1077-20-1605   **Aliza A. Steurer*** (`asteurer@dom.edu`), Dominican University, Department of Mathematics, 7900 W. Division, River Forest, IL 60305. *Using the p-Group Generation Algorithm to Generate Extensions of D_4 by $C_2 \times C_2 \times C_{2^{n-5}}$.* Preliminary report.

Let D_4 denote the dihedral group of order 8, let C_m denote the cyclic group of order m, and assume $n \geq 8$. In a recent class field theory paper, Michael Bush investigated groups that are part of an interesting family of extensions of D_4 by $C_2 \times C_2 \times C_{2^{n-5}}$. We proved that for each fixed n, there are 8 inequivalent extensions of D_4 by $C_2 \times C_2 \times C_{2^{n-5}}$ that are non-isomorphic as groups. We achieved this in two main parts. First, we used group cohomology to prove there are 8 such inequivalent extensions. Second, we used the p-group generation algorithm to find presentations for 8 non-isomorphic groups that are extensions of D_4 by $C_2 \times C_2 \times C_{2^{n-5}}$. These must be the 8 extensions of interest. In this talk, we will outline our proof. (Received September 20, 2011)