LWD 1

Roll and Pulse Test for Directional Probes

Roll Test - What is it?

A roll test is a way of checking
the balance of the accelerometers.

The probe is tested in six orientations:
four horizontal and two vertical

Each orientation places an accelerometer at its maximum output, either positive or negative, while the other two are at their minimum outputs.

Roll Test - What is it?

0 deg Highside to max Gx -2.5

180 deg Highside to max Gx +2.5

90 deg Highside to max Gy +2.5
270 deg Highside to max Gy -2.5

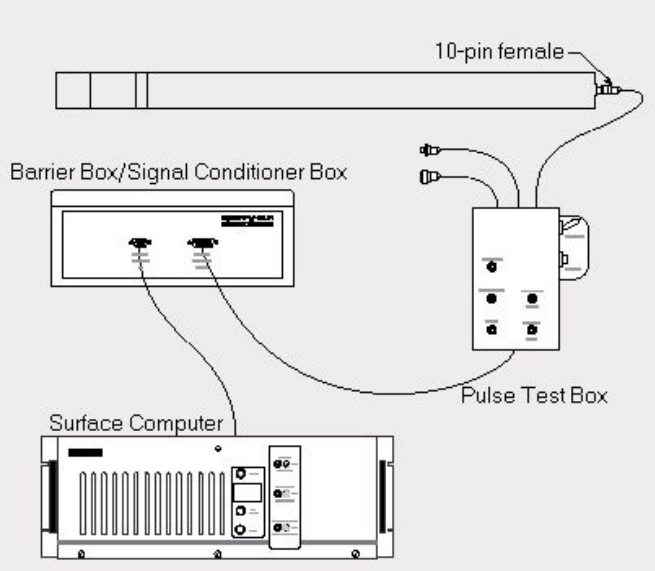
0 deg Inclination max Gz +2.5
180 deg Inclination max Gz -2.5

If a tool fails a roll test, it means the tool is out of calibration and should not be used.

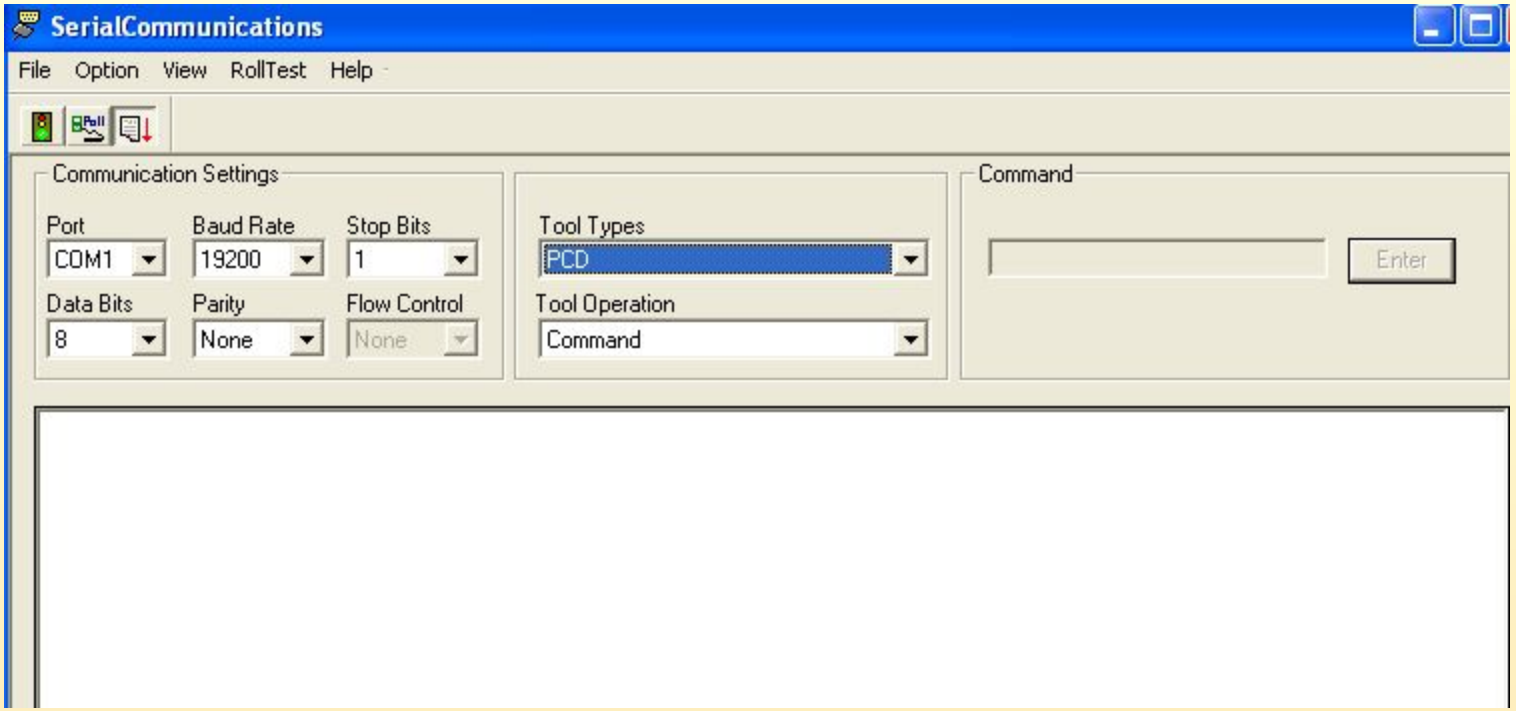
What equipment do you need?

1. The tool on which you are performing the Roll Test.
2. The serial number from the tool.
3. A computer on which INSITE is installed.
4. A text editor, such as Notepad to view and/or analyze roll test data, generated in a QA report.

How do you perform a Roll Test?



1. Connect the tool. See the graphic above, demonstrating how to connect the PCD tool.
2. Open the Serial Communications application in INSITE.

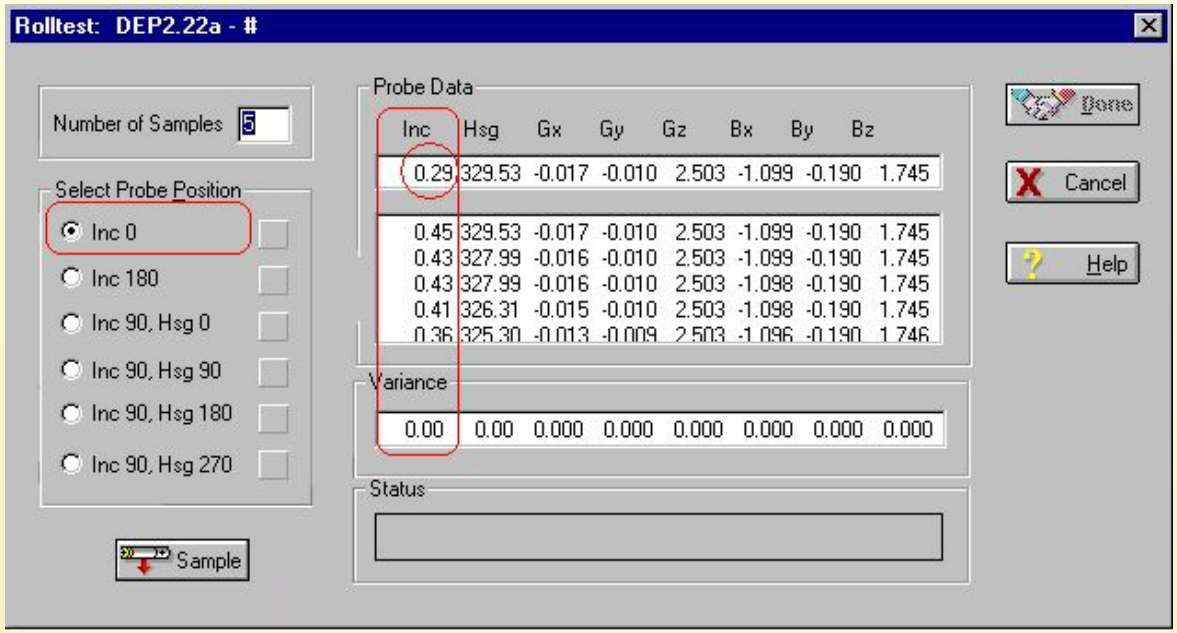


3. Select the correct tool in the Tool Types drop-down list. (The example above shows PCD as the selected tool.)
4. Verify that communication settings are accurate. (Serial Communications is set up to reflect the best options depending upon the tool you select.)

5. Click Start Communication  to begin communicating with the tool.

6. When the Roll Test dialog box opens, enter the serial number of the tool you are using.

7. The Number of Samples text box shows a default value reflecting the number of samples to be taken for each roll test. To change this number, type a new value in the text box.



8. Select the Inc 0 probe position (shown above) to perform the first roll test.
9. Position the tool based on the requirements of the probe position, rolling the tool to obtain the correct values.

Values must not vary by more than 0.3 of a degree for both inclination angle and highside gravity.

10. When the position of the probe is within 0.3 of a degree, click 

and view probe data in the display area of the Roll Test dialog box.
11. Repeat Steps 8-10 for each of the probe positions.
12. After all positions have been tested, click Done. Raw voltages are written to the database and a QA report is generated in *.txt format.

Note: A  displays beside the probe position when that portion of the roll test is complete.

Analyze Roll Test Data

1. Examine the ANALYSIS OF PROBE section of the report. All of the results from the SPREAD and G VALUES sections should be marked as OK.

   —Any results marked as *BAD* indicate that the probe has failed the roll test and should not be run downhole.

2. Only use the probe if the report has the remark *** PROBE Passed! ***. If ***PROBE Failed!*** is reported, do not use the probe.

View an example of a Roll Test QA Report, below:

--- DIRECTIONAL PROBE QUALITY ASSURANCE REPORT ---

Well Id :
Date :
Bitrun :
Probe Type : DEP2.22a
Comment :
Serial Number :

--- ANALYSIS OF PROBE ---

SPREAD: 0.0125v/0.005g maximum spread G VALUES 0.985 - 1.015 maximum range
Probe: 0.002v/0.001g OK +Gx/-Gx: 1.001g/1.000g OK
Gx: 0.002v/0.001g OK +Gy/-Gy: 1.001g/1.000g OK
Gy: 0.002v/0.001g OK +Gz/-Gz: 1.000g/1.001g OK
Gz: 0.001v/0.000g OK
Gtotal: 0.002v/0.001g OK

*** PROBE Passed! ***

Inclination 0 (+Gz) (5/ 5)						Inclination 180 (-Gz) (5/ 5)				
	Gzvolt	Gz	Hsg	Goxy	Gtotal	Gzvolt	Gz	Hsg	Goxy	Gtotal
Mean:	2.501	1.000	23.1	0.009	1.000	-2.502	-1.001	183.0	0.003	1.001
St Dev:	0.000	0.000	4.9	0.001	0.000	0.000	0.000	3.9	0.001	0.000
+1 Dev:	2.501	1.000	28.0	0.009	1.000	-2.502	-1.001	186.9	0.004	1.001
-1 Dev:	2.501	1.000	18.2	0.008	1.000	-2.502	-1.001	179.1	0.002	1.001
Maximum:	2.501	1.000	29.7	0.010	1.000	-2.502	-1.001	189.5	0.004	1.001
Minimum:	2.501	1.000	16.7	0.008	1.000	-2.502	-1.001	180.0	0.002	1.001
Mean1SD:	2.501	1.000	23.1	0.009	1.000	-2.502	-1.001	183.0	0.003	1.001
St. Dev:	0.000	0.000	4.9	0.001	0.000	0.000	0.000	3.9	0.001	0.000
Minimum:	2.501	1.000	16.7	0.008	1.000	-2.502	-1.001	180.0	0.002	1.001

Inclination 90/Hsg 180 (+Gx) (5/ 5)						Inclination 90/Hsg 0 (-Gx) (5/ 5)				
	Gxvolt	Gx	Hsg	Goxy	Gtotal	Gxvolt	Gx	Hsg	Goxy	Gtotal
Mean:	2.502	1.001	180.2	1.001	1.001	-2.500	-1.000	359.6	1.000	1.000
St Dev:	0.000	0.000	0.0	0.000	0.000	0.000	0.000	0.0	0.000	0.000
+1 Dev:	2.502	1.001	180.2	1.001	1.001	-2.500	-1.000	359.6	1.000	1.000
-1 Dev:	2.502	1.001	180.2	1.001	1.001	-2.500	-1.000	359.6	1.000	1.000
Maximum:	2.502	1.001	180.2	1.001	1.001	-2.500	-1.000	359.6	1.000	1.000
Minimum:	2.502	1.001	180.2	1.001	1.001	-2.500	-1.000	359.6	1.000	1.000
Mean1SD:	2.502	1.001	180.2	1.001	1.001	-2.500	-1.000	359.6	1.000	1.000
St. Dev:	0.000	0.000	0.0	0.000	0.000	0.000	0.000	0.0	0.000	0.000
Minimum:	2.502	1.001	180.2	1.001	1.001	-2.500	-1.000	359.6	1.000	1.000

Inclination 90/Hsg 90 (+Gy) (5/ 5)						Inclination 90/Hsg 270 (-Gy) (5/ 5)				
	Gyvolt	Gy	Hsg	Goxy	Gtotal	Gyvolt	Gy	Hsg	Goxy	Gtotal
Mean:	2.502	1.001	90.1	1.001	1.001	-2.500	-1.000	270.1	1.000	1.000
St Dev:	0.000	0.000	0.0	0.000	0.000	0.000	0.000	0.0	0.000	0.000
+1 Dev:	2.502	1.001	90.1	1.001	1.001	-2.500	-1.000	270.1	1.000	1.000
-1 Dev:	2.502	1.001	90.1	1.001	1.001	-2.500	-1.000	270.1	1.000	1.000
Maximum:	2.502	1.001	90.1	1.001	1.001	-2.500	-1.000	270.1	1.000	1.000
Minimum:	2.502	1.001	90.1	1.001	1.001	-2.500	-1.000	270.1	1.000	1.000
Mean1SD:	2.502	1.001	90.1	1.001	1.001	-2.500	-1.000	270.1	1.000	1.000
St. Dev:	0.000	0.000	0.0	0.000	0.000	0.000	0.000	0.0	0.000	0.000
Minimum:	2.502	1.001	90.1	1.001	1.001	-2.500	-1.000	270.1	1.000	1.000

Pulse Test - What is it?

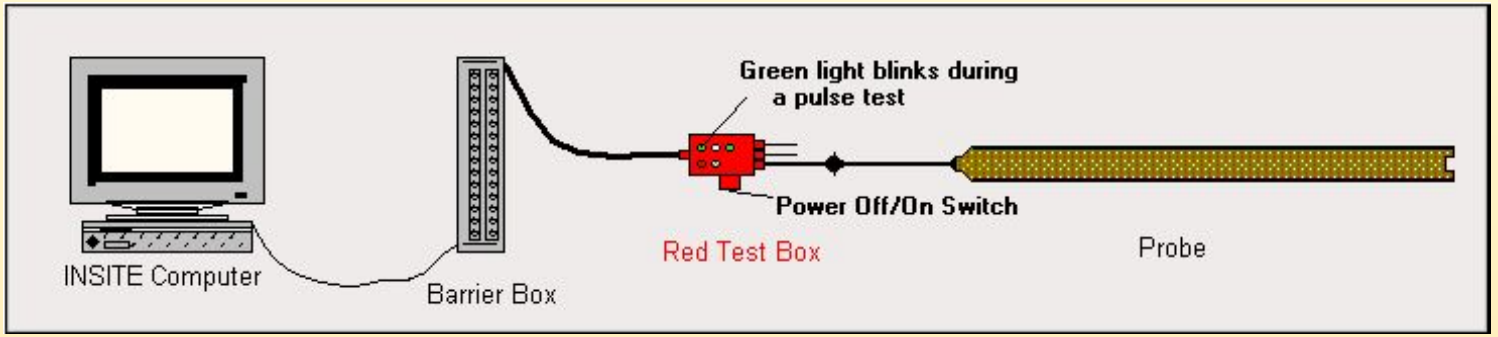
A Pulse Test (formerly known as a Probe Mode Test) shows that the circuitry that drives the pulser poppet extension is working properly.

A Pulse Test also checks the “logic” of the tool.

What equipment do you need?

1. The tool on which you are performing the Pulse Test.
2. A computer on which INSITE is installed.
3. A barrier box.
4. A red test box.

How do you perform a Pulse Test?



1. Connect the tool. See the graphic above, demonstrating how to connect the PCD tool.
2. Verify that the red test box is in the “Off” position.

3. Open the Serial Communications  application in INSITE.

4. Verify the Session Log is on (click Toolbar button  or select Option>Session Log).

This allows you to view the session log while performing the pulse test.

5. Open the Positive Pulse  application in INSITE.

3. Open the Serial Communications  application in INSITE.

4. Verify the Session Log is on (click Toolbar button  or select Option>Session Log).

This allows you to view the session log while performing the pulse test.

5. Initialize the probe

6. Open the Positive Pulse  application in INSITE.

7. Select Settings>Tool Type.

—Since this is a DWD job, select MEP15 from the drop-down list.

—Type a number to set the switch position for detection. The switch position should match the tool.

8. Select Settings>Detection Settings.

—Select TX3. **Important** TX3 must be selected to perform the pulse test.

—Verify that the psig value is set to 500. If it is not, type 500 and click Set to confirm the change.

—Select the data rate. The data rate should be the same as the data rate of the tool.

9. Select View>Waveform Display Settings.
   - —For the Top Trace, select Transducer 3.
   - —For the bottom Trace, select Transducer 3.

10. Turn the red test box to the “On” position and wait approximately 30 seconds for pulses to begin.

11. View Session Log messages to verify that detection is established and pulses are being decoded.

12. Use the red switch box (Power On/Power Off) to verify the tool is working properly and to view Session Log messages.

—Toggle data rates to verify the tool is working properly.

—Toggle list types to view Session Log messages and verify a list type change.