



**Hanford Electrical Transmission & Distribution Systems Survey, Hanford Nuclear Reservation, WA; Mission Support Alliance for the US Department of Energy**

White Shield (WSI) managed this electrical transmission systems survey under an existing Master Services Agreement for the Mission Support Alliance at the Hanford Nuclear Reservation. The survey was required to assess the transmission facilities and mitigate discrepancies found between actual field conditions and design specifications per current National Electric Reliability Corporation (NERC) standards. The scope of work included aerial LiDAR inspections of two looped 230kV transmission lines (approximately 53 miles) that make up the DOE Hanford Site Transmission System. Additionally, the project involved Thermal Image Inspections and Corona Discharge Surveys of the entire length of the transmission system.

WSI subcontractor AeroMetric, Inc. utilized the Eagle Eye Mapping System to acquire helicopter-based LiDAR and medium format color stereo aerial imagery. WSI surveyors set 64 aerial panels, and provided GPS control for the flight corridors. The data was acquired at an altitude of approximately 500 feet, and resulted in LiDAR point density of 30 – 50 points per square meter. LiDAR data was delivered in separate ASCII .txt files for each transmission line segment, and all data was classified per the corresponding feature from the BPA PLS-CADD AS-BUILT feature code list. Easting, Northing, and Elevation were reported to the nearest 0.01 feet. All raw LiDAR data was delivered in .las format, and separate shapefiles were delivered which outlined the LiDAR data and imagery capture area for each transmission line segment.

WSI subcontractor Atlas Inspection Technologies, Inc. performed the Thermal Inspections and Corona Discharge Surveys, with subcontractor ARES Corporation providing the Engineering Assessment. Atlas utilized Ofil Daycor Superb and Uvolle Corona cameras, and a Flir T620 IR camera to provide thermal data on components such as armor rods, and compression splices and switches to detect and locate overheating joints, general hot spots, and other anomalies of the aerial lines and towers. Inspections included insulators (degradation, contamination, cracked, shorted, etc.), conductor attachments to insulators, improper grounding/bonding, loose hardware (spacers, splices, clamps, etc.) power loss, and audio noise contamination. Photographs and thermograms were provided to document deficient areas, and were compatible with FLIR Quick Reporter Software. WSI provided additional survey data to document line sag, and tower cross arm elevations.

