963-53-16 **Scott D Pauls*** (pauls@math.rice.edu), Rice University, Department of Mathematics - MS 136, 6100 Main Street, Houston, TX 77005. *Smooth minimal surfaces in the Heisenberg group.*

We investigate smooth nonparametric minimal surfaces in the three dimensional Heisenberg group, H, equipped with a Carnot-Caratheodory metric. By considering critical points of area variation for smooth graphs, we derive a sub-elliptic partial differential equation analogous to the minimal surface equation in Euclidean space which characterizes all such critical points. Then, through a variety of standard methods, we produce many examples of minimal surfaces. These examples provide counterexamples to the generalization of any Bernstein style theorem in this setting as well as to the uniqueness of the solution to the Plateau problem for arbitrarily nice boundary data. Moreover, considering Heisenberg group equipped with a sequence of left invariant Riemannian metrics which Gromov-Hausdorff converge to H with a Carnot-Caratheodory metric, we demonstrate a link between the minimal surfaces in the sequence and the minimal surfaces in the limit. (Received November 21, 2000)