



# Real-time Survey Data QC

*A novel Shell technique using real-time operation digital monitoring system*

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## Introduction

- Shell has developed and implemented a real-time survey quality control digital monitoring system in its well-site operations.
- Numerically computed tolerance curves for the quality control parameters (relative gravity field strength, magnetic field strength and dip angle) specific to the planned well survey program and wellbore trajectory are uploaded to the well site real-time monitoring system.
- These curves are used while drilling by the well site operations teams to accept or reject surveys streamed live from actual measured data.
- This quality control mechanism is a primary check besides the pre- and post-calibration data on the performance of the tool to ensure that the expected uncertainties in inclination and azimuth are met.

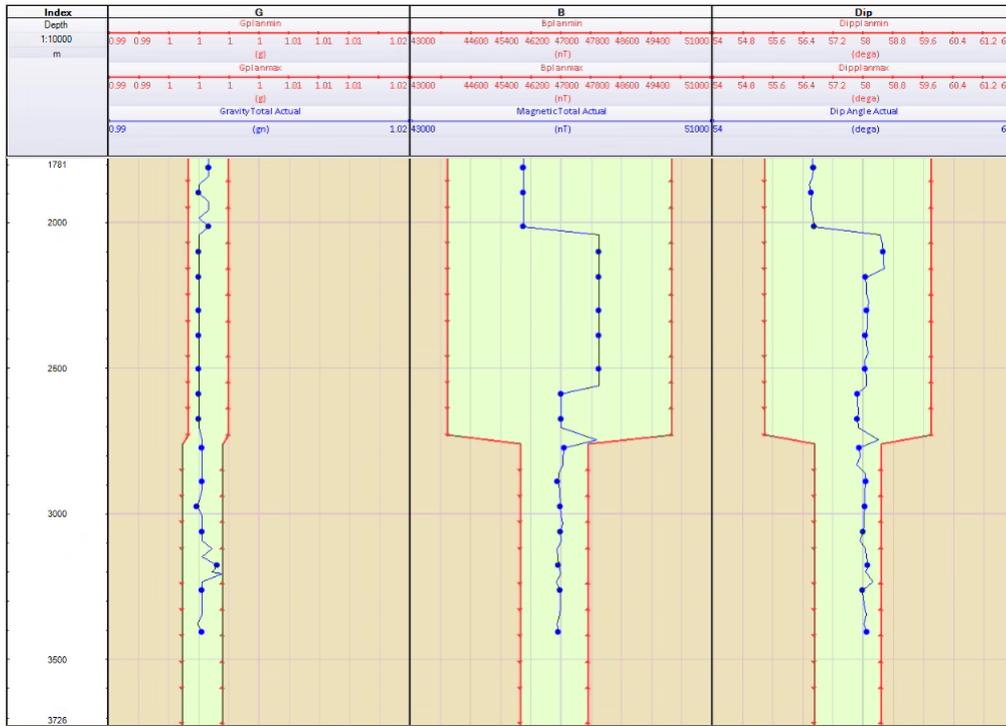


## Opportunity Drivers

- Control on Well Position Uncertainty.
- Avoiding Well Collision and geological Anti-targets.
- Eliminating waste of rig staff man-hours.

# What is Real-time Survey data QC?

An example from a well recently drilled by Shell in Europe, using WellVantage survey data QC.



Quality Control limit curves account for the following uncertainties:

- MWD sensors uncertainty (scale factor, bias).
- Earth Geomagnetic field uncertainty.
- BHA magnetic interference uncertainty.



## Wellbore Positioning Technical Section



The Industry Steering Committee on  
Wellbore Survey Accuracy (ISCWSA)

Office

Technical Bridging Document

Survey Focal Point

Prepare and upload survey data  
QC tolerances into  
WellVantage

Accept survey and store in  
PRODUCTION DATABASE

Survey Focal Point

# Real-Time Survey QC Work Flow

Well Site

WellVantage

DSV

QAQC Survey

Pass

Fail

Survey Focal Point

DSV

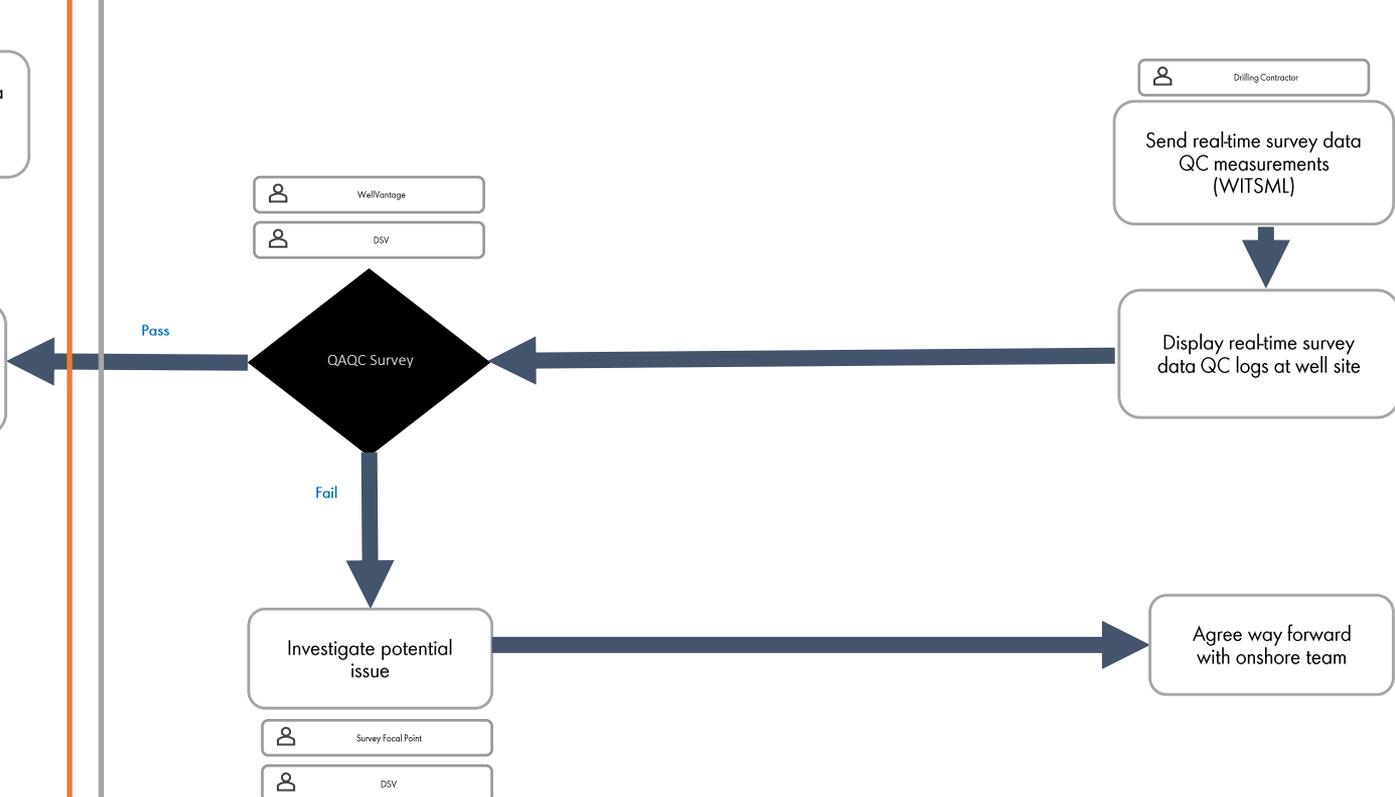
Drilling Contractor

Send real-time survey data  
QC measurements  
(WITSML)

Display real-time survey  
data QC logs at well site

Investigate potential  
issue

Agree way forward  
with onshore team





Thank you!

Questions?