**Required Completion of the Wells**

Please, see tables below for each wells the required material spec. The Supplier of Gravel Pack job is oblige to fulfilled yellow gabs (Producer/Supplier) for each wells.

The materials/equipment delivered by RWE GS you can find in the tables for each wells.

The yellow gabs **(**Producer/Supplier) – have to be fulfilled by Supplier with name of given equipment and name of producer.

The fulfilled Annex No. 3 will be part of the bid.

**General requirements for the equipment:**

* All wells without CO2 or H2S contents,
* All wells are vertical or slightly deviated max. to 10°,

**Screens:**

* For wells Tv 2, Ts 7, Ts 9, Ts 12, Z 19, Z 24, Z 34 are required **Mesh type** screens (at least with three layers of media that form the jacket) max. OD for: (3 ½” screen – 4,35”), ( 2 7/8” screen – 3.68”)
* For well Lo 28 is required wire-wrapped screen. Max OD 2 7/8” screen – 3.35”
* The control screen can be **Wire-wrapped type** max. OD for: (3 ½” screen – 4”), ( 2 7/8” screen – 3.35”)
* Size, thread connection, length and material according spec. in the tables

**Anchor tubing seal assembly:**

* Ratch Latch Seal Assembly modified to isolate GPE ports, completed at least with two molded seals completed with mule shoe
* Upper connection VAGT thread according spec. in the tables

**Gravel pack packer:**

* retrievable production gravel pack packer – two trips system
* material, size according spec. in the tables
* resistant to differential pressure more than 30MPa and 80°C

**Gravel pack extension:**

* suitable for gravel pack packer and gravel pack job
* gravel pack extension with sliding sleeve

**Pup joint:**

* above and below the landing nipple we require pup joint according spec. in the tables

**SOSJ:**

* size, thread connection, material according to spec. in the tables
* delivered with fully number of shear screws

**Shoe of screens:**

* blinded with sufficient angle of bevel for good guide to milling casing

**Gravel pack sand:**

* the requirements for the gravel pack sand are specified in **Annex No. 1 Technical spec.** and in **Annex No. 3 Technical data**
* supplier is oblige calculate in the bid gravel pack sand for each well as is state in the **Annex No. 3 Technical data**

**Fluids:**

* the requirements for the fluids are specified in **Annex No. 1 Technical spec.**

**Screen Centralization:**

* in case hole and OH we required weld-on blade type centralizers:
* thick of centralizers: from 0,25” to 0,50”, approx.. 6” long
* the centralizers consist of four blades welded to the screen base pipe 90° apart to result in an OD approx.. 0,25” under ID of the well casing
* the centralizers are spaced 15 to 20 feet and can be positioned at the top, bottom and/or middle of a screen joint
* positioned of the centralizers have to be approved by Client

|  |  |  |
| --- | --- | --- |
| **Well** | **Temperature** | **Pressure** |
| **Tv 2** | **21°** | **4,4 MPa** |
| **Lo 28** | **25°** | **4,5 MPa** |
| **Ts 7, Ts 9, Ts 12** | **18°** | **3,8 MPa** |
| **Z 19, Z 24** | **43° – 44°** | **13,7 – 13,6 MPa** |
| **Z 34** | **34° – 35°** | **12,1 MPa** |

**Well Tv 2**

|  |  |
| --- | --- |
| Tubing 3 ½“ VAGT, 9,20 LB/FT, J-55 | RWE GS |
| Seating Nipple X profile 2,750, 3 ½” VAGT, 9,20 LB/FT, mat. L-80 | RWE GS |
| Pup Joint 3 ½” VAGT, 9,20 LB/FT, J-55 | RWE GS |
| Anchor tubing seal assembly (modified to isolate GPE ports) at least 2 sealing, upper connection 3 ½” VAGT 9,20 LB/FT, mat. L-80 | Producer/Supplier |
| GP packer (retrievable production gravel pack packer) for 6 5/8, w.t. 7,32 mm, mat. Steel 4140-4142 80 MYS 22 HRC MAX | Producer/Supplier |
| GPE (gravel pack extension with sliding sleeve suitable for gravel pack), mat. A098 41XX OR P110 STEEL 110 MYS STD N-80 UPPER EXT | Producer/Supplier |
| X-over (from GPE to pup joint) mat. L-80 | Producer/Supplier |
| Pup joint 3 ½” NU 10RD box/pin (2,5 m), J-55 | Producer/Supplier |
| Seating Nipple XN profile 2,750, 3 ½” NU 10RD, mat. L-80 | RWE GS |
| Pup joint 3 ½” NU 10RD box/pin (2,5 m), J-55 | Producer/Supplier |
| SOSJ 3 ½” NU 10RD, mat. A098 41XX OR P110 STEEL 110 MYS | Producer/Supplier |
| 1 pc tubing 3 ½” NU 10RD box/pin (9,5 m), J-55 | Producer/Supplier |
| 1 pc screen 3 ½” NU 10RD ( approx. 2,5 m), mat. 316L STAINLESS STEEL, Base Pipe L-80 | Producer/Supplier |
| 2 pc tubing 3 ½” NU 10RD box/pin (approx.. 9,5 m), J-55 | Producer/Supplier |
| 1 pc screen 3 ½” NU 10 RD, (min. length 11,2 m, active part of screen have to be at least 10m ), mat. 316L STAINLESS STEEL, Base Pipe L-80 | Producer/Supplier |
| 1 pc blind shoe 3 ½” NU 10RD, with conical guidance, J-55 | Producer/Supplier |

* **ID of anchor tubing seal assembly have to allow go through the plug to the seating nipple XN.**

**Well Lo 28**

|  |  |
| --- | --- |
| Tubing 2 7/8“ VAGT, 6,40 LB/FT, J-55 | RWE GS |
| Seating Nipple X profile 2,313, 2 7/8” VAGT, 6,40 LB/FT, mat. L-80 | RWE GS |
| Pup Joint 2 7/8” VAGT, 6,40 LB/FT, J-55 | RWE GS |
| Anchor tubing seal assembly (modified to isolate GP ports) at least 2 sealing, upper connection 2 7/8” VAGT, 6,40 LB/FT, mat. L-80 | Producer/Supplier |
| GP packer (retrievable production gravel pack packer) for 5 ½”, w.t. 6,98 mm, mat. Steel 4140-4142 80 MYS 22 HRC MAX | Producer/Supplier |
| GPE (gravel pack extension with sliding sleeve suitable for gravel pack), mat. A098 41XX OR P110 STEEL 110 MYS STD N-80 UPPER EXT | Producer/Supplier |
| X-over (from GPE to pup joint) mat. L-80 | Producer/Supplier |
| Pup joint 2 7/8” NU 10RD box/pin (2,5 m), J-55 | Producer/Supplier |
| Seating Nipple XN profile 1.875, 2 7/8” NU 10RD, mat. L-80 | RWE GS |
| Pup joint 2 7/8” NU 10RD box/pin (2,5 m), J-55 | Producer/Supplier |
| SOSJ 2 7/8” NU 10RD, mat. A098 41XX OR P110 STEEL 110 MYS | Producer/Supplier |
| 1 pc tubing 2 7/8” NU 10RD box/pin (9,5 m), J-55 | Producer/Supplier |
| Screen 2 7/8” NU 10RD ( approx. 2,5 m), mat. 316L STAINLESS STEEL, Base Pipe L-80, wire-wrapped type | Producer/Supplier |
| 2 pc tubing 2 7/8” NU 10RD box/pin (9,5 m), J-55 | Producer/Supplier |
| 1 pc screen 2 7/8” NU 10 RD, (min. length 11,2 m, active part of screen have to be at least 10m ), mat. 316L STAINLESS STEEL, Base Pipe L-80, wire-wrapped type | Producer/Supplier |
| 1 pc blind shoe 2 7/8” NU 10RD, with conical guidance, J-55 | Producer/Supplier |

* **ID of anchor tubing seal assembly have to allow go through the plug to the seating nipple XN.**

**Wells Ts 7, Ts 9, Ts 12**

|  |  |
| --- | --- |
| Tubing 3 ½“ VAGT, 9,20 LB/FT, J-55 | RWE GS |
| Seating Nipple X profile 2,750, 3 ½” VAGT, 9,20 LB/FT, mat. L-80 | RWE GS |
| Pup Joint 3 ½” VAGT, 9,20 LB/FT, J-55 | RWE GS |
| Anchor tubing seal assembly (modified to isolate GP ports) at least 2 sealing, upper connection 3 ½” VAGT 9,20 LB/FT, mat. L-80 | Producer/Supplier |
| GP packer (retrievable production gravel pack packer) for 7”, w.t. 9,19 mm, mat. Steel 4140-4142 80 MYS 22 HRC MAX | Producer/Supplier |
| GPE (gravel pack extension with sliding sleeve suitable for gravel pack), mat. A098 41XX OR P110 STEEL 110 MYS STD N-80 UPPER EXT | Producer/Supplier |
| X-over (from GPE to pup joint) mat. L-80 | Producer/Supplier |
| Pup joint 3 ½” NU 10RD box/pin (2,5 m), J-55 | Producer/Supplier |
| Seating Nipple XN profile 2,750, 3 ½” NU 10RD, mat. L-80 | RWE GS |
| Pup joint 3 ½” NU 10RD box/pin (2,5 m), J-55 | Producer/Supplier |
| SOSJ 3 ½” NU 10RD, mat. A098 41XX OR P110 STEEL 110 MYS | Producer/Supplier |
| 1 pc tubing 3 ½” NU 10RD box/pin (9,5 m), J-55 | Producer/Supplier |
| Screen 3 ½” NU 10RD ( approx. 2,5 m), mat. 316L STAINLESS STEEL, Base Pipe L-80 | Producer/Supplier |
| 2 pc tubing 3 ½” NU 10RD box/pin (approx.. 9,5 m), J-55 | Producer/Supplier |
| **For Ts 7**: 8 pcs screen 3 ½” NU 10 RD, (min. length 11,2 m, active part of screen have to be at least 10 m), mat. 316L STAINLESS STEEL, Base Pipe L-80  **For** **Ts 9:** 6 pcs screen 3 ½” NU 10 RD, (min. length 11,2 m, active part of screen have to be at least 10 m), mat. 316L STAINLESS STEEL, Base Pipe L-80  **For** **Ts 12:** 4 pcs screen 3 ½” NU 10 RD, (min. length 11,2 m, active part of screen have to be at least 10 m), mat. 316L STAINLESS STEEL, Base Pipe L-80 | Producer/Supplier |
| 1 pc blind shoe 3 ½” NU 10RD, with conical guidance, J-55 | Producer/Supplier |

* **ID of anchor tubing seal assembly have to allow go through the plug to the seating nipple XN.**

**Well Z 19**

|  |  |
| --- | --- |
| Tubing 3 ½“ VAGT, 9,20 LB/FT, J-55 | RWE GS |
| Seating Nipple X profile 2,750, 3 ½” VAGT, 9,20 LB/FT, mat. L-80 | RWE GS |
| Pup Joint 3 ½” VAGT, 9,20 LB/FT, J-55 | RWE GS |
| Anchor tubing seal assembly (modified to isolate GP ports) at least 2 sealing, upper connection 3 ½” VAGT 9,20 LB/FT, mat. L-80 | Producer/Supplier |
| GP packer (retrievable production gravel pack packer) for 6 5/8, w.t. 7,32 mm, mat. Steel 4140-4142 80 MYS 22 HRC MAX | Producer/Supplier |
| GPE (gravel pack extension with sliding sleeve suitable for gravel pack), mat. A098 41XX OR P110 STEEL 110 MYS STD N-80 UPPER EXT | Producer/Supplier |
| X-over (from GPE to pup joint) mat. L-80 | Producer/Supplier |
| Pup joint 2 7/8” NU 10RD box/pin (2,5 m), J-55 | Producer/Supplier |
| Seating Nipple XN profile 2,313, 2 7/8” NU 10RD, mat. L-80 | RWE GS |
| Pup joint 2 7/8” NU 10RD box/pin (2,5 m), J-55 | Producer/Supplier |
| SOSJ 2 7/8” NU 10RD, mat. A098 41XX OR P110 STEEL 110 MYS | Producer/Supplier |
| 1 pc tubing 2 7/8” NU 10RD box/pin (9,5 m), J-55 | Producer/Supplier |
| Screen 2 7/8” NU 10RD ( approx. 2,5 m), mat. 316L STAINLESS STEEL, Base Pipe L-80 | Producer/Supplier |
| 2 pc tubing 2 7/8” NU 10RD box/pin (approx.. 9,5 m), J-55 | Producer/Supplier |
| 2 pc screen 2 7/8” NU 10 RD, (min. length 11,2 m, active part of screen have to be at least 10 m ), mat. 316L STAINLESS STEEL, Base Pipe L-80  1 pc screen 2 7/8” NU 10 RD, (min. length 5,6 m, active part of screen have to be at least 4,5 m ), mat. 316L STAINLESS STEEL, Base Pipe L-80 | Producer/Supplier |
| 1 pc blind shoe 2 7/8” NU 10RD, with conical guidance, J-55 | Producer/Supplier |

**Well Z 24**

|  |  |
| --- | --- |
| Tubing 2 7/8“ VAGT, 6,40 LB/FT, J-55 | RWE GS |
| Seating Nipple X profile 2,313, 2 7/8“ VAGT, 6,40 LB/FT, mat. L-80 | RWE GS |
| Pup Joint 2 7/8“ VAGT, 6,40 LB/FT, J-55 | RWE GS |
| Anchor tubing seal assembly (modified to isolate GP ports) at least 2 sealing, upper connection 2 7/8“ VAGT, 6,40 LB/FT, mat. L-80 | Producer/Supplier |
| GP packer (retrievable production gravel pack packer) for 7, w.t. 9,19 mm, mat. Steel 4140-4142 80 MYS 22 HRC MAX | Producer/Supplier |
| GPE (gravel pack extension with sliding sleeve suitable for gravel pack), mat. A098 41XX OR P110 STEEL 110 MYS STD N-80 UPPER EXT | Producer/Supplier |
| X-over (from GPE to pup joint) mat. L-80 | Producer/Supplier |
| Pup joint 2 7/8” NU 10RD box/pin (2,5 m), J-55 | Producer/Supplier |
| Seating Nipple XN profile 2,313, 2 7/8” NU 10RD, mat. L-80 | RWE GS |
| Pup joint 2 7/8” NU 10RD box/pin (2,5 m), J-55 | Producer/Supplier |
| SOSJ 2 7/8” NU 10RD, mat. A098 41XX OR P110 STEEL 110 MYS | Producer/Supplier |
| 1 pc tubing 2 7/8” NU 10RD box/pin (9,5 m), J-55 | Producer/Supplier |
| Screen 2 7/8” NU 10RD ( approx. 2,5 m), mat. 316L STAINLESS STEEL, Base Pipe L-80 | Producer/Supplier |
| 2 pc tubing 2 7/8” NU 10RD box/pin (approx.. 9,5 m), J-55 | Producer/Supplier |
| 1 pc screen 2 7/8” NU 10 RD, (min. length 11,2 m, active part of screen have to be at least 10 m ), mat. 316L STAINLESS STEEL, Base Pipe L-80  1 pc screen 2 7/8” NU 10 RD, (min. length 5,6 m, active part of screen have to be at least 4,5 m ), mat. 316L STAINLESS STEEL, Base Pipe L-80 | Producer/Supplier |
| 1 pc blind shoe 2 7/8” NU 10RD, with conical guidance, J-55 | Producer/Supplier |

**Well Z 34**

|  |  |
| --- | --- |
| Tubing 2 7/8“ VAGT, 6,40 LB/FT, J-55 | RWE GS |
| Seating Nipple X profile 2,313, 2 7/8“ VAGT, 6,40 LB/FT, mat. L-80 | RWE GS |
| Pup Joint 2 7/8“ VAGT, 6,40 LB/FT, J-55 | RWE GS |
| Anchor tubing seal assembly (modified to isolate GP ports) at least 2 sealing, upper connection 2 7/8“ VAGT, 6,40 LB/FT, mat. L-80 | Producer/Supplier |
| GP packer (retrievable production gravel pack packer) for 7, w.t. 9,19 mm, mat. Steel 4140-4142 80 MYS 22 HRC MAX | Producer/Supplier |
| GPE (gravel pack extension with sliding sleeve suitable for gravel pack), mat. A098 41XX OR P110 STEEL 110 MYS STD N-80 UPPER EXT | Producer/Supplier |
| X-over (from GPE to pup joint) mat. L-80 | Producer/Supplier |
| Pup joint 2 7/8” NU 10RD box/pin (2,5 m), J-55 | Producer/Supplier |
| Seating Nipple XN profile 2,313, 2 7/8” NU 10RD, mat. L-80 | RWE GS |
| Pup joint 2 7/8” NU 10RD box/pin (2,5 m), J-55 | Producer/Supplier |
| SOSJ 2 7/8” NU 10RD, mat. A098 41XX OR P110 STEEL 110 MYS | Producer/Supplier |
| 1 pc tubing 2 7/8” NU 10RD box/pin (9,5 m), J-55 | Producer/Supplier |
| Screen 2 7/8” NU 10RD ( approx. 2,5 m), mat. 316L STAINLESS STEEL, Base Pipe L-80 | Producer/Supplier |
| 2 pc tubing 2 7/8” NU 10RD box/pin (approx.. 9,5 m), J-55 | Producer/Supplier |
| 1 pc screen 2 7/8” NU 10 RD, (min. length 11,2 m, active part of screen have to be at least 10 m ), mat. 316L STAINLESS STEEL, Base Pipe L-80  1 pc screen 2 7/8” NU 10 RD, (min. length 2,8 m, active part of screen have to be at least 1,8 m ), mat. 316L STAINLESS STEEL, Base Pipe L-80 | Producer/Supplier |
| 1 pc blind shoe 2 7/8” NU 10RD, with conical guidance, J-55 | Producer/Supplier |