

## ABSTRACT

### DEMONSTRATION OF SELECTED ASPECTS OF A UTILITY MAPPING SYSTEM (UMS)

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Mapping power distribution lines presents a unique photogrammetric challenge. The homogeneous character of a power cable precludes the identification of conjugate imagery in the photo-base direction when photography is flown in the direction of the power line. By locating small, digital array cameras in the wing tips of low flying aircraft, the error in image identification occurs in the cross-base direction (y-parallax) and does not present a problem in computing conjugate ray intersections for measurement of elevation and horizontal position normal to the direction of the cable. A program of research was sponsored by Ontario Hydro of Toronto to test this "cross-base" concept for power line surveys. Results indicate that the cross-base concept is feasible and can meet required spatial accuracies provided care is taken in providing strong geometry and calibrating the photogrammetric system in the air. Requirements by utilities for spatial accuracy on cables, towers and insulator attach points are described. Results obtained from flight tests are presented.