

#### White Rose Extension Project (WREP) Prequalification Wellhead Platform (WHP) Topsides Fabrication & Construction Reference # 8.34.1.081

Husky Oil Operations Limited (Husky), operator of the White Rose Field and satellite extensions, is seeking prequalification responses from interested companies/consortia/joint ventures for the fabrication and construction of the topsides drilling platform for the White Rose Extension Project (WREP).

Husky and its co-venturers are presently evaluating the development of a wellhead platform (WHP) to enable future extension at the White Rose field. The White Rose Field and satellite extensions are located approximately 350 kilometers east-southeast of St. John's, NL in the Jeanne d'Arc Basin. Husky utilizes a Floating Production, Storage and Offloading (FPSO) vessel, the *SeaRose*, for production at the fields. The WHP option would include topsides supported by a concrete gravity structure (CGS).

In order to pre-qualify for this scope of work, respondents must demonstrate proven capability, capacity and experience to construct such a topsides drilling platform. The following areas of expertise associated with the fabrication and construction of topsides drilling platforms will be required and need to be adequately demonstrated by the respondents:

- Extensive experience of heavy offshore fabrication and construction projects.
- Management and supervision of large fabrication and construction yards.
- Management and execution of large steel fabrication scopes of work and integration with the topsides.
- Health, Safety, Environment and Quality procedures and policies.
- Ownership and management of fabrication and construction equipment e.g. fixed/mobile or tower cranes, plate cutting machines, welding, site transportation, and offices/warehouses.
- Management of labour relations, including relationship with local trades unions, collective bargaining, administration and interpretation of various types of construction collective agreements, grievance management, dispute resolution, supply and retention of qualified labour, and managing productivity (Pre-qualified bidders will be required to complete a labour relations questionnaire at the Invitation to Bid stage).
- Skilled and competent labour force.
- Marine experience and interface with marine contractors.
- Pre-commissioning/commissioning of all accommodations, mechanical (including pipe work), drilling equipment, electrical, HVAC equipment and instruments, instrumentation and control systems.
- Field engineering capabilities and preparation of as-built documents, and progressive turnover of documentation

Husky strongly supports providing opportunities to Canadian and, in particular, Newfoundland and Labrador companies and individuals, on a commercially competitive basis. In accordance with the framework agreement between Husky, its co-venturers and the Province of Newfoundland and Labrador, Husky's expectation is that the successful contractor/consortium or joint venture for the fabrication and construction of the topsides drilling platform will maximize participation from the local marketplace. Pre-qualified bidders will be required to complete a Canada/Newfoundland and Labrador benefits questionnaire at the Invitation to Bid stage. *Husky Energy encourages the participation of members of designated groups (women; Aboriginal peoples; persons with disabilities; and members of visible minorities) and corporations or cooperatives owned by them, in the supply of goods and services* 

Please provide one (1) original and one (1) copy of your formal response no later than **2:00pm NST on 22 November 2013** to the address as shown below:

Husky Energy Inc. Suite 901, Scotia Centre 235 Water Street St. John's, NL Canada A1C 1B6

Attn: Mark Collett, Procurement Manager Email: Mark.Collett@huskyenergy.com

Any submission which is not received by 2:00 PM NDT 22 November 2013 will be returned to sender, unopened, and will not be given any further consideration as part of this procurement process.

#### General Requirements

Interested companies/consortia/joint ventures must be qualified to conduct the work as summarized in the <u>Scope for Topsides Fabrication and Construction</u> below and are asked to demonstrate their capabilities, capacities, and experience via a formal response to the detailed prequalification questionnaire located on the website at:

http://www.huskyenergy.com/operations/growthpillars/atlantic/opportunities/default.asp

Please note that any updates, bulletins and/or clarifications to the above noted prequalification will be posted on the website. Please check regularly during the pre-submission period for updates.

#### 1. <u>Scope for Topsides Fabrication and Construction</u>

The existing White Rose Field and its satellite extensions are located in the Jeanne D'Arc Basin, approximately 350km southeast of Newfoundland. A series of subsea drill centres are connected to the *SeaRose* FPSO via subsea umbilicals, flexible flow lines and risers.

The WHP option for development of the White Rose Extension Project consists of a CGS and a topsides facility comprised of integrated drilling facilities, wellheads, living quarters, minimum production systems and utility support systems. The primary function of the WHP is to provide a platform for 'dry tree' drilling, completions and intervention. The reservoir fluids produced to the WHP will be transported to the *SeaRose* FPSO via subsea flowlines for processing, storage and offloading. Fuel gas and injection water will be supplied to the WHP from the *SeaRose* FPSO via subsea flowlines. The WHP will be equipped with minimal process equipment and there will be no oil storage in the CGS. The WHP design will account for the risks posed by icebergs, sea ice and the harsh environmental conditions found in the NL offshore. The design life of the WHP facility is expected to be 25 years.

The WHP option for developing the White Rose Extension Project entails constructing the CGS in a purpose-built graving dock at Argentia, NL and the fabrication of the WHP topsides at a fabrication yard yet to be determined. The topsides will be mated with the CGS using an offshore floatover installation at the White Rose field. Flowlines and umbilicals will then be connected to the WHP and final offshore commissioning completed prior to hand-over to operations.



#### Field Layout in WHP

#### 2. <u>WHP Topsides Description</u>

The WHP topsides will be an integrated drilling, production and living quarters facilities with an estimated dry load-out weight of 14,500 tonnes. The WHP topside facilities will be designed for operation in the harsh environmental conditions found in the area of the Jeanne d' Arc basin.

The WHP production systems consist of equipment and systems to accommodate for oil production, water injection, gas lift and gas flood, with no processing planned for the facility.

The drilling facilities consist of an integrated single rig package capable of drilling, running completions, specialized well interventions and work-over operations. The drilling facilities will be comprised of a drilling equipment set (DES) mounted on the topsides capping beams and drilling equipment and support utilities systems incorporated within the main topsides decks.

The WHP design permits the utilization of rigless intervention equipment. Electric line, slickline, hydraulic fracturing and coiled tubing equipment are expected to be deployed during the drilling operational phase of the WHP development.

The WHP will accommodate 20 well slots using conductor sharing wellhead technology, allowing for two wells to be drilled in each conductor for a total of up to 40 wells.

The WHP topsides facilities include:

- Drilling, completions and well intervention equipment
- Well bay and wellheads

- Oil production, test, water injection, gas injection, and gas lift manifolds
- High pressure water injection booster pumps
- Fuel gas heating and treatment
- Test separator and metering
- Safety and utility systems
- Integrated control and safety systems
- Telecommunications systems
- Power generation and distribution systems
- 130 person living quarters

The WHP topsides layout consists of a transition frame, sub-cellar deck, three main decks, several mezzanine decks, drilling equipment set, and the following topsides appurtenances:

- Living Quarters
- Helideck
- Life Boat Stations
- Flare Boom

#### Please pay particular attention to the following:

- Husky's local benefits agreement mandates that the topsides appurtenances listed above (i.e. Living Quarters, Helideck, Life Boat Stations, and Flare Boom) must be fabricated in Newfoundland and Labrador and subsequently integrated with the topsides drilling platform at the topsides fabrication facility. Husky appreciates that international companies may not have adequate familiarity with local fabrication capabilities in Newfoundland and Labrador. In order to assist potential bidders in this regard, Husky has completed a comprehensive Prequalification for these structures and will provide bidders with a list of relevant companies as part of the Initiation to Bid package.
- Husky will purchase all tagged equipment and free issue to the Topsides Fabrication Contractor (TFC). Tagged equipment includes (but may not be limited to) the following packages:
  - Main Power Generator
  - Emergency Generator Package
  - Water Injection Pump Package
  - Firewater Pumps Generator
  - Firewater Pumps Caissons
  - Pedestal Cranes
  - Seawater Lift Pump
  - 72 Man Life Boat w/ Davit & PrOD
  - Test Separator Package
  - Diesel Filtration Package

- Diesel Transfer Package
- Seawater Filter Package
- Flare Knockout Package
- Fuel Gas Package
- Open Drain Sump Package
- Closed Drain Package
- Methanol Package
- Scale Inhibitor Package
- Hypochlorite Package
- Potable Water Hydrophore Package

- Water Sterilizer
- Fresh Water Generator
- Rehardening Filter
- Utility Water Hydrophore Package
- Gantry Crane
- Hydraulics HPU
- Macerator Pump Package
- Aviation Fuel
- Air Compressor Package
- Flare Tip
- Flare Ignition Panel
- Deluge Package
- Foam Pumping Package
- Life-Raft Evacution Chute System
- Nitrogen Generator Package
- Hose Loading Station
- Potable Water Storage Tank
- Utility Water Storage Tank
- Diesel Tanks
- Air Receiver
- Nitrogen Receiver
- Breathing Air Compressor / Filling Station
- Manifold Packages (Production, G/L and W/I)
- Manual Valves ICP
- Specialty Items ICP
- Safety Equipment
- Trolleys and Hoists
- Fire and Gas System
- Switchgear
- Transformers
- UPS
- Heat Tracing Equipment
- Motor Control Center (LV Auxiliary Switchgear & MCCs)
- Multi-phase Flow Meters
- Control Panels (WHCP)
- Shutdown Valves-ICP
- Transmitters ICP
- Control Valves ICP
- Relief Valves ICP
- Tank Vents ICP
- Flare gas Flow Transmitters
- Orifice Plates and Restriction
  Orifices
- Solids/Proppant Handling

- Microwave Link
- WAN / LAN
- Trunked Radio Communications
  Package
- CCTV System
- HF/VHF Communication
  Equipment
- Satellite Communications (Inmarsat ) Package
- Aircraft Radio Equipment
- Global Maritime Distress Safety System
- Ship Security Alerting System (SSAS) Package
- Radar Equipment Package
- Navigation Aids
- PA & Emergency Alarm
- Weather Monitoring
- HP Mud Pumps
- Choke & Kill Manifold w/skid and Poorboy Degasser
- Mud Gas Separator
- Diverter
- BOP Stack
- BOP Test Stump, BOP Test Unit
- BOP Control Unit
- HP Mud Standpipe and Cement Standpipe
- Rig Skidding System
- BOP Handling System BOP/Xmas Tree Trolley
- DCDA
- Utility Winches
- Mousehole
- Derrick Structure
- Driller's Cabinet
- Top Drive
- Derrick Mounted Pipe Handling
  Equipment
- Mud Bucket
- Manriding Winch
- Hydraulic Catheads
- Drill Floor Pipe Handling Equipment
- Iron Roughneck
- Drilling Package HPU
- Rotary Table Package
- Power Slips
- Drawworks
- Deadline Anchor

- Travelling Block
- Catwalk Pipe Conveyor
- Derrick Machinery & Equipment
  Outfitting
- Powered Drill Line Reel (Spooler) w/ Wire Rope
- Bulk Transfer, Loading & Dosing System
- Mud Dry Bulk Storage Tanks
- Bulk Cement Storage Tanks
- Centrifugal Pumps
- Shale Shakers
- Cuttings Augers / Conveyors
- Vacuum Degasser

- Centrifuges
- Cement Unit
- Cuttings Reinjection Skid
- Mud Tank Cleaning Equipment
- Mud Vacuum Equipment
- HP Pressure Hoses
- Drag Chains
- Mud Mix Equipment
- Agitators
- Knuckleboom Crane
- Telescoping Low Pressure Riser, HP & LP Risers
- Bell Nipple



The WHP topsides will be fabricated and loaded-out as a fully integrated unit with no equipment or module integration performed at the CGS construction site or final field location.

Southeast Corner of Topsides



North Elevation of Topsides



Northeast Corner of Topsides



South Elevation of Topsides

#### a. Transition Frame

The transition frame is a tubular structure with approximate dimensions of 25 meters wide by 23 meters deep by 10 meters high, with an approximate weight of 1100 tonnes. The transition frame serves as the structural interface between the top of the CGS shaft and the main topsides structure, and permits an increase in the deck framing spacing. In addition, the transition frame includes a conductor guide frame. The transition frame also supports risers, J-tubes and caissons that span between the top of the CGS shaft and the underside of the topside's cellar deck. The transition frame will be welded to the topsides structure at the topsides fabrication yard.



TRANSITION FRAME

Transition Frame

# b. Sub Cellar Deck

The sub-cellar deck is a 10 meter wide by 23 meter long deck with inter-deck spacing of 3.5 meters to the cellar deck. The sub-cellar deck houses riser shutdown valves and hazardous and non-hazardous open drains tanks.



Sub Cellar Deck

#### c. Cellar Deck

The cellar deck is a 43 meter wide by 72 meter long deck with 13.5 meter inter-deck spacing. The cellar deck houses the following equipment: three dual fuel main power generators; emergency generator and switchboard; two firewater pump generators; flare knock-out package; switchboard and transformer rooms; machinery rooms; offices; workshops; warehouse; well bay with two Christmas tree access mezzanines; wellheads; manifolds and piping; fuel gas package; methanol pump skid; diesel pumps and storage tanks; HP water injection pumps; test separator; two multi-phase flow meters; air compressors, dryers and receiver; nitrogen generator and receiver; fresh/potable water makers and storage tanks; seawater filters; hose loading stations; and utility equipment.



Cellar Deck

## d. Middle Deck

The middle deck is a 43 meter wide by 72 meter long deck with 11 meter inter-deck height. The middle deck houses the following equipment: HP and LP mud pumps; mud storage tanks; cementing unit; cement storage and control cabin; 2 level generator control and switch board room; cuttings drying and re-injection package; base oil pumps and tanks; flare ignition panel; crane pedestals; diverter line; open deck space for drilling and well intervention equipment. The middle deck will also provide the base support frame for the living quarters building.



Middle Deck

The middle deck mezzanine houses the drilling drive switchboard room, mud control room and mud lab. The middle deck mezzanine provides access to middle deck tank agitators and the second level of the generator control and switchboard room.



Middle Deck Mezzanine

### e. Drilling Deck

The drilling deck is a 43 meter wide by 46 meter long deck with 11 meter inter-deck spacing. The drilling deck houses the following equipment: sack storage building (with mud mixing area); shaker building (with shale shakers, centrifuges, pumps and operators cabin); barite, bentonite, cement and calcium carbonite P-tanks; chemical injection skid; tote tanks; and drilling transformer room.

North-south capping beams and drag chain permit the DES to skid in a north-south direction over the well bay. East-west movement is accommodated in the DES. Open space in the west side of the drilling deck layout is provided to accommodate movement of the DES to all well slots.



Drilling Deck

# f. Pipe Rack

The pipe rack is 40 meter by 23 meter deck. The pipe rack will be equipped with a knuckleboom crane and a dedicated catwalk machine for feeding tubulars onto the drill floor of the DES. The wireline logging unit will be located on a platform next to the pipe rack.



# g. Drilling Equipment Set

The drilling equipment set consists of a substructure, drill floor and derrick with an approximate weight of 2000 tonnes. The drill floor/pipe handling systems will be highly mechanized and generally remotely controlled by operators in control cabins. The DES will accommodate offline stand-building.

The DES substructure has approximate overall dimensions of 14 meters wide by 12 meters long with a height of 15 meters to the drill floor. The DES substructure houses the following equipment: blow-out preventer (BOP); BOP control unit and accumulators; BOP test stump; BOP handling and test panels; trip tank and pumps; mud vacuum unit; electrical and instrumentation rooms; east-west skidding jacks; and east-west drag chain.

The drill floor has approximate overall dimensions of 19 meters by 23 meters with 4 meters between the drill floor and the upper drill floor. The drill floor houses the following equipment: rotary table; iron roughneck; powered mousehole; vertical pipe handling package; hydraulic catheads; choke, kill, cement and mud standpipe manifolds; mud/gas separator; electrical and instrumentation rooms; and setback area.



The upper drill floor houses the following equipment: drawworks; topdrive assembly; drill line drum; deadline anchor; hydraulic power unit; drillers control cabin; air handling unit; and MWB/LWD office.

The derrick has approximate dimensions of 11 meters by 12 meters and a height of 48 meters from the upper drill floor to the underside of the crown table.



Drill Equipment Set - Side View

# h. Cranes

50 tonne diesel hydraulic pedestal cranes will be mounted on the north and south sides on the platform supported from pedestals connected to the middle and drilling decks. The cranes will be used to transfer bulk supplies, equipment and personnel, as well as maneuver equipment on the WHP and lower it to supply vessels. The crane boom length will be in the order of 48 meters. Appropriately located crane rests will be included in the topsides.

# i. Living Quarters

The living quarters will provide adequate accommodations and sufficient support facilities for sleeping, personal hygiene, catering and dining, laundry, recreation, leisure, offices, control stations and medical services for all occupants. The living quarters will be designed to accommodate a POB of 130 persons. The living quarters consist of four levels with approximate overall dimensions of 44m long x 21m wide x 16m high. The living quarters is expected to weight approximately 1400 tonnes.

# j. Flare Boom

The flare boom structure will be a tubular lattice construction designed for all load conditions including transport, installation and load out. The flare boom is expected to be between 40 and 50 meters in length cantilevered at a 60 degree angle off the platform. The flare piping is expected to be in the 12" to 16" range. The flare boom is expected to weight approximately 100 tonnes.

## k. Life Boat Stations

The WHP topsides will be equipped with lifeboat stations for four totally enclosed motor propelled survival craft with a capacity of 65 POB each. Total weight for both lifeboat stations is expected to be approximately 200 tonnes.

### I. Helideck

The helideck shall comply with C-NLOPB Guidelines and CAA CAP 437 requirements, as well as Transport Canada TP4414 for helideck firefighting equipment. The helideck will accommodate landing and take-off operations for an EH101 (CH-149 Cormorant). Helideck facilities will incorporate refuelling capabilities. The weight of the helideck is expected to be approximately 300 tonnes.

# 3. Fabrication Contractor's Scope

# a. Fabrication

The Topsides Fabrication Contractor (TFC) shall fabricate the topsides facilities described above based on detailed construction documents provided by Husky's topsides engineering contractor. The TFC shall be responsible for the fabrication, assembly, hook-up, mechanical completion and commissioning of complete topsides scope. The TFC shall comply with all relevant regulations, codes and standards as per the C-NLOPB regulations. The TFC shall provide all necessary facilities, equipment, materials and labour to complete the work scope.

# b. Mechanical Completion

The topsides fabrication shall be mechanically complete and the TFC shall verify completeness with mechanical completion procedures and systems. The TFC shall prepare all required mechanical completion dossiers and punch lists.

# c. Testing and Commissioning

The TFC shall be responsible for all testing and commissioning at the fabrication yard and produce testing and commissioning documentation to support the C-NLOPB certificate of fitness requirements. The requirement for commissioning at the offshore location will be minimized by extensive commissioning at the fabrication yard. The TFC shall provide the necessary personnel, test equipment and consumables for fabrication yard testing and commissioning.

### d. Load-Out

The TFC shall be responsible for the load-out and sea fastening of the integrated topsides facility including transition frame on to marine transport barges provided by Husky's marine installation contractor.

### e. Warehousing and Preservation

The TFC shall provide warehousing and be responsible for the storage and preservation of all topsides equipment including all Husky free-issued equipment.

# f. Procurement

The TFC shall be responsible for procuring all required materials and services not free-issued by Husky to deliver the complete topsides scope. Husky will include a list of free-issued materials and equipment with the bid Invitation to Bid (ITB) documentation which for guidance will be all tagged items. In general, bulk items, mechanical completion and commissioning consumables will be the TFC's responsibility to purchase. The TFC shall be responsible for complying with the C-NLOPB Canada-Newfoundland Benefits requirements.

### g. Project Management

The TFC shall provide all necessary project management resources and systems to effectively management and coordinate all required activities at their fabrication yard.

The TFC shall provide suitable offices on site for Husky's site team.

# h. Engineering and Services

The TFC may be responsible for the design and production of the following fabrication documentation:

- Piping isometrics and material take-offs
- Structural shop fabrication drawings and weld detail drawings
- Quality assurance and fabrication records to support C-NLOPB certificate of fitness requirements;
- Construction work packs
- Mechanical completion dossiers
- Pre-commissioning/commissioning dossiers and test records

A detailed list of the TFC's engineering services will be provided with the ITB document.