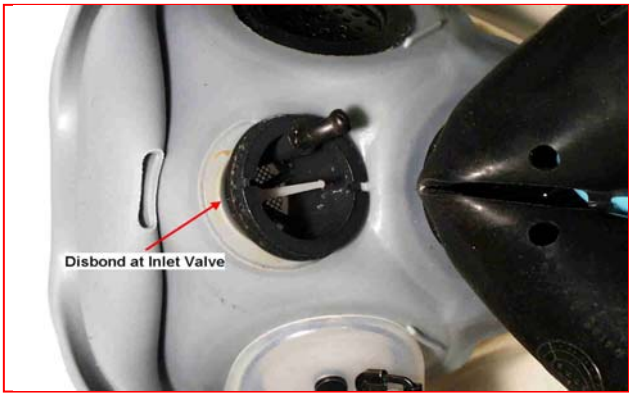
DAYTON T. BROWN INC.
Founded 1950

METALLURGICAL LABORATORY

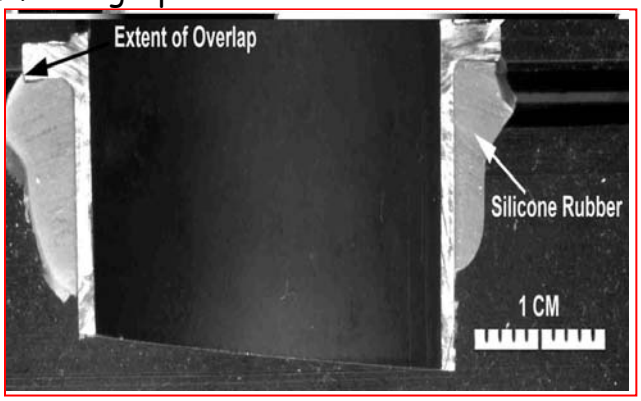
FAILURE ANALYSIS CASE STUDY

Description	Failure in gas masks used by Air Force crews
Problem	Inlet valve/silicone interface disbanded during service
Analysis	Chemical bonding had not degraded. Analytical modeling showed that high stresses were generated during mask removal by leveraging the inlet valve
Resolution & Recommendations	Modification of interface geometry from one-step to two-step configuration reduced the maximum stress by 45%

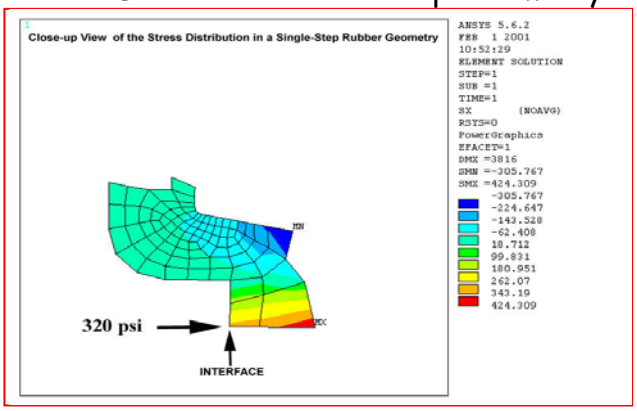
Disbond Location



Metallographic Cross Section



Stress Distribution One-Step Geometry



Stress Distribution Two-Step Geometry