

# **Query Expression and Design Guide**

**Designed For**

**Commission on Marginally  
Producing Oil and Gas Wells**

**and**

**Personal Digital Assistant (PDA)  
Pumpers/Well Tenders  
Software Program**

# Access Database Background

An Access database is a collection of information that's related to a particular subject or purpose. Using Access, you can manage all your information from a single database file. Within Access you will use the following:

- Tables to store your data.
- Queries to find and retrieve just the data you want.
- Reports to analyze or print data in a specific layout.

To store your data, a table for each type of information that you track is created. You will bring the data from multiple tables together to create a query, or a report.

A unique ID distinguishes one record from another within a table. By adding one table's unique ID field to another table and defining a relationship, Access can match related records from both tables so that you can bring them together in a report, or query.

To find and retrieve just the data that meets conditions that you specify, including data from multiple tables, create a query.

To analyze your data or present it a certain way in print, create a report.

After you've set up different tables for each subject in your database you need a way of telling Access how to bring that information back together again. The first step in this process is to define relationships between your tables. After you've done that, you can create queries and reports to display information from several tables at once.

Access is a relational database, meaning all tables have relationships to other tables. With this in mind you can create any type of query and report from any and all data entered into the database.

Keep in mind that all tables and relationships have already been created along with necessary queries, forms and reports to maintain your database. These files should never be modified or changed, unless it is done within the program itself.

The best way to understand relational databases is to take a training course. This guide will only give you basic information to design basic queries and reports. Queries and reports can be as simple or as complex as you want them to be. This guide will help you understand the screens and criteria expressions needed to be able to use the data entered into your PDA Database to create queries or reports.

# How to Create a Query

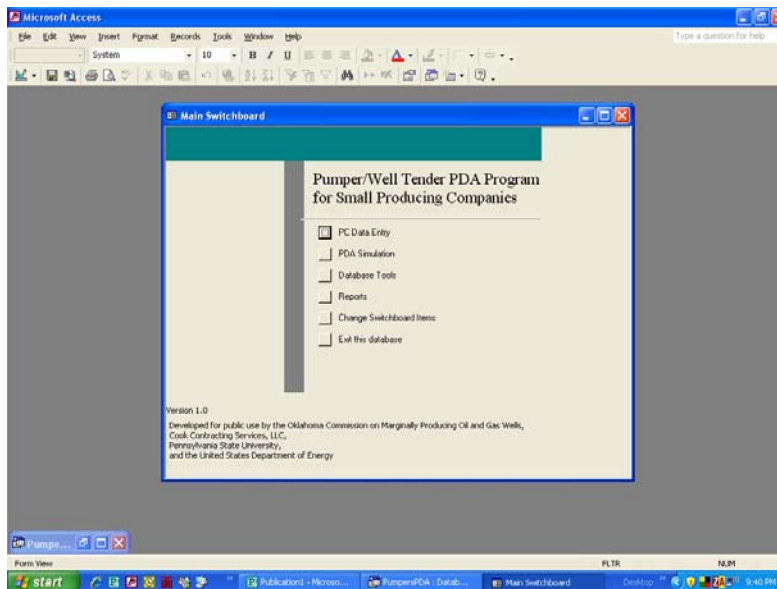
Open the Access Program.

Click on File

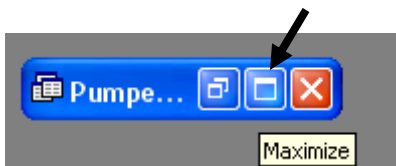
Click on Open

Locate Database: C:/Program Files/PumpersPDA/PumpersPDA  
(should be the default location from when you loaded the program).

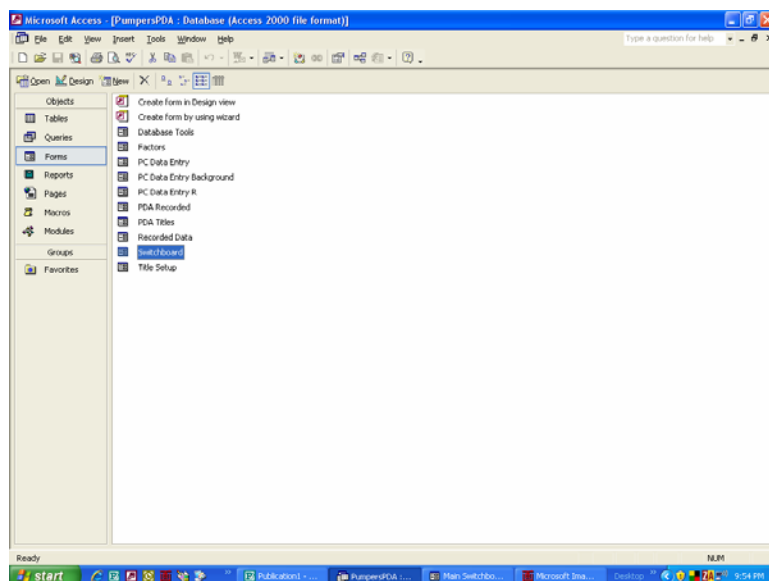
Database will open to Main Switchboard:



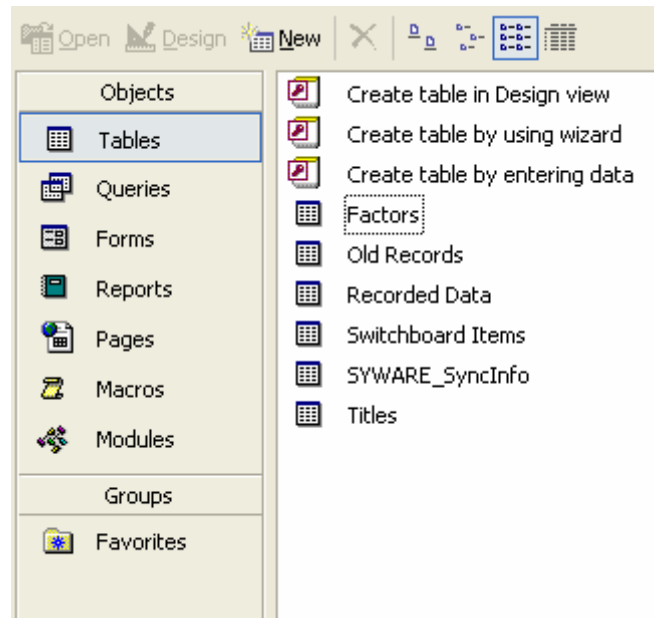
Click on the Maximize link at the bottom left corner to open the Pumper Database Data Files.



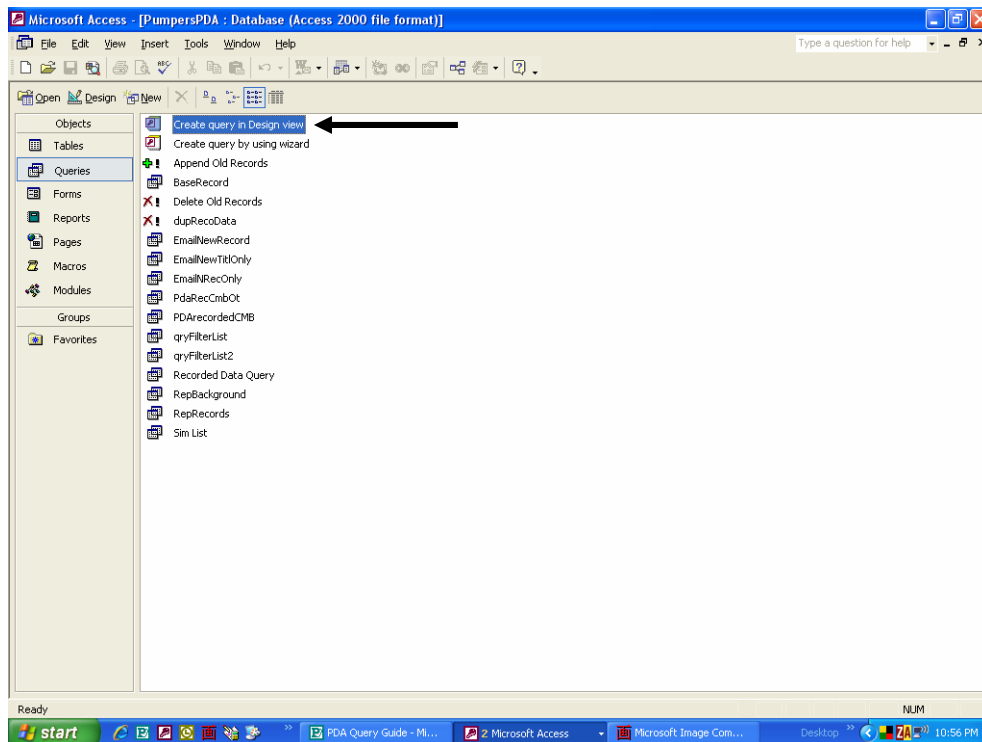
The database should open and look like the example on the right.



When you click on tables, a list of all tables will be viewable. Same when you click on Queries and Reports.



Click on Queries, and then double click on “Create query in Design View”.







Wildcard characters allow you to search for a pattern of alphanumeric characters.

## Wildcard Characters

*	Represents a series of characters
?	Represents a single character

Wildcard characters can also be used with the NOT operator. The NOT operator excludes records that match the wildcard character pattern.

When you use the wildcard character, Access includes the LIKE operator. If you enter O\* in a criteria cell, Access evaluates that expression as LIKE "O\*".

You can enter criteria in either uppercase or lowercase letters.

### Examples of WILDCARD characters and the NOT operator

O*	Includes all records containing text entries that begin with an upper or lower case letters
4/*/0?	Includes all records containing dates in April in any year beginning with 0
NOT */*/0?	Excludes all records containing dates in any year beginning with 0
3?000	Includes all records containing values beginning with 30000 and ending with 39000, or, if the string contains non-numeric characters, any character in the seconde position in the string. If you enter the expression in a number field, you must surround it with quotation marks, as follows: "3?000"
*Wells	Includes all records containing text entries that conclude with the string wells
NOT 4*	Excludes all records with entries that begin with 4. If you enter the criteria in a number field, you must surround it with quotation marks, as follows: NOT "4"

You enter the BETWEEN and AND operator in the criteria cell of the design grid for the field you want to query.

## Examples of BETWEEN and AND operators

Between 30000 and 50000	Includes records containing values beginning with 30,000 and ending with 50,000
Between #1/31/00# and #1/30/07#	Includes records containing dates beginning with January 31, 2000 and ending with January 30, 2007

## Comparison Operators

>	Greater than
<	Less than

## Example of Comparison Operators

>=#2/10/07#	Evaluates records in a table and displays all records where the field contains dates on or after 2/10/07
<=3/20/07#	Evaluates records in a table and displays all records where the field contains dates prior to or on 3/20/07

You can use multiple criteria to query more than one value in a field. To do so, you need to work with two logical operators.

## Logical Operators

AND	Combines criteria in a field to be able to query. A record must meet both criteria to be included in the query result.
OR	Provides alternative criteria you use to query a field. Any record meeting one of the criteria is included

There are two ways to use the AND operator:

- In the criteria field.
- You can imply the use of the AND operator by placing both criteria in the same row of the design grid.

**Example of AND operator when included in the criteria field**

*Wells* and *Tanks*	Includes only those records that contain the text wells and tanks in the same field
W* and *tanks*	Includes only those records that begin with the letter W and contains the text tanks in the field. Water and tanks would be included because the word water contain the string W

You imply the use of the AND operator when you place criteria in two or more fields in the criteria row.

**Example**

Field Name	Criteria
Date	“3/20/07”
Name	=Big Well

There are two ways to use the OR operator:

- You can include the OR operator in the criteria field.
- You can use the OR row(s) in the design grid.

### Example of OR Operator

*Wells* or *Tanks*	Includes any records that contain the text wells or tanks in the field
W* or *Tanks*	Includes any records that begin with the letter W or contain the text tanks in the field

Calculated fields appear as separate fields in a query. A calculated field performs a mathematical calculations on values in one or more queried fields. A calculated field also combines text from two or more fields.

### Arithmetic Operators

+	Addition
-	Subtraction
*	Multiplication
\	Division of integers
/	Division of floating-point #'s

To perform a mathematical calculation on existing values in a table use these steps:

1. In query design grid, click in the field row of an empty column.
2. Type the name you want to give the new calculated field and end it with a colon(:).
3. While still in the field row, enter the name of the field that contains the values upon which you want to perform the calculation, using the following format:

[field name]  
or  
[field name]&""&[field name]  
(if you want text from two fields)

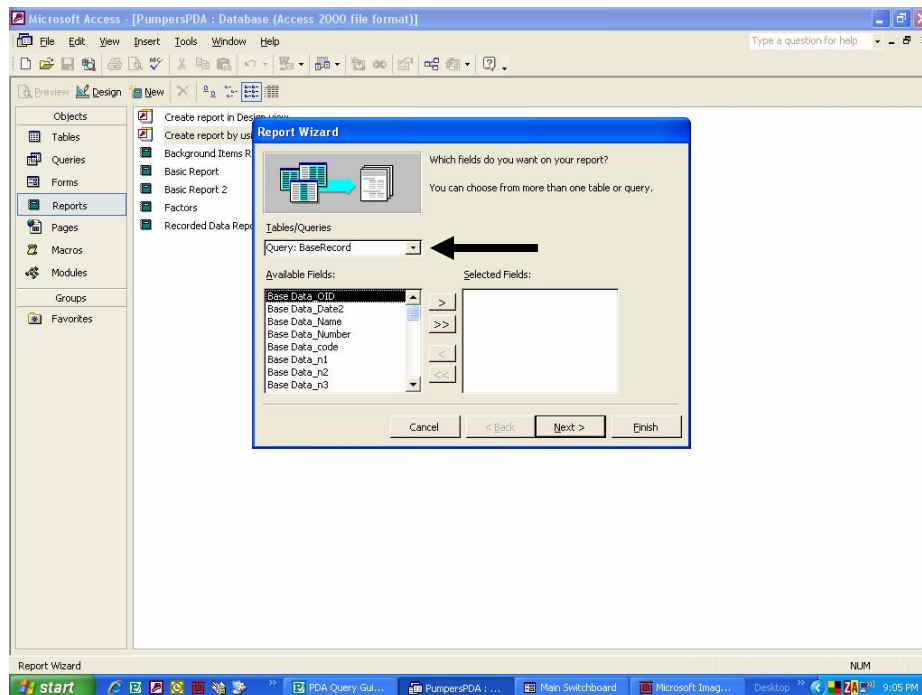
4. Type the arithmetic operator you want to use.
5. Type either the name of another field that contains values or a constant. Use the same format as you did in step 3.
6. Make any other changes to the query.
7. Click on the view button.

Note: Make sure the show check box for the calculated field is selected, otherwise it won't show up in your query results.

## How To Create Report in Access

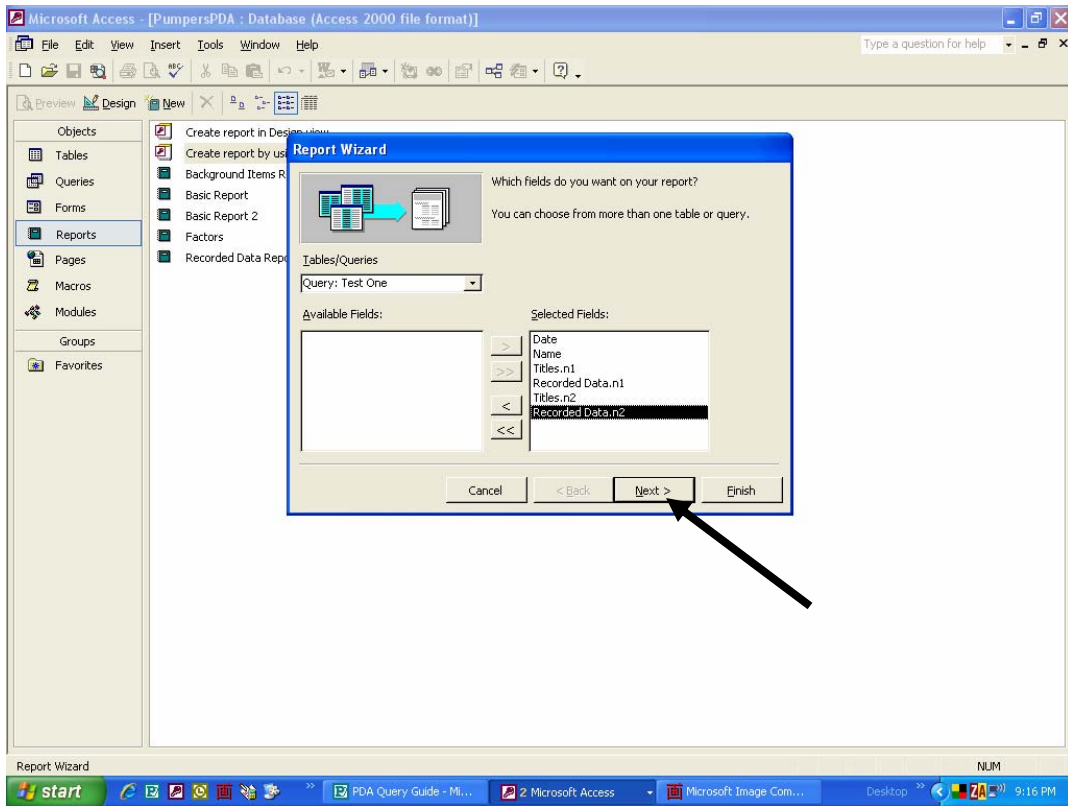
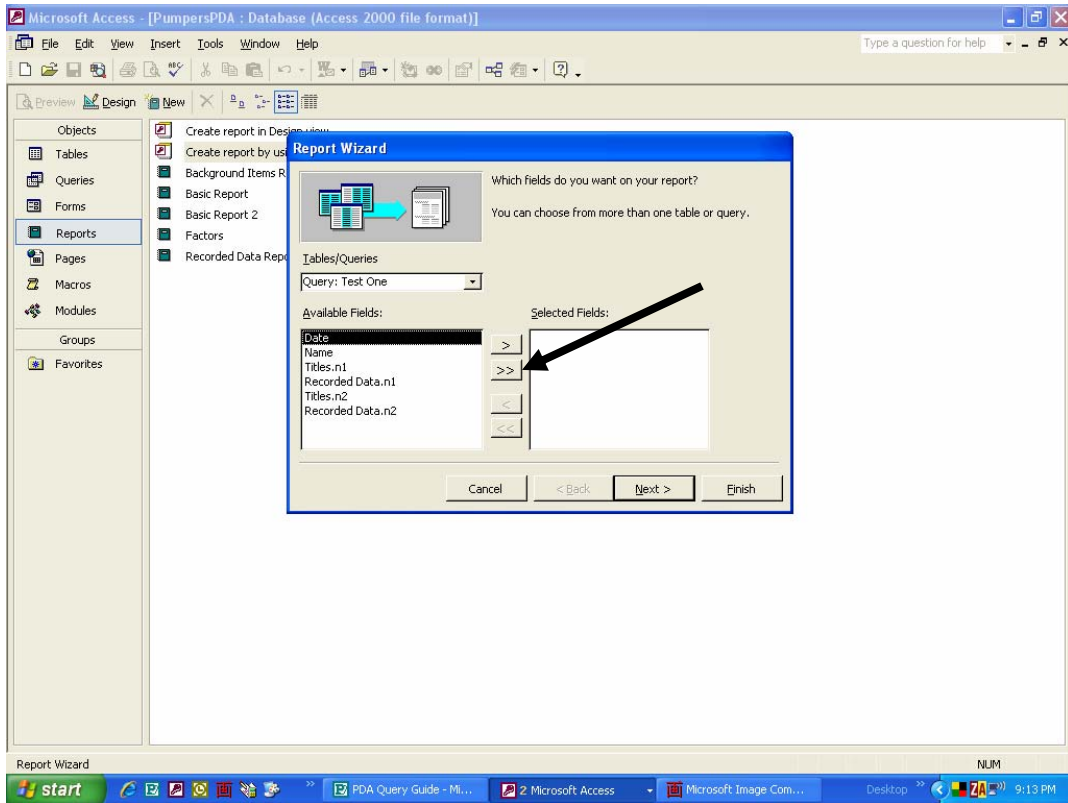
Click on Reports.

Double click on "Create Report by using Wizard". You should get the following screen.



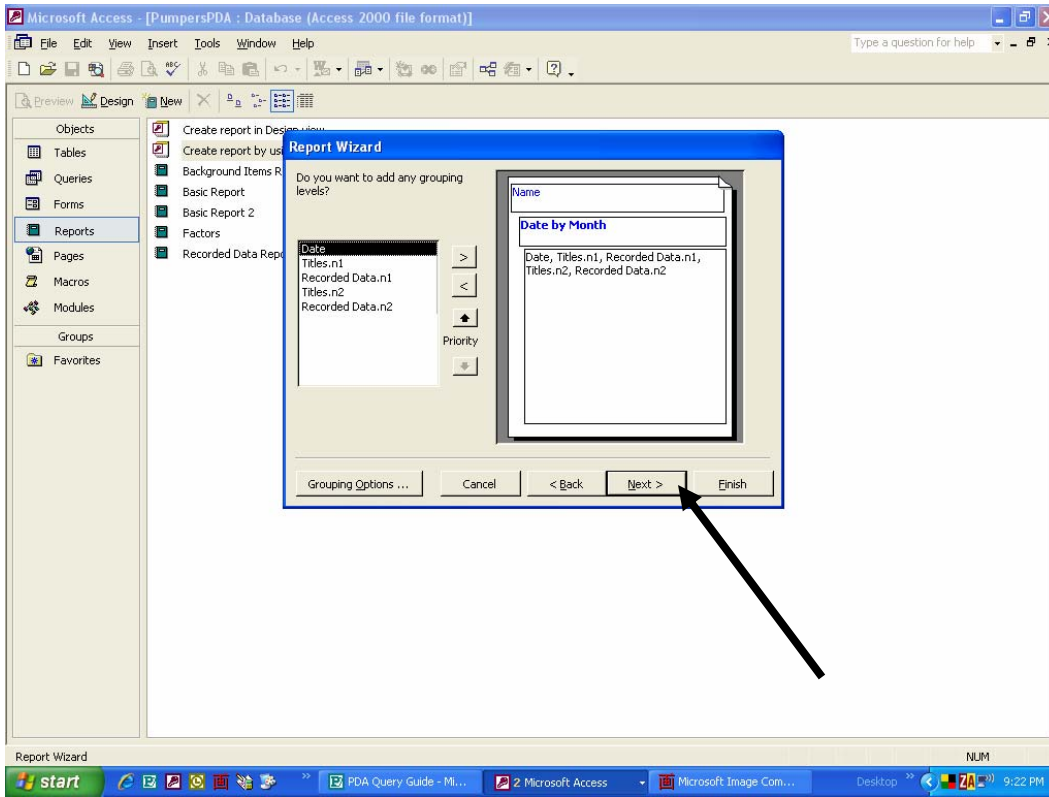
The Report Wizard dialog box will prompt you for certain information. Under Table/Queries in the Drop Down Box choose Query: Test One. When you do all the fields you originally choose will be available on your final report.

Under selected fields, if you want all fields click on the >> button. If you only want, for example, Name and Date. Click on Date to highlight it and click on the > button. Then do the same for the Name field.

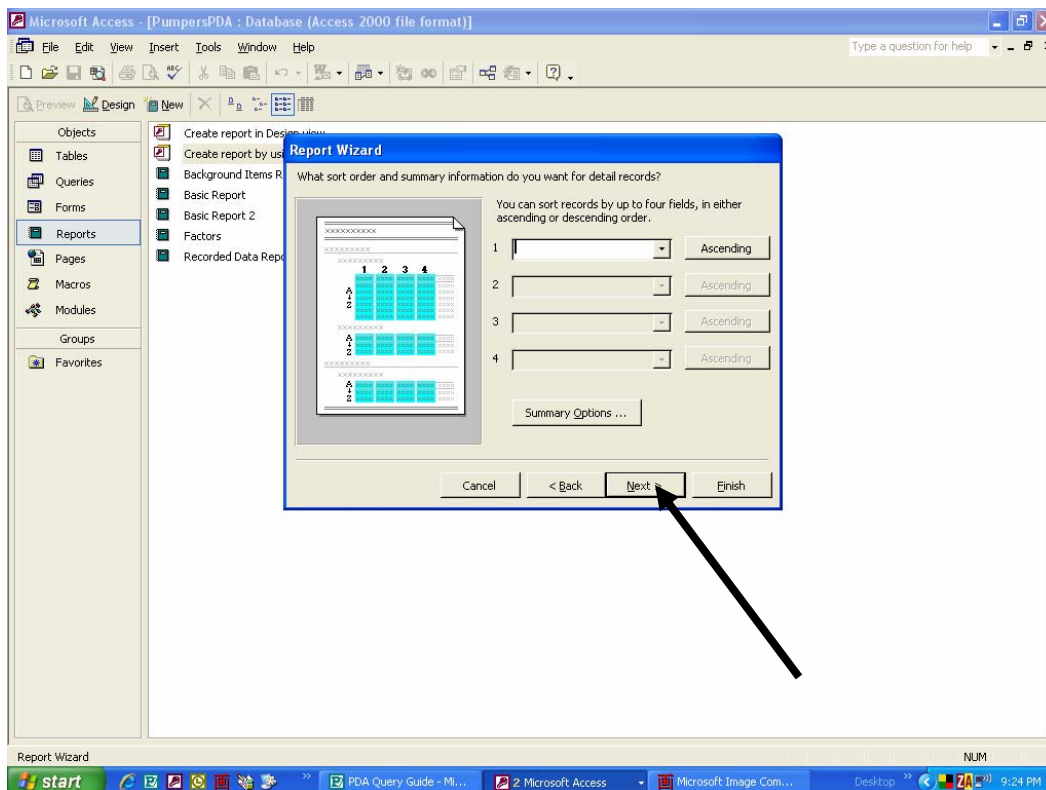


Then click “Next”

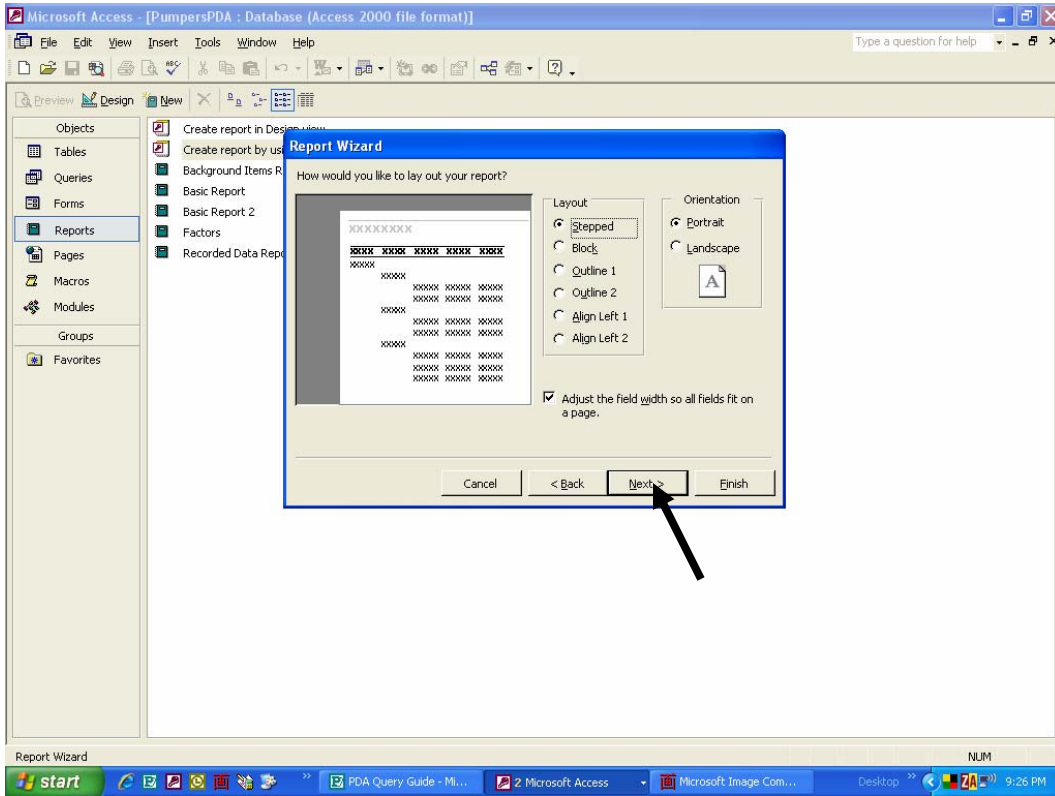
The screen wants to know if you want any grouping levels. Meaning, which field do you want first. Highlight field and click on the > button to choose it or use arrows to change the priority. If you have no preference click next.



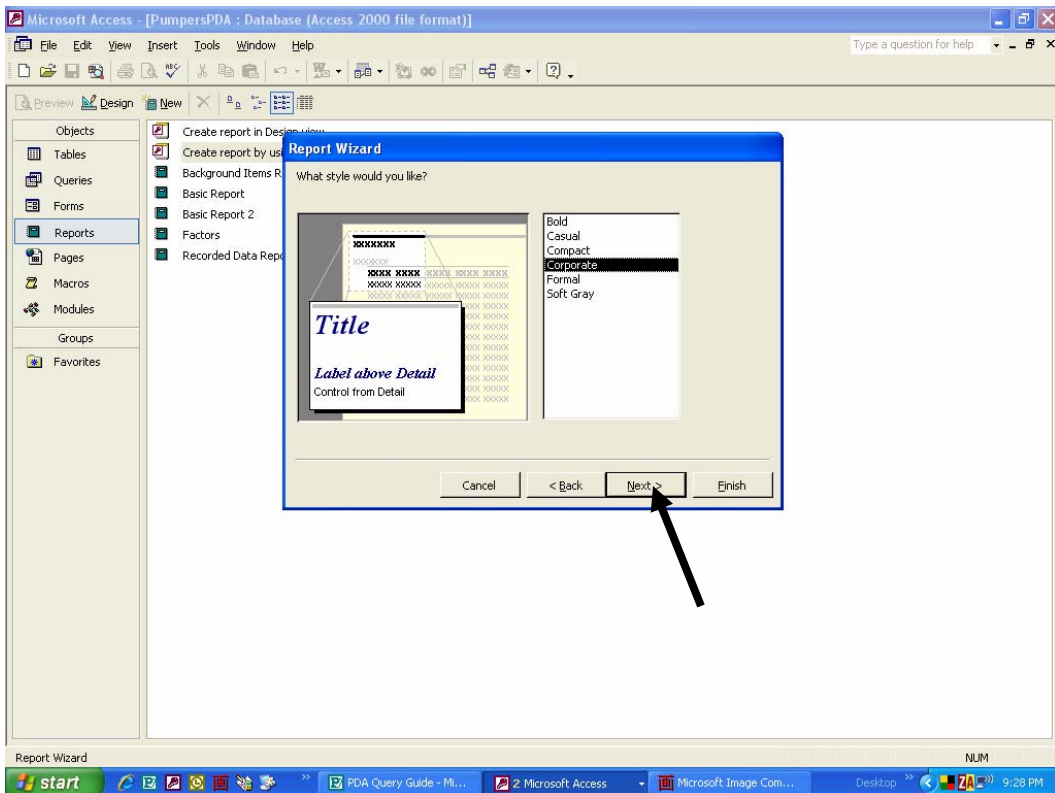
The next screen wants to know the sort order. You can sort records by up to four records, in either ascending or descending order. The most common and the default is ascending. Click on next.



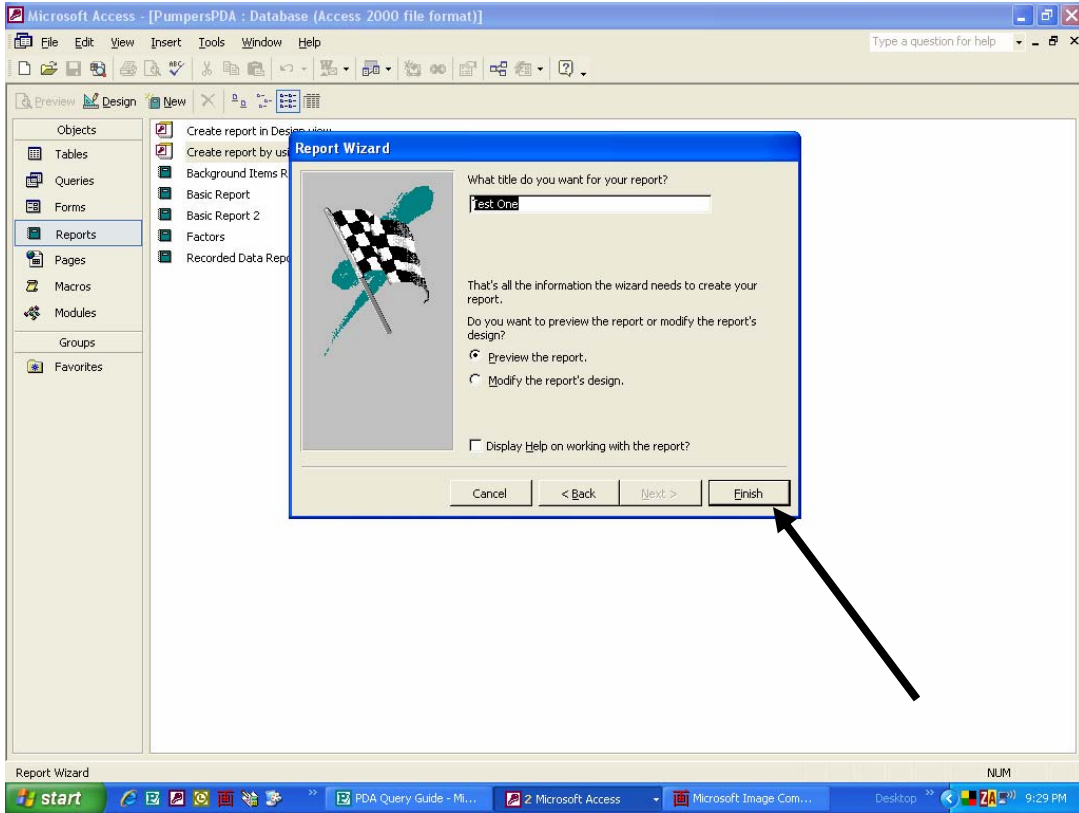
The next screen wants to know how you want to lay out your report. Make your choices, then click next.



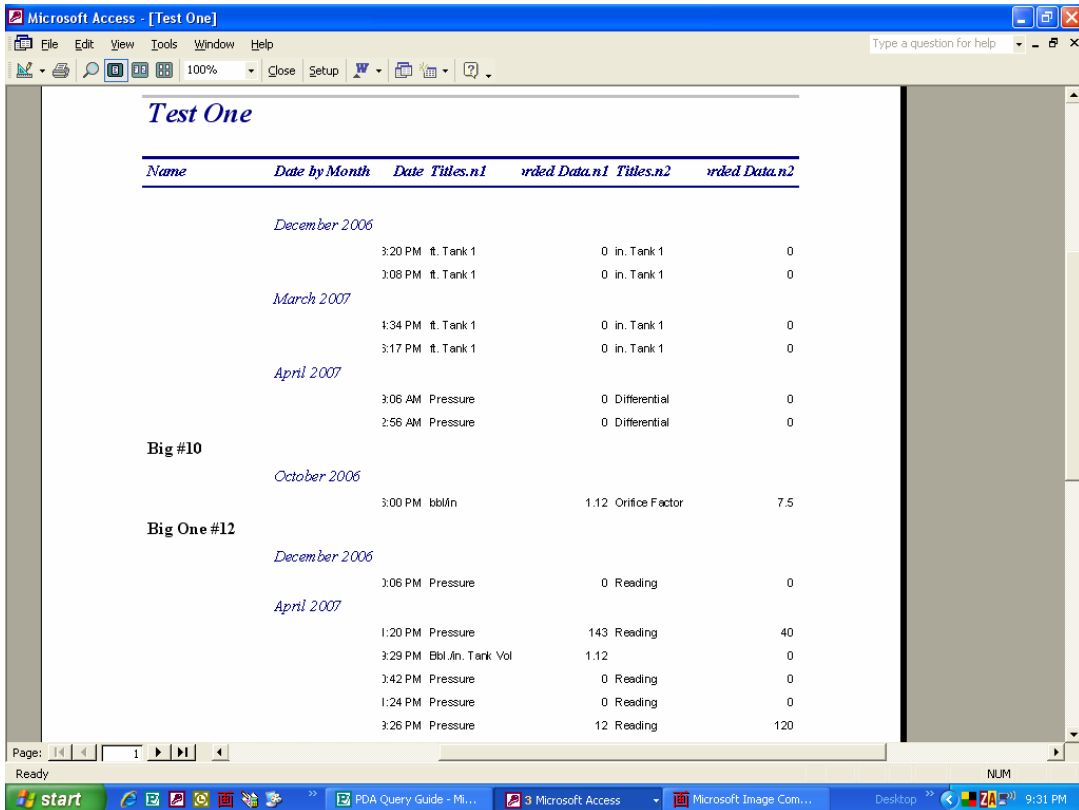
The next screen wants to know what style you want, make your choices, then click next.



Type in the title of your report. The default is the name of the query. You can name it anything you want, you will just need to remember it. Click on Finish.



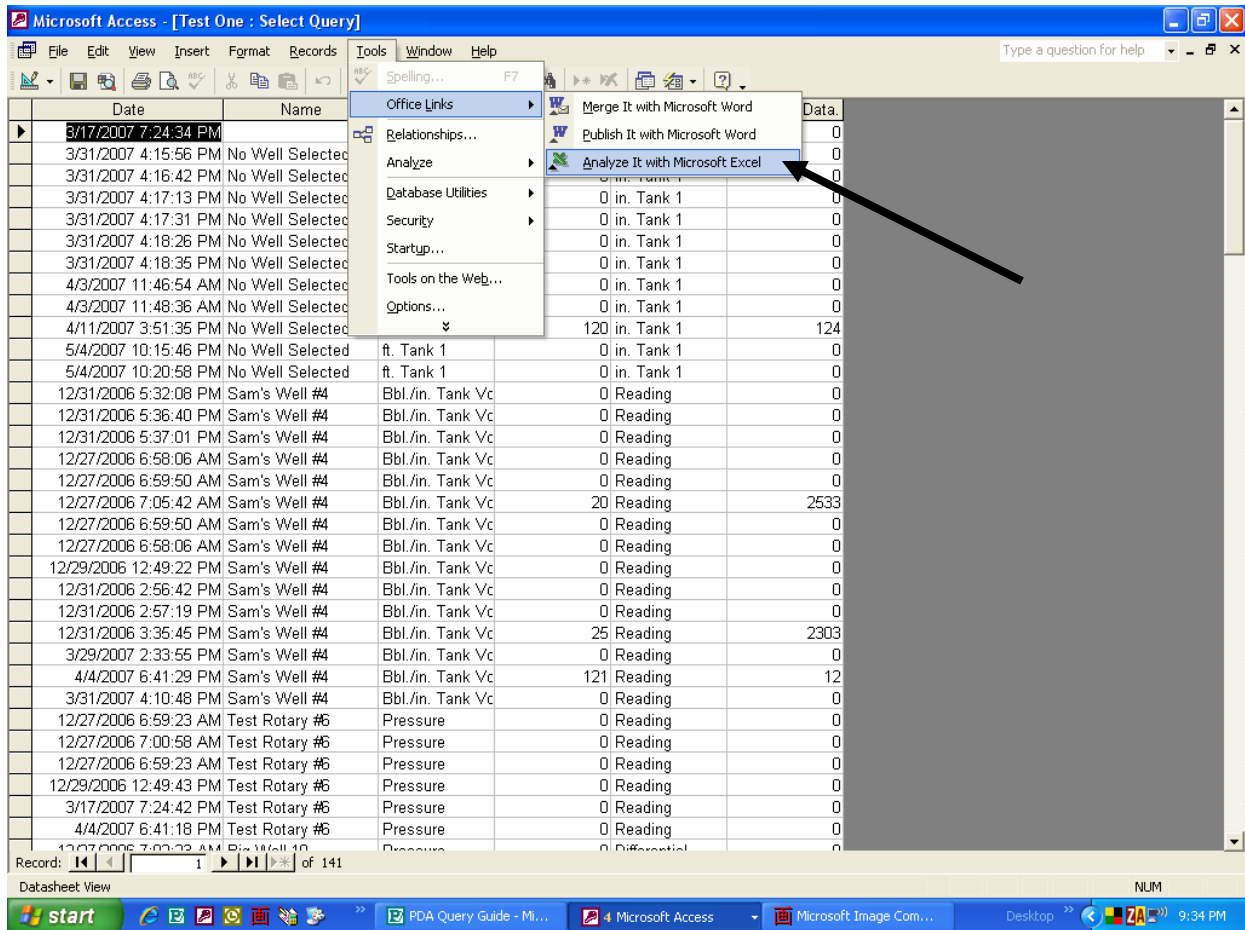
Your report can now be printed.



## How To Create an Excel File Out of Access

You can also pull your query generated data into Excel by doing the following:

Once the query is open, click on “Tools”. Put your cursor on “Office Links”, choose “Analyze It with Excel”. The data will automatically be pulled into Excel and at that point you can run any kind of calculation or formula you would like.



This should get you started. No matter how simple or complex you want your query to be, you should be able to use all of the operators to obtain the correct results. Take your time and think about what exactly you want from your query. Also remembering how the data is entered into each field is helpful too.

Located on Page 17 is the default equations set-up in the PDA Program.

<p>Eq. 1 - All on one form with Orifice Meter  background.n1—BBL./in.  background.n2—Orifice Factor  background.n3—Press. Atm  n1—Pressure  n2—Differential  n3—Temperature  n4—P Well Head  n5—Strokes per Min.  n6—Tank ft.  n7—Tank in.  t8—Operations  t9—Operations extended  c11—Gas Rate—MCFD  c12—BBL.</p>	<p>Eq.2 - All on one form with Rotary Meter  background.n1—BBL./in.  background.n3—Press. Atm  n1—Pressure  n2—Reading  n3—Strokes Per Min.  n4—P Well Head  n5—Rate  n6—Tank ft.  n7—Tank in.  t8—Operations  t9—Operations extended  c11—Gas Rate—MCFD  c12—BBL.</p>
<p>Eq.2 - Orifice Meter  background.n2—Orifice Meter  background.n3—Press. Atm  n1—Pressure  n2—Differential  n3—Temperature</p>	<p>Eq.4 - Rotary Meter  background.n3—Press. Atm  n1—Pressure  n2—Reading  n5—Rate</p>
<p>Eq.10 - Tank BBL  background.n1—BBL/in.  odds, ft;even,in.</p>	<p>n = Number, ie n1=Number1  c = Calculation Field</p>
<p>*=Optional Examples</p>	<p>The background is the record containing the background information, assumed to be numbered 1,000,000 + the number.</p>