Case Study

Module 5: Introduction to Power BI Q&A and Data Insights

Sensor Analysis

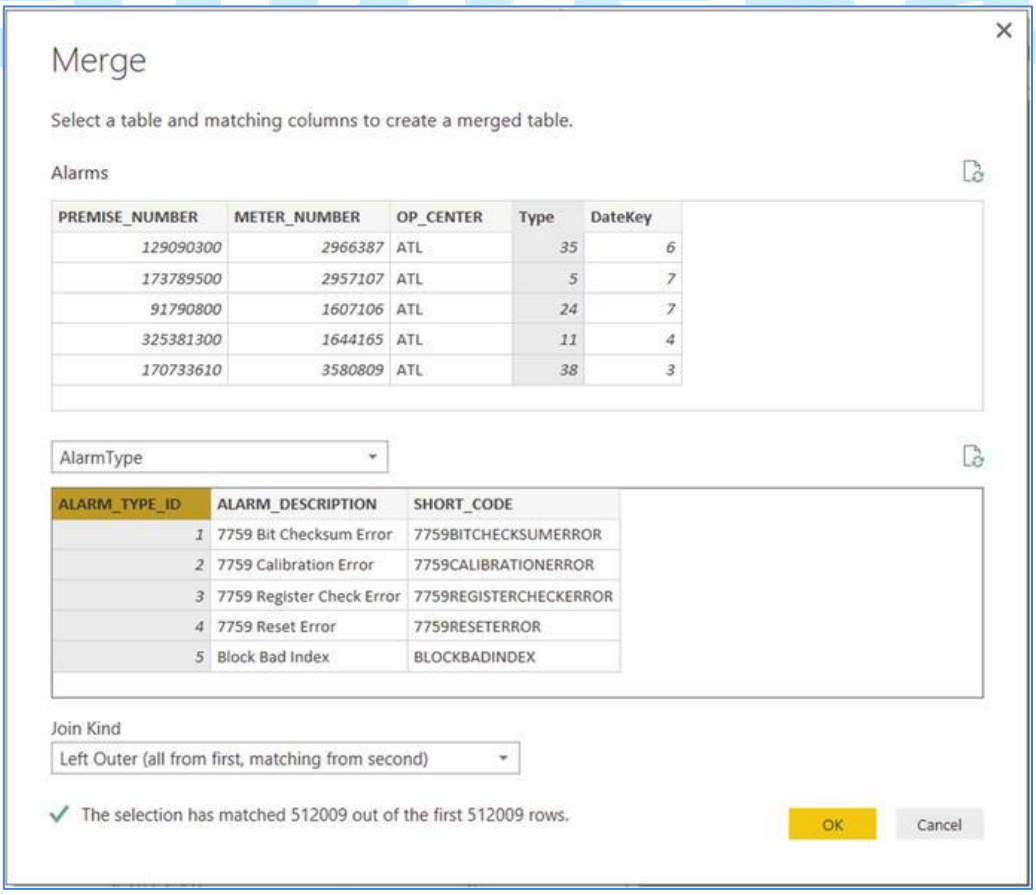
Scenario: You work for a power company that monitors equipment using sensors. The sensors monitor various power readings, including power interruptions and voltage spikes. When the sensor senses a problem, it triggers an alarm signal that is recorded. You need to create a map that allows analysts to view and compare power interruptions and voltage spikes over time.

Problem Statement: Perform the following operations:

1. LOAD THE DATA: The data you will need is in several text files. Download the dataset from the LMS. This data has four files that contain the sensor data and the related data you need to complete the analysis.

2. Create a new Power BI Desktop file named PowerAnalysis.pbix. Connect to the Alarms.csv file. You should have the following columns: PREMISE_NUMBER, METER_NUMBER, OP_CENTER, Type, and DateKey. Add a second query, AlarmType, which gets the alarm type data from the AlarmType.txt file.

3. Reopen the Alarms query and merge it with the AlarmType query using the appropriate keys

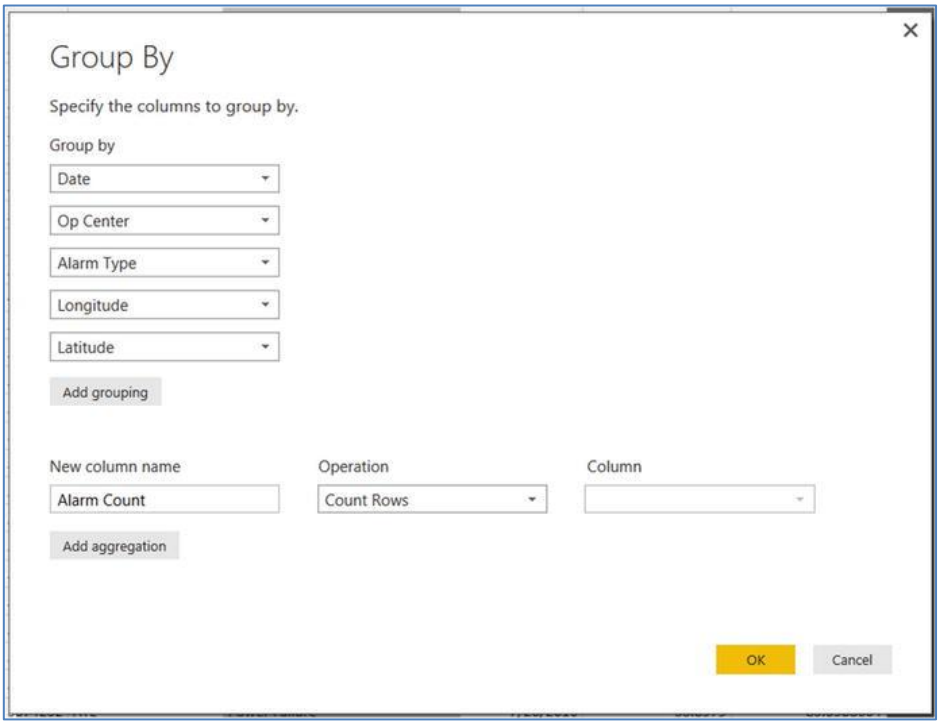


4. Expand the new column and select the ALARM_DESCRIPTION column. Rename this column to Alarm Type. Repeat the previous procedures to replace the DateKey column with the dates in the Date.csv file.

5. Use the Locations.txt file to add the longitude and latitude values to the Alarms query based on the OP_CENTER. You can rename the columns so that they use the same naming convention. Your alarm query data should look similar to Figure below:

	Premise	Meter	Op Center	Alarm Type	Date	Latitude	Longitude
1	129090300	2966387	ATL	ROM Fail	7/25/2016	33.8979	-85.0988604
2	11490200	2964378	ATL	7759 Bit Checksum Error	7/25/2016	33.8979	-85.0988604
3	164889600	3043592	ATL	ROM Fail	7/22/2016	33.8979	-85.0988604
4	173789500	2957107	ATL	Block Bad Index	7/26/2016	33.8979	-85.0988604
5	275189600	4450418	ATL	7759 Calibration Error	7/26/2016	33.8979	-85.0988604
6	91790800	1607106	ATL	Meter Read Fail	7/26/2016	33.8979	-85.0988604
7	325381300	1644165	ATL	Configuration Error	7/23/2016	33.8979	-85.0988604
8	314790200	1666554	ATL	Meter Read Fail	7/24/2016	33.8979	-85.0988604
9	14574700	2111210	ATL	7759 Reset Error	7/22/2016	33.8979	-85.0988604
10	28989500	2915841	ATL	7759 Reset Error	7/25/2016	33.8979	-85.0988604
11	170733610	3580809	ATL	Soft EEPROM Error	7/22/2016	33.8979	-85.0988604
12	141668300	3113114	ATL	Power Failure	7/26/2016	33.8979	-85.0988604

6. Next, filter the data to limit it to alarm types of power failure and high AC volts. Now you can aggregate the alarm counts grouping by the Date, Op Center, Alarm Type, Longitude, and Latitude



7. After aggregating the data , disable the load for the AlarmType, Date, and Locations queries.

8. On Page 1 of the report add a Map visual. Add the longitude and latitude values to the map. Add the Alarm Count to the Size and the Op Center as the legend.

9. Next add a line chart to the report page. Use the Date as the Axis, the Op Center as the Legend, and the Alarm Count as the Values. The report should look similar to Figure below: