1049-35-171 **Maria Elena Schonbek*** (schonbek@math.ucsc.edu), UCSC, Math department, Santa Cruz, CA 95060, and **Clayton BJorland**. *Questions on steady state Navier-Stoke equations.*

I will consider the steady-state Navier-Stokes equation in the whole space $\mathbb{R}^3$ driven by a forcing function f. I will show that given any $M > 0$ we can find a class of forcing terms for which there exists solutions U with bounds $\|U\|_{L^2(\mathbb{R}^3)} \leq M$. The main conditions on the source terms f is absence of low modes and the ratio of f to viscosity is sufficiently small in a natural norm. These solutions are unique among all solutions with finite energy and finite Dirichlet integral. Using Fourier-splitting tools, the constructed solutions will be shown to be stable in the following sense: If U is such a solution then any viscous, incompressible flow in the whole space, driven by f and starting with finite energy, will return to U. (Received March 02, 2009)