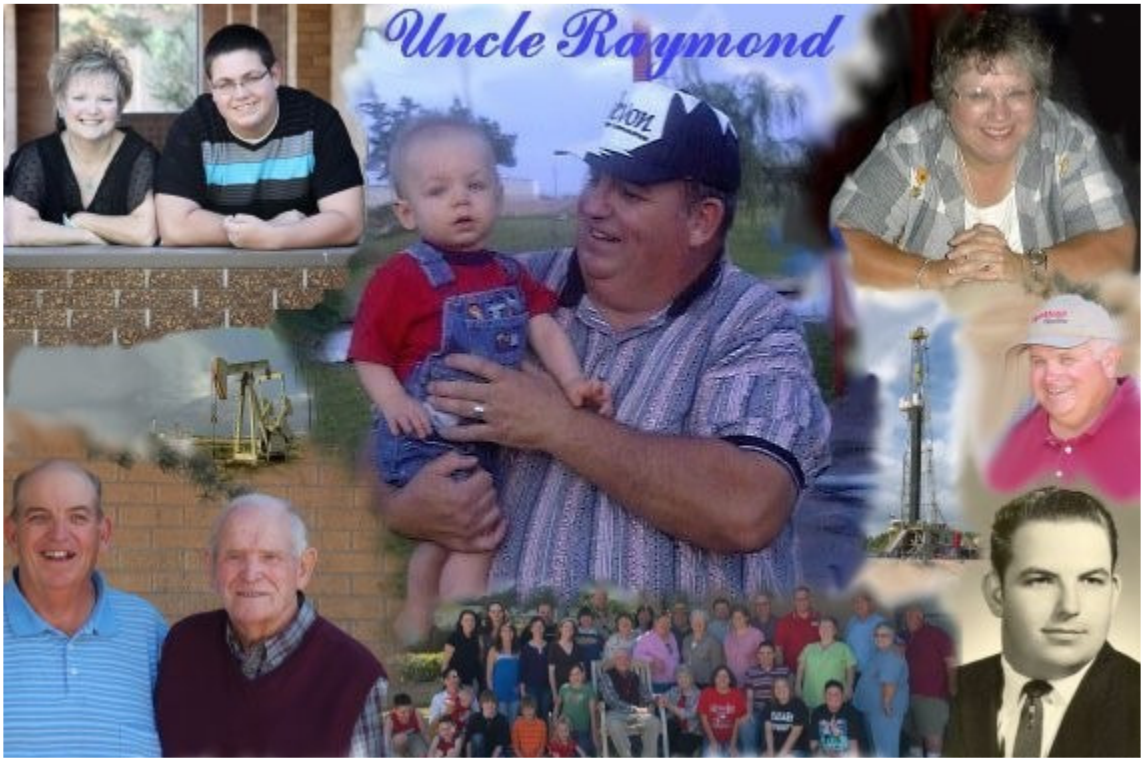
Uncle Raymond's Tool Box
Version X

Instructions for URTB

or URTB For Dummies



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Most Frequently Asked Question

Question:

Why don't some of the tabs work? I click on them and nothing happens?

Answer:

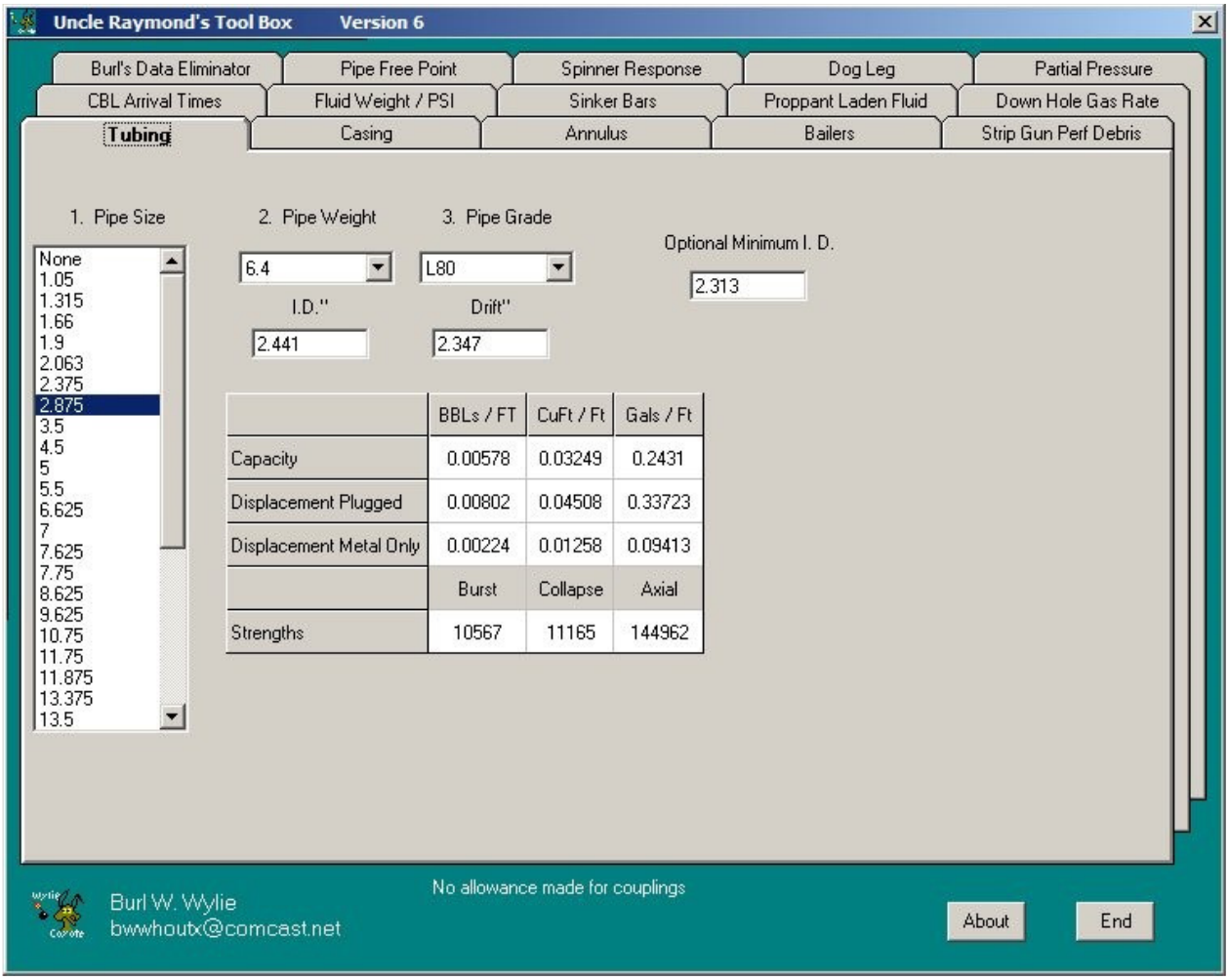
When you first start the program the **Casing Tab, Annulus Tab, Bailers Tab, Strip Gun Perf Debris Tab, CBL Arrival Times Tab, Spinner Response Tab, and Dog Leg Tab** all need pipe sizes to perform calculations. These tabs will not respond until they have the parameters need to function.

Select your pipe sizes and everything is ready to go.

Table of Contents

Tubing Tab

I have tried to keep this program as simple as possible. Below is a picture of the opening screen from URTB.



2-7/8" 6.4# L-80 has been selected.

Pick a pipe size from the list on the left. Click the down arrow on the Pipe Weight Box and select the proper weight. Click the Pipe Grade Box and select the grade. Then all the empty boxes will be filled with the values for the selection you have made.

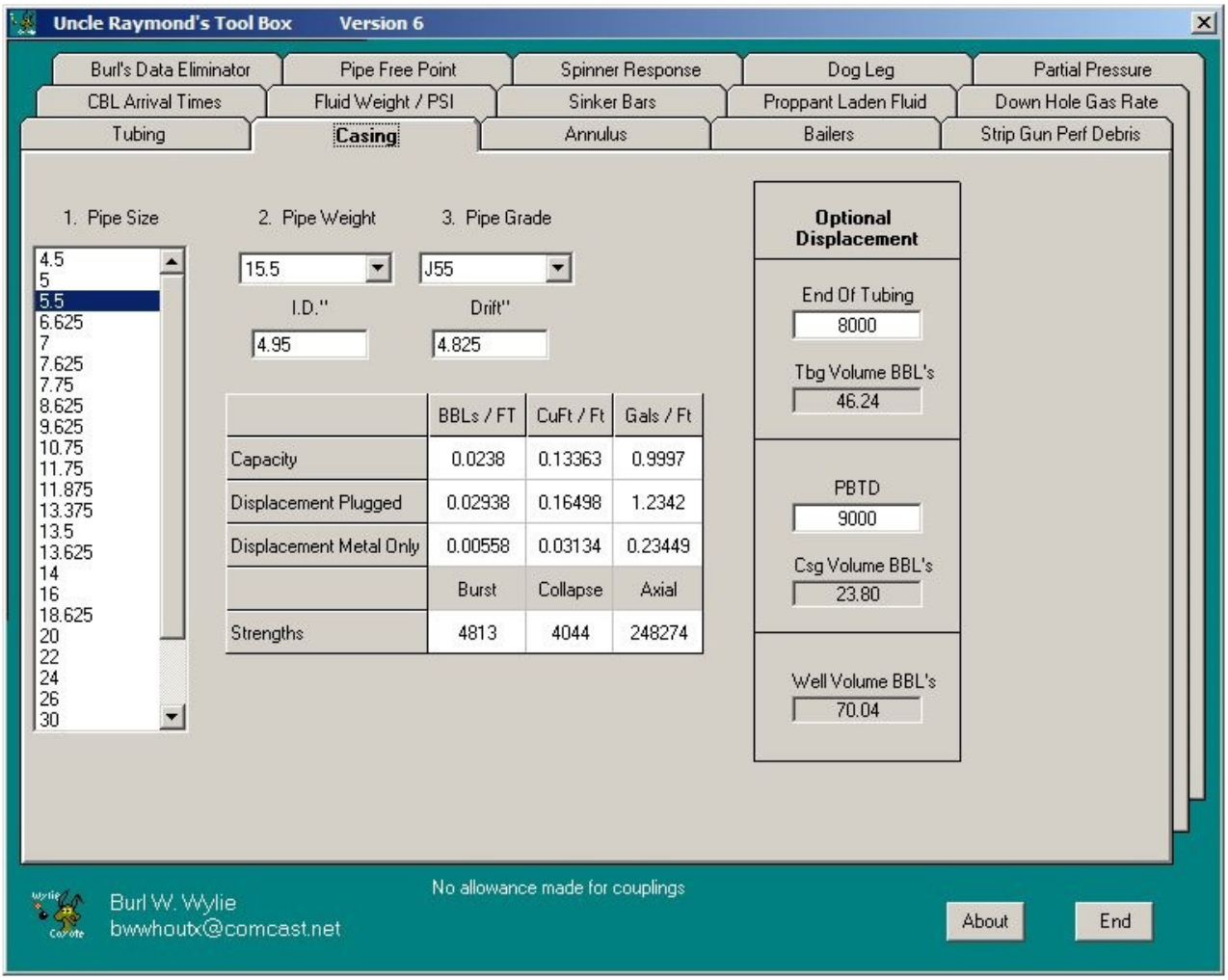
If there is no tubing in the well, just select "None" from the list. You can then enter a Minimum I.D. in the Optional Minimum I.D. Box. This would be used only if there was an I.D. less than the casing in the well head or such.

You can also enter a more restrictive Minimum I.D. if you have selected a tubing size and you need to enter a smaller I.D. for a tubing nipple or other restriction.

About Button - A little information about the program and Uncle Raymond.

End Button - Will end the program and all calculations and values are cleared.

Casing Tab



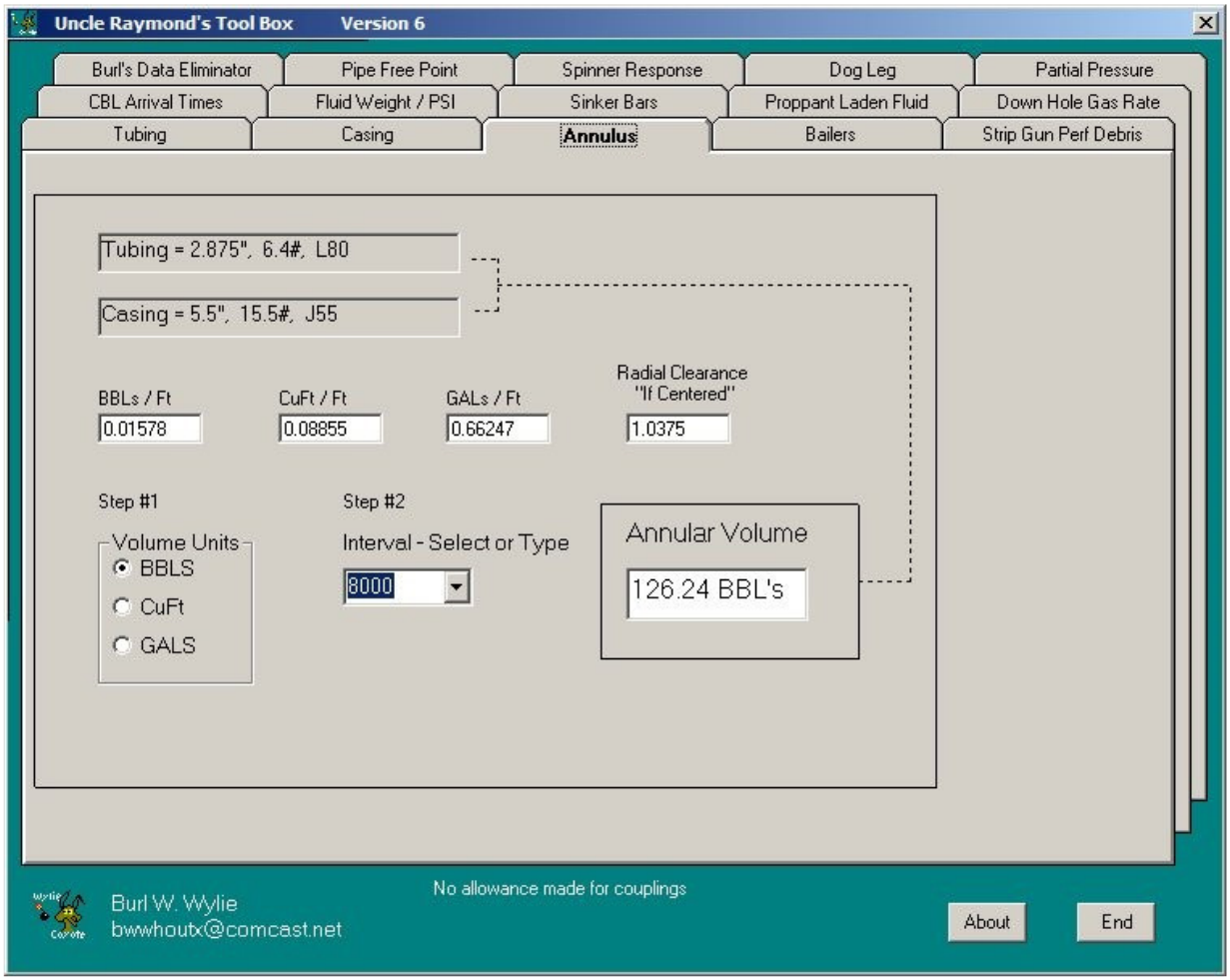
5-1/2" 15.5# J-55 has been selected.

Only casing sizes with an I. D. large enough to accommodate the tubing are offered as choices. Please keep in mind that there has been **no consideration given to the couplings**. The tubing may fit, but if the tolerance is close and a beefy coupling is used, the tubing may not fit in that size of casing.

A new section of this tab is dedicated to the optional displacement calculations for the well bore. Just enter the depth of the tubing and PBTD. It will calculate the volume of the tubing, casing, and entire well.

Once you have made your selections on the Tubing and Casing Tabs, the Annulus Tab will become active.

Annulus Tab



The gray boxes in the upper, left corner indicate the pipe sizes you have chosen in the Tubing and Casing Tabs.

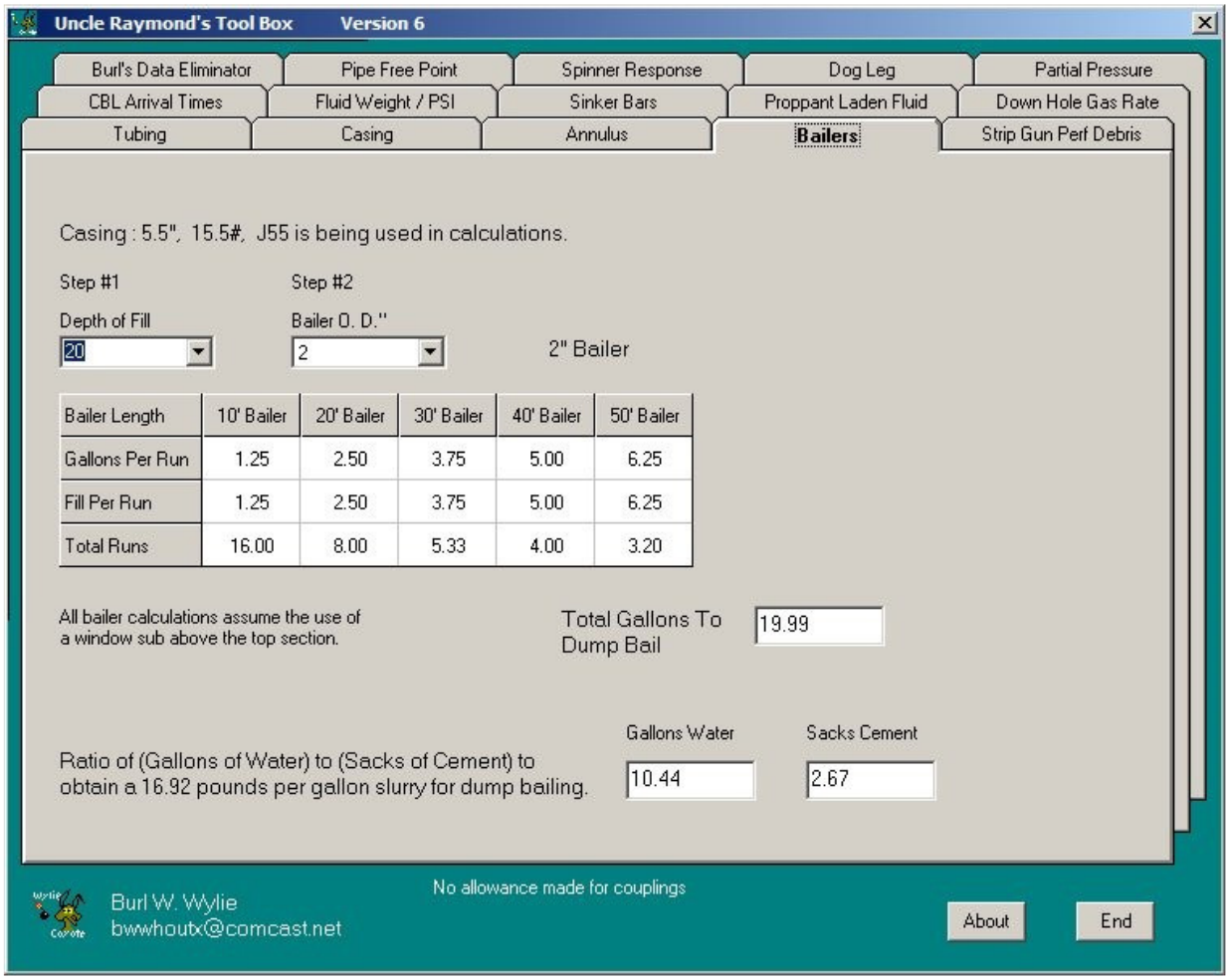
The white boxes across the center of the form indicate the volumes per foot of annulus in barrels, cubic feet, and gallons. The radial clearance is shown in the last box. Please note that the **program assumes the tubing to be centered**.

The option buttons, listed as Step #1, and combo box, listed as Step #2, can be used to calculate volumes for various lengths of annulus.

Step #1 - select the volume measurement you wish to use. In this case we want barrels.

Step #2 - Up to this point you have only been allowed to select data for entry. This box will allow you to select a predetermined number, or type a specific number into the box. If you need to calculate 10,539 feet of annulus, just enter 10539 into the box. **Do not use commas** in your numbers. Our example well had the tubing set at 8000 feet so our annular volume is approximately 126 bbls.

Bailers Tab



Step #1 - Depth of Fill, This is a combo box. You can select a number or enter a number for the amount of fill you will be dumping.

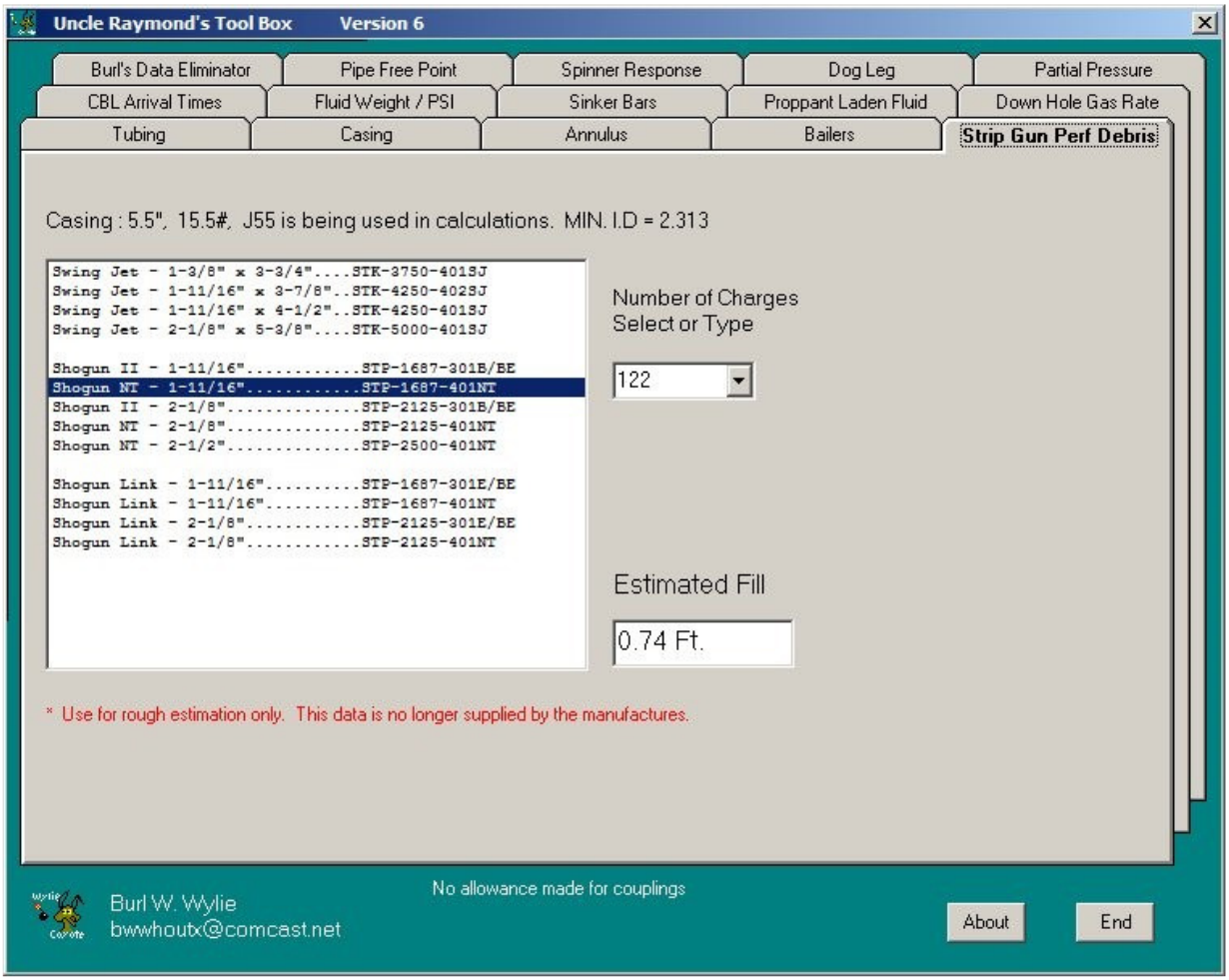
Step #2 Bailer Diameter, The program will limit your selection of bailer O. D.'s that will fit through the Minimum I.D. you defined in the Tubing Tab.

The chart will show the volume per run for various lengths of bailer and calculate the number of runs necessary to complete the job.

The Total Gallons To Dump Bail is number of gallons needed to run the job. If you use pre-packaged cement kits that are designed for a 16.92 pounds per gallon slurry, the last two boxes will back calculate the amount of water and cement you will be dumping in the well.

Note: Most cement kits do not use a slurry of 16.92 pounds per gallon. While not exact, this will get you close.

Strip Gun Perf Debris Tab



This section will help you estimate the amount of fill you can expect when perforating with strip, or completely expendable guns.

Step #1 - Select the charges to be used. For our example well we have chosen the 1-11/16" Owens Shogun NT.

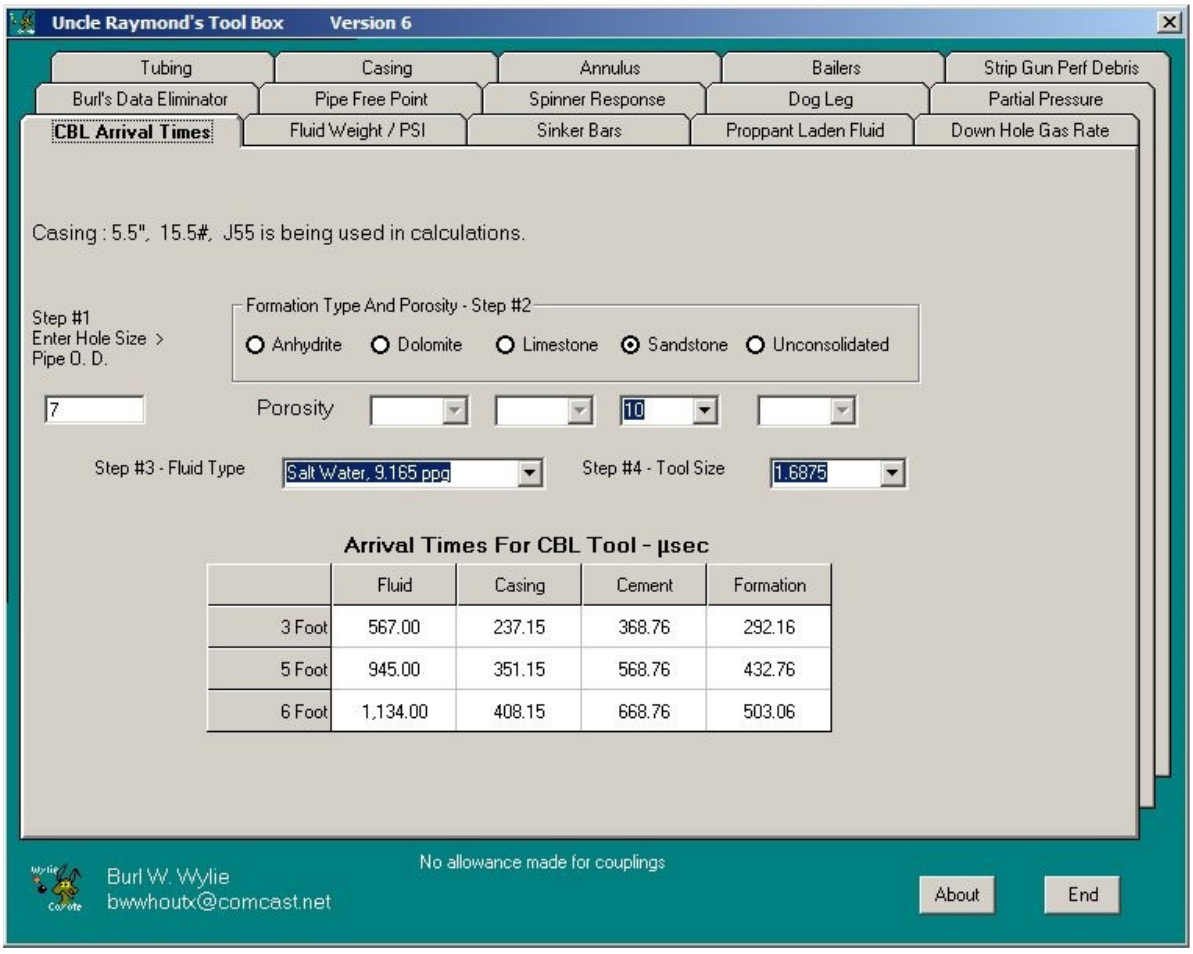
Step #2 - Select or type the number of charges you will use. We need to shoot 122 holes.

Estimated fill will be indicated in the last box. We will have approximately 3/4 foot of perforating debris in the 5.5" casing when done.

I almost did not include this in URTB. I only have old data for Owen's Swing Jet and Shogun Systems. We all know this data will not be exact. But I think you will find it to be an excellent tool for roughly estimating fill from perforating debris.

For example: If you are planning on setting a plug and perforating a new zone 10 feet above that plug. If the debris data indicates there could be 9 feet of fill, you might want to reconsider the plug depth.

CBL Arrival Times Tab



This section will use the casing dimensions along with information you supply to calculate the sonic arrival times of fluid, casing, cement, and formation over 3', 5', and 6' spacing. There are two potential problems in this section that you may be warned about. If you have minimum I.D. that is too small to run a CBL, or if you have entered a hole size (bit) that is too small for the pipe, you will warned and the program will not allow you to continue. You will be required to go back to the Casing Tab and select a different pipe size or enter a bigger hole (bit) size.

Step #1:

Enter a hole (bit) size that is larger than the pipe. On our example we have entered a hole size of 7 inches.

Step #2:

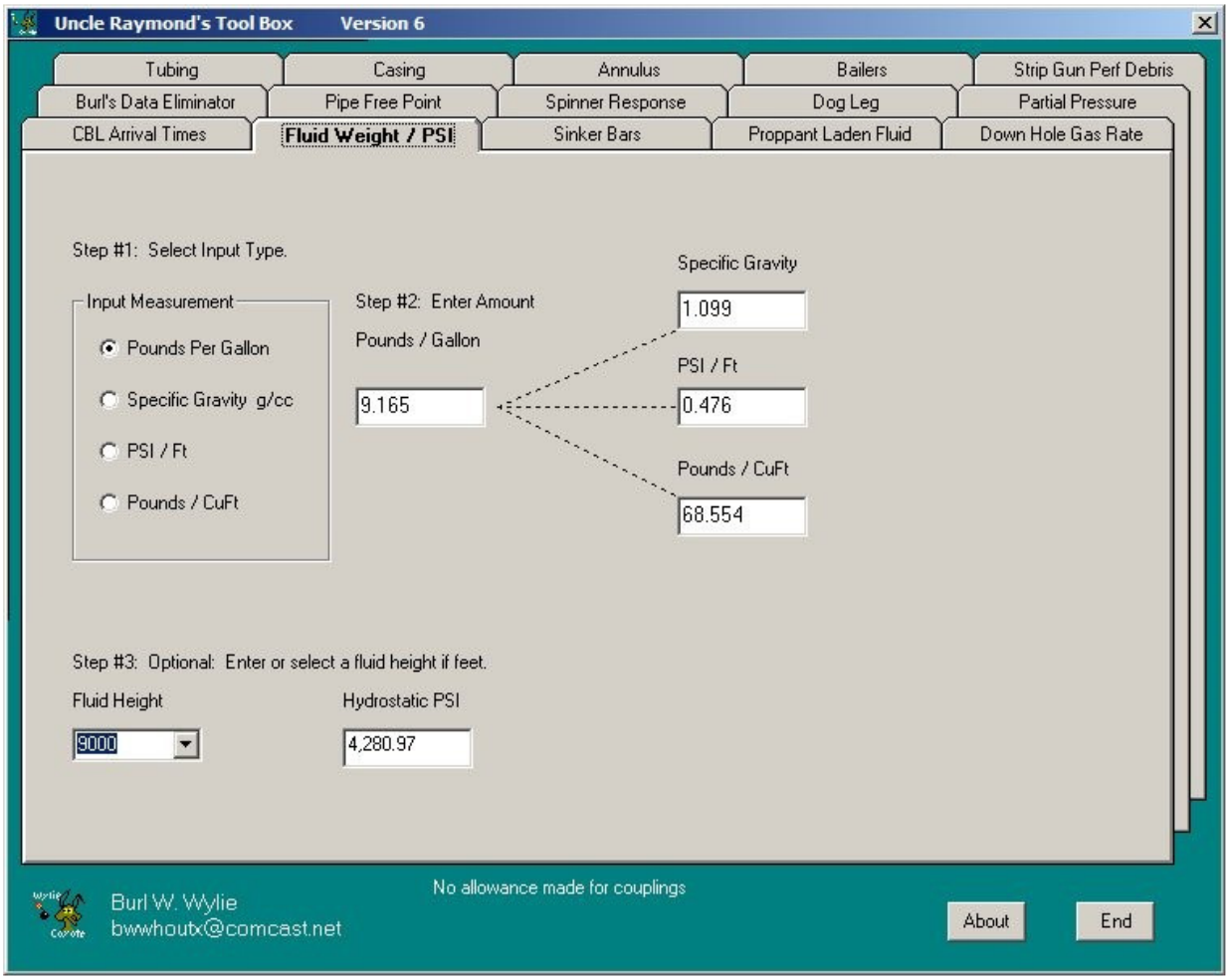
Select the type of formation and porosity for that zone from the corresponding combo box. If you select Anhydrite, there is no corresponding porosity combo box. We have chosen a sandstone with 10 percent porosity.

Step #3:

Select the type of fluid in the well bore. We have selected a medium weight saltwater Step #4:

Select the CBL tool size. Only tools that are smaller than the Min. I.D. are listed. In this case, we've selected a 1-11/16" O.D. CBL tool.

Fluid Weight / PSI Tab



This section of the program allows you to enter fluid weights in Pounds Per Gallon, Specific Gravity, PSI/Foot, or Pounds/CuFt. It will then cross calculate the other values.

Step #1:

Select the category for the fluid measurement you wish to enter. PPG, SG, PSI/Ft, or Pounds/CuFt. In this case, we are using the default Pounds Per Gallon.

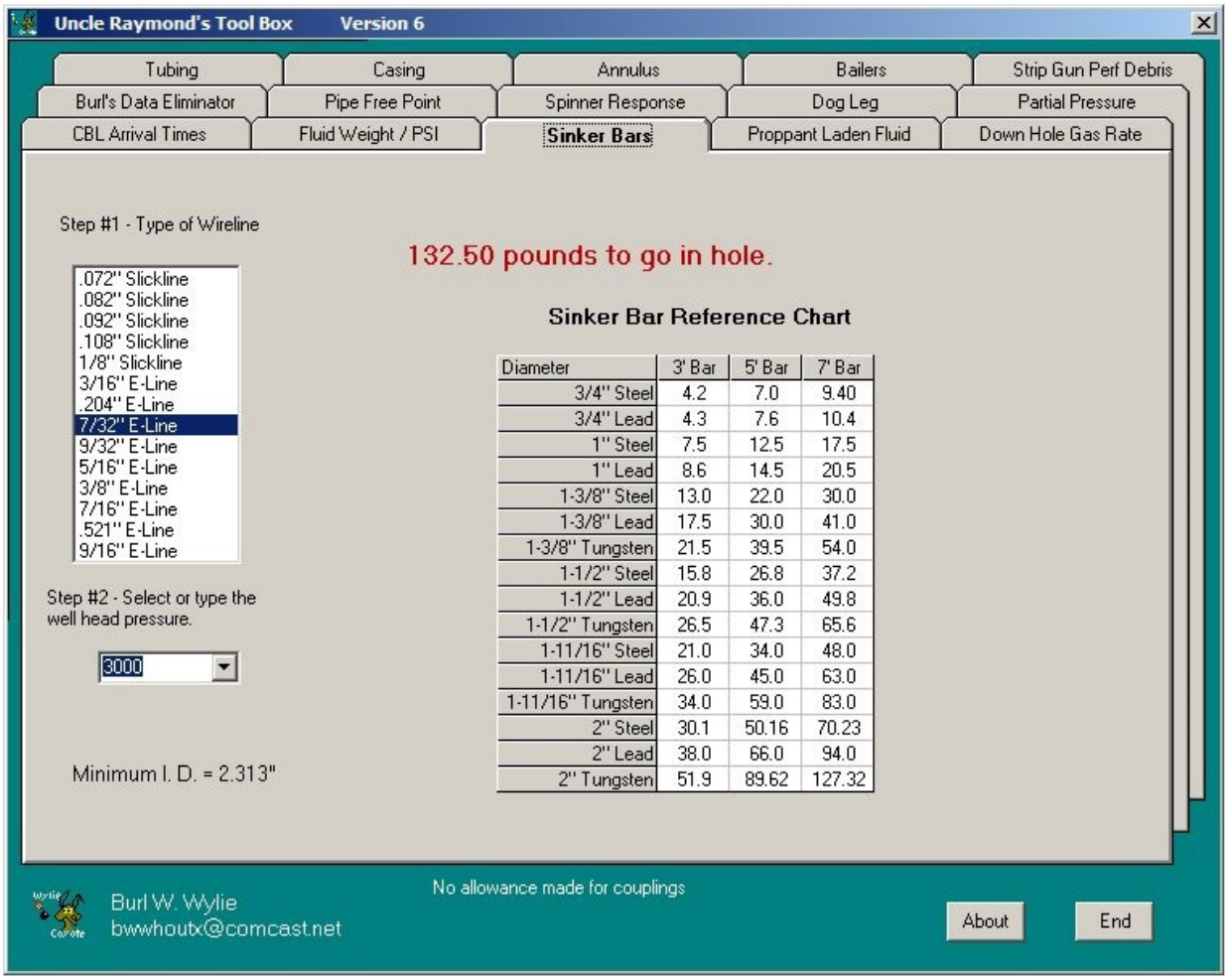
Step #2:

Enter a value into the text box. Let's see what 9.165 ppg saltwater would look like.

Step #3:

Select or enter a value for the height of the fluid column to calculate a hydrostatic pressure for a specific column of fluid. Our example well is 9000 feet and it would have a BHP of approximately 4281 psi.

Sinker Bars Tab



This section will allow you to quickly calculate the weight needed to overcome the well head pressure and allow the logging equipment to be lowered out of the lubricator. Don't forget to calculate your highest expected pressure. **You may need more weight to safely come back out of the hole**.

Step #1:

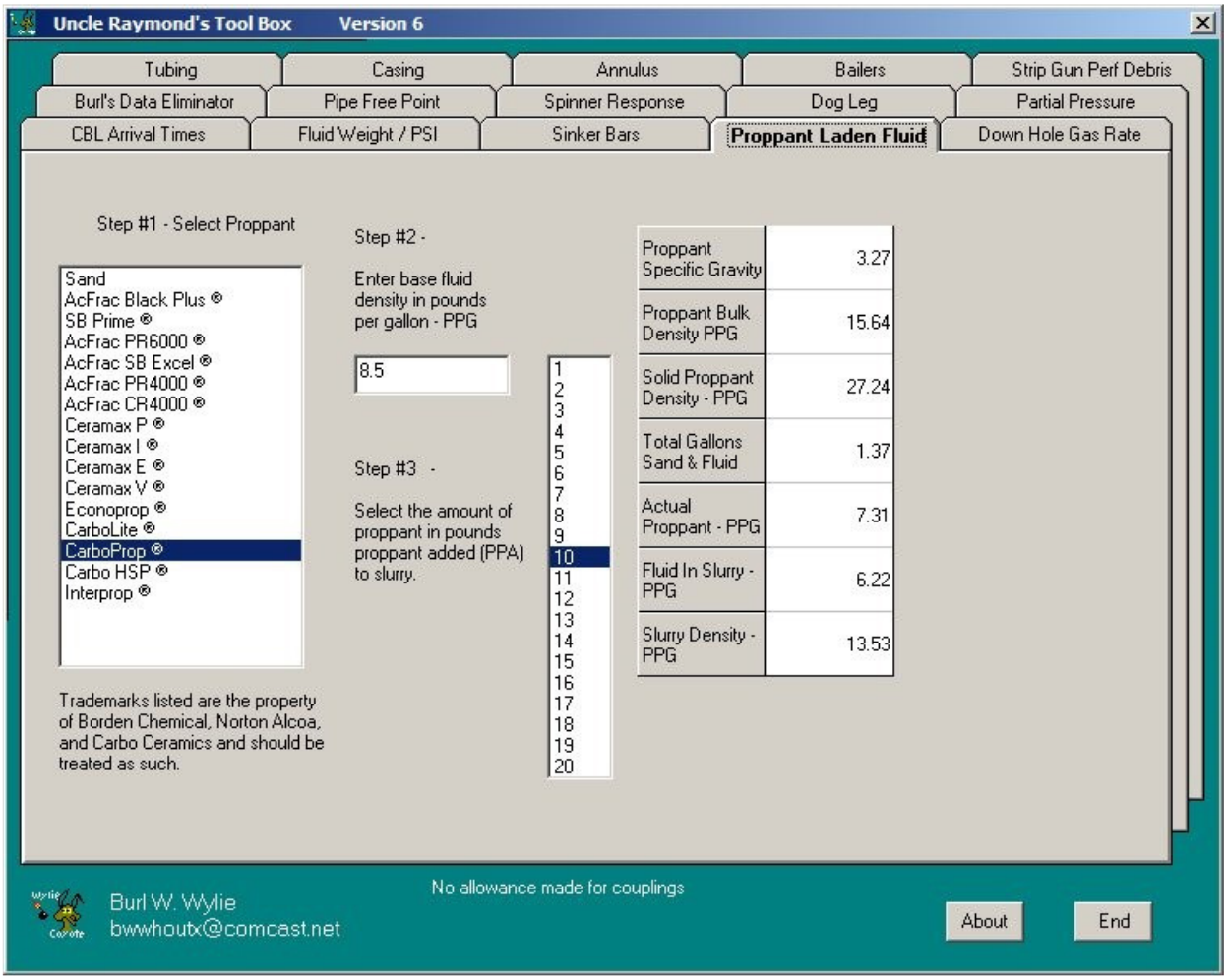
Select the type of wireline being used. We're using 7/32" E-Line Step #2:

Enter or select the well head pressure. Let's say we expect 3000 psi to be our maximum surface pressure.

We will need approximately 132.5 pounds of weight to safely work.

I've also included a reference chart of bar sizes and weights. While these values vary by company, they will be close enough for most your applications. There is also a Minimum I.D. reminder in the lower left hand corner of the tab.

Proppant Laden Fluid Tab



This section will help us calculate some characteristics of proppant laden fluid. First of all, let's try to get everyone on the same page. Even if it's the wrong page. While looking into the ways to calculate laden fluid densities, I received a lot of conflicting information. Especially with the term PPA (Pounds Proppant Added). It is my interpretation that this is **the amount of prop added to each gallon**. Not the net sand per gallon after mixing. In my calculations, PPA is the sand added to each gallon, resulting in a volume of more than a gallon.

Whew! Glad that's over with.

Step #1:

Select the type of proppant to be added to the slurry.

Step #2:

Enter the weight per gallon of the base, slurry fluid.

Step #3:

Select the weight of proppant to be added to each gallon of slurry (PPA).

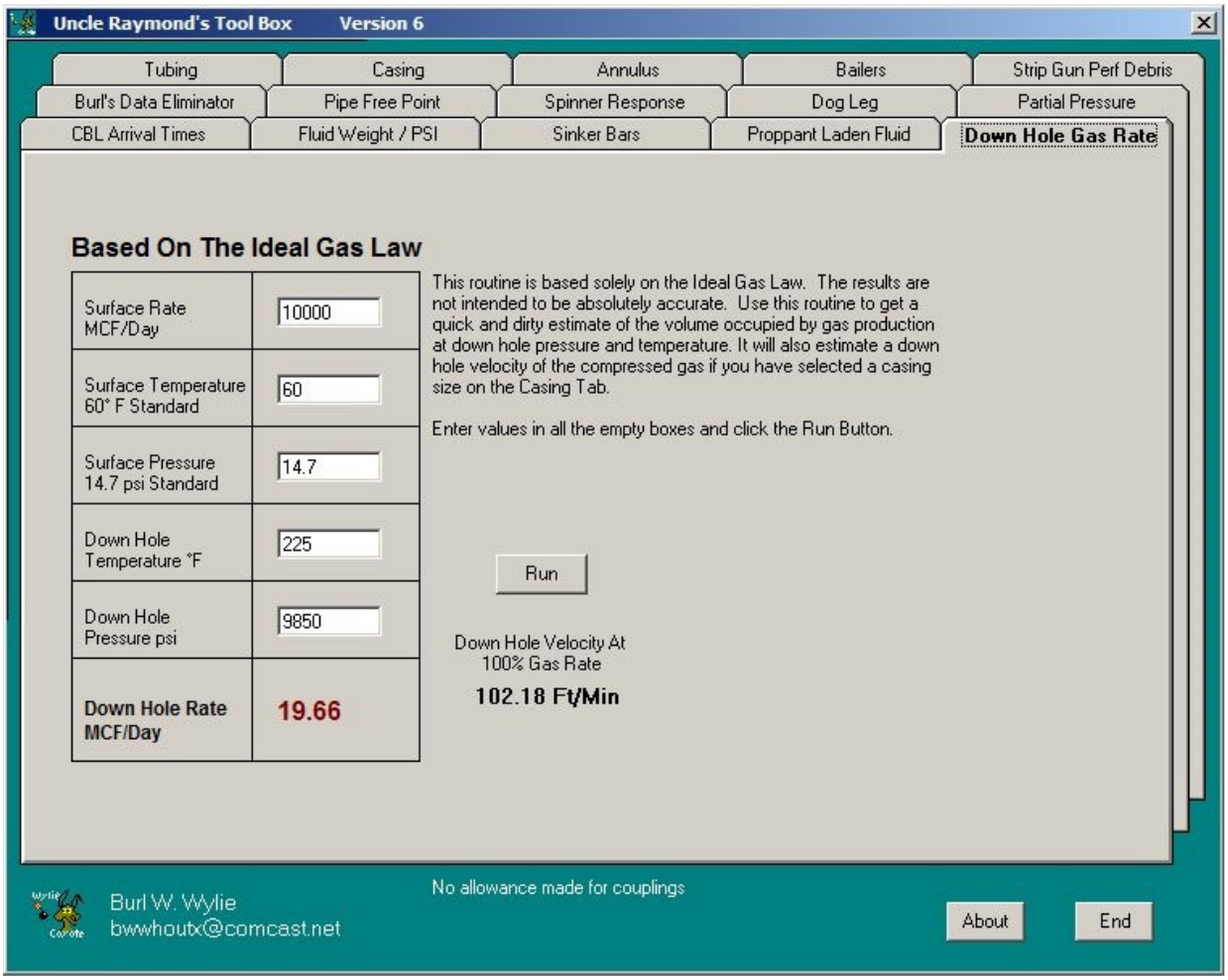
In our example above. We have selected CarboLite® as our proppant. The chart on the right indicates that propant's specific gravity is 2.71. It's Bulk Density in ppg is 12.97 and its Solid Density (no air space) is 22.57 pounds per gallon.

In step 2 we entered 8.5 ppg for a near, fresh water base to the slurry.

In step 3 we selected 10 PPA to add 10 pounds of CarboProp® to every gallon of slurry. This results in a Total Volume of 1.37 gallons, Actual pounds per gallon of CarboProp® at 7.31, a fluid weight of 6.22 pounds per gallon, and a Slurry Density of 13.53 pounds per gallon.

Hint, if you want to get an idea of the ratio, or relationship of PPA to PPG Sand, just click up and down the list in step 3 to see how the slurry is changed.

Down Hole Gas Rate Tab



This is based on the Ideal Gas Law and will give you a quick and dirty estimation of the down hole gas volume at pressure and temperature. It will also give you an estimated velocity if you have selected a casing size on the Casing Tab.

This is not intended to be definitive. There is no consideration given to gas composition, Z Factor, etc.... It's intended use is to get a quick and dirty estimate of the down hole conditions.

Step #1:

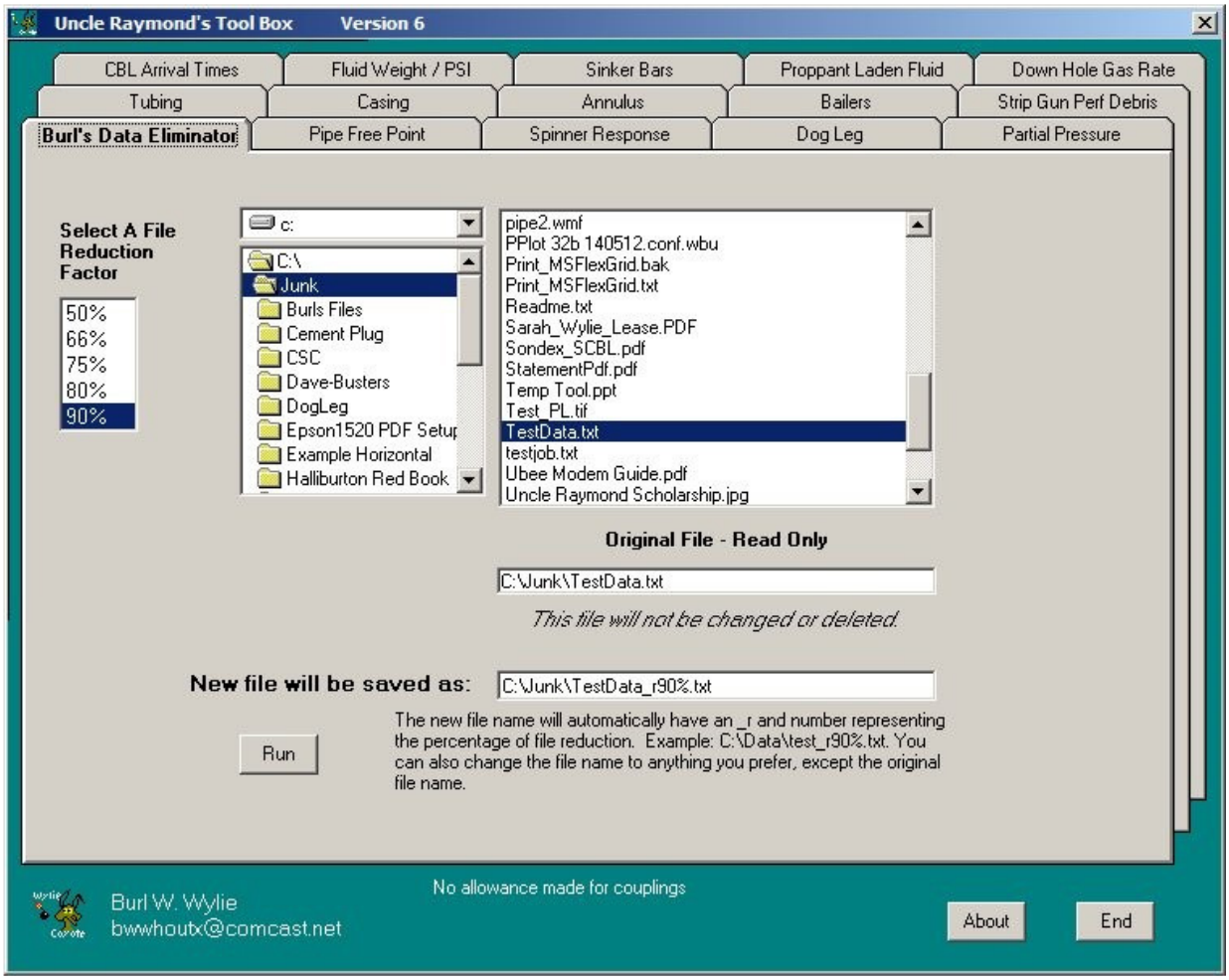
Fill in all the blank boxes with appropriate values.

Step #2:

Press the Run Button.

For our example, we have indicated that our surface rate is 10000 mcf/day (10MMcd/day), the down hole temperature is about 225 degrees Fahrenheit, and the bottom hole pressure is approximately 9850 psi. The 10,000,000 cubic feet at one atmosphere and 60 degrees Fahrenheit will only occupy approximately 19.66 mcf at down hole conditions. In addition, it will only have a velocity of approximately 102 feet per minute in the 5-1/2" casing.

Burl's Data Eliminator



This program that will reduce the size of any ASCII, or text, file. How many times has some someone presented you with a ridiculous amount of data in a file when a 1/10th as much would be sufficient?

Step #1:

Select the desired file reduction factor.

Step #2:

Navigate to the desired file using the drive, folder, and file selection boxes.

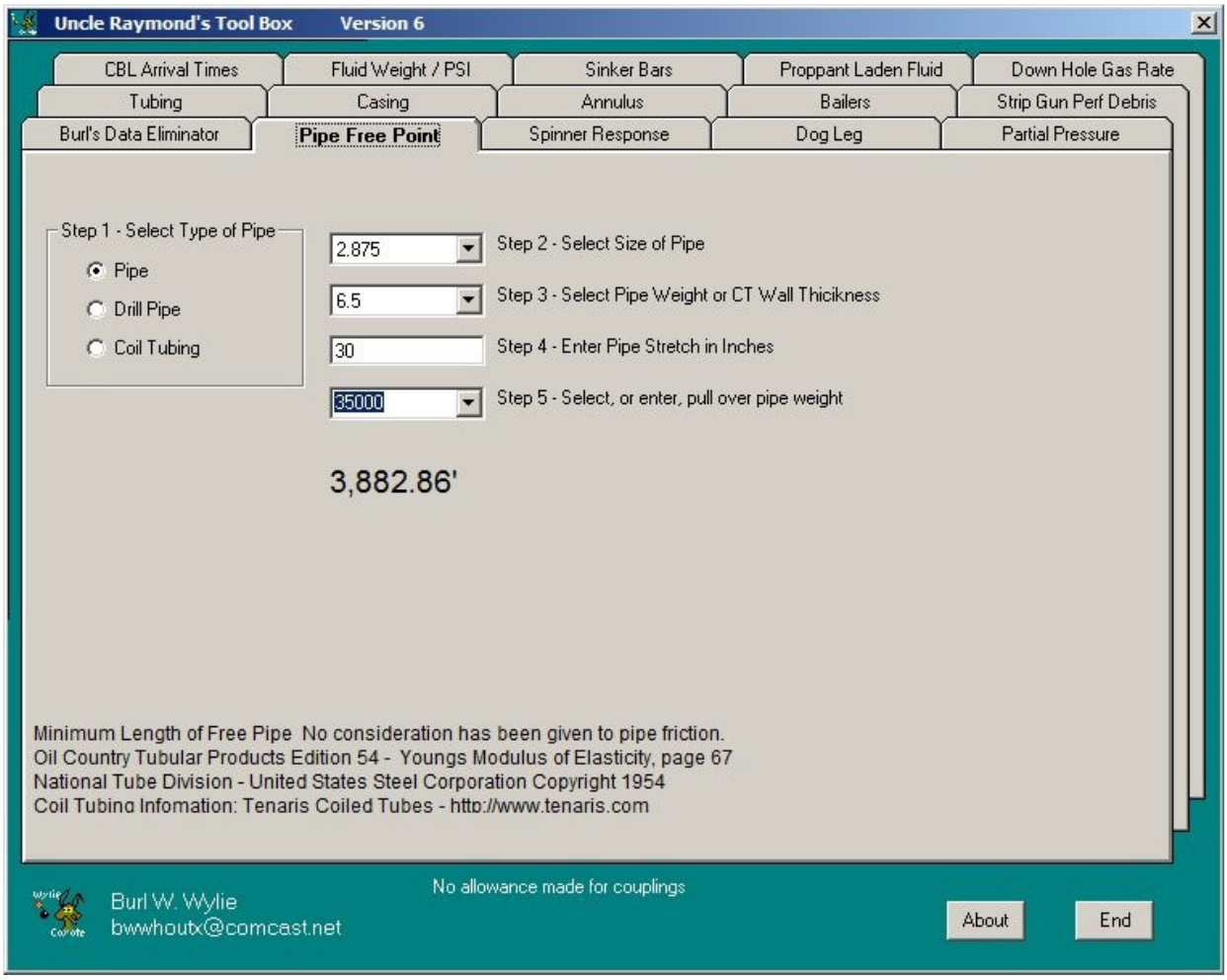
Step #3:

Click on the Run Button.

The program will open your original file on a "Read Only" basis. It will not change the contents of the original. The output file will have the original name with an "_r" followed by a number and "%".

Example: We've selected the file C:\Data\TestData.txt . The output file will be named C:\Data\TestData_r90%.txt and it will be reduced by 90 percent. You can change the output file name to anything you wish, **except the original file name**.

Pipe Free Point

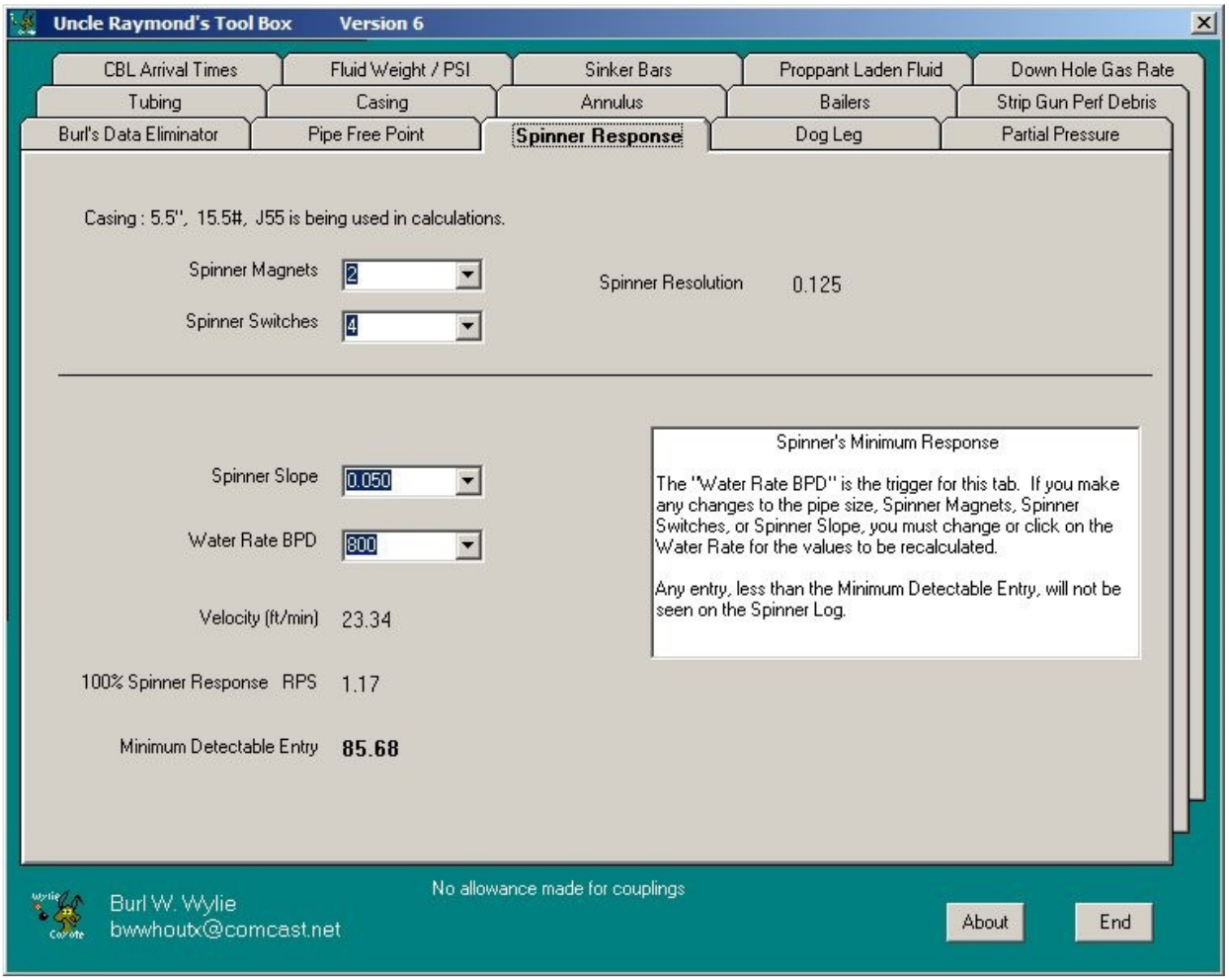


This program that will estimate the minimum amount of free pipe in the wellbore.

Step #1:
Select the type of pipe (Pipe / Drill Pipe / Coil Tubing).
Step #2:
Select the size of the pipe.
Step #3:
Select the pipe weight or coil tubing wall thickness.
Step #4:
Enter the pipe stretch in inches.
Step #5:
Select, or enter, the pull applied in excess of the pipe weight.

Information used for this program was obtained from “Oil Country Tubular Products Edition 54”, Youngs Modulus of Elasticity, page 67. National Tube Division - United States Steel Corporation Copyright 1954.

Spinner Response



This program that will calculate your spinner resolution and estimate the minimum, detectable entry for that spinner in water.

Step #1:

Select number of spinner magnets.

Step #2:

Select the number of spinner switches. The Spinner Resolution will be indicated

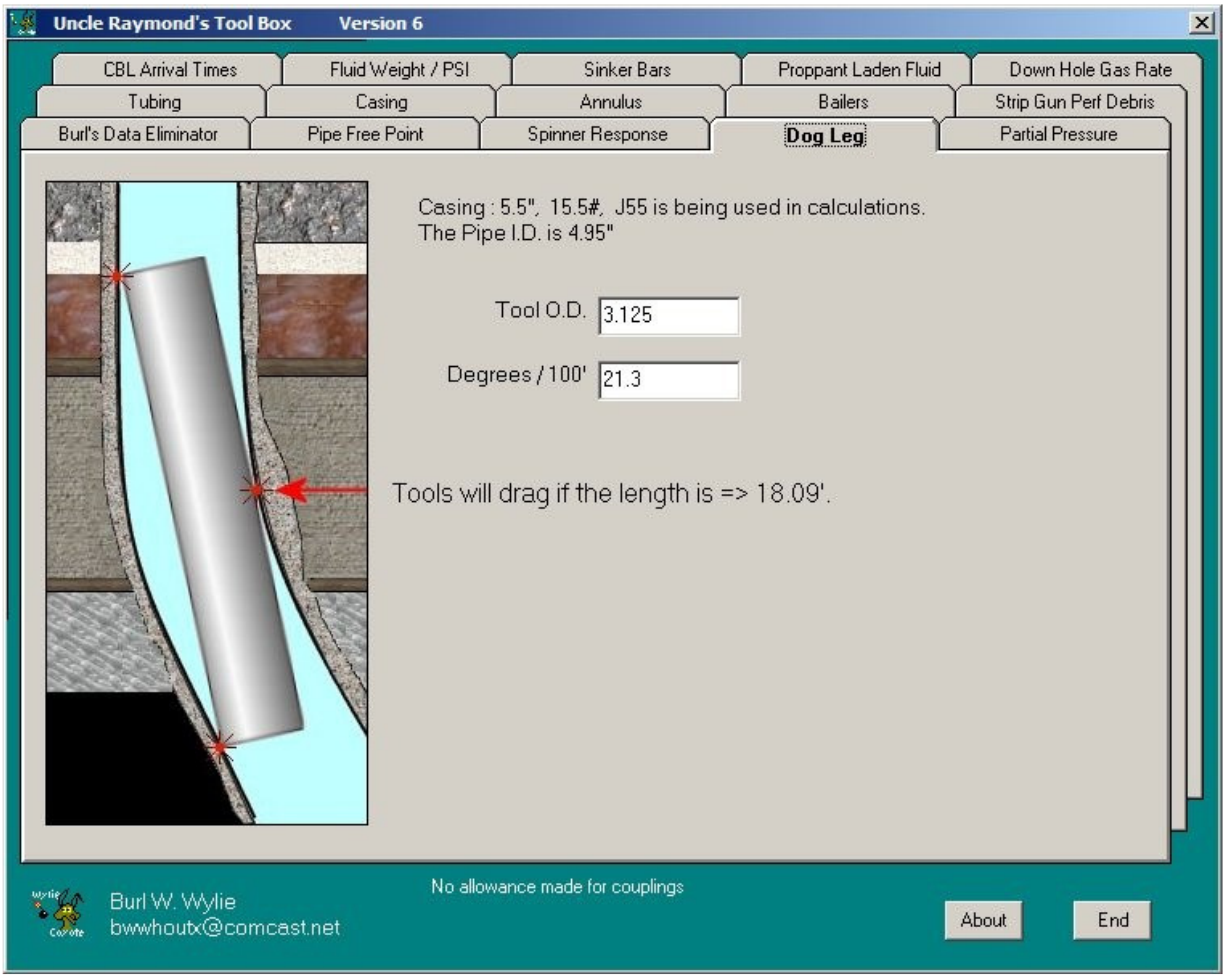
Step #3:

Select the Spinner Slope. 0.05 is the default and should not be changed unless you know what you are doing.

Step #4:

The water rate in BPD. The Velocity, 100 Percent Spinner Response, and Minimum Detectable Entry will be calculated. On this example, any fluid entries below 86 BPD will not be seen by the spinner.

Dog Leg



This program that will calculate the maximum length of a tool to pass through a dog leg in the well.

Step #1:

Enter the O.D. of the tool in inches. The Tool O.D. must be smaller than the Casing I.D.

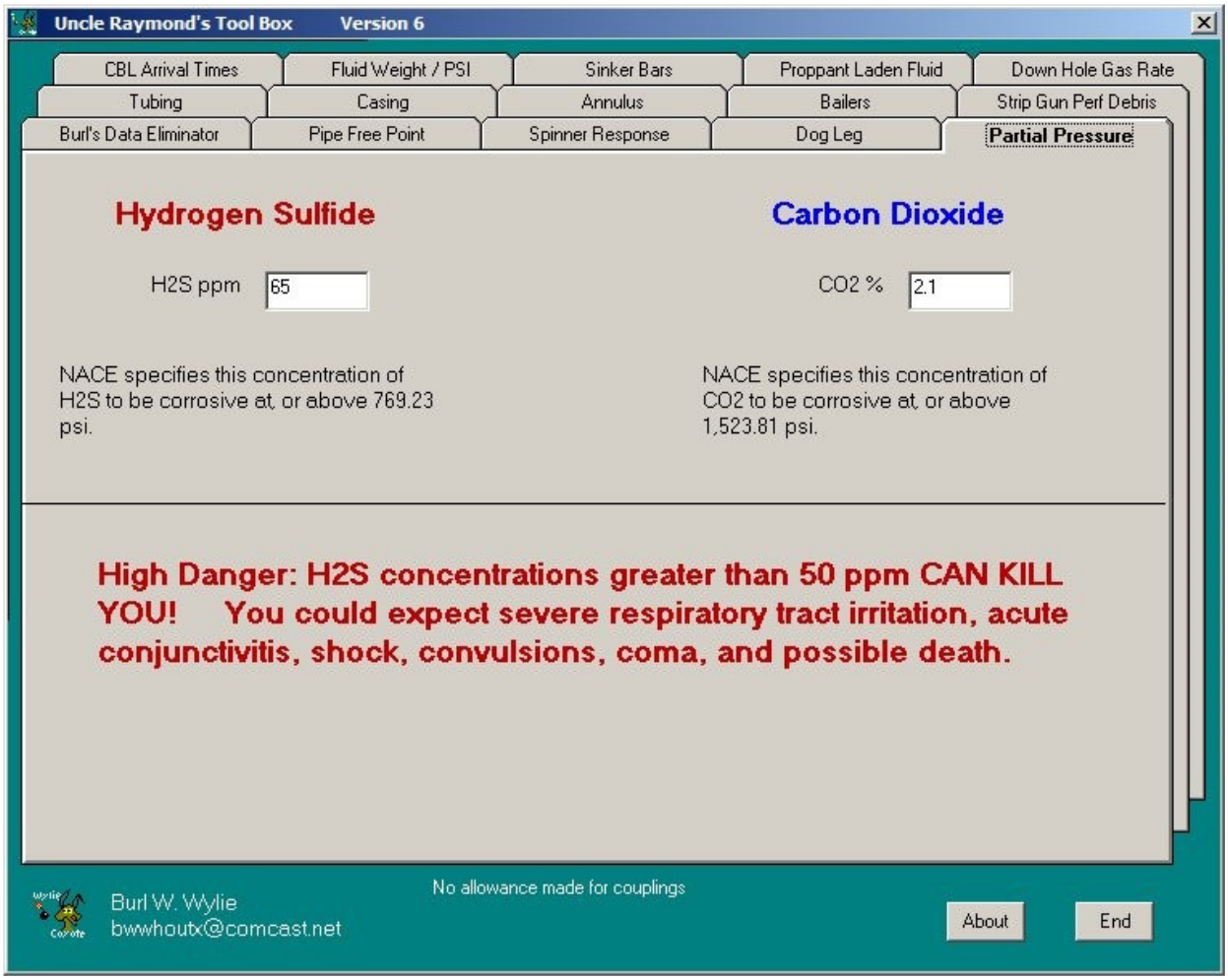
Step #2:

Enter the degrees change per 100' at the dog leg. The program will calculate the length of tool that will drag at mid point. Your tool must be shorter than the indicated length.

Example:

We have entered a tool O.D. of 3.125" and a dog leg with 21.3 degrees per 100'. Any tools 18' or longer will likely not make it through the dog leg.

Partial Pressures



This program that will calculate the pressure at which H2S and CO2 become corrosive according to NACE.

Step #1:

Enter the H2S concentration in ppm or CO2 concentration in percentage.

Results:

The pressure at which the substance is corrosive is indicated. In our example, 65 ppm H2S becomes corrosive at 770 psi. 2.1 percent CO2 becomes corrosive at about 1,524 psi.

WARNING:

H2S can KILL YOU. You don't "TRY" anything with high pressure, thermonuclear weapons, or hydrogen sulfide. Analyze and plan to mitigate the dangers. There are **NO SECOND CHANCES**!