

INVITATION TO SUBMIT EXPRESSIONS OF INTEREST (“EOI”)



INTRODUCTION

BHP Billiton Petróleo Operaciones de México, S. De R.L. De C.V. (“BHP”) is currently progressing appraisal activities in the Trion field in Mexico to assess the viability of its development. If the field is declared commercial, the development will require an in-field drilling and completion program (“Drilling Program”) with the use of Tubing Conveyed Perforating (TCP) Services.

PURPOSE OF THIS EOI

BHP is soliciting the interest of reputable Drilling Contractors (hereinafter referred to as “Contractors”) experienced in the provision of TCP goods and services, to develop a list of suitable Contractors who may subsequently be invited into the bidding process for the execution of the here-in described Scope of Work. This process may eventually lead to the award of a contract for the provision of TCP Services.

The EOI seeks to provide prospective Contractors with relevant background information regarding the Trion project and to describe the information to be submitted by prospective Contractors in order to assist BHP in compiling a list of suitable Contractors for further assessment.

This EOI comprises of two scopes of work: the Primary Scope being the provision of TCP services at the wellsite and the Supplemental Scope is for the development of perforating charges for the water injection wells, both detailed below. Potential suppliers can participate in either or both of these scopes of work.

Primary Scope - Key project metrics and specifications are as follows:

Trion Tubing Conveyed Perforating SOW Summary	
General Data	
<i>Location</i>	Deep Water Mexico, Trion Contract Area
<i>Water Depth</i>	~ 2,500 m / 8,200 ft
<i>Well Depth Range</i>	~ 4,500 - 5,500 m MD/ 14,800 - 18,000 ft MD
<i>BHT Range</i>	55 - 85 °C / 132 - 185 °F (4°C / 40°F Seabed Temp)
<i>H2S</i>	No
<i>CO2</i>	<1.15% Mol
<i>Number of wells</i>	11 to 18
<i>Production Liner</i>	9.875” 62.8 ppf 1Cr P110
<i>Rig</i>	TBD
<i>Work Schedule</i>	Work execution estimated between: 2024 – 2027 Surface sections to be batch drilled. Average total well drilling duration (including batch section) is 26 days. Average total well completion duration is 36 days.
Well Design - Equipment & Tools	
<i>Gun Pressure Rating</i>	10,000 psi
<i>Perforating Guns</i>	<u>Frac Pack Wells - Producers / Gas Injectors / Water Injectors</u> 6.5” (preferred), 6.625”, or 7” gun carrier 12-14 SPF EH diameters > 0.9”

INVITATION TO SUBMIT EXPRESSIONS OF INTEREST (“EOI”)



Trion Tubing Conveyed Perforating SOW Summary	
	<p><u>Cased & Perforated Wells– Water Injectors</u></p> <p>6.5” (preferred), 6.625”, or 7” gun carrier</p> <p>4 - 6 SPF with 180 degree phasing</p> <p>Formation (not entry hole) diameters ≤0.3” (REQUIREMENT)</p> <p>Perforations to be passively oriented +/- 30 degrees of vertical</p>
<i>Firing Head (FH)</i>	<p>Pressure Actuated Delayed FH</p> <p>Electronic FH</p> <p>Ability to place multiple FH in system</p>
<i>DST Tools</i>	<p>Fill Sub</p> <p>Safety Shear Subs (Below & Above Pkr)</p> <p>9.875” Packer with fluid by-pass</p> <p>Jars</p> <p>15,000 psi High Frequency Pressure Gauges</p> <p>Multi-position Circulation Valve</p> <p>Circulation Sub</p> <p>RA Sub</p>
<i>Running Tools</i>	Clamps, screen table, slips, lift subs, elevator
<i>LCM</i>	Cross-Linked solids-free pill
<i>LCM Mixer</i>	Mixer suitable to mix LCM above
<i>Back-up Equipment</i>	100% Tool redundancy on rig
Services	
<i>Technical Support and Facilities</i>	<p>All necessary equipment and services required to execute the drilling programs and well designs including:</p> <ul style="list-style-type: none"> • Onshore support base • Perforation Modelling • Technical engineering support in BHP’s office in CDMX. • Appropriate facilities for storage and maintenance of equipment and chemical products. • Qualified engineers, technicians, supervisors and operators for equipment maintenance and services. <p><i>Note: All fluid systems, equipment and facilities must be fully compliant with local regulations and industry best practices.</i></p>
Logistics	
<i>Trion Field Location</i>	180 km East off the coast of Tamaulipas (Matamoros)
<i>BHP Rig operations Shorebase</i>	<p>Likely to be in Altamira/Tampico</p> <p><i>Note: If required contractor to provide transportation of the Contractor’s Equipment and Contractor’s Goods and Consumables between Contractor’s Operations Base and BHP’s Supply Base or Shorebase.</i></p>
<i>Heliport</i>	Likely to be in Matamoros

INVITATION TO SUBMIT EXPRESSIONS OF INTEREST (“EOI”)



Trion Tubing Conveyed Perforating SOW Summary	
Minimum Personnel Requirements	
<i>Contract Coordinator / Engineer</i>	Yes, onshore at BHP's Mexico office
<i>Field Engineer</i>	Yes, offshore (2)
HSE	
<i>Minimum requirements</i>	Must comply with BHP's HSE requirements and local regulations, including COVID-19 protocols (if applicable).

Any entity responding to this EOI must have the capacity and capability to provide and safely execute the TCP Services with the related equipment that meet or exceed the specification noted above without co-venturing for supply.

Note: The scopes and specifications presented in this document are the most accurate estimates at this time and are subject to change. Any information included in this EOI is not to be associated with any other EOI or tender from BHP.

Supplemental Scope: Key Project Metrics and Specifications for Water Injection Well Perforating Charge Design

Company is continuing to progress the engineering design of their water injection completions. These completions include “Cased and Perforated” or “C&P” completions, where the interval is drilled, cased and cemented, and then perforated. Sand control will not be installed.

The following is intended to share Company’s requirements for perforation charge performance in these water injection wells. This is being sent in the spirit of sharing information and a response is not mandatory. Any response or lack thereof will in no way impact possible future tendering. In the same context, this section is intended to initiate technical discussion only and no communication of prices nor of commercial terms shall take place.

Perforation Requirements

The following are required of the perforating gun system:

1. Perforation tunnel ID ≤ 0.30 ” in the formation (not casing or cement) after firing and any perforating-related flow, such as from dynamic under-balance. A larger perforation diameter (on any axis other than length) cannot be accepted.
2. 180-degree charge phasing, shooting top and bottom of hole only (± 30 degrees).
3. Minimum 4 shots per foot (SPF), higher shot density is preferred.
4. Minimum of 12” penetration in formation beyond cement sheath, greater penetration is preferred. A lesser length could be accepted if all other criteria are met and 12” cannot be achieved.
5. Must be readily fishable after firing and subsequent gun expansion.
6. Minimum acceptable casing penetration diameter is subject to review but a target of 0.25” or larger is proposed.
7. Note that while jet charges are typical in the industry today, this may be a good application for a bullet perforator. Company is willing to consider any viable, cost-effective technology.

INVITATION TO SUBMIT EXPRESSIONS OF INTEREST (“EOI”)



Well Information

Air Permeability:	up to 365 mD
Porosity:	up to 27%
UCS:	550 PSI minimum to be perforated (can possibly be increased if needed)
Reservoir Pressure:	6000 – 7300 PSIA
Reservoir Temperature:	Up to 170 F
Young's Modulus:	0.31 to 0.79
Poisson's Ratio:	0.23 to 0.27
Interval Length:	300 ft nominal, 60% nominally perforated (there may be substantial blank section in the gun carrier)
Inclination at Formation:	22 to 50 degrees
Formation Fluid:	Oil or water (some water injectors may be completed in the oil leg)
Hole Size:	12.25" bit (gauge hole expected)
Cement:	Low-density high UCS slurry: +/-14 PPG, 1500 – 2300 PSI UCS.
Casing:	9-7/8" 62.8# P110
Planned Over-Balance:	Plans are to shoot with modest (200 – 500 PSI) overbalance, exclusive of any dynamic underbalance.

Company Criteria for Qualification

1. In order to qualify a charge for this critical service, Company proposes that a minimum of three successful shots under analogue conditions are required to demonstrate repeatability.
2. The analogue conditions require a target and test comprising of the following:
 - a. A sandstone sample of similar porosity and UCS as the formation rock.
 - b. The sandstone may be natural or synthetic.
 - c. The sandstone shall be filled with water or mineral oil.
3. A cement layer of similar thickness and properties as the proposed cement.
4. A steel target plate of similar thickness as the well casing.
5. Stand-off between the charge and the steel plate as would be expected in the wellbore. Assuming imperfect centralization and variation of the stand-off, the stand-off to be tested must be the most challenging for the charge.
6. An API 19B Section 2 or Section 4 test fixture. Post-perforating flow typical of Section 4 testing is not required, but the charge qualification must include dynamic underbalance flow anticipated from the charge. Company refers to this as “Section 2 Plus” testing.

INVITATION TO SUBMIT EXPRESSIONS OF INTEREST (“EOI”)



7. Post-shot analysis must be conducted using CT scan or similar non-destructive methodology.

Note: Any technical related discussions and questions on this EOI’s Supplemental Scope are encouraged and should be addressed to the following inbox: Ron.Nelson@BHP.com

In order to ensure transparency and equitable communication with all parties, if relevant non-proprietary findings or observations are made when in discussion with one party these will be documented and communicated with other potential suppliers.

INFORMATION REQUIRED FROM PROSPECTIVE CONTRACTORS – MAIN SCOPE

Interested Contractors must provide the information requested below in order to be considered for further assessment (this information is also listed in the attached Expression of Interest (EOI) Response Form).

Company Name:	
Legal Entity Name (if different from Company Name):	
Company Type (Please check one):	<input type="checkbox"/> Local <input type="checkbox"/> Foreign <input type="checkbox"/> Joint Venture (JV) <i>If JV, please list involved Companies:</i>
Mailing Address:	
Country:	
Designated Contact (name and title):	
Email Address:	
Telephone:	
Year Company founded:	
Website URL:	
Please list your top three (3) competitors:	
Please list your top five (5) clients:	
Number of years’ experience operating in Mexico:	
Deepwater Operating Experience:	
Anticipated lead time (per well if possible) required to support the proposed scope:	
Anticipated Mexican content (local Content) in your operation:	

Confirmation of Interest – prospective Contractor is requested to confirm their company interest and compliance with requirements outlined in this EOI Letter by completing and signing the EOI Response Form.

INVITATION TO SUBMIT EXPRESSIONS OF INTEREST (“EOI”)



INFORMATION REQUIRED FROM PROSPECTIVE CONTRACTORS – SUPPLEMENTAL SCOPE

Interested Contractors must provide the information requested below in order to be considered for further assessment (this information is also listed in the attached Expression of Interest (EOI) Response Form for Supplemental Scope).

Company Name:	
Legal Entity Name (if different from Company Name):	
Company Type (Please check one):	<input type="checkbox"/> Local <input type="checkbox"/> Foreign <input type="checkbox"/> Joint Venture (JV) <i>If JV, please list involved Companies:</i>
Mailing Address:	
Country:	
Designated Contact (name and title):	
Email Address:	
Telephone:	
Year Company founded:	
Website URL:	
Please list your top three (3) competitors:	
Please list your top five (5) clients:	
Number of years’ experience operating in Mexico:	
Deepwater Operating Experience:	
Anticipated lead time (per well if possible) required to support the proposed scope:	
Anticipated Mexican content (local Content) in your operation:	
Technical Questionnaire	
<p>1. Does vendor have API 19B Section 2 or similar data suggesting that an existing charge can meet Company requirements? If “yes”:</p> <p style="margin-left: 40px;">a. Please provide details of the charge and as much test data as can be shared.</p> <p style="margin-left: 40px;">b. Was the charge tested in a sample with similar casing thickness, rock UCS and confining stress?</p>	

INVITATION TO SUBMIT EXPRESSIONS OF INTEREST (“EOI”)



<p>2. Does vendor believe that a suitable charge can be qualified? If “yes”:</p> <ul style="list-style-type: none">a. With what confidence or likelihood does vendor believe the qualification will be successful?b. What is the basis for this conclusion?c. Is a suitable charge likely to be in inventory, or will a new charge need to be developed?	
<p>3. If charge development and qualification is required:</p> <ul style="list-style-type: none">a. Please briefly outline a proposed development and qualification programme.b. How much time should be allocated to this supplemental scope of work?c. Would vendor be doing the charge design internally, or would they outsource to a Third Party?<ul style="list-style-type: none">i. If outsourced, to who and why?d. Would vendor be doing the charge qualification testing (API 19B Section 4 without post-perforating flow) internally, or would they outsource to a Third Party?<ul style="list-style-type: none">i. If outsourced, to who and why?e. If done internally, would vendor be willing to market the system to Company’s TCP service provider, or sell to Company for direct free-issue to Company’s TCP service provider?f. If done internally, please provide:<ul style="list-style-type: none">i. Details of the test facility and its capability.ii. Current workload and duration of any back-order.iii. Number and capability of test cells.	

INVITATION TO SUBMIT EXPRESSIONS OF INTEREST (“EOI”)



iv. Details of on-site imaging equipment to assess core without disturbing it.	
--	--

Confirmation of Interest – prospective Contractor is requested to confirm their company interest and compliance with requirements outlined in this EOI Letter by completing and signing the EOI Response Form.

EOI RESPONSE SUBMISSION REQUIREMENTS

Prospective Contractors interested in participating in the identification/assessment process must download, complete and sign the EOI Response Forms attached. This Form should be signed by a legal representative of the Contractor. The representative’s name should also be printed where requested. The electronic version of the Form is located at <https://www.bhp.com/our-businesses/petroleum/trion/>, and submit to the following inbox:

BHP Petroleum (BHP)
nicole.stockenberger@bhp.com

Submissions should be made electronically by no later than close of business 5:00 pm (CST) on 5th April 2021. BHP reserves the right not to accept submissions after this time. Submissions must be kept short and concise. Please endeavor to keep the submission under **5 MB**, if possible.

Please note that this invitation to submit expression of interest does not constitute a formal request for quotation or proposal, nor is it intended to create any expectations regarding future business dealings between BHP and recipient.

All EOI documents will become and remain BHP’s property. BHP shall not be liable in any respect for any costs, damages, charges or expenses incurred by the contractor in relation to preparing or submitting this EOI response. BHP reserves the right to accept or reject any or all EOI submissions that may be received related to the services requested. BHP reserves the right to change the requirements of this EOI, terminate further participation in the EOI process and change or terminate the contracting process at any time.

Thank you in advance for your willingness to respond to this EOI. We look forward to hearing from you. Should you have any questions or issues regarding the process outlined above, please contact the undersigned at nicole.stockenberger@bhp.com

Sincerely,

Nicole Stockenberger
Specialist Category Management
BHP Billiton Petroleum

Enclosures:

Expression of Interest (EOI) Response Form – Main Scope

Expression of Interest (EOI) Response Form – Supplemental Scope