

PUMPER/WELL TENDER PDA PROGRAM FOR SMALL  
PRODUCING COMPANIES

FINAL REPORT

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Pumper/Well Tender PDA Program for Small Producing Companies  
Final Report

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## ABSTRACT

### Pumper/Well Tender PDA Program for Small Producing Companies Final Report

This report for the Pumper/Well Tender PDA Program for Small Producing Companies outlines the progress made in beta testing and in revising the software and instruction manual. The Oklahoma Marginal Well Commission (MWC) & Cook Contracting, LLC. Cook Contracting, LLC have collaborated on making revisions to the first draft of the software and instruction manual as issues have arisen during beta testing. Revisions to the materials and software have made loading and initializing the software more user friendly. Beta testing the program continues, and plans are being formulated for introduction of the software to potential users.

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## INTRODUCTION

### Pumper/Well Tender PDA Program for Small Producing Companies Final Report

The objective of the Pumper/Well Tender PDA Program for Small Producing Companies is to make computer record keeping technology available, free of charge, to operators of marginal oil and gas wells. Daily production data will be recorded by the pumper/well tender on a PDA and transmitted to the operator's office electronically. The data will be stored on the PDA and on a computer in the operator's office, in a form that is easy to access and from which timely reports for managerial personnel can be generated in order to help track production and field data. The overall objective is to increase production and/or enhance the collection of field data in a more efficient, cost effective manner.

## EXECUTIVE SUMMARY

### Pumper/Well Tender PDA Program for Small Producing Companies Final Report

During this reporting period for the Pumper/Well Tender PDA Program for Small Producing Companies, updates and revisions were made to the computer program previously written to facilitate the process of obtaining and recording the basic data that is typically gathered in the field on a daily basis by pumpers/well tenders, for operators of oil and gas wells. Changes to the program were initiated as a result of input from beta testers helping test the software.

Also during this reporting period, the manual for the program's use was finalized and made more detailed in order to help users without a great deal of computer experience navigate the installation and initialization of the program.

During this reporting period beta testing of the program continued and training workshops were held throughout the state of Oklahoma.

EXPERIMENTAL

Pumper/Well Tender PDA Program for Small Producing Companies  
Final Report

During this reporting period for the Pumper/Well Tender PDA Program for Small Producing Companies no experimental methods, materials or equipment were used. A computer and a PDA were used to edit the software program and edit the instructional manual.

## RESULTS AND DISCUSSION

### Pumper/Well Tender PDA Program for Small Producing Companies Final Report

During the early part of this reporting period for the Personal Digital Assistant (PDA) Software Program for Pumpers/Well Tenders final changes to the program were completed and the final draft of the manual was completed. The software program was released and made available to the public at workshop training sessions on May 15, 2007 in Enid, OK, May 16, 2007 in Tulsa, OK, May 17, 2007 in Oklahoma City and May 18, 2007 in Ardmore, OK. Seventy-seven people attended the training sessions. The majority of the workshop attendees were employed with small independent oil and gas producing companies, but several mid/large producing company employees as well as employees from government agencies and service companies attended the trainings also.

The workshop sessions were announced in a mailing to approximately 12,000 people who are in the Marginal Well Commission's database. The database is comprised of oil and gas well operators in Oklahoma, people who have attended workshops sponsored by the Commission in the past and people who have attended the Commission's annual oil and gas trade expo in the past. The software program and manual were also made available to the public on the Commission's web site on May 21, 2007. The Installation Manual for Mobile Device is attached as Appendix A.

The program is designed to allow companies the opportunity to customize their records to fit their individual needs. Customization and entering initial well data is the most time consuming step in operating the program and it requires the user to have at least a basic working knowledge of databases and how to input data into a database. The program was also designed to allow the user to make changes to the program, which requires a working knowledge of designing a database.

The program and instruction manual are free of charge and no shipping or packing fees are assessed to anyone that calls the Commission's office and requests hard copies of the program and manual. The software and manual are also available for downloading on the Commission's website at no charge. The Manual is attached as Appendix B.

Technical support was offered free of charge through September 30, 2007 through the software developer, Cook Contracting, LLC and there were several requests for technical support. The Marginal Well Commission will take all future requests for technical support via phone, mail or e-mail.

It seems that the software was well received by participants at the workshops and subsequently by people requesting the materials via mail and download. The program and manuals have also been taken to conference events and handed out at no charge. These events included the Osage Oil & Gas Summit and the Marginal Well Commission's District IV Operator Roundtable.

## CONCLUSION

### Pumper/Well Tender PDA Program for Small Producing Companies Final Report

Testing of the Pumper/Well Tender PDA Program for Small Producing Companies was concluded with mixed results. Initial input from beta testers although was encouraging resulting in a final product that is beneficial to operators of marginal oil and gas wells however not as user friendly as we had intended.

It was found that the difficulty comes as a result of the data inputting that is required prior to operation is time consuming and requires some general knowledge of computers. Many of the field personnel had problems inputting the data.

During the time of the project the PDA operating system had changed from Microsoft CE to Windows Mobile resulting in more issues in the field operations.

The final result is that the Pumper/Well Tender PDA Program is a useful tool and would be beneficial to the small producing companies throughout the United States with some additional work on the software.

## REFERENCES

### Pumper/Well Tender PDA Program for Small Producing Companies Final Report

There are no references to cite for this report.

## Appendix A Installation Instructions for Mobile Device

# Basic Installation Instructions for the Mobile Device and the PDA Pumper Program

The Installation Instructions are for the purpose of ensuring that the Personal Digital Assistant (PDA) Pumper/Well Tender Program will be loaded correctly. There are additional features and options that you may add that do not interfere with the operation of the program, but will consume more space on the desktop as well as the PDA. **All screens, instructions and agreements should be read in their entirety.**

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If loading from a CD:

\*\*Almost all computers will automatically initialize a Setup Wizard when the CD is put into the drive and it has been given time to process (usually no more than 1-2 minutes)\*\*

**If for some reason the CD does not automatically initialize, please see Appendix A-1 for alternative setup instructions when loading from a CD.**

If for some reason the installation CD is not available to you and you have an available internet connection, please see Appendix A-2 for further website downloading instructions.

For the purposes of this manual we will assume the CD is automatically initialized and we will begin with those instructions.

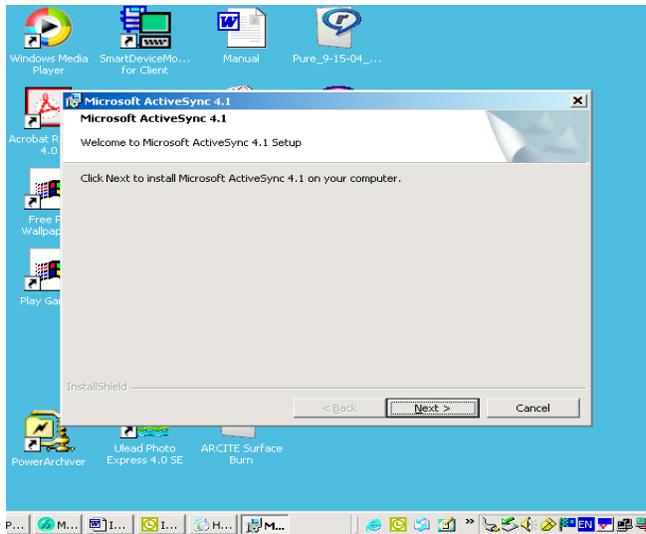
Once you have inserted the CD and it has had time to process, you should see a screen similar to the one below displayed on your desktop.



Depending on the PDA purchased and the company who manufactured the installation CD, you may see several different screens to configure your setup. Depending on the system requirements of the PDA and other programs that can be installed for the use of additional features on the PDA and the PC, the installation steps will also vary. Please follow the instructions carefully!

### **Step #1**

A screen should appear titled "Microsoft ActiveSync 4.5 (version will vary, e.g. 4.1, 4.5, 5.0)" and the next line should read "Welcome to Microsoft ActiveSync 4.5 Setup" and the instruction is as follows: "Click Next to Install Microsoft ActiveSync 4.5 on your computer." You must click next in order to proceed to the next screen.



A screen will appear that asks you to read the license agreement carefully. PLEASE TAKE TIME TO READ THIS. You must accept the license agreement in order to proceed. You must click on the circle to the right of the line that says "I accept the terms in the license agreement." Then click on the box labeled "NEXT."

A screen will appear that asks you to enter the Customer Information. The field, titled "USER NAME", will sometimes auto generate the name that was entered when the computer was setup. If you wish to input data other than what is auto generated simple delete the data in that field and enter the appropriate data. It is important to remember that the ActiveSync program will associate all folders that are created and any registration processes with the name and organization that are entered in these fields.

The next screen that appears is titled "Destination Folder" and the first line gives you the instruction to install to C:\Program Files\Microsoft ActiveSync\. This is the default installation folder and virtually every computer has a "C Drive" that is the main hard drive of the computer. If you want to install this software to another location, simply click on the "CHANGE" box and you will receive another screen that will ask you to choose the location of the folder you want to install ActiveSync in. Other information that is located on this screen is the capacity of the folder you wish to install to. Make sure you have enough available space in that folder prior to proceeding with the installation. If you are not familiar with installing programs to your computer, please refer to the Technical Support website we have provided or contact you local IT specialist for further instructions. You must click on the NEXT button to proceed to the next screen.

A screen appears that is titled "READY TO INSTALL THE PROGRAM" and the next line should say, "The wizard is ready to begin installation " and "Setup is ready to begin installing Microsoft ActiveSync 4.5 (versions will vary, e.g. 4.1, 4.5, 5.0). If you are ready to begin installation, you must click on the INSTALL box.

The next screen is titled "Installing Microsoft ActiveSync 4.5" and the first line states "the program features you selected are being installed" and you are given the following instruction

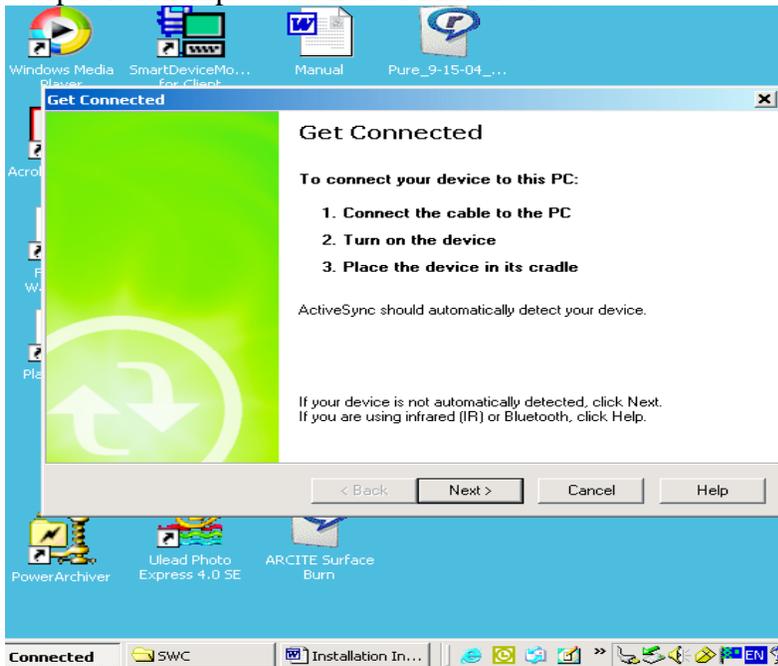
"Please wait while the Setup Wizard installs Microsoft ActiveSync 4.5, this may take several minutes."

The next screen is titled "Microsoft ActiveSync setup is complete" and says "The setup wizard has successfully installed Microsoft ActiveSync 4.5." Click finish to exit the wizard. You must click on the Finish button to proceed. **\*\*Do Not Remove the CD from the CD Drive in which it was first inserted\*\***

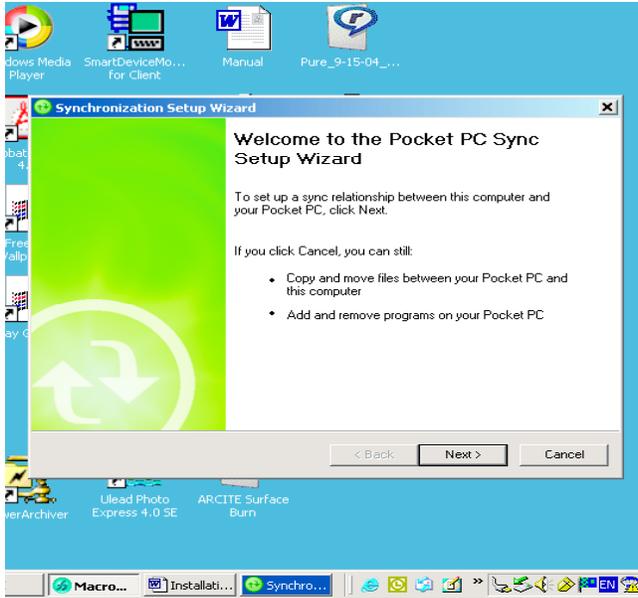
Upon completion of the above steps, you may be asked to restart your computer. If you are prompted to do so, it is always better to restart/reboot your PC after you install any program. Once your computer has completed the restart/reboot process, the program should then direct you to plug the PDA into the PC via the USB cable. Please see additional instructions at the back of this manual or reference the user manual that accompanies your PDA, if you have difficulty with this instruction.

If you are not prompted to restart/reboot your computer, please do so for the purposes of this training, in order to ensure an accurate and complete installation. You will also need to see Appendix A-3 to proceed with the PDA setup.

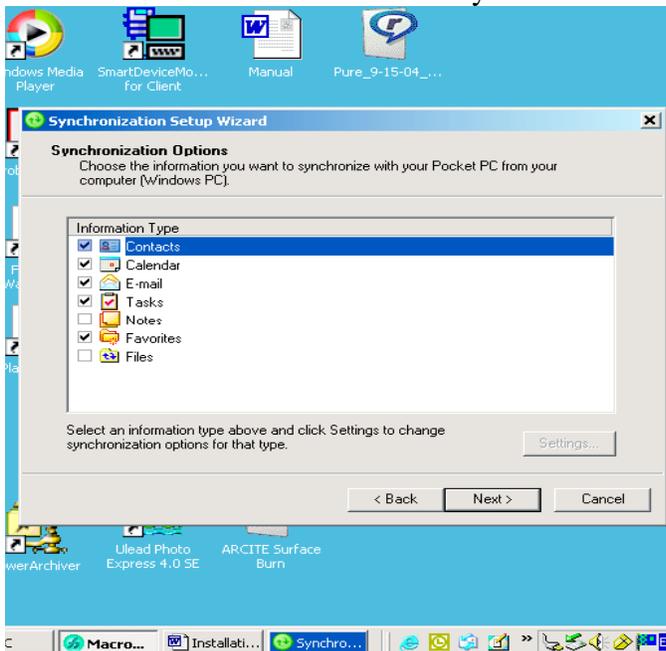
The next set of screens are the most important and crucial set of instructions, to ensure a proper setup/relationship between the PDA and PC.



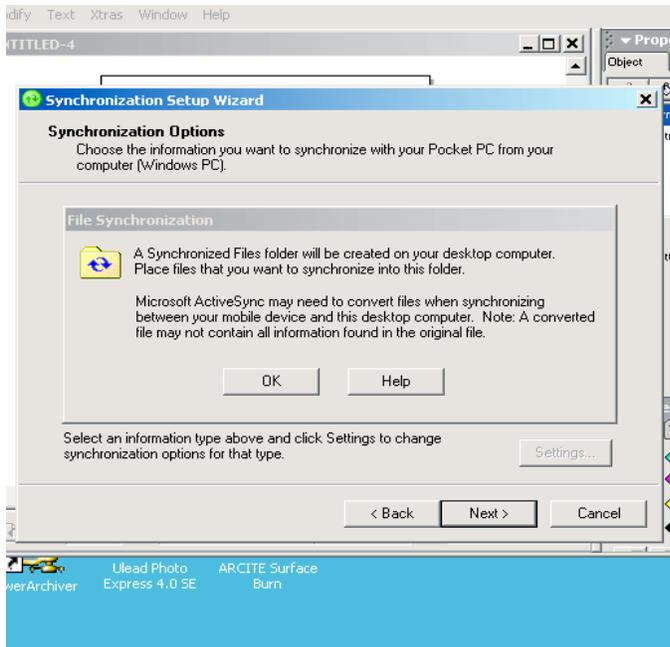
The very next screen should have this appearance and you must click next in order to proceed. If you do not click next, you will not be able to load the PDA Pumper Program on the PDA.



This screen is very important, because you must choose the data you would like to sync between your PC and PDA. For instance if you leave a check mark in the box to the left of "E-Mail", your PC and the PDA will check to make sure that the data in the e-mail folder on your PC and the data in the e-mail folder on the PDA "sync up." The purpose of that is to ensure that if an e-mail is on the PC it will then transfer the e-mail to the PDA, so that the e-mail folder in both locations are identical in the data they contain.



For the purposes of the PDA Pumper Program, neither of the boxes need a check mark. It will be helpful later on to have the "Files" (very last option) option installed on the computer. You simply click on the boxes to add/remove the check marks. Choosing the "Files" option will direct you to the following screen.



This is simply telling you that a link/shortcut will be added to the desktop. This folder will allow you to transfer information from your PC to the PDA. The screen on the previous page allows you to select various data to transfer, but you may want to transfer items that are not given as an option to choose from. Simply move the data to this folder and the next time you place the PDA in the docking cradle that information will transfer/sync to the PDA.

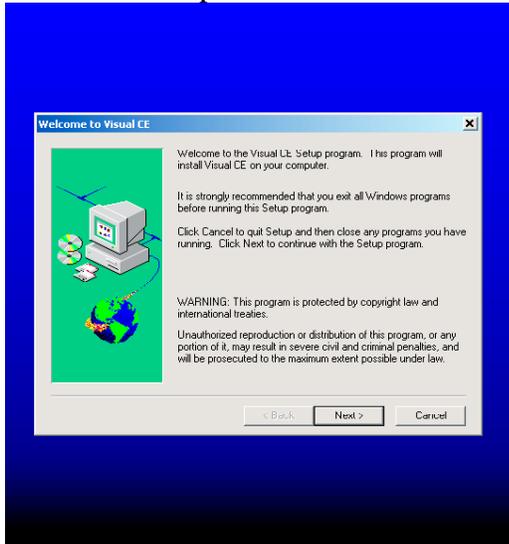


Once this screen appears you know you have successfully installed the PDA Sync software and the Sync Setup Wizard is complete.

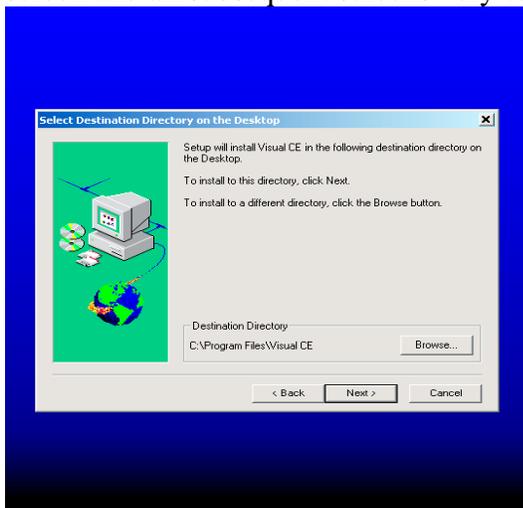
## Installation of the PDA Pumper Program

If you download the program from the website, please see Appendix A-4.

Insert the CD that contains the "PDA Pumper Program." If the CD does not autostart, double click the My Computer file and locate the drive that contains the "V 1.0" program, then double click on that file and locate a file named "Runtime." Double click on this file, locate the file titled "Runtime Install," double-click on the file & allow the install to proceed, until it is complete. Your next step is to locate the file titled "Support," double click on it, locate the file titled "PDA Install," there should also be a computer icon that represents that file. Double click on the file and a window should appear that says "Setup is preparing the Install Shield....," allow it to finish that process and then the following screen should appear:



Visual CE is the software program that the Pumper database is written in. This is a necessary step in the installation process, because without this software loaded on the PC you would not be able to save changes to the data that you enter in the Pumper database and you would not have the ability to transfer the program and its changes to the PDA. Please take the time to read this screen and all subsequent screens very carefully throughout this process.



The Destination Directory will automatically default to the C:\Program Files\Visual CE. If you are familiar with browsing for the correct location on your PC to install programs, you have the

option to change the destination of the program by clicking the "browse" button. The instructions for the purposes of the PDA program are to install the program to the default destination. The next screen will tell you "The Directory does not exist, would you like to create it?" and for the purposes of the Pumper Program the instruction is to click the "Yes" button. If you click the "No" button, you will have to search for the program each time you wish to locate it. Allow the setup to go through the next few phases of the installation and then a window titled "Information" should appear and give you a message that reads "Setup Complete." Once you click the "OK" button, then the setup will automatically initialize itself with the PDA and begin to synchronize the changes on the PDA. Another way of looking at it is, the PDA Pumper program is being transferred to the PDA. You should then be able to locate the PDA Pumper Program on the PC and the PDA by following the next few steps. It is not necessary, but the suggestion is to restart/reboot your PC to ensure a complete installation was performed. There will be a folder titled "PDA" and a folder titled "Pumpers PDA Program," but the folder titled "PDA" is the folder for installation purposes only. You should be entering data and working in the "Pumpers PDA Program" folder.

Steps to locating the PDA Pumper Program on the PC:

- 1) Open the My Computer Folder
- 2) Open the C Drive
- 3) Open the Program Files folder
- 4) Open the PDA folder
- 5) Open the PDA Pumpers Program

Steps to locating the PDA Pumper Program on the PDA:

- 1) Click on the Start button (a drop-down list will appear)
- 2) Click on "Programs"
- 3) Scroll down the screen, then locate and click on the Pumpers Program

### **Appendix A-1**

1. Click on "My Computer" and locate the drive that contains the installation CD
2. Double-click on the drive or with cursor on the drive right click and choose open on the drop down list

A screen that is similar to the first one at the beginning of the instructions, should appear. If you are still not able to proceed with installation, refer to the reference manual that accompanies your PDA or contact local IT support.

### **Appendix A-2**

1. Go to <http://microsoft.com>
2. Locate the downloads page
3. Locate the download center

4. Locate the download categories list and choose Mobile Devices
5. Locate the ActiveSync version that is appropriate for your device and click on it
6. Download the driver to your "C" drive
7. Locate the setup file within the "ActiveSync" file you have saved to your "C" drive
8. Double-click on the file or right click on the file, choose open and proceed with installation

A screen that is similar to the first one, at the beginning of these instructions, should appear. If you are still not able to proceed with installation, refer to the reference manual that accompanies your PDA or contact local IT support.

### **Appendix A-3**

If you are not prompted to restart/reboot your computer:

1. Reboot your computer manually
2. You should see a screen that looks similar to the one below
3. You will also notice that you are back to page 4 of the installation instructions, return to that page and proceed



### **Appendix A-4**

1. Go to <http://www.cook-contracting.com>
2. Click on download page
3. Click on the appropriate link to download the software package and proceed with the instructions

\*Note: You must download the software to your "C" Drive\*

If you are still not able to proceed with installation, refer to your local IT support or send a message via the technical support link located at the <http://www.cook-contracting.com>.

## Appendix B Manual

# **Pumper/Well Tender PDA Program for Small Producing Companies**

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# Introduction

## ***Mission Statement***

The goal of the software is to increase the value of small oil and gas producing companies.

The collection of data will enhance the evaluation of wells. Identification of problems or potential improvements can be better facilitated with better data. In time the increase in production and/or reduction in operating cost will increase the value of the company assets.

## ***Considerations before Starting***

There are three levels of users. Each organization will need to have all of its users trained to be a level 1 user, and it will need at least one person trained to be a level 2 user.

Level 1: The level 1 user, or field user will use the PDAs in the field. They are required to know very little about computers. They will be required to understand the field manual. They will use the PDA to enter data.

Level 2: The level 2 user will use the software in the office. By extension, they will be required to know how to operate the PDAs. They will be capable of setting up the software and equipment and making the necessary changes to the setup. They will also be capable of printing and manipulating data in Excel and Access formats.

Level 3: The level 3 user will be capable of utilizing the software to perform task outside of the original programming.

These devices are going to be used in harsh condition. Many of the people who will be using them will have very few computer skills.

There are a few ruggedized PDAs available on the market. They typically are much more expensive than standard PDAs.

A standard device can be purchased at a number of office supply and electronics stores. It is highly recommended that a hard, waterproof case be used. Since these cases are not commonly used, they will most likely have to be purchased online.

Typically, when looking for devices for this project, the simplest devices should be considered. PDAs can have many little gadgets and features included in them (Wi-Fi, GPS, etc.). If these items are not going to be used, they will only add complexity and cost to the device. For companies just starting to use this type of system, it is recommended that they **keep it simple**.

# **Field Manual**

## ***Introduction***

This section is the field manual. It covers operation of the PDA software and basic operation of the PDA. It is intended to be used by the field user and does not cover the system setup.

The function of the PDA program is to collect data in the field, transfer data to the office computer, and to store data for use in the field.

The PDA cannot delete records. It can only create and change records. When a record is changed or added on the PDA, it will update the PC when they connect. Also, when records on the PC are changed, the PDA will be updated.

The program is intended to be very flexible. As a result, there are often a number of ways to do things. The user should keep an open mind.

## ***Connecting PDA to PC***

To connect the PDA to the PC, plug the appropriate cord into the PDA or dock the PDA on the cradle. The PDA will turn on and synchronize the data. A window will come up on both devices to tell you when it is done. If this does not work, consult the Setup portion of the manual.

## ***Using the PDA***

You can turn the device off and turn it back on (using the Power Button) and the same screen will come up. The program does not need to be closed at any time during daily operations.

## ***Battery***

Generally, PDAs have two batteries. The main battery operates the PDA and a backup battery will keep data on the PDA if the main battery is dead. Both batteries will charge at once. Depending on the PDA and usage, the PDA will need to be charged every few days. The Pumper/Well Tender should maintain possession of a docking cradle, because the cradle serves two purposes. It will transfer data to the PC and also charge the battery.

## ***Personal Setup***

### ***Entering Text***

There are a number of different ways to enter text into the PDA. Use the Keyboard Transcriber, Block Recognizer or Letter Recognizer. Each of these has advantages and disadvantages. The best for people who do not type is the Transcriber. For an

explanation of all data input options, refer to the reference manual that accompanies your PDA.

When the program is opened, at the bottom right corner is an up arrow. Tap on this arrow and select Transcriber. Now, whenever you are entering text, simply write on the screen like it is a notebook. The program should recognize the writing and transcribe it to text.

### ***Opening the Program***

One of the buttons on the PDA should be set up to open the program. Whenever this button is pushed, as long as the battery is charged and the device is working correctly, this screen will open. We will refer to this screen as the Start screen. This Manual assumes that the Mail button is set to open the program. Yours may be set up differently. The person who set it up will tell you what to do. If you are ever lost, pushing this button should return you to the start screen.

The screenshot shows a PDA interface with the following elements:

- Top left: "Select" label.
- Top right: A dropdown menu showing "Well".
- Second row: Two buttons, "Use List" on the left and "Use Base Number" on the right.
- Third row: A dropdown menu showing "Test Well #1" on the left, and a text input field containing "1.000000" on the right.
- A thick red horizontal bar separates the input section from the data section.
- Below the bar: Text labels "Item Number" and "Name" followed by their respective values "100001" and "Test Well #1".
- Bottom row: Five buttons arranged in two rows: "Info", "View Table", and "Enter New" in the top row; "Exit" and "Titles" in the bottom row.

**Figure 1 - PDA Start Screen**

## Data Entry

### Selecting an Item

#### Select Item from List

Every Well, Meter, Tank and other entity recorded in the system has its own number. Each of these entities is going to be called an Item and its corresponding number, the Item Number. In some cases a single Item Number can be used to track more than one entity. For instance an Item and corresponding Item Number may represent a well, meter, and tank grouped together. This is called a “Combo Item.”

The first step is to select the Item Type from the first Dropdown list. In this case we have selected ‘Well’.



Next, we will select the Item. There are two choices. We will use the dropdown list on the left first. Touch the Down arrow on the right of the box. A list will appear below the box. You may have to use the up and down arrows to move the list. When you find the one you are looking for, tap on it. The list will close and the item you tapped on will appear in the box.



Now tap the **Use List** button on the start screen. Below the Red line, the Item Number and Name should appear. This tells us the item has been found and we are ready to move on.

**Use List**



#### Select Item by Number

Secondly, to select an item, a number can be used.

This number is called the Base Number. In this case, the Test well number is 1. Tap on

the box below **Use Base Number** on the start screen

**Use Base Number**

A new window will appear.

Type in the number, which appears in the blue box at the top

Then push OK and the window will disappear. Tap on the 'Use Base Number'

**Use Base Number** button on the start screen. The appropriate Item name and number should appear below the red line.

**Use Base Number**

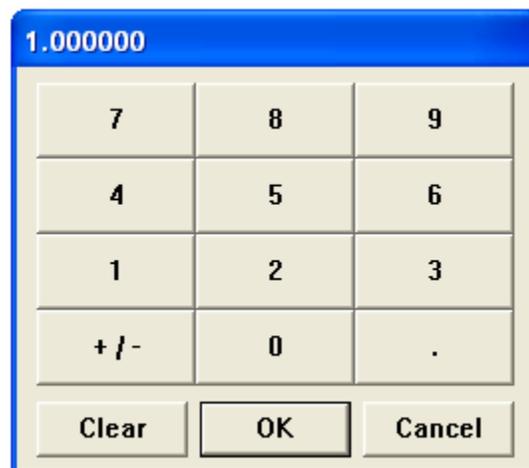


Figure 2 - Number Keypad

*Base Number – The Base Number is the root number for an item, for instance well #12 will have a base number of 12. Subsequently, a possible setup for the well and its equipment, the well would have the number 100,012, the tank would have the number 200,012, the meter would have the number 300,012, the compressor would have the number 400,012 & anything else would have the number 500,012*

### View Background Information

We can start by looking at information on the item. This is background information, which does not change from day to day.

Start by pressing the info button  on the start screen

This will take us to the next screen. As you can see, the background information for the well can be reviewed or changed. This form will be explained later. For now, Tap the 'Back' button.  You will be returned to the Start screen.

Back	Titles		Note
Test Well #1	1100001		Timer
TotalDepth	2010.00		
Perf D.	1930.00	Oil Tank	12203.0
Casing	4.50000	Gas Mete	39201.0
		Updated	9/6/2006
Prod Zone	Big Injun		Aa
API	49-201-09829		
Welltender	Bob		
	0	0	
4/23/2006 12:47:00 PM			

Figure 3 - Background Info

### Viewing History Table

Next we will look at the table. Due to the size of the Table, it is split into three different screens on the PDA. Below, the red line marks where the screens separate. To move from one screen to the next, use the arrow buttons.  

Back	100001 Test Well #1			->	<-	100001 Test Well #1			->	<-	100001 Test Well #1			Back
	Pressure	Differentia	Tempuratur			Tank, ft	Tank, in							
4/23/2006 11:	0.0000	0.0000	0.00000	0.000	0.000	0.0000	0.0000	AAA	AAA	AAA	AAA	0.000	0.000	4/23/

Figure 4 - PDA History Table

The Table will allow you to view old records. The record on top of the list should be the newest.

The person using a PC in the office will remove old records from this list periodically. By quickly tapping twice on one of the records, the record will be brought up on the screen were you to change the data or look at it in more detail.

The Back Button **Back** will return you to the Start screen.

### Entering New Data

Tap on the 'Enter New' button **Enter New** on the start screen. A new record is created with the Item name and number. The name of the well and its number are in the first two boxes. The rest of the boxes will be blank.

The record shown is a "Combo Item". In this case, the required info on a well, orifice meter and tank are all kept on one record.

Below the name there is a field for Pressure, Differential and Temperature.

Data is entered into the appropriate boxes and the computer calculates the gas rate and barrels in the tank. The calculations are based on numbers from the info record for the well. So, if an orifice is changed, the orifice factor will have to be changed on the Info record for the well.

Back	Titles		Note
Test Well #1	100001		Timer
Pressure	120.000	SPM	2.00000
Differential	62.0000	Tank, Ft	7.00000
Tempuratu	70.0000	Tank, In	11.0000
Condition	Good		Aa
	[Yellow bar]		
	[Red bar]		
Orifice ' 1	150	Tank, bbl ' 1	75
4/23/2006 7:49:00 PM		Code	

Figure 5 - PDA New Data

### Types of Fields

As shown in the picture, there are 7 number fields, one date field, three text fields, a field that is automatically the current date and time and a code field.

Under the red text box, there are two fields with numbers. These are calculations based on the number you entered and the equation set up to use for this record.

Back	Base Data		Note
Test Well #1	100001		Timer
Pressure	Number	SPM	Number
Differential	Number	Tank, Ft	Number
Tempuratu	Number	Tank, In	Number
	Number		Date
Condition	Text		Aa
	Text		
	Text		
	' 150	' 75	
Default Date		Code	

Figure 6 - PDA Field Types

### Numbers

With the number fields a number will be entered into the boxes using the number keypad, which appears when one of these boxes is active.

For example, you read a pressure on the meter of 120#.

Tap on the box beside Pressure.

In this box, tap 1, 2, 0, and then OK.

Do this for each of the spaces with titles beside them.

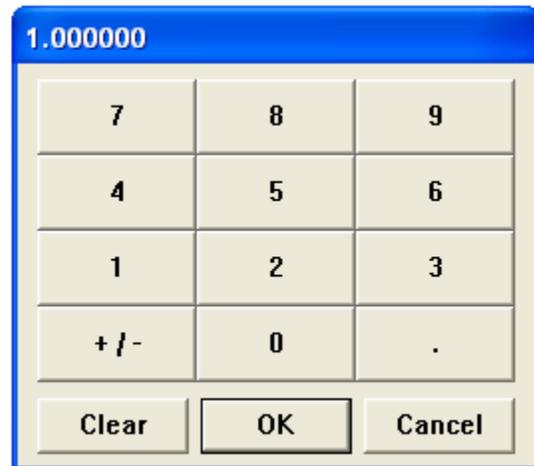


Figure 7 - PDA Number Keypad

### Timer

Press the **Timer** button to open the 'Timer' feature. This will allow you to measure the time it takes for an event to happen. Let's say that we are going to measure how fast a pump jack is operating. In the first box we enter 2. We are going to measure two strokes. When the rods are at the bottom, push 'Start'. When the rods reach the bottom two more times press 'Stop'. The program calculates how much time has elapsed and divides that by the number of strokes (2 strokes/1 minute = 2 SPM). You should be measuring at least 15 seconds because the timer rounds to the nearest second.

If we want to store this number, we would push Move to. **Move To** This will move the calculated number to the field below the Timer button or field number 5. Next, tap the Back button to return to the previous screen.

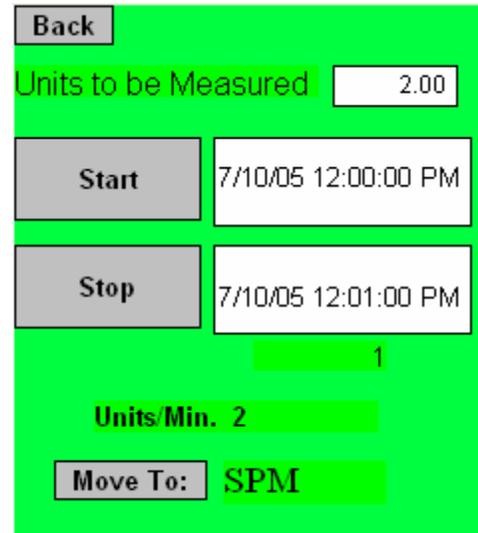


Figure 8 - PDA Timer Screen

**Text**

The three text fields are colored. By taping on one of them, text can be entered into the box either by the Keyboard, Transcriber, Letter Recognizer, or Block Recognizer.

When done entering text into the box, tap on the next field or the box in the bottom left corner to close the Keyboard.

Beside the blue text box is the 'Aa' button. **Aa**  
 This will open a screen to help enter commonly used data. If you write the same thing repeatedly, you can use this feature to enter it more quickly. You can select text from the list by tapping on the down arrow and then the text you want to use. Alternatively, you can type what you want in the box. The text that you enter will stay on the list, so make sure it is right.

Next, tap the **Move To** button to move the text to the corresponding field.  
 When you are done, tap Back.

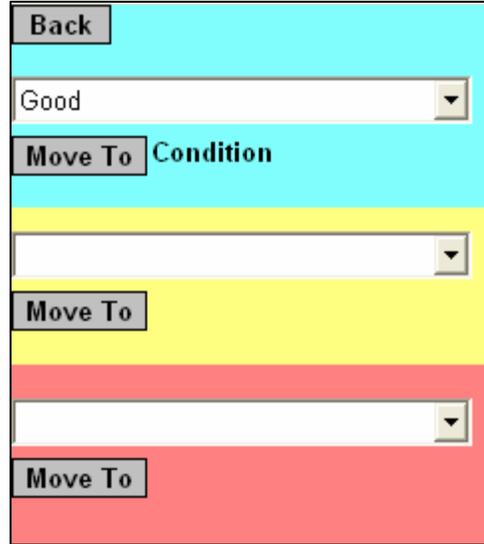


Figure 9 - PDA Text List Boxes

Back	Titles		Note
Test Well #1	100001		Timer
Pressure	120.000	SPM	2.00000
Differential	62.0000	Tank, Ft	7.00000
Tempuratu	70.0000	Tank, In	11.0000
Condition	Good		Aa
Orifice	150	Tank, bbl	75
4/23/2006 4:33:00 PM		Code	

Figure 10 - PDA Sample Final

We have entered all of the data on this page that is needed.

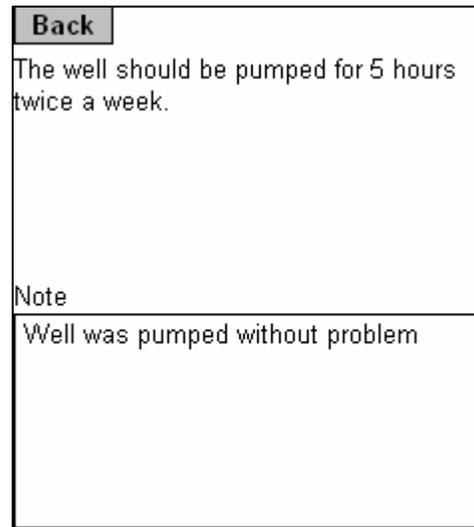
Below the Red text box we see the word "Orifice". This is telling us that the first calculation is the rate for an orifice meter. So based on the readings, the flow rate is 150 MCFD. To the right of the black line is the word "Tank, bbl". This is telling us that based on the tank measurements we have 75 bbl in the tank.

## Notes

There is more information we need to make note of. The Note button will open another screen. **Note**

First there is a note from the office, which may tell the field personnel something. It will appear on this screen every time. We will see where to change this later.

At the bottom is a big box where a note can be made. When you tap on this box the keyboard appears at the bottom of the screen. (The PDA can be set up to use Transcriber, Block Recognizer or Letter Recognizer). When you are done typing, press the Back Button.



<b>Back</b>
The well should be pumped for 5 hours twice a week.
Note
Well was pumped without problem

**Figure 11 - PDA Note Screen**

## Finishing Up

Once you are satisfied with the data that has been entered, Press the Back button at the top left of the screen. You are now finished with this record. In order to change it or review it, look for it at the top of the table as described earlier.

This concludes the operations that will be performed daily.

## Titles

This section will discuss how to change the titles for each item or add an entirely new one. There are two different places to open this form. One is at the bottom right of the Start screen, the other is at the top of the Data entry screen. Tap on either **Titles** button and the Titles screen will be opened. If the appropriate record has been set up, it will appear. If the item has not been set up, refer to the section below.

The picture below shows the two screens that are in this form. The one on the left is the first one you see. The 'More' button on the left screen will show the right screen and the 'Back' button will return to the left screen.

The image shows two side-by-side screens from a PDA application, separated by a vertical red line. The left screen is a data entry form with a 'Back' button at the top left and buttons for 'New', 'List', and 'More' at the top right. The form fields include: 'Name' (Test Well #1), 'Number' (100001) with a 'code' dropdown (well), and seven numbered items (Number 1-7) with text input boxes containing 'Pressure', 'Differential', 'Temperatur', an empty box, 'Tank, Ft', 'Tank, In', and an empty box. A 'Show All Records' button is at the bottom right. The right screen is a record view with a 'Back' button at the top left. It displays: 'Test Well #1' (100001), 'Text 8' (Condition) with a 'Date 2' dropdown, 'Text 9' (empty), 'Text 10' (empty) with a 'Note' dropdown, 'Calc 11' (1) with a 'Note:' dropdown, 'Calc 12' (1), and a 'Memo' field containing the text 'Well should be pumped for 5 hours twice a week.'

Figure 12 - PDA Titles

## Changing Titles

If we want to just change the titles for an item, simply tap on the appropriate box and make the change. When you are finished tap the 'Back' button to return to the Start screen. Your change will then be made on the office computer and subsequently on the other PDAs.

## Creating a New Item

Ideally, all of the Items will be created on the office PC. However, they can be created on the PDAs. The first step is to tap on the New button **New** on the Titles screen. A new record has been created. Enter the name of the item in the first box. In the example provided above, it is 'Test Well #1'. In the next box, enter the number of the item. Our item is 1 so we will enter 100,001. The first number will be used to determine which list the data will appear on the Start screen. In our example, we have a well, so this item should appear on the drop down list on the start screen when 'Well' is selected.

If the item is a tank, or battery of tanks, we would enter 200,000 plus the number of the item. For meters use 300,000. For everything else, use 400,000. Default records are use the 500,000 range.

To the right of the Number is the Code box. Whatever is entered in this box will appear on every record created for this item. 'Well' is entered. This feature will help to sort and manipulate data in the office.

Down the rest of the page are 7 number fields. On the screen to the right are the 3 text boxes, the second date box, and the note box. The Calc boxes are used to store which calculation will be done. Refer to the Equations section to determine which calculation number you will want and which boxes it requires.

For instance, an orifice meter calculation (#1) takes the Pressure from Number box 1 and the differential from Number box 2 and, if there is something in Number box 3, the Temperature from Number box 3. It will then calculate the Rate. If calculation 1 is being used and Number box 3 is storing a wellhead pressure, the program will assume that it is temperature, which will give a bad flow rate calculation.

At the bottom of the right screen is the Memo field. This can be changed. It appears on the Note screen of the Data entry form.

## List

The List button  will show a table of the items.

By tapping on the Show All Items button , all of the items in the database can be seen on the list. By tapping on one twice, the item will appear on the titles screen.

## Office Manual

This section is intended to teach office staff the basics of operating the System. The user will learn how to manipulate the Access Database in order to facilitate the field portion of the system.

It is assumed that the office staff will have minimal computer skills and be familiar with general computer terminology. While this manual will attempt to describe every keystroke, there are instances where some variations will occur. Different software versions will operate in slightly different manners or the computer may be set up slightly different. For help, contact technical support or the technical support website (Listed in the front of the manual)

The Office staff should become familiar with the operation of the PDA.

### ***Synchronizing Data***

In order for data to be transferred from the PDA to the computer, a connection must be established. After the PDA is set up, the only thing that is required of the user to transfer the data is to connect the PDA to the computer. The computer will do the rest. Typically connecting the USB cord to the PDA will do this. When the process is complete, a window will appear on the PDA indicating the process is complete.

If a record has been changed on the PDA and the computer, the following window will pop up. You can select which record to use.

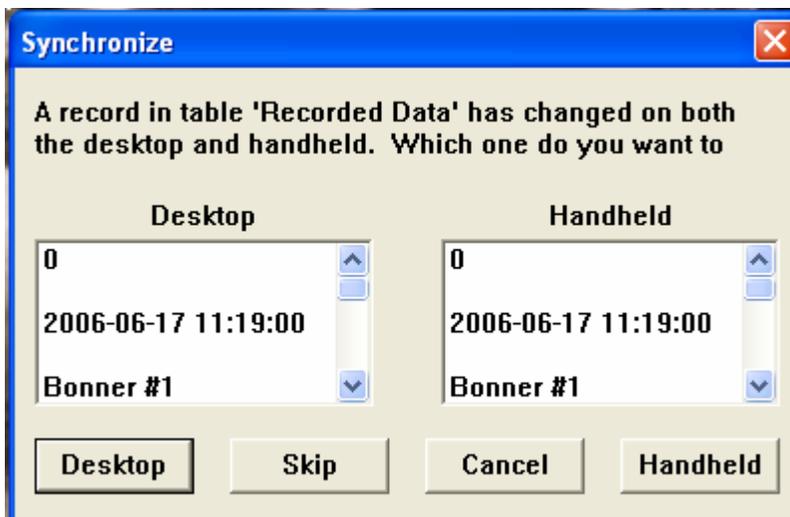


Figure 13 - Sync Question

Otherwise the program will operate without user input.

## Opening the Program

Open the Access Database by clicking on the link on your desktop. The default location is C:\Program Files\Pumper's PDA Program\Pumper's PDA Program.mdb.



A security warning box may come up. Click on “Open” or “OK”.

The location of the database can be changed if necessary, however technical support will need to be contacted to do this.

## Main Switchboard

When the program opens, the “Main Switchboard” will appear in the center of the screen.

This is the central point of the program and we will go through each section individually.

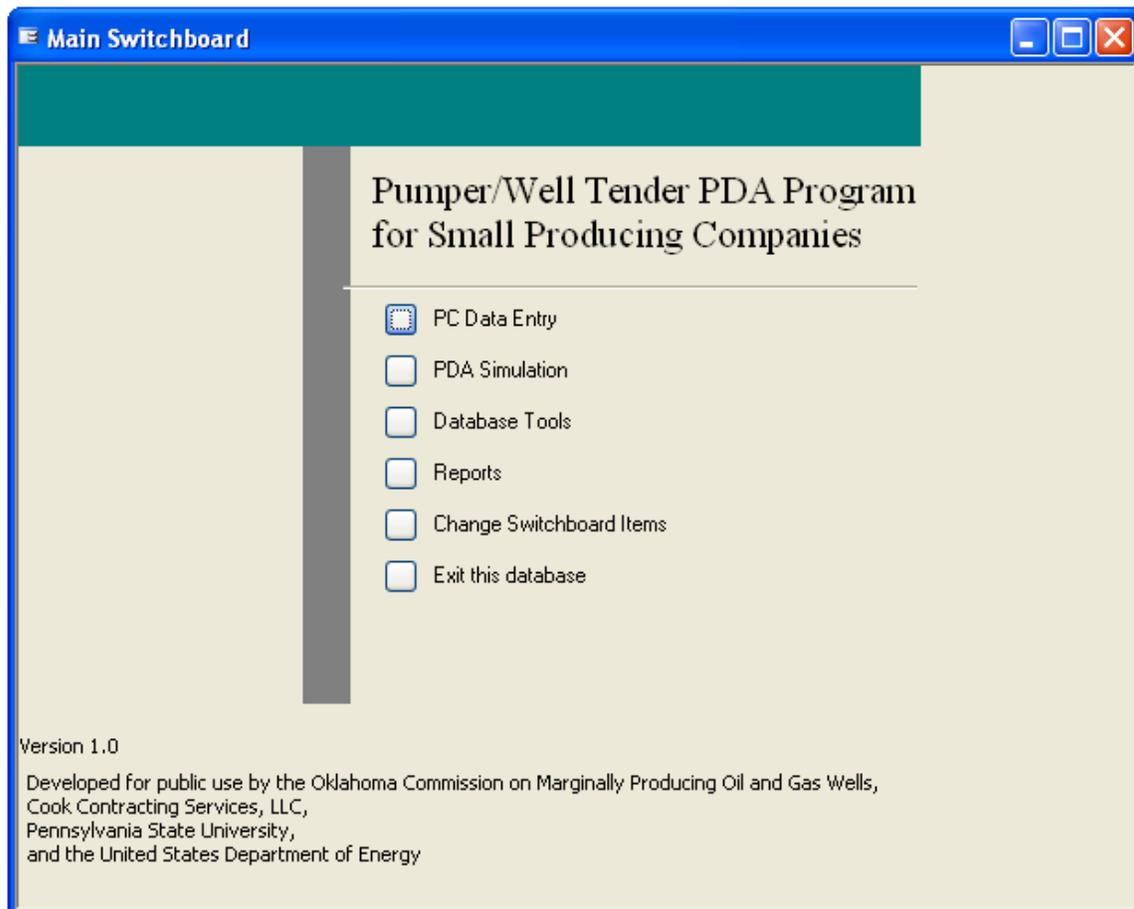
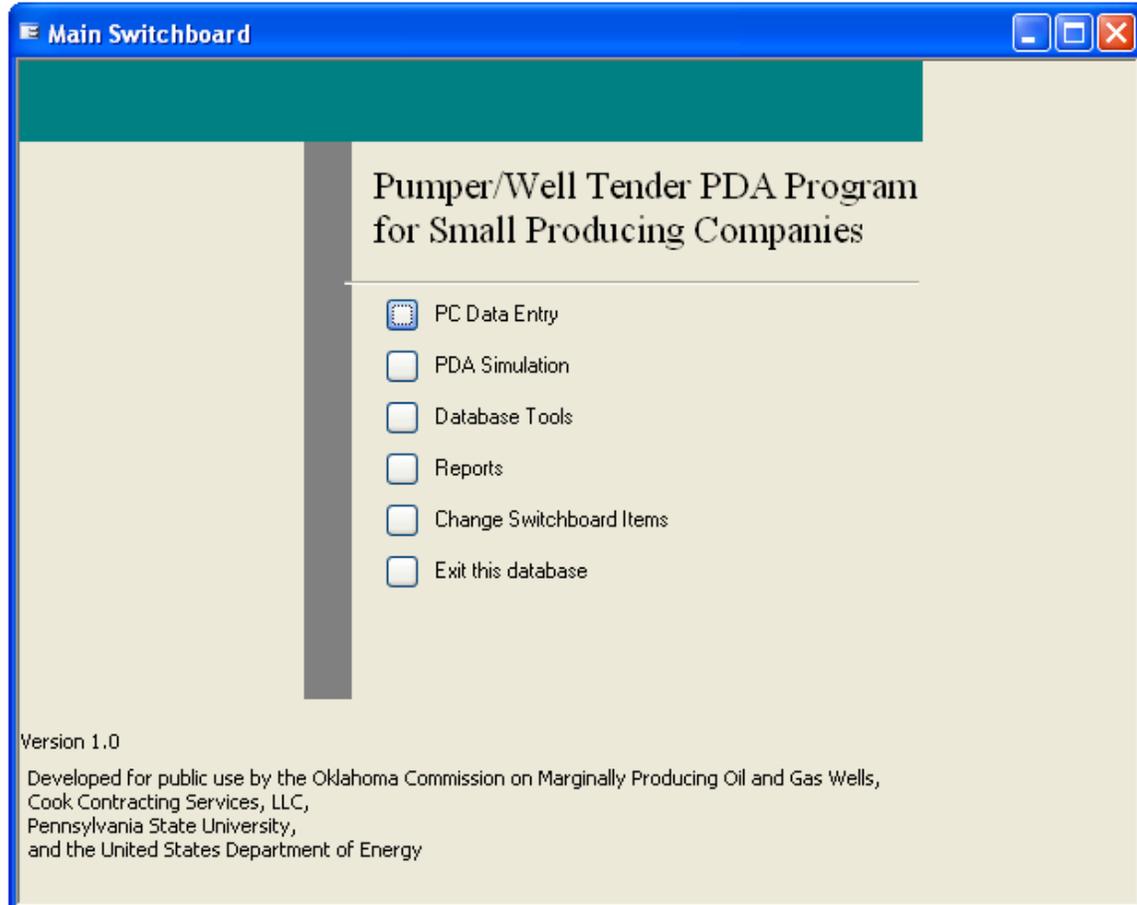


Figure 14 - Main Switchboard

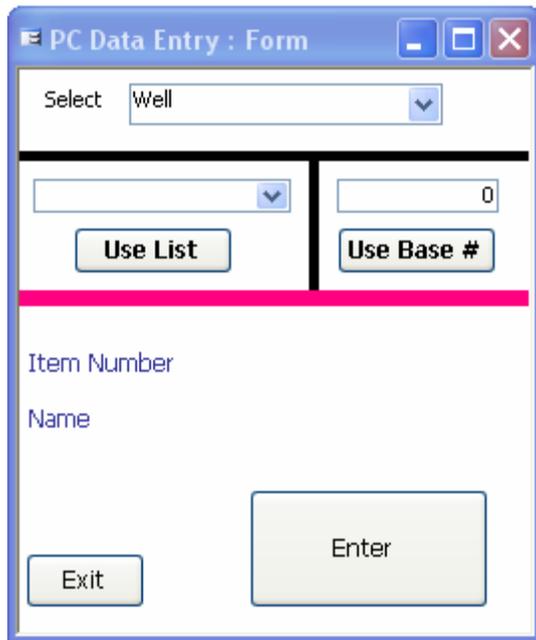
## ***PC Data Entry***

To enter data on the PC the best way is to open the PC Data Entry form. Select 'PC Data Entry' from the Switchboard list.



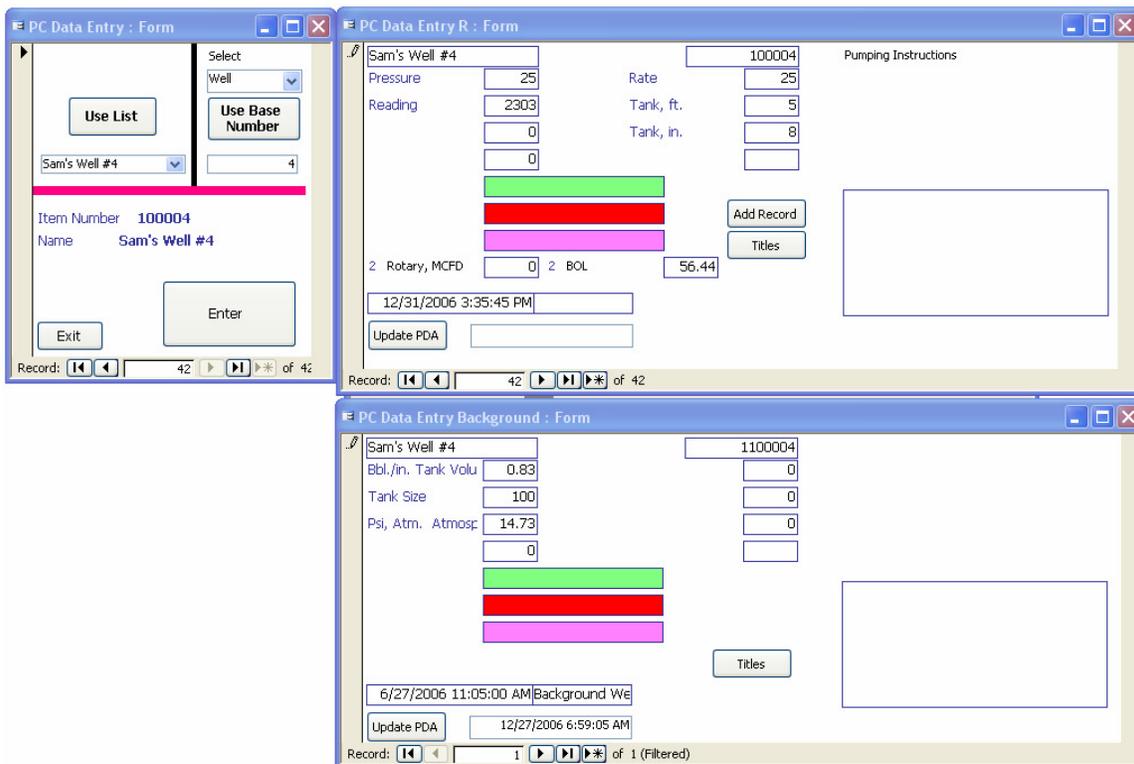
**Figure 15a - PC Data Entry**

The Window below will open up. This window is similar to the PDA's main screen. Well selection will operate the same way. Select the well name from the list or enter the base number and the type. When the item is visible press 'Enter'.



**Figure 15b - PC Data Entry**

Two other screens will open up. A new record will be created if the item name has changed from the last record. If a new record for the same item is to be created, the 'Add Record' button will have to be used.



**Figure 16 - PC Data Entry**

The top window is the record for the item. A record can be created just as it would be on the PDA. If you are updating a record, click on the 'Update PDA' button. This will tell the computer to update the record on the PDA.

The bottom window has the background information for the item. You can change or create a background record. Again if the record is updated, push the 'Update PDA' button.

The 'Titles' button will open the screen to edit the titles for that item. For more information on this form, go to **Titles - Create New Items** page 30.

### Errors

If the following error message appears, close both windows to the right and start over.



## Creating a New Item from the PC

The example will illustrate how to create a new item with background information. It will be the tank battery for well number 55.

1. Enter the well number and the type from the Base Number side of the screen on the left. Press the 'Enter' button to create new records. The windows should look as follows:

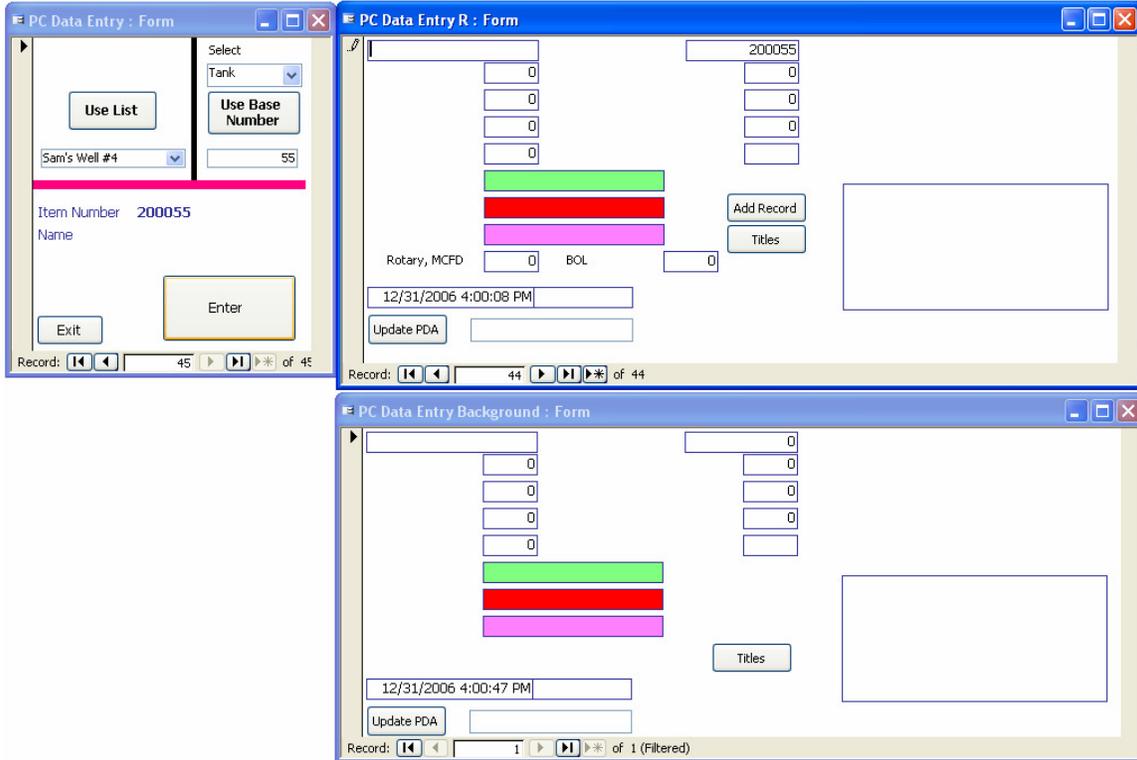


Figure 17 - New Item Setup

2. Press the 'Titles' button on the top screen to create the titles for each field. More info can be found in **Titles - Create New Items** section page 30. Three tanks are in this tank battery. The 'Auto Fill' feature is best so that the titles are right. Be certain that the number is the correct. We want to record the conditions of the site, so in t8 enter 'Site Conditions'. Also instructions are created and a title for the note section is created. After the titles are complete, close the Titles form.

This form is used to set up new or edit items. Enter the field titles which should be displayed when information is recorded.

Select Record Type

Background Record

Field Record

Type: Tank [v] [Auto Fill]

Number: 200055

Name: Tanks 55

code: Tank

n1: ft. Tank 1

n2: in. Tank 1

n3: ft. Tank 2

n4: in. Tank 2

n5: ft. Tank 3

n6: in. Tank 3

n7:

Date2:

t8: Site Condition

t9:

t10:

Calculation #11: 10

Calculation #12: 0

Memo: Tank battery is located on the location of well 55. The entire site should be inspected for oil or water spills and other

Note: Note any problems on loction.

[Add Record]

[Find Record]

[Show All]

Allow Clear

[Clear]

[Update] 12/31/2006 4:05:37 PM

Record: 1 of 1 (Filtered)

**Figure 18 - New Item Titles**

3. By activating the Data Entry R form, the new titles should appear. Selecting the 'Use Base Number' button will make the name appear on the form. In the process a blank record will be created.
4. Select the titles form.
5. Enter the name and appropriate number for the item. The number is 1,000,000 + the item number.

Figure 19 - New Item Background

6. Select the 'Titles' button to set up the titles for the item.
7. A blank record should appear. Enter the appropriate name and number. The 'Auto Fill' feature is used again to help fill out the form.

Figure 20 - Background Titles Setup

8. Close the form.
9. Enter the appropriate information for the background record.

**Figure 21 - Background Data**

We can enter the information directly or use the “Find Conversion Factors” table to look up the data.

- a. Click on the “Find Conversion Factors” button. To open the form.

**Figure 22 - Factors Form**

- b. Select the Value that you wish to enter

From the list select that desired value. Accepting it will transfer the value to the indicated location.

Select

5	tank std. welded	400 bbl	1.678	n1
6	tank std. bolted	250 bbl	2.76	n1
7	tank std. bolted	500 bbl 21.65x8.5	5.41	n1
8	tank std. bolted	500 bbl 15.38x16.0	2.76	n1
9	tank std. bolted	1000 bbl	5.41	n1
111	Orifice Meter	0.125" X 2in. Line	3.126	n2
112	Orifice Meter	0.187" X 2in. Line	7.181	n2
113	Orifice Meter	0.25" X 2.067in. Lir	12.711	n2

Record: 1 of 1

**Figure 23 – Factors Selecting Form**

- c. Click on “Accept”. The value will go to the appropriate place. In this case, ‘2.76’ will go to “n1”. The form will close.

You can change or add to the table by selecting “Open Table”. Note that the first column contains the key for the item and each one must be different.

This concludes the setup for this item.

## PDA Simulation

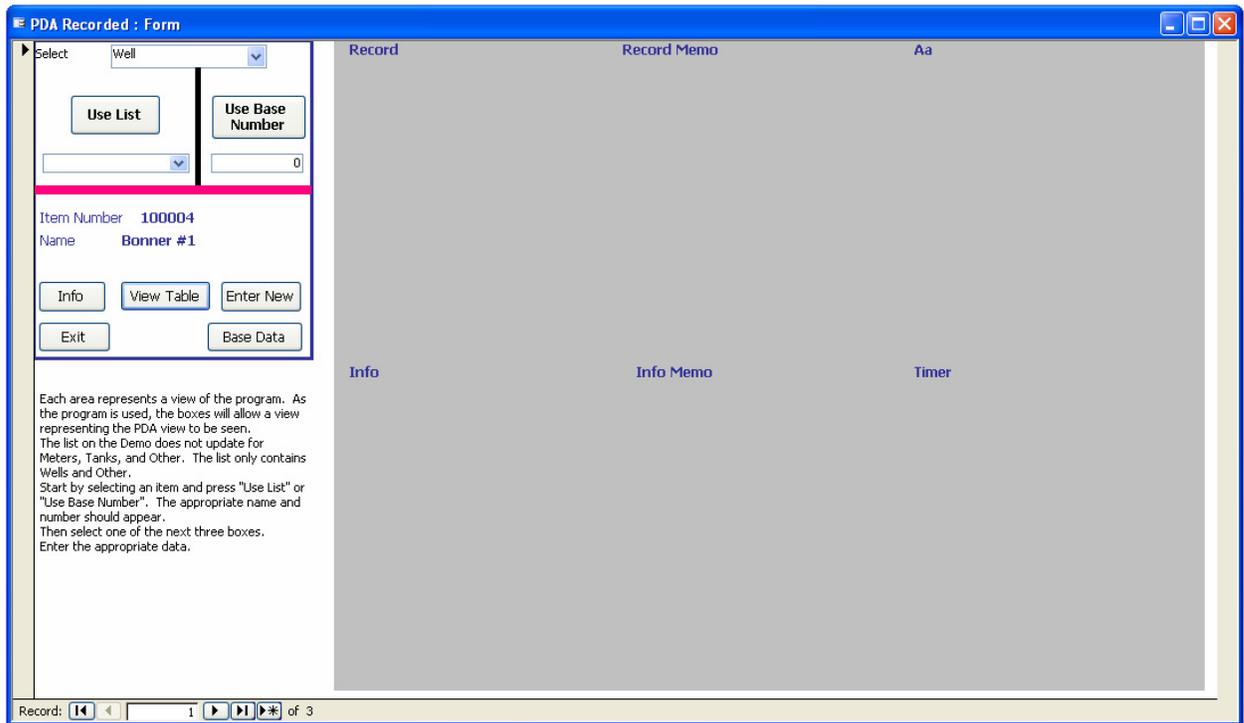


Figure 24 - PDA Simulation

When the button beside “PDA Simulation” is pressed this window appears. The purpose of this area is to simulate the operation of the PDA. It will use and change data in the database. If this area is going to be used for practice or training a ‘practice’ database should be setup. To do this, create a backup database and use it (see the Database Backup section, page 34). Since the simulation is much like the actual PDA program, refer to the Field Operation Manual for operating instructions. Calculations are not performed in the simulation model. This area should not be used to enter actual data, since the calculations are not performed.

## Database Tools

**Create Email Attachment**

Previous Days: 30

Date of Records to send

Start Date

End Date

\*\* Dates based on last time the records were updated and synchronized.

Create Combined File

Create Separate Files

**Move Records From to Old Records**

Old After 30 Days

Move Old Record

\*\*This will Remove the records from the PDA

Sync Info Table

Records Table

Old Records Table

Titles Table

Figure 25 - Database Tools

Selecting Database Tools from the switchboard, this window appears.

### Create a file of records for e-mails:

A file containing data that has been updated in the given number of days can be created. The 'Previous Days' button will enter the current date as the end date and x days before that as the Start date. Alternatively the dates can be entered manually.

Next there are two options. Creating a combined file will create a file of the selected type, which lists each field title and the values entered in the corresponding field.

Creating separate files will create two files in the selected format of both the titles and the records tables. For importing data into another database, the Excel format will be used. Refer to

**Importing Data** section page 27.

### Move old records:

The PDA will operate with 10,000+ records. However, the more records it has, the slower it will run. With various computer speeds and setups, the results will vary significantly. At some point it is necessary to remove older records from the PDA. They can still be kept on the Desktop computer.

The number of days is selected (in the case above '30') and the button "Move Old Records" is selected.

This will move data with a date more than '30' days ago from the "Recorded Data" table to "Old Records" table. When the PDAs are connected, the records that were moved will be removed from the PDA.

Four windows will appear, in each of these, click on OK.  
 This should be done periodically because when large amounts of data are left in the “Records” table, the PDAs will operate slowly or not at all.

## Tables

The four different tables can be opened from their respective button. Data can be accessed from these tables and a number of different things can be done with tables.

## Importing Data from Excel

To import data, data can be exported into separate Excel formatted files. These files can be sent from one computer to another through email or disk.

1. Locate and open the excel file to be imported.
2. Highlight the records to be imported.

	A	B	C	D	E	F	G	H
1	OID	xcount	code	Date	Date2	Name	Number	n1
2			Background	27-Jun-06		Sam's Well #4	1100004	0.0
3	0	0		29-Dec-06		Smith #10 Well Test	1410001	
4	0	1000000000		27-Dec-06		Sam's Well #4	100004	
5	0	1000000000		27-Dec-06		Test Rotary #6	100006	
6	0	1000000000		27-Dec-06		Sam's Well #4	100004	
7	0	1000000000		27-Dec-06		Test Rotary #6	100006	
8	0	999960922		27-Dec-06		Sam's Well #4	100004	
9			Background	27-Jun-06		Sam's Well #4	1100004	0.0
10	0	999960922		27-Dec-06		Big Well 10	100010	
11	0	1000000000		27-Dec-06		Test Rotary #6	100006	
12	0	1000000000		27-Dec-06		Sam's Well #4	100004	
13	0	1000000000		27-Dec-06		Sam's Well #4	100004	
14	0	0		29-Dec-06		Smith #10 Well Test	1410001	
15	0	999960919		29-Dec-06		Smith #10 Well Test	410001	
16								

Figure 26 - Excel Example

3. Copy the highlighted cells by pressing ‘ctrl’ and ‘c’ at the same time or by selecting edit and copy from the pull-down menu.
4. Open the appropriate table from the database tools menu.
5. Highlight the bottom row by clicking on the Arrow or star at the bottom left at the bottom of the table.

Date	Date2	Name	Number	n1	n2	n3	n4	n5	n6	n7	n8
12/29/2006 12:48:49 PM		Flowing Well 57	100057	0	0	0	0	0	0	0	0
12/29/2006 12:48:25 PM		Test 15	100015	0	0	0	0	0	0	0	0
12/29/2006 12:48:17 PM		Smith #10 Well Test	410001	0	0	0	0	0	0	0	0
12/29/2006 12:46:42 PM		Smith #10 Well Test	410001	0	0	0	0	0	0	0	0
12/29/2006 12:46:28 PM		Test 15	100015	0	0	0	0	0	0	0	0
12/29/2006 12:45:00 PM		Smith #10 Well Test	1410001	0	0	0	0	0	0	0	0
12/29/2006 12:44:55 PM		Smith #10 Well Test	410001	0	0	0	0	0	0	0	0
12/27/2006 7:05:42 AM		Sam's Well #4	100004	20	2533	0	0	34	5	3	
12/27/2006 7:02:23 AM		Big Well 10	100010	0	0	0	0	0	0	0	0
12/27/2006 7:00:58 AM		Test Rotary #6	100006	0	0	0	0	0	0	0	0
12/27/2006 6:59:50 AM		Sam's Well #4	100004	0	0	0	0	0	0	0	0
12/27/2006 6:59:50 AM		Sam's Well #4	100004	0	0	0	0	0	0	0	0
12/27/2006 6:59:23 AM		Test Rotary #6	100006	0	0	0	0	0	0	0	0
12/27/2006 6:59:23 AM		Test Rotary #6	100006	0	0	0	0	0	0	0	0
12/27/2006 6:58:06 AM		Sam's Well #4	100004	0	0	0	0	0	0	0	0
12/27/2006 6:58:06 AM		Sam's Well #4	100004	0	0	0	0	0	0	0	0
10/19/2006 2:26:00 PM		Big #10	1100010	1.12	7.5	14.73	210	2	35	34	2201-
10/19/2006 2:14:00 PM		Default Tank Measure	1502000	1.12							
10/19/2006 2:12:00 PM		Default orifice Meter	1503000	0.25	12.011						
6/27/2006 11:05:51 AM		Test Rotary #6	1100006	0.833	100	14.73	0	0	0	0	0
6/27/2006 11:05:00 AM		Sam's Well #4	1100004	0.83	100	14.73	0	0	0	0	0
6/27/2006		Sam's Well #4	1100004	0.83	100	14.73	0	0	0	0	0
12/29/2006		Smith #10 Well Test	1410001	0	0	0	0	0	0	0	0

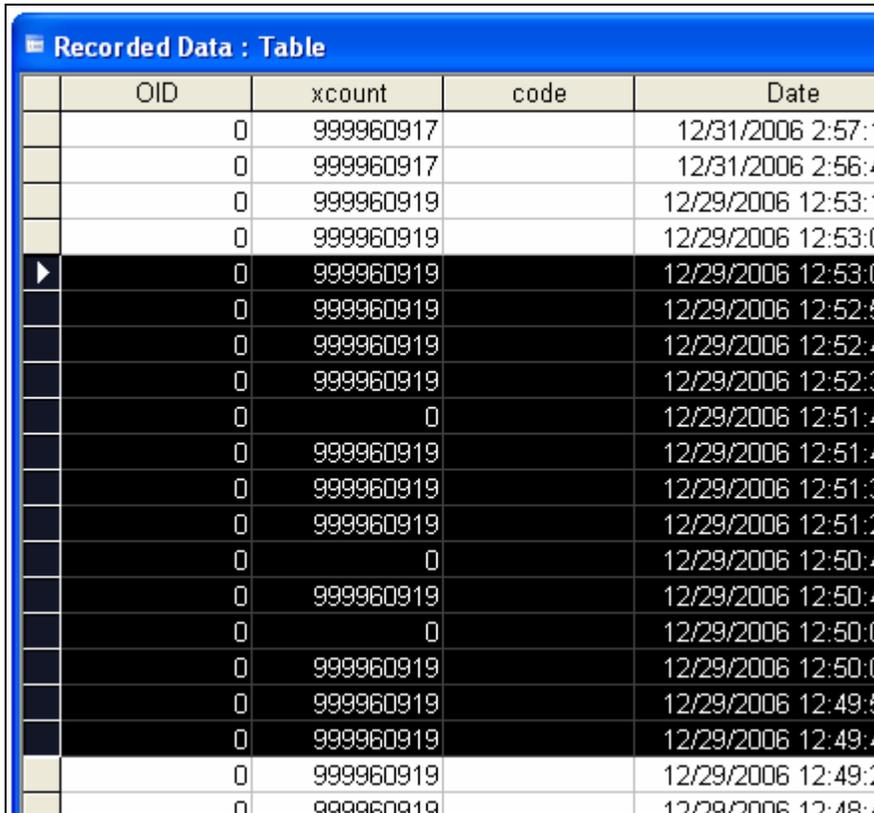
Figure 27 - Excel Example 2

6. Paste the records by pressing 'ctrl' and 'v' at the same time or by selecting edit and Paste from the pull-down menu.
7. Perform the same operation for both the Records table and the titles table.

## Importing Data from Access

Data can be imported or copied into the database from another.

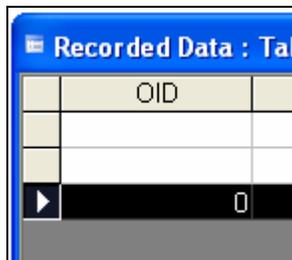
1. Open the same tables in each database.
2. Highlight the records that are to be copied. 'Ctrl' and 'a' will select all records.



	OID	xcount	code	Date
	0	999960917		12/31/2006 2:57:1
	0	999960917		12/31/2006 2:56:4
	0	999960919		12/29/2006 12:53:1
	0	999960919		12/29/2006 12:53:0
▶	0	999960919		12/29/2006 12:53:0
	0	999960919		12/29/2006 12:52:5
	0	999960919		12/29/2006 12:52:4
	0	999960919		12/29/2006 12:52:3
	0	0		12/29/2006 12:51:4
	0	999960919		12/29/2006 12:51:4
	0	999960919		12/29/2006 12:51:3
	0	999960919		12/29/2006 12:51:2
	0	0		12/29/2006 12:50:4
	0	999960919		12/29/2006 12:50:4
	0	0		12/29/2006 12:50:0
	0	999960919		12/29/2006 12:50:0
	0	999960919		12/29/2006 12:49:5
	0	999960919		12/29/2006 12:49:4
	0	999960919		12/29/2006 12:49:2
	0	999960919		12/29/2006 12:48:4

Figure 28 - Access Import

3. Copy the cells by pressing 'ctrl' and 'c'
4. Open the table where the data is to be copied to.
5. Highlight the bottom row and paste the data by pressing 'ctrl' and 'v'.



	OID	xcount
▶		0

6. Click 'ok' and the data should appear.
7. Repeat for each of the tables that are to be transferred.

## Titles - Create New Items

### Field Record

This form is used to set up new or edit items. Enter the field titles which should be displayed when information is recorded.

Select Record Type

Background Record

Field Record

Type: Combo Orifice Meter [v] [Auto Fill]

[Add Record]

Allow Clear

[Clear]

Number: 00,004

Name: Test Well #4

code: Well

n1: Pressure

n2: Differential

n3: Psi, Atm. Atmospheric Pressure

n4: [ ]

n5: [ ]

n6: Tank, ft.

n7: Tank, in.

Date2: [ ]

t8: [ ]

t9: [ ]

t10: [ ]

Calculation #11: [ ] 1

Calculation #12: [ ] 1

Memo: [ ]

Note: [ ]

[Update] 7/28/2006 3:47:29 PM

Record: [ ] 1 of 8

Figure 29 - Titles Setup

Be sure when entering or changing data in the form that you press the Update button. This will cause the program to recognize that the record has been updated and subsequently the PDAs will be updated.

This form will write records to the “Titles” table. This is where the title of the field for each item is stored. This form can be used to help create Items. The easiest way to start is to select the ‘Type’ first. In the first box, “Field Record” has been selected to indicate that the record being created is going to be used to collect data in the field. In this case, “Combo Orifice Meter” has been selected. The next action is to click on Auto Fill and the appropriate titles should pre-populate into the appropriate fields. If the steps are followed correctly, the data should appear as it does in Figure 29.

There are a number of calculations that require data to be in certain locations. The ‘Auto Fill’ will put the correct titles with the correct equation numbers, but if a different structure is desired, review the Equations Section of the General Manual.

Again, any title can be put in the fields.

**Item Number** – The item number has to be Unique. The item number may have a root as the Base Number, for instance well #12 will have a base number of 12. Subsequently, a possible setup for the well and its equipment, the well would have the number 100,012, the tank would have the number 200,012, the meter would have the number 300,012, and the compressor would have the number 400,012.

**Calculations**

Eq. 1 - All on one form with orifice Meter

bd.n1 - bbl./in.  
bd.n2 - orifice factor  
bd.n3 - Press. Atm

n1 - pressure  
n2 - Differential  
n3 - Temperature   \*\* if 0 then 60F  
n4 - P Well Head   \*\*optional  
n5 - Strokes Per Min. \*\*optional  
n6 - Tank ft.  
n7 - Tank in.  
t8 - Operations   \*\*optional  
t9 - Operations ex   \*\*optional

c11 - Gas Rate - MCFD  
c12 - bbl.

Eq. 2 - All on one form with Rotary Meter

bd.n1 - bbl./in.  
bd.n3 - Press. Atm

n1 - pressure   \*\*optional  
n2 - Reading   \*\*optional  
n3 - P Well Head  
  
n5 - Rate.  
n6 - Tank ft.  
n7 - Tank in.   \*\*optional  
t8 - Operations   \*\*optional  
t9 - Operations ex

c11 - Gas Rate - MCFD  
c12 - bbl.

Eq. 3 - Orifice Meter

bd.n2 - orifice factor  
bd.n3 - Press. Atm

n1 - pressure  
n2 - Differential  
n3 - Temperature   \*\* if 0 then 60F

Eq. 4 - Rotary Meter

bd.n3 - Press. Atm

n1 - Pressure  
n2 - Reading  
n5 - Rate   \*\* can use timer

Eq 10 - Tank BBL

bd.n1 - bbl/in.  
odds, ft ; even, in.

Eq 11 - 2 Tanks Same or Different Size

bd.n1 - tank 1 bbl/in.  
bd.n2 - tank 2 bbl/in.

n = Number, ie n1=Number1  
c = Calculation field

The Background is the record containing the background information, Assumed to be item numbered 1,000,000 + the number.

n1-Tank1, ft	Sum to Calc1
n2-Tank1, in	
n3-tank3, ft	
n4-tank3, in	
n5-tank2, ft	Sum to Calc2
n6-tank2, in	
n7-tank4, ft others	

**Table 1 - Calculations**

## Background Records

The screenshot shows a software window titled "Titles Setup" with a blue title bar. The window contains the following elements:

- Instructions:** "This form is used to set up new or edit items. Enter the field titles which should be displayed when information is recorded."
- Select Record Type:** Two radio buttons: "Background Record" (selected) and "Field Record".
- Type:** A dropdown menu set to "Combo Orifice Meter" and an "Auto Fill" button.
- Buttons:** "Add Record" and "Clear" (with a checked "Allow Clear" checkbox).
- Number:** Text box containing "1,100,004".
- Name:** Text box containing "Test Well #4".
- Not Visible on PDA:** A vertical line separating fields visible on a PDA from those not visible.
- code:** Text box containing "Background Well".
- n1:** Text box containing "Bbl./in. Tank Volume Conversion".
- n2:** Text box containing "Orifice Factor".
- n3:** Text box containing "Psi, Atm. Atmospheric Pressure".
- n4, n5, n6, n7:** Empty text boxes.
- Date2, t8, t9, t10:** Empty text boxes.
- Calculation #11, #12:** Empty text boxes. A note to the right says "These contain the numbers of the equations to be used."
- Memo:** A large empty text area.
- Note:** An empty text box.
- Update:** A button with a timestamp "8/3/2006 3:41:58 PM" next to it.
- Footer:** "Record: [Navigation icons] 8 of 8".

Figure 30 - Background Titles

A background record should be created for each item. For the same well as before, which is numbered 100,004, a background record numbered 1,100,004 will be used to store background information. This background information includes factors like bbl/in. or an orifice factor, which are needed to perform calculations. The background record may also contain other information that may be helpful in the field, such as total depth or engine model.

## Reports

This tab will open up a second window that lists reports.

The Basic Report is set up to show all of the records in the Recorded data table.

The end user can create new reports. For information on this, refer to the help in Access.

## ***Change Switchboard Items***

This tab will open a program to change the items that appear in the Switchboard, which is the first window. As you develop the database, you can use this to access reports more easily.

## ***Exit Database***

'Exit Database' will close the Database.

## ***Database Tables***

### **Opening the Tables**

On the bottom-left of the screen is a minimized window.



Restore or Maximize this Window by clicking on the  or  button, respectively. Click on the object, Tables. The tables of the database will be listed. Double Click on the table to open it. You can then edit or add to it. You can also copy to or paste from another place.

### **Switchboard Items**

The Switchboard Items table contains the data that operates the first window that comes up in Access. You will not need to modify this table.

### **SYWARE\_SyncInfo Table**

Do not modify the "SYWARE\_SyncInfo" table. It is used by the synchronization software to determine what data to update.

### **Recorded Data Table**

This table contains the records which are kept on the handhelds. Changes or additions can be made with this table or in the Records form. Remember that when making changes to this table, in order for the PDAs to be updated, the Timestamp field has to be changed to a later date and time.

### **Titles Table**

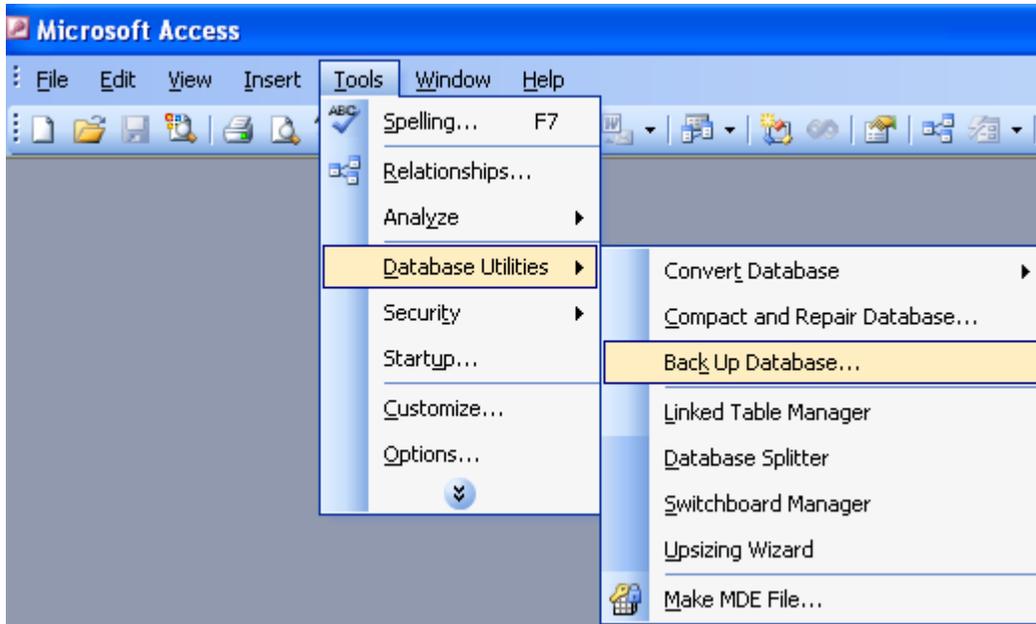
This table contains the titles for each item. Changes or additions can be made with this table or in the Record Setup form. Remember when making changes to this table, the Timestamp field has to be changed to a later date and time.

### **Old Records Table**

This table contains the records that have been removed from the handhelds. Records are moved to this table from the Recorded Data table by using the 'Move Old Records' function.

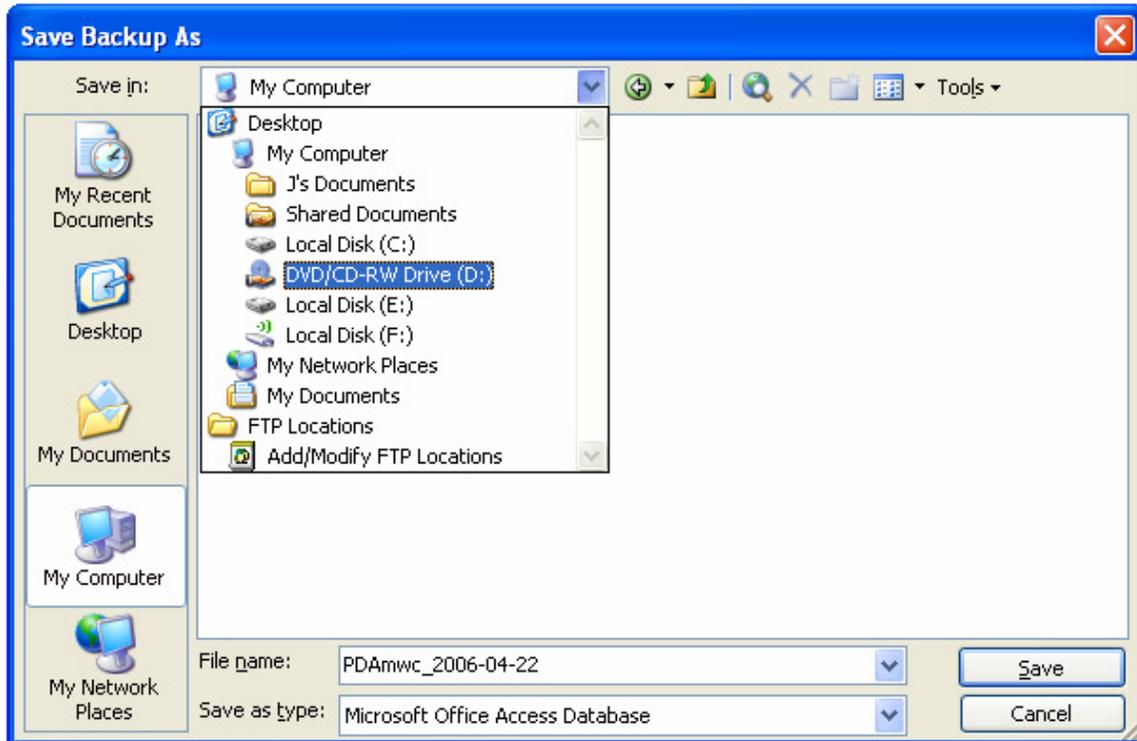
## Database Backup

Periodically, the database should be backed up. There are a number of different reasons for this (data corruption, hardware malfunctions, fire, etc.). Depending on the value of the data, backups should be performed weekly and anytime a major upgrade or change is performed. A backup should be kept on the computer and in a different location, such as someone's house. At least one backup should be kept for a few months. As long as the database does not get too large, there should be no problems with storing several backups on the PC.



**Figure 31 - Database Backup**

To backup the database, first select Tool's, then Database Utilities, then Back Up Database. Select the location where you want to store the backup file. In this case we will use the CD.



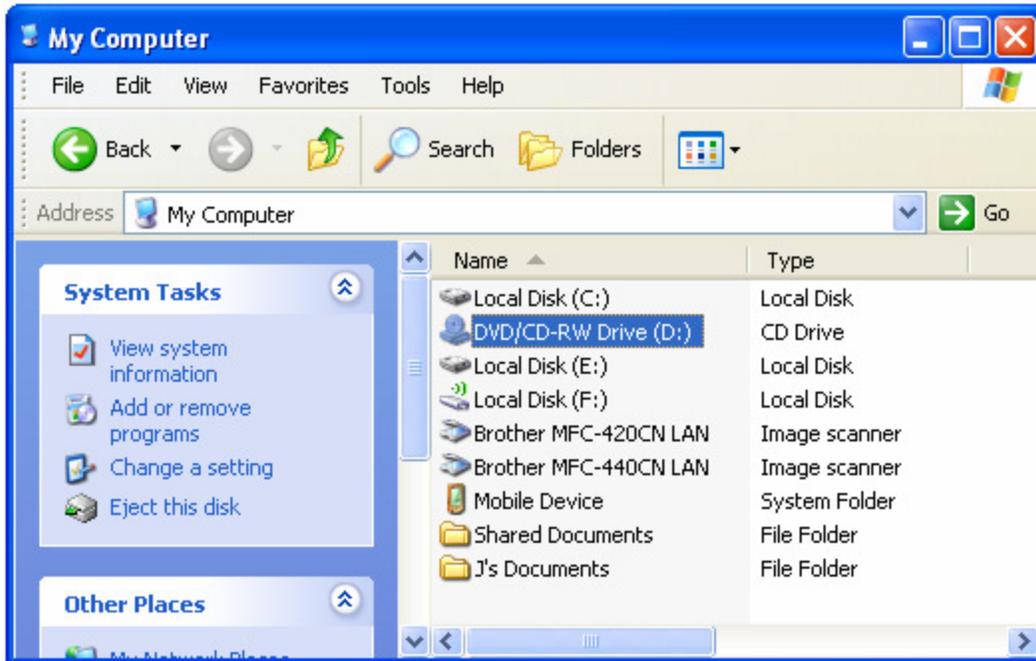
**Figure 32 - Database Save As**

When you have the location opened, type what you want the name of the file to be in the File Name box and click Save.

## Setup Instructions

The following instructions are to set up the program. The same process can be repeated to repair damaged files in the system.

1. Locate the setup file. With the CD, the CD may automatically open the Setup file when the CD is inserted. If the file is downloaded, the folder will need to be unzipped and then located. The following instructions show how to open a CD if it does not open automatically.
  - a. Select "My Computer" from the start menu.



**Figure 33 - My Computer Window**

- b. Select the CD drive where the file is located.
  - c. Select the file titled "Setup".
2. The program will lead you through the process. The first time the program is installed the Runtime software will have to be installed. The program will lead you through this and you will have to go through the setup again.
3. If you do not have the full version of Access, you will likely have an error when you first open the database. Refer to the Errors section page 39 about the ODBC Driver Manager.

If you have Access, follow the instructions below to open the program in the full version of Access as opposed to the Runtime version that comes with the program.

1. Locate the program on the programs list from the start menu.
2. Right click on the program name.
3. Select "Properties".
4. On the target line delete the following text:  
"\"C:\Program Files\Microsoft Office\Office\MSACCESS.EXE\""  
This will leave: "C:\Program Files\PumpersPDA\PumpersPDA.mdb"

On the initial installation, a blank database will be installed in the appropriate place. If setup is run again, the blank database will replace the current one. Therefore any data entered into the system will be lost.

## ***PDA Setup***

After the database has been installed, each of the PDAs will need to be set up.

1. Connect the PDA to the computer and make sure a connection is established
2. Go to the Start menu and select “All Programs”
3. In the Pumpers PDA, open “PDA Setup”
4. Click on “Next”
5. Check “I agree”
6. Click on “Next” twice
7. If you are reinstalling the program, click on “Yes” in each window, except the one that ask if you want to overwrite the current database. Unless you want to loose all of the data in your database, click on “No”

Select “Exit” if the program still does not work:

1. Select List
2. Slide bar over until you see the Number Column. Click on "Number" and Click on "OK"
3. Tap twice on a record.
4. Then "Exit"

The program should begin to transfer data to the PDA

The PDA has a window that comes up to tell you it is completed transferring data.

The program is now ready to use.

## ***Using a Button to Open Program***

1. On the PDA’s Start menu, select “Settings”
2. Tap the “Button” Icon.
3. Select the desired Button to use.
4. From the “Button Assignment” list, select “Pumper’sProgram”
5. Tap on “OK” and test out the button.

## ***Errors***

For the most up-to-date fixes, visit Tech Support on the web or by phone.

### **Virus scan**

Virus scanning programs can cause many problems with the program setup and synchronization. The software can be disabled for installation. Also it can slow synchronization down considerably. If this is found to be the case, consult the software manual or tech support.

### Slow download/ Data Transfer

Virus Scan software can cause the data transfer process to be very slow. You will have to work with the Virus Scan software to disable part of it.

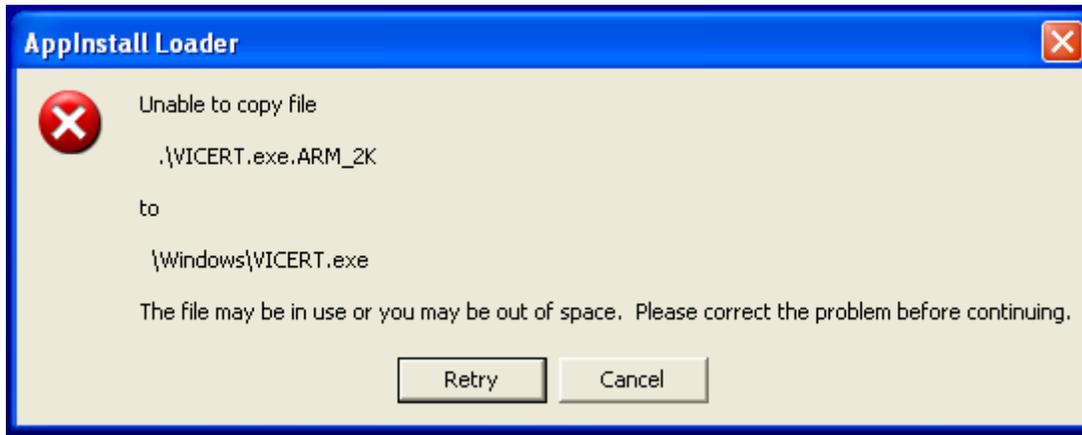


Figure 34 - PDA Setup Error

The PDA program is open or a window of the program is open. Close all of the windows and press Retry. If that does not work, try to open the program on the PDA and press exit.

### [SYWARE, Inc.][Windows CE ODBC Driver][ISAM]Open table failed

This message will appear when the program has not been downloaded. A similar message appears when Access table is locked. Close Access and try again.



Figure 35 - PDA Setup Error

A connection is not functioning between the PDA and the PC. Disconnect and reconnect the PDA. Otherwise, check connections, and restart computer and PDA.



Figure 36 - PDA Setup Error

## ODBC Driver Manager

Found with runtime version. This error occurs because the datasource has not been set up.

1. Select “Control Panel” from the “Start” menu.
2. Select “Administrative Tools”.
  - a. If you do not see it select “Performance and Maintenance” then “Administrative Tools”
3. Select “Data Sources (ODBC). The following screen will appear.

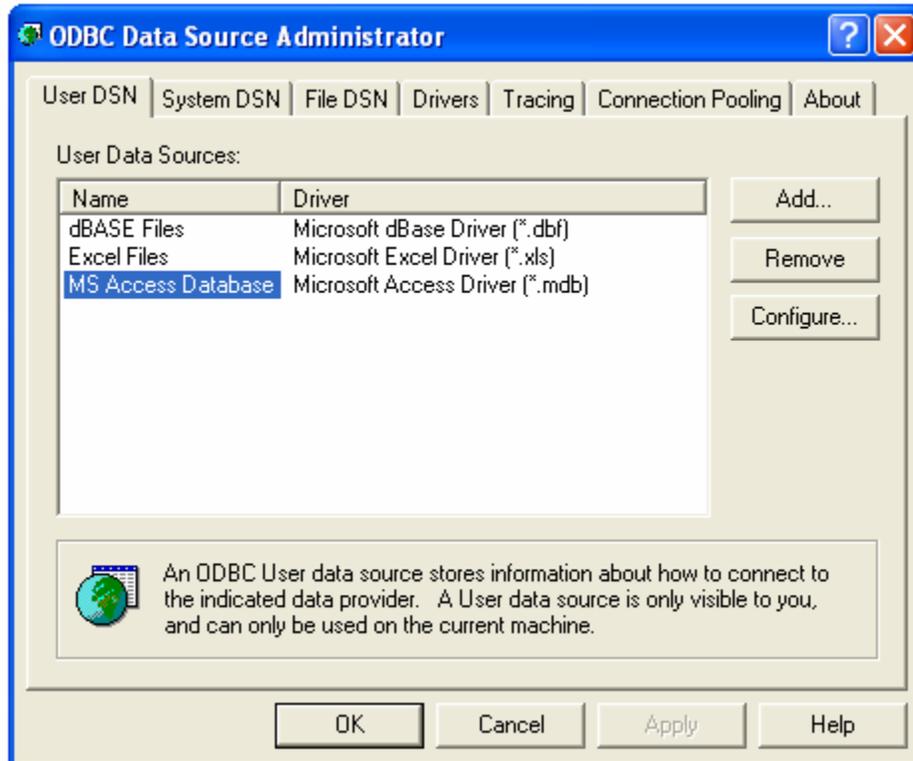
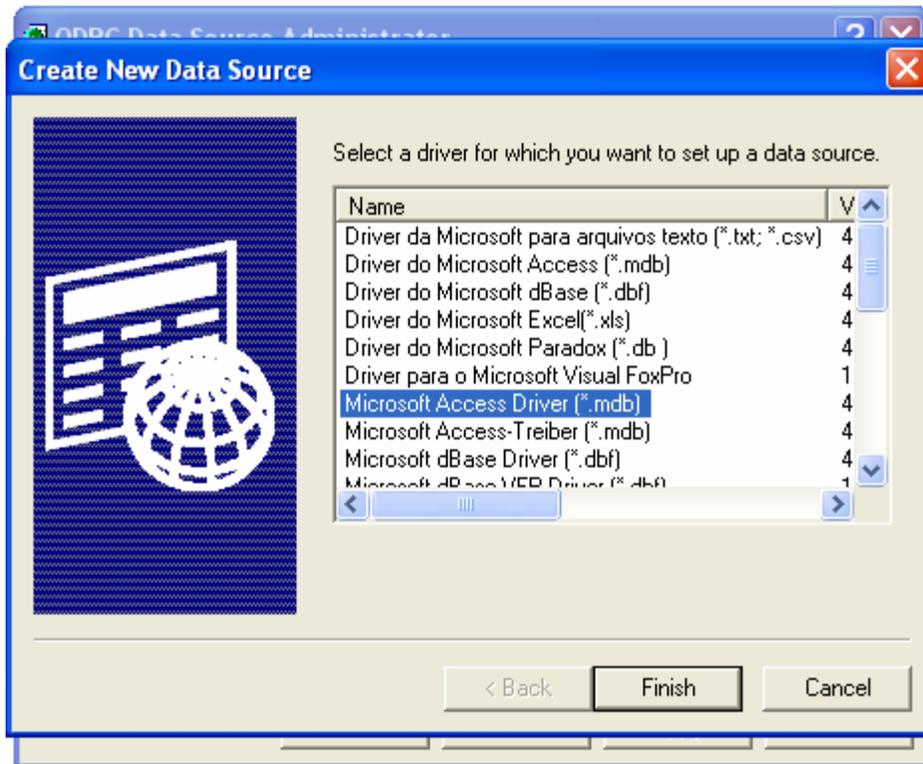


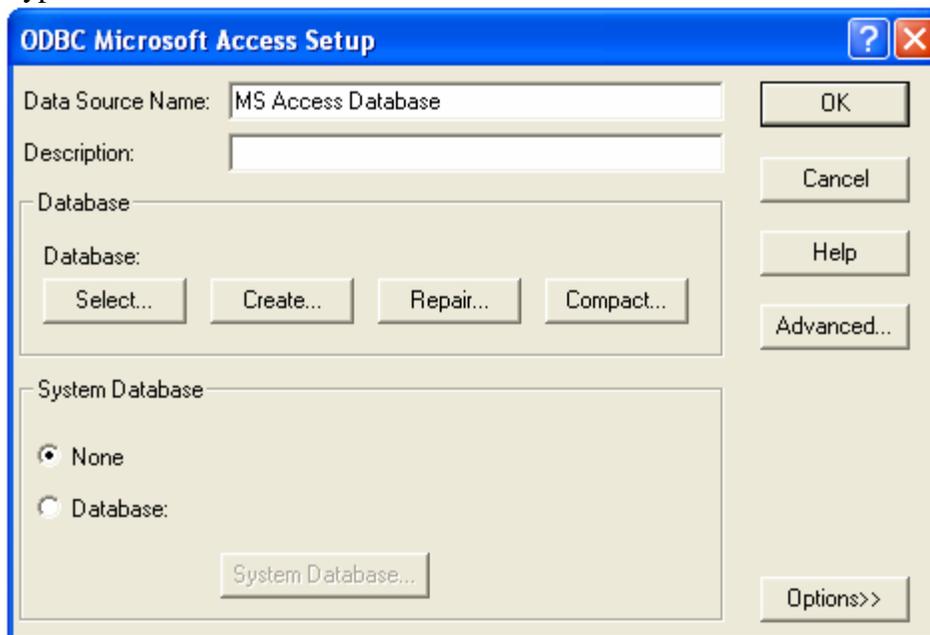
Figure 37 - ODBC Data Source

4. Most likely you will not have anything in the white box. We will need one for MS Access Database.
5. Click on the “Add...” button.
6. Select Microsoft Access Driver (\*.mdb) from the list.



**Figure 38 - Create Data Source**

7. Type MS Access Database in the “Data Source Name:” box.



**Figure 39 - ODBC Access Setup**

8. Click “OK”
9. Click “OK” on the next Screen and close the unneeded windows.
10. Try to sync the device again.

## **Summarized Technical Notes**

PC – Microsoft Access – Development was done with Access 2003. Therefore this version or later would work best.

PC – ActiveSync – The Windows CE devices are packaged with ActiveSync. This will need to be installed and communication with the device will need to be established. There is other communication software, but these have not been tested.

Communications – Communication can be created with the device through several means. If ActiveSync is working, the program data will be transferred.

PDA – Windows CE Device – the software operates on Windows CE. Development was performed with Windows CE 2003. Earlier or later versions should operate correctly.

Field Users – The person who uses the PDAs in the field is not required to know anything about computers. The field manual goes over everything that they will need to know, from charging the battery to opening the program.

# Appendix

## Sample Data Setups

The following show examples of how to set up items from the Titles form page .

### Tank Battery

We are going to set up a tank battery with 4 tanks.

The screenshot shows the 'Titles Setup' application window. The title bar reads 'Titles Setup'. The main area contains the following elements:

- Instructions:** 'This form is used to set up new or edit items. Enter the field titles which should be displayed when information is recorded.'
- Select Record Type:** Two radio buttons: 'Background Record' (unselected) and 'Field Record' (selected).
- Type:** A dropdown menu set to 'Tank' and an 'Auto Fill' button.
- Add Record:** A button.
- Allow Clear:** A checkbox (unchecked) and a 'Clear' button.
- Number:** Text box containing '200,004'.
- Name:** Text box containing 'Test Well #4'.
- Not Visible on PDA:** A checkbox (unchecked).
- code:** Text box containing 'Tank'.
- n1:** Text box containing 'ft. Tank 1'.
- n2:** Text box containing 'in. Tank 1'.
- n3:** Text box containing 'ft. Tank 2'.
- n4:** Text box containing 'in. Tank 2'.
- n5:** Text box containing 'ft. Tank 3'.
- n6:** Text box containing 'in. Tank 3'.
- n7:** Text box containing 'ft. Tank 4'.
- Date2:** Text box.
- t8:** Text box.
- t9:** Text box.
- t10:** Text box.
- Calculation #11:** Text box containing '10'. To its right is the text: 'These contain the numbers of the equations to be used.'
- Calculation #12:** Text box containing '10'. To its right is the text: 'These contain the numbers of the equations to be used.'
- Memo:** A large text area.
- Note:** A text box.
- Update:** A button.
- Timestamp:** A text box containing '7/28/2006 3:54:51 PM'.
- Record Navigation:** A bar at the bottom with 'Record:' followed by navigation icons and '1 of 8'.

Figure 40 - App Tank Bat. Titles

First, we enter a number for the item. Since the tank battery goes with the Smith well #53, we will use 200,053. For the name, enter “Smith Tanks”.

This is going to be a tank type record. In the type box, select tank. Press the Auto Fill button. The equation numbers appear in the calculation number boxes and the titles appear in the number boxes.

In the Date2 field, we want to know when the last truck hauled oil from the location, so enter “Last shipment”.

The calculation works by adding ft/12 to inches then multiplying by the bbl/in. (n1) of the background record. Therefore, the following measurements result in the same answer: 126 inches; 10 ft 6 in; 10.5 ft.

## Master Meter

This example will create an item, which is a Master Meter. A meter can be included with a well or tank in a combo item or it can be by itself. This example will not be included on a well because it goes with several wells.

The screenshot shows the 'Titles Setup' application window. The title bar reads 'Titles Setup'. The main area contains the following elements:

- Instructions:** 'This form is used to set up new or edit items. Enter the field titles which should be displayed when information is recorded.'
- Select Record Type:** Radio buttons for 'Background Record' and 'Field Record' (selected).
- Type:** A dropdown menu set to 'Orifice Meter' and an 'Auto Fill' button.
- Buttons:** 'Add Record' and 'Clear' (with an 'Allow Clear' checkbox).
- Form Fields:**
  - Number: 200,004
  - Name: Test Well #4
  - code: Meter
  - n1: Pressure
  - n2: Differential
  - n3: Temperature
  - n4, n5, n6, n7: (empty)
  - Date2, t8, t9, t10: (empty)
  - Calculation #11: 3
  - Calculation #12: 3
  - Memo: (empty)
  - Note: (empty)
- Footer:** 'Record: 1 of 8' with navigation icons and an 'Update' button showing a timestamp '7/28/2006 3:56:05 PM'.

Figure 41 – App. Meter

Since the Meter has used the number 901 in the past, enter 300901 in the first box and enter the name “Smith Master Meter” in the name box.

Since the meter is an orifice meter, select Orifice Meter from the Type drop down box and click on Auto Fill. The equation numbers appear in the Calculation fields and the appropriate titles appear in number fields 1, 2, and 3.

If the meter does not measure temperature, make field 3 blank. If no number is entered in this field, the computer will assume the temperature is 60°F. Do not use this field for anything else. You can use any of the rest of the fields for whatever is appropriate.

## Well with Tank and Meter

In this example we will create an item for a well with a tank and meter. One Combo item can be created or three different items could be created. Making one item would be easier in most cases.

### Combo Item

The screenshot shows the 'Titles Setup' application window. The window title is 'Titles Setup'. The main area contains the following fields and controls:

- Select Record Type:** Radio buttons for 'Background Record' (unselected) and 'Field Record' (selected).
- Type:** A dropdown menu set to 'Combo Rotary Meter' and an 'Auto Fill' button.
- Add Record:** A button.
- Allow Clear:** A checkbox (unchecked) and a 'Clear' button.
- Number:** Text box containing '100,101'.
- Name:** Text box containing 'Jones Well #101'.
- code:** Text box containing 'Well'.
- n1:** Text box containing 'Pressure'.
- n2:** Text box containing 'Reading'.
- n3:** Text box containing 'Tank, ft.'.
- n4:** Text box containing 'Tank, in.'.
- n5:** Text box containing 'Rate'.
- n6:** Text box (empty).
- n7:** Text box (empty).
- Date2:** Text box (empty).
- t8:** Text box (empty).
- t9:** Text box (empty).
- t10:** Text box (empty).
- Calculation #11:** Text box containing '2'.
- Calculation #12:** Text box containing '2'.
- Memo:** Text area (empty).
- Note:** Text box (empty).
- Update:** Button.
- Timestamp:** Text box containing '9/6/2006 10:17:27 AM'.

At the bottom, there is a record navigation bar showing 'Record: 1 of 20'.

**Figure 42 – App. Combo Titles**

The well #101 is given the number 100101. Type the name into the name box. 'Combo Rotary Meter' is selected from the Type dropdown box and Auto Fill is clicked. The appropriate titles and calculations appear in the boxes. Note that Rate is placed in N5 to allow the field user to use the Timer function on the PDA. We want to know what work was performed. In the text field, t1 enter 'Well Work'; t2 enter 'Meter Work'; t3 enter 'Tank Work'.

### Separate Items

The same wellsite may have a separate record for the well, meter, tank, and compressor. For the Well itself, the item number is 100101. It will appear on the Wells list.

The screenshot shows a software window titled "Titles Setup" with a blue header bar. The window contains a form for setting up well titles. On the left, there is a "Select Record Type" section with two radio buttons: "Background Record" (unselected) and "Field Record" (selected). Below this is a "Type" dropdown menu set to "Well" and an "Auto Fill" button. A large "Add Record" button is positioned in the middle-left area. At the bottom-left, there is a checkbox labeled "Allow Clear" (unchecked) and a "Clear" button. The right side of the form is divided into two columns by a vertical line. The top-right section is labeled "Not Visible on PDA" and contains fields for "Number" (100,101), "Name" (Jones Well #101), "code" (Well), "n1" (Casing,psi), "n2" (Tubing,psi), "n3", "n4", "n5" (SPM, Strokes Per minute), "n6", "n7", "Date2", "t8" (Operation), "t9", and "t10". Below these are "Calculation #11" and "Calculation #12" fields, with a note: "These contain the numbers of the equations to be used." There is also a "Memo" text area and a "Note" field. At the bottom right, an "Update" button is next to a timestamp field showing "9/6/2006 10:17:27 AM". The bottom status bar shows "Record: 1 of 20" with navigation icons.

Figure 43 – App. Well Titles

For the Tank, the item number is 200101. It will appear on the Tanks list.

The screenshot shows a software window titled "Titles Setup" with a blue title bar. The window contains a form for setting up titles. On the left, there is a "Select Record Type" section with two radio buttons: "Background Record" (unselected) and "Field Record" (selected). Below this is a "Type" dropdown menu set to "Tank" and an "Auto Fill" button. A large "Add Record" button is positioned in the middle-left area. At the bottom-left, there is an "Allow Clear" checkbox (unchecked) and a "Clear" button. The main form area on the right contains several input fields: "Number" (200,101), "Name" (Jones Well #101), "code" (Tank), and a vertical column of fields labeled n1 through n7. Fields n1 and n2 contain "ft. Tank 1" and "in. Tank 1" respectively, while n3 and n4 contain "ft. Tank 2" and "in. Tank 2". Fields n5, n6, and n7 are empty. Below these are "Date2", "t8" (Operation), "t9", and "t10". At the bottom right, there are "Calculation #11" and "Calculation #12" fields, both containing "10", with a note: "These contain the numbers of the equations to be used." Below that is a "Memo" text area and a "Note" field. An "Update" button is located at the bottom right, with a timestamp "10/6/2006 10:24:56 AM" next to it. The status bar at the bottom shows "Record: 1 of 20" with navigation icons.

Figure 44 – App. Tank Titles

For the Meter, the item number is 300101. It will appear on the Meters list.

The screenshot shows a software window titled "Titles Setup" with a blue header bar. The window contains a form for configuring a meter title. On the left side, there is a section for "Select Record Type" with two radio buttons: "Background Record" (unselected) and "Field Record" (selected). Below this is a "Type" dropdown menu set to "Rotary Meter" and an "Auto Fill" button. A large "Add Record" button is positioned in the center-left. At the bottom left, there is a checkbox for "Allow Clear" and a "Clear" button. The right side of the form contains a grid of input fields. The "Number" field is set to "300,101" and the "Name" field is "Jones Well #101". A vertical line separates the "Name" field from a "Not Visible on PDA" column. Below the name are fields for "code" (set to "Meter"), "n1" (set to "Pressure"), "n2" (set to "Reading"), "n3", "n4", "n5" (set to "Rate"), "n6", "n7", "Date2", "t8" (set to "Operation"), "t9", and "t10". Below these are "Calculation #11" and "Calculation #12", both set to "4", with a note: "These contain the numbers of the equations to be used." There is a "Memo" text area and a "Note" field. At the bottom right, an "Update" button is next to a timestamp "10/6/2006 10:27:10 AM". The bottom status bar shows "Record: 1 of 20" with navigation icons.

Figure 45 – App. Meter Titles

For the Compressor, the item number is 400101. It will appear on the Other List.

The screenshot shows the 'Titles Setup' application window. The title bar reads 'Titles Setup'. The main area contains the following elements:

- Instructions:** 'This form is used to set up new or edit items. Enter the field titles which should be displayed when information is recorded.'
- Select Record Type:** Radio buttons for 'Background Record' and 'Field Record' (selected).
- Type:** A dropdown menu set to 'Rotary Meter' and an 'Auto Fill' button.
- Buttons:** 'Add Record' and 'Clear' (with an 'Allow Clear' checkbox).
- Fields:**
  - Number: 400,101
  - Name: Jones Well #101 Compressor
  - code: Other
  - n1: Inlet Pressure
  - n2: Outlet Pressure
  - n3: Motor Oil Used qt.
  - n4: Motor RPM
  - n5: (empty)
  - n6: (empty)
  - n7: (empty)
  - Date2: (empty)
  - t8: Operation
  - t9: (empty)
  - t10: (empty)
  - Calculation #11: (empty)
  - Calculation #12: (empty)
  - Memo: (empty text area)
  - Note: (empty text area)
- Footer:** 'Update' button and a timestamp '10/6/2006 10:27:10 AM'. The status bar at the bottom shows 'Record: 1 of 20'.

Figure 46 – App. Compressor Titles

Updated: 4-4-07