



7° CONGRESO IAPI
**Producción
y Desarrollo
de Reservas**

5 – 8 de Noviembre 2019
Mar del Plata, Argentina



DST/TCP OPERATIONS CAN BE DESIGNED TO REDUCE NEAR-WELLBORE DAMAGE



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- En GeoPark nos dedicamos a la exploración, operación y consolidación de petróleo y gas.
- Nuestra apuesta está centrada en Latinoamérica. Ecuador es el último país que se sumó a nuestro portafolio de activos.
- Desde el 2014, cotizamos en la Bolsa de Valores de Nueva York, lo que nos exige los más altos estándares de gobierno corporativo y sustentabilidad.



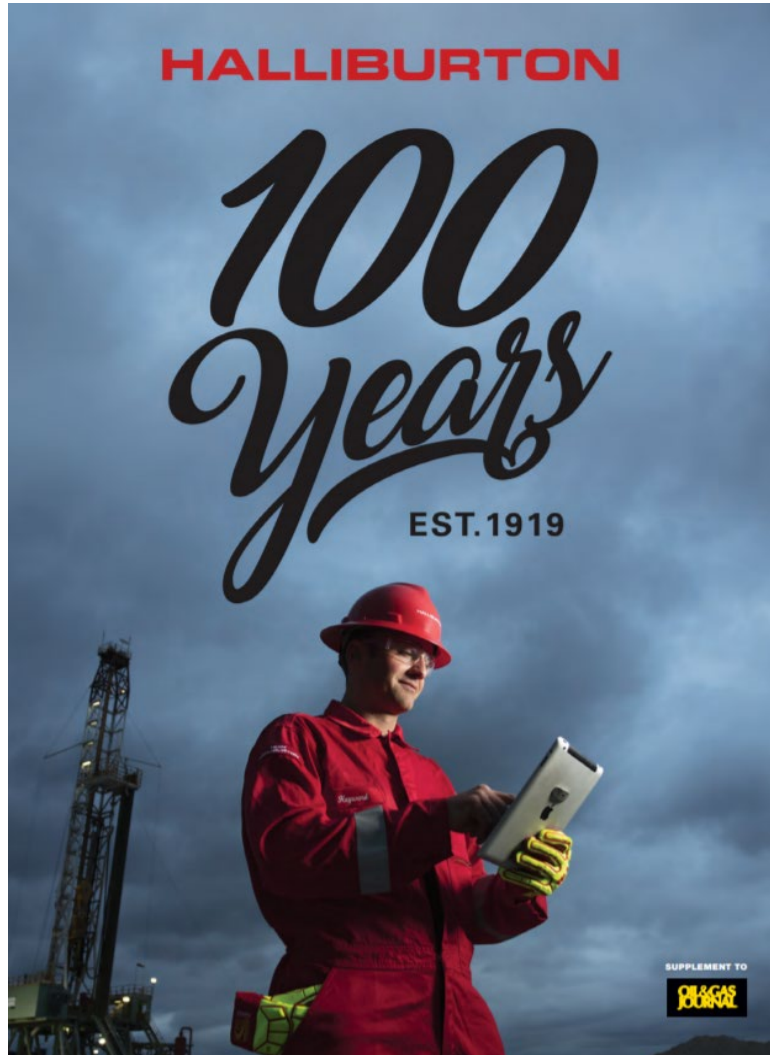
6
países

10
cuencas

34
bloques

6+mm
acres

75k
boepd



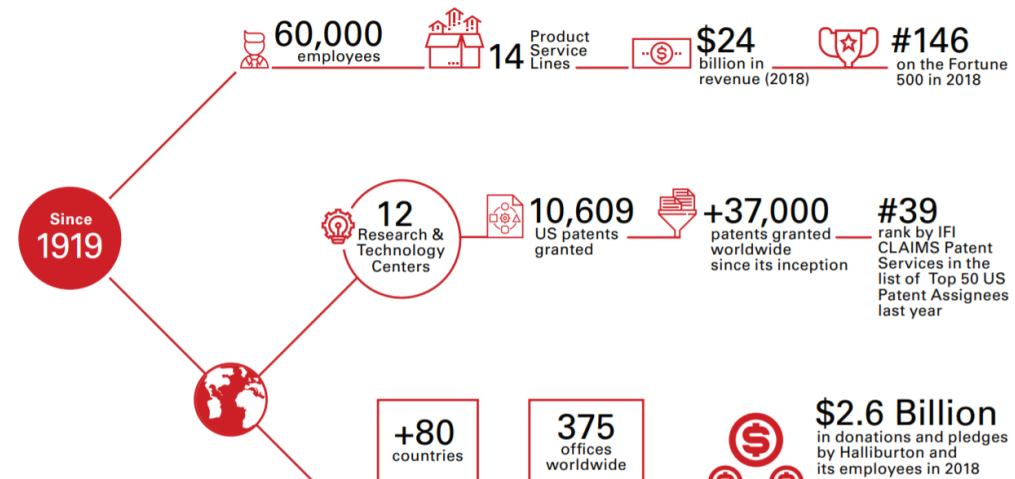
Value Proposition

We collaborate and engineer solutions to maximize asset value for our customers.

Values

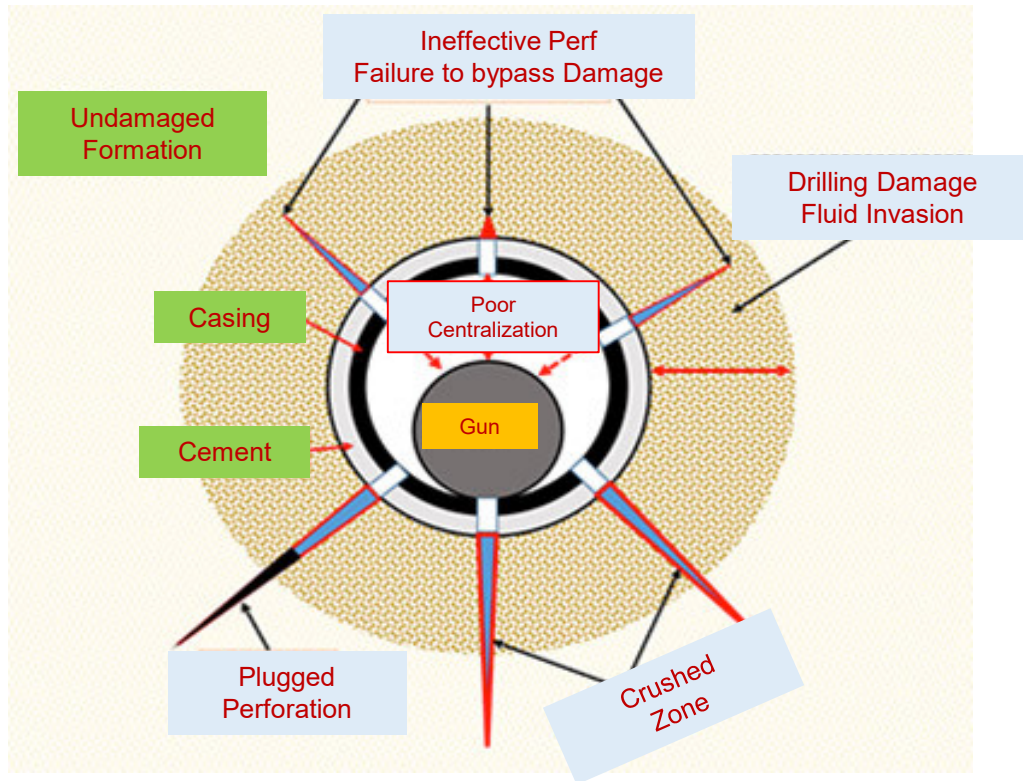
- **Integrity:** Ethics and integrity are the foundation.
- **Safety:** Priority number one.
- **Collaboration:** We work together with customers.
- **Competition:** We compete to win.
- **Creativity:** We are resourceful.
- **Reliability:** We deliver what we promise.
- **Respect:** We are honest with ourselves and each other. We are stronger together as one family.

HALLIBURTON BY THE NUMBERS



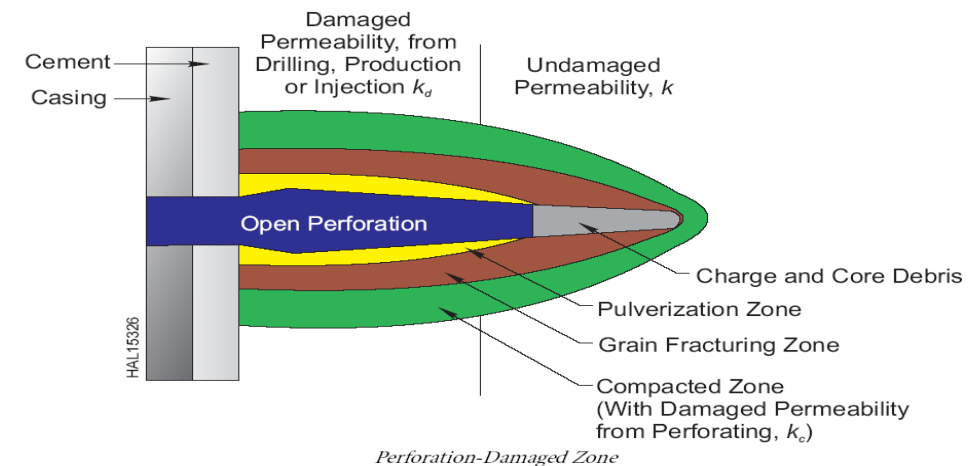


WHAT IS NEAR-WELLBORE DAMAGE?



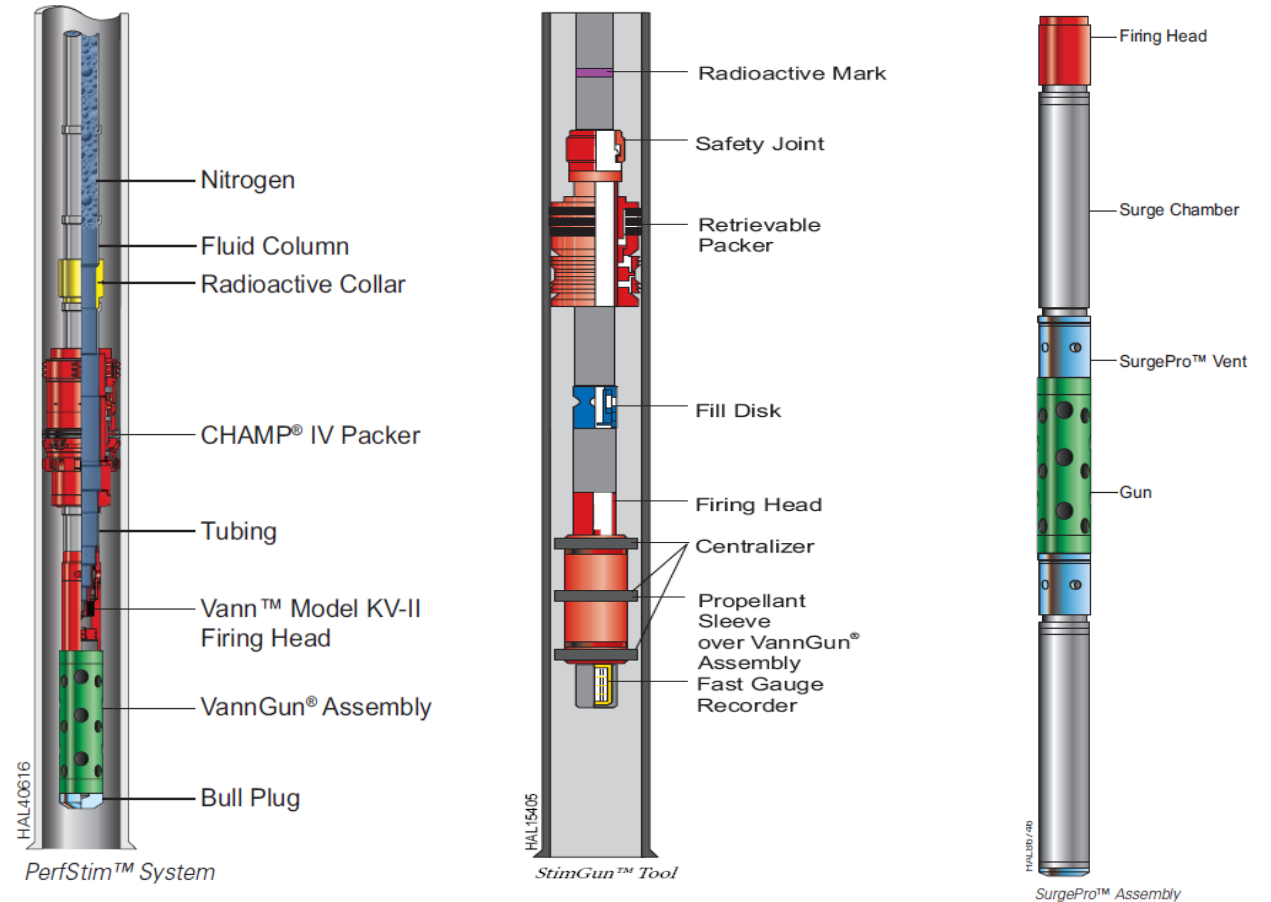
Formation damage might occur during the following operations:

- Drilling
- Completion
- Workover
- Stimulation
- Production
- Water/gas injection



NEAR-WELLBORE DAMAGE SOLUTIONS

- Extreme overbalance (EOB)
 - Propellant sleeves
 - Propellant tubes
- Underbalance
 - Static
 - Dynamic
- Combination
 - Stim surge
 - Static + propellants
- Software planners modeling



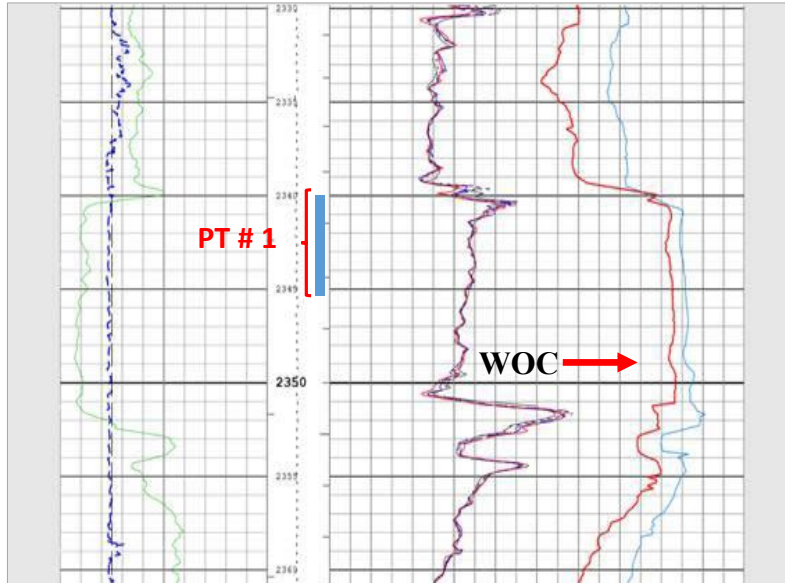
PROPELLANT SLEEVE: WHAT IS IT?

- Installed over a standard perforating gun, and fragments into pieces with gun detonation
- Potassium per chlorate in suspension by epoxy resin
- Oxidizer that generates CO₂ peak pressure during combustion above the formation fracture gradient
- High pressure injects fluid into the fracture at extremely high rates for a few milliseconds
- Excellent prehydraulic fracture treatment, decreasing breakdown pressure and horsepower requirements on location





WELL DESCRIPTION AND CHALLENGES

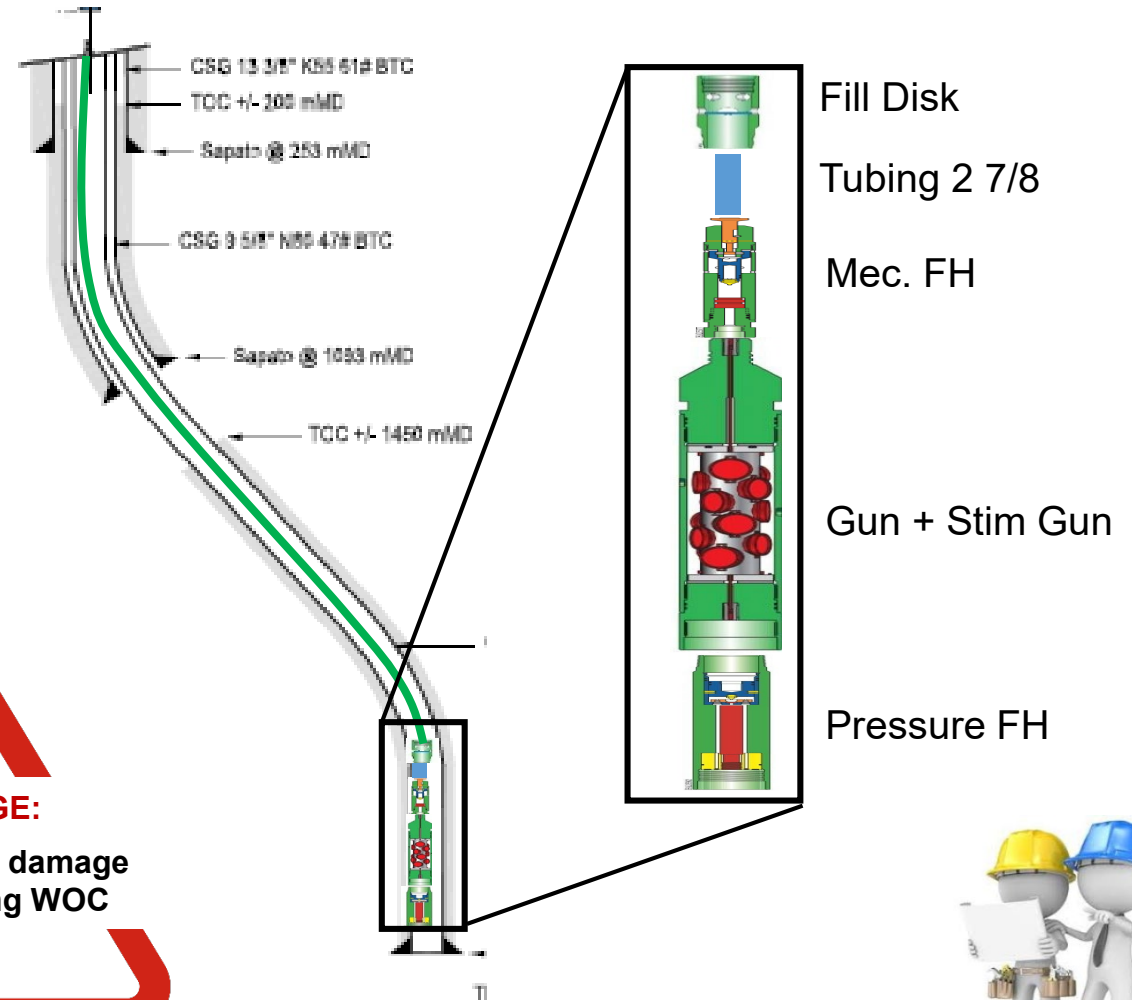


Net Reservoir: 11.9 m

Net Pay: 8.9 m

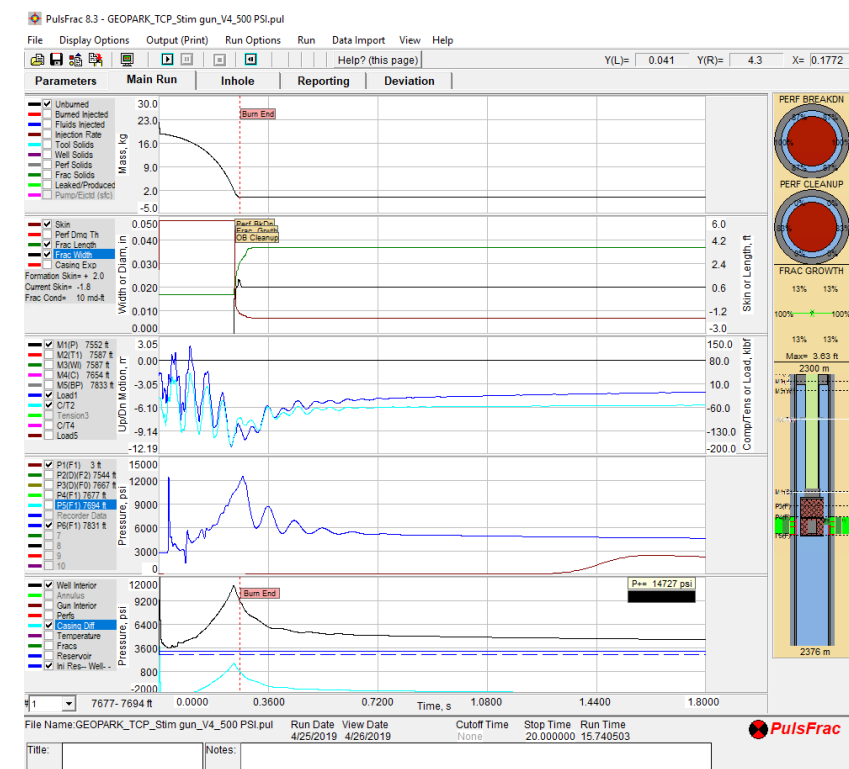
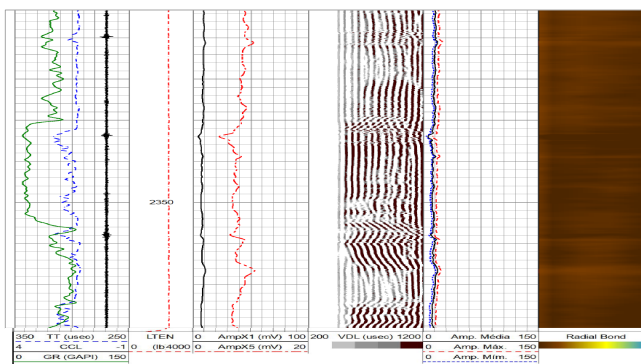
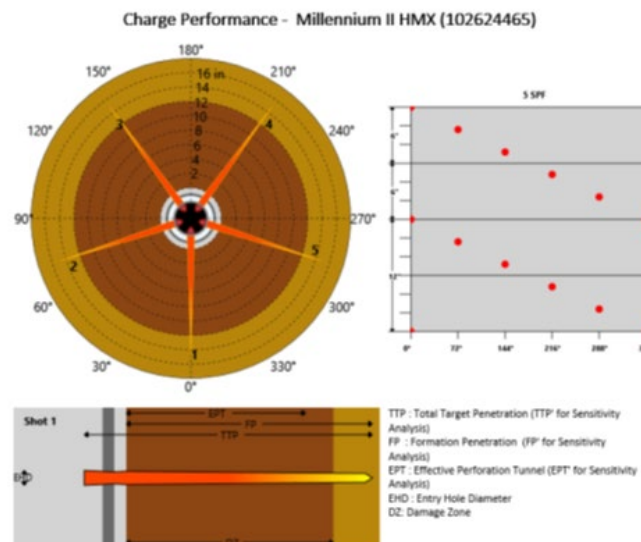
Avg Sw: 42%

Avg Phi: 15%



SOLUTION: GENERAL DESCRIPTION

	descripción	PROVEEDOR
	Surface Test Tree	Halliburton
	Let Down	Geopark
	3rd Party: Tubing	Geopark
	3rd Party: Crossover	Geopark
	3rd Party: Drill Collar - 12 UNIDADES	Geopark
	Crossover	Halliburton
	RD Safety Circulating Valve 5 OD - PRESSÃO DE OPERAÇÃO = 2500 PSI	Halliburton
	Drain Valve 5 OD-100066901	Halliburton
	Gauge Carrier SG-15 5 OD - 1 REGISTRADOR SAPHRANULAR + 1 COLUNA + 100% BACKUP	Halliburton
	Radioactive Sub	Halliburton
	LPR-N Tester Valve 5 OD With Kit Ball Open - PRESSÃO DE OPERAÇÃO ANULAR = 1500 PSI	Halliburton
	Gauge Carrier DYNASTRING 5 - 2 REGISTRADORES DE QUARTZO + 100% BACKUP	Halliburton
	TST Valve 5 OD-100065288	Halliburton
	Jar- Big John 5 OD	Halliburton
	RTTS Safety Joint 7 IN 3 7/8 CAS	Halliburton
	CHAMP IV Packer 7 IN 29-35 PPF - 85 DURO	Halliburton
	Crossover	Halliburton
	3rd Party: Tubing	Geopark
	Fill Disk	Halliburton
	3rd Party: Tubing	Geopark
	Model IID 3-3/8"-100005191	Halliburton
	Safety Space	Halliburton
	HPET Halliburton Perforating Evaluation Tool	Halliburton
	Depth Ref: 2340.00 m, Distance to Top of the Tool: 0.00 ft, Perforating Guns	Halliburton
	3-3/8" TDF-100005230	Halliburton
	Ported Bull Plug	Halliburton

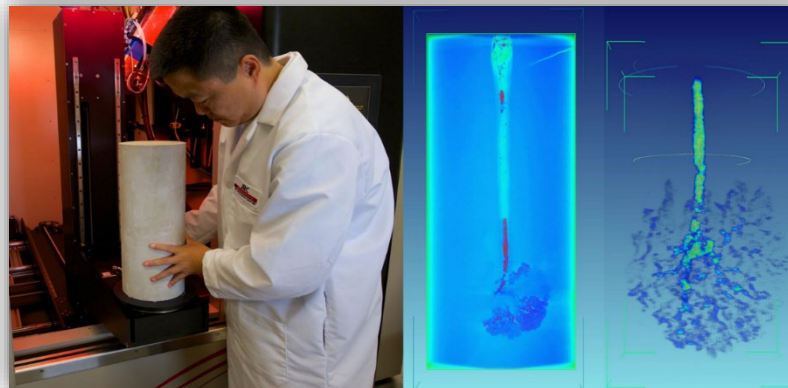
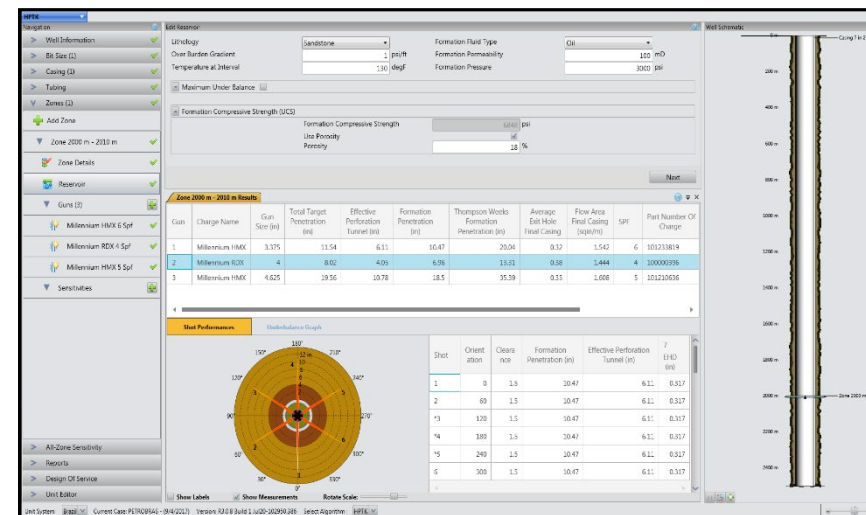


DST/TCP Operations can be Designed to Reduce Near-Wellbore Damage

SOLUTION: CHARGE PERFORMANCE

PREMIUM CHARGE HMX 5 SPF VS. 12 SPF

Property	Measurement (in.)	
	5 SPF	12 SPF
Effective perforation tunnel	10.38	6.22
Formation penetration	14.26	10.39
Total target penetration	15.37	11.5
Average exit hole final casing	0.424 in	0.297

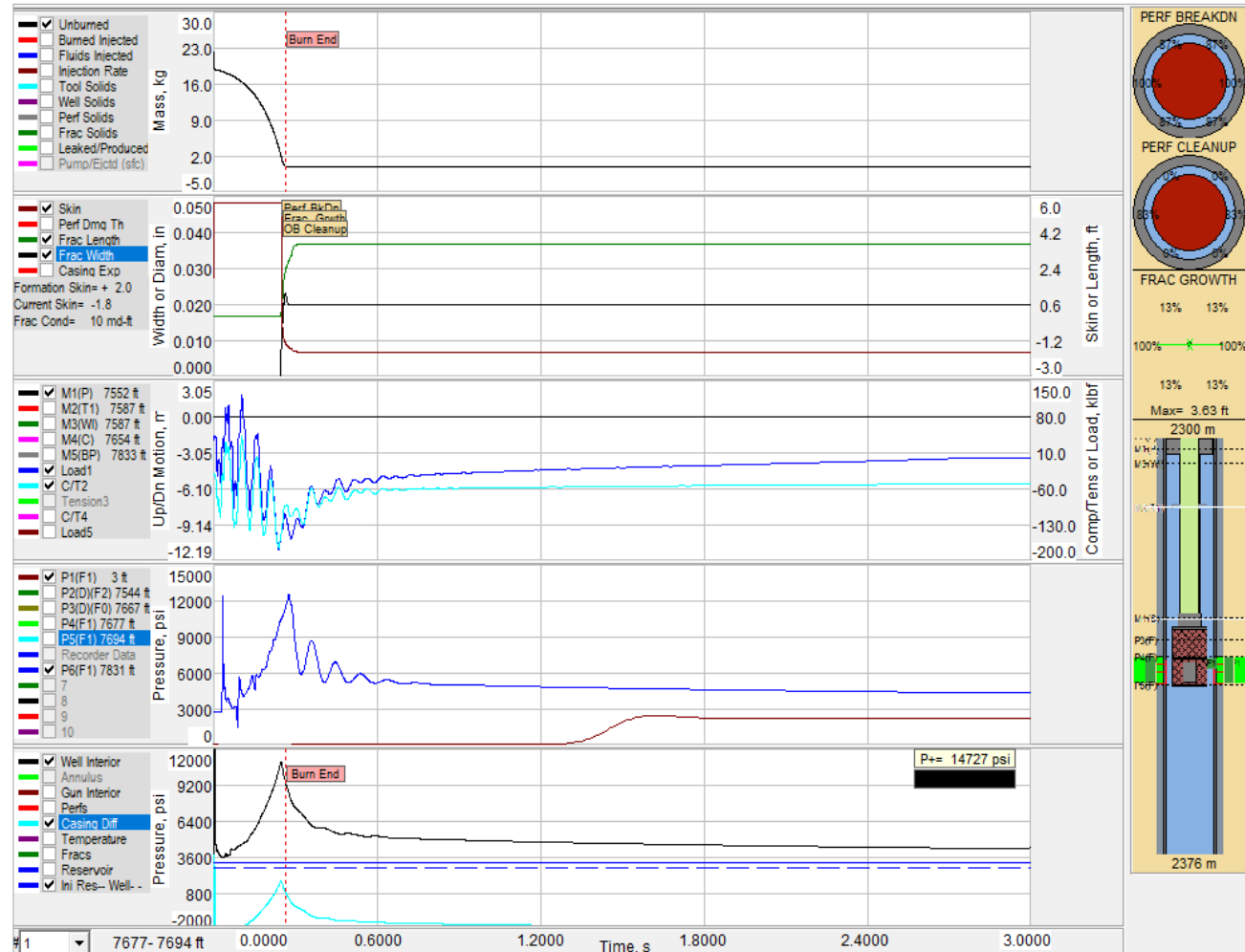


HPTK Perforation Analysis
R4.0.0 Build 4 Dec12-130706.201
Wireline & Perforating Services

GEO PARK

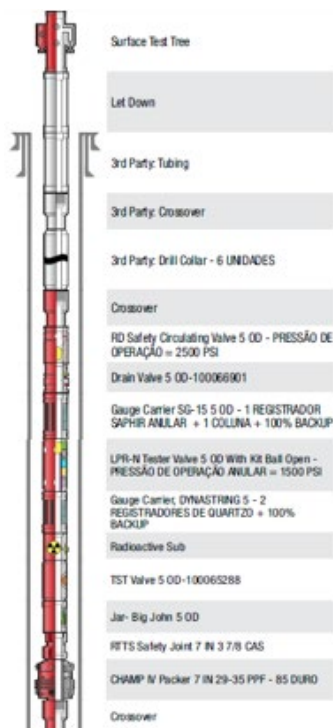
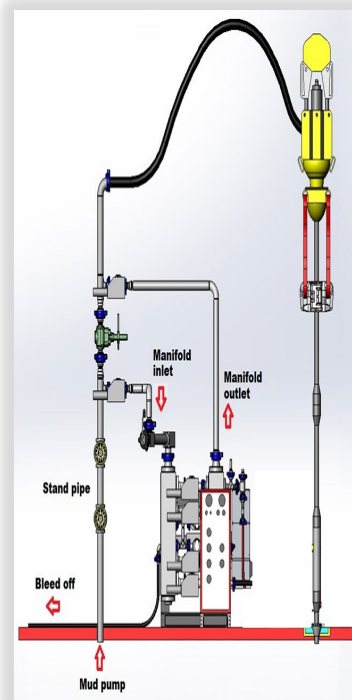
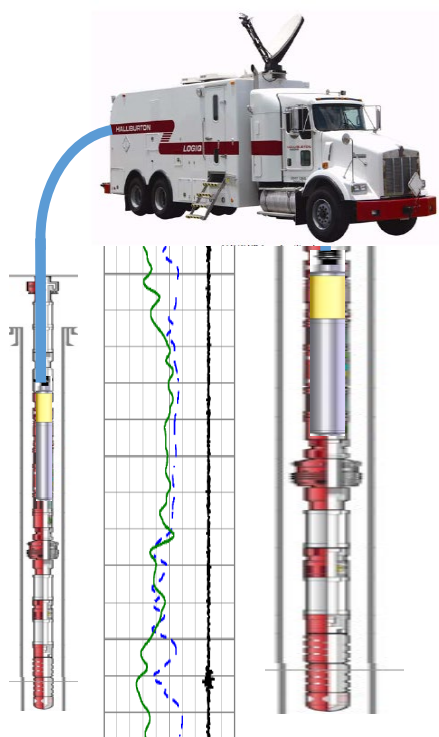
Prepared For Juan Moggia
Field Name REC-T-128
Well Name 1-PRC-1D-BA
Country Brazil
Report ID 15.38.44.61

SOLUTION: SIMULATIONS AND PROPELLANTS PERFORMANCE



DST/TCP Operations can be Designed to Reduce Near-Wellbore Damage

EXECUTION



CHAMP N Packer 7 IN 29-35 PPF - 85 DURO	Halliburton
Crossover	Halliburton
3rd Party: Tubing	Geopark
Fill Disk	Halliburton
3rd Party: Tubing	Geopark
Model IID 3-3/8"-100005191	Halliburton
Safety Space	Halliburton
HPET Halliburton Perforating Evaluation Tool	Halliburton
Depth Ref: 2340.00 m, Distance to Top of the Tool: 0.00 ft, Perforating Guns	Halliburton
3-3/8" TDF-100005230	Halliburton
Ported Bull Plug	Halliburton

GR-CCL Correlation

Diesel Bull Heading

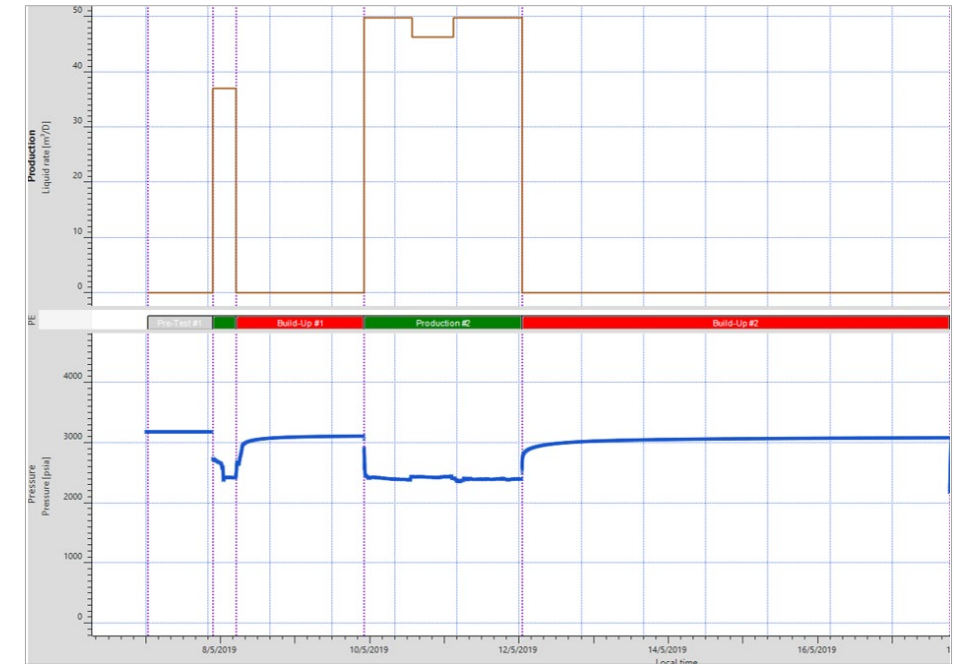
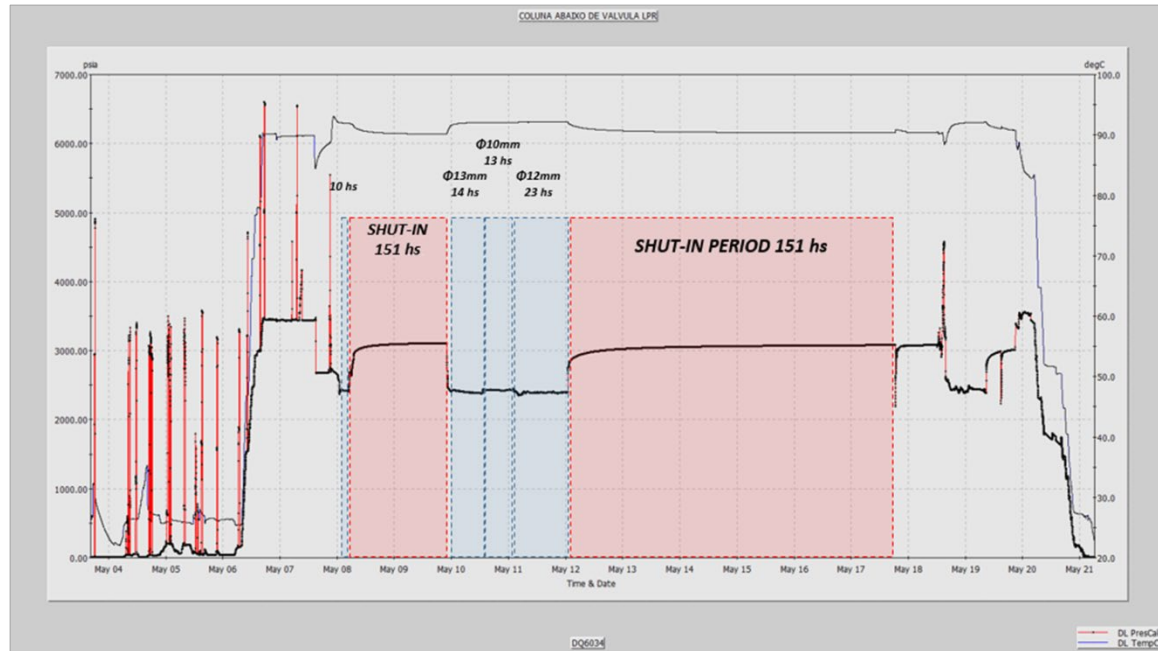
Packer Position

Flow Testing
Line Layout

Firing Guns with
Hydraulic Actuated
Firing Head

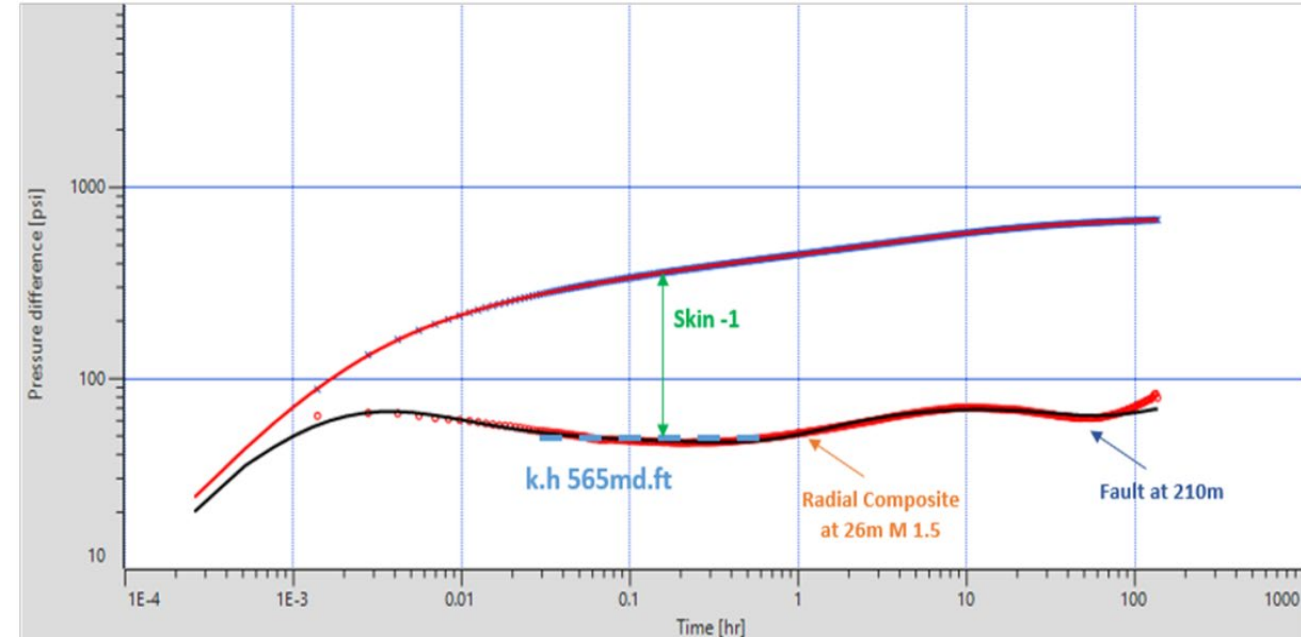


RESULTS



CONCLUSIONS

- Skin reduction, helping improve well production
- Cost and time reduction by avoiding workover operations, such as matrix acidification
- Improved well performance by helping prevent potential water production by avoiding a close water/oil contact with a hydraulic fracture





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IAPE INSTITUTO ARGENTINO
DEL PETRÓLEO Y DEL GAS

THANK YOU