

NATIONAL PETROLEUM COMPANY- NPC

AMMAN JORDAN
Schedule of specifications and prices



PDC DRILLING BITS

TENDER No. 44/2026/S

Item No.	DESCRIPTIONS	UNIT	QTY	W/O CUSTOMS & TAXES	
				RISHA STORES	
				Unit price	Total Price
1	8 1/2" PDC bit with enhanced premium cutters Steel body, IADC (S222), 6 Blades, Cutter Size 16mm, Total cutter count not less than 50, Nozzle number and Size 6x12" with available spare nozzles 11" and 13" , JSA 13.72 in2 Gage length 1.5 to 2in gage geometry Spiral Trailing, Gage profile slick gage, bit profile Medium taper- Shallow cone. Reinforced TSP with back ream cutters, PIN connection Standard 4 1/2" Reg PIN. Suitable for rotary and PDM drilling, Makeup length 200-280mm , Shank Bore 2.283in and Shank Diameter 6.356, Hydraulic design to enhance anti bit balling capability and ROP, Including Bit Breaker. WOB range up to 38 Klbs, TFA range (0.29 to 2.3 in2) Max Flow 900 gpm, HSI 1-6, Nozzles Quantity 6 Type TNZ Size Variable	EA	2		
1.1	EXTRA SET OF NOZZLE SIZE SIZE 11/32" WITH WRENCH	SET	2		
1.2	EXTRA SET OF NOZZLE SIZE SIZE 13/32" WITH WRENCH	SET	2		
				TOTAL	

CURRENCY:

DELIVERY PERIOD :

VALIDITY :

MANUFACTURER:

ORIGIN OF GOODS :

SPECIAL CONDITIONS:

NOTES:

ALL COLUMNS AND BLANK MUST BE FILLED IN AND IT'S THE NPC CHOICE TO CHOOSE THE PRICE WHICH SUITS IT'S REQUIRMENT

ORIGINATOR: issa makhamreh	SIGNATURE	DATE: 01/09/2026
HEAD OF DIVISION: issa makhamreh	SIGNATURE	DATE: 01/09/2026
DEPARTMENT MANAGER: Eng.ghassan al kiki	SIGNATURE	DATE: 01/09/2026

1/5



8½" PDC DRILL BIT – TECHNICAL SPECIFICATION

Al-Risha Field – Predominantly Plastic Shale Section

Purpose: Procurement of an 8½-inch PDC drill bit optimized for predominantly plastic/sticky shale, with the objective of maximizing single-run footage while maintaining an average ROP of 15–20 m/hr or higher.

1. Design Basis

Parameter	Value
Bit Size	8½ inch PDC
Formation	~95% Shale; Soft to Medium Hard; locally Plastic/Sticky, 5% Silt And Dolerite Traces
Section Length	~1,600 m
Mud System	KCI Polymer
Mud Weight	1.25 -1.331 SG (~10.95 ppg)
PV / YP	16–19 cP / 17 lb/100 ft ²
Flow Rate	350–450 gpm
RPM	80–95 RPM
WOB	30–40 klb
Target ROP	≥15–20 m/hr or higher
Primary Challenge	Bit Balling due to plastic/sticky shale

2. Preferred Bit Design

- 8½" PDC; 5-blade, 6 blade.
- 16 mm Premium PDC cutters; preferred active cutter count not less than 50.
- Matrix Body.
- Medium Taper / Shallow Cone profile, or technically justified equivalent.
- Full Gauge with robust gauge protection.
- Large/open junk slots optimized for plastic-shale cuttings evacuation.
- Dedicated Anti-Balling hydraulic/face-cleaning design.
- Suitable for Rotary and PDM applications.

3. Cutter Layout

The design shall balance aggressiveness, ROP, cutter durability and anti-balling performance. The bidder shall provide the complete cutter layout and specify primary, backup and gauge cutters, cutter exposure, back rake, side rake, orientation and spacing.

4. Hydraulic Requirements

Hydraulics shall be optimized for min 350–450 gpm. The bidder shall submit calculations at 350, 400 and 450 gpm, including TFA, nozzle quantity/sizes, nozzle velocity, bit pressure drop, HSI and hydraulic horsepower. The design shall prioritize face cleaning and cuttings evacuation and shall not be optimized solely around max flow 900 gpm.

5. Anti-Balling Requirements

- Large/open junk slots and efficient cutting evacuation.
- Optimized fluid paths across the bit face.
- Nozzle placement directed toward critical cutter rows/face areas.
- Cutter spacing and blade geometry suitable for plastic/sticky shale.
- Bidder shall explain the specific anti-balling features of the proposed design.

6. Operating Window

The bidder shall state recommended and maximum WOB, RPM and flow, expected operating window, and suitability for 1.31 SG KCI Polymer mud.

7. Mandatory Vendor Deliverables

1. Complete bit drawing and cutter layout.



2. Cutter grade, diamond table thickness, chamfer and thermal/impact specifications.
3. Primary, backup and gauge cutter details.
4. Back rake, side rake and cutter exposure.
5. Gauge design and protection details.
6. Nozzle configuration, TFA and hydraulic calculations at 350/400/450 gpm.
7. Recommended WOB/RPM/Flow operating window.
8. Anti-balling design description.
9. At least three comparable offset-well applications, including footage, drilling hours, ROP, WOB, RPM, flow and dull grade.
10. Separate technical/commercial quotations for Steel and Matrix bodies where both are proposed.
11. Any alternative blade/cutter design shall be technically justified by comparable field performance.

8. Performance Objective

The bit shall be designed with the objective of drilling the complete approximately 1,600 m section in a single run while maintaining an average ROP of not less than 15–20 m/hr, subject to actual formation and drilling conditions.

9. Technical Evaluation Basis

Technical evaluation should consider ROP, Capable of being used for multiple run footage (at least 2 run), bit life, dull condition, anti-balling performance, hydraulic efficiency, offset-well evidence and cost per meter—not bit purchase price alone.

Note: The preferred design parameters are the current technical basis developed from the available drilling information. Vendors may propose technically superior alternatives provided they submit supporting calculations and comparable field evidence.

