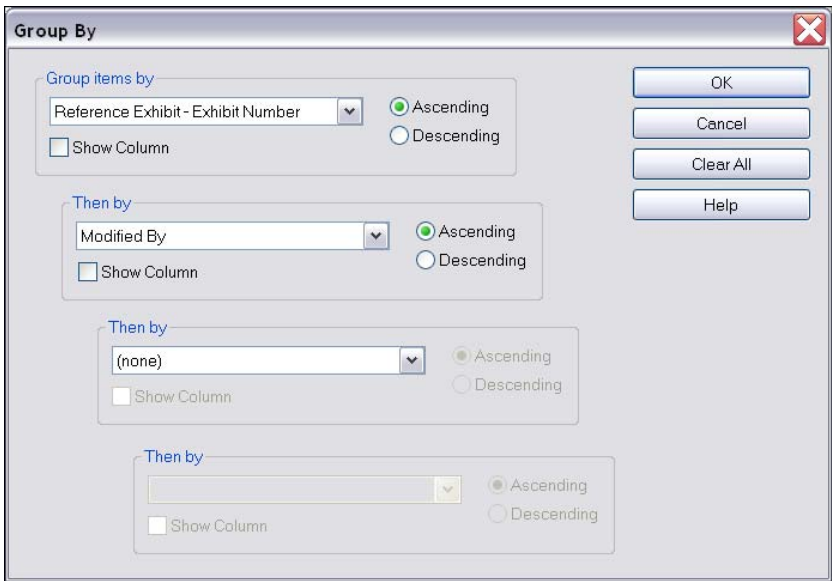
Options and Buttons

Options and Buttons	Description
Group items by	Selection of items that can be used for the first group.
Ascending	Sorts the items in the group in ascending order.
Descending	Sorts the items in the group in descending order.
Show column	When selected, shows the column of the grouped items. After a group is defined, the column is hidden by default.
Then by	Selection of items that can be used for subsequent groups.

OK	Groups the list according the specified criteria.

Options and Buttons	Description
Cancel	Closes the dialog box without grouping.
Clear All	Clears all the groups that are defined.
Help	Opens the Help topic that describes the dialog box.

How Do I…?
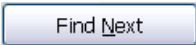
Quick Search Dialog Box

This dialog box opens when you select **Tools** > **Quick Search** from the menu bar or type an entry on the keyboard when the Navigation tree displays a list.
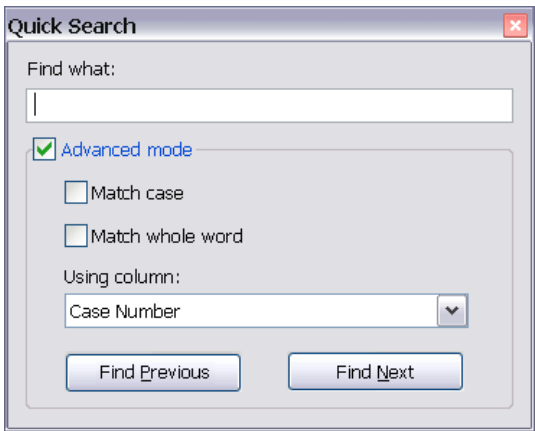
Options and Buttons

Options and Buttons	Description
Find what	The text that you want to find; a single character or words.
Advanced mode	Enables extended search options.
Match case	Restricts the search to match the case that is used in the Find what field.
Match whole word	Restricts the search to match the whole word that is entered in the Find what field.
Using column	Lists the columns that can be searched according to the displayed list. By default, the search is performed on the contents of the sorted column. Use this option to search a column that is different than the one used to sort the list.

Options and Buttons	Description
Find Next	Searches for the next occurrence without looping.
Find Previous	Searches for the previous occurrence without looping.

How Do I...?

Preferred Lists Dialog Box

This dialog box opens when you select **Tools** > **Preferred Lists** from the menu bar.
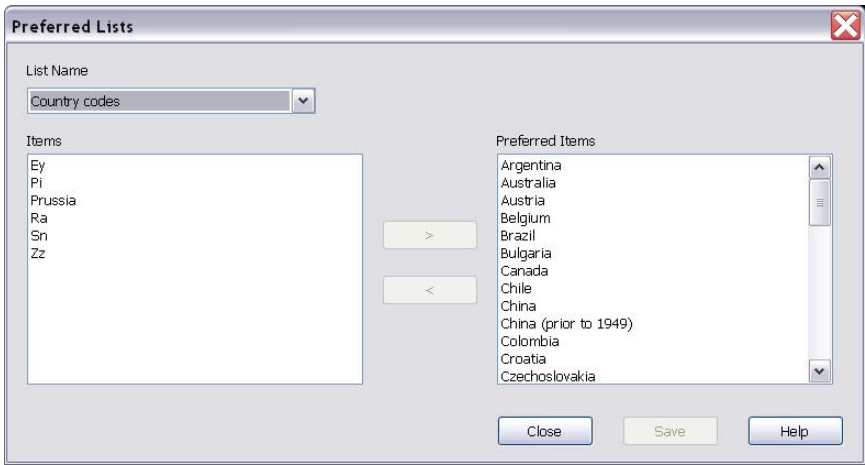
Options and Buttons

Options and Buttons	Description
List Name	Selection of lists for which preferred items can be defined.
Items	Items that are hidden (collapsed at the end of the list) when the list appears in the application. Hidden items can always be expanded and used, as required.
Preferred Items	Items that are displayed when the list appears in the application, for example, preferred calibers for firearm exhibits.
>	Moves the selected item(s) from the Hidden Items list to the Preferred Items list.
<	Moves the selected item(s) from the Preferred Items list to the Hidden Items list.

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Options and Buttons	Description
Close	Closes the dialog box without modifying the list.
Save	Saves the preferred list displayed in the List Name field.
Help	Opens the Help topic for the dialog box.

How Do I...?

Correlations Reference

This section covers the following topics:

Correlation Request Dialog Box

This dialog box opens when you create a manual correlation request for a cartridge case or bullet exhibit. In it you can define a set of filter criteria that will be used to select test exhibits, put constraints on the manual request, and filter the results.

Cartridge Cases

Bullets

Fields and Buttons

Field	Description
Request Filter	
Event Type	When selected, the event type that is selected in the list is used as a filter criteria. Assault with a Deadly Weapon, Homicide, Other, and Unknown are all treated the same in the event type called Crime.
Occurrence Range	
Occurrence Range	When selected, the specified occurrence date range is used as a filter criteria.
Start	Specifies the start of the date range.
End	Specifies the end of the date range. The **Start** and **End** fields can be set to the same date.

Field	Description
Caliber Range	
Caliber Range	When selected, the specified caliber range is used as a filter criteria.
Start Family	Specifies the start of the caliber family range. This is a read-only field that depends on the selection made in the **Start Caliber** field.
	Correlation requests are based on the caliber families, not the calibers themselves.
Start Caliber	Specifies the start of the caliber range, which is the smallest caliber that will be considered in the correlation.
End Family	Specifies the end of the caliber family range. This is a read-only field that depends on the selection made in the **End Caliber** field.
End Caliber	Specifies the end of the caliber range, which is the largest caliber that will be considered in the correlation.
	The **Start** and **End** fields can be set to the same caliber if you want to find exhibits of a specific caliber.
Firing Pin Shape	When selected, the firing pin shape of the reference exhibit is used as a filter criteria. This field is applicable to cartridge case exhibits only.
Twist	When selected, the twist of the LEAs on the reference exhibit is used as a filter criteria. This field is applicable to bullet exhibits only.
LEA Count	When selected, the number of LEAs on the reference exhibit is used as a filter criteria. This field is applicable to bullet exhibits only.
Request Constraints	
Include Exhibits from the Reference Case	When selected, the selected reference exhibit is also correlated against the other exhibits that belong to the reference case.
	When cleared, the other exhibits in the reference case are not included in the correlation.

Field	Description
Correlation Sites Selection	When selected, you can specify the sites to include in the correlation. A dialog box that lists the available Correlation Sites opens when you click **Generate**.
	When cleared, the same correlation sites that are used for an automatic correlation are used.

Returned Results Filter

Percent of Best Score Results	When set to less than 100 percent, MATCHPOINT+ returns only a portion of the found results (with the highest scores), as determined by the specified percentage.
Minimum Number of Returned Results	Specifies the minimum number of exhibits that will be returned as results.
	Note: The greater number of results is always returned. For example, in a database of 1000 records, if you specify 5 percent and a minimum of 10, MATCHPOINT+ displays 50 results (0.05 x 1000 = 50).

Generate	Generates the correlation request using the specified criteria.
Cancel	Cancels the request and closes the dialog box.
Help	Opens the Help topic that describes the dialog box.

How Do I...?

Create a manual correlation request (page 110)

Correlation Sites Dialog Box

If the **Correlation Sites Selection** check box is selected on the Correlation Request dialog box (page 277), the **Correlation Sites** dialog box automatically opens after you click **Generate** to submit a manual correlation request. Use this dialog box to select the correlation sites that you want to include in the correlation.
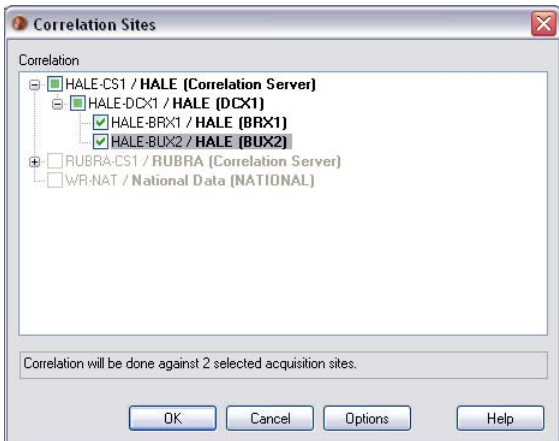
Options and Buttons

Options	Description
Correlation Sites	The hierarchy of correlation sites is configured for your system and can include National, State and Regional levels within which there may be multiple Correlation Servers, Data Concentrators and acquisition sites.

OK	Performs the manual correlation against the selected sites.
Cancel	Closes the dialog box.

Options	Description
Options	Opens the Correlation Sites Options Dialog Box (page 283).
Help	Opens the Help topic that describes the dialog box.

How Do I...?

Create a manual correlation request (page 110)

Correlation Sites Options Dialog Box

This dialog box opens when you click **Options** on the Correlation Sites dialog box (page 281). Use this dialog box to change the display of the site name and if Data Concentrators should be included.
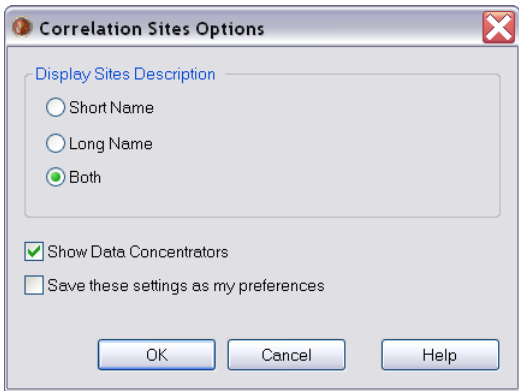
Fields and Buttons

Field/Button	Description
Short Name	The short name for the site.
Long Name	The long name for the site.
Both	The short and long name together.
Show Data Concentrators	Controls if the Data Concentrators are included in the display.
Save these settings as my preferences	Saves the settings as your preferences. For more information, see Setting Your Preferences (page 55).
OK	Applies the display setting and closes the dialog box.

Field/Button	Description
Cancel	Closes the dialog box.
Help	Opens the Help topic that describes the dialog box.

How Do I...?

Correlations Window

The **Correlations** window has two views. The **Correlation Requests** view, on top, displays all correlation requests available from the Correlation Server. The **Correlation Results** view displays the correlation results for the selected correlation request. From this window, you can determine which test exhibits are most similar to a particular reference exhibit by examining correlation scores. You can also open the **MultiViewer** or **Side-by-Side Viewer**, to compare images for similarity.

Note: Only users with Expert Acquisition Technician or Firearm Examiner permissions can open this window.

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Active Toolbar Buttons

Button	Name	Description
	Delete	Deletes the selected correlation request.
	Print	Opens the Print dialog box.
	Refresh Information	Refreshes the displayed information by reloading data from the database.
	Side-by-Side	Opens the Cartridge Case Side-by-Side Viewer (page 347) or the Bullet Side-by-Side Viewer (page 355) and displays the selected reference and test exhibits.
	MultiViewer	Opens the Cartridge Case MultiViewer (page 331) or the Bullet MultiViewer (page 339) and displays the selected reference and test exhibits.
	Viewed	Sets the status to Previously Viewed to indicate that a Firearm Examiner has analyzed the correlation results. This button is enabled only if the selected correlation request has a status of Done. Your system may be configured to automatically delete correlations with a status of Viewed after a certain number of days.
	Not Viewed	Sets the status of a previously viewed correlation to Correlation Done.
	New Report	Opens the New Report dialog box (page 390).
	Help	Opens IBIS MATCHPOINT+ Help.

Correlation Requests view

Column	Description
Case Number	The case number of the reference exhibit.
Exhibit Number	The number that is assigned to the reference exhibit.
Caliber	The caliber of the reference exhibit.
Site Name	The name of the site that acquired the reference exhibit.
Type	The type of correlation submitted: Automatic, Manual, Prior Test Fire, National or Eurobis.
Correlation Server	The Correlation Server that performed the correlation.
Status	The status of the correlation request. For more information, see Correlation Status (page 75).
Created By	The user who created the correlation request.
Creation	The date on which the correlation request was submitted.
Modified By	The user who made the last modification.
Modification	The date on which the correlation request was last modified.
Total Sample Size	The number of exhibits that were used in the correlation.

Correlation Results view

Column	Description
Case Number	The number of the case containing the test exhibit.
Exhibit Number	The number that is assigned to the test exhibit.
Caliber	The caliber of the test exhibit.
Site Name	The name of the site that acquired the test exhibit.

Cartridge Case Score Columns

Breech Face	The breech face score.
Firing Pin	The firing pin score.

Column	Description
Ejector Mark	The ejector mark score.

Firearm Columns

Make	The make of the firearm linked to the test exhibit.
Model	The model of the firearm linked to the test exhibit.

Bullet 2D Score Columns

Max LEA	The highest LEA score, calculated using 2D data, within all of the individual LEA scores for a bullet correlation.
Peak Phase	The highest LEA score within the phase that produced the Max Phase score.
Max Phase	The highest phase score within a bullet correlation, calculated using acquired 2D data.

Bullet 3D Score Columns

Max LEA	The highest LEA score, calculated using 3D data, within all of the individual LEA scores for a bullet correlation.
Max Phase	The highest phase score within a bullet correlation, calculated using acquired 3D data.

Context Menu

The following menu items appear when you right-click the mouse with a correlation request or result selected.

Menu Item	Description
These items appear when a correlation request is selected:	
Side-by-Side Viewer	Opens the Cartridge Case Side-by-Side Viewer (page 347) or the Bullet Side-by-Side Viewer (page 355), which displays the first test exhibits listed in the **Correlation Results** view.

Menu Item	Description
MultiViewer	Opens the Cartridge Case MultiViewer (page 331) or the Bullet MultiViewer (page 339), which displays all the test exhibits that are listed in the **Correlation Results** view.
Correlation Results Filtering	Opens Correlation Results Filtering (page 119).
Status	Allows you to change the status of the selected correlation request from Not Viewed to Viewed, or vice versa. See Change the Status of Correlation Requests (page 124).
Delete	Deletes the selected correlation request.
Correlation Request Information	Opens the Correlation Request Information dialog box (page 291).
Reference Exhibit Information	Opens the Reference Exhibit information window.
Print Correlation Results	Opens the Print Correlation Results Dialog Box (page 297).

This item appears when a correlation result is selected:

Compare Exhibits	Opens the Cartridge Case Side-by-Side Viewer (page 347) or the Bullet Side-by-Side Viewer (page 355), which displays the reference exhibit that is selected in the **Correlation Requests** view and the test exhibit that is selected in **Correlation Results** view.
Import Exhibit	Imports the selected exhibit into the local site. Available only if the selected exhibit exists on a remote site.
Reimport Exhibit	Reimports the selected exhibit to ensure that the imported information is up-to-date. Available only if the selected exhibit was imported.
Test Exhibit Information	Opens the Test Exhibit information window.

How Do I...?

Create a manual correlation request (page 110)

View correlation requests and results (page 113)

Correlation Request Information Dialog Box

This dialog box opens when you select a cartridge case or bullet reference exhibit from the Correlations window (page 285) and select **Correlation Request Information** from the right-click menu.

Fields and Buttons

Field/Button	Description
Request Specific Information	
Site Name	The unique name that is assigned to the site that originated the request.
Type	The type of correlation request: Automatic or Manual.
Creation	The date on which the correlation request was created.
Created By	The user who created the correlation request.
Modification	The date on which the correlation request was last modified.
Modified By	The user who modified the correlation request.
Status	The status of the correlation request.

Field/Button	Description
Minimum Number of Returned Results	The minimum number of results the correlation request was configured to return.
Percent of Best Score Results	The percentage of found best score results that the correlation request was configured to return.
Total Sample Size	The number of exhibits that were used in the correlation.
Remote Site Name	The site name of the remote Correlation Server against which exhibits were correlated, if applicable.
Include Exhibits from the Reference Case	Indicates if exhibits belonging to the reference case were used in the correlation.

Request Filter Information

Caliber Family Start	The start of the caliber range that was specified in the request filter.
Caliber Family End	The end of the caliber range that was specified in the request filter.
Occurrence Start	The start of the occurrence date range that was specified in the request filter.
Occurrence End	The end of the occurrence date range that was specified in the request filter.
Event Type	The event type that was specified in the request filter.
Firing Pin Shape	The firing pin shape that was specified in the request filter. This field is applicable to cartridge case exhibits only.
LEA Count	The LEA count that was specified in the request filter. This field is applicable to bullet exhibits only.
Twist	The direction of twist that was specified in the request filter. This field is applicable to bullet exhibits only.

Reference Exhibit Information

Case Number	The number of the case to which the reference exhibit belongs.
Occurrence	The date on which the incident occurred.

Field/Button	Description
Site Name	The site name of the Correlation Server on which the reference exhibit is located.
Exhibit Number	The reference exhibit number.
Event Type	The type of event, such as HOM or AWD.
LEA Count	The number of LEAs on the reference exhibit. This field is applicable to bullet exhibits only.
Details	Opens the detailed exhibit information.
OK	Closes the dialog box.
Print	Prints the request information.

How Do I...?

Correlation Results Filtering Window

The Correlation Results Filtering window opens when you right-click a correlation result and select **Correlation Results Filtering** from the menu.

The correlation scores are charted at the top of the window and listed in a data table below. The **Chart Options** and **List Options** control how the scores are displayed and listed.

Toolbar

Chart Options

List Options

Chart Options

Option	Description
Chart Type	The type of chart, either bar or line.
Number of Exhibits to Show	The number of exhibits to show in the chart. If you enter a number that is larger than the number of exhibits, the field turns red.
Show Vertical Lines	When selected, shows the vertical lines in the chart background.
Show Horizontal Lines	When selected, shows the horizontal lines in the chart background.

Option	Description
Show Second Y Axis	When selected, shows the second Y axis on the right side.
Use Line Styles	For Line Charts. When selected, shows the lines with dashed line styles.

List Options

Option	Description
Show Normalized Scores	When selected, shows the scores based on a scale of 100. When cleared, shows the actual scores.
Show Ranks	When selected, shows the relative ranking position of each score in a separate column. When cleared, the **Rank** column does not display.
Select All	Selects all the exhibit ID check boxes in the list.
Clear All	Clears all the exhibit ID check boxes in the list.

Toolbar Buttons

Button	Name	Description
	Reset	Resets all values to the default settings.
	Print	Opens the Print dialog box. Print options can be configured by clicking the down arrow.
	Side-by-Side	Opens the Cartridge Case Side-by-Side Viewer (page 347) or the Bullet Side-by-Side Viewer (page 355) and displays the selected exhibits.
	MultiViewer	Opens the Cartridge Case MultiViewer (page 331) or the Bullet MultiViewer (page 339) and displays the selected exhibits.

Button	Name	Description
	Save Settings	Saves the settings as your preferences. For more information, see Set preferences (page 55).
	Help	Opens IBIS MATCHPOINT+ Help.

How Do I...?

View correlation request details (page 126)

Print Correlation Results Dialog Box

This dialog box opens when you select a correlation request from the Correlations window (page 285), right-click and select **Print Correlation Requests** from the menu.
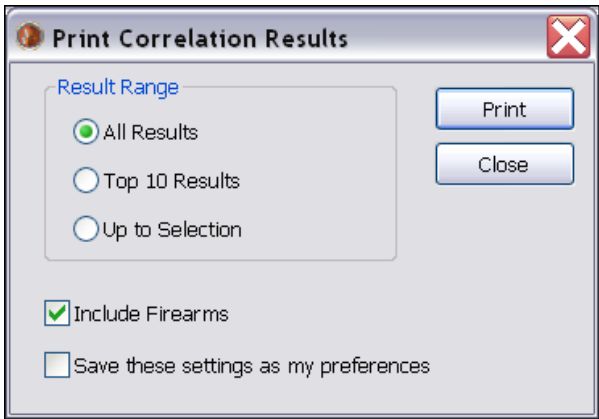
Options and Buttons

Field/Button	Description
All Results	The print format that includes all the results.
Top 10 Results	The print format that includes only the top 10 results.
Up to Selection	The print format that includes the results according to the selected result in the Correlation Results view. A result must be selected to activate this option.
Include Firearms	The print format that includes available firearm information from test exhibits in the correlation results.
Save these settings as my preferences	Saves the print settings.

Field/Button	Description
Print	Prints the correlation results.
Close	Closes the dialog box.

How Do I...?

Case Management Reference

This section covers the following topics:

Test Exhibits Filtering Dialog Box

This dialog box opens when there are no test exhibits in the **Viewer Exhibits** and you set a cartridge case or bullet exhibit from the Navigation tree as the reference and then click **MultiViewer** or **Side-by-Side Viewer** on the toolbar. In this dialog box, you define the criteria that are used to select the test exhibits for display in the **MultiViewer** or the **Side-by-Side Viewer**.

The following example shows the filtering criteria for Cartridge Case exhibits to display in the **MultiViewer**.

Fields

Field	Description
Event Type	When selected, the event type that is selected in the list is used as a filter criteria. Assault with a Deadly Weapon, Homicide, Other, and Unknown are all treated the same in the event type called Crime.
Occurrence Range	When selected, the specified date range is used as a filter criteria.
Start	Specifies the start of the date range.
End	Specifies the end of the date range. The **Start** and **End** fields can be set to the same date.
Caliber Range	When selected, the specified caliber range is used as a filter criteria.
Start Family	Indicates the caliber family to which the selected start caliber belongs.
Start Caliber	Specifies the start of the caliber range, which is the smallest caliber that will be considered in the correlation.
End Family	Indicates the caliber family to which the selected end caliber belongs.
End Caliber	Specifies the end of the caliber range, which is the largest caliber that will be considered in the correlation. The **Start** and **End** fields can be set to the same caliber if you want to find exhibits of a specific caliber.
Firing Pin Shape	When selected, the firing pin shape of the reference exhibit is used as a filter criteria. This field is applicable to cartridge case exhibits only.
Twist	When selected, the twist of the LEAs on the reference exhibit is used as a filter criteria. This field is applicable to bullet exhibits only.
LEA Count	When selected, the number of LEAs on the reference exhibit is used as a filter criteria. This field is applicable to bullet exhibits only.

Field	Description
MultiViewer	Opens the MultiViewer to display the filtered test exhibits. If you selected Side-by-Side Viewer from the toolbar, the button name will be **Side-by-Side**.
Cancel	Cancels the filter operation and closes the dialog box.
Help	Opens the Help topic that describes the dialog box.

How Do I...?

Image Information View

This window opens when you select a LEA, GEA, or cartridge case ROI from the Navigation tree. Use it to view an acquired image without opening the **MultiViewer** or **Side-by-Side Viewer**.

You can change the magnification level, adjust the brightness and contrast, and move all image types. For 3D images, you can also adjust the lighting, 3D elevation, and 2D/3D rendering. You can view text annotations, if any have been added to the image.
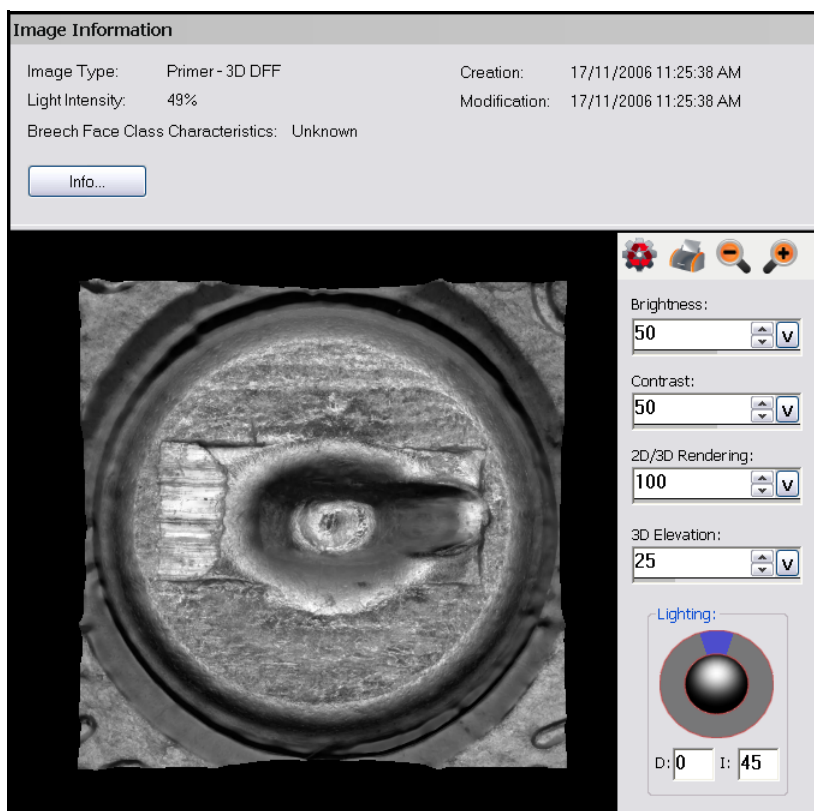
Image Information Fields and Buttons

Field	Description
Image Type	The type of image: LEA or GEA and 2D or 3D for bullets. For cartridge cases, examples are Breech Face - Ring, Full Headstamp - Ring, and Ejector 6 o'clock.
Light Intensity	The light intensity setting. This field is available when viewing cartridge case images only.
Breech Face Class Characteristics	The class characteristics of the markings on the breech face, if known. This field is available when viewing cartridge case images only.
Creation	The date on which the image was acquired.
Modification	The last date on which the image was modified.

Info...	Opens the Detailed Image Information dialog box (page 308).

Buttons

Button	Name	Description
	Reset	Resets all the control settings to their default values.
	Print	Opens the Print dialog box.
	Zoom Out	Decreases the magnification of the displayed image.
	Zoom In	Increases the magnification of the displayed image.

Image Controls

Control	Description
Brightness control	Adjusts the brightness of the displayed image.
	The range is between 0 and 100. The default is 50. As the value approaches 0, the images get darker. As the value approaches 100, the images get brighter.
Contrast control	Adjusts the contrast of the displayed image.
	The range is between 0 and 100. The default is 50. As the value approaches 0, the contrast is reduced. As the value approaches 100, the contrast is increased.
2D/3D Rendering	Adjusts the 2D/3D rendering of the displayed 3D image.
	The range is from 0, which renders the image as completely 2D, to 100, which renders the image with the maximum level of 3D. This control produces a proportionate mix of 2D and 3D within that range.
3D Elevation	Adjusts the height of the peaks on the displayed 3D image.
	The range is between 0 and 100. As the value approaches 0, the peak size is reduced. As the value approaches 100, the peak size is increased.
Lighting control	Changes the type of light and adjusts the direction of the side light. This control is enabled for 3D images only.
	Clicking the center of the inner circle switches to the center light. Clicking the outer circle switches to the side light. Dragging the "light beam" on the outer circle changes the direction of the side light. For more information, see Lighting Control (page 363).

Cursor Modes

Mode	Description
✛	Moves the image. This is the default mode.
↻	Rotates the image. You must right-click the mouse to switch to Rotate mode. Available when viewing cartridge case images only.

How Do I...?

View an image (page 96)

Detailed Image Information Dialog Box

This dialog box opens when you select a cartridge case or bullet ROI image from the Navigation tree and click **Info**. Use this dialog box to view more detailed information about a particular image.
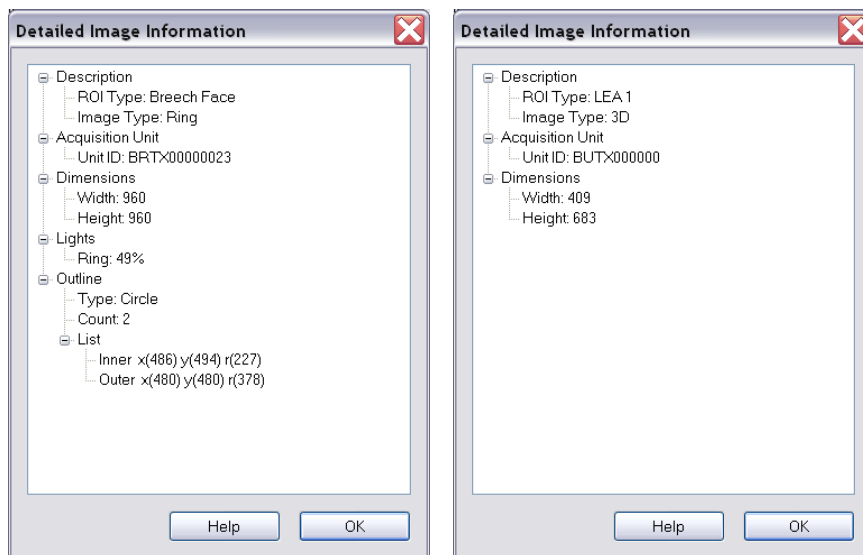
Cartridge Cases

Bullets

Detailed Image Information Fields

Field/Button	Description
Description	
ROI Type	The region of interest captured by the image. For example, Breech Face, Ejector, and Full Headstamp.
Image Type	The type of light that was used to acquire the image. For example, ring, 6 o'clock, and 3 o'clock.
Acquisition Unit	
Unit ID	The hardware-specific ID of the acquisition unit.

Field/Button	Description
Dimensions	
Width	The width of the image in pixels.
Height	The height of the image in pixels.
Lights (Cartridge Cases only)	
Ring	The light intensity setting of the ring light that is used to acquire the image. Applicable to certain ROIs only.
3 o'clock	The light intensity setting of the 3 o'clock light that is used to acquire the image. Applicable to certain ROIs only.
6 o'clock	The light intensity setting of the 6 o'clock light that is used to acquire the image. Applicable to certain ROIs only.
All-In-Focus	The light intensity setting of the ring light that is used to acquire the image. Applicable to primer all-in-focus images only.
3D DFF	The light intensity setting of the ring light that is used to acquire the image. Applicable to primer 3D DFF images only.
Outline (Cartridge Cases only)	
Type	The type of outline. This field is set to either **Circle** or **Polygon**.
Count	The number of geometric forms in the outline. If the **Type** field is set to **Circle**, this field displays the number of circles. If the **Type** field is set to **Polygon**, this field displays the number of points in the outline.
List	Displays the X and Y coordinates and the radius of the inner and outer rings.
Help	Opens the Help topic that describes the dialog box.
OK	Closes the dialog box.

How Do I...?

Import Exhibits Dialog Box

This dialog box opens when you click **Import** on the Viewer toolbar. The import button is only available if there are exhibits in the selection that are stored on remote sites.

After an exhibit is imported it is displayed in the in an imported case folder under the site name to which it belongs.

Fields and Buttons

Option	Description
All	The option to import all the remaining remote exhibits. The number that will be imported out of the total number of exhibits in the list is displayed.
Highest Scores	The option to import exhibits based on the highest scores. You can enter a number to limit the exhibits that will be imported.
Import	Imports the exhibits you selected.
Cancel	Closes the dialog box.
Help	Opens the Help topic that describes the dialog box.

How Do I...?

Import exhibits from remote sites (page 136) in the MultiViewer

Import exhibits from remote sites (page 166) in the Side-by-Side Viewer
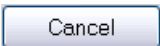
Modify Cartridge Case Exhibit Dialog Box

This dialog box opens when you select a cartridge case exhibit from a migrated site in the Navigation tree and then select **Edit** > **Modify** from the menu bar. Use this dialog box to edit a migrated cartrdige case exhibit.

Modify Cartridge Case Fields

Field	Description
Exhibit Number	A unique user-defined code that is assigned to the exhibit in the database.
Caliber	The caliber of the firearm exhibit.
Make	The ammunition manufacturer.
Firing Pin Shape	The shape of the exhibit's firing pin impression. **Note:** If existing acquisitions are associated with the exhibit, you cannot change a centerfire firing pin shape to rimfire (rectangular or circular). You also cannot change rimfire (rectangular or circular) to any other firing pin shape.

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Field	Description
Breech Face Class Characteristics	The class characteristics of the markings on the breech face, if known.
Event Type	The event to which the cartridge case is related, if different from the case. For example, Assault with a Deadly Weapon, Homicide, Test Fire or Unknown. **Note:** Demonstration, Test, and QA exhibits generally contain sample information. Therefore, to avoid confusion, the Event Type field of exhibits initially labeled as Demonstration, Test, and QA cannot be modified.
Firearm Exhibit Number	The exhibit number of the firearm from which the cartridge was fired. **Note:** This field is applicable only if the cartridge was test fired from a firearm exhibit in the same case.
Comments	Additional relevant comments concerning the cartridge case.
Modify	Opens the dialog box to modify breech face class characteristics.
OK	Saves the changes you have made to the exhibit information and closes the dialog box.
Cancel	Closes the dialog box without saving the changes you have made.
Help	Opens the Help topic that describes the dialog box.

How Do I...?

Modify or Delete Migrated Data (page 103)

Breech Face Class Characteristics Dialog Box

The class characteristics that best describe the markings present on the breech face are part of the exhibit information. You can describe the marks on the exhibit using a process of elimination, or identification. An exhibit can have more than one breech face class characteristic.
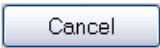
This dialog box is available when you modify a cartridge case exhibit from a migrated site in the Navigation tree.

Use this dialog box to better describe the marks that are present on an exhibit. The default selection is **Unknown**.
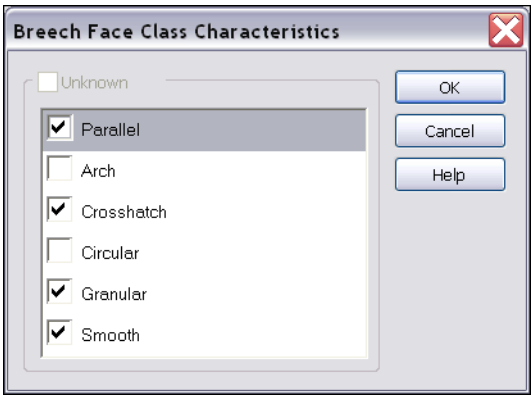
Breech Face Class Characteristics Fields

Check Box	Description
Unknown	Indicates that the class characteristics are unknown. This is different than selecting all the class characteristics.
Parallel	Indicates that parallel marks are present.
Arch	Indicates that arched marks are present.
Crosshatch	Indicates that crosshatch marks are present.
Circular	Indicates that circular marks are present.
Granular	Indicates that granular marks are present.
Smooth	Indicates that smooth marks are present.

Check Box	Description
OK	Saves the changes you have made to the exhibit information and closes the dialog box.
Cancel	Closes the dialog box without saving the changes you have made.
Help	Opens the Help topic that describes the dialog box.

How Do I...?

Modify or Delete Migrated Data (page 103)

Modify Bullet Exhibit Dialog Box

This dialog box opens when you select a bullet exhibit from a migrated site in the Navigation tree and then select **Edit** > **Modify** from the menu bar. Use this dialog box to edit a migrated bullet exhibit.

Modify Bullet Fields

Field	Description
Exhibit Number	A unique user-defined code that is assigned to the exhibit in the database.
Start Caliber	The start of the bullet caliber range.
	If the caliber is known, specify the same value for both the **Start** and **End** fields.
	If the specific caliber is not known, use the **Start** and **End** fields to specify the caliber range within which the bullet is believed to belong.
End Caliber	The end of the bullet caliber range.
LEA	The number of land engraved areas (LEAs) on the bullet.
	This value is very important because two exhibits will be correlated against each other only if they have the same number of LEAs.

Field	Description
Twist	The direction in which the striae twist. The options are Left, Right, and Unknown.
Rifling Type	The rifling method used on the barrel through which the bullet was fired. Except for **Unknown**, the exhibit will automatically correlate only against exhibits of the same rifling type. The options are:
	• **Unknown** - Exhibits with Unknown rifling types are included in all automatic correlations, unless they are excluded by other criteria.
	• **Cut or Button** - Both cut and button rifling types are characterized by lands and grooves, which result in LEAs and GEAs with distinct transitions on bullets that are fired through these types of rifled barrels.
	• **Enhanced Polygonal** - Glock's Enhanced Bullet Identification System (EBIS), which adds unique marks to their polygonal rifling in order to try to make bullets fired from Glock firearms more easily identifiable.
	• **Polygonal** - Instead of lands and grooves, the shape of the interior of a barrel resembles that of a polygon.
	• **Smooth Bore** - Refers to smooth barrels, such as those of shotguns.
Composition	The materials that make up the bullet's physical structure.
Event Type	The event to which the bullet is related, if different from the case. For example, Assault with a Deadly Weapon, Homicide, Test Fire or Unknown.
	Note: Demonstration, Test, and QA exhibits generally contain sample information. Therefore, to avoid confusion, the Event Type field of exhibits initially labelled as Demonstration, Test, and QA cannot be modified.
Firearm Exhibit Number	The exhibit number of the firearm from which the bullet was fired.
	Note: This field is applicable only if the bullet was test fired from a firearm exhibit in the same case.
Comments	Additional relevant comments concerning the bullet.
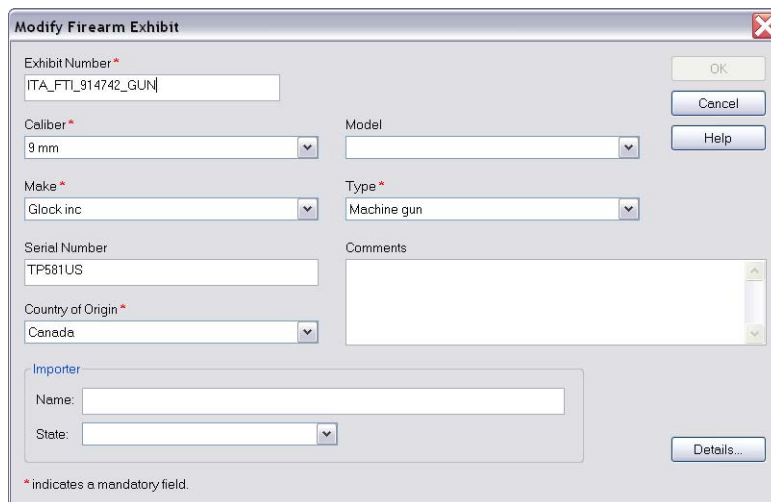
Field	Description
OK	Saves the changes you have made to the exhibit information and closes the dialog box.
Cancel	Closes the dialog box without saving the changes you have made.
Help	Opens the Help topic that describes the dialog box.

How Do I...?

Modify Firearm Exhibit Dialog Box

This dialog box opens when a firearm exhibit from a migrated site is highlighted in the Navigation tree and you select **Edit** > **Modify** from the menu bar. Use this dialog box to edit a migrated firearm exhibit.
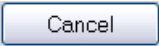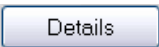
Modify Firearm Exhibit Fields

Field	Description
Exhibit Number	A unique user-defined code that is assigned to the exhibit in the database.
Caliber	The caliber of the firearm exhibit.
Make	The firearm manufacturer.
Serial Number	The serial number of the firearm.
Country of Origin	The country in which the firearm was manufactured.
Model	The model of the firearm. If the model is not in the list, you can type it in the field.
Type	The type of firearm.
Comments	Additional relevant comments concerning the firearm.

Field	Description
Importer	
Name	If the firearm was manufactured in a foreign country, the name of the company that imported it.
State	The state in which the importer operates.

OK	Saves the changes you have made to the exhibit information and closes the dialog box.
Cancel	Closes the dialog box without saving the changes you have made.
Help	Opens the Help topic that describes the dialog box.
Details	Opens the Firearm Exhibit Details dialog box (page 322) in which you can enter additional information about the firearm.

How Do I...?

Modify or Delete Migrated Data (page 103)

Firearm Exhibit Details Dialog Box

This dialog box opens when you click **Details** in the Modify Firearm Exhibit dialog box (page 320). Use this dialog box to add more detailed information about a firearm exhibit from a migrated site.

Firearm Exhibit Details Fields

Field	Description
Registration Date	The date on which the firearm was registered, if available.
Crime	The type of incident the firearm was involved in.
Physical Characteristics	
Barrel Length	The length (between 0 - 99 inches) of the firearm barrel.
Ammunition Capacity	The ammunition capacity (between 0 - 9999) based on a standard magazine.
Finish	The color or type of finish of the firearm.
Recovery	
Date	The date on which the firearm was recovered.
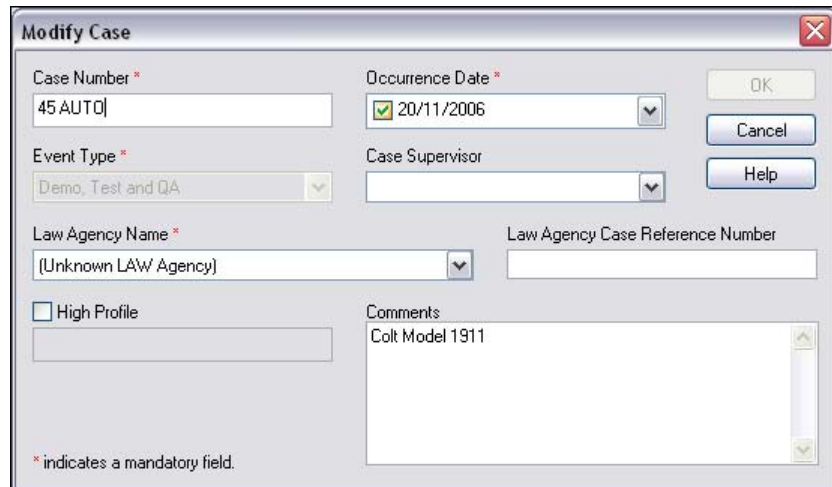
Field	Description
City	The city in which the firearm was recovered.
State	The state in which the firearm was recovered.
Possessor Name	
Last	The last name of the person in possession of the firearm at the time of the incident.
First	The first name of the person in possession of the firearm at the time of the incident.
Middle	The middle name of the person in possession of the firearm at the time of the incident.
Officer Name	
Last	The last name of the officer who recovered the firearm.
First	The first name of the officer who recovered the firearm.
Hide	Closes the dialog box.
Help	Opens the Help topic that describes the dialog box.

How Do I...?

Modify Case Dialog Box

This dialog box opens when you select a case from a migrated site in the Navigation tree and then select **Edit** > **Modify** from the menu bar. Use this dialog box to edit a migrated case.

Modify Case Fields

Field	Description
Case Number	A unique user-defined code that is assigned to the case in the database.
Event Type	The event to which the case is related. For example, Assault with a Deadly Weapon, Homicide, Test Fire or Unknown.
	Note: Exhibits assigned the Event Type Demonstration, Test and QA generally contain sample information. Therefore, to avoid confusion, the Event Type field of exhibits initially labeled as Demonstration, Test, and QA cannot be modified.
Law Agency Name	The name of the law agency that is submitting the case.
High Profile check box	When selected, indicates that the case is high profile and enables the **High Profile** text box.
High Profile text box	The reason for the high profile status.

Field	Description
Restricted Status	When selected, indicates that the case and its exhibits cannot be replicated outside your country.
Occurrence Date	The date on which the event occurred.
Case Supervisor	The name of the supervisor in charge of the case.
Law Agency Case Reference Number	The reference number that was assigned to the case by the law agency.
Comments	Additional relevant comments concerning the case.
OK	Saves the changes you have made to the exhibit information and closes the dialog box.
Cancel	Closes the dialog box without saving the changes you have made.
Help	Opens the Help topic that describes the dialog box.

How Do I...?

Data Export Dialog Box

This dialog box opens when you select **Tools** > **Data Export** from the menu bar. The feature is used to export data from one or more sites in your configuration.
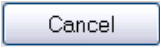
Fields and Buttons

Option	Description
New Data Export Tab	
Sites	The local sites in your configuration.
Date Filter	The type of date, associated with the case, that is used for the date range, for example, the date that the case was created, modified, or when it occurred.
Start Date	The start date, based on the type of date in the date filter.
End Date	The end date, based on the type of date in the date filter.
Image Export	The option to include all the images, the image information only, or nothing about the images.
File Type	The file type for the exported images if the images are included in the export.
Name	The file name for the generated export file. File names are unique because the complete date and time of the export are automatically added to the end of the file name.
Data Export Path	The default path for exported site data is C:\IBISDataExport. Exported files are saved to a configured computer in a folder named after the file name. The data from every site that is exported is saved in a separate folder, and a subfolder is created for images, if they are included.
Select All	Selects all the sites in the list.
Clear All	Clears all the selected sites.
Create	Starts creating the export file. The progress of the file export can be viewed on the Pending Data Export tab.
Help	Opens the Help topic that describes the dialog box.
Pending Data Export Tab	

Option	Description
Export Name	The file name given to the data export file when it was created.
Requested By	The user who created the data export.
Status	The status of the pending data export.
Cancel	Cancels the pending data export that is selected.
Help	Opens the Help topic that describes the dialog box.

How Do I...?

Export site data (page 104)

MultiViewer Reference

This section covers the following topics:

Cartridge Case MultiViewer

The **Cartridge Case MultiViewer** has two panes in which exhibit images are displayed.

- The first pane (on the left) displays the reference exhibit and its acquired images.
- The second pane displays the test exhibits and their acquired images.

Reference exhibit   Sort by order   Test exhibits

Image group

Exhibit information   A red X indicates that the exhibit is of low interest

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Image Groups

A cartridge case exhibit can have up to seven different images, representing the different regions of interest (ROIs) that are associated with it. In the full view version of the **MultiViewer**, the images associated with an exhibit are arranged vertically into an image group. Images are arranged by region of interest as follows:

Image Position	Image Type
First	Breech face - ring light
Second	Breech face - 6 o'clock side light
Third	Firing pin - ring light
Fourth	Ejector mark - 6 o'clock side light
Fifth	Ejector mark - 3 o'clock side light
Sixth	Primer 3D DFF
Seventh	Full headstamp - ring light

"Not available" indicates that there is no image for that region of interest.

Toolbar Buttons and Fields

Button/Field	Name	Description
	Display Guides	Turns the display information on and off. When selected, the options set using the down arrow are displayed on the image.
	Marked Exhibits	Hides/shows all marked images.
	All Test Exhibits Images	Displays all cartridge case image types. Disabled if all cartridge case image types are already displayed.

Button/Field	Name	Description
	Set Position	Displays images at their acquisition position or their best match position, based on rotation.
		Best match position is enabled only if exhibits were selected from the **Correlation Requests** view.
	Sort By	The selected option determines how images are sorted in the **MultiViewer**. The options in the list are:
		• **Breech Face Score** *
		• **Firing Pin Score** *
		• **Ejector Mark Score** *
		• **Event Type**
		• **Caliber**
		• **Law Agency**
		*Available only if the **MultiViewer** was opened from the **Correlation Requests** view. Otherwise, **User Selection** is displayed as an option, which sorts exhibits in the order in which they were selected.
	Layout	The selection determines the number of images in the layout. The options are:
		• 8 x 5
		• 6 x 4
		• 4 x 3
		• 2 x 2
	Side-by-Side Viewer	Opens the Cartridge Case Side-by-Side Viewer (page 347). The reference exhibit and the selected test exhibit are displayed.
	Import Exhibits	Opens the Import Exhibits Dialog Box (page 311). You can import all the remaining exhibits that are not stored locally, or set a number of exhibits to import based on the highest scores.

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Button/Field	Name	Description
⭐	Save Settings	Saves the Viewer settings as your Preferences (page 55).
❓	Help	Opens the Help topic for the MultiViewer.

3D Image Controls

Control	Description
2D/3D Rendering	Adjusts the 2D/3D rendering of the displayed primer 3D composite images that have been acquired with BRASSTRAX-3D.
	The range is from 0, which renders the image as completely 2D, to 100, which renders the image with the maximum level of 3D. This control produces a proportionate mix of 2D and 3D within that range.
Lighting control	Changes the type of light and adjusts the direction of the side light. This control affects only primer 3D composite images.
	Clicking the center of the inner circle switches to the center light. Clicking the outer circle switches to the side light. Dragging the "light beam" on the outer circle changes the direction of the side light. For more information, see Lighting Control (page 363).

Visual Indicators

Indicator	Description
Blue border	When used on one exhibit, the border indicates the test exhibit that will display first if you open the Side-by-Side Viewer. When used on two exhibits, the borders indicate the two exhibits that will display in the Side-by-Side Viewer.

Indicator	Description
Red X	Indicates that the test exhibit is of low interest and may be hidden.
Not available	Indicates that no image exists for the particular region of interest.

Mouse Actions

Action	Description
Double-click	On a test exhibit image, a blue border is placed around the exhibit. This indicates that the exhibit is selected to display in the Side-by-Side Viewer. To select a second test exhibit, press CTRL+double-click.
	On a reference exhibit image, this isolates the image type to display all the test exhibits.
Right-click	If the clicked exhibit is not currently marked, marks the images in the exhibit's image group with a red X. When the **Marked Exhibits** button is clicked, the marked exhibits are removed from the display.
	If the clicked exhibit is currently marked, unmarks the exhibit images.

Exhibit Details Fields

Field	Description
Site Name	The site name of the case.
Case Number	The unique ID that is assigned to the case.
Case Ref. Number	The reference number that is assigned to the case.
High Profile	Indicates if the case to which the exhibit belongs is high profile.
Law Agency	The law enforcement agency that submitted the case to which the exhibit belongs.
Case Occurrence	The date on which the event occurred.
Case Creation	The date on which the case was created.

Field	Description
Exhibit Number	The unique number that is assigned to the exhibit.
Caliber	The caliber of the exhibit.
Manufacturer	The name of the ammunition manufacturer.
Firing Pin Shape	The shape of the exhibit's firing pin impression.
Event Type	The event to which the case is related, such as a Homicide or Assault with a Deadly Weapon.
Acquisition	The date on which the exhibit was acquired.
Created By	The user who created the exhibit.

How Do I...?

Open the MultiViewer (page 132)

Display guides in the MultiViewer (page 134)

Sort exhibits (page 139)

Display one or all cartridge case image types (page 143)

Hide exhibits (page 149)

Move and rotate images (page 150)

Adjust the lighting and rendering of 3D images (page 151)

Breech Face Class Characteristics Filter Dialog Box
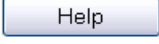
You can filter cartridge case exhibits by their breech face class characteristics. This dialog box opens when you select **Breech Face Characteristics** from Display Guides in the MultiViewer (page 134).
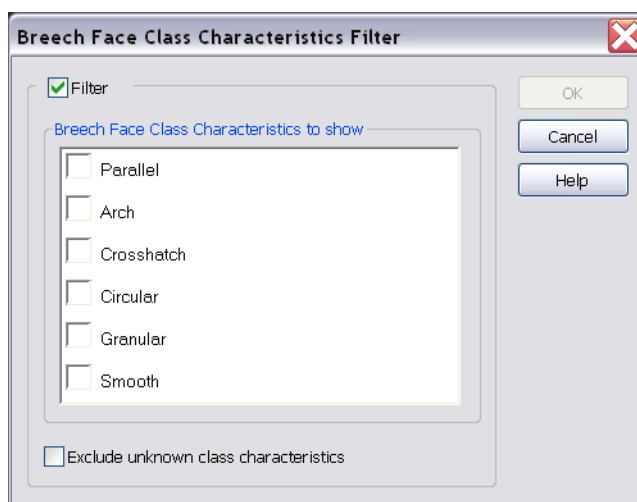
Class Characteristics

The breech face class characteristics help identify a cartridge case. The filter can include one or more class characteristics, and exclude Unknown types. Unknown is the default when no class characteristic is entered for an exhibit.

Check Box	Description
Filter	Activates the filter options.
Parallel	Includes parallel marks.
Arch	Includes arch marks.
Circular	Includes circular marks.
Granular	Includes granular marks.
Smooth	Includes smooth marks.
Exclude Unknown	Excludes class characteristics that are of the Unknown type.

Check Box	Description
OK	Sets the filter and closes the dialog box.
Cancel	Closes the dialog box.
Help	Opens the Help topics that describes the dialog box.

How Do I...?

Bullet MultiViewer

The **Bullet MultiViewer** has two panes in which mosaics are displayed.

- The first pane (on the left) displays the reference exhibit.
- The second pane displays the test exhibits.

Reference exhibit   Exhibit layout   Test exhibits
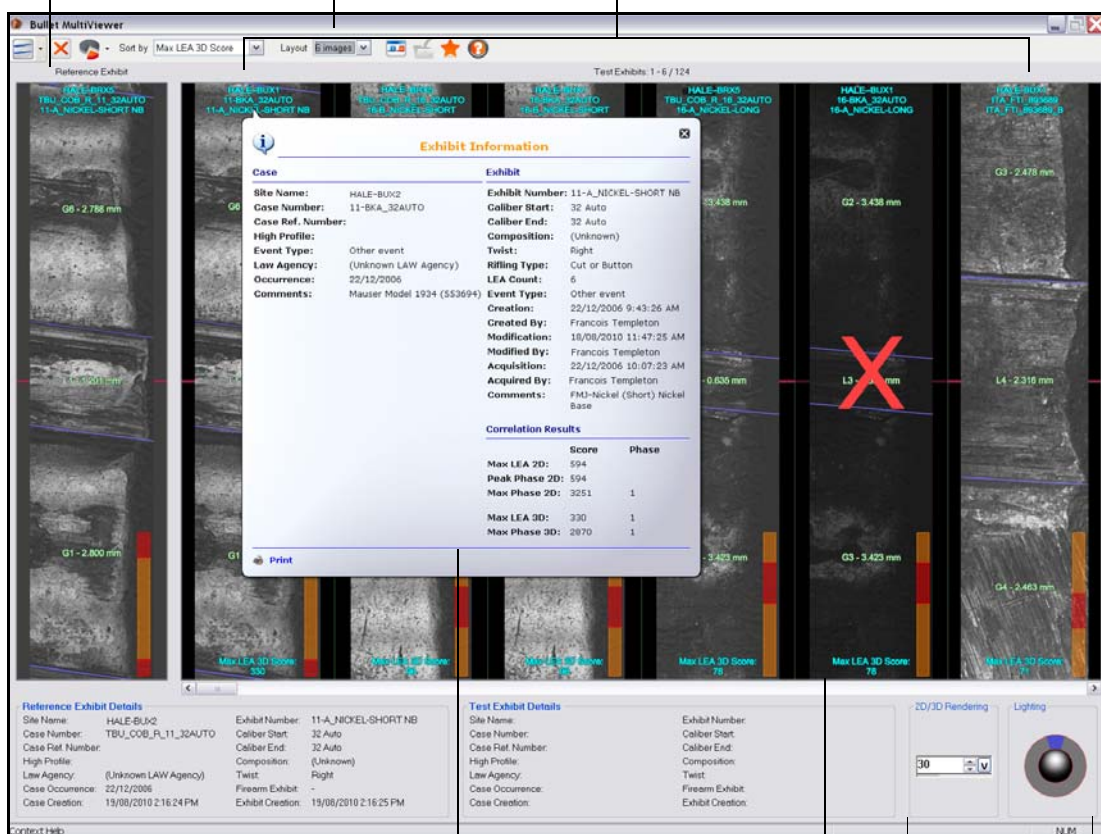
Exhibit information   A red X indicates that the   Image manipulation
exhibit is of low interest   controls

Toolbar Buttons and Fields

Button/Field	Name	Description
	Display Guides	Turns the display information on and off.
		When selected, the options set using the down arrow are displayed on the image.
	Marked Exhibits	Hides/shows all marked exhibits.
	Set Position	Displays images at their acquisition position or their best match position, based on phase.
		Best match position is enabled only if exhibits were selected from the **Correlation Requests** view.
	Sort By	The selected option determines how images are sorted in the **MultiViewer**. The options are:
		• Max LEA 2D score* • Peak Phase 2D score* • Max Phase 2D score* • Max LEA 3D score* • Max Phase 3D score* • Event type • Caliber • Law agency • Average LEA width • Maximum LEA width • Minimum LEA width
		*Available only if the **MultiViewer** was opened from the **Correlation Requests** view. Otherwise, **User Selection** is displayed as an option, which sorts exhibits in the order in which they were selected.
	Layout	The selection determines the number of images in the layout. The options are from 8 to 2.

Button/Field	Name	Description
	Side-by-Side Viewer	Opens the Bullet Side-by-Side Viewer (page 355). The reference exhibit and the selected test exhibit are displayed.
	Import Exhibits	Opens the Import Exhibits Dialog Box (page 311). You can import all the remaining exhibits that are not stored locally, or set a number of exhibits to import based on the highest scores.
	Save Settings	Saves the Viewer settings as your Preferences (page 55).
	Help	Opens IBIS MATCHPOINT+ Help.

Visual Indicators

Indicator	Description
Blue border	When used on one exhibit, the border indicates the test exhibit that will display first if you open the Side-by-Side Viewer. When used on two exhibits, the borders indicate the two exhibits that will display in the Side-by-Side Viewer.
Red X	Indicates that the test exhibit's mosaic is of low interest and can be hidden.
Not available	Indicates that no mosaic exists for the test exhibit.

Mouse Actions

Action	Description
Double-click	On a test exhibit image, a blue border is placed around the exhibit. This indicates that the exhibit is selected to display in the Side-by-Side Viewer. To select a second test exhibit, press CTRL+double-click.
	On a reference exhibit image, this isolates the image type to display all the test exhibits.
Right-click	If the clicked exhibit is not currently marked, marks the images in the exhibit's image group with a red X. When the **Marked Exhibits** button is clicked, the marked exhibits are removed from the display.
	If the clicked exhibit is currently marked, unmarks the exhibit images.

Image Manipulation Controls

There are several ways to enter a value using the following controls. For more information about how this type of control works, see Using the Image Manipulation Controls (page 171).

Control	Description
2D/3D Rendering	Changes the rendering of the images from 2D to 3D.
	The range is from 0, which renders the image as completely 2D, to 100, which renders the image with the maximum level of 3D. This control produces a proportionate mix of 2D and 3D within that range.
	This control is available only for 3D images that have been acquired with BULLETTRAX-3D.
Lighting	Changes the lighting for all 3D images. For more information, see Lighting Control (page 363).

Exhibit Details Fields

Field	Description
Site Name	The site name of the case.
Case Number	The unique ID that is assigned to the case.
Case Ref. Number	The reference number that is assigned to the case.
High Profile	Indicates if the case to which the exhibit belongs is high profile.
Law Agency	The law enforcement agency that submitted the case to which the exhibit belongs.
Case Occurrence	The date on which the event occurred.
Case Creation	The date on which the case was created.
Exhibit Number	The unique ID that is assigned to the exhibit.
Caliber Start	The start of the bullet caliber range.
Caliber End	The end of the bullet caliber range.
Composition	The materials that make up the bullet's physical structure.
Twist	The direction in which the striae twist.
Firearm Exhibit	The exhibit number of the firearm from which the bullet was fired.
Exhibit Creation	The date on which the exhibit was created.

How Do I...?

Side-by-Side Viewer Reference

This section covers the following topics:

Cartridge Case Side-by-Side Viewer

The **Cartridge Case Side-by-Side Viewer** displays two cartridge case images, the reference image and the test image simultaneously. The images can be rotated, overlapped, and saved to a file. You can adjust the contrast and brightness of all cartridge case images. When comparing primer 3D composite images, you can also adjust the 2D/3D rendering, 3D elevation, and lighting.
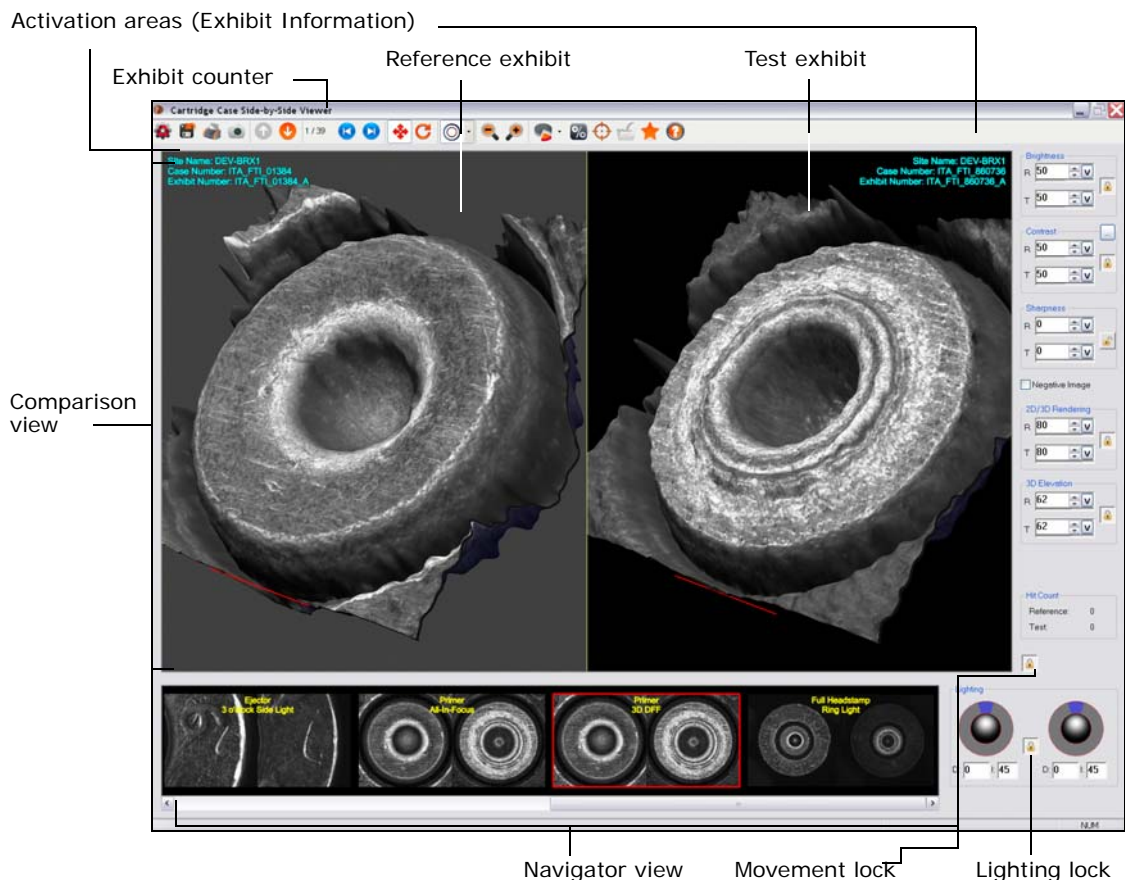
Views

View	Description
Comparison view	Displays the reference exhibit in the left pane and the test exhibit in the right pane.
Navigator view	Displays image pairs, which consist of a reference image and a test image, for each image type that was acquired. Clicking on an image pair copies it to the **Comparison** view.

Toolbar Buttons

Button	Name	Description
	Reset	Resets all values to the default settings.
	Export Images	Opens the Export Images dialog box (page 373), which enables you to save selected images to graphic files.
	Print	Opens the **Print** dialog box, in which you can select a printer, specify print properties, a page range, and the number of copies.
	Comparison View Screenshot	Opens the Screenshot dialog box (page 369), which allows you to save the **Comparison** view image as a bitmap or copy it to the Windows clipboard so that you can paste it into another application.
	Previous Exhibit	Displays the previous exhibit in the test list. A counter indicates the number of exhibits.
	Next Exhibit	Displays the next exhibit in the test list. A counter indicates the number of exhibits.
	Previous ROI	Displays the previous ROI in the test exhibit.

Button	Name	Description
	Next ROI	Displays the next ROI in the test exhibit.
	Translation Mode	Puts the cursor into translation mode so that you can move an image by dragging the cursor.
	Rotation Mode	Puts the cursor into rotation mode so that you can rotate an image by dragging the cursor.
	Display Guides	Turns the display information on and off. When selected, the options set using the down arrow are displayed on the image.
	Zoom Out	Decreases the zoom level for the reference and test images. You cannot change the zoom level of the images independently.
	Zoom In	Increases the zoom level for the reference and test images. You cannot change the zoom level of the images independently.
	Set Position	Displays images at their acquisition position or their best match position, based on rotation. Best match position is enabled only if exhibits were selected from the **Correlation Requests** view.
	Correlation Scores	Opens the Cartridge Case Correlation Scores dialog box (page 375) in which the correlation scores of the exhibits in the **Comparison** view are displayed. Enabled only if exhibits were selected from the **Correlation Requests** view.
	Hit	Opens the Add Hit dialog box (page 381).
	Import	Opens the Import Exhibits dialog box (page 311). You can import all the remaining exhibits that are not stored locally, or set a number of exhibits to import based on the highest scores.

Button	Name	Description
	Save Settings	Saves the Viewer settings as your Preferences (page 55).
	Help	Opens the Help topic that describes the window.

Image Manipulation Controls

Control	Description
Brightness	
R (Reference)	Adjusts the brightness of the reference exhibit.
	For the Reference and the Test exhibit, the brightness range is between 0 and 100. The default is 50. As the value approaches 0, the images get darker. As the value approaches 100, the images get brighter.
T (Test)	Adjusts the brightness of the test exhibit.
Contrast	
R (Reference)	Adjusts the contrast of the reference exhibit.
	For the Reference and the Test exhibit, the contrast range is between 0 and 100. The default is 50. As the value approaches 0, the contrast is reduced. As the value approaches 100, the contrast is increased.
	For information about midtones, see Midtones dialog box (page 367).
T (Test)	Adjusts the contrast of the test exhibit.
Sharpness	
R (Reference)	Adjusts the sharpness of the reference image.
	The default is 0 and the maximum is 10. As the value approaches 10, the focus is enhanced by increasing the contrast of adjacent pixels in the image.
T (Test)	Adjusts the sharpness of the test exhibit.

Control	Description
Negative Image	Converts the contrast to the negative image for the reference exhibit and test exhibit.
2D/3D Rendering	
R (Reference)	Adjusts the 2D/3D rendering of the reference exhibit. This control applies to primer 3D composite images only.
	For the reference and the test exhibit, the range is from 0, which renders the image as completely 2D, to 100, which renders the image with the maximum level of 3D. This control produces a proportionate mix of 2D and 3D within that range.
	This control can be used only on 3D images that were acquired with BRASSTRAX-3D.
T (Test)	Adjusts the 2D/3D rendering of the test exhibit.
3D Elevation	
R (Reference)	Adjusts the height of the peaks on the reference image. This control applies to primer 3D composite images only.
	The default is 25, which represents a magnitude factor of 1x. The range is from 0 (0x) to 100 (4x). To reduce the height of peaks, select a value that is between 0 and 25. To increase the height of image peaks, select a value that is between 25 and 100.
T (Test)	Adjusts the height of the peaks on the reference image. This control applies to primer 3D composite images only.
Lighting	This control applies to primer 3D composite images only. For more information, see Lighting Control (page 363).

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Hit Count Fields

Field	Description
R (Reference)	The number of hits in which the reference exhibit has been involved.
T (Test)	The number of hits in which the test exhibit has been involved.
	If a hit has been recorded between the displayed reference exhibit and test exhibit, an orange bull's-eye icon appears next to the **Hit Count** heading.

Locks

Lock	Description
Movement	When this lock is on, the test exhibit still moves independently, but when the reference exhibit is moved the test exhibit is locked to move with it. When off, only the exhibit over which the cursor is positioned moves.
	Use the keyboard shortcut key, F12, to toggle between locked and unlocked.
Brightness	When this lock is on, changes to brightness are applied to both the reference exhibit and the test exhibit simultaneously. When this lock is off, brightness adjustments can be made to each image independently.
Contrast	When this lock is on, changes to contrast are applied to both the reference exhibit and the test exhibit simultaneously. When this lock is off, contrast adjustments can be made to each image independently.
2D/3D Rendering	When this lock is on, changes to 2D/3D rendering are applied to both the reference exhibit and the test exhibit simultaneously. When this lock is off, 2D/3D rendering adjustments can be made to each image independently.

Lock	Description
3D Elevation	When this lock is on, changes to 3D elevation are applied to both the reference exhibit and the test exhibit simultaneously. When this lock is off, 3D elevation adjustments can be made to each image independently.
Lighting	When this lock is on, changes to the lighting are applied to both the reference exhibit and the test exhibit simultaneously. When this lock is off, lighting adjustments can be made to each image independently.

Lighting Control

Adjusting the lighting can help to enhance image detail. The Lighting control allows you to switch between a center light and a side light and change the direction of the side light. Lighting adjustments affect all the 3D images in the **Side-by-Side Viewer**.

You can use the control as shown in the following illustration, or you can enter values directly in the **D** (Direction) and **I** (Inclination) fields.

Clicking the outer circle enables the side light. Dragging the blue "light beam" changes the direction of the light.

Clicking off-center in the inner circle enables the side light. Where you click determines the direction of the side light, as indicated by the blue "light beam".

Clicking in the middle of the inner circle enables the center light.

Note: Lighting can be adjusted for 3D images only.

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How Do I...?

Bullet Side-by-Side Viewer

The **Bullet Side-by-Side Viewer** is used to closely compare a reference bullet exhibit to a test exhibit. Toolmark identification features, such as bullet profiling and consecutive matching striae (CMS), are available.

Activation areas (Exhibit Information)
Navigator view
Reference exhibit
Test exhibit
Move handle
Profile lines
Profile guide lines
Navigator box
Anchor line
Index numbers
Movement lock
Comparison view
CMS view
Profile view
Lighting lock
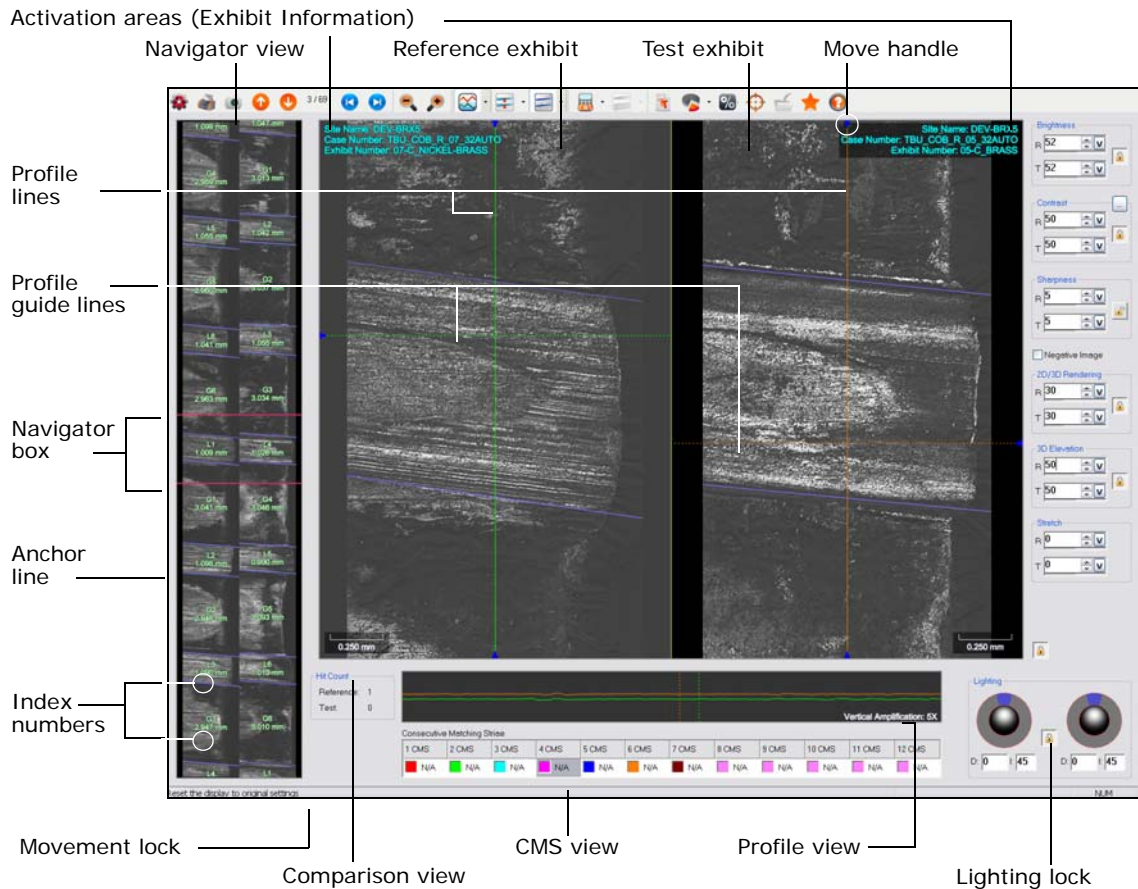
Views

View	Description
Navigator view	Displays the full mosaics of the reference and test exhibits. The part of the mosaic that appears in the Navigator Box is enlarged and displayed in the **Comparison** view. Missing LEAs or GEAs are indicated by gray shading.
Comparison view	Displays an enlarged view of a section of the reference exhibit and the test exhibit for close side-by-side inspection.
Profile view	When bullet profiling is enabled, displays two two-dimensional graphs, or profiles. The green graph represents the shape of the reference bullet's surface, and the orange graph represents that of the test bullet.
CMS view	When the consecutive matching striae (CMS) have been calculated, displays the number of instances of each CMS group (1 CMS to 12 CMS) that have been found.

Toolbar Buttons

Button	Name	Description
	Reset	Resets all values to the default settings.
	Print	Opens the **Print** dialog box, in which you can select a printer, specify print properties, a page range, and the number of copies.
	Comparison View Screenshot	Opens the Screenshot dialog box (page 369), which enables you to save the **Comparison** view image as a bitmap or copy it to the Windows clipboard so that you can paste it into another application.
	Previous Exhibit	Displays the previous exhibit in the test list. A counter indicates the number of exhibits.
	Next Exhibit	Displays the next exhibit in the test list. A counter indicates the number of exhibits.

Button	Name	Description
	Previous ROI	Displays the previous ROI in the test exhibit.
	Next ROI	Displays the next ROI in the test exhibit.
	Zoom Out	Sets the magnification of the images in the **Comparison** view to the lowest level.
	Zoom In	Sets the magnification of the images in the **Comparison** view to the highest level.
	Profiling State	Turns the bullet profiles on and off. When selected, the options that are set using the down arrow are displayed on the image. **Hairline Profiling**: the position of the hairline is used as the basis of the bullet profiles. **Profile Lines**: the position of each profile line is used as the basis of the bullet profiles. There are two profile lines that can be positioned separately. The green line is for the reference exhibit and the orange line is for the test exhibit. For more information, see Visualize Bullet Profiles (page 201).
	Adjust	Adjustment options used to redress and normalize the images.
	Display Guides	Turns the display information on and off. When selected, the options set using the down arrow are displayed on the image.

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Button	Name	Description
	Calculate CMS	Calculates the number of consecutive matching striae (CMS) that are in the selected reference LEA and test LEA.
		Clicking the down arrow next to this button opens a menu that contains the **Configure** option, which opens the Configure CMS dialog box (page 365).
		For more information, see Calculate the Number of Consecutive Matching Striae (page 205).
	Show/Hide the CMS	When set to Show, found CMS groups and/or individual striae are highlighted to make them stand out. When set to Hide, they are not highlighted.
		Clicking the down arrow next to this button opens a menu from which you can select what you want highlighted in the **Comparison** view:
		• CMS only Only CMS groups of consecutive matching striae are highlighted. • Striae only Only individual striae that meet the Stria Calculation criteria in the Configure CMS dialog box (page 365) are highlighted. • CMS and Striae CMS groups and individual striae are highlighted.
	Transparency Mode	When enabled, both exhibits are transparent. When the images are overlapped, the features of the two exhibits are combined.
		When disabled, both exhibits are opaque.
		For more information, see Overlap Images (page 181).

Button	Name	Description
	Set Position	Displays images at their acquisition position or their best match position, based on phase. The pair of LEAs with the Max Phase score are displayed in the **Comparison** view.
		Best match position is enabled only if exhibits were selected from the **Correlation Requests** view.
		For more information, see Set Bullet Images at Best Match Position (page 173).
	Correlation Scores	Opens the Bullet Correlation Scores dialog box (page 377) in which the bullet correlation scores of the reference and the test exhibits are displayed.
	Hit	Opens the Add Hit dialog box (page 381).
	Import	Opens the Import Exhibits dialog box (page 311). You can import all the remaining exhibits that are not stored locally, or set a number of exhibits to import based on the highest scores.
	Save Settings	Saves the Viewer settings as your Preferences (page 55).
	Help	Opens MATCHPOINT+ Help.

Hit Count Fields

Field	Description
R (Reference)	The number of hits in which the reference exhibit has been involved.
T (Test)	The number of hits in which the test exhibit has been involved. If a hit has been recorded between the displayed reference exhibit and test exhibit, an orange bull's-eye icon appears next to the **Hit Count** heading.

Locks

Lock	Description
Movement	When this lock is on, the test exhibit still moves independently, but when the reference exhibit is moved the test exhibit is locked to move with it. When off, only the exhibit over which the cursor is positioned moves. Use the keyboard shortcut key, F12, to toggle between locked and unlocked.
Brightness	When this lock is on, changes to brightness are applied to both the reference exhibit and the test exhibit simultaneously. When this lock is off, brightness adjustments can be made to each image independently.
Contrast	When this lock is on, changes to contrast are applied to both the reference exhibit and the test exhibit simultaneously. When this lock is off, contrast adjustments can be made to each image independently.
2D/3D Rendering	When this lock is on, changes to 2D/3D rendering are applied to both the reference exhibit and the test exhibit simultaneously. When this lock is off, 2D/3D rendering adjustments can be made to each image independently.

Lock	Description
3D Elevation	When this lock is on, changes to 3D elevation are applied to both the reference exhibit and the test exhibit simultaneously. When this lock is off, 3D elevation adjustments can be made to each image independently.
Lighting	When this lock is on, changes to the lighting are applied to both the reference exhibit and the test exhibit simultaneously. When this lock is off, lighting adjustments can be made to each image independently.

Image Manipulation Controls

There are several ways to enter a value using the following controls. For more information about how this type of control works, see Using the Image Manipulation Controls (page 171).

Control	Description
Brightness	
R (Reference)	Adjusts the brightness of the reference exhibit.
	For the Reference and the Test exhibit, the brightness range is between 0 and 100. The default is 50. As the value approaches 0, the images get darker. As the value approaches 100, the images get brighter.
T (Test)	Adjusts the brightness of the test exhibit.
Contrast	
R (Reference)	Adjusts the contrast of the reference exhibit.
	For the Reference and the Test exhibit, the contrast range is between 0 and 100. The default is 50. As the value approaches 0, the contrast is reduced. As the value approaches 100, the contrast is increased.
	For information about midtones, see Midtones dialog box (page 367).
T (Test)	Adjusts the contrast of the test exhibit.

Control	Description
Sharpness	
R (Reference)	Adjusts the sharpness of the reference image.
	The default is 0 and the maximum is 10. As the value approaches 10, the focus is enhanced by increasing the contrast of adjacent pixels in the image.
T (Test)	Adjusts the sharpness of the test exhibit.
Negative Image	Converts the contrast to the negative image for the reference exhibit and test exhibit.
2D/3D Rendering	
R (Reference)	Adjusts the 2D/3D rendering of the reference exhibit.
	For the Reference and the Test exhibit, the range is from 0, which renders the image as completely 2D, to 100, which renders the image with the maximum level of 3D. This control produces a proportionate mix of 2D and 3D within that range.
	This control is available only for 3D images that have been acquired with BULLETTRAX-3D.
T (Test)	Adjusts the 2D/3D rendering of the test exhibit.
3D Elevation	
R (Reference)	Adjusts the height of the peaks on the reference image.
	The default is 25, which represents a magnitude factor of 1x. The range is from 0 (0x) to 100 (4x). To reduce the height of peaks, select a value that is between 0 and 25. To increase the height of image peaks, select a value that is between 25 and 100.
	The 3D elevation control can be used only on 3D images that were acquired with BULLETTRAX-3D.
T (Test)	Adjusts the height of the peaks on the reference image.
Stretch	

Control	Description
R (Reference)	Stretches or shrinks the reference image vertically.
	If one of the images is of lesser quality than the other, its striae may be compressed in comparison to the other image. Stretching the image allows you to align its striae with those in the other image.
T (Test)	Stretches or shrinks the test image vertically.
Lighting	See Lighting Control (page 363).

Lighting Control

Adjusting the lighting can help to enhance image detail. The Lighting control allows you to switch between a center light and a side light and change the direction of the side light. Lighting adjustments affect all the 3D images in the Side-by-Side Viewer.

You can use the control as shown in the following illustration, or you can enter values directly in the D (Direction) and I (Inclination) fields.

Clicking the outer circle enables the side light. Dragging the blue "light beam" changes the direction of the light.

Clicking off-center in the inner circle enables the side light. Where you click determines the direction of the side light, as indicated by the blue "light beam".

Clicking in the middle of the inner circle enables the center light.

Note: Lighting can be adjusted for 3D images only.

How Do I...?

Configure CMS Dialog Box (Bullets Only)

This dialog box opens when you click the arrow next to the **Calculate CMS** button on the **Bullet Side-by-Side Viewer** toolbar and select **Configure**. Use this dialog box to define the criteria that are used to determine which markings are considered valid striae and the tolerances that are used to decide if consecutive striae match.

Fields and Buttons

Field/Button	Description
Striae Calculation	
Find Striae Using Peaks	Striae will be defined by looking at the peaks.

Field/Button	Description
Find Striae Using Valleys	Striae will be defined by looking at the valleys.
Relative Height Difference (%)	When Find Striae Using Peaks is selected, determines how high a peak must be, relative to the mean level of surface features in the LEA, to be considered a significant feature and included in the computation.
	When Find Striae Using Valleys is selected, this value refers to the depth of valleys.
Minimum Length	Determines how long a stria must be to be considered significant. The length can be entered in inches or millimeters.

CMS Calculation

Match Tolerance (Pixels)	Determines how much of a difference in vertical distance (measured in pixels) will be tolerated between two sets of consecutive striae that are being compared.
	If the difference is greater than this value, the two sets of consecutive striae will not be considered a match.

OK	Saves the CMS configuration and closes the dialog box.
Cancel	Closes the dialog box without saving the changes to the CMS configuration.
Help	Opens the Help topic that describes the dialog box.

How Do I...?

Midtones Dialog Box

This dialog box opens when you click the button inside the Contrast control section. Instead of affecting the contrast of the image globally, you can use the midtone contrast and shift controls in this dialog box to adjust the midtones of an image.
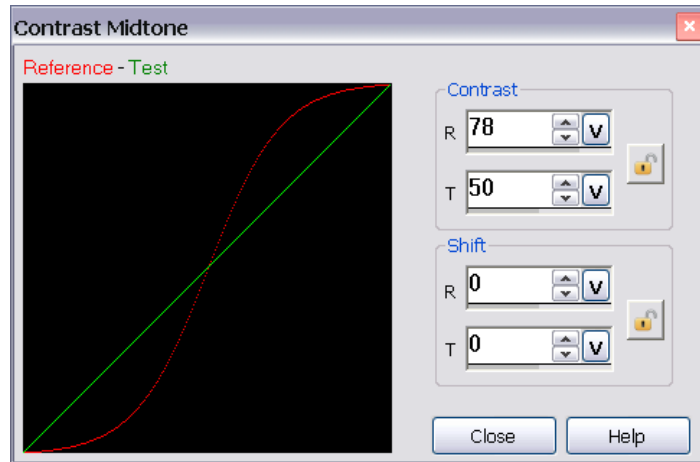
Views

View	Description
Midtone viewer	The graphic representation of midtone adjustments for the reference and test. If the control is unlocked, the reference and test exhibits appear as separate lines. The reference exhibit is red and the test exhibit is green.

Image Manipulations Controls

Control	Description
Contrast	
R (Reference)	Adjusts the contrast midtone of the reference exhibit. The default is 50 and the range is from 0 to 100.
T (Test)	Adjusts the contrast midtone of the test exhibit.

Control	Description
Shift	
R (Reference)	Adjusts the shift of the reference exhibit. The default is 0 and the range is from -100 to 100.
T (Test)	Adjusts the shift of the test exhibit.

Locks

Lock	Description
Contrast	When this lock is on, changes to the contrast midtone are applied to both the reference exhibit and the test exhibit simultaneously. When this lock is off, contrast midtone adjustments can be made to each image independently.
Shift	When this lock is on, changes to the shift are applied to both the reference exhibit and the test exhibit simultaneously. When this lock is off, shift adjustments can be made to each image independently.

Buttons

Button	Description
Close	Closes the dialog box.
Help	Opens the Help topic that describes the dialog box.

How Do I...?
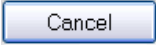
Screenshot Dialog Box

This dialog box opens when you click **Comparison View Screenshot** on the **Side-by-Side Viewer** toolbar. Use this dialog box to save the images in the **Comparison** view as a bitmap file or to copy them to the Windows clipboard so that you can paste them into another application.
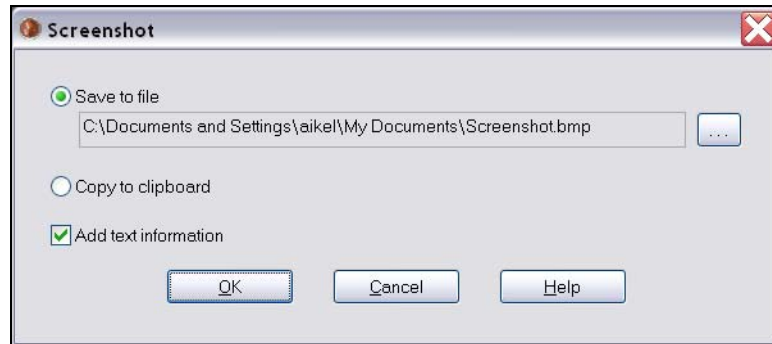
Fields and Buttons

Field/Button	Description
Save to file	Saves the **Comparison** view image as a bitmap file.
[...]	Opens a dialog box in which you specify the folder in which you want to save the file and the file name.
Copy to clipboard	Copies the **Comparison** view image to the Windows clipboard so that you can paste it into another application.
Add text information	Saves exhibit information, such as the contrast and brightness settings, along with the image.
OK	Saves a screen capture of the **Comparison** view as a bitmap file or copies it to the Windows clipboard, depending on the selected option.

Field/Button	Description
Cancel	Closes the dialog box without saving or copying the **Comparison** view image.
Help	Opens the Help topic that describes the dialog box.

How Do I...?

Print Preview Window

This window opens when you click **Print** > **Print Preview** on the Cartridge Case Side-by-Side Viewer (page 347) or the Bullet Side-by-Side Viewer (page 355) toolbar. Use this window to preview a document before printing it. You can also print a document from this dialog box.
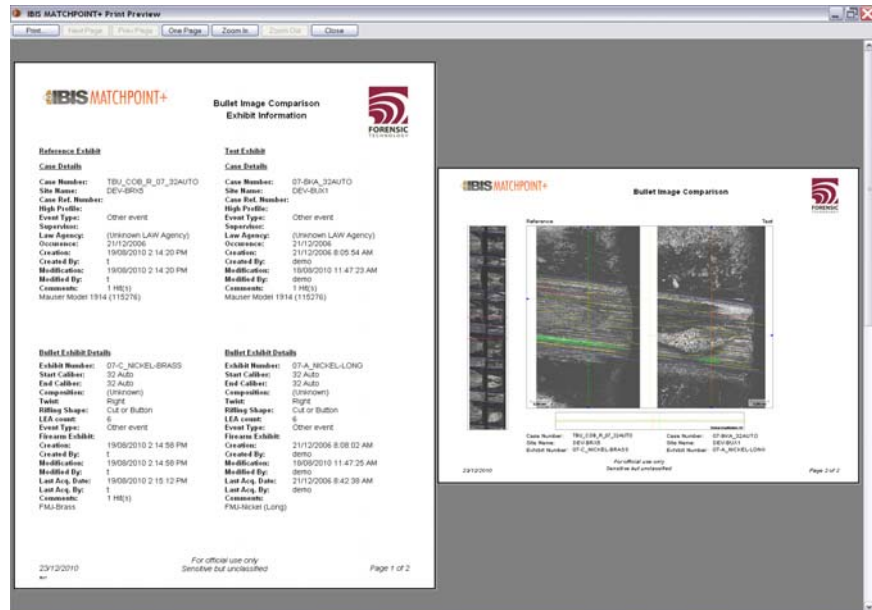
Toolbar Buttons

Button	Description
Print...	Opens the **Print** dialog box.
Next Page	If there are multiple pages, displays the next page.
Prev Page	If there are multiple pages, displays the previous page.
Two Page	If there are multiple pages, displays two pages side-by-side.

Button	Description
Zoom In	Increases the magnification level.
Zoom Out	Decreases the magnification level.
Close	Closes the dialog box.

How Do I...?

Export Images Dialog Box (Cartridge Cases Only)
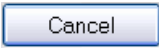
This dialog box opens when you click **Export Images** on the **Cartridge Case Side-by-Side Viewer** toolbar. Use this dialog box to export some or all of the images associated with the reference and test exhibits to individual graphic files.

Note: You cannot export primer 3D DFF images.

Fields and Buttons

Field/Button	Description
Reference Exhibit	Lists the images that are associated with the reference exhibit. When the check box next to an image is selected, the image is exported as a graphic file when **Export** is clicked.
Test Exhibit	Lists the images that associated with the test exhibit. When the check box next to an image is selected, the image is exported as a graphic file when **Export** is clicked.
File Name	The root file name that is used in the individual names of the files that are created. Individual file names are made up of the root file name and a suffix.
	For example, if the root file name is EX-CC-9MM, the resulting name of the breech face ring light graphic file is:
	EX-CC-9MM - Breech Face - Ring Light
File Type	The graphic file format in which the selected images are saved. The options are **PNG**, **JP2**, and **RAW**.
Export Path	The folder in which the files will be saved.
[...]	Opens a dialog box that allows you to browse for the folder.
[Export]	Exports the selected images as individual graphic files and saves them in the folder selected in **Export Path** field.
[Cancel]	Closes the dialog box without exporting the images.
[Help]	Opens the Help topic that describes the dialog box.

How Do I...?

Correlation Scores Dialog Box (Cartridge Cases)

This dialog box opens when you click **Correlation Scores** on the Cartridge Case Side-by-Side Viewer (page 347) toolbar. This dialog box displays the correlation scores of the image pair that is displayed in the **Comparison** view. For more information about scores, see Understanding Cartridge Case Correlation Scores (page 77).

```
┌─────────────────────────────────────────┐
│ Correlation Scores                    ✕  │
├─────────────────────────────────────────┤
│                                           │
│         Breech Face:     121              │
│                                           │
│          Firing Pin:     41               │
│                                           │
│        Ejector Mark:     382              │
│                                           │
│      ┌──────────┐      ┌──────────┐       │
│      │  Close   │      │   Help   │       │
│      └──────────┘      └──────────┘       │
└─────────────────────────────────────────┘
```

Fields and Buttons

Field/Button	Description
Breech Face	This score reflects the degree of similarity between the breech face region of interest (ROI) of the reference exhibit and the test exhibit that are displayed in the **Comparison** view.
Firing Pin	This score reflects the degree of similarity between the firing pin region of interest (ROI) of the reference exhibit and the test exhibit that are displayed in the **Comparison** view. This is the only score for rimfire.
Ejector Mark	This score reflects the degree of similarity between the ejector mark region of interest (ROI) of the reference exhibit and the test exhibit that are displayed in the **Comparison** view.

Field/Button	Description
Close	Closes the dialog box.
Help	Opens the Help topic that describes the dialog box.

How Do I...?

Correlation Scores Dialog Box (Bullets)

This dialog box opens when you click **Correlation Scores** on the Bullet Side-by-Side Viewer (page 355) toolbar. This dialog box displays the correlation scores of reference and test exhibits that are displayed in the **Comparison** view. For more information about scores, see Understanding Bullet Correlation Scores (page 80).

Fields and Buttons

Field/Button	Description
Max LEA 2D	The highest LEA score, calculated using acquired 2D data, within all of the individual LEA scores for a bullet correlation, and the phase where it was produced.
Peak Phase 2D	The highest LEA score within the phase that produced the Max Phase score, and the phase where it was produced.
Max Phase 2D	The highest phase score within a bullet correlation, calculated using acquired 2D data, and the phase where it was produced.
Max LEA 3D	The highest LEA score, calculated using acquired 3D data, within all of the individual LEA scores for a bullet correlation, and the phase where it was produced.

Field/Button	Description
Max Phase 3D	The highest phase score within a bullet correlation, calculated using acquired 3D data, and the phase where it was produced.
Close	Closes the dialog box.
Help	Opens the Help topic that describes the dialog box.

How Do I...?

Hits Reference

This section covers the following topics:

Add/Modify Hit Dialog Box
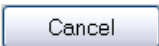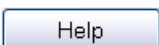
The **Add Hit** dialog box opens when you click **Hit** on the **Side-by-Side Viewer** toolbar. However, if the two exhibits are already logged as a hit, the **Modify Hit** dialog box opens.

The **Modify Hit** dialog box opens when you double-click a hit in the Hits window (page 383).

Use the **Add Hit** dialog box to record a hit in MATCHPOINT+. Most of the information is automatically filled in. You can only enter comments. Use the **Modify Hit** dialog box to modify the comments of an existing hit.

Fields and Buttons

Field/Button	Description
Site Name	The unique name that is assigned to the site to which the case belongs. This field is read-only.
Case Number	The unique number that is assigned to the case. This field is read-only.
Exhibit Number	The unique number that is assigned to the exhibit. This field is read-only.
Comments	An area in which you can record additional comments.

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Field/Button	Description
Confirmed	When selected, indicates the date that the hit was confirmed by a firearm examiner. **Note:** Confirmed hits cannot be deleted.
OK	Saves the hit in MATCHPOINT+.
Cancel	Closes the dialog box without saving or modifying the hit.
Help	Opens the Help topic that describes the dialog box.

How Do I...?

Hits Window

The **Hits** window displays a list of all hits that have been entered at your MATCHPOINT+ workstation.

Note: Only users with Expert Acquisition Technician or Firearm Examiner permissions can open this window.
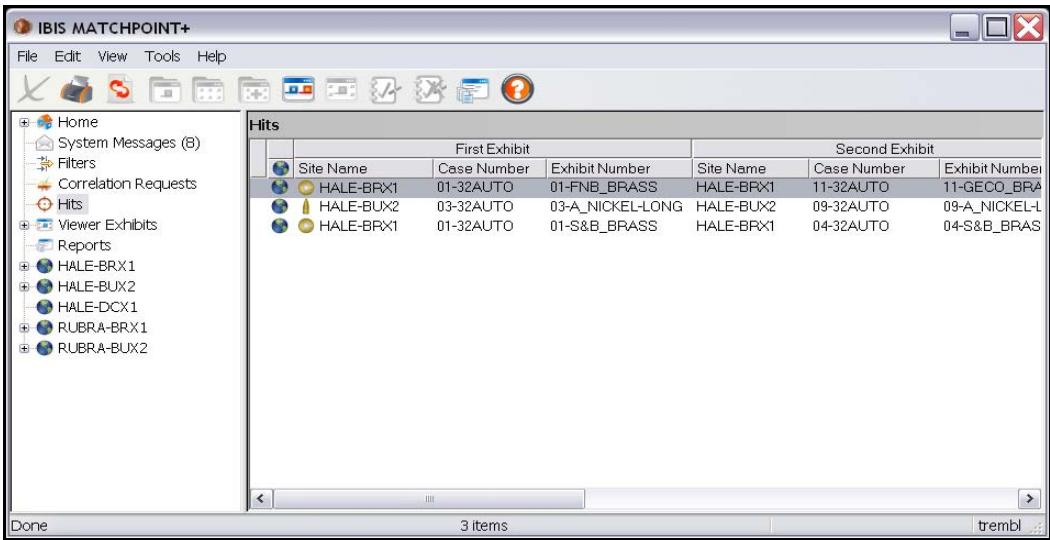
Columns

Column	Description
Site Icon	A colored site icon in the first column indicates that the hit is on a local site, and therefore can be modified. If no icon appears, the hit is on a remote site and is read-only.
First Exhibit	The site name, case number, and exhibit number of the reference exhibit.
Second Exhibit	The site name, case number, and exhibit number of the test exhibit.
Comments	Additional comments that were entered during hit creation.

Column	Description
Creation	The date the hit was created in MATCHPOINT+.
Created By	The user who created the hit.
Confirmation	The date the hit was confirmed by a firearm examiner.
Confirmed By	The user who confirmed the hit.
Modification	The date the hit was last modified.
Modified By	The user who modified the hit in MATCHPOINT+.

Context Menu

The following menu items appear when you right-click a selected hit in the list.

Menu Item	Description
Compare Exhibits	Opens the Side-by-Side Viewer.
Exhibit Information	Opens the exhibit information window (First Exhibit or Second Exhibit.)
Modify	Allows you to modify the comments or confirm a hit if it is not already confirmed.
Delete	Deletes the selected hit. Confirmed hits cannot be deleted.
Print	Open the Print dialog box.

How Do I...?

Reports Reference

This section covers the following topics:

Reports Window

This window opens when you click **Reports** in the Navigation tree. Use this view to see a list of the reports that you have created. You can sort the list by clicking on any of the column headers.
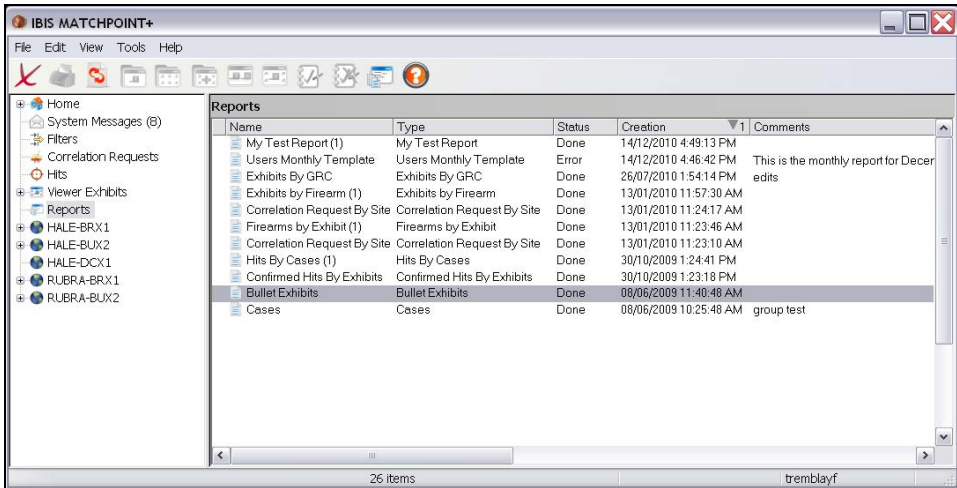
Columns

Column	Description
Name	The name of the report.
Type	The name of the template that was used to create the report.

Column	Description
Status	The status of the report, which will be one of the following: • **Requested** indicates that the report request has been submitted. • **Waiting** indicates that the report request has been received and is queued to be processed. • **Processing** indicates that MATCHPOINT+ is currently generating the report. • **Available** indicates that the report is ready to be downloaded from the server. • **Downloading** indicates that the report is currently being downloaded (also indicates the percent completed). • **Error** indicates that an error has occurred. • **Done** indicates that the report is ready to be viewed.
Creation	The date on which the report was created.
Comments	Additional comments about the report.

Context Menu

The following menu items appear when you right-click a report in the list.

Menu Item	Description
New	Opens the **New Report** dialog box.
Open	Opens the list of report formats that can be opened from your computer. A format must be generated before it can be selected. This menu item is available only if the report status is Done.
Copy	Opens a list of report formats that can be copied. If a format has been generated it can be selected and copied to a folder on your computer or to an external drive.
Delete	If the status of the selected report is Done, deletes all the report formats that are saved locally. If the status of the selected report is Waiting, cancels the report request and removes the entry from the Reports window.

How Do I...?

New Report Dialog Box

This dialog box opens when you select **File** > **New** > **Report** or click **New Report** on the toolbar. Use this dialog box to select a standard or custom template to use to generate a report, or to create a new custom template.

Fields and Buttons

Field/Button	Description
Standard templates	The standard MATCHPOINT+ report templates. These templates are available to all users.
Custom templates	The report templates that you have created. These templates are available only to the user who created them.
Description	The description of the selected template.
Comments	Descriptive comments about the report. The field is mandatory, which makes it easier to recognize reports that are generated with the same template.
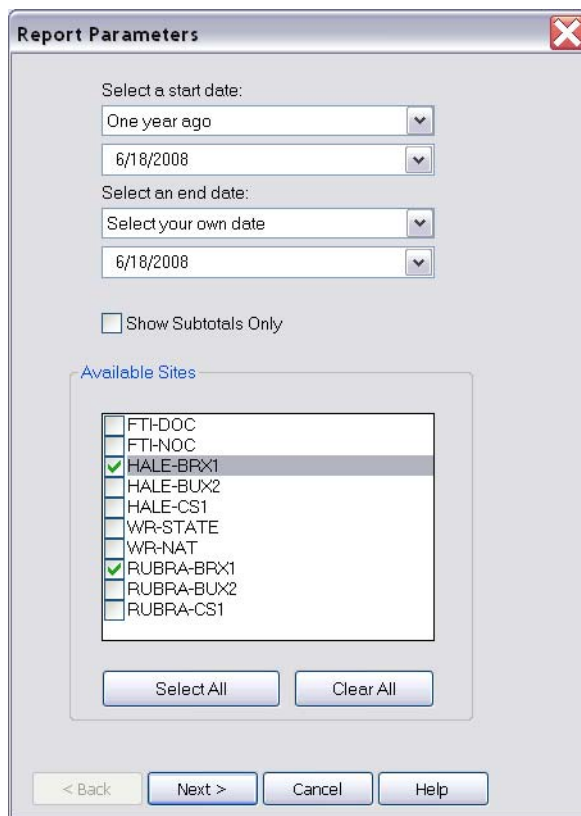
Field/Button	Description
Generate	Opens the **Report Parameters** dialog box.
Cancel	Closes the **New Report** dialog box.
New	Starts the **New Custom Report** wizard, which guides you through the creation of a new custom report template. The new template is then used to generate the report.
Modify	Opens the selected custom template so that you can make modifications.
Delete	Deletes the selected custom report template. **Note:** This button is disabled if a standard report is selected.
Help	Opens the Help topic for the dialog box.

How Do I...?

Create a report (page 235)

Report Parameters Dialog Box

This dialog box opens when you click **Generate** on the New Report dialog box (page 390) or **Finish** on the Report Title and Options dialog box (page 409), which is the last dialog box in the New Custom Report wizard. Use this dialog box to specify the parameters for the report.

Fields and Buttons

Field/Button	Description
Select a start date	Specifies which date is used as the start date. The options are: • Select your own date • Today • Six months ago • One year ago • 01 January (of the current year)
	If **Select your own date** is selected in the previous field, the second starting date field shows the date that you selected from the calendar. The calendar is displayed when you click the down arrow in this field.
Select an end date	Specifies which date is used as the ending date. The options are: • Select your own date • Today • Six months ago • One year ago • 01 January (of the current year)
	If **Select your own date** is selected in the previous field, the second ending date field shows the date that you selected from the calendar. The calendar is displayed when you click the down arrow in this field.
Show Subtotals Only	An option for certain reports that may generate a lot of data. Only the subtotals appear in the report; the individual items are eliminated.
Hits Option	For reports that are based on hits, you can choose to include confirmed, unconfirmed, or all hits.
Available Sites	The list of available sites that can be used to filter the data content of a report.

Field/Button	Description
Select All	Selects all the available sites for the report.
Clear All	Clears all the sites that have been selected for the report.
‹ Back	Returns to the previous step. This button is disabled for report templates since this is the first dialog box.
Next ›	Opens the next dialog box in the wizard.
Cancel	Closes the dialog box and cancels the report request.
Help	Opens the Help topic for the dialog box.

How Do I...?
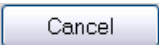
Select the report parameters (page 241)

Report Format Dialog Box

This dialog box opens after you specify the report parameters. Use this dialog box to specify the formats that you want to create for the report.
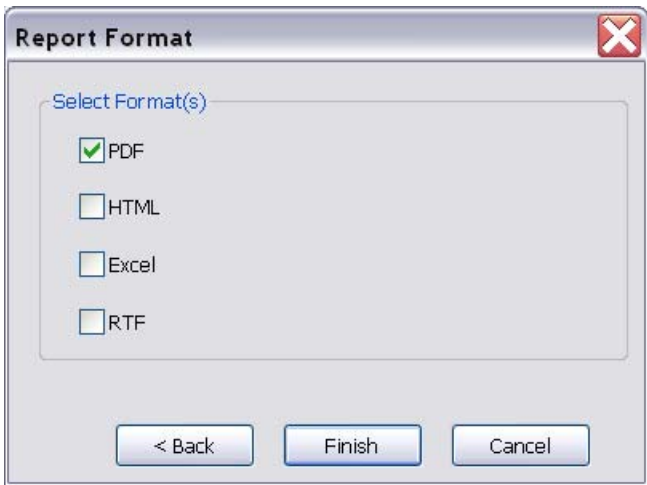
Fields and Buttons

Formats	Description
PDF	Generates a version of the report in PDF format. This is the default selection.
HTML	Generates a version of the report in HTML format.
Excel	Generates a version of the report in Excel format.
RTF	Generates a version of the report in RTF format.

< Back	Returns to the previous step.
Finish	Generates the selected formats of the report.
Cancel	Closes the dialog box and cancels the report request.

How Do I...?
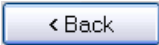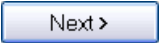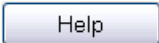
Report Data Source Dialog Box

This dialog box opens when you start the New Custom Report wizard by clicking **New** in the New Report dialog box (page 390). It is the first dialog box in the wizard. Use this dialog box to specify the type of report that you want to create.

Fields and Buttons

Field/Button	Description
Data Source	The data that will appear in the report. You can choose from the following data sources: • Confirmed Hits by Exhibit • Cases • Bullet Exhibits • Cartridge Case Exhibits • Firearm Exhibits • Hits For Bullet Exhibits • Hits For Cartridge Case Exhibits • Correlation Requests • Cartridge Case and Bullet Exhibits • Hits for Cartridge Case and Bullet Exhibits • Users
Description	A description of the selected data source.

Field/Button	Description
‹ Back	Disabled in this dialog box since this is the first dialog box in the wizard.
Next ›	Opens the Report Fields dialog box (page 399). This button remains disabled until a data source is selected from the list.
Cancel	Cancels the New Custom Report wizard.
Help	Opens the Help topic for the dialog box.

How Do I...?

Select the report data source (page 249)
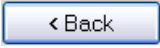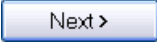
Report Fields Dialog Box

Use this dialog box to select the fields that you want to be included in the report.

Fields and Buttons

Field/Button	Description
Available fields	Lists the fields that are available for inclusion in the report. The particular fields that are available are determined by the selection that was made in the Report Data Source dialog box (page 397).
Selected fields	Lists the fields that have been selected for inclusion in the report.

>	Moves the selected field from the **Available fields** list to the **Selected fields** list.
>>	Moves all of the fields in the **Available fields** list to the **Selected fields** list.

Field/Button	Description
<<	Moves all of the fields in the **Selected fields** list to the **Available fields** list.
<	Moves the selected field from the **Selected fields** list to the **Available fields** list.
< Back	Returns to the previous step.
Next >	Opens the next dialog box in the wizard. This button remains disabled until at least one field is selected.
Cancel	Cancels the New Custom Report wizard.
Help	Opens the Help topic for the dialog box.

How Do I...?

Grouping Dialog Box
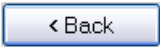
Use this dialog box to specify how you want to group the fields in the report.

Up to three grouping fields can be selected. The first field that is selected is at the top of the hierarchy. If you choose a second and third field, they are treated as subgroups within the main group.
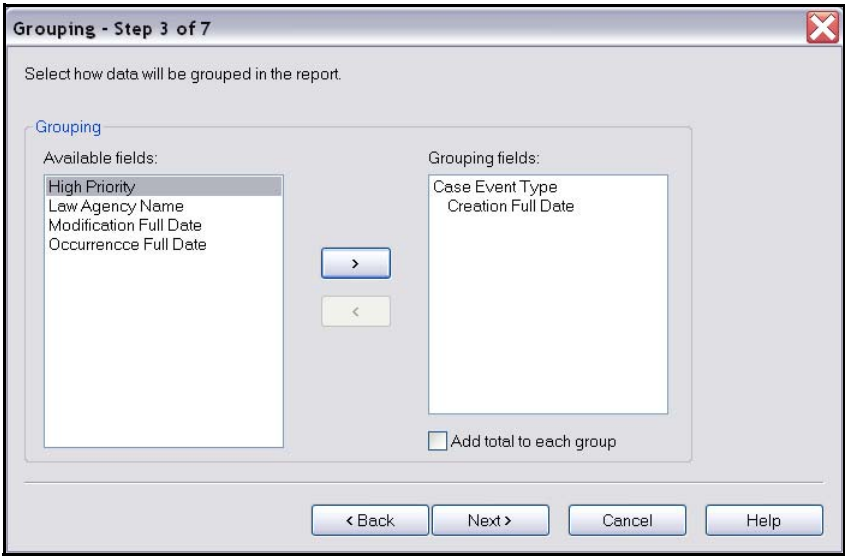
Fields and Buttons

Field/Button	Description
Available fields	Lists the fields that can be used to group the data in the report.
Grouping fields	Lists the fields that have been selected to group the data in the report.
Add total to each group	When selected, the total number of records for each grouping is shown in the report.
>	Moves the selected field from the **Available fields** list to the **Grouping fields** list.

Field/Button	Description
[<]	Moves the selected field from the **Grouping fields** list to the **Available fields** list.
[< Back]	Returns to the previous step.
[Next >]	Opens the next dialog box in the wizard.
[Cancel]	Cancels the New Custom Report wizard.
[Help]	Opens the Help topic for the dialog box.

How Do I...?
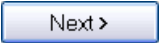
Display Order Dialog Box

Use this dialog box to specify the order in which the selected fields will be displayed in the report.
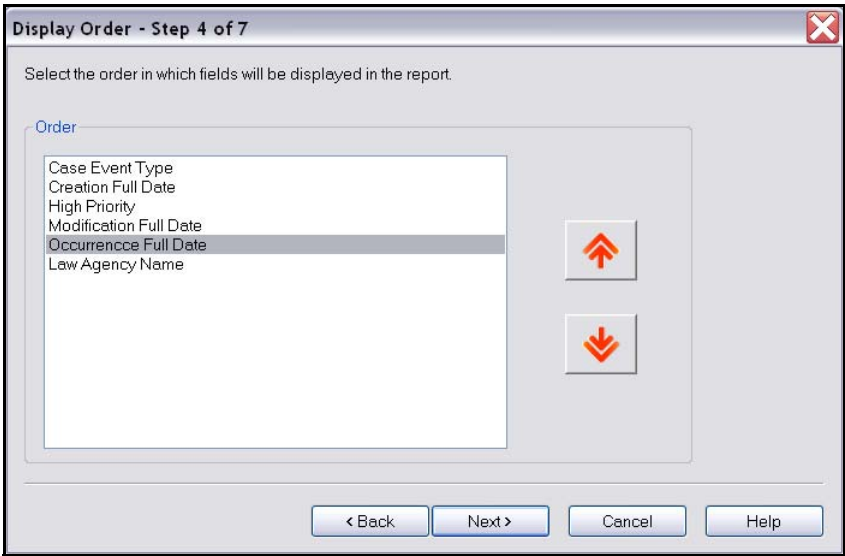
Fields and Buttons

Field/Button	Description
Order	Displays the order in which fields will be displayed in the report.
	Moves the selected field up one position in the list.
	Moves the selected field down one position in the list.
< Back	Returns to the previous step.

Field/Button	Description
Next >	Opens the next dialog box in the wizard.
Cancel	Cancels the New Custom Report wizard.
Help	Opens the Help topic for the dialog box.

How Do I...?
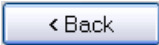
Sorting Dialog Box

Use this dialog box to specify how data will be sorted in the report. You can specify up to three sort fields.
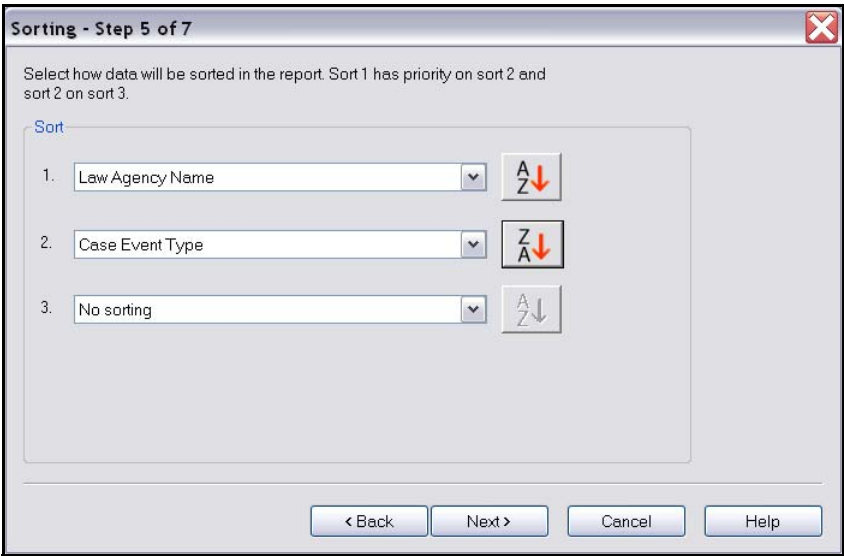
Fields and Buttons

Field/Button	Description
1	The field by which the data will be sorted. If more than one sort field is specified, MATCHPOINT+ first sorts by this field.
2	The second field by which MATCHPOINT+ sorts the report data. To specify a second sort field, a selection must be made in the first sort field.
3	The third field by which MATCHPOINT+ sorts the report data. To specify a third sort field, a selection must be made in the first and second sort fields.

Field/Button	Description
A Z↓	Sorts the results in ascending order.
Z A↓	Sorts the results in descending order.
‹ Back	Returns to the previous step.
Next ›	Opens the next dialog box in the wizard.
Cancel	Cancels the New Custom Report wizard.
Help	Opens the Help topic for the dialog box.

How Do I...?

Charts Dialog Box

Use this dialog box to specify whether or not to include a chart in the report and, if so, the type of chart.
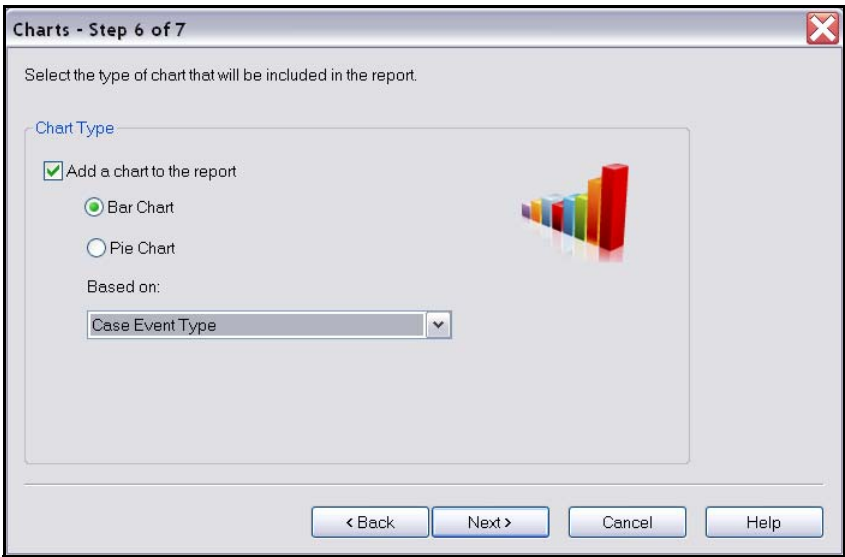
Fields and Buttons

Field/Button	Description
Add a chart to the report	When selected, includes a chart in the report.
Bar Chart	When selected, a vertical bar chart is included in the report.
Pie Chart	When selected, a pie chart is included in the report.
Based on	Specifies which field is used to calculate the bars or segments in the chart.
< Back	Returns to the previous step.

Field/Button	Description
Next >	Opens the next dialog box in the wizard. If the **Add a chart to the report** check box is selected but no selection has been made in the **Based on** field, this button remains disabled.
Cancel	Cancels the New Custom Report wizard.
Help	Opens the Help topic for the dialog box.

How Do I...?

Add a chart (page 254)
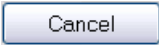
Report Title and Options Dialog Box

Use this dialog box to specify page layout elements, including the report title and headers.

Fields and Buttons

Field/Button	Description
Report Title	The title that will be printed on all report pages. This field is mandatory.
Element to be used as date range	The element that is used as the basis of the date range. The available options depend on the report type that was selected in the Report Data Source dialog box (page 397). This field is mandatory. You will be prompted to enter the specified date range when creating a new report.
Show page numbers in header	When selected, page numbers are displayed in the report headers.

Field/Button	Description
Show date in header	When selected, the date on which the report is generated is displayed in the report headers.
Save template as (check box)	Indicates that you want to save the options you selected in the wizard as a template. When selected, the text box to name the template is enabled.
Save template as (text box)	The name for the template you want save. The name appears in the list of **Custom Templates** in the New Report dialog box (page 390). If you enter a name that is already in use, you will be prompted to enter a different name.
Description	The description of the new custom template. This description displays when the template is selected in the New Report dialog box (page 390). This field is available only when a custom template is created or modified.

< Back	Returns to the previous step.
Finish	Terminates the wizard and opens the Report Parameters dialog box (page 392) in which you specify the date range. Generates and displays the report using the supplied date range. If you have not completed all mandatory fields, or if you selected the **Save template as** check box but did not enter a name, this button remains disabled.
Cancel	Cancels the New Custom Report wizard.
Help	Opens the Help topic for the dialog box.

How Do I...?

Specify page layout options and save the template (page 255)

3D Elevation   A measure of the differences in height along the z-axis. Increasing the 3D elevation increases the difference between the peaks and valleys on a bullet's surface, creating a more pronounced texture.

Acquisition Marker   A line of reference that appears on cartridge case images. The marker provides a reference to the original acquisition position.

Acquisition Station   The BULLETTRAX-3D Acquisition Station collects bullet information and images. The BRASSTRAX-3D Acquisition Station collects cartridge case information and images. Both Acquisition Stations copy the images to the Data Concentrator.

Analysis Station   The MATCHPOINT+ Analysis Station provides Firearm Examiners with access to the images and correlation results stored on an IBIS TRAX-3D system over a Local Area Network (LAN).

Anchor Line   A visual indicator that separates LEAs from GEAs in a bullet mosaic.

Annotations   Text annotations can be added to identify ejector and extractor marks on breech face ring light images. Annotations are added in BRASSTRAX-3D and cannot be modified in MATCHPOINT+.

Breech Face   That part of the breechblock or breech bolt which is against the head of the cartridge case or shotshell during firing.

Breech Face Class Characteristics   The class characteristics that describe the breech face marks. This information about the exhibit is added in BRASSTRAX-3D and cannot be modified in MATCHPOINT+. Characteristics can be used as search criteria or a display filter in the MultiViewer.

Brightness   The lightness value of a pixel in an electronic image, from black (0) to white (255).

Bullet   A non-spherical projectile that is expelled from a firearm, such as a rifle or handgun.

Bullet Profile   A two-dimensional graph that represents the shape of a bullet's surface and the height measurements of its features and markings.

Caliber	1. Firearms: The approximate diameter of the circle formed by the tops of the lands of a rifled barrel. 2. Ammunition: A numerical term, without the decimal places, included in a cartridge name to indicate the nominal bullet diameter.
Cartridge	A single, complete round of ammunition.
Cartridge Case	The envelope, or container, of a cartridge.
Case	An entity in MATCHPOINT+ that represents a law enforcement case, which keeps track of relevant case information such as the event type, law agency name, and occurrence date. A case is represented by a folder in the Navigation tree. Associated bullet and firearm exhibits are stored in the case folder.
Centerfire	Any cartridge that has its primer central to the axis in the head of the case.
Class Characteristics	Measurable features of a specimen which indicate a restricted group source. They result from design factors, and are therefore determined prior to manufacture.
Consecutive Matching Striae (CMS)	A toolmark identification technique that determines how many stria groups in a reference LEA match stria groups in the test LEA, based on the number of consecutive matching stria that make up the group.
Contrast	The difference between the darkest and lightest areas in an image. The greater the difference, the higher the contrast.
Correlation	The process by which signatures extracted from different exhibit images are compared for similarities. Results returned by this process are rankings of how similar each signature is to the reference exhibit in question.
Correlation Request	A correlation request instructs the IBIS TRAX-3D system to compare a reference exhibit against test exhibits that are stored in the IBIS TRAX-3D database. After an exhibit is acquired in BRASSTRAX-3D or BULLETTRAX-3D, a correlation request is created automatically.
Correlation Score	The end result of the correlation process, which rates how similar one region of interest of a given reference exhibit is to the matching region of interest of a given test exhibit.

Correlation Server	A server that contains compressed images, image signatures, and information about cases and exhibits. After an exhibit's signature has been extracted, this signature is copied into the Correlation Server. When a correlation is performed, the database stored on the server is consulted, and the signatures of the acquired images are compared.
Data Concentrator	The Data Concentrator is a database server that stores all the bullet and cartridge case information, and the images that have been acquired by the BULLETTRAX-3D and BRASSTRAX-3D Acquisition Stations. It also contains the correlation requests and scores used for analysis in MATCHPOINT+.
Delimiter	In a cartridge case exhibit, the outline around the region of interest.
Depth from Focus (DFF)	Depth from focus (DFF) is a method of measuring depth information so that 3D primer images can be acquired by BRASSTRAX-3D. This method involves taking a series of images of a breech face region of interest, with each image taken at a different focal distance. As a result, only a certain region will be in focus in any particular image within the series. BRASSTRAX-3D then constructs an all-in-focus image from the image series.
Display Guides	A collective term used to describe the types of additional information about exhibits that can be displayed in the Viewers, for example, anchor lines and annotations.
Ejector	The part of a firearm's mechanism which ejects cartridges or cartridge cases from a firearm.
Exhibit	An entity in MATCHPOINT+ that keeps track of information relating to a particular bullet, cartridge case, or firearm found at the scene of a crime and associated with a particular case. Exhibits are represented as subfolders within case folders. For bullet and cartridge case exhibits, acquired images are stored in the exhibit subfolder.
Extractor	The part of a firearm's mechanism which holds the cartridge case in place so that the ejector can eject it from the firearm.
Firearm	An assembly of a barrel and action from which a projectile(s) is propelled by products of combustion.
Firing Pin	The part of the firing mechanism that strikes the primer of the cartridge to initiate ignition.

Groove Engraved Area (GEA)	Raised areas on a bullet's surface that are created by the grooves of the rifling of the barrel through which the bullet was fired.
Hairline Profiling	Bullet surface profiling method whereby the pixels used to generate the profile depend on the position of the hairline in the Side-by-Side Viewer.
Headstamp	The markings imprinted on the base of a cartridge case, typically containing information about the caliber and manufacturer.
Hit	A match between a reference exhibit and a test exhibit that has been confirmed by a Firearm Examiner.
Index Numbers	The labels on bullet mosaics that identify LEAs and GEAs. They are the ROI references in an exhibit.
Image Group	The images associated with a particular cartridge case exhibit, arranged vertically in a group in the MultiViewer.
Impression	Surface contour variations on an object caused by applying force that is approximately perpendicular to the plane being marked. See striae.
Land	The raised portion between the grooves in a rifled bore.
Land Engraved Area (LEA)	Depressions on a bullet's surface created by the lands of the rifling through which the bullet was fired.
LEA Count	The number of LEAs on a bullet exhibit.
LEA Score	A score generated according to the degree of similarity between two correlated LEAs.
Max LEA Score	The highest LEA score within all of the individual LEA scores for a bullet correlation.
Max Phase Score	The highest phase score within a bullet correlation, based on acquired 2D data.
Mosaic	A single image of a bullet exhibit with LEAs and GEAs arranged vertically in a continuous image that wraps around when moved vertically. Anchor lines are used to indicate the boundaries between LEAs and GEAs.
MultiViewer	A window that allows a Firearm Examiner to compare multiple bullet or cartridge case exhibits simultaneously.

Outer Region	The area outside the delimiters for breech face ring light and firing pin cartridge case images. This area can be hidden in the viewers.
Peak 3D Score	The highest LEA score, calculated using acquired 3D data, within all of the individual LEA scores for a bullet correlation.
Peak Phase Score	The highest LEA score within the phase that produced the Max Phase score.
Phase	A group of scores. One way a pair of bullets, the reference and a test, can align with each other. For example, two bullets with four LEAs each can be aligned in four different ways. Therefore, the correlation has four phases.
Phase Score	The sum of all LEA scores within a phase.
Phase 3D Score	The phase that produced the Peak 3D score.
Pistol	A handgun in which the chamber is part of the barrel. A term sometimes used for handgun.
Polygonal Rifling	Lands and grooves having a rounded profile instead of the traditional rectangular profile.
Profile Line	A vertical line in the Comparison view of the Bullet Side-by-Side Viewer that determines which pixels are used to generate a bullet profile. See also Hairline Profiling.
Primer 3D Composite	A term used to describe the primer 3D rendering which uses information from both the primer 3D DFF and primer all-in-focus image types.
Reference Exhibit	The exhibit that is used to generate a correlation request.
Region of Interest (ROI)	The area or region from which BRASSTRAX-3D and BULLETTRAX-3D extract a signature for correlation. The information of interest includes the marks that are unique to a type of image; breech face, firing pin, or ejector mark in the case of cartridge cases, or LEAs and GEAs, in the case of bullet exhibits.
Remote Correlation Request	A correlation request that checks the databases of selected remote sites.

Rendering	The manner in which a bullet image is depicted on screen. A bullet image can be rendered as 2D, 3D, or a mixture of 2D and 3D. The more that an image is rendered as 3D, the more pronounced are the surface details and texture.
Rifle	A firearm having rifling in the bore and designed to be fired from the shoulder.
Rimfire	A flange-headed cartridge containing the priming mixture inside the rim cavity.
Side-by-Side Viewer	A comparison window that allows a Firearm Examiner to compare two bullet or cartridge case exhibits side-by-side. The Side-by-Side Viewer is an electronic version of the comparison microscope.
Signature	A mathematical representation of important information that is extracted from the digital image of a bullet or cartridge case.
Striae	Parallel surface contour variations on the surface of an object caused by a combination of force and motion where the motion is approximately parallel to the plane being marked. Striae are accidental in nature and unique to a common origin, (a particular firearm or tool). See impression.
Test Exhibit	The exhibits in the database against which the reference exhibit is compared.
Test Fire Bullet	A bullet fired into a bullet recovery system in a laboratory for comparison or analysis.
Toolmark	The mark produced when a tool is placed against an object and enough pressure is applied to the tool so that it leaves an impression on the object.
Twist	The direction and rate of turn of the rifling helix, e.g. left hand, right hand.

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Numerics

A

B

USER GUIDE

FORENSIC
TECHNOLOGY