

Ashbaugh Corrosion Consulting Services

Mr. Richard Garrett
10696 Haddington, Ste. 110
Houston, Tx. 77043

February 10, 1998

SUBJECT: Qualification of Rotor-Tech Pumps to NACE MRO-175.

FROM: W.G. Ashbaugh, P.E.
Ashbaugh Corrosion Consulting Services

Dear Mr. Garrett:

In response to your request we have reviewed the Rotor-Tech pump materials with respect to qualification to NACE standard MRO-175.

The process conditions which were considered were the dehydrated (striped) Triethylene Glycol (TEG) being fed to the water removal process for sour gas. Since the glycol is used to absorb water from a sour gas production stream it was assumed that all materials of construction need to be qualified according to NACE Standard MRO-175.

This is a correct assumption for wet-H₂S exposure. Attached are paragraphs 1.2 and 1.3 which describe where this standard is applicable. The key to the use of this standard is stated in paragraph 1.3.1, first sentence, "Sour environments are defined as fluids containing water as a liquid and H₂S exceeding the limits described in paragraph 1.3.1 and 1.3.1.2."

In the process under review the TEG absorbs water from a natural gas stream. The glycol then goes to a stripping column where the water is stripped out along with H₂S and other gases. The bottoms from the stripper then are very low in water, with no more than 0.5% water and a trace of H₂S.

Since water is completely soluble in TEG there is NO free (liquid) water in the recycle stream. This is where the Rotor-Tech pumps

operate and it is clear that MRO-175 does not apply to this part of the process.

MRO-175 is the result of industry testing and experience to determine the parameters of materials and environments that work or do not work. From this point of view the Rotor-Tech pumps are well proven through many years of successful experience on dehydrators processing sour gas.

To conclude and reiterate: the use of Rotor-Tech materials of construction such as 4120, 4140, 8620 and other low alloy steels, in heat treated condition, are not covered by MRO-175 in dehydrator service because there is no liquid water present.

Sincerely,

A handwritten signature in cursive script, appearing to read "W.G. Ashbaugh".

W.G. Ashbaugh, P.E.

NACE Corrosion Specialist Certification #87

State of California Corrosion Engineers License #492

Attachment