DAYTON T. BROWN INC.
Founded 1950

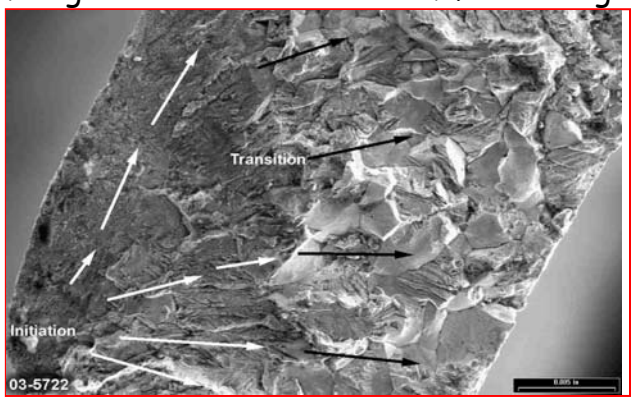
METALLURGICAL LABORATORY

FAILURE ANALYSIS CASE STUDY

Description	Mass transit bus heater core failure
Problem	Heater cores showed susceptibility to failure in service, primarily by fracture of copper tubing
Analysis	Failure was caused by high cycle fatigue due to mechanical (rather than thermal) variable-amplitude vibratory stresses. Cracks propagated in a corrosion-fatigue mode.
Resolution & Recommendations	Reduce joint stresses through the use of flexible couplings

Failure Location

Fatigue Initiation and Crack Mode Change



Failure Location

Fatigue Striations and IG Fracture