1086-35-514 **Fabrice Baudoin** (fbaudoin@math.purdue.edu), Department of Mathematics, Purdue University, 150 N. University Street, West Lafayette, IN 47907-2067, and **Jing Wang*** (wang321@purdue.edu), Department of Mathematics, Purdue University, 150 N. University Street, West Lafayette, IN 47907-2067. *Curvature-Dimension Inequalities and Ricci Lower Bounds for Contact Manifolds.* Preliminary report.

Let M be a contact Riemannian manifold. The sub-Laplacian L on M is a symmet- ric diffusion operator which is subelliptic but nowhere elliptic. We study Bochner's type formulas for L and, as a consequence, prove that under suitable geometric bounds spectral gap estimates can be obtained as well as gradient estimates for the heat semi- group. (Received September 05, 2012)