$$-\frac{\partial H}{\partial \mathbf{x}_a} = \dot{\mathbf{p}}_a = e_a \sum_{b \neq a} \frac{e_b \hat{\mathbf{n}}_{ab}}{R_{ab}^2} \left[1 - \left(\frac{1}{2 m_a m_b c^2} \right) (\mathbf{p}_a \cdot \mathbf{p}_b) \right] - e_a \sum_{b \neq a} \frac{3 e_b \hat{\mathbf{n}}_{ab}}{2 m_a m_b c^2 R_{ab}^2} (\mathbf{p}_a \cdot \hat{\mathbf{n}}_{ab}) (\mathbf{p}_b \cdot \hat{\mathbf{n}}_{ab}) +$$
$$e_a \sum_{b \neq a} \frac{e_b}{2 m_a m_b c^2 R_{ab}^2} \left[\mathbf{p}_a (\mathbf{p}_b \cdot \hat{\mathbf{n}}_{ab}) + \mathbf{p}_b (\mathbf{p}_a \cdot \hat{\mathbf{n}}_{ab}) \right] + \left(\frac{1}{m_a c} \right) \frac{(\mathbf{p}_a \times \mathbf{m})}{x_a^3} - \left(\frac{3}{m_a c} \right) \left[\mathbf{p}_a \cdot (\mathbf{m} \times \mathbf{x}_a) \right] \frac{\mathbf{x}_a}{x_a^5} -$$
$$\left(\frac{2 e_a^2}{c^2} \right) \frac{\left[m^2 \mathbf{x}_a - \mathbf{m} (\mathbf{m} \cdot \mathbf{x}_a) \right]}{x_a^6} - \left(\frac{6 e_a^2}{c^2} \right) \left[m^2 x_a^2 - (\mathbf{m} \cdot \mathbf{x}_a)^2 \right] \frac{\mathbf{x}_a}{x_a^8}$$