Purpose:

Prolonged CT x-ray tube (CTXT) life is always in the interest of health-care provides for lowering the operating costs. However, long CTXT life is a function of many conditions, such as, mA, heat loading, environmental, anode material, pulse duration, scan length and mechanical failures. In this multi-year study, we investigated actual CTXT life versus manufacturer warranty coverage limits.

Methods:

Ten GE Lightspeed CT (GE Healthcare, Waukesha, WI) scanners with 33 Performix-Ultra and 3 GE VCT scanners with 8 Performix-Pro tube changes over the 5 year period (2006-2011) included in the study. These CT scanners located at main campus and various satellite locations of our radiology department. CTXT life measurements were performed by analyzing log files of the CT units after a CTXT change.

Results:

Company warranty coverage indicates 6000 exams/12 months (whichever comes first) for Performix-Pro and 70kAs/12 months for Performix-Ultra tubes. Our measurements for 33 Ultra CTXT showed a range from 7 months to 48 months and from 16.7 kAs to 239.9 kAs. Mean values for Ultra CTXT are 16.5 ± 9.9 months and 81.2 ± 46.9 kAs. For 8 Pro CTXTs, the measured logs indicated 19.0 ± 7.0 months of CTXT life. Among the 33 Ultra CTXTs, 7 of them did not meet the company warranty coverage limits. Those 7 CTXTs had an average life of 8.0 months and 48.1 kAs. All 8 Ultra-Pro CTXTs exceeded company warranty coverage limits.

Conclusions:

Overall 7 out of 41 CTXTs failed to meet company warranty period. None of these tubes were Pro type. Since clinical demand from a CT scanner varies, it is difficult to reason for the failed CTXTs. Mechanical, environmental conditions and usage related choices can reduce the life expectancy of a CTXT.

Funding Support, Disclosures, and Conflict of Interest:

N/A