Figure 6b. Microstructure of vacuum hot pressed Ti -W sputtering targets. In addition to the β-stablized Ti and the W matrix, the structure exhibits the presence of lamellar β Ti,W between the W and Ti rich particles, along the grain boundaries of the Ti-rich particle and diffusing into the Ti.

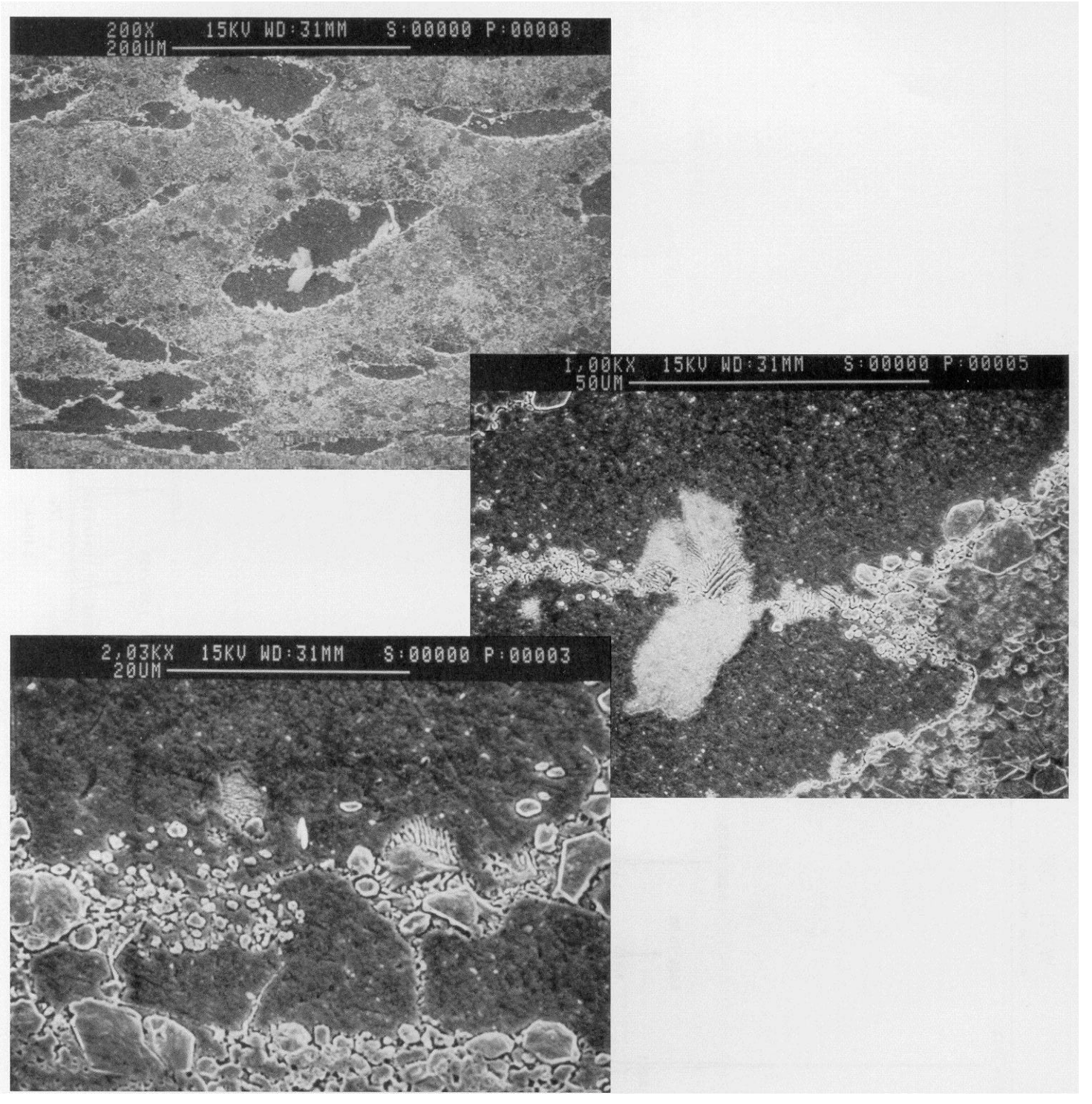
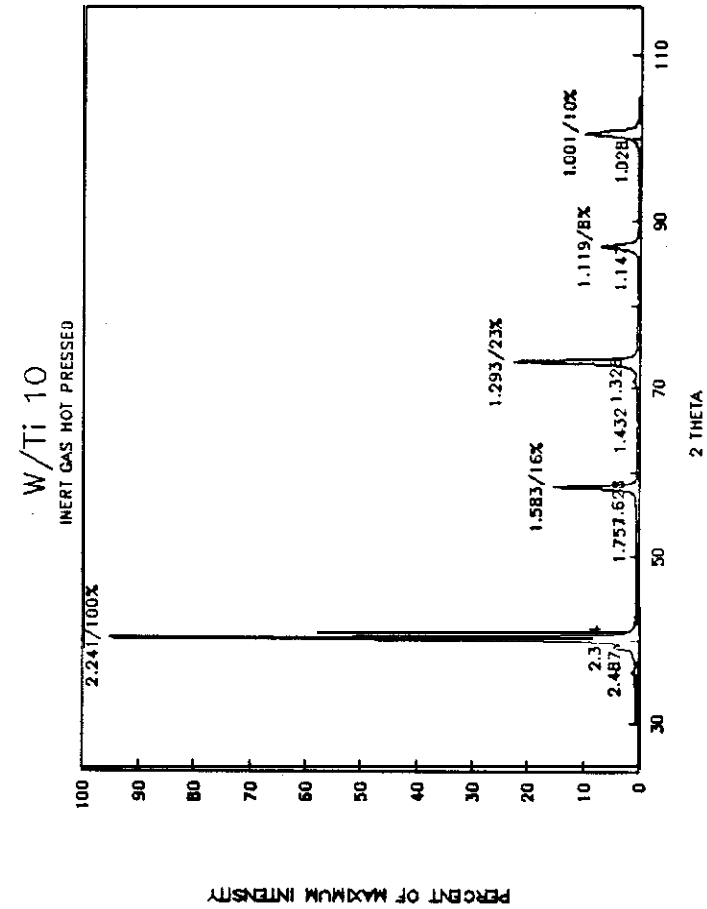
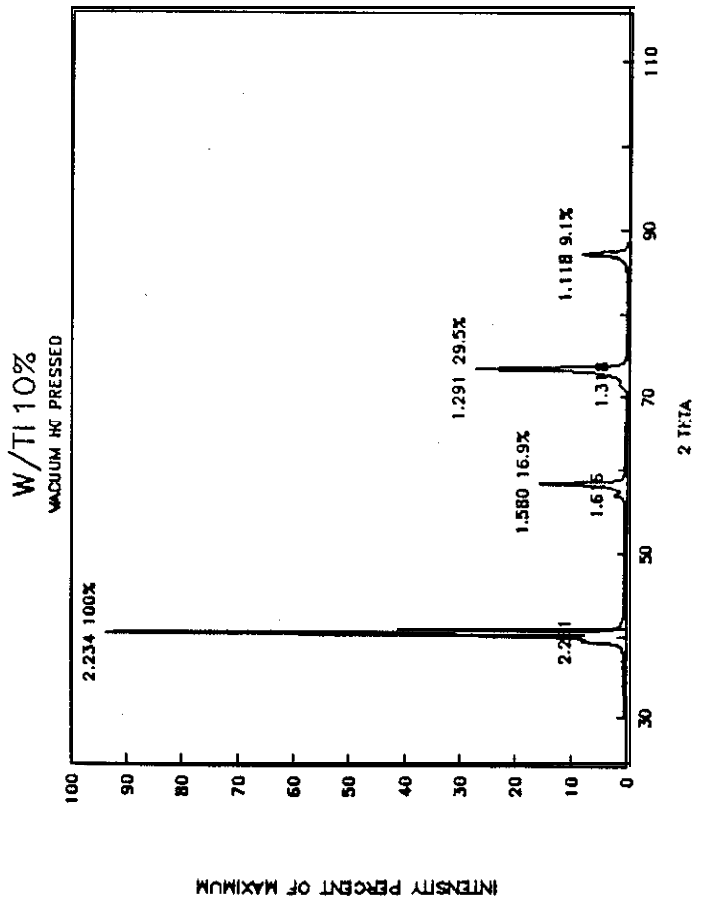


Figure 7. X-ray diffraction data for a) MRC, b) vacuum hot oressed. and c) hot isostatic pressed targets.





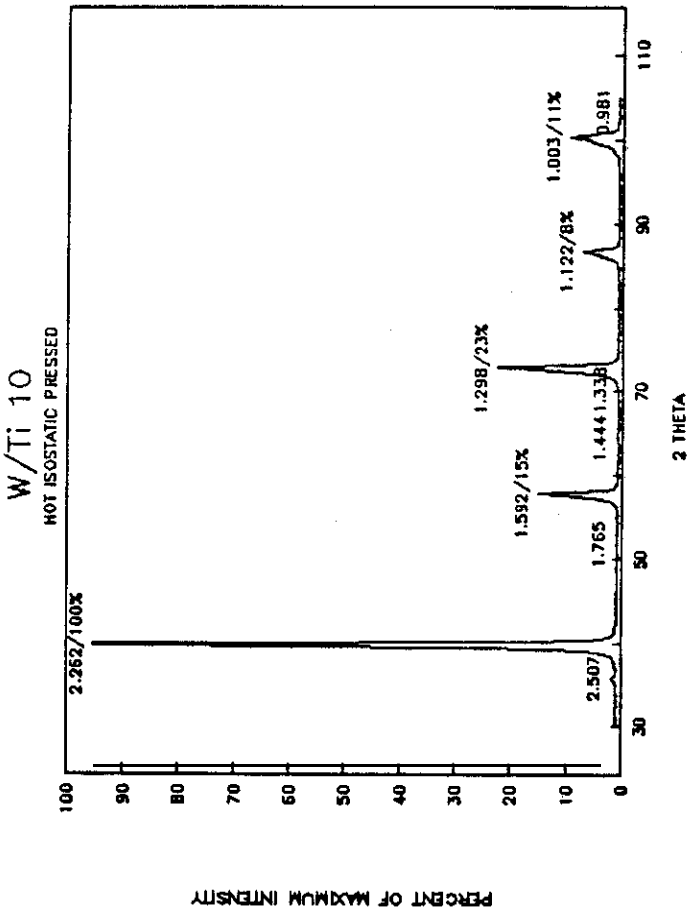


Figure 8. Statistical evaluation of through-life particle data

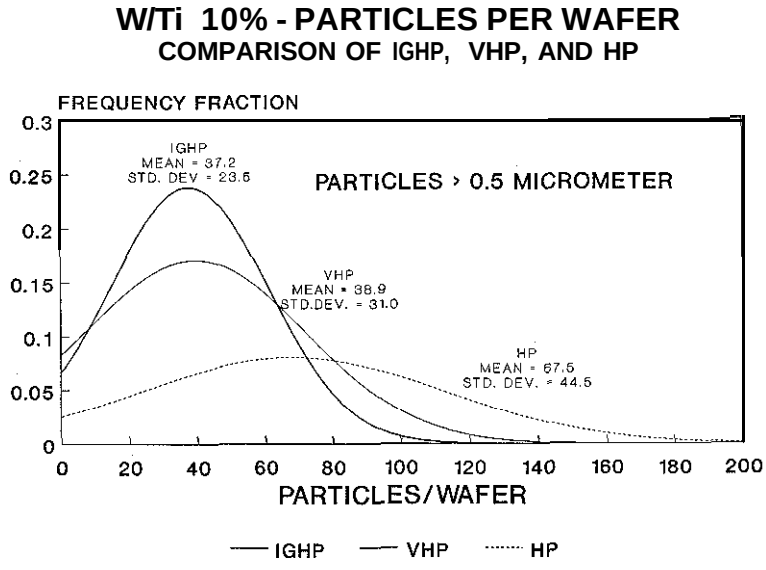


Figure 9. Trend line of data showing direct relation between target density and particle generation. Early life (<200 kW-hr) data from reference 3 shows similar relation.

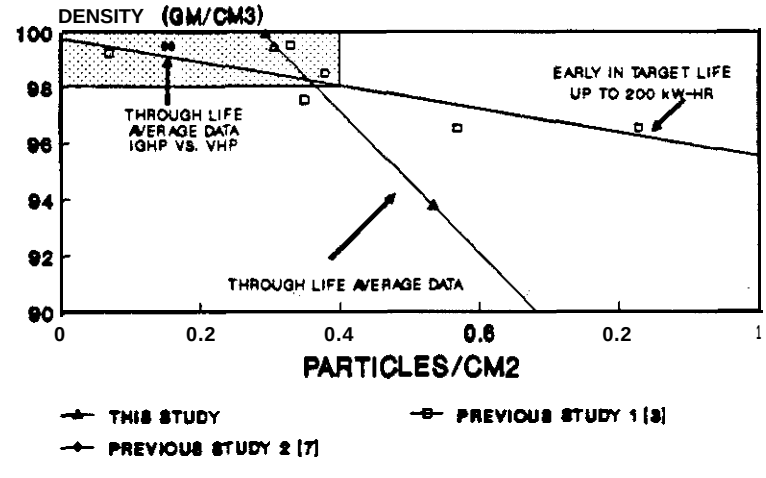


Figure IO: Particle data vs pressing temperature from Wickersham compared to data from IGHP and VHP target performance.

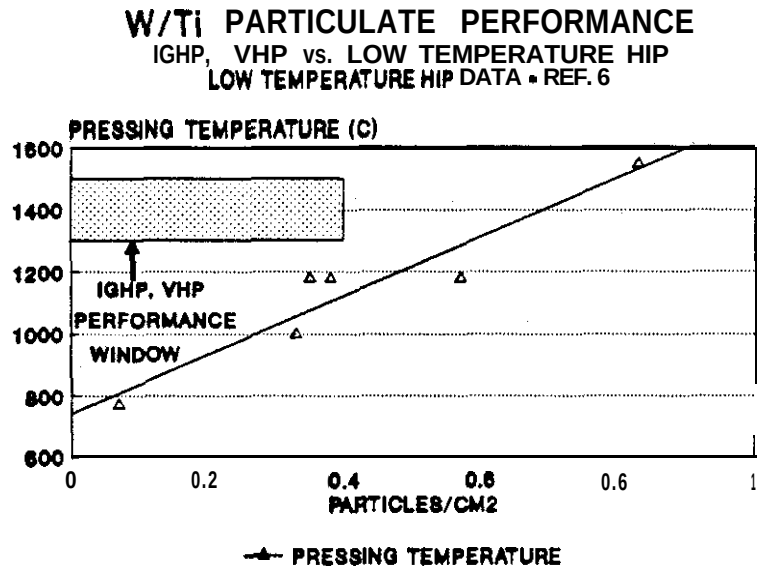


Figure 11. Through-life particle generation.

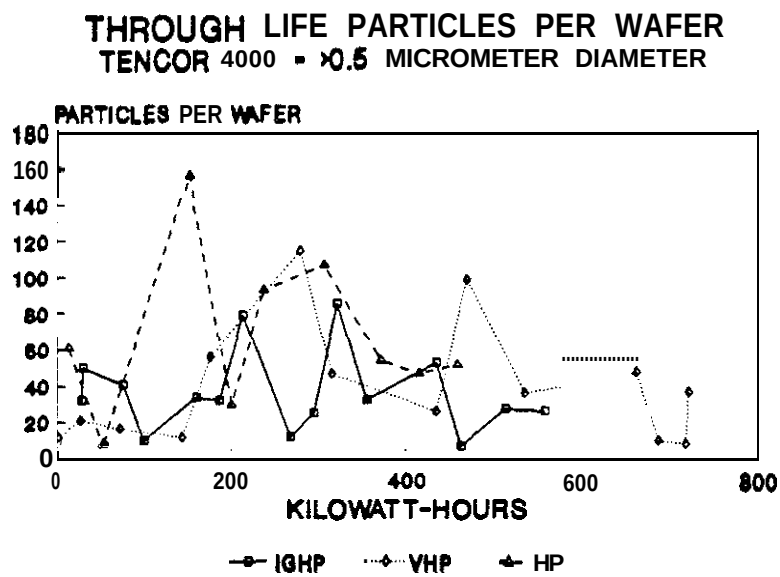


Figure 12. Separate study of particle performance for W-Ti films on a 5-inch (125 mm) wafer application. Two sets of data are for an inert gas hot pressed target and a vacuum hot pressed target.

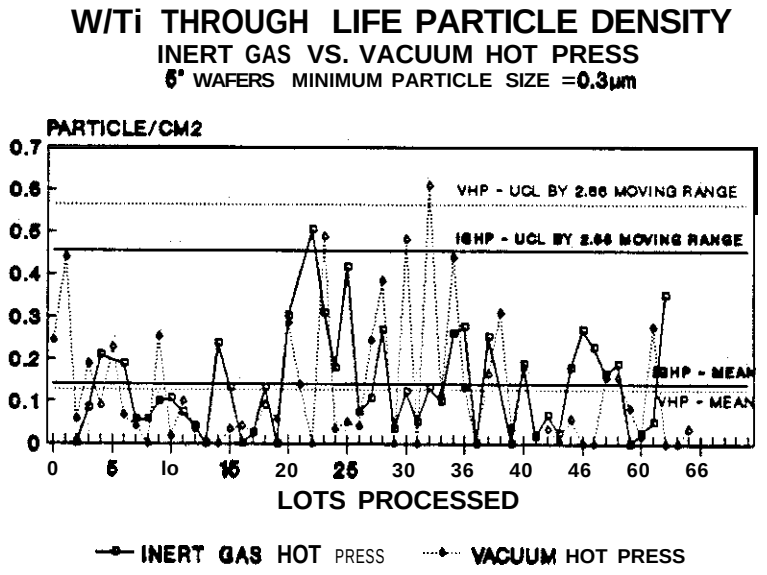
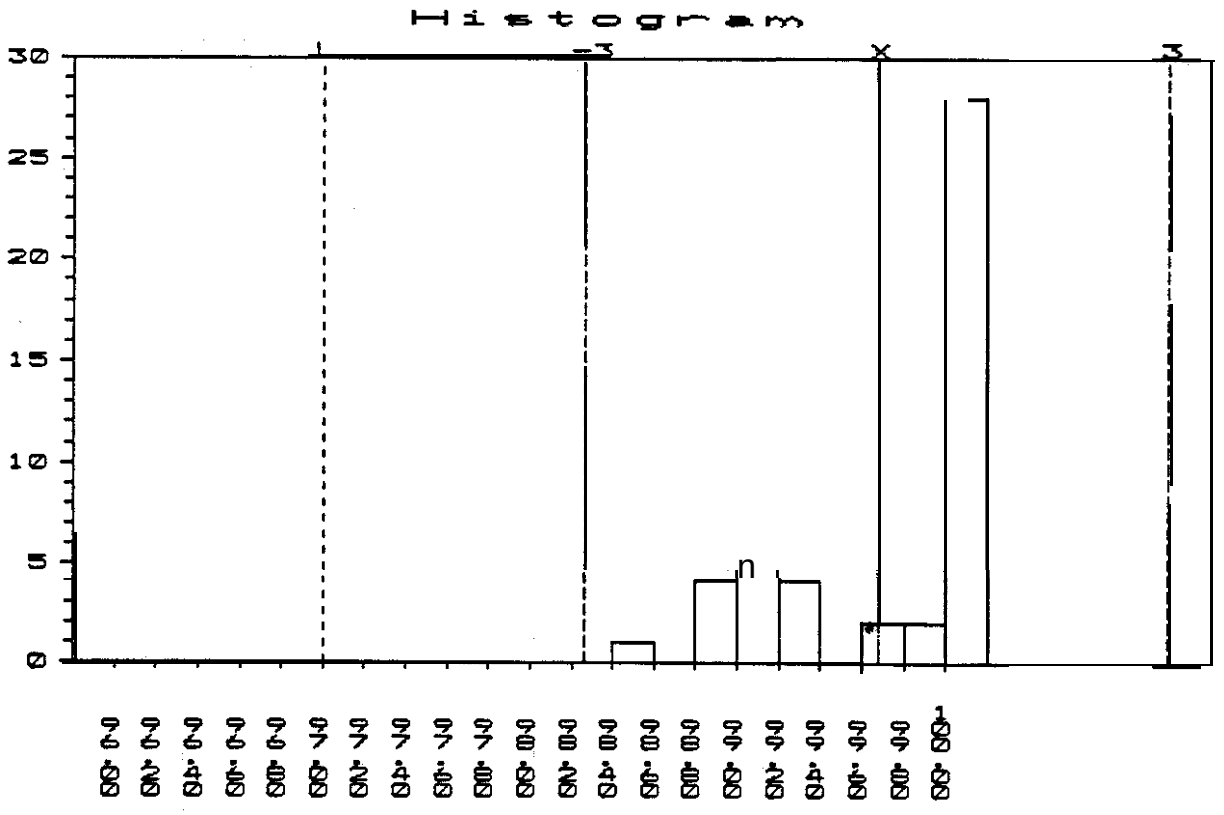


Figure 13. Historgram illustrating a controlled manufacturing process having Cpk of 1.9 for the density of high performance W-Ti targets.



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