

IADC Dull Code Upgrade Project BHA committee

02/09/2022



Outline

- Objective
- Charter
- Workgroup Structure
- Coding Structure
- Items to be resolved
- Polling Questions

Objective

Upgrade the IADC dull grading system to better support a workflow focused on root cause analysis. This section of the grading system shall focus on the classification of the BHA, motors, RSS tools, stabilizers, and other BHA elements.

Charter Statement

Create a Forensics Evaluation Workflow and Best Practices Document for BHA coding to be published within IADC and SPE.

Review / propose related codes and BHA elements with the current IADC system to ensure that are needed, unique and current.

Supplement and improve the Dull grade coding to include case study and photo examples for human training.

Develop and execute field test program to ensure that coding system is effective and appropriate.

Workgroup Structure

Motors

PDM
Turbine

Rotary
Steerables

Push
Point

Data
Acquisition

MWD
LWD
Dynamic
Subs

Performance
Enhancing

Friction
reduction
Vibration
Mitigation
Reamers
Jars

Iron

Stabs
Collars
Subs

High Level Structure

Phase 1

- Level 1 - BHA Level
 - High level for an overview of the BHA
 - Flags if there is an issue with a component
- Level 2 - Tool Field reporting
 - Detailed level for each component
 - Gives the end user an overview of the condition of that tool

Phase 2 – Future Phase

- Level 3 - Post Run analysis
 - Root cause analysis and reporting structure
 - Standardize reporting and classification for investigations

Level 2 – Field Coding – Motor Example

TOP SUB			POWER SECTION			TRANSMISSION			BEARING			STABILIZATION			Field Observations
Top Sub			Stator Tube			Transmission Housing			Bearing Housing			Stabilizer Body			
F/D	L	WS	F/D	L	WS	F/D	L	WS	F/D	L	WS	F/D	L	WS	
						Kickpad			Bit Box			Stabilizer Blades			
						F/D	L	WS	F/D	L	WS	F/D	L	WS	

Failure/Damage Codes (F/D)

No Damage - N
 Back-off – BO
 Washout – WO
 Cracks – C
 Belled Connection – BC
 Fracture – F
 Wear - W

Location (L)

Not Applicable - N
 Upper Connection - U
 Lower Connection - L
 Body - B

Wear Severity (WS)

No Wear – N
 Low – 1
 Medium – 2
 High - 3

Field Observations

Non-draining Power Section - ND
 Free rotating Bit Box - FB
 Locked up Bit Box - LB
 Stalling - SG
 Directional Control - DC
 Power Loss - PL
 Chunking - CH
 Excessive Bearing Play - EB

Primary Failure/Damages: Back-off, Washout, Fracture, Cracks

Secondary Failure/Damages: Belled Connection

Level 2 – Field Coding – Motor Example

TOP SUB			POWER SECTION			TRANSMISSION			BEARING			STABILIZATION			Field Observations
Top Sub			Stator Tube			Transmission Housing			Bearing Housing			Stabilizer Body			PL
F/D	L	WS	F/D	L	WS	F/D	L	WS	F/D	L	WS	F/D	L	WS	SG
			BO	L	3										
						Kickpad			Bit Box			Stabilizer Blades			
			F/D	L	WS	F/D	L	WS	F/D	L	WS	F/D	L	WS	
			C	B	3										

Failure/Damage Codes (F/D)

No Damage - N
 Back-off - BO
 Washout - WO
 Cracks - C
 Belled Connection - BC
 Fracture - F
 Wear - W

Location (L)

Not Applicable - N
 Upper Connection - U
 Lower Connection - L
 Body - B

Wear Severity (WS)

No Wear - N
 Low - 1
 Medium - 2
 High - 3

Field Observations

Non-draining Power Section - ND
 Free rotating Bit Box - FB
 Locked up Bit Box - LB
 Stalling - SG
 Directional Control - DC
 Power Loss - PL
 Chunking - CH
 Excessive Bearing Play - EB



Reasons Pulled

Current	Suggested
BHA-Change Bottom Hole Assembly	Operating Parameters
DMF-Downhole Motor Failure	Differential Pressure (High-Low)
DSF-Downhole String Failure	Hole Drag (High-Increasing)
DST-Drill Stem Test	Pump Pressure (High-Low)
LOG-Run Logs	ROP (Low-Excessive/Drilling Break)
LIH-Left in Hole	RPM Variations / Stick Slip
RIG-Rig Repair	String Vibrations (Lateral-Axial)
CM-MUD Conditioning	Torque (High-Low-Variation)
CP-Core Point	WOB Transfer
DP-Drill Plug	Operating Procedure
FM-Formation Change	Bit Hrs
HP-Hole Problems	Coring
HR-Hrs on Bit	Directional Control-Motor/RSS/BHA Yield
PP-Pump Pressure	Logs
PR-Penetration Rate	Lost in Hole / Fishing
TD-Total Depth / Casing Depth	Motor Hrs
TQ-Torque	MWD / LWD / RSS Hrs (Battery)
TW-Twist Off	MWD / LWD / RSS Communication
WC-Weather Condition	MWD / LWD / RSS Data Integrity
	Planned BHA change
	Section TD
	Testing
	Tool Face Control - Motor/RSS/MWD/LWD
	Well Collision
	Environment
	Formation Change
	Mud Conditioning
	Rig Repair
	Rubber in Cuttings
	Weather Condition

Recap

- Established all the teams for the 5 BHA groups
- Focus on the Level 1 and Level 2 reporting
- Have established ~13 new Reasons Pulled categories
- Have established ~46 codes thus far between all the groups

Items to be Resolved

- Finalize the field coding system for all workgroups
- Continue to collect examples for the Case Studies group
- Develop digital interface and data archiving system with the Data Storage and Retrieval team
- Work with the Bit Team to finalize a cohesive coding system
- Develop and execute field testing plan
- Update the coding system to incorporate findings from field testing
- Complete documentation and launch

Questions