TO: WrapTech, Inc.
FROM: Exponent, Inc.
DATE: November 18, 2019
SUBJECT: BolaWrap 100 Impact Testing

Exponent tested the BolaWrap 100 device to evaluate the following:

- The risk of penetration and injury in the case of direct impacts of the device projectile in different anatomical regions as a function of anatomical site at short range distances (1 ft and 7 ft).
- The risk of puncture injury and tearing in the case that the projectile hooks are embedded in a subject’s skin and forcefully pulled.

This testing was intended to represent extreme and rare worst-case conditions during an accident or misuse of the device for the following reasons:

- The device was tested at 7 ft. and 1 ft. from the target. Normal use of the device is intended for distances of 10 to 25 ft.
- The specimen was tested without clothing.
- The testing subjected the specimen to a direct straight-line trajectory impact of the device barb. This direct straight-line trajectory impact is not expected during normal use.
- The device was aimed at specific anatomical targets, which would not be expected during normal use.

Exponent conducted testing on a full torso male cadaveric tissue specimen (55-years-old).

During impact testing, tissue penetration was observed during a majority of tests. In some cases, tissue penetration near non-vital organs was observed, which might present a risk of hematoma, bleeding, infection, and pain. In select situations, we observed tissue penetration in the neck or head region, which could potentially cause blindness, skull fracture, hemorrhage, respiratory compromise or be potentially lethal. In some instances, tissue penetration in the abdomen could potentially cause trauma to internal organs or breach the peritoneal cavity. Tissue penetration on exposed genitalia may irreparably damage reproductive organs.

It is noted that any impact leading to these outcomes would require a direct hit of the device barb upon a specific anatomical region, which is not expected during normal use of the BolaWrap 100 device.

During the evaluation of tissue tearing during pull-testing, we observed tissue injury consistent with minor superficial tissue injury. Tissue tearing was localized to the immediate region around the hooks, and did not appear to extend past the dermal layer.