Recommended Practice for the Care and Handling of Sucker Rods

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Detailed requirements applying to sucker rods are given in API Specification 11B, *Specification for Sucker Rods*, which also is under the jurisdiction of the API Executive Committee on Standardization.

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Recommended Practice for Care and Handling of Sucker Rods

1 Scope

This recommended practice (RP) covers the care and handling of steel sucker rods, including guidelines on selection, allowable stress, proper joint makeup, corrosion control and used rod inspection.

2 References

This specification includes by reference, either in total or in part, the most recent editions of the following API, industry, and government standards, unless a specific edition is listed:

API Specification 11B, *Specification for Sucker Rods*

API Technical Report 11L, *Design Calculations for Sucker Rod Pumping Systems (Conventional Units)*

ASNT SNT-TC-1A [1], *Recommended Practice*, *Personnel Qualification and Certification in Nondestructive Testing*

NACE MR0174 [2], *Selecting Inhibitors for Use as Sucker-Rod Thread Lubricants*

NACE SP0195, *Corrosion Control of Sucker Rods by Chemical Treatment*

3 Selection of API Steel Sucker Rods

3.1 General

The selection of API grade sucker rods for a beam pump installation depends on a variety of factors, including stress effects, environmental effects and rod grade.

3.2 Stress Effects

Sucker rods need to be selected based on applied stresses. API 11L, *Design Calculations for Sucker Rod Pumping Systems* provides a procedure for calculating the applied loads or stress on a sucker rod string design.

Sucker rod strength is limited by the fatigue performance of the rod's metal. This useful strength is dependent on the metal's tensile strength as shown by Goodman (Goodman, "Mechanics Applied to Engineering" and Kommers, "Effect of Range of Stress and Kind of Stress on Fatigue Life"). This relationship is the basis for Section 4 of this document. According to the Goodman diagram shown in Figure 1, sucker rods operating in a non-corrosive environment and in the proper stress range will theoretically exceed 10 million load reversals. However, the fatigue life can be dramatically decreased by improper installation, design, handling or operation even without corrosion.

3.3 Environmental Effects

Sucker rods will eventually fail, even if not stressed, when placed in a corrosive environment. There is a reduction in sucker rod and coupling life if placed in a corrosive environment. However, the life of the sucker rod can be extended by the use of an effective corrosion inhibition program. In that case the expected life of a sucker rod can potentially be the same as a rod in a non-corrosive environment.

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1 American National Standards Institute, 25 West 43rd Street, 4th floor, New York, New York 10036, www.ansi.org.

2 NACE International (formerly the National Association of Corrosion Engineers), 1440 South Creek Drive, Houston, Texas 77218-8340, www.nace.org.