

2006



WHITL™ & KRONOS™

**In test automated Pass/Fail determination of
digital pressure tests**

WHITL™ Test System

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While conducting Well Head Integrity & general testing work scopes Intervention felt that compromises were always having to be made on equipment used in the measurement and recording of testing operations.

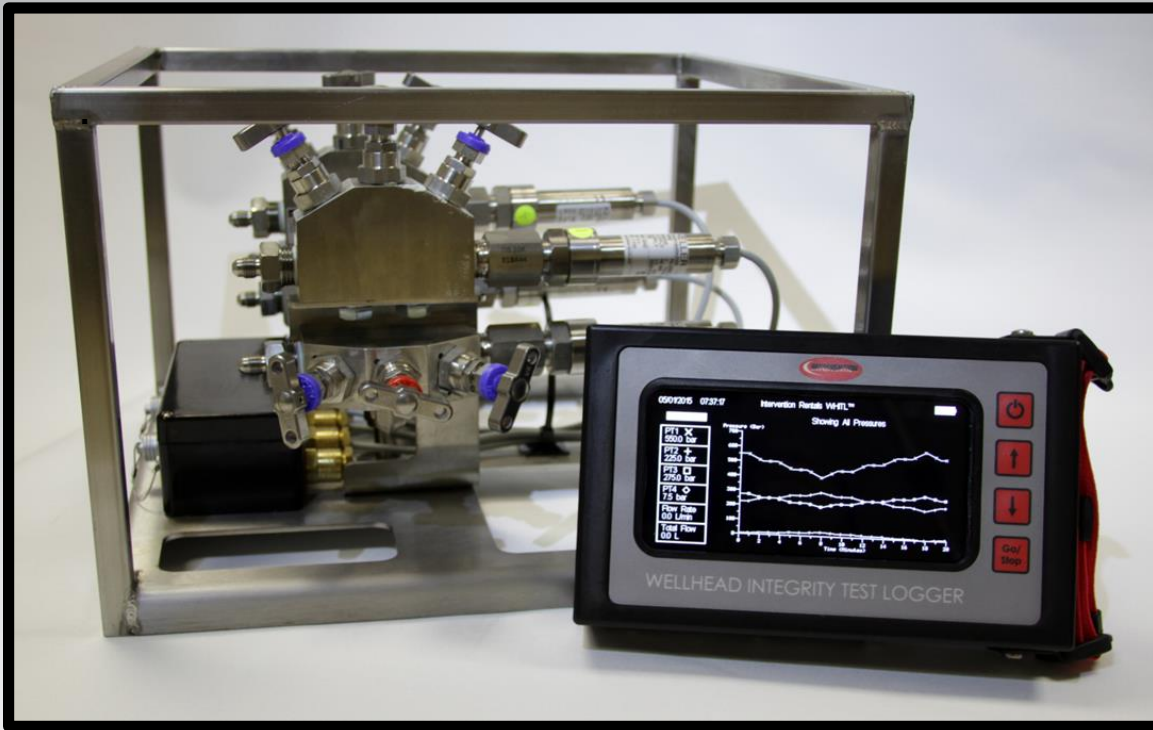
Requirements:-

- **Suit small test team with high degree of autonomy**
- **Need for immediate in test feedback in multiple formats**
- **Simple, clear & expedient data to report conversion**
- **Ease of import into Well Failure Models**
- **Preserve the integrity & traceability of test data**

WHITL™ Test Logger

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The solution was an Intrinsically Safe handheld ATEX Zone 0 test system to incorporate up to 4 channels with flow measurement capabilities.



- Up to 1000 Bar pressure.
- Flow meter input.
- ATEX/IECEX Zone 0
- Battery powered
- Lightweight & Portable
- Report generating software

Applications:- Pumping, Drilling, Completions, Well Head Maintenance, Leak Detection..

Kronos™

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Features:-

Basic Test:- pressure & flow rates are recorded and graphed.

Pumping Mode:- with customisable “damping factor” to smooth out pressure flow rate spikes created during pumping operations improving data clarity.

Automated test:- pass/fail determination for Positive pressure & PBU inflow tests c/w report generation.

Inflow Test:- pass/fail determination for PBU Inflow tests c/w report generation

The screenshot displays the 'KRONOS™ Configuration Tool' window. The title bar reads 'KRONOS™ Configuration Tool' with standard window controls. The menu bar includes 'File', 'Functions', and 'Help'. The main title is 'KRONOS™ Test Configuration'. On the left, a list of test configurations is shown, with 'Lkirk_A23_LMV' selected. Below this list are 'Add Test', 'Edit Test', and 'Delete Test' buttons. The right side of the window contains several input fields: 'Test Name' (Lkirk_A23_LMV), 'Customer' (IRL), 'Platform ID' (Lkirk), 'Well ID' (A23), 'Test ID' (LMV), and 'Test Type' (AUTO_PRESS). Below these are 'Trigger Pressure' (1000.00 PSI), 'Max Delta' (100.00 PSI), 'Max Build Up' (0.00 PSI), and 'Smoothing Bias*' (1 Sec). A note below the bias field reads '*Averaging factor of readings'. The 'Duration' is set to 0 Hours, 5 Minutes, and 0 Seconds. At the bottom of the configuration area are 'Save Test' and 'Cancel' buttons. Below the configuration area, a message states 'Add Test File Data and click Configure WHITL™ to continue.' At the very bottom, there are buttons for 'Configure WHITL™', 'Export', 'Import', 'Clear All', and 'Close'.

Kronos Test Configuration Tool

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Report Editor - Lkirk_B1_HYD (2)

Information Results

HYD	Start Time:	05:47:58	End Time:	05:52:58	Delta:	6.66900	PSI
KWV	Start Time:	05:39:30	End Time:	05:44:30	Delta:	4.36200	PSI
LMV	Start Time:	06:30:00	End Time:	06:35:00	Delta:	20.8489	PSI
UMV	Start Time:	05:58:22	End Time:	06:03:22	Delta:	4.03299	PSI

Details Variables Results

Start Pressure:	1183.575	End Pressure:	1176.906
Start Pressure:	1179.077	End Pressure:	1174.715
Start Pressure:	1114.398	End Pressure:	1093.549
Start Pressure:	1197.388	End Pressure:	1193.355

Show on Graph

HYD KWV LMV UMV Flow Rate

Graph Options
Zoom: X Axis Options Reset Graph

Total Flow: 0 ml ML

Test Description: (max 420 characters)
Pressure test of Well B1 Kill Wing Valve (KWV), Hydraulic Master Valve (HYD), Lower Master Valve (LMV) & Upper Master Valve (UMV)

Comments: (max 420 characters)
Lower master valve initially passing, adjusted valve position and achieved a successful test

Test Result:

Technician: A.N.Other

Sign Off: I confirm the above data is accurate

Generate Report Cancel

Kronos Report Generation Interface

Kronos™

Excel spreadsheet showing test results for WHITL™. The spreadsheet includes columns for test parameters and results, such as Test ID, Test Name, Start Time, End Time, Delta Press, Test Max Delta Press, Test Press, Test Type, and Result. The data shows four tests (HYD-1, KVV-1, LMV-1, UMY-1) all with a 'PASS' result.

Test ID	Test Name	Start Time / Press	End Time / Press	Delta Press	Test Max Delta Press	Test Press	Test Type	Result
HYD-1		05:47:58 / 700	05:52:57 / 700	0.57	700	1,000.00	AUTO_PRES6	PASS
KVV-1		05:39:30 / 700	05:44:29 / 700	4.98	700	1,000.00	AUTO_PRES6	PASS
LMV-1		08:35:00 / 700	08:34:56 / 700	33.85	700	1,000.00	AUTO_PRES6	PASS
UMY-1		05:58:02 / 700	06:03:21 / 700	4.03	700	1,000.00	AUTO_PRES6	PASS



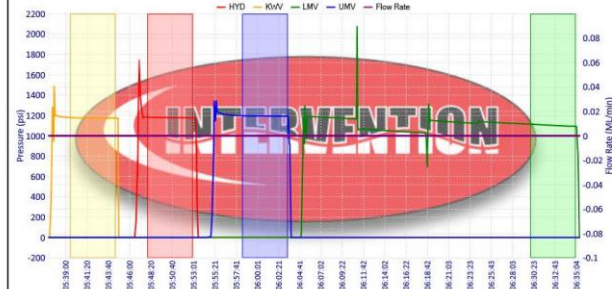
WHITL™ Report Summary

Lkirk_B1_HYD (2)

CUSTOMER	WHITL™ S/N	PLATFORM	WELL ID	TEST ID	REC START	REC END
IFL	206F-384E-3436	Lkirk	B1	HYD	24/04/2019 05:07:03	24/04/2019 08:35:27

Test Name	Start Time / Press	End Time / Press	Delta Press	Test Max Delta Press	Test Press	Test Type	Result
HYD-1	05:47:58 / 700	05:52:57 / 700	0.57	700	1,000.00	AUTO_PRES6	PASS
KVV-1	05:39:30 / 700	05:44:29 / 700	4.98	700	1,000.00	AUTO_PRES6	PASS
LMV-1	08:35:00 / 700	08:34:56 / 700	33.85	700	1,000.00	AUTO_PRES6	PASS
UMY-1	05:58:02 / 700	06:03:21 / 700	4.03	700	1,000.00	AUTO_PRES6	PASS

TEST DESCRIPTION



TEST COMMENTS

TEST RESULT	TOTAL FLOW	SIGN OFF
0	0 m³	
TECHNICIAN NAME	REPORT DATE	
	26/04/2019 08:21:04	

The information provided in this report is based on best industry practice and the judgement of our employees, but since all interpretation is based on inferences from electrical and other measurements, we cannot, and do not guarantee the correctness of any information. We shall not be liable or responsible for any loss, cost, damages, or expenses whatsoever incurred or sustained by the customer resulting from any interpretation made by any of our employees.



Kronos Protected pdf & Excel Report

Digitising & Optimising Testing

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The key objective of undertaking four tests simultaneously required that all of the test metrics be presented to the technician in a simple and clear format. These changes have reduced the time taken on selected campaigns by 40-50%.

The ability to transform raw data into easily distributed reports in less than 5 minutes allows test data to be in the hands of onshore engineering support within a few minutes of test completion.

- **Transparency & integrity of the test data is increased.**
- **Test technicians given clear pass/fail determination**
- **Reduction in number of false negative “failure” tests**
- **Downstream decisions applied based on accurate test results**

Conclusion



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- The increase in efficiency from conducting simultaneous tests, increased accuracy and definitive pass indication reduces operational time.
- The WHITL & Kronos will remove the need for the use of “rule of thumb” to determine whether a test is good or not at the test site.
- Secured output formats provide confidence that the data provided is an exact representation of the test.
- Digital formatting simplifies test report distribution and integration into operator integrity monitoring processes or WIMS systems.