TECHNICAL REQUIREMENTS
OF CASING WINDOW OPENING SERVICE
(EXIT THROUGH CASING SIZE 13-3/8")

1. THE GENERAL REQUIREMENTS

1.1. WHIPSTOCK SYSTEM REQUIREMENTS

The whipstock system and its accessories must meet all technical requirements specified in the table Appendix 1. "An Integral Part of Technical Requirements" and comply with the following conditions:

- Manufacturing Requirements: The goods for sale shall be new and unused, and the time elapsed since the year of manufacture shall not exceed 3 years.
- Coatings: Suitable coatings for preventing corrosion.
- The goods shall be delivered in accordance with international standard for export packing to ensure safety of goods from damages and corrosion during transportation and suitable for crane operations and handling. Suitable plastic or steel protectors if required.

1.2. CASING WINDOW OPENING SERVICE REQUIREMENTS

The CONTRACTOR shall provide all necessary equipment for casing window opening operations (as specified in the Appendix 1.) and shall guarantee the following:

- Tool Face Control: Prevent tool face of whipstock system to turn until the next drilled interval is cemented.
- Packer System: The packer system must be held in position until the next drilled interval is cemented.
- Window Opening Performance: The whipstock system must guarantee smoothly running the hardest bottom hole assemblies through the opened window and milling window in one trip for 1 casing layer sidetrack and maximum 2 trips for 2 or 3 casing layer sidetrack.

CONTRACTOR shall provide Whipstock specialist whose qualifications are detailed in below. They shall, at all times, work under the direct supervision of OPERATOR, or under instructions given by OPERATOR to CONTRACTOR's REPRESENTATIVE.

Minimum experience of CONTRACTOR's personnel:

- Personnel working on this operation shall have, unless agreed otherwise with OPERATOR, the following minimum periods of experience in position of whipstock specialists - 05 years (minimum successful 10 jobs).

2. LIABILITY OF CONTRACTOR

CONTRACTOR shall, under the direction of OPERATOR, perform whipstock operations in accordance with OPERATOR's program. The equipment provided shall meet the minimum specifications and quantities described in Section 1. CONTRACTOR shall use safe working practices of a standard normally acceptable in the drilling industry.

CONTRACTOR shall provide all the equipment necessary for casing window opening operations. Equipment shall be available at all times during the Term of the CONTRACT.

Technical Proposal without back-up tools will be disqualified. Back-up tools shall be run at no additional charge in case primary tool fails.

CONTRACTOR shall, at the request of OPERATOR, calculate and provide calculations normally associated with Casing window opening service, as requested by OPERATOR'S REPRESENTATIVE. CONTRACTOR's representative shall be available at all times to give advice to OPERATOR on any aspect of the service.

CONTRACTOR must have a base/workshop equipped with sufficient tools and facilities to test the operability of the equipment before transportation to the drilling rig. The testing process includes the function test, the pressure test and must be supervised by the OPERATOR.

In case of emergency requiring repair or replacement, the backup equipment shall be urgently transported from the Contractor's base to the drilling rig upon mobilization notice from the Operator. The transportation time of the equipment from the CONTRACTOR'S base/workshop to the VSP port must ensure timeliness and promptness according to VSP's requirements (not exceeding 04 hours).

Guarantee time: Until the next liner shall be cemented.

(*) Notes:

a) Equipment rental period does not include the mob and demob time of equipment, time will count lumpsum 12 days of the journey and return (for all equipment, including 3rd party equipment).

b) Personnel rental period does not include the mob/demob time of Engineer. Mob/demob time will count lumpsum 04 days of the journey and return (for all engineers, including 3rd party personnel).

3. LIABILITY OF OPERATOR (VIETSOVPETRO)

a) VSP shall provide Contractor all necessary data and support to do the work in accordance with the order.

b) OPERATOR guarantees that the selected objects comply with the requirements.

c) OPERATOR shall supervise the service works execution, including all process operations performed at VSP facilities (within the Contract framework).

d) Provide safety instructions for CONTRACTOR’s personnel working in VSP.

e) Supervise and inspect, and agree with the CONTRACTOR on the steps to perform the service.

f) Provide facilities and living conditions for CONTRACTOR's personnel at VSP's Rig.

4. TIMING FOR SERVICE WORK: 08/2027.

* This is the expecting schedule for providing services.

5. SAFETY AND ENVIRONMENT

The works shall be done in line with the current SRV and VSP HSE and Environmental codes and standards.

If required, the extra safety measures shall be provided, upon CONTRACTOR’s expenses.

Appendix 1: AN INTERGRAL PART OF TECHNICAL REQUIREMENTS

П/п	Найменование		Тех.характеристики	Ед.изм	Объем	Примечание
	(Tên hàng hóa/ Service)		(Đặc tính kỹ thuật)	(Đơn vị tính)	(KhốI lượng)	(Ghi chú)
(STT)	**Русс. язык**	**Англ.язык**	Technical Characteristics			Note
	(Tiếng Nga)	(Tiếng Anh)		Unit	Quantity	
1	**2**	**3**	**4**	**5**	**6**	**7**
1	**Технология вырезания окна ОК 13-3/8"**	**Technology of casing window openning (Exit through casing size 13-3/8")**	**A - WELL DATA**	ОПЕР.	**1**	
			1- Side-track point (Window openning) from casings 13-3/8"			
			2- Inclination angle at side-track point approximately: 1º			
			3- Azimuth at side-track point approximately: 223.72º			
			4- Characteristics of casings: - Ф 13-3/8", 68 lb/ft, steel grade N-80, BTC connection			
			5- Formation at kick-off point: interbedded claystone, siltstone and polyminerals sandstone.			
			6- Setting depth of whipstock/packer system: appox. 600m MD.			
			7- Temperature at setting depth of whipstock/ packer system: 35 - 45 deg.C.			
			8- Mud type: Water based.			
			9- Mud weight: 1.10 ± 0.02 SG.			
			10- Mud viscosity: 50-65 sec.			
			11- Min/max flowrate for GMWD orientation: be provided when performing the service			
			12- Is casing cemented at kick-off point : Yes.			
			13- Tool face of whipstock system: be provided when performing the service.			
			14- Drill Bit diameter for the next interval: 12-1/4".			
			15- OD of next casing: 9-5/8".			
			16- Next interval will be drilled by: motor/RSS/rotor.			
			17- Desired drilling interval after sidetracking: 600-1990m.			
			B - SPECIFIC TECHNICAL REQUIREMENTS FOR SERVICE			
			- Whipstock type: One-trip, permanent, combination of Packer and Anchor; Whipstock Tool with hanger - Window cutting operation required: Milling system (includes Window mills - 3ea, Lower/Upper mills -2 sets, flex joint - 2ea, handling tool and bit breaker, filter sub - 2ea), Running tool, Magnet (2ea). - 1-2 Whipstock engineer. - Minimum rat hole length: 10m - Guaranty the smoothly running of listed below bottom hole assemblies through the openning window for the next drilling interval: Bit 12-1/4" + Motor 9-5/8" (1.5 deg w/ BHS 12-1/8")/ RSS 9-1/2" + 12-1/16" Stab. + MWD/LWD 9.5" + Drill collar 8"			

Back-up Tools (mandatory requirements):

- Backup equipments for the service execution for each well
  + 01 whipstock
  + 01 combination of Packer and Anchor; whipstock tool with hanger.
  + Milling system.
  + 01 Valve, Multi Cycle Bypass (if required).