



**TENDER FOR SUPPLY OF GEOTHERMAL WELLHEADS (KGN-GDD-091-2016)**

**Date: 30<sup>th</sup> November 2016**

**CLARIFICATION No. 1**

In accordance with the tender for supply of geothermal wellheads, KenGen hereby issues Clarification No.1.

No.	BIDDER'S QUESTION	KENGEN'S RESPONSE
1	Please provide wellhead material grade, specification level, the level of performance requirements (including the content of CO <sub>2</sub> and H <sub>2</sub> S )	<p>The material grades are provided in specifications API 6D and API 6A. The product specification level is PSL-1. It is the manufacturer's responsibility to select the most suitable materials. Usually, ASTM A216 Gr. WCC is used for the valve body and AISI 4130 or 4140 alloy steel (with hardness not exceeding 22RC) is used for adaptor flanges.</p> <p>Typical fluid chemistry: CO<sub>2</sub> – 642 ppm H<sub>2</sub>S – 1.7 ppm Chloride – 178 ppm</p>
2	<p>10" API 6D Class 900 Ring Joint (R-53) Flanged Ends (full face), Full Bore Through Conduit, Geothermal Expanding Gate Valve, Handwheel Operated (with no bevel gear), Geothermal Trim (Sour Gas &amp; Oil, H<sub>2</sub>S, Meets NACE MR-01-75, -20°F to 650°F) API 6D <b>Gate Material with Stellite No. 6 overlay</b>. Must be fitted with appropriately rated stainless steel body relief valve.</p> <p>whether "Gate Material with Stellite No. 6 overlay" can be replaced by "Gate Material with tungsten carbide overlay".</p>	<p>KenGen prefers Stellite No. 6 overlay on the gate material. Stellite has better corrosion resistance than tungsten carbide.</p> <p>The sealing method is metal-to-metal mechanical sealing – with no elastomer or plastic materials</p>

3	<p>Double studded adaptor flange 13 5/8" API 6A, 3000 psi ring joint (R-57) bottom x 10" ANSI 900 (11" API 3000 psi) ring joint (R-53) top, complete with <b>ASTM grade B6 stud bolts &amp; nuts</b> (20 sets) for 13 5/8" 3000 psi flange and 10"- Class 900 flange (16 sets) and 4" long erosion shield welded on the bottom.</p> <p>whether "ASTM grade B6 stud bolts &amp; nuts" can be replaced by "ASTM grade B7M\2HM stud bolts &amp; nuts ".</p>	<p>ASTM A193 Gr. B7M is acceptable for stud bolts and ASTM A194 Gr. 2HM is acceptable for nuts.</p>
4	<p>Double studded adaptor flange 13 5/8" API 6A, 3000 psi ring joint (R-57) bottom x 10" ANSI 1500 (11" API 5000 psi) ring joint (R-54) top, complete with ASTM grade B6 stud bolts &amp; nuts (20 sets) for 13 5/8" 3000 psi flange and 10"- Class 1500 flange (12 sets) and <b>4" long erosion shield welded on the bottom.</b></p> <p>please provide the OD and ID about 4" long erosion shield welded so as to confirm the thickness</p>	<p>The OD is 298.5 mm and the ID is 279.4 mm</p>

**ACKNOWLEDGEMENT OF CLARIFICATION NO. 1**

We, the undersigned hereby certify that the clarification is an integral part of the document and the alterations set out in the clarification has been incorporated in the tender proposal.

**Signed** \_\_\_\_\_

**Tenderer** \_\_\_\_\_