KLINE ENGINEERING CO., INC.

Projectile Flight Dynamics **Forensic Exterior Ballistics**

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Feb. 5, 2001

Mr. C. Owens

Port Angeles, WA 98636

Dear Sir,

This is in regard to your inquiry concerning the firing of a .50 caliber weapon in the waters adjacent to the Olympic Peninsula. The enclosed surface danger zone (SDZ) was developed by the U.S. Army Research Development and Engineering Center (ARDEC), Picatinny Arsenal, NJ and is based on extensive firings at proving grounds both in this country and in Europe. This includes ricochet data obtained by firing into a variety of surface media. Also, to supplement this data, a very accurate computer simulation of flight was formulated based on the work of the US Army Ballistic Research Laboratory, Aberdeen Proving Ground, MD.

The "dispersion area" on the enclosed SDZ represents the area wherein personnel are at risk when a weapon is intentionally fired along the centerline. The "ricochet area" is that area in which personnel are at risk from a bullet being deflected by impact media.

As this SDZ shows, NO firings should be conducted within 6100 meters of the shoreline or any surface vessel. Restricting firing away from the shoreline is NOT a solution since a ricochet can travel almost 1700 meters off the line of fire and, carelessness and inattention could easily result in a bullet being fired in the general direction of the Peninsula.

Respectfully,

Roy Kline