

Tracer Wire Study by Gas Technology Institute Summary

November 1, 2012

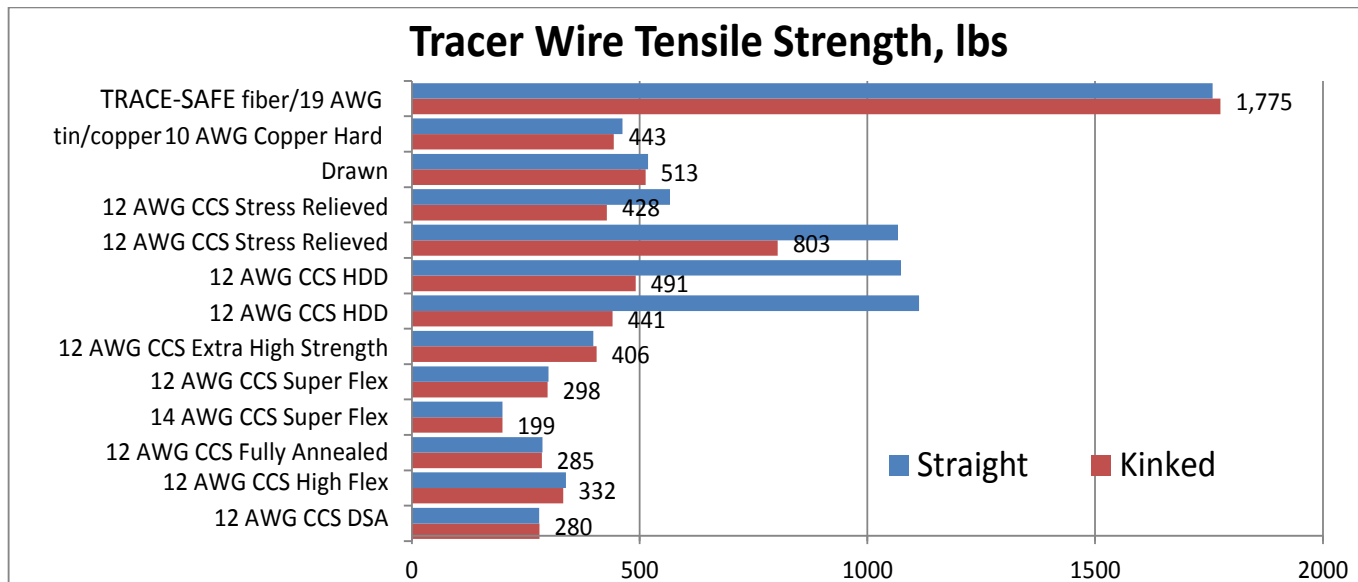
Summary of Trace Safe Test Results:

1. **Trace-Safe** wire **outperformed** the other wires ...
2. **Trace-Safe** wire has the **highest score** on the **tensile break load with and without kink** and the **scrape test**.
3. Trace-Safe **did not show significant damage** (all others field tested had damage).
4. The **continuity** of this wire conductor was **not affected after 2000 hr corrosion test**.
5. The **scrape resistance** of Trace-Safe insulation material are **significantly higher than the traditional HDPE or LDPE coating**.
6. Trace-Safe was the **only wire selected to remain in the ground for future locates** of the pipeline.

... The Trace-Safe wire utilizes a **woven polyester** core with an internal insulated wire. Such woven strip configurations have a **very high strength-to-weight ratio**, and larger sizes are commonly used in **industrial lifting and towing applications** which require very high levels of loading. ...
 In addition, this wire is **very flexible** ...

Horizontal Directional Drilling Field Tests

Test #1: 300 ft rock/limestone, 200 ft soil/clay	Faults	Test #2: 190 ft rock, 100 ft pea gravel, 50' clay	Faults
Trace-Safe fiber/copper	0	Trace-Safe fiber/copper	0
#12 A Copper PE coated	4	#12 High Flex-CCS 45 mil HDPE	1
#12 D Copper PE coated	3	#12 HDD-CCS 45 mil HDPE	3
		#12 HDD-CCS 45 mil LDPE	3



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