

Casing Assumptions and Load Cases

Surface

All casing design assumptions were ran in Stress Check to determine safety factor which meet or exceed both Devon Energy and BLM minimum requirements. All casing strings will be filled while running in hole in order to not exceed collapse rating of the pipe.

| <b>Surface Casing Burst Design</b> |                          |   |
|------------------------------------|--------------------------|---|
| <b>Load Case</b>                   | <b>External Pressure</b> | <b>Internal Pressure</b>                          |
| Pressure Test                      | Formation Pore Pressure  | Max mud weight of next hole-section plus Test psi |
| Drill Ahead                        | Formation Pore Pressure  | Max mud weight of next hole section               |
| Displace to Gas                    | Formation Pore Pressure  | Dry gas from next casing point                    |

| <b>Surface Casing Collapse Design</b> |   |                          |
|---------------------------------------|---|--------------------------|
| <b>Load Case</b>                      | <b>External Pressure</b>                | <b>Internal Pressure</b> |
| Full Evacuation                       | Water gradient in cement, mud above TOC | None                     |
| Cementing                             | Wet cement weight                       | Water (8.33ppg)          |

| <b>Surface Casing Tension Design</b> |                    |
|--------------------------------------|--------------------|
| <b>Load Case</b>                     | <b>Assumptions</b> |
| Overpull                             | 100kips            |
| Runing in hole                       | 3 ft/s             |
| Service Loads                        | N/A                |

Casing Assumptions and Load Cases

Intermediate

All casing design assumptions were ran in Stress Check to determine safety factor which meet or exceed both Devon Energy and BLM minimum requirements. All casing strings will be filled while running in hole in order to not exceed collapse rating of the pipe.

| <b>Intermediate Casing Burst Design</b> |                          |   |
|---|--------------------------|---|
| <b>Load Case</b>                        | <b>External Pressure</b> | <b>Internal Pressure</b>                          |
| Pressure Test                           | Formation Pore Pressure  | Max mud weight of next hole-section plus Test psi |
| Drill Ahead                             | Formation Pore Pressure  | Max mud weight of next hole section               |
| Fracture @ Shoe                         | Formation Pore Pressure  | Dry gas   |

| <b>Intermediate Casing Collapse Design</b> |   |                          |
|--|---|--------------------------|
| <b>Load Case</b>                           | <b>External Pressure</b>                | <b>Internal Pressure</b> |
| Full Evacuation                            | Water gradient in cement, mud above TOC | None                     |
| Cementing                                  | Wet cement weight                       | Water (8.33ppg)          |

| <b>Intermediate Casing Tension Design</b> |                    |
|---|--------------------|
| <b>Load Case</b>                          | <b>Assumptions</b> |
| Overpull                                  | 100kips            |
| Runing in hole                            | 2 ft/s             |
| Service Loads                             | N/A                |

Casing Assumptions and Load Cases

Production

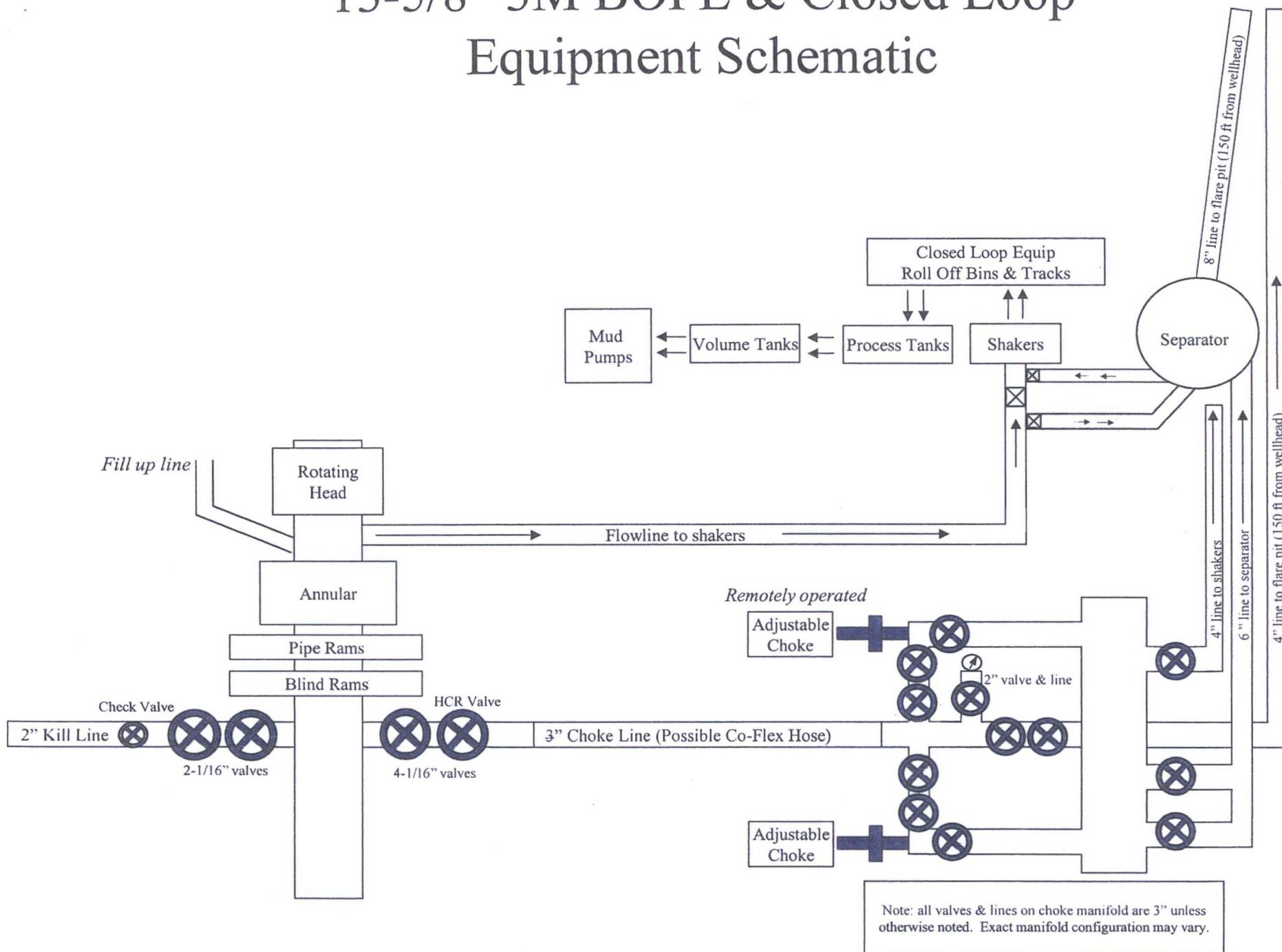
All casing design assumptions were ran in Stress Check to determine safety factor which meet or exceed both Devon Energy and BLM minimum requirements. All casing strings will be filled while running in hole in order to not exceed collapse rating of the pipe.

| <b>Production Casing Burst Design</b> |                          |   |
|---------------------------------------|--------------------------|---|
| <b>Load Case</b>                      | <b>External Pressure</b> | <b>Internal Pressure</b>                              |
| Pressure Test                         | Formation Pore Pressure  | Fluid in hole (water or produced water) + test psi    |
| Tubing Leak                           | Formation Pore Pressure  | Packer @ KOP, leak below surface 8.6 ppg packer fluid |
| Stimulation                           | Formation Pore Pressure  | Max frac pressure with heaviest frac fluid            |

| <b>Production Casing Collapse Design</b> |  |                          |
|--|--|--------------------------|
| <b>Load Case</b>                         | <b>External Pressure</b>                 | <b>Internal Pressure</b> |
| Full Evacuation                          | Water gradient in cement, mud above TOC. | None                     |
| Cementing                                | Wet cement weight                        | Water (8.33ppg)          |

| <b>Production Casing Tension Design</b> |                    |
|---|--------------------|
| <b>Load Case</b>                        | <b>Assumptions</b> |
| Overpull                                | 100kips            |
| Runing in hole                          | 2 ft/s             |
| Service Loads                           | N/A                |

# 13-5/8" 3M BOPE & Closed Loop Equipment Schematic



RIG 212



QUALITY DOCUMENT

PHOENIX RUBBER INDUSTRIAL LTD.

6728 Szeged, Budapest út 10, Hungary • H-6701 Szeged, P. O. Box 152  
Phone: (3662) 556-737 • Fax: (3662) 556-738

SALES & MARKETING: H-1092 Budapest, Ráday u. 42-44, Hungary • H-1440 Budapest, P. O. Box 26  
Phone: (361) 456-4200 • Fax: (361) 217-2972, 456-4273 • www.tauruserge.hu

| QUALITY CONTROL INSPECTION AND TEST CERTIFICATE  |           |                                  |   | CERT. N°: 552       |  |
|--|-----------|----------------------------------|---|---------------------|--|
| PURCHASER: Phoenix Beattie Co.   |           |                                  | P.O. N°: 1519FA-871   |                     |  |
| PHOENIX RUBBER order N°: 170466  |           | HOSE TYPE: 3" ID                 |   | Choke and Kill Hose |  |
| HOSE SERIAL N°: 34128  |           | NOMINAL / ACTUAL LENGTH: 11,43 m |   |                     |  |
| W.P. 68,96 MPa 10000 psi   |           | T.P. 103,4 MPa 15000 psi         |   | Duration: 60 min.   |  |
| <p>Pressure test with water at ambient temperature</p> <p style="text-align: center;">See attachment. (1 page)</p> <p>↑ 10 mm = 10 Min.<br/>→ 10 mm = 25 MPa</p> |           |                                  |   |                     |  |
| COUPLINGS  |           |                                  |   |                     |  |
| Type   | Serial N° |                                  | Quality   | Heat N°             |  |
| 3" coupling with<br>4 1/16" Flange end   | 720 719   |                                  | AISI 4130   | C7626               |  |
|  |           |                                  | AISI 4130   | 47357               |  |
| API Spec 16 C<br>Temperature rate: "B"   |           |                                  |   |                     |  |
| All metal parts are flawless   |           |                                  |   |                     |  |
| WE CERTIFY THAT THE ABOVE HOSE HAS BEEN MANUFACTURED IN ACCORDANCE WITH THE TERMS OF THE ORDER AND PRESSURE TESTED AS ABOVE WITH SATISFACTORY RESULT.            |           |                                  |   |                     |  |
| Date:<br>29. April. 2002.  | Inspector |                                  | Quality Control<br>PHOENIX RUBBER Industrial Ltd.<br>Hose Inspection and<br>TESTED TRUE COPY<br>PHOENIX RUBBER & C. |                     |  |

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|   |    |        |    |       |
|---|----|--------|----|-------|
| 6 | GN | +0.000 | PC | 14:00 |
|   | RD | +0.000 | PC | 14:00 |
|   | BL | 13:45  | 32 | 14:00 |
| 7 | GN | +0.000 | PC | 13:45 |
|   | RD | +0.000 | PC | 13:45 |
|   | BL | 13:15  | 32 | 13:45 |
| 6 | GN | +0.000 | PC | 13:20 |
|   | RD | +0.000 | PC | 13:20 |
|   | BL | 13:55  | 32 | 13:20 |
| 5 | GN | +0.000 | PC | 13:00 |
|   | RD | +0.000 | PC | 13:00 |
|   | BL | 13:55  | 32 | 13:00 |
| 4 |    |        |    |       |
| 3 |    |        |    |       |
| 2 |    |        |    |       |

*[Signature]*  
**GENIX RUBBER**  
 Industrial Ltd.  
 Hose Inspection and  
 Certification Dept.

VERIFIED TRUE CO.  
 PHOENIX RUBBER CO.



A multibowl wellhead may be used. The BOP will be tested per Onshore Order #2 after installation on the surface casing which will cover testing requirements for a maximum of 30 days. If any seal subject to test pressure is broken the system must be tested.

Devon proposes using a multi-bowl wellhead assembly. This assembly will only be tested when installed on the surface casing. Minimum working pressure of the blowout preventer (BOP) and related equipment (BOPE) required for drilling below the surface casing shoe shall be 3000 (3M) psi.

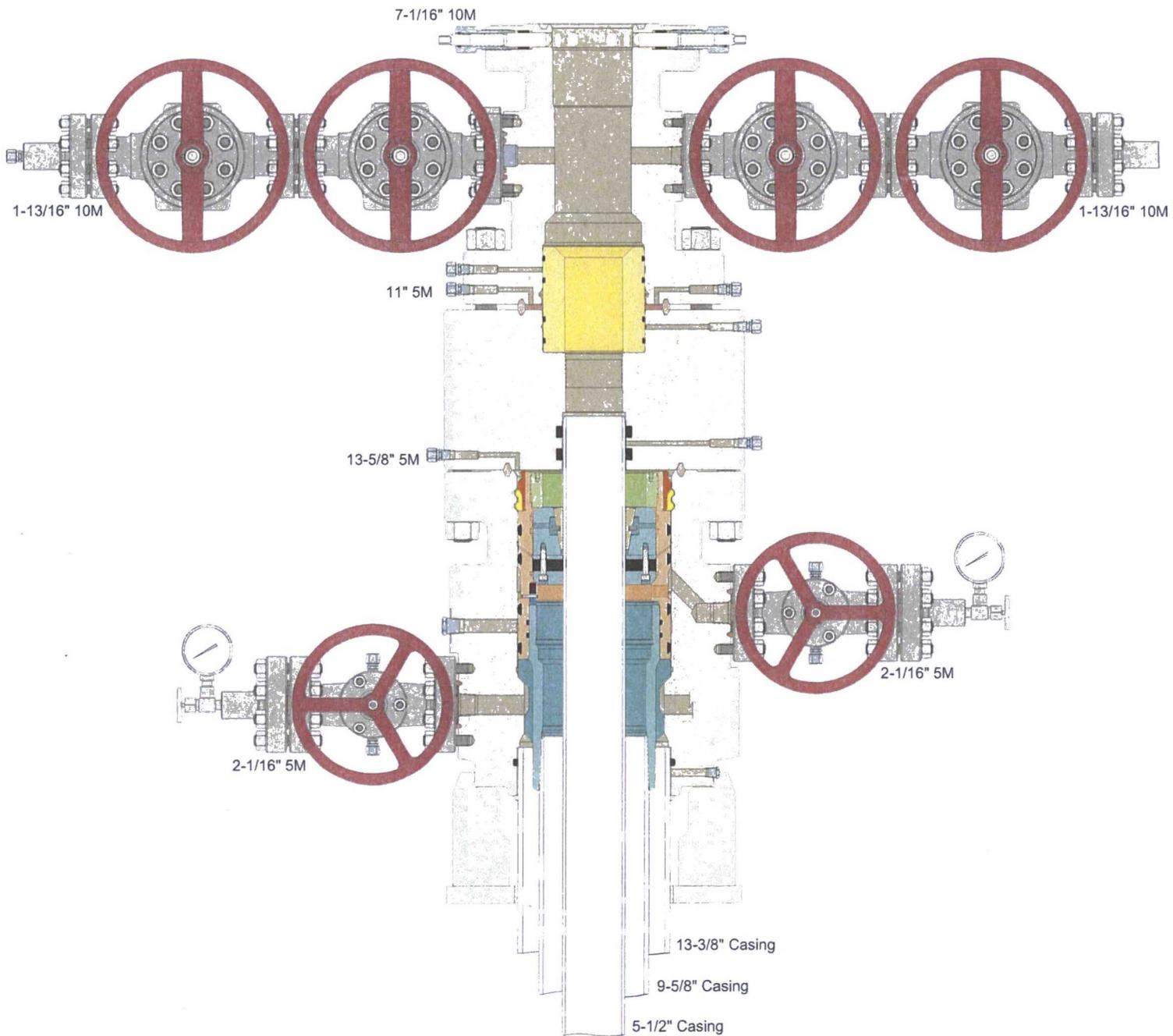
- Wellhead will be installed by wellhead representatives.
- If the welding is performed by a third party, the wellhead representative will monitor the temperature to verify that it does not exceed the maximum temperature of the seal.
- Wellhead representative will install the test plug for the initial BOP test.
- Wellhead company will install a solid steel body pack-off to completely isolate the lower head after cementing intermediate casing. After installation of the pack-off, the pack-off and the lower flange will be tested to 3M, as shown on the attached schematic. Everything above the pack-off will not have been altered whatsoever from the initial nipple up. Therefore the BOP components will not be retested at that time.
- If the cement does not circulate and one inch operations would have been possible with a standard wellhead, the well head will be cut and top out operations will be conducted.
- Devon will pressure test all seals above and below the mandrel (but still above the casing) to full working pressure rating.
- Devon will test the casing to 0.22 psi/ft or 1500 psi, whichever is greater, as per Onshore Order #2.

After running the 13-3/8" surface casing, a 13-5/8" BOP/BOPE system with a minimum rating of 3M will be installed on the wellhead system and will undergo a 250 psi low pressure test followed by a 3,000 psi high pressure test. The 3,000 psi high and 250 psi low test will cover testing requirements a maximum of 30 days, as per Onshore Order #2. If the well is not complete within 30 days of this BOP test, another full BOP test will be conducted, as per Onshore Order #2.

After running the 9-5/8' intermediate casing with a mandrel hanger, the 13-5/8" BOP/BOPE system with a minimum rating of 3M will already be installed on the wellhead.

The pipe rams will be operated and checked each 24 hour period and each time the drill pipe is out of the hole. These tests will be logged in the daily driller's log. A 2" kill line and 3" choke line will be incorporated into the drilling spool below the ram BOP. In addition to the rams and annular preventer, additional BOP accessories include a kelly cock, floor safety valve, choke lines, and choke manifold rated at 3,000 psi WP.

Devon's proposed wellhead manufactures will be FMC Technologies, Cactus Wellhead, or Cameron.





Fluid Technology

ContiTech Beattie Corp.  
Website: [www.contitechbeattie.com](http://www.contitechbeattie.com)

Monday, June 14, 2010

RE: Drilling & Production Hoses  
Lifting & Safety Equipment

To Helmerich & Payne,

A Continental ContiTech hose assembly can perform as intended and suitable for the application regardless of whether the hose is secured or unsecured in its configuration. As a manufacturer of High Pressure Hose Assemblies for use In Drilling & Production, we do offer the corresponding lifting and safety equipment, this has the added benefit of easing the lifting and handling of each hose assembly whilst affording hose longevity by ensuring correct handling methods and procedures as well as securing the hose in the unlikely event of a failure; but in no way does the lifting and safety equipment affect the performance of the hoses providing the hoses have been handled and installed correctly. It is good practice to use lifting & safety equipment but not mandatory.

Should you have any questions or require any additional information/clarifications then please do not hesitate to contact us.

ContiTech Beattie is part of the Continental AG Corporation and can offer the full support resources associated with a global organization.

Best regards,

Robin Hodgson  
Sales Manager  
ContiTech Beattie Corp

ContiTech Beattie Corp,  
11535 Brittmoore Park Drive,  
Houston, TX 77041  
Phone: +1 (832) 327-0141  
Fax: +1 (832) 327-0148  
[www.contitechbeattie.com](http://www.contitechbeattie.com)

