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wed file  
→ P.A.

Oilfield Services, Peru

Schlumberger del Peru S.A.  
Camp. Schlumberger s/n Zona Industrial  
Talara Alta

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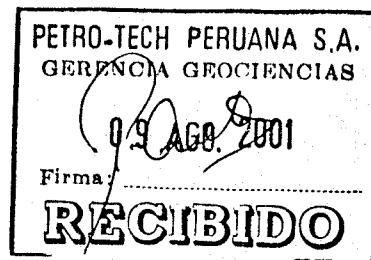
Fax +51 7 438 2845

# Schlumberger

Talara, August 6, 2001.

## PETROTECH PERUANA SA

Attn: Mr. John Meyers  
Mr. Oscar Nieto  
Mr. Guillermo Ruesta  
Mr. Pedro Alarcon



Ref: LO6-25 ST OH logging services.

Dear Mr. Meyers et al,


We deeply appreciate the opportunity of participating in the well exploration. It is of our concern to make sure the logging job will be accomplished by providing Petrotech Peruana S.A. with our high deviated wells' expertise, best technology tools and high deviation well accessories.

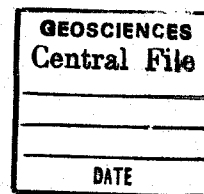
We are very optimistic about the successful logging of the well sidetrack as our experiences in this type of wells are very satisfactory. Below you can find relevant information of insurance, tools and devices that are suitable to pursue our goal. See details at on the next pages

- Logging Equipment Insurance
- Platform express (PEX) logging suite
- Cable Tension Measurement at tool head
- Accelerometer in Tool String
- Flex Joints
- Rollers

We will be happy to attend questions you might have, so if there is any thing we could do for you, please let us know.

Best regards,

  
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Jose Vasquez H.  
Wireline Operations  
SCHLUMBERGER DEL PERU S.A.



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## Logging Equipment Insurance

Despite of the high technology available for the successful completion of this job, we are aware of the risk the whole operation implies. A feasible alternative that could help you guaranty the economic liability of the project is the acquisition of a Logging Tool insurance that would cover for the entire tools string if an incident comes up.

We can process this insurance upon your request. Approximate insurance cost for 1-month cover time and up to US\$ 835,000 replacement value is US\$ 1000, with a deductible of US\$ 25,000 if the incident occurs.

## Platform express (PEX) logging suite

This highly Integrated Logging Tool is less than half as long as a triple combo and logging speed is twice as fast (3600 ft/h). It is also robust for high deviated wells and Tough Logging Conditions.

### Tool ratings

Component	Diameter (in)	Length (ft)	Max Tension (lb)	Max Compression (lb)	Hole size (in)		Temp. (C)	Weight (lb)
					Min	Max		
HALS-PEX	4.77	37.7	20000	8600	5.5	16	125	689

## Cable Tension Measurement at tool head

This important feature provided only by Schlumberger, allows for the logging crew to have full control of logging tension measured at the weakpoint level, thus allowing applying maximum pull rapidly and safely in case of adverse well conditions.

## Accelerometer in Tool String

Accelerometers allow for the proper monitoring and correcting for irregular tool movement, thus the tools can actually be worked out to TD.

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## Flex Joints

The careful placement of flexible joints will allow most logging tools to pass even in small diameter, small radius holes.

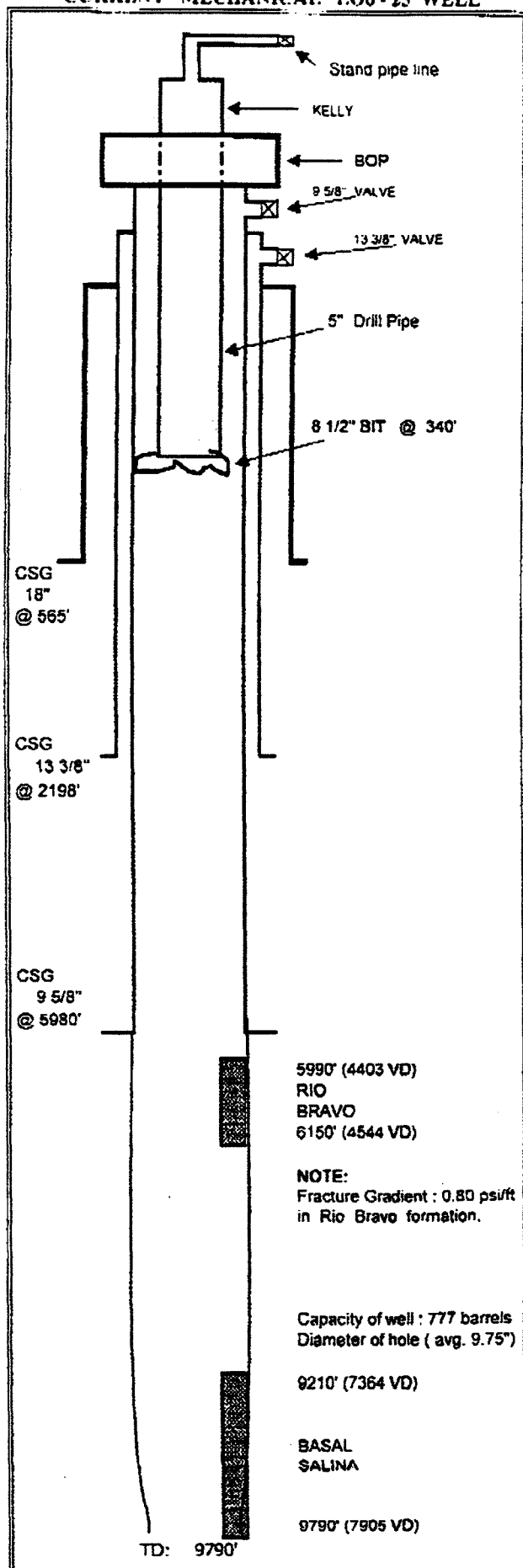
For example, in a 6" hole, 3" tool and a 40' radius of curvature, the maximum rigid tool length is 9.0', which is obtainable with the Platform Express (PEX) logging suite.

## Rollers

These adapters provide a tool standoff and help the tool string easily slide through tight and small curvature spots of the well by minimizing tool drag. Tool drag is the most important factor when dealing with high angle wells.

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## CURRENT MECHANICAL LOG-25 WELL



To: Mario Chavez  
From: Victor Selgado H.

$$P = 0.052 \times 8.33 \times 4474 = 1937 \text{ psi}$$

$$P_b = 2000 \text{ in surface}$$

Total pressure to Frac is 3937 psi

G.F. = 0.88 psi/ft in Rio Bravo fm.

Using 11.9 ppg of Mud

$$P = 0.052 \times 11.9 \times 4474 = 2769 \text{ psi}$$

Maximum pressure to pump  
mud is 1000 psi in well head.

**CENTRAL FILE  
GEOSCIENCES**