



## Cement

Well Name: Peschel 20H-302

### Cement

#### Surface Casing Cement, Casing, 8/10/2015 03:15

|                |                              |                         |                                 |                           |                                            |                                                 |                  |                                   |
|----------------|------------------------------|-------------------------|---------------------------------|---------------------------|--------------------------------------------|-------------------------------------------------|------------------|-----------------------------------|
| Type<br>Casing | String<br>Surface, 907.0ftKB | Start Date<br>8/10/2015 | Cementing End Date<br>8/10/2015 | Wellbore<br>Original Hole | Job<br>Drilling - original, 8/9/2015 12:00 | Cementing Company<br>Cementers Well Service Inc | Cement Objective | Eval Method<br>Returns to Surface |
|----------------|------------------------------|-------------------------|---------------------------------|---------------------------|--------------------------------------------|-------------------------------------------------|------------------|-----------------------------------|

#### Cement Stages

|                                  |                                      |                                |                |                              |                    |                                    |                                     |                                |                              |                                    |               |                            |                              |                             |                             |                              |
|----------------------------------|--------------------------------------|--------------------------------|----------------|------------------------------|--------------------|------------------------------------|-------------------------------------|--------------------------------|------------------------------|------------------------------------|---------------|----------------------------|------------------------------|-----------------------------|-----------------------------|------------------------------|
| Stg #<br>1                       | Description<br>Surface Casing Cement |                                |                |                              | Objective          |                                    | Top Depth (ftKB)<br>13.0            | Bottom Depth (ftKB)<br>908.0   | Pump Start Date<br>8/10/2015 |                                    |               | Pump End Date<br>8/10/2015 |                              | Top Plug?<br>No             | Btm Plug?<br>No             |                              |
| Initial Pump Rate (bbl/min)<br>4 |                                      | Final Pump Rate (bbl/min)<br>5 |                | Avg Pump Rate (bbl/min)<br>5 |                    | Final Pump Pressure (psi)<br>510.0 | Plug Bump Pressure (psi)<br>1,030.0 | Pressure Held (psi)<br>1,000.0 |                              | Pressure Release Date<br>8/10/2015 |               | Full Return?<br>No         |                              | Vol Cement Ret (bbl)<br>7.0 |                             | Volume Lost (bbl)            |
| Recip?<br>No                     | Stroke (ft)                          | Recip Rate (...)               | Rotat...<br>No | RPM (rpm)                    | Pipe Movement Note |                                    |                                     | MD Tagged (...)<br>866.0       | Tag Method<br>Drill Bit      | Tag Wt (100...)<br>5               | Prop...<br>No | Depth Plug...<br>915.0     | Tag Cement Date<br>8/10/2015 |                             | Drill Out Date<br>8/10/2015 | Drill Out Dia (...)<br>8 3/4 |

#### Cement Fluids

| Fluid | Est Top (ftKB) | Est Btm (ftKB) | Pump Start Date | Pump End Date | Class | Amount (sacks) | Mix H2O Ratio (gal/sack) | Yield (ft³/sack) | Vol Pumped (bbl) | Excess (%) | Dens (lb/gal) |
|-------|----------------|----------------|-----------------|---------------|-------|----------------|--------------------------|------------------|------------------|------------|---------------|
| Lead  | 13.0           | 908.0          | 8/10/2015       | 8/10/2015     | NEAT  | 485            | 6.30                     | 1.18             | 101.9            |            | 15.20         |

#### Intermediate Casing Cement, Casing, 8/13/2015 06:30

|                |                                     |                         |                                 |                           |                                            |                                       |                  |                                   |
|----------------|-------------------------------------|-------------------------|---------------------------------|---------------------------|--------------------------------------------|---------------------------------------|------------------|-----------------------------------|
| Type<br>Casing | String<br>Intermediate, 7,686.6ftKB | Start Date<br>8/13/2015 | Cementing End Date<br>8/13/2015 | Wellbore<br>Original Hole | Job<br>Drilling - original, 8/9/2015 12:00 | Cementing Company<br>Sanjel (USA) Inc | Cement Objective | Eval Method<br>Returns to Surface |
|----------------|-------------------------------------|-------------------------|---------------------------------|---------------------------|--------------------------------------------|---------------------------------------|------------------|-----------------------------------|

#### Cement Stages

|                                  |                                           |                                |                |                              |                    |                                      |                                     |                                |                                    |                      |                            |                              |                              |                             |                              |
|----------------------------------|-------------------------------------------|--------------------------------|----------------|------------------------------|--------------------|--------------------------------------|-------------------------------------|--------------------------------|------------------------------------|----------------------|----------------------------|------------------------------|------------------------------|-----------------------------|------------------------------|
| Stg #<br>1                       | Description<br>Intermediate Casing Cement |                                |                |                              | Objective          |                                      | Top Depth (ftKB)<br>13.0            | Bottom Depth (ftKB)<br>7,695.0 | Pump Start Date<br>8/13/2015       |                      | Pump End Date<br>8/13/2015 |                              | Top Plug?<br>No              | Btm Plug?<br>No             |                              |
| Initial Pump Rate (bbl/min)<br>6 |                                           | Final Pump Rate (bbl/min)<br>6 |                | Avg Pump Rate (bbl/min)<br>6 |                    | Final Pump Pressure (psi)<br>1,140.0 | Plug Bump Pressure (psi)<br>1,834.0 | Pressure Held (psi)<br>1,834.0 | Pressure Release Date<br>8/13/2015 |                      | Full Return?<br>No         | Vol Cement Ret (bbl)<br>10.0 |                              | Volume Lost (bbl)           |                              |
| Recip?<br>No                     | Stroke (ft)                               | Recip Rate (...)               | Rotat...<br>No | RPM (rpm)                    | Pipe Movement Note |                                      |                                     | MD Tagged (...)<br>7,629.0     | Tag Method<br>Drill Bit            | Tag Wt (100...)<br>5 | Prop...<br>No              | Depth Plug...<br>7,695.0     | Tag Cement Date<br>8/13/2015 | Drill Out Date<br>8/13/2015 | Drill Out Dia (...)<br>6 1/8 |

#### Cement Fluids

| Fluid | Est Top (ftKB) | Est Btm (ftKB) | Pump Start Date | Pump End Date | Class              | Amount (sacks) | Mix H2O Ratio (gal/sack) | Yield (ft³/sack) | Vol Pumped (bbl) | Excess (%) | Dens (lb/gal) |
|-------|----------------|----------------|-----------------|---------------|--------------------|----------------|--------------------------|------------------|------------------|------------|---------------|
| Lead  | 13.0           | 5,487.0        | 8/13/2015       | 8/13/2015     | 1:1:0 POZ TYPE 111 | 500            | 10.88                    | 1.95             | 173.7            |            | 12.00         |
| Tail  | 5,487.0        | 7,695.0        | 8/13/2015       | 8/13/2015     | 1:1:2 POZ G        | 285            | 5.93                     | 1.42             | 72.1             |            | 14.60         |

#### Production Casing Cement, Casing, 8/15/2015 18:00

|                |                               |                         |                                 |                           |                                            |                                       |                  |                                   |
|----------------|-------------------------------|-------------------------|---------------------------------|---------------------------|--------------------------------------------|---------------------------------------|------------------|-----------------------------------|
| Type<br>Casing | String<br>Liner, 11,587.0ftKB | Start Date<br>8/15/2015 | Cementing End Date<br>8/15/2015 | Wellbore<br>Original Hole | Job<br>Drilling - original, 8/9/2015 12:00 | Cementing Company<br>Sanjel (USA) Inc | Cement Objective | Eval Method<br>Returns to Surface |
|----------------|-------------------------------|-------------------------|---------------------------------|---------------------------|--------------------------------------------|---------------------------------------|------------------|-----------------------------------|

#### Cement Stages

|                                  |                                         |                                |  |                              |           |                                      |  |                                     |                                 |                                |            |                                    |                            |                    |                 |                              |                 |                   |                |  |                     |  |
|----------------------------------|-----------------------------------------|--------------------------------|--|------------------------------|-----------|--------------------------------------|--|-------------------------------------|---------------------------------|--------------------------------|------------|------------------------------------|----------------------------|--------------------|-----------------|------------------------------|-----------------|-------------------|----------------|--|---------------------|--|
| Stg #<br>1                       | Description<br>Production Casing Cement |                                |  |                              | Objective |                                      |  | Top Depth (ftKB)<br>6,485.0         | Bottom Depth (ftKB)<br>11,587.0 | Pump Start Date<br>8/15/2015   |            |                                    | Pump End Date<br>8/15/2015 |                    | Top Plug?<br>No | Btm Plug?<br>No              |                 |                   |                |  |                     |  |
| Initial Pump Rate (bbl/min)<br>5 |                                         | Final Pump Rate (bbl/min)<br>5 |  | Avg Pump Rate (bbl/min)<br>5 |           | Final Pump Pressure (psi)<br>1,200.0 |  | Plug Bump Pressure (psi)<br>1,800.0 |                                 | Pressure Held (psi)<br>1,800.0 |            | Pressure Release Date<br>8/15/2015 |                            | Full Return?<br>No |                 | Vol Cement Ret (bbl)<br>18.0 |                 | Volume Lost (bbl) |                |  |                     |  |
| Recip?<br>No                     | Stroke (ft)                             | Recip Rate (...)               |  | Rotat...<br>No               | RPM (rpm) | Pipe Movement Note                   |  |                                     | MD Tagged (...)                 |                                | Tag Method |                                    | Tag Wt (100...)            |                    | Prop...<br>No   | Depth Plug...                | Tag Cement Date |                   | Drill Out Date |  | Drill Out Dia (...) |  |

#### Cement Fluids

| Fluid | Est Top (ftKB) | Est Btm (ftKB) | Pump Start Date | Pump End Date | Class       | Amount (sacks) | Mix H2O Ratio (gal/sack) | Yield (ft³/sack) | Vol Pumped (bbl) | Excess (%) | Dens (lb/gal) |
|-------|----------------|----------------|-----------------|---------------|-------------|----------------|--------------------------|------------------|------------------|------------|---------------|
| Tail  | 6,485.0        | 11,587.0       | 8/15/2015       | 8/15/2015     | SAN TAIL WB | 485            | 6.19                     | 1.25             | 108.0            |            | 13.50         |