

Well ID: 050010507200 Name: FLADER # 3 Class: OIL WELL

Operator: OIL INCORPORATED Status: ABD-OW

Latitude: 33.80673 Longitude: -104.10682 Footage: 1977 FNL 1983 FWL WSN 35233

Datum Elevation: 5045.00 Reference: KB T/R/S: TVP: 3 S - Range: 60 W - Sec: 9

Log: Vector Flaser Text Track Elevations... Display: English Internal Status

Header: Formations Zones Faults Survey Proposed Survey Intervals DST Core Completion Velocity IP Production Tests Production Tubing Casing Microseismic Remarks

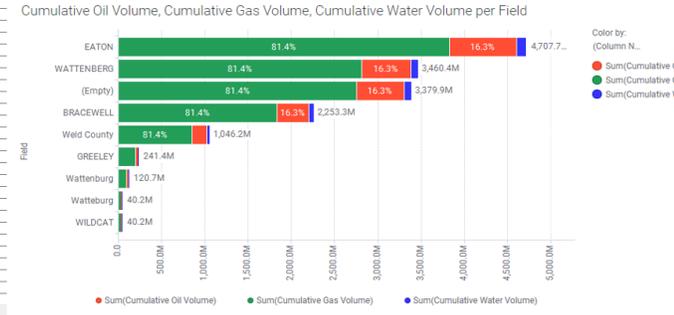
Activity type: Production Zone ID: D.SAND Percent allocation: 100 Source: T2zic v

Full History Production Statistics (Selected Zone)

Fluid Type	Cum	EUR	Reserves	Avg Monthly	Min Monthly	Max Monthly	First Month	Last Month	First Date	Last Date
Oil	33281.30		1024	0	210526	210526	5	01/01/1970	31/12/1996	
Gas	410277.0		1262	0	384504	384504	23	01/01/1970	30/11/1995	
Water	26296.0		93	0	634	634	1	01/01/1970	31/12/1996	
Total Fluids	359829		1107	0	210526	210526	6	01/01/1970	31/12/1996	

Monthly Production

Zone Alias	Date	Days On	Oil	Water	Gas
D SAND	28/02/1970		675	130	959
D SAND	31/03/1970		693	252	985
D SAND	30/04/1970		860	894	939
D SAND	31/05/1970		514	453	724
D SAND	30/06/1970		489	402	699
D SAND	31/07/1970		561	486	804
D SAND	31/08/1970		791	558	1139
D SAND	30/09/1970		667	499	959
D SAND	31/10/1970		667	522	959
D SAND	30/11/1970		500	514	712
D SAND	31/12/1970		520	560	739
D SAND	31/01/1971		454	533	643
D SAND	28/02/1971		561	504	804
D SAND	31/03/1971		236	335	97
D SAND	30/04/1971		570	475	102
D SAND	31/05/1971		810	450	102
D SAND	30/06/1971		806	425	95
D SAND	31/07/1971		790	415	95
D SAND	31/08/1971		586	372	93
D SAND	30/09/1971		591	286	93
D SAND	31/10/1971		796	458	93
D SAND	30/11/1971		744	395	88
D SAND	31/12/1971		733	341	83
D SAND	31/01/1972		694	305	83
D SAND	29/02/1972		636	237	75
D SAND	31/03/1972		611	267	76
D SAND	30/04/1972		660	220	78



GVERSE GeoGraphix and Spotfire Integration

Cutting-edge Data Integration and Analysis

GVERSE GeoGraphix is a complete geoscience platform offering leading-edge mapping and data management, geological, geophysical, and petrophysical interpretation.

WellBase is a data management module of GVERSE GeoGraphix which provides access to a relational database management system for geological well data, including formation tops, deviation surveys, completions, perforations, and other types of mechanical data. WellBase stores its data using the GeoGraphix® Data Model (GXDM).

The GeoGraphix Data Model is based on an industry-standard well data model called the Public Petroleum Data Model (PPDM) that has revolutionized the oil and gas industry by bringing together disciplines with the best in class science in an unparalleled productivity environment.

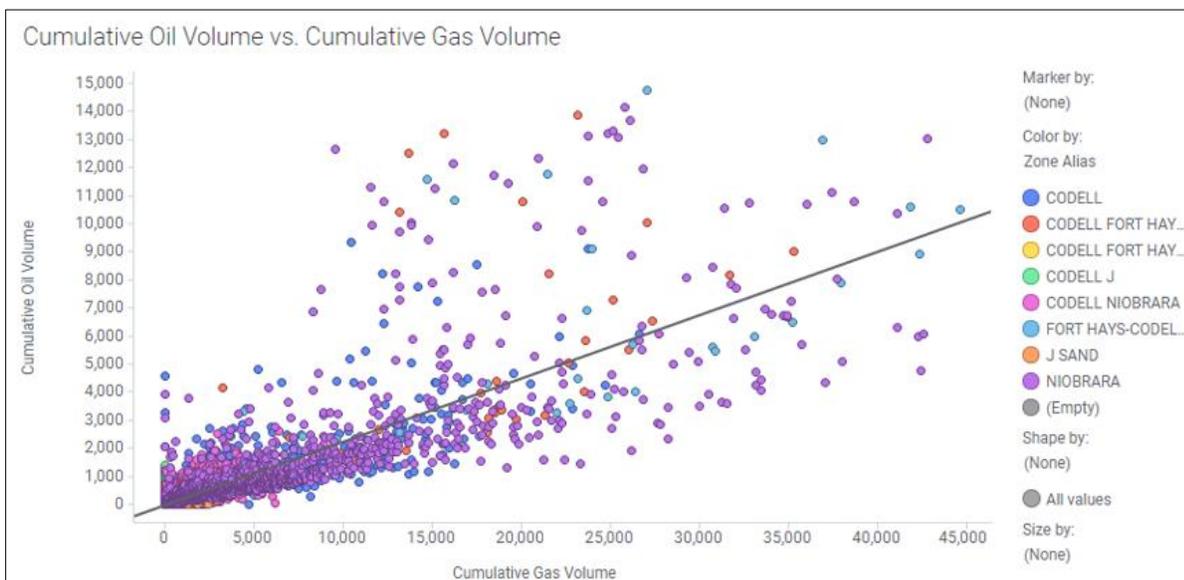
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Survey Point Number	MD	TVD	Inclination	Azimuth	N/S Offset	E/W Offset	Latitude	Longitude	DLS	Closure	TVDSS
1	122.00	122.00	20	44.20	0.04	0.14	32.409400	-97.589410	0.22	0.06	853.00
2	326.00	326.00	40	243.30	10.07	-8.08	32.409400	-97.589410	0.73	0.11	759.00
3	319.00	319.00	20	63.80	-0.99	-0.21	32.409400	-97.589411	0.62	0.23	696.00
4	419.00	419.00	20	246.40	-0.17	-0.20	32.409400	-97.589411	1.42	0.28	575.00
5	562.00	562.00	20	222.80	-0.35	-0.45	32.409459	-97.589411	0.88	0.57	483.00
6	583.00	583.00	40	183.20	-0.79	-0.58	32.409458	-97.589412	0.50	0.88	382.00
7	664.00	664.00	20	185.00	-1.19	-0.82	32.409458	-97.589412	0.11	1.49	300.01
8	777.00	777.00	60	144.20	-1.98	-0.36	32.409455	-97.589411	0.48	2.01	208.01
9	889.00	889.00	20	300.80	-2.29	-0.22	32.409454	-97.589411	0.05	2.38	116.01
10	961.00	960.99	60	94.30	-2.24	0.12	32.409454	-97.589410	0.05	2.34	54.61
11	1053.00	1052.99	50	30.20	-1.93	0.81	32.409455	-97.589407	0.64	2.09	-47.99
12	1140.00	1139.98	40	277.40	-1.56	0.78	32.409456	-97.589408	0.86	1.71	-184.88
13	1239.00	1238.98	20	290.50	-1.43	0.11	32.409456	-97.589410	0.12	1.43	-253.98
14	1334.00	1333.98	40	234.10	-1.53	-0.48	32.409456	-97.589411	0.26	1.58	-348.98
15	1428.00	1428.98	60	208.10	-1.83	-1.06	32.409455	-97.589413	0.18	2.11	-443.98
16	1523.00	1522.98	40	244.20	-2.08	-1.75	32.409454	-97.589410	0.14	2.72	-537.98
17	1619.00	1618.97	40	223.70	-2.47	-2.29	32.409453	-97.589417	0.14	3.37	-633.97
18	1714.00	1713.97	60	227.30	-3.04	-2.88	32.409452	-97.589419	0.21	4.19	-728.97
19	1809.00	1808.97	40	196.80	-3.70	-2.34	32.409450	-97.589421	0.34	4.98	-823.97
20	1904.00	1903.96	40	227.40	-4.24	-2.89	32.409449	-97.589422	0.22	5.62	-918.96
21	1999.00	1998.96	50	241.90	-4.85	-4.30	32.409447	-97.589424	0.15	6.33	-1013.96
22	2095.00	2094.96	40	238.70	-5.03	-4.66	32.409446	-97.589425	0.11	7.06	-1108.96
23	2190.00	2189.95	60	248.10	-5.43	-5.68	32.409445	-97.589426	0.02	7.86	-1204.95
24	2285.00	2284.95	40	254.80	-5.72	-6.45	32.409444	-97.589431	0.22	8.62	-1299.95
25	2380.00	2379.95	60	243.00	-6.04	-7.21	32.409443	-97.589433	0.23	9.41	-1394.95
26	2475.00	2474.94	50	275.90	-6.22	-8.07	32.409443	-97.589436	0.33	10.19	-1489.94
27	2571.00	2570.94	50	267.20	-6.27	-8.89	32.409443	-97.589439	0.16	10.88	-1585.94
28	2666.00	2665.93	60	288.10	-6.26	-9.78	32.409443	-97.589442	0.27	11.61	-1680.93
29	2761.00	2760.91	1.70	295.40	-6.55	-11.54	32.409445	-97.589447	1.18	12.31	-1775.91
30	2856.00	2855.84	2.00	316.20	-6.34	-14.58	32.409461	-97.589457	1.38	14.60	-1870.84
31	2951.00	2950.85	1.90	314.00	-6.30	-18.05	32.409461	-97.589471	1.17	16.03	-1965.85
32	3046.00	3045.43	4.40	316.60	-5.19	-23.50	32.409474	-97.589488	0.56	24.07	-2060.43

TIBCO Spotfire is a fully governed, scalable analytics platform that allows all of the decision makers - from marketing managers to data scientists - to make discoveries in data through insightful and immersive visual exploration.

GVERSE GeoGraphix and TIBCO Spotfire integration allows seamless transfer of data between GeoGraphix and Spotfire. In the integrated workflow, GVERSE GeoGraphix serves as the data source for TIBCO Spotfire to perform data analysis, discovery, decision-making, and insights on the data stored in the GeoGraphix database.



Benefits

Seamless Integration and Data Transfer

GeoGraphix and Spotfire integration enables the dynamic, efficient, and robust transfer of data between the two applications. The mechanism for data selection and transformation is extremely simple and it provides the ability to select and load a customized set of data for analysis.

Faster Decision Making

GeoGraphix and Spotfire integration provides user-friendly data cleaning and filtering operations. With these abilities, you can easily filter out the data you want to use for making critical business decisions.

Fascinating Data Analytics

With GeoGraphix and Spotfire integration you can analyze GeoGraphix data in a single-pane-of-glass view for visual analytics, data discovery, and point-and-click insights.

Key Features

Data Transfer and Filtering

- Transfer data into Spotfire from GeoGraphix database tables
- Transfer QueryBuilder results from GeoGraphix to Spotfire
- Write user-defined SQL statements to limit data transfer from GeoGraphix to Spotfire
- Combine data from GeoGraphix database tables and views for further analysis
- Transfer ZoneManager™ Template data from GeoGraphix to Spotfire
- Transfer Drill Stem Testing (DST) Data inside ZoneManager zones to Spotfire
- Save calculated zone attributes from Spotfire to ZoneManager

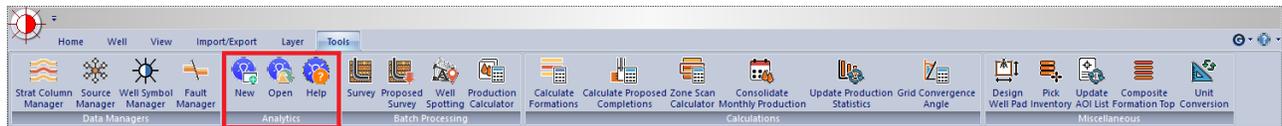
Data Analysis

- Visualize GeoGraphix data for data mining, analysis, and Quality Control
- View GeoGraphix wells with their scout tickets
- Remove outliers and clean up Well data
- Add zone attributes and create WellBase filters based on different parameters after data analysis
- Analyze production data and calculate Key Performance Indicators

Workflow

Analytics Menu

The **Analytics** menu on the **Tools** tab in **WellBase**, displays the options for exploring, analyzing, and visualizing well data from **GeoGraphix** project in **TIBCO Spotfire Analyst**:



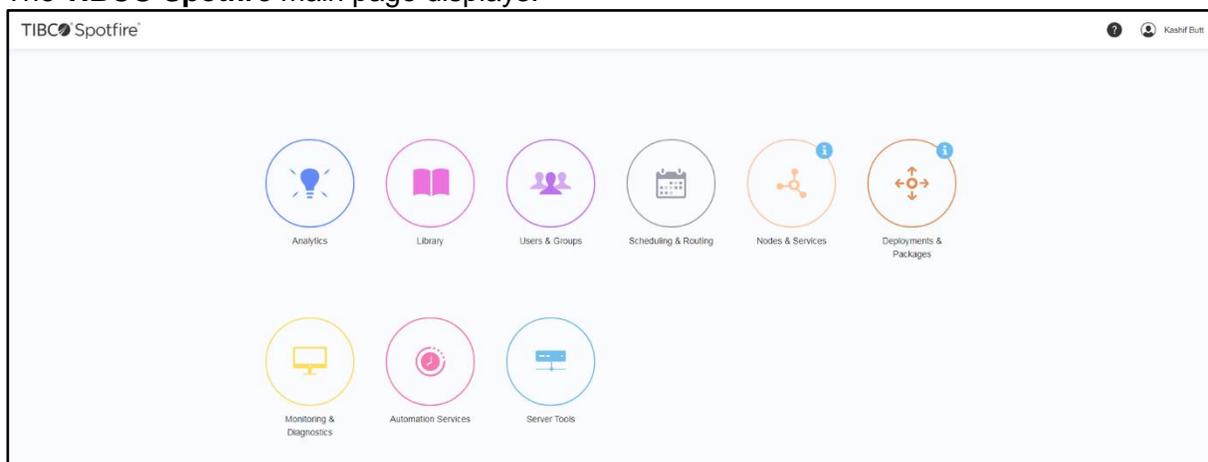
TIBCO Spotfire Analyst application needs to be installed for integration of **GeoGraphix** with **Spotfire**.

Spotfire Analytics Plug-in Installation

The following steps must be performed on the Spotfire server by an administrator:

1. Access the **Spotfire** web server.

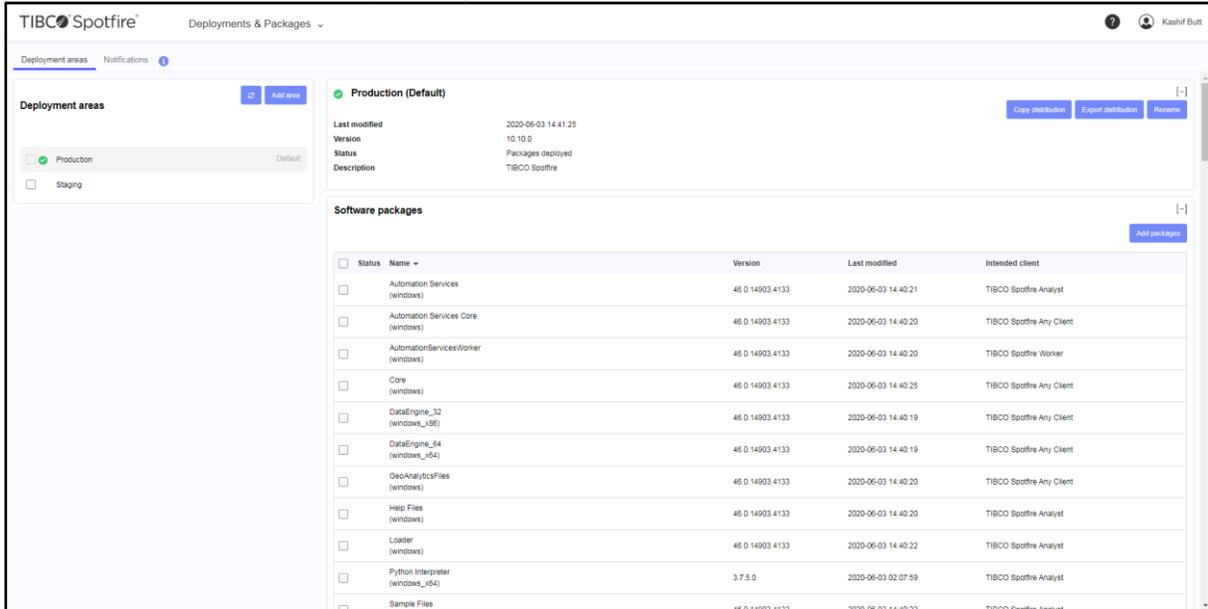
The **TIBCO Spotfire** main page displays.



Disclaimer

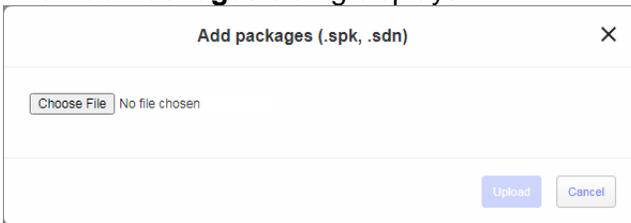
2. Select the **Deployments & Packages** option.

The **Deployments & Packages** page displays.

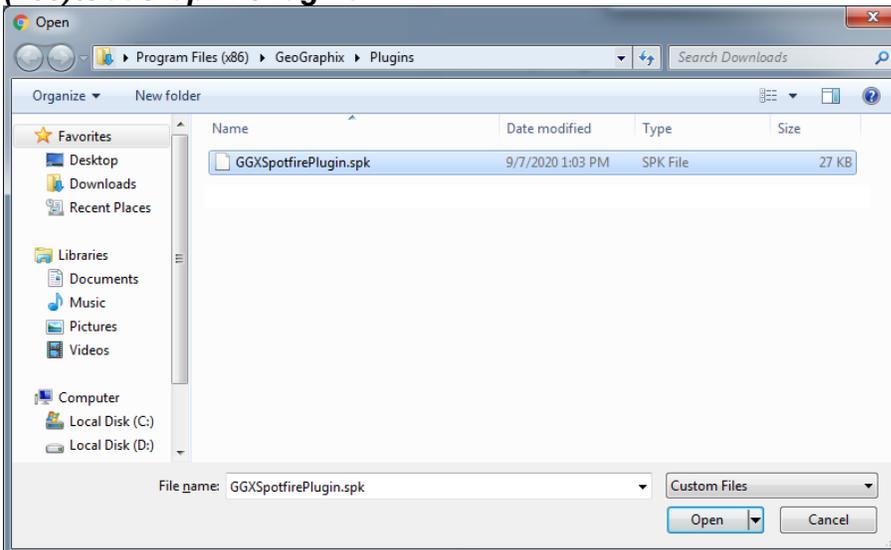


3. Click **Add Packages**.

The **Add Packages** dialog displays.



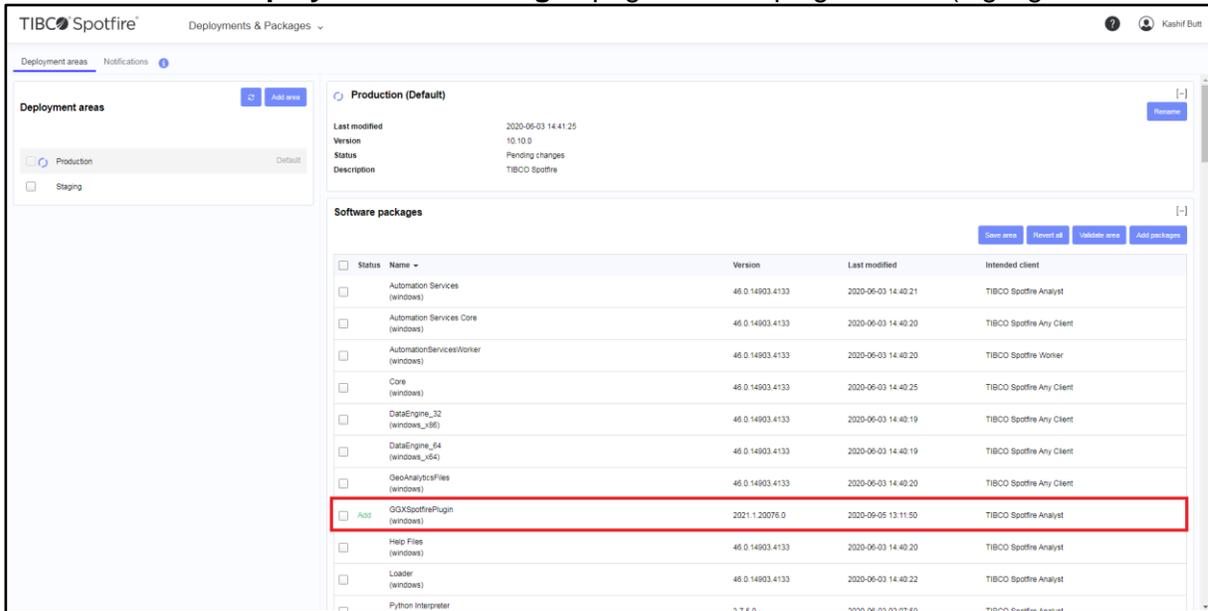
4. Click **Choose File** to select the GeoGraphix Spotfire plugin file. The file is located at **C:\Program Files (x86)\GeoGraphix\Plugins**.



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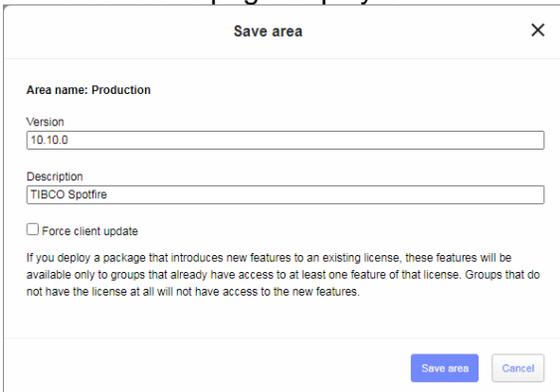
5. Select the plugin file and click **Open**.
6. On the **Add Packages** dialog, click **Upload**.

You return to the **Deployments & Packages** page with the plugin added (highlighted in red below).



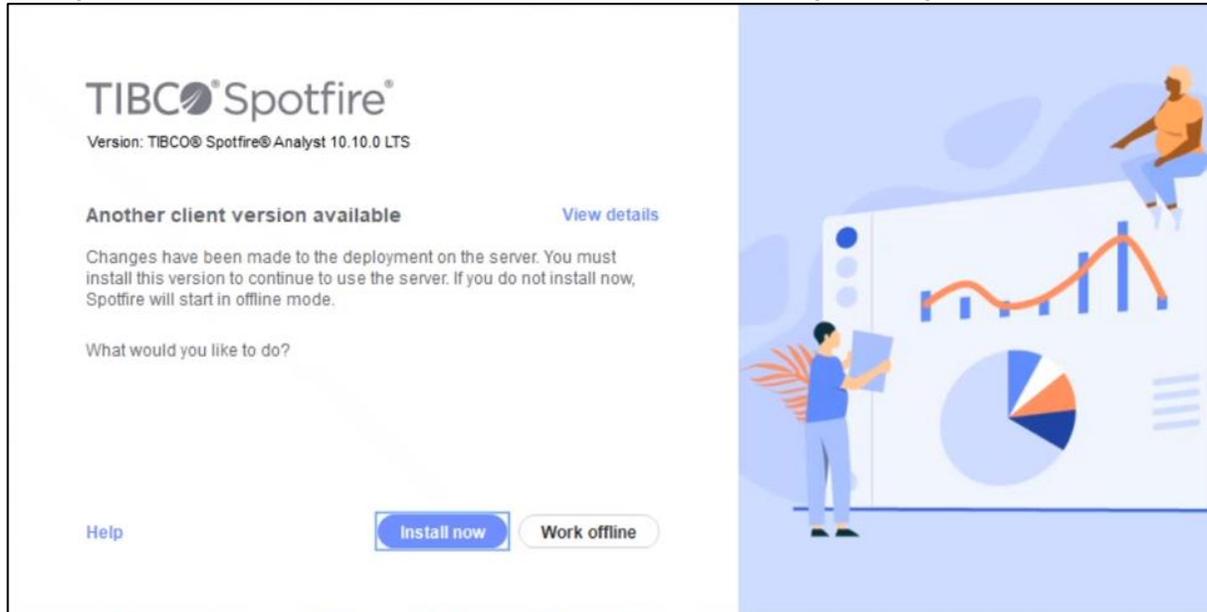
7. Ensure you select the relevant deployment area to which the **GeoGraphix** users will connect to.
8. Select the check box adjacent to the plugin name and click **Save Area**.

The **Save Area** page displays.



9. Edit the **Spotfire** plugin's version and description information in the relevant text boxes, if required.
10. Select the **Force client update** check box. This enables installation of new **Spotfire** version on client machines automatically.
11. Click **Save area** to complete the configuration process.

Once the **Spotfire** configuration is done by an administrator, the end user upon launching **Spotfire** either through the shortcut or from **WellBase** encounters the following message:



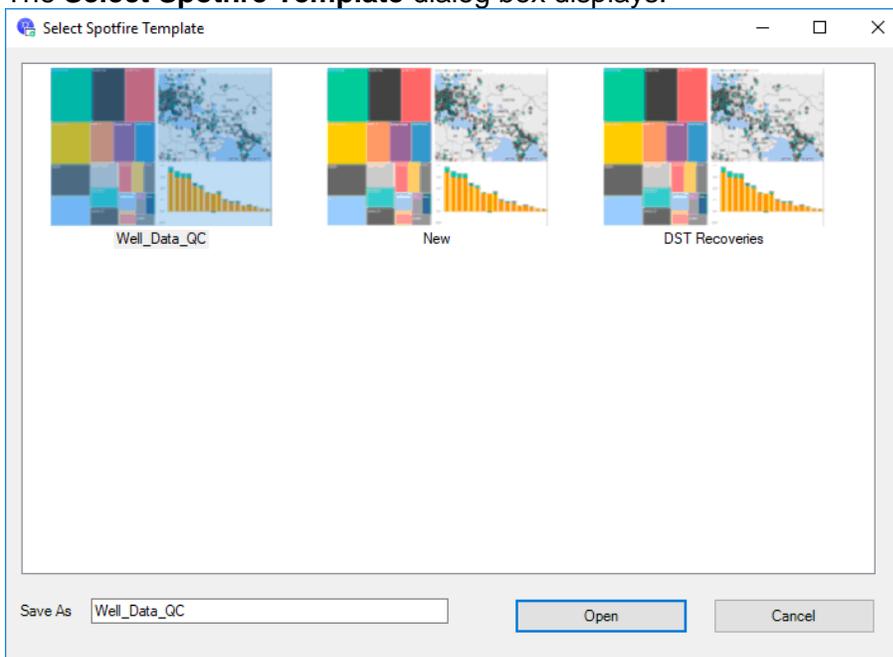
Click **Install now** to install the latest available version of **Spotfire** on client's machine.

Note: You may click the **View details** button to check the **Spotfire** version that will be installed.

Opening a New Spotfire Template

1. Select the **New** option in the **Analytics** menu on the **Tools** tab to open a new **Spotfire** template.

The **Select Spotfire Template** dialog box displays.



The **Select Spotfire Template** dialog box displays templates with their associated icons included in the project by default.

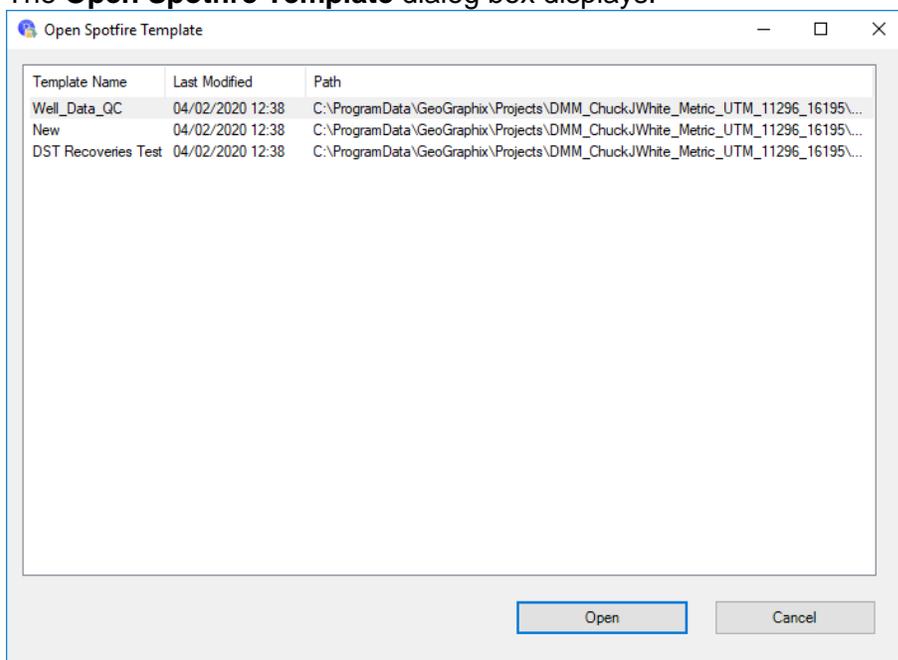
2. Select from the list of the default templates. When a template is selected, it displays in the **Save As** field.
3. Click the template name in the **Save As** field to edit it.
4. Click **Open** to save a copy of the customized template in the active AOI. The template opens in **Spotfire** for QC and analysis.
5. Click **Cancel** to close the dialog box, otherwise.

Note: If you want to use your own Spotfire DXP template, navigate to **C:\ProgramData\GeoGraphix\Data\Templates\Analytics** and copy it here. The user-defined templates are visible in the **Select Spotfire Template** dialog.

Opening an Existing Spotfire Template

1. Select the **Open** option in the **Analytics** menu on the **Tools** tab to open an existing **Spotfire** template.

The **Open Spotfire Template** dialog box displays.



The **Open Spotfire Template** dialog box lists templates existing in the project for the active AOI. All of the existing files are sorted by **Date Modified**.

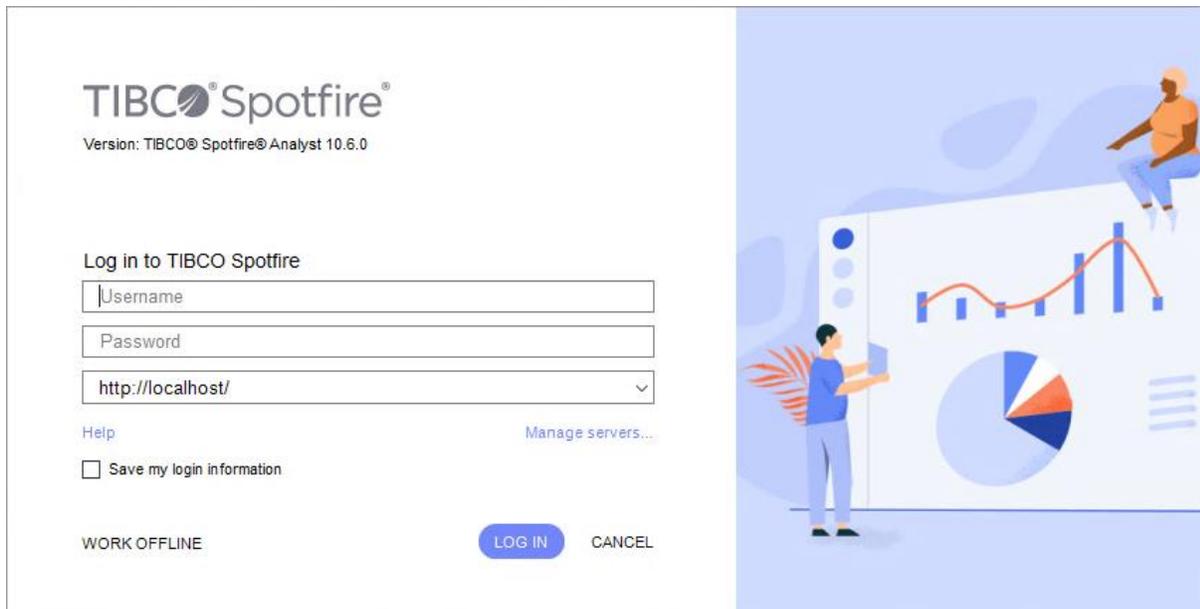
2. Navigate to **ActiveProject >> Active AOI >> Analytics** to add user-defined custom templates in the project.
3. Select the required template from the list.
4. Click **Open** to launch the selected template (*.dpx) file to QC and analyze well data in **Spotfire**.

5. Click **Cancel** to close the dialog box without making any changes.

Data Analytics in Spotfire Analytics

Opening a new template or an existing template displays the data included in the template, loaded in **TIBCO® Spotfire® Analyst** software.

The **TIBCO® Spotfire® Analyst Login** window displays.



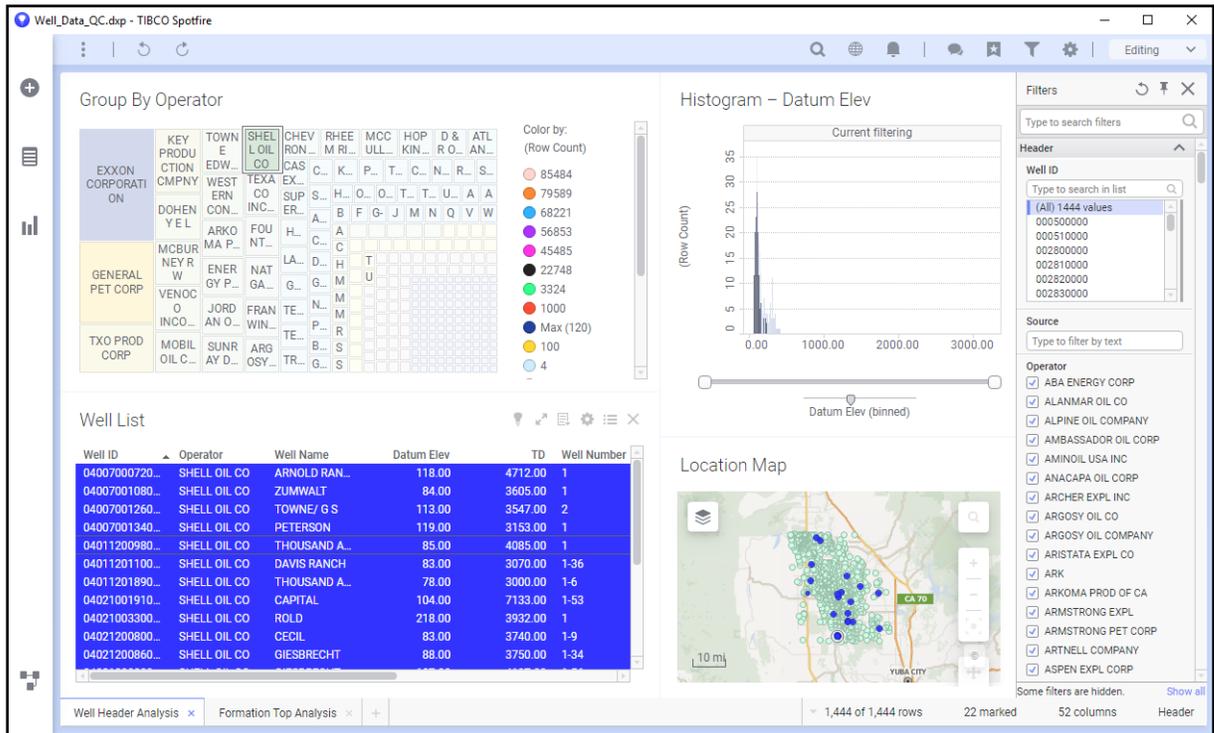
Log in the **TIBCO® Spotfire® Analyst** by user credentials and selection of configured server. The **TIBCO® Spotfire® Analyst** helps visualize **GeoGraphix data**, in templates, arranged in different geological interpretation categories for exploration and analysis.

The visualized **GeoGraphix data** in **TIBCO® Spotfire® Analyst** can be marked and selected for different functions.

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Viewing Well(s) in WellBase

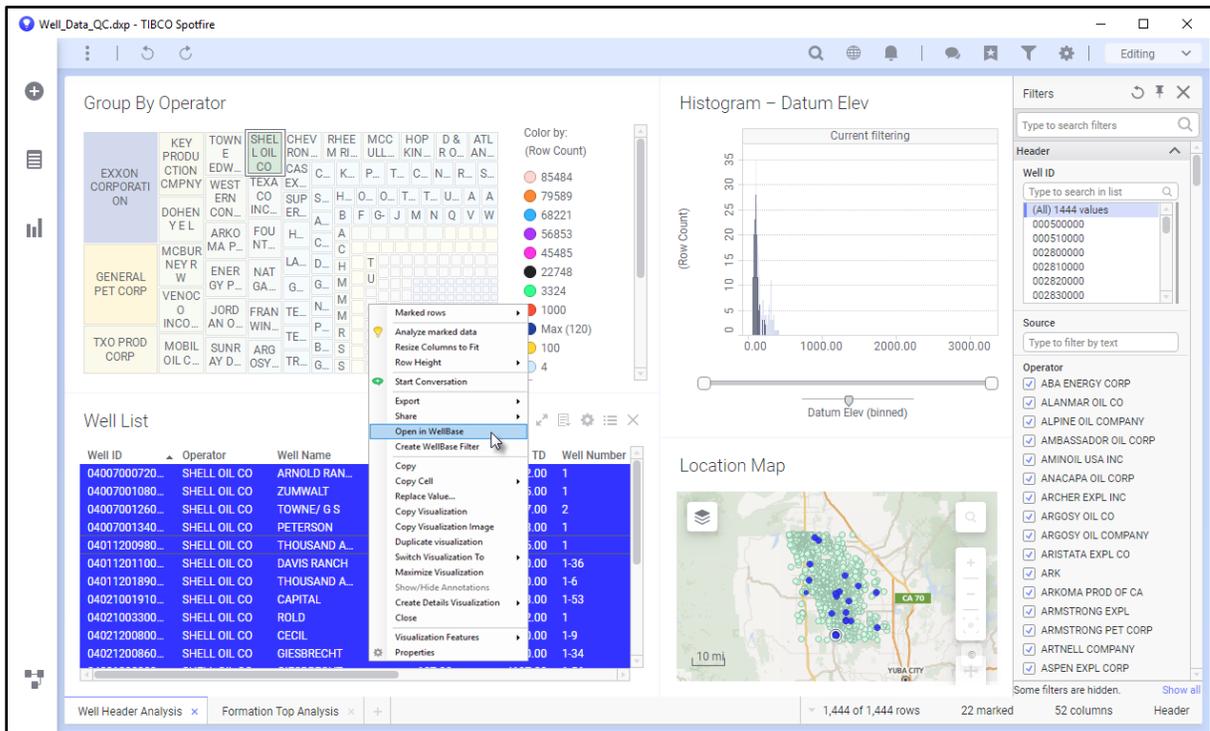
1. Open a new or existing template in **Spotfire Analyst** from the **GeoGraphix** project AOI folder.
Spotfire loads **GeoGraphix** well data, visually represented for **geological analysis**.
2. Filter **well data** either by clicking the desired **Operators** or by selecting the **Histograms** in **Spotfire**.



Data marking applies **data filtration** in **Spotfire** as filters to display the required well list. The Well List displayed, lists all the wells selected as per the filter set in **Spotfire**.

Note: To view well(s) in WellBase, ensure you have a **WELL ID/WellID**, or a **UWI** column in the well list.

- Right-click the **Well List** and select **Open in WellBase** from the context menu.



The wells display in **WellBase**. Using this functionality, the well data can be edited in **WellBase** and analyzed. This can help to explore the redundancies and faults in well data.

Creating WellBase Filter in Spotfire Analyst

- Open a new or existing template in **Spotfire Analyst** from the **GeoGraphix** project AOI folder.

Spotfire loads **GeoGraphix** well data, visually represented for geological analysis.

Disclaimer

2. Filter well data either by clicking the desired **Operators** or by selecting the **Histograms** in **Spotfire**.

The screenshot displays the TIBCO Spotfire interface for a dataset named 'Well_Data_QC.dxp'. The main view is divided into several sections:

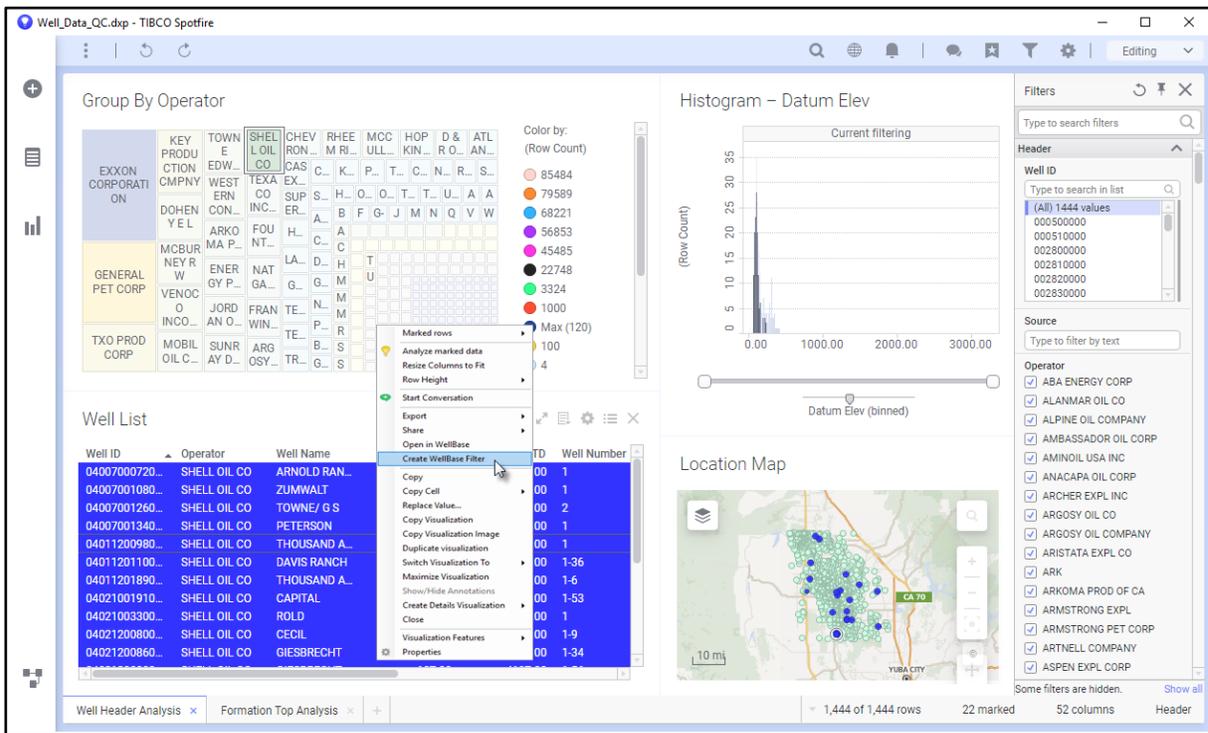
- Group By Operator:** A grid of colored squares representing different operators, such as EXXON CORPORATION, GENERAL PET CORP, and TXO PROD CORP.
- Histogram - Datum Elev:** A bar chart showing the distribution of 'Datum Elev' values. The x-axis ranges from 0.00 to 3000.00, and the y-axis (Row Count) ranges from 0 to 35.
- Well List:** A table with the following columns: Well ID, Operator, Well Name, Datum Elev, TD, and Well Number. The table contains 14 rows of data, with the first row being 04007000720... SHELL OIL CO ARNOLD RAN... 118.00 4712.00 1.
- Location Map:** A map showing the geographical locations of the wells, with markers indicating their positions.
- Filters:** A panel on the right side of the interface showing a list of operators with checkboxes. The list includes: ABA ENERGY CORP, ALANMAR OIL CO, ALPINE OIL COMPANY, AMBASSADOR OIL CORP, AMINOIL USA INC, ANACAPA OIL CORP, ARCHER EXPL INC, ARGOSY OIL CO, ARGOSY OIL COMPANY, ARISTATA EXPL CO, ARK, ARKOMA PROD OF CA, ARMSTRONG EXPL, ARMSTRONG PET CORP, ARTNELL COMPANY, and ASPEN EXPL CORP.

Data marking applies data filtration in **Spotfire** as filters to display the required well list. The Well List displayed, lists all the wells selected as the filter set in **Spotfire**.

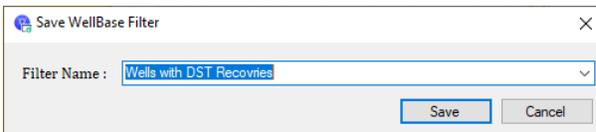
Note: To create a WellBase filter, ensure you have a WELL ID/WellID or a UWI column in the well list.

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3. To save the filter, right-click the **Well List** and select **Create WellBase Filter** from the context menu.



The **Save WellBase Filter** dialog box displays.



4. Enter a name for the created filter in the **Save WellBase Filter** dialog box displayed.

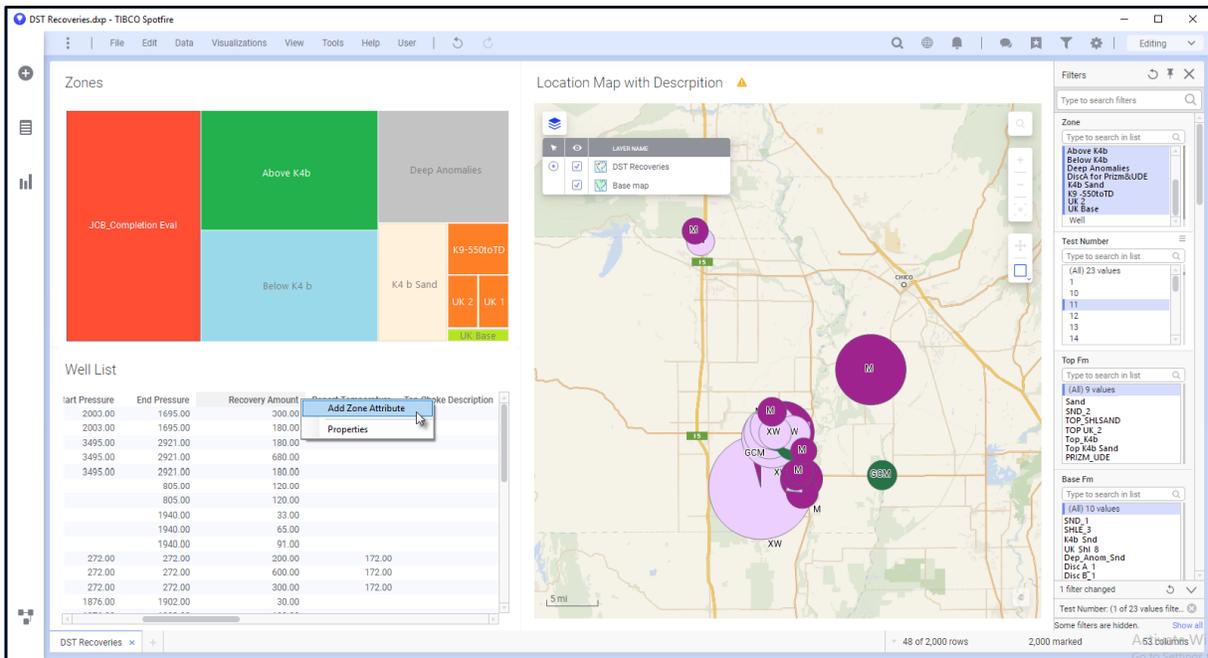
The newly created filter is saved in **GeoGraphix** project and can be accessed through any **GeoGraphix** application.

Adding Zone Attributes in Spotfire Analyst

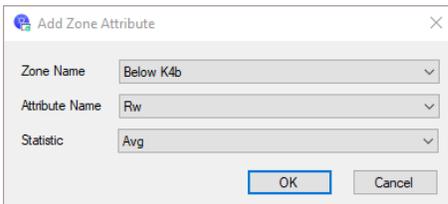
Data visualized in **Spotfire** as well lists can be added in **GeoGraphix** project as zone attribute(s).

1. Select a data column in **Spotfire**.

2. Right-click the column header in the well list and select **Add Zone Attribute** from the context menu.



The **Add Zone Attribute** dialog box displays.



Note: To add Zone Attribute, ensure you have a Zone Name and WELL ID column in the well list.

3. Select the following information for the zone attribute:

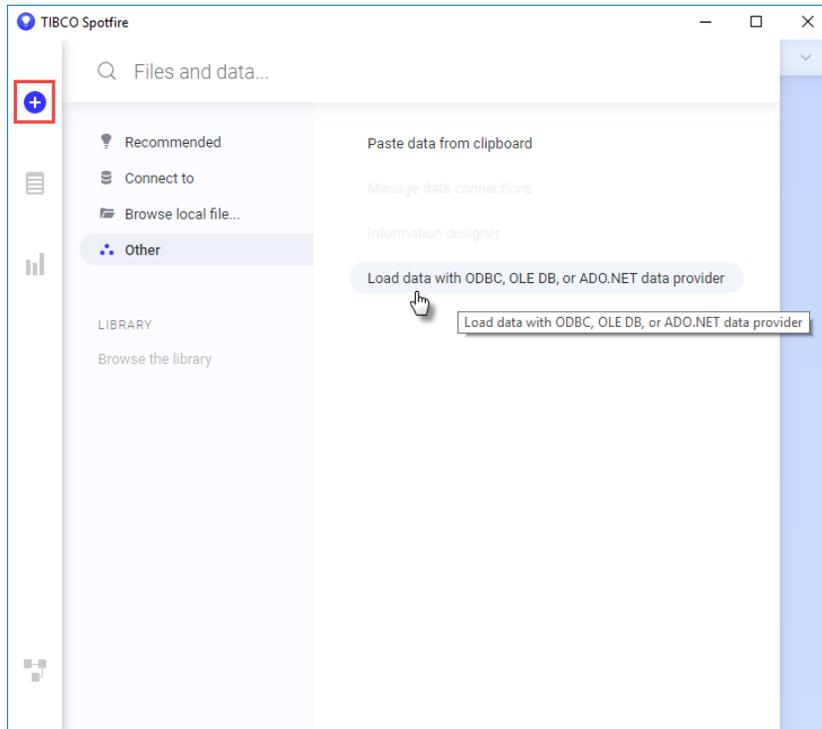
- **Zone Name:** Select the zone from this drop-down list.
- **Attribute Name:** Select the attribute type from this drop-down list. All date and numeric type attributes are available in this drop-down list.
- **Statistic:** Select a statistical operation for the zone attribute from this drop-down list. The options that you can select are **AVG**, **MAX**, **MIN**, and **SUM**. **SUM** will not be available in this list if a **Date type** attribute is selected from the **Attribute Name** drop-down list.

4. Click **OK** to add the zone attribute. The zone attribute added from **Spotfire** is saved in the **GeoGraphix** project.

Connect and Load Data from GeoGraphix Project

While working with **Spotfire**, you can load data from **GeoGraphix** project by connecting to a project database via **ODBC** driver. To do so:

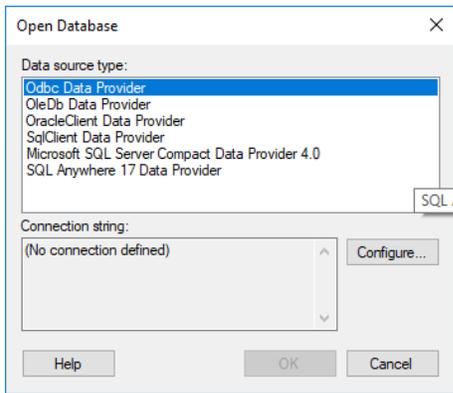
1. Click **Files and Data** icon on the authoring bar.



2. Under this option, click **Other** and then click **Load Data with ODBC, OLE DB, or ADO.NET** data provider.

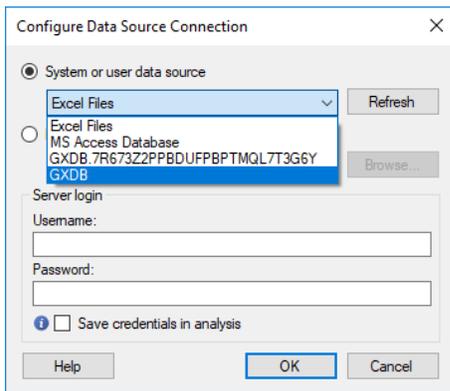
Disclaimer

The **Open Database** dialog box displays.



3. Select **Odbc Data Provider** as **Data source type** and click **Configure**.

The **Configure Data Source Connection** dialog box displays.

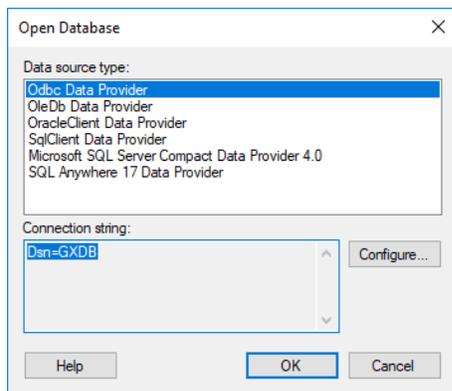


The dialog box has following options:

Option	Description
System or user data source	Select GXDB option from the drop-down list to connect to a data source.
File data source radio button	Use the radio button to activate the field to connect to a file data source using the Browse button.
Browse button	Click this button to open a dialog where you can browse to locate the DSN file of interest.

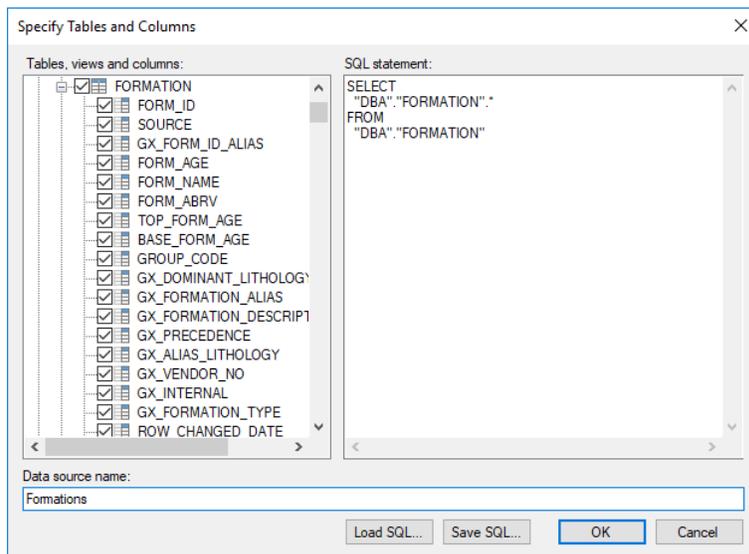
4. From the dialog box, select a **System or user data source name** from the drop-down list of options.
5. If the data source is password protected, enter the desired **Username** and **Password** in their respective text boxes and click **OK**.

The **Connection string** list in the **Open Database** dialog is updated.



6. Click **OK**.

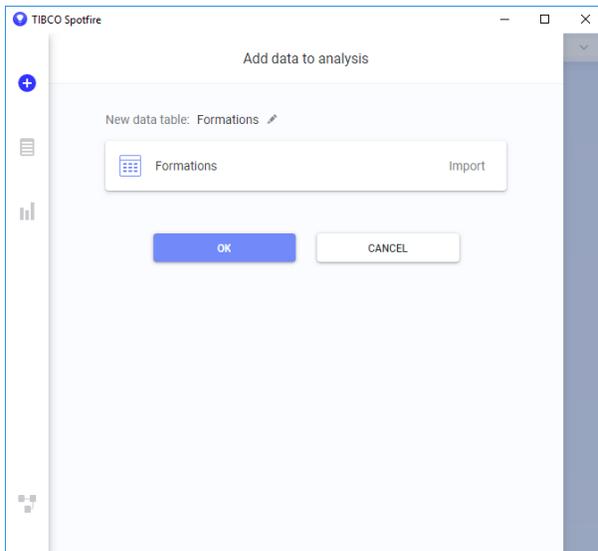
The **Specify Tables and Columns** dialog box displays.



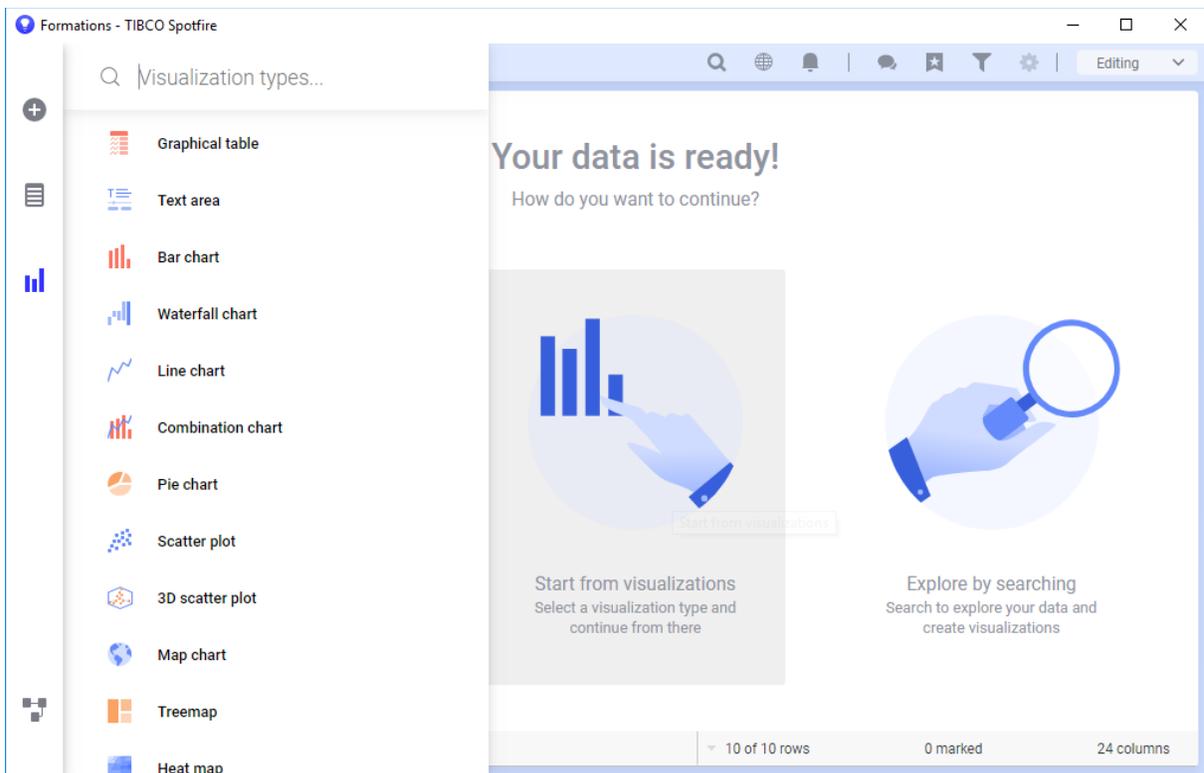
7. Select the desired tables, views and columns from the dialog box. Enter a Data Source name and click **OK**.

Disclaimer

The data is loaded in **Spotfire**.

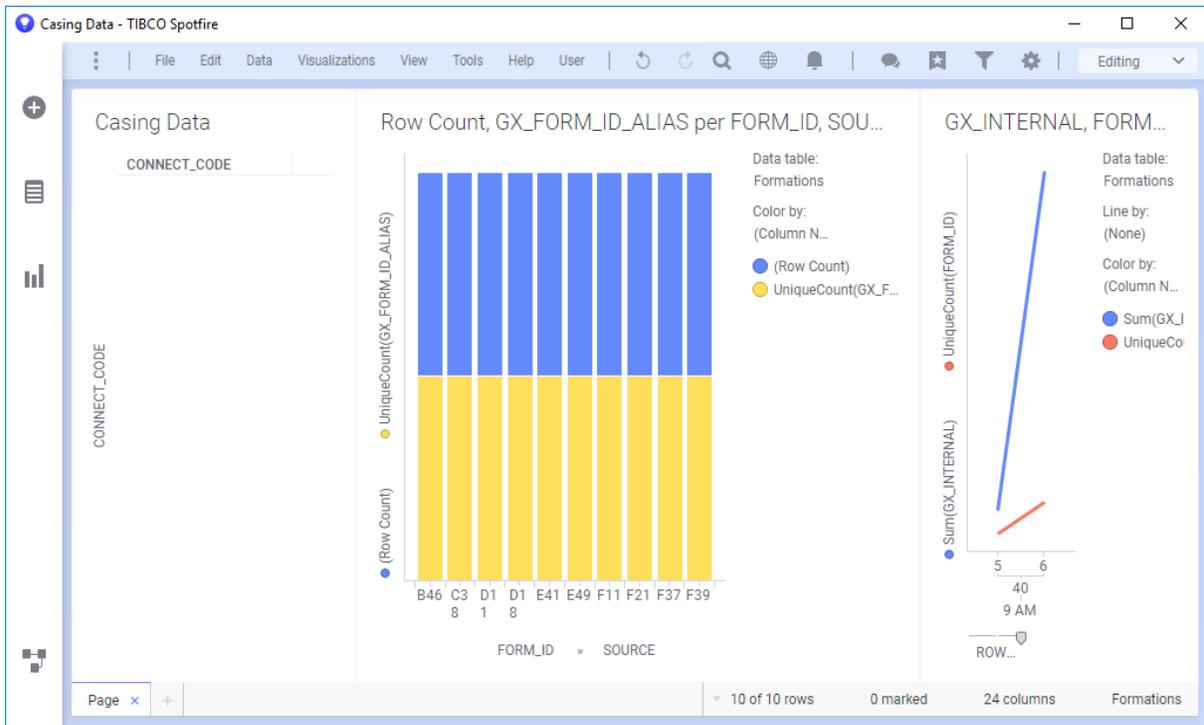


8. Click **OK** and start your data visualization in **Spotfire** using the options provided on the dashboard and authoring bar.



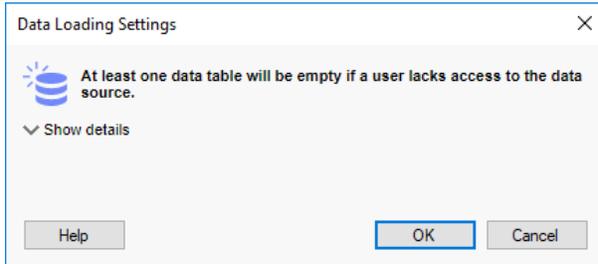
Disclaimer

A bar and line chart data visualization in **Spotfire** is displayed below.



- To save data as a new **GeoGraphix** template, select **File >> Save as >> File** from the menu bar or copy it to **C:\ProgramData\GeoGraphix\Data\Templates\Analytics**.

The **Data Loading Setting** dialog box displays.



- Click **OK** to proceed to **Save Copy as File** dialog box. Enter the desired file name and click **Save**.

Requirements

Hardware (MINIMUM)

- 2.4GHz 64-bit Intel class or better
- 4GB RAM
- 1,024 x 768 graphics resolution
- CD-ROM drive
- 19-inch monitor

Hardware (RECOMMENDED)

- Quad 2.4 GHz 64-bit Intel class or better
- 16 GB RAM or greater
- NVIDIA GeForce or Quadro - 2GB video RAM
- DVD-RW drive
- Dual 21+-inch monitors

Software

- Microsoft® .NET 4.5
- Microsoft® DirectX 11

Operating System(s)

- Windows® 7 Professional x64
- Windows® 7 Enterprise x64
- Windows® 7 Ultimate x64
- Windows® 10 Professional x64
- Windows® 10 Enterprise x64

Licenses

- GeoGraphix license version 2022.1
- TIBCO Spotfire Server license version 12.2
- TIBCO Spotfire Analyst license version 12.3

Disclaimer