

Case study:

Caso de éxito:

HWDP 4" OD Abrasive cut.

*Corte abrasivo
de HWDP 4" OD.*

PROSHALE

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Location / Locación:

Ocelote

Surface Equipment / Equipo:

Coiled Tubing 1.5" OD

Heavy Weight OD /

4" OD (2.563" ID) WT: 0.71"

Well Type / Pozo tipo:

Directional / Desviado

Fluid System / Fluido:

Abrasive Slurry 1 ppg #100 Mesh

Job Type / Tipo de operación:

Abrasive Cut/ Corte Abrasivo

Download Tools / Herramientas utilizadas:

1,70" BHA w/ sealed bearing motor and 1,85" OD

cutting head with 2 nozzles at 180 deg/ BHA con motor

1.70" OD y cabezal de corte 1.85" OD

Field results:

One of our main clients in Colombia, contacted us to get a technical proposal for cutting a 4" HWDP on a stuck drill string. At the moment we were contacted, the client was considering abandoning the well as they were unable to find a solution.

After defining the free-point on the drill string, our client asked us to sever a 4" HWDP with a wall thickness of 0.71".

Wireline and slackline conveyed cutting methods capable of cutting thru a large wall thickness usually need further runs to dress the fishing point with a mill or wash pipe.

Our technical proposal was based on a BHA including a 1.7" sealed bearing motor and a 1.85" cutting head with two nozzles at 180-degree phasing.

Resultado real:

Unos de nuestros principales clientes en Colombia nos presentó un serio problema de aprisionamiento de la sarta de perforación. Luego de muchos intentos por liberarla, el cliente estaba contemplando la idea de abandonar el pozo debido a que no encontraban en el país una opción de corte para ese espesor de pared: se presentó la alternativa de hacer un corte abrasivo.

Una vez realizadas las maniobras para determinar el punto libre, se determinó que el corte se debía realizar en una HWDP, OD 4" con espesor de pared 0.71".

Los métodos de corte que se corren con wireline o slickline no tienen la capacidad de cortar espesores de pared significativos sin dejar un punto de pesca abocardado o aflorado. Esta condición obliga a realizar posteriores maniobras de rectificado del punto de pesca con motor de fondo y molino.

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STRING SARTA	DESCRIPTION DESCRIPCIÓN	CONNECTION CONEXION	CIA	SERIAL
(2) HW DP 4"	3 1/2" IF BOX 3 1/2" IF PIN	PETROWORKS	"	
X-OVER 5	3 1/2" IF BOX 4 1/2" IF PIN	PETROWORKS	TNU19-069	
6 1/2" DRILLING JAR	4 1/2" IF BOX 4 1/2" IF PIN	WEATHERFORD	14161420	
X-OVER 4	4 1/2" IF BOX 3 1/2" IF PIN	PETROWORKS	14305452	
(16) HW DP 4"	3 1/2" IF BOX 3 1/2" IF PIN	PETROWORKS	"	
(38) DP 4"	3 1/2" IF BOX 3 1/2" IF PIN	PETROWORKS	"	
(2) HW DP 4"	3 1/2" IF BOX 3 1/2" IF PIN	PETROWORKS	"	
X-OVER 3	3 1/2" IF BOX 4 1/2" IF PIN	PETROWORKS	"	
6 1/2" NHD DRILLING JAR	4 1/2" IF BOX 4 1/2" IF PIN	WEATHERFORD	WC-02975790	
X-OVER 2	4 1/2" IF BOX 3 1/2" IF PIN	PETROWORKS	NNI	
(8) HW DP 4"	3 1/2" IF BOX 3 1/2" IF PIN	PETROWORKS	"	
X-OVER 1	3 1/2" IF BOX NC59 PIN	PETROWORKS	14305415	
NMOC	4 1/2" IF BOX 4 1/2" IF PIN	Schlumberger	AIVS875-30-7611	
UPPER SAVER SUB	4 1/2" IF BOX 5 1/2" FH PIN	Schlumberger	OIT41122	
6 3/4" TELESCOPE	5 1/2" FH PIN 5 1/2" FH PIN	Schlumberger	5025	
LOWER SAVER SUB	5 1/2" FH BOX 5 1/2" FH PIN	Schlumberger	AJT7755	
8 3/8" IN LINE STABILIZER	5 1/2" FH BOX 5 1/2" FH PIN	Schlumberger	00058	
UPPER SAVER SUB	5 1/2" FH BOX 5 1/2" FH BOX	Schlumberger	688331	
PERISCOPE 875	5 1/2" FH BOX 5 1/2" FH BOX	Schlumberger	9175	
LOWER SAVER SUB	5 1/2" FH PIN 5 1/2" FH PIN	Schlumberger	AK05854	
SHORT HOP - SLICK	5 1/2" FH BOX 4 1/2" IF PIN	Schlumberger	71251	
POWER DRIVE ARCHER 875 8 3/8" Stabilizers	4 1/2" IF BOX 4 1/2" REG BOX	Schlumberger	CC42811	
BROCA 8 1/2", Tipo: M619LHBPX0 Boquillas: 7x10 TFA.: 0.537	4 1/2" REG PIN	Schlumberger Smith	JJB722	

Stuck drill string/ Drill String con HWDP a cortar.

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Tool OD (in.)	Tool ID (in.)	Tool Diagram	Length (ft.)	Description	Connection (Make-Up Torque)	Drop Ball	Part #/Asset #
1.50	0.65		0.42	Anti-Rotation Roll-On Connector f/ 1.50" - 0.125" WT	1" AM MT Pin Dn (350 Ft/Lbs)		AROC150-700
1.70	0.69		1.29	Dual Back Pressure Valve	1" AM MT Box Up (350 Ft/Lbs) x 1" AM MT Pin Dn (350 Ft/Lbs)		MHA170-011-06
1.70	0.45		1.43	Hydraulic Disconnect	1" AM MT Box Up (350 Ft/Lbs) x 1" AM MT Pin Dn (350 Ft/Lbs)	1/2" (.500)	MHA170-011-05
1.70			11.26	Titan Motor w/ Conventional Power Section	1" AM MT Box Up (350 Ft/Lbs) x 1" AM MT Box Dn (350 Ft/Lbs)		MTR169-426
1.85			0.75	Nitro Tuff Cutter	1" AM MT Pin Up (350 Ft/Lbs)		
Overall Length: 15.15				BHA Prepared By: Nestor Mesa	Date: 4/19/19		

Our proposal was based on a 1.70" OD BHA with a sealed bearing downhole motor and a 1.85" OD cutting head with 2 nozzles at 180 deg. phasing.

Nuestra propuesta estaba basada en un BHA con motor de fondo 1.70" OD con cabezal de corte 1.85" OD con dos nozzles @ 180 deg. phasing.

Before rigging up the coiled tubing unit on the drilling rig, we asked the client to leave the drill string with 50.000 lbs over the weight.

On said condition, we then ran the cutting BHA thru the ID of the stuck string, until reaching the desired depth. After pumping a volume of freshwater to gain steady conditions, we pumped 150 barrels of abrasive slurry at 1 BPM thru the motor and the cutting head.

The fluid exiting thru the nozzles phased at 180 degrees, creates a cutting plane that steadily erodes the wall of the HWDP until it completely severs the tubular.

After pumping the pre-determined volume of abrasive slurry, a sudden drop in pumping pressure was registered at the surface, an indication that the cut was successful.

The client then rigged down the coiled tubing unit and worked the drill string until it was recovered.

Previo al montaje de la unidad de coiled tubing sobre el equipo de torre, se procedió a dejar la sarta en tensión con 50,000 lb sobre el peso.

La operación consistía en correr el BHA por dentro de la sarta hasta la profundidad de corte, para luego bombeo 150 barriles a 1 bpm de slurry abrasivo a través del motor y el cabezal de corte. El motor de fondo provee rotación al cabezal: genera un plano de corte transversal al tubular.

Luego de bombear el volumen programado, se pudo ver una disminución en la presión de bombeo, indicando un corte del HWDP. Se procedió luego a desmontar el equipo de coiled tubing, y trabajar la sarta de perforación con equipo de torre hasta recuperar la sarta, lo que confirmó el corte total del tubular.

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HWDP recovered at surface, showing a clean cut preserving the OD of the string.

HWDP recuperada en superficie luego del corte exitoso.

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