Basic Steps to Track a Plunger.

1. Start TWM. Select **Acquire Mode**.

2. Select the serial number for both pressure transducers. Use **Create New…** if serial number is not found in the list. Make sure coefficients are entered as typed on transducer label. Enter **Gun Serial No.** at bottom (GG–compact gas gun or WG–remote fire gun).

3. Attach both pressure transducers as selected to special Y-cable. 1st start process of zeroing transducer by selecting **Obtain Zero Offset** button (Alt-3). 2nd once the reading displayed in **Present Zero Offset** has stabilized press **Update Zero Offset with Present Reading** button to record this value.

4. Open Base Well File for the well where data is to be acquired. Use **New…** to create a Base Well File if one does not exist. Be sure to enter at least: daily production rates, tubing & casing sizes, average joint length, tubing intake and formation depths.

5. Click on the "**F4**" **Select Test** and select the **Plunger Lift** Tab to initiate a plunger lift test. Use displayed info to check that both pressure transducers are correctly attached to the special labeled "Casing" and "Tubing" Y-cable. For high fall speed plungers increase the default 30 Hz sample rate to 120 Hz.

6. Tap "**F5**" button to prepare to **Acquire Data** for one or more plunger lift cycles. At this point incoming data is ONLY DISPLAYED on a graph. Before starting data acquisition; examine the real time display of Tubing, Casing and Acoustic data to quality check the data. (i.e. Casing pressure > Tubing pressure)

7. Begin data acquisition by clicking the **Start Acquiring** button. Real Time Data is displayed in Lower right-hand box. The Real Time Data is copied to the lower left-hand and upper graphs when the default **Delta Time Axis** time period elapses (Set at 60 seconds in step **5)**. Begin to collect data for at least one minute before opening or closing the motor valve. During acquisition switch back and forth between the graphical displays on the **Tubing, Casing and Acoustics** tabs. Note: Recording of the incoming data on the hard drive begins after clicking on the **Start Acquiring** button. Recording continues until the **Stop Acquiring** button is clicked.

8. During the Shut-in time period while the plunger is falling, monitor the graphics on the **Tubing**, **Casing** and **Acoustics** tabs. Count collar kicks/minute on the **Acoustic** tab to estimate a plunger fall rate. A plunger tends to slow down while falling to bottom, if there is a seal and liquid is in bottom of tubing. Reduce the initial fall velocity by 10 to 20 percent to estimate plunger target arrival time. (Estimate time for the plunger to reach fluid or bottom: If the initial fall velocity is approximately 7 jts/min, then use 6 jts/min with 296 joints in well [296/6] to estimate 49 minutes for plunger to reach bottom.)

9. At ANY TIME during acquisition the user may view all the data that has been recorded from the beginning of the test by selecting the **Raw Data** tab. **Raw Data** displays all three traces on one graph. Changing the value of **X-axis Range** will ZOOM into the graph and aid in identifying specific events taking place during the plunger lift cycle, such as the exact time when the motor valve opens or closes, plunger starts to fall or gets stuck in the tubing, plunger reaches liquid or bottom, etc.

10. Click **Annotate** button to identify many important events during the plunger lift cycle:
> 1. Click on the graph to position a marker and identify the time an event occurred.
> 2. Click Add button
> 3. Check the appropriate radio button from the Description list. If the specific event is not listed, then select Comment and type in your remark.
> 4. Click **OK** button, to accept annotation.

11. Click on the **Stop Acquiring** button to terminate recording of plunger lift data. A description of the recorded test data and test should be entered. Click the **Save** button to keep and store the acquired data. Acquire one or more cycles from valve open to next time valve opens or from valve close to close.

12. Finally, if a new Plunger test is to be undertaken, then the acquisition process should be closed by going to File Mgt. Tab and clicking the **Close** button. To Acquire another Plunger test, you must **Open** the Well File again to create an new session file from the File Mgt. Tab.

Please, refer to the Echometer Manual for a more detailed discussion of the analysis and calculated results.