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Paul Boeckman, VP of Engineering

January 20, 2017

Subject: PG&E Safety Flash- Swivel Hook

To Whom It May Concern:

The safety flash shown on the following page was prepared by Pacific Gas and Electric (PG&E) after an incident in July 2016, that resulted in the swivel hook body being bent. Crosby was made aware of the incident through the safety flash, and contacted PG&E to assist with the evaluation. Crosby suggested that the deformation evidenced in the photograph was consistent with an overload condition and/or improper tip loading of the hook.

The hook was sent by PG&E to an independent laboratory for a detailed metallurgical analysis, and the laboratory has determined **there were no manufacturing deficiencies of the hook**. In September 2016, the laboratory concluded that **tip loading of the hook is most likely responsible** for the excessive deformation. PG&E has shared the laboratory report with Crosby, and acknowledges the tip loading condition, even though they were unable to confirm how potential misuse had occurred. Their conclusion satisfactorily removes any implied blame for the incident from the Crosby swivel hook.

Crosby was also recently made aware of other similar safety alerts initiated by Vectren Corporation, and Miller Pipeline, using the original safety flash information and photographs from PG&E. The Vectren Corporation, and Miller Pipeline safety alerts are included for reference on the following pages.

Thank you for your continued support of products of The Crosby Group. If you have any questions or need additional information, please do not hesitate to contact me.

Sincerely,

Paul Boeckman, P.E.

Vice President-Engineering

products of uncompromising quality...

CROSBY Clips & Fittings, **LEBUS** Load Binders, **McKISSICK** Blocks & Sheaves, **CROSBY-WESTERN** Blocks, **NATIONAL** Swaging Systems

Plants and facilities in: Little Rock, Arkansas - Tulsa, Oklahoma - Dallas, Texas - Longview, Texas
Toronto (Brampton), Ontario - Barnsley, England - Heist-op-den-Berg, Belgium - Cergy St. Christophe, France

Safety Flash – Crosby Swivel Hook Failure



CAUTION: A new S-322A Crosby swivel hook purchased from Carpenters Rigging has failed on June 7, 2016.



The Hazard

A trench shield was in the process of being lowered into the trench with an excavator when the new swivel hook elongated causing uncontrolled descent of the trench shield and 4-way sling onto a 12" depressurized gas transmission facility. The trench shield with spreader bars weighed 10,700 lbs. The maximum lifting capacity of the Crosby S-322A swivel hook is listed at 22,000 lbs.

The Ask

Remove all 11 ton Crosby hooks from service in the field.

Inspect all rigging equipment prior to using

Verify

The failed hook was sent to Exponent test lab to determine the cause of the swivel hook failure and we are reaching out to the Supplier.

In the interim, ensure that crews substitute alternative approved rigging methods such as shackles until completion of the investigation.



Mission:
We will integrate a strong focus on safety and health into our day-to-day business management and process design, thereby creating a safe workplace. No aspect of operations is more important than the health and safety of people.



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SAFETY ALERT: Crosby Swivel Hook Failure

Cranes can be one of the most dangerous pieces of construction equipment on the jobsite. They are large and can be difficult to control. Even small miscalculations can lead to injury or death to those nearby. **5476**

We would like to thank Jamie Hatfield for bringing the following safety alert to our attention. It originated as a non-Vectren incident.



A trench shield was in the process of being lowered into a trench with an excavator when the newly purchased swivel hook unexpectedly elongated. This resulted in an uncontrolled descent of the trench shield and four-way sling down onto a depressurized 12" gas transmission pipeline. The cause of the elongation is presently unknown.

The Crosby S-322A swivel hook had a capacity of 22,000 lbs. (11 tons), while the trench shield with spreader bars weighed only 10,700 lbs.

The failed hook was sent to a testing lab to determine the cause of the failure. **8478**

In the meantime:

1. Immediately remove all 11 ton Crosby hooks from service and tag as out of service,
2. Inspect all rigging equipment prior to use, and
3. Substitute alternative approved rigging methods such as shackles until the completion of the investigation.

Things to inspect on the hook include:

- Checking that the safety latch (mouse) is in place and operating correctly. **2140**
- Is the hook bent or twisted? The twist cannot exceed 10° from the plane of the unbent hook or as recommended by the manufacturer.

Has the throat opening increased? The throat opening cannot increase by more than 15% or as recommended by manufacturer.



- Check the bowl conditions. Are there any gauges, nicks or cuts that could damage synthetic slings and etc.? **8943**
- Check the rotation of the hook. Does it rotate freely the whole 360°?

Other operational reminders:

- **Never overload the crane or hoist.** Make sure the combined weight of the lifter and load does not exceed the rated load capacity of the crane or hoist.
- **Take instructions only from the person designated to give signals.**
- **Do not ride or allow other people to do so.**
- Before lifting, ensure that everyone is clear of any pinch or crush zones.
- **Do not lift loads over people.** Stay out from under the load and make sure other people remain at a distance. **632**
- **Never leave a suspended load unattended.** If you must leave the area, lower the load to the ground before doing so.



Did you see your company ID number to win a Safety T-shirt? (If so, contact Jon Lollar at jlollar@vectren.com and let me know what size shirt you would like)

Quick Stats
249 cranes analyzed
249 crane accidents over the last decade.

These incidents resulted in fatalities,
838 OSHA violations,
and over \$3 million OSHA fines.

The injuries/fatalities related to these incidents resulted from the following:

37% were crushed by the load. (load swing, or unstable load.)

27% were injured from the load dropping. (poor rigging practices)

12% were caused by a fall. (falls from heights of over 8 ft.)

11% were injured crushed by the overhead or gantry crane. (includes caught in between.)

6% were injured from improper or lack of Lock Out Tag Out (LOTO).

7% were injured from other causes.

70% of the incidents could have been prevented by proper training.

Many of the incidents could have been prevented with proper crane maintenance.

SAFETY

ALERTS

Crosby Swivel Hook Failure

We recently learned of an incident where a fellow contractor lost control of a load that was being carried by this model of hook.

The crew was in the process of lowering a trench shield into a trench with an excavator when the (new) swivel hook unexpectedly elongated, causing the trench shield and 4-way sling to descend uncontrolled into the excavation, eventually landing on top of a gas pressurized 12" gas transmission pipeline. This particular model, Crosby 5-3224 (See Fig. 7 Below), was rated for 22,000 lbs., but failed with only the trench shield and spreader bars attached (only 9,700 lbs.). This hook was sent off to a testing lab to determine why the failure occurred.

As a result of this, we are requiring any Miller Pipeline crews that may be using this model to immediately remove all applicable hooks from service, and re-tag them "Out of Service".



ELONGATED HOOK