



DIGITAL ROADMAPSM TECHNOLOGY

AUTOMATICALLY UPLOAD AND EXECUTE ON THE DRILLING ROADMAP

The workflow around drilling roadmaps that exists today is a manual process that lacks real-time communication amongst relevant stakeholders. H&P's Digital RoadmapSM technology allows users to view and change the roadmap remotely and enables the automatic execution of that roadmap. By enabling the automatic execution of these parameters, which are based on geologic formation and depth, Digital Roadmap technology helps reduce the time needed for manual inputs and decreases the potential for inaccuracies.

- › Increase Visibility
- › External Control/Remote Empowerment
- › Automatic Execution

CONSISTENT, REPEATABLE RESULTS ENHANCE BHA INTEGRITY

Today, drillers are responsible for changing and executing roadmap parameters at the right time or they face a number of risks – one being damage to BHA tools. Digital Roadmap takes the drilling roadmap concept and automates the process through a digital platform. H&P can now take specific drilling roadmaps ahead of each well and enter it into Digital Roadmap, which will then execute that roadmap in an automated fashion. This means that when a roadmap calls for a specific reduction in RPM and weight on bit (WOB), the rig will automatically reduce drilling parameters through critical formations and transition zones.

INTEGRATED SOLUTIONS DELIVER BETTER DRILLING OUTCOMES

Digital Roadmap Technology's unique ability to integrate a variety of data-driven, autonomous solutions help remove human variability and deliver better overall drilling outcomes. When combined with other H&P failure prevention technologies like FlexB2D[®] 2.0, FlexTorque[®], and Autodriller Pro, this suite of solutions combat multiple causes of BHA damage.

Autodriller Pro Control System

- Our advanced drawworks control system smoothly controls block velocity, while regulating inputs from differential pressure, torque, and/or WOB in order to maintain smooth block velocity to improve consistent bit/rock engagement.

FlexB2D[®] Technology

- Consistently and efficiently engage the bit back to bottom to decrease drilling dysfunction and reduce bit and BHA damage.

FlexTorque[®] Technology

- Our technology actively responds to torque fluctuations by adjusting top drive RPM to mitigate stick slip.

Automation Sequencer

- Sequenced collaboration between our advanced drilling technologies allows for more robust solutions without manual changes.

INCREASE CONSISTENCY. REDUCE INACCURACIES. DRIVE CONSISTENT AND REPEATABLE RESULTS.

HP Digital Roadmap Blackboard Well 13H H&P 900 Select Other Well Teslyrre DeSouza

DRILLINGHEAD FLEXB2D FLEXTORQUE 2,065.00 15,395.40 Edit

#	Formation Tops	TVD (ft)	MD (ft)	Enabled	ADSP ROP (ft/hr)	ADSP WOB (k lbs)	ADSP Torque (k ft-lbs)	ADSP Delta P (psi)	Top Drive Speed (rpm)	Top Drive Torque (k ft-lbs)	Actions
1	Surface	0	0	<input type="checkbox"/>	700	55	20	1,500	70	26	
2	Top Hole	3,300	3,300	<input type="checkbox"/>	600	35	16	1,300	70	22	
3	Titus	4,154	4,160	<input checked="" type="checkbox"/>	600	35	16	1,250	70	22	
4	Pluto Transition	5,766	5,800	<input checked="" type="checkbox"/>	200	20	12	700	45	18	
5	Pluto	5,966	6,038	<input checked="" type="checkbox"/>	100	20	12	700	45	18	
6	Spindle	7,955	8,052	<input checked="" type="checkbox"/>	225	30	16	950	65	22	
7	Sylvester	9,132	9,240	<input checked="" type="checkbox"/>	225	35	16	950	65	22	
8	Curve rotating	10,900	11,050	<input checked="" type="checkbox"/>	180	40	16	950	65	30	
9	Lateral first mile	11,380	12,050	<input checked="" type="checkbox"/>	180	45	18	1,110	70	30	
10	Lateral second mile	11,380	17,330	<input checked="" type="checkbox"/>	160	45	21	1,112	70	30	

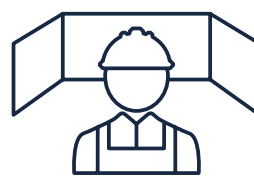
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DRILLING ENGINEER



GEOLOGIST



DRILLER



COMPANY MAN

Users can operate Digital Roadmap technology from any location, empowering remote operations for both Operators and H&P. Real-time updates for a variety of operational stakeholders helps to keep everyone involved in the drilling operation closely aligned.

CONTACT US

For more information on how our Digital Roadmap technology can help you achieve better drilling outcomes, contact an H&P sales representative today or contact us through our website at helmerichpayne.com/contact.

It's time to follow through on your drilling performance potential.