EDUCTION TUBE INSPECTION CRITERIA

Scope

The purpose of this document is to outline general guidelines for the inspection of eduction tubes at regular intervals.

Recommendations

Hydrochloric Acid/Other Services:

1. The inspection process should start after 5 years of being put in service, and continue every 5 years of service time.
2. When inspecting the eduction tube, make sure to remove the entire tube from the tank car. The eduction tube may be discolored compared to a new tube. Blue/green discoloration of the tube in HCL service is to be expected.
3. Inspect the eduction tube's length for excessive bowing. If the eduction tube no longer naturally hangs over the sump, replacement is recommended.
4. Inspect a two inch area of the tube beneath the flange for stress cracks (area shown in FIGURE 1). Stress cracks typically form where the flange meets the tube on the underside due to heightened mechanical stresses from general use.
5. If stress cracks are visually present in the inner or outer diameter of the tube, immediate replacement is recommended.
6. If the eduction tube is deemed fit for service, the flex end should be replaced. It is recommended that the flex end be replaced every 5 years and the dip tube every 10 years. An eduction tube can be used after the listed recommended life span, at the equipment owner's discretion, if the part is inspected to the above criteria. The flex end can be used after the listed recommended life span, at the equipment owner's discretion, if the part is inspected to the equipment owner's inspection criteria.

Bleach and Bleach-Like Services:

Note: Bleach and bleach-like services include, but are not limited to, bleach (Sodium Hypochlorite), Sodium Chlorite, or other services that use commodities that result in a Chlorine by-product.

1. The inspection process should start after 5 years of being put in service. While most eduction tubes in these services last much longer than the initial 5 years, instances have been found that tubes have had signs of needing to be replaced.
2. When inspecting the eduction tube, make sure to remove the entire tube from the tank car. Eduction tube may be discolored compared to new tube.
3. Inspect eduction tube's length for excessive bowing.
4. Inspect a two inch area of the tube beneath the flange for stress cracks and chemical attack (area shown in FIGURE 1). Chemical attack will present itself as excessive whitening. Stress cracks typically form where the flange meets the tube on the underside due to heightened mechanical stresses from general use.
5. If stress cracks are visually present in the inner or outer diameter of the tube, immediate replacement is recommended.
6. If the eduction tube is deemed fit for service, the flex end should be replaced. It is recommended that the flex end be replaced every 5 years. After the first 5 years of

service, it is recommended that the eduction tube be checked at a regular interval. Stress cracks enhanced by chemical attack have been noted in some tubes as early as 6 years of service.

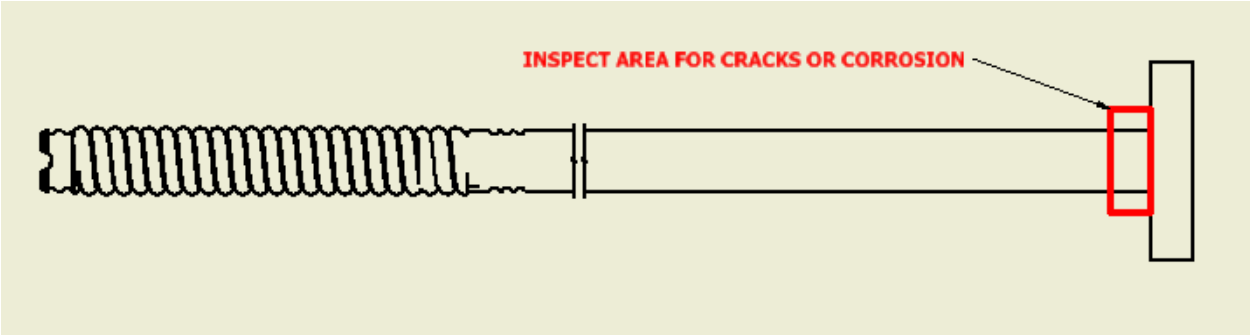

FIGURE 1: INSPECTION AREA

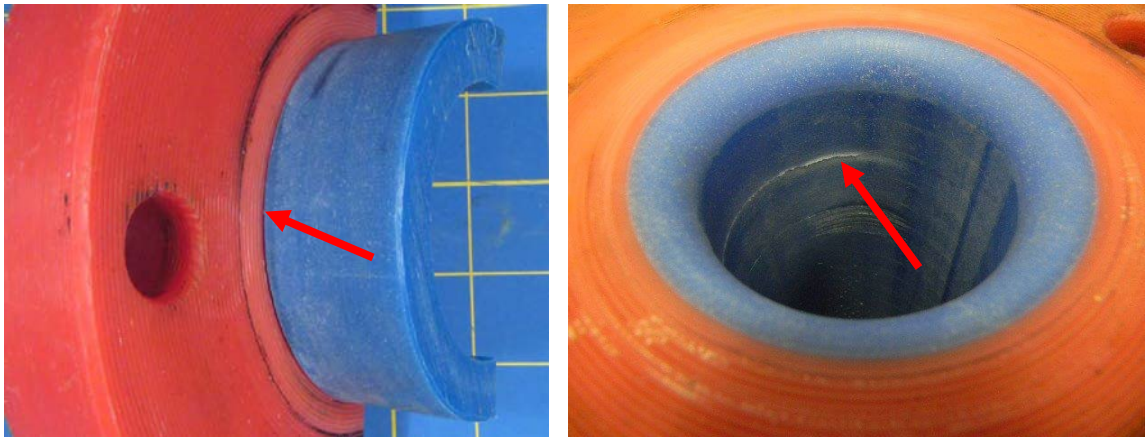

FIGURE 2: STRESS CRACK EXAMPLES

Revision Level	Rev. By	Rev. Date	Rev. Section	Change Made
1	MJW	3/17/2020	HCL #6	Added "An eduction tube can be used after the listed recommended life span, at the equipment owner's discretion, if the part is inspected to the above criteria."
2	MJW	2/4/2022	HCL #6	Added "The flex end can be used after the listed recommended life span, at the equipment owner's discretion, if the part is inspected to the equipment owner's inspection criteria."