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 1 - BHA

- 1	MELLEND ACTOR (At end of		rmea		BIT	пссоло		MUD RECORD						
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BHA Component		Specs			Dull Grading	
	Serial	OD	L	Category	Main	Loc
Bit				ок		
MWD				ок		
PDM				RI	во	Power Section
RSS				ОК		
Formation Evaluation				ОК		
Perf. Enhancement				N		
DC/HWDP				ОК		
Stabilizer				N		
DP Stands						
DP singles						
String Weight						
String Length						
Reason Pulled						
BHA Performance	Depth In:	Distance:	Hrs:	Remarks:		

Categories

- N Not Used
- OK No problem found
- RI Requires Investigation
- For bit Rerunnable
 - . Y
 - . N

Main Codes

No Damage - N/A

Back-off - BO

Washout - WO

Cracks - C

Belled Connection - BC

Fracture - F

Other - O

Location

Power Section

Kick Pad

Bearing

Stabilizer

Connection T/B

Mandrel

Body

Other



Level 2 – Field Coding – Motor Example

	TOP SUB		POWER SECTION			TRANSMISSION BEARING					STA	ABILIZAT	ION	Field Observations	
	Top Sub		Stator Tube		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		Stal	bilizer Bla	ades	
						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

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

Location (L)

Body - B

Not Applicable - N

Upper Connection - U

Lower Connection - L

Secondary Failure/Damages: Belled Connection

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



Level 2 – Field Coding – Motor Example

	TOP SUB		POV	VER SEC	TION	TR	ANSMISS	ION	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
			ВО	L	3										
							Kickpad			Bit Box		Stal	bilizer Bla	ades	
						F/D	L	ws	F/D	L	ws	F/D	L	ws	
						С	В	3							

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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